

Structured Finance

Global CBO/CLO Criteria

STANDARD
&POOR'S

STANDARD & POOR'S RATINGS SERVICES

President

Leo C. O'Neill

Executive Vice Presidents

Hendrik J. Kranenburg, Robert E. Maitner

Executive Managing Directors

Edward Z. Emmer, *Corporate Ratings*
Clifford M. Griep, *Financial Institutions Ratings*
Vladimir Stadnyk, *Public Finance Ratings*
Roy N. Taub, *Insurance Ratings*
Vickie A. Tillman, *Structured Finance Ratings*

Sanford B. Bragg, *Managing Director, Managed Funds Ratings*
Joanne W. Rose, *Senior Managing Director, General Counsel*

RATINGS INFORMATION SERVICES

Managing Director

Jay S. Kilberg

Vice Presidents

Andrew Cursio, *Product Management*
Robert Frump, *Production & Electronic Distribution*
Paul Stanwick, *Editorial*
David A. Collins, *Director, Asia-Pacific*
Guy Hewitt, *Director, Europe*
Susanne Barkan, *Product Manager*
Sara Burris, *Director, Design, Production, & Manufacturing*
Jean-Claude Bouis, *Editor, Franchise Products*
Donald Shoultz, *Editor, Policy & Operations*

Editorial

Jennifer O'Brien, *Managing Editor*
Ned Geeslin, Audrey Kennan, Suzanne Lorge, Donald Marleau (Tokyo)
Cynthia Michelsen, Miriam Stickler, Lisa Tibbitts (*Editorial Managers*)
Arlene Cullen (Melbourne) (*Copy Editor*)

Design & Production

Sandy Fong, Renee L. Mofrad, Beth Russo (*Senior Managers*)
Elizabeth McCormack, Steve McLure (*Senior Designers*)
Rosalia Bonanni, Theresa Moreno, Heidi Weinberg (*Designers*)
Maura Gibbons (*Junior Designer*)
John J. Hughes, Alicia E. Jones, Barry Ritz, Leonid Vilgorin (*Managers*)
Dianne Henriques, Stephen Williams (*Production Coordinators*)
Christopher Givler, Stan Kulp, Michelle McFarquhar (*Senior Production Assistants*)

Subscription Information

Hong Kong, (852) 2533-3535
London, (44) 171-826-3510
Melbourne, (61) 3-9631-2000
New York, (1) 212-208-8830
Tokyo, (81) 3-3593-8700

Subscriber Services

New York (1) 212-208-1146

Web Site

www.standardandpoors.com/ratings

Standard & Poor's

A Division of The McGraw-Hill Companies



Published by Standard & Poor's, a Division of The McGraw-Hill Companies, Inc. Executive offices: 1221 Avenue of the Americas, New York, N.Y. 10020. Editorial offices: 25 Broadway, New York, N.Y. 10004. Copyright 1999 by The McGraw-Hill Companies, Inc. All rights reserved. Officers of The McGraw-Hill Companies, Inc.: Joseph L. Dionne, Chairman; Harold W. McGraw, III, President and Chief Executive Officer; Kenneth M. Vittor, Senior Vice President and General Counsel; Frank Penglase, Senior Vice President, Treasury Operations. Information has been obtained by Standard & Poor's from sources believed to be reliable. However, because of the possibility of human or mechanical error by our sources, Standard & Poor's, or others, Standard & Poor's does not guarantee the accuracy, adequacy, or completeness of any information and is not responsible for any errors or omissions or for the results obtained from the use of such information.

Global Collateralized Bond And Loan Obligation (CBO/CLO) Criteria

Global CBO/CLO Product Overview	3
Product Basics	3
Cash Flow CBOs/CLOs	4
Differences Between CBOs And CLOs	6
Key Areas Of Risk	6
Outlook	9
The Rating Process, Asset Management, And Surveillance For CBOs/CLOs	11
Procedures	11
Sponsor/Asset-Manager Review	14
Surveillance	14
Evaluating Credit Risk For CBO/CLO Transactions	19
Determining Credit Enhancement	19
Credit Enhancement Level: Cash Flow Analysis And Default Estimation	30
Risk Factors: Structure And Collateral	47
Other Considerations	65
Legal Considerations For CBO/CLO Transactions	69
Bankruptcy-Remote Entities	69
Transfer Of Assets And Perfection	72
Selected Specific Criteria	76
Master Trust And Synthetic CLO Structures	79
Overview Of The Master Trust Structure	79
Master Trust Structural Issues	84

Credit Considerations	89
Credit-Linked Notes And Synthetic CLOs	94
Multi-jurisdiction/Emerging Market CBO Criteria	99
Sovereign Risk	100
Concentration Risks	103
Recovery And Loss Severity Assumptions	106
Appendix A	
Mapping Bank Loan Scoring Models To Standard & Poor's Ratings In CBO/CLO Transactions	107
Appendix B	
Structured Finance Interest Rate And Currency Swap Criteria	111
Appendix C	
'AAA' Swaps Approved In Structured Finance Transactions	117
Appendix D	
Swap Agreement Criteria For CBO/CLO Transactions	121
Appendix E	
Interest Rate Assumptions For Structured Ratings	135
Appendix F	
Structured Financing Without True Sale: English Secured Loans	143

Global CBO/CLO Product Overview

Product Basics

The genesis of the CBO (collateralized bond obligation) and CLO (collateralized loan obligation) market occurred in the late 1980s with the repackaging of high-yield, speculative-grade bonds or loans into highly rated paper. By the late 1990s, the market had expanded into far more diverse product applications, and beyond U.S. borders in terms of issuers and investors alike. Participation by sponsors outside the U.S. increased, most notably, by European and Japanese financial institutions through

CBO/CLO Definitions

CBOs and **CLOs** are securities backed or collateralized by a diversified pool of corporate bonds or loans, respectively. **CDOs** are securities backed or collateralized by a diversified pool of both corporate bonds and loans.

A **CBO** is backed by a portfolio of secured or unsecured senior or junior bonds issued by a variety of corporate or sovereign obligors.

A **CLO** is backed by a portfolio of secured or unsecured loans made to a variety of corporate commercial and industrial loan customers of one or more lending banks.

A **CDO** is backed by a portfolio which is a combination of bonds and loans described above.

Cash flows from the asset pool plus **credit enhancement** to cover credit risk in the portfolio provide payment to the CBO or CLO investor. Credit enhancement or credit support often comes in the form of excess assets over rated CBO/CLO liabilities. This is achieved by subdividing the CBO or CLO into senior and subordinated

tranches or classes, each with different ratings, different loss positions and different levels of excess asset “buffers.” For example, depending on an issuer’s underlying portfolio characteristics, \$100 million in assets can back \$80 million ‘AA’ rated senior notes, and \$20 million unrated subordinated and equity classes.

Arbitrage or “spread” CBO/CLO transactions can realize the positive spread between a portfolio of higher-return, higher-risk assets, often rated below ‘BBB-’, and lower-cost, highly rated CBO/CLO securities issued to purchase that portfolio.

Example: Asset manager-sponsored high-yield bond CBO

Balance sheet CBO/CLO transactions can reduce regulatory capital requirements and enhance lending capacity and return on equity by using the proceeds of the CBO/CLO securities to “spin off” bonds or loans from corporate commercial and industrial lending portfolios.

Example: Lending bank-sponsored CLO.

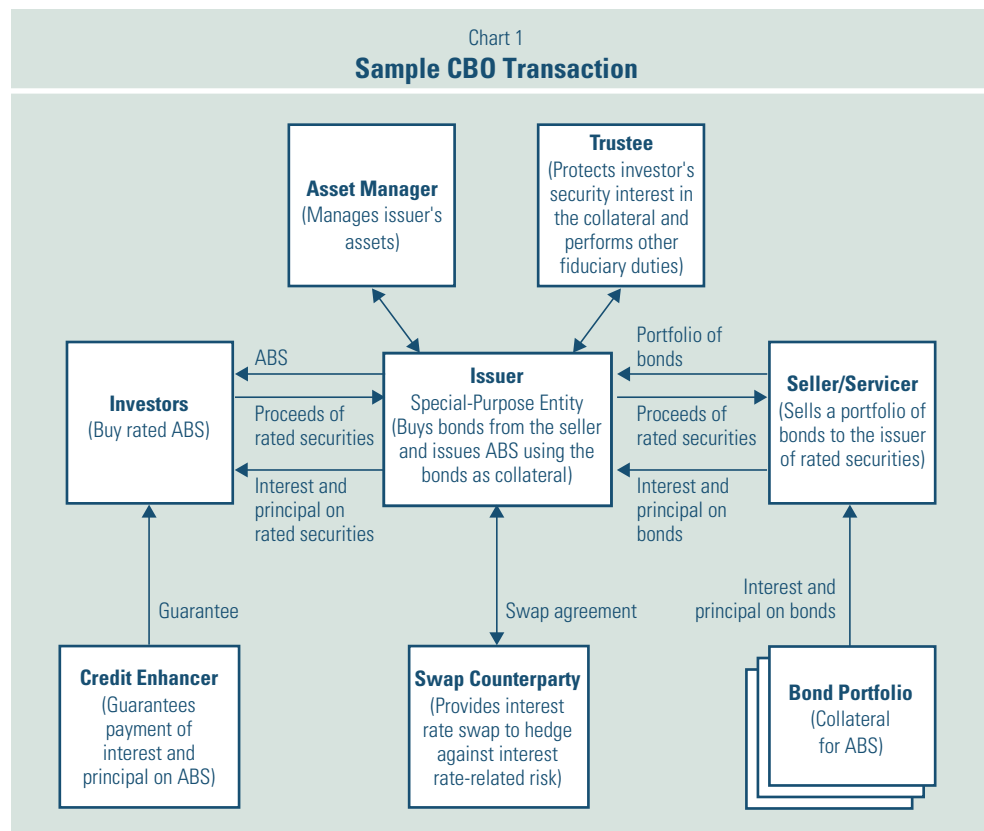
their overseas U.S. branches as well as on their domestic fronts in Europe and in the Asia-Pacific region.

Cash Flow CBOs/CLOs

Cash flow transactions comprise the bulk of the global CBO/CLO market. In turn, the cash flow CBO/CLO market is comprised of three main sectors, or products: arbitrage, balance sheet, and emerging market.

The arbitrage sector of the CBO/CLO market is the largest in terms of the number of transactions completed. Arbitrage deals are designed to capture the positive spread between relatively higher yielding assets and lower cost, highly rated liabilities. Arbitrage CBOs represent most of this sector (*see chart 1 “Sample CBO Transaction”*). However, arbitrage CLOs and CDOs (collateralized debt obligations) are growing subsectors (unless otherwise noted, any references in this book to CBOs/CLOs includes CDOs).

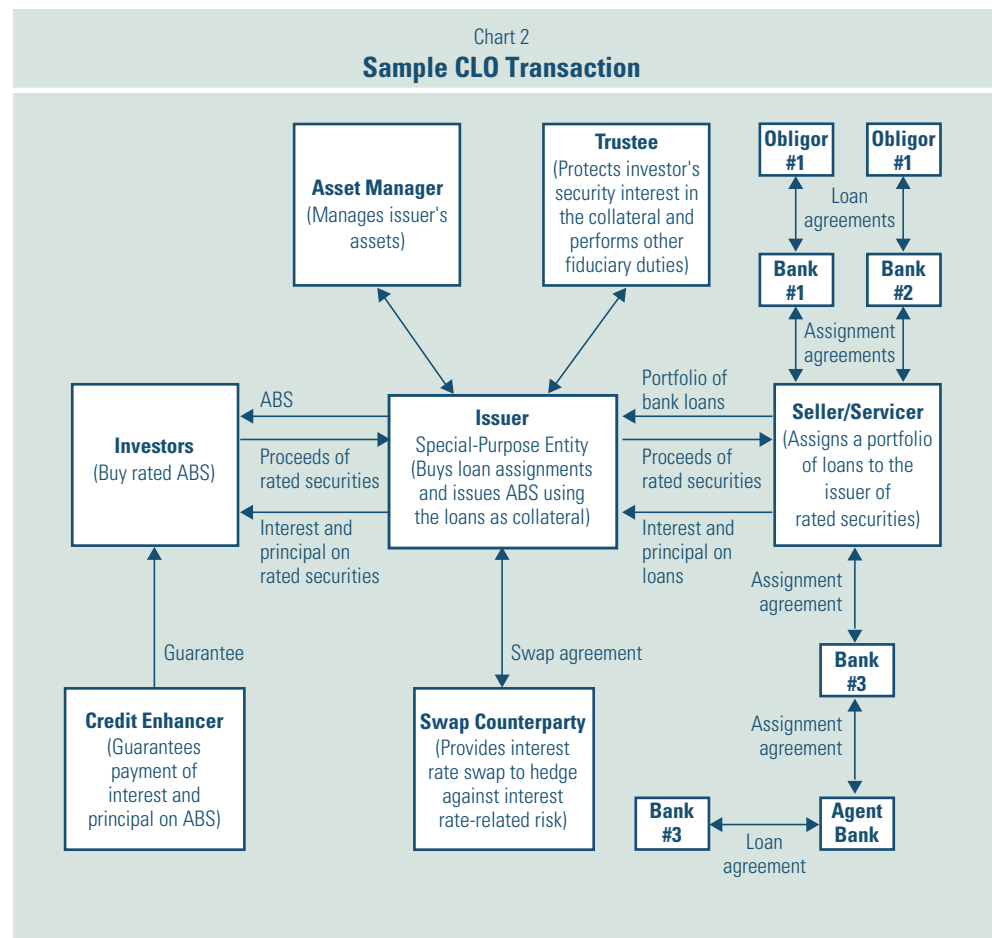
The balance sheet sector is the largest in terms of the dollar volume of transactions completed. Balance sheet deals were initially designed to reduce regulatory capital requirements for the selling institution on the assets transferred into the transaction.



Additional motivations include increased lending capacity and lower cost of funding. Balance sheet CLOs represent most of this sector, and many sponsors in the late 1990s have used the master trust vehicle (*see chart 2 “Sample CLO Transaction”*).

Other subsectors of the balance sheet CLO market are on the rise. Synthetic CLOs or credit derivative structures, such as credit swap and credit-linked note (CLN) securitizations, have gained popularity. They can potentially provide regulatory relief and hedge credit exposures, without legal transfer of the underlying assets. In addition, CBOs seeking off-balance sheet treatment have been on the rise, for example, in the U.S. under accounting standard FASB 125.

The remainder of the cash flow CBO/CLO market is largely made up of the emerging market sector. Emerging market CBOs (EMCBOs) are arbitrage transactions backed by portfolios of sovereign debt and/or emerging market high-yield corporate bonds. Finally, project finance securitizations of infrastructure debt represent the newest product sector.



Differences Between CBOs And CLOs

It is important to note that while the criteria for CBO and CLO transactions share similarities, loan assets have features that can make the analysis more complicated than that of bond assets. Certain credit, legal, and cash flow analyses of CLOs differ from those of CBOs due to the following factors:

- The loan type and loan documentation can affect the degree to which rights and obligations can be transferred from the sponsor to the transferee. For example, a loan may in part be a participation. The lead bank transfers all or part of its interest in a loan (which also may include a pro rata interest in any collateral securing the loan) to one or more participants. Analysis of participations often entails an evaluation of the credit risk of the seller bank, whose insolvency may interrupt payments from the borrower to, ultimately, the issuer, as transferee.
- Loan terms vary widely, such as different amortization schedules, payment dates, rate indices, index reset dates, tenors, and so on, which impact the cash flow analysis.
- The lack of uniformity in the manner in which rights and obligations are transferred also results in a lack of standardized documentation for these transactions. Therefore, loan documents require a more detailed legal review.
- Loan portfolios can be restructured to accommodate the diminished or declining repayment capacity of borrowers.
- Markets for bank loans are less liquid than bond markets. This increases the risk of not being able to purchase eligible loans during the ramp-up and revolving periods, as well as not being able to sell defaulted loans. In addition, disposition of defaulted loans via sale into the market may lower the ultimate recovery relative to disposition via a gradual workout.

Key Areas Of Risk

This analysis describes Standard & Poor's rating approach to CBOs/CLOs and the key risk areas, which are the focus here of a brief review. The key areas include sovereign risk, default risk, recovery and loss severity estimation, currency and interest rate hedging, as well as legal risk.

Sovereign Risk

Both the overall credit profile for an obligor and its rating can be impacted and possibly constrained by the sovereign rating of the country in which the obligors are domiciled. Standard & Poor's has modified its "traditional," or single-jurisdictional, CBO/CLO default model to take into account such factors when determining a multi-jurisdictional or emerging market pool's credit profile at a given rating level.

Single-jurisdiction CBOs/CLOs are collateralized by sovereign debt or corporate bonds or loans from a single country. If all obligors in the collateral pool are from the same country, that country's local currency or foreign currency issuer credit rating will most likely limit the transaction's rating to that of the sovereign, regardless of the portfolio's underlying credit quality or the amount of credit enhancement. "Traditional" single-jurisdiction CBOs/CLOs are collateralized by corporate bonds or loans from a single, typically developed, country. These transactions can achieve a rating as high as 'AAA' with a collateral pool comprised, for example, of all U.S. obligors, based in part on the 'AAA' local currency or foreign currency issuer credit rating of the United States.

In CBOs/CLOs with significant exposures in the collateral pool to a single or multiple less developed or emerging market countries, solutions for structuring a transaction with a rating higher than that sovereign's issuer credit rating become important. One example is obtaining a 100% guarantee or an insurance policy, in either case from a highly rated third-party credit enhancer. However, there is still a practical problem for issuers seeking such third-party support arrangements in emerging market regions, particularly in those nations whose ratings have been recently downgraded. The reason is that both the investors and the monoline insurers who typically "wrap," or insure, such transactions have taken a cautious approach. This can hinder issuance activity for pools with large, relatively undiversified exposures to single countries or individual regions where there is economic stress.

Another analytical challenge related to sovereign risk involves the quantification of the incremental risk associated with "regional correlation." This involves analyzing the extent to which countries in a given region or subregion may tend to be impacted by the same economic cycles at the same time. Standard & Poor's will continue to examine this issue case by case when analyzing asset pools with regional concentrations.

Default Risk

The issuer credit rating (ICR) is the fundamental tool to assess obligor credit risk in Standard & Poor's default models. However, due to the lack of a well-developed bond market in certain regions, such as Southeast Asia, and even in some mature European markets, unrated credits can become a substantial component of CBO/CLO asset pools. In order to assess credit risk in such collateral pools, analysts can apply alternative measures of obligor default risk, such as credit estimates, for the unrated obligors.

Due to the general lack of transparency in many developing countries, it is difficult to perform accurate credit assessments due to a lack of information and different financial reporting standards. In many portfolios, there is a preponderance of small and mid-size commercial obligors whose financial profiles do not lend themselves to traditional corporate ratings analysis. In some nations where central government

intervention historically has been mixed with open market economies, it is difficult to analyze the stand-alone credit strength of a given company.

In some cases, where the number of unrated credits precludes credit estimates or rating assessments on each individual obligor, analysts can correlate a financial institution's internal credit scoring system with the rating scale, and develop proxies to be used in the default model. However, this approach is not feasible in situations in which the institution does not have a well-developed and validated internal scoring system.

Another challenge of many emerging market portfolios is that in certain countries there may be a lack of industry diversification. In these cases, the rating inputs into the default model must be adjusted downward to account for these industrial concentrations.

Recovery And Loss Severity Estimation

Accurate and detailed historical data on post-default recoveries on loans and bonds for issuers in emerging market regions generally is sparse or nonexistent. Any analysis of recoveries must factor in, on a country-specific basis, the legal and practical issues involved in realizing such recoveries, and the likely impact on timing of recoveries.

Currency And Interest Rate Hedging

Local currency denominated CBO/CLO issuance is still not feasible in developing countries due to the lack of a deep investor market, as well as legal and regulatory issues. In the aftermath of various emerging market currency crises, currency hedge providers may not have the desire to position the risk of certain currencies, or may price their products at levels that are not economical for a CBO/CLO. While interest rate risk can often be sized and covered with internal credit enhancement, such as cash reserves or overcollateralization, the economics of this strategy may not be favorable with respect to currency risks.

Legal Risk

Evaluation of the legal structure of CBO/CLO transactions is done in light of applicable laws and regulations governing all aspects of the structure. Problems that typically arise relate to the legal transfer/assignment of assets from the seller/originator to the securitization vehicle; bankruptcy remoteness of the issuer or other special-purpose entities; commingling, and set-off risk. Obtaining local legal expertise is critical to evaluating the legal integrity of any CBO/CLO structure. In addition, Standard & Poor's has concluded that contingent transfer or perfection mechanisms cannot be relied on to rate CLO/CBO transactions higher than the issuer credit rating of the originator of the assets.

Outlook

Analysis of CBO and CLO securities increasingly demands a multidisciplinary approach, in which objective criteria are combined with portfolio-specific information to provide flexible solutions. Standard & Poor's has responded by working with CBO/CLO market participants through its offices worldwide to develop new rating approaches and analytical solutions in challenging environments.

The Rating Process, Asset Management, And Surveillance For CBOs/CLOs

Procedures

As dynamic, multivariate structures, CBOs/CLOs demand a flexible yet disciplined approach. This section provides:

- An overview of the process for obtaining a transaction rating,
- A general description of asset manager and seller/servicer review procedures, and
- A summary of the surveillance process to maintain a transaction rating.

A rating addresses the likelihood of full and timely payment of interest and principal to noteholders. Specifically, it addresses the likelihood of the first dollar of default. The objective of a structured finance rating is to assign a rating higher than that of the sponsor (asset manager or seller/servicer). Structured rating analytical criteria focus on how much credit enhancement is needed to achieve such a rating, and accompanying legal criteria focus on isolation of the assets from the credit risk of the seller.

The rating process begins with a request in writing for a rating from the issuer, which can be made on its behalf by its investment banker or legal counsel. The key items necessary to facilitate the CBO/CLO rating process are the following:

- Execution of a rating contract to confirm the rating(s) request and relevant terms;
- Submittal of a detailed term sheet laying out the anatomy of the transaction (as further described below);
- Submittal of a detailed transaction book, and presentation at a meeting to elaborate on transaction specifics as well as address any rating concerns;
- An on-site meeting with the asset manager or seller/servicer to review management, investment/underwriting guidelines and operational aspects (*see sponsor/asset manager review section*); and

-
- Submittal of complete transaction legal documentation, portfolio data, and default/cash flow stress analyses (including detailed assumption summary for each cash flow run).

The detailed term sheet is critical to launching an efficient and effective rating analysis, particularly in view of the complexity of and variations in CBO/CLO structures. It is especially important in giving the issuer feedback on material issues that may require additional analysis or criteria decisions. A term sheet should at least explain the main aspects of a CBO/CLO (*see box, CBO/CLO Term Sheet Summary*).

A primary analyst is assigned to each transaction. In order to analyze the main elements of the transaction—credit, structure, cash flow and legal analysis—the primary analyst is joined by legal counsel, and other members of the CBO/CLO analytical team as necessary. If there are material issues in the transaction that require clarification, the analyst(s) may hold meetings to resolve them and, if necessary, involve a larger body made up of senior members of the Structured Finance Ratings department.

Not surprisingly, the parties to the transaction are most interested in determination of the credit enhancement level. The challenge, however, is that there are many “moving parts” to CBOs/CLOs, and credit enhancement is sensitive to structure and collateral. In order to begin the assessment of proposed credit enhancement levels, the analyst needs two essential ingredients: portfolio data and the issuer’s finalized transaction structure. The investment banker or issuer should send the portfolio file to the analyst,

Sample CBO/CLO Term Sheet Summary

A sample term sheet laying out the anatomy of a CBO/CLO transaction is as follows:

- Capital structure and requested ratings for each tranche;
- “Waterfall” or priority of payments;
- Proposed credit enhancement levels;
- Eligible asset definition (eligible collateral and investments, including “baskets” such as emerging market debt and other bivariate risk assets);
- Portfolio parameters and collateral quality tests;
- “Surrogate” ratings (e.g., correlated ratings or credit estimates);
- Substitution/asset addition, reinvestment, restructuring/modification and trading criteria (including any proposed use of the CBO/CLO default model);
- Ratio tests (coverage tests, maturity tests, triggers);
- Ramp-up and revolving/reinvestment periods;
- Amortization/redemption triggers and periods;
- Interest rate/currency hedging;
- Legal aspects (special-purpose entity bankruptcy remoteness, collateral transfer, etc.); and
- Regulatory issues.

along with the results from the applicable (single-jurisdictional or multi-jurisdictional) CBO/CLO default model as a structuring model (*see Evaluating Credit Risk section*).

After the appropriate CBO/CLO model calculates the portfolio's potential default frequency at the targeted rating level for the CBO/CLO, and the analyst has reviewed that calculation, it can be input into the investment banker's cash flow model. If the transaction structure is finalized, the cash flow analysis and credit enhancement assessment can begin. This part of the rating process is complex, involving multivariate stress runs. Although the variables to be stressed can be identified (for example, recovery levels, default scenarios, and interest rate stresses), the "dominating" stress runs to test credit enhancement cannot be easily identified a priori, and are often predicated on the results of other cash flow scenarios. In addition, if the structure evolves during the cash flow stage, the stress runs and, possibly, the proprietary cash flow model itself may need to be changed by the investment banker. The analyst should be provided with independent accountant verification of the proprietary cash flow model, its representation of the transaction structure, and the cash flow stress run results.

A rating committee makes the final decision on the sufficiency of credit enhancement. After the analytical team performs its review of the issuer's operations and analyzes the structure (as represented in the transaction documents and cash flow analyses), a rating committee comprised of senior analysts is assembled. The primary analyst is responsible for ensuring that all pertinent information received is presented to the rating committee. The committee presentation also includes information from the sponsor review process, and covers the structural, collateral, and legal aspects, as well as default/cash flow stress and credit enhancement analysis.

A rating is based on the representations of the parties to the transaction. However, documentation—offering memorandum, private placement memorandum or prospectus—is usually prepared by the issuer's counsel before a transaction is priced. However, Standard & Poor's relies on the binding legal agreements to determine the likelihood that the structure will provide timely payment. The most important of these documents is the pooling and servicing agreement in a typical balance sheet CLO, and the trust indenture in a typical arbitrage CBO/CLO, including supplements. These documents should be, and usually are, drafted by the time a transaction is priced. The primary analyst ordinarily presents the structure of a transaction to a rating committee after a transaction is priced, but in any event, as soon as practicable after the team receives a draft of the binding legal documents. Once the rating committee process is complete and all open issues have been addressed, a rating letter will be issued.

Sponsor/Asset-Manager Review

As part of the CBO/CLO rating process, analysts conduct a review of the asset manager or originator/servicer. The primary responsibility of the asset manager or servicer is to manage the portfolio in order to minimize losses due to the actual default or bankruptcy of the underlying obligors. Both the senior noteholders and junior or equity investors rely on the ability of the manager to identify, or the servicer to originate and maintain, creditworthy investments. CBO/CLO transactions are more sensitive to the performance of each obligor than are much larger, more homogenous traditional ABS portfolios. The asset manager's and servicer's breadth of responsibilities reflects that. Even with respect to measuring the default risk of an obligor, the asset manager or servicer must monitor credit quality changes, and facilitate annual updates by Standard & Poor's of "surrogate" measures such as credit estimates or correlated bank scores. Therefore, the performance of the asset manager plays a large role in the ultimate return to investors.

The review covers the company's management and operations, past historical performance, and other factors that may impact the asset manager or servicer's abilities (*see box, Asset Manager And Originator/Servicer Review*).

Surveillance

Rating surveillance of CBO/CLO transactions is becoming increasingly important. Master trust structures with multiple series takedowns, higher asset turnover, and cross-collateralization increase the surveillance burden. The higher amounts of

Asset Manager And Originator/Servicer Review

The following information, modified for each transaction, should be assessed in an asset manager and originator/servicer review:

Overview of the Company

- Background of the company;
- Organizational structure and staffing;
- Financial strength;
- Rated CBO/CLO history and management of multiple rated CBO/CLO transactions;
- Competitive position in managing high yield bonds, bank loans, emerging markets assets and asset-backed securities;
- Prior experience as servicer, manager and/or investor, including volume and history of high yield bond, bank loan, emerging market assets and asset-backed securities under management;
- Number of high yield, bank loans and emerging markets funds under management;
- Industries covered and not covered;
- Number of credits/industries covered by each analyst (credit generalist versus industry specialists);
- Ability to expand expertise to cover industries required in a diversified CBO/CLO;
- Regions covered in emerging markets;
- Types of asset-backed securities;
- Performance results relative to peer group and indices;

Asset Manager And Originator/Servicer Review (continued)

- Experience of the company in corporate lending or managing portfolios of high yield bonds, bank loans, emerging markets debt and asset-backed securities;
- Experience of staff in corporate lending or investing in and managing portfolio of high yield bonds, bank loans, emerging markets assets and asset-backed securities including experience and performance results prior to joining the company;
- Similarities and differences in managing CBOs and existing funds;
- Strategic objectives of the company in extending credit or managing CBO portfolios; and
- Compensation arrangements for portfolio managers/servicers.

Underwriting/Investment Strategy And Objectives

- Credit and approval policy;
- Underwriting guidelines;
- Investment strategy (credit versus yield);
- Investment style (buy and hold versus high turnover);
- Decision-making, selection and approval process for buy/sell/trade/lend decisions;
- Breakdown of loan book (bilateral vs. syndicated loans; agent bank role) and transaction book;
- Research methodology and capabilities;
- Sample credit and research reports;
- Credit processes;
- Presence of any subservicers on any of the lender's portfolio or sub-advisors on any of the company's managed funds;
- Depth and breadth of research;
- Audit status of the company's financial statements, and if audited, whether auditors issue any report on internal control;
- Hedging Strategy for interest rate and currency risks (Asset-specific vs. aggregate portfolio);
- Pricing sources; and
- Policies and procedures regarding securities valuation, segregation of duties, etc.

Servicing And Credit Monitoring Capabilities

- Procedures in place to service, administer and monitor the CBO/CLO securitization, and to ensure compliance with the CBO/CLO transaction documents;
- Identification of who performs the above servicing, administration, monitoring and compliance functions, along with whether they are contracted solely to the trustee or third party servicer, or are they jointly performed by the CBO/CLO sponsor (issuer asset manager or originator/servicer);
- Portfolio administration and report generation (credit/underwriting package and surveillance);
- Frequency and scope of credit review;
- Frequency of credit reviews for determining credit deterioration, improvement, change in risk standing or increase of credit line;
- Handling collection and disbursements;
- Managing Revolving Credit Facilities And Liquidity;
- Handling delinquencies (forbearance vs. write-off, loan modification and restructuring);
- Handling problem credits (Disposition: workouts vs. secondary market sale history);
- Handling "credit risk securities" and defaulted assets (liquidation strategy: transfer of assets to a workout specialist or "cradle to grave" philosophy);
- Historical portfolio performance (delinquencies/defaults/recoveries/timing);
- Systems and back-up capabilities;
- Conversion problems: actions and contingency plans; and
- Conversion problems for service providers such as trustee, etc.

unrated assets in collateral pools also necessitate more frequent surveillance. Portfolio turnover and trading, particularly in actively managed transactions, also demand close surveillance. Additionally, the participation of credit enhancement providers, such as bond insurers, or other parties providing support to these structured transactions, represent “dependent ratings” whose credit rating may impact the CBO/CLO rating.

In general, Standard & Poor’s reviews the rating it has assigned to determine whether the rating continues to reflect the likelihood of timely payment of interest and principal to investors. Analysts review and monitor various aspects of the transaction, including portfolio credit risk, coverage test results, and cash flow stress results (*see box, Basic CBO/CLO Surveillance Information*).

Each category of transaction data should provide a very detailed snapshot of performance at the appropriate CBO/CLO rating category. The first item is the collateral portfolio itself, separate from downgraded, delinquent, or defaulted assets (which must be separately reported in detail). Current portfolio data should include three main categories of information: individual collateral securities; portfolio composition by relevant parameters and asset categories; and all portfolio transactions since the last reporting date.

First, a complete schedule of individual collateral securities should include at least the following data:

- Issuer,
- Par amount,
- Interest rate (if floating rate, index and spread),
- Maturity date,
- Amortization schedules,
- Industry classification by Standard & Poor’s suggested categories, and
- Issuer credit rating by Standard & Poor’s, or “surrogate” assessment.

Surrogate assessments, such as credit estimates or “shadow ratings”, should be noted in the report. In addition, the trustee or servicer should indicate in the report when the credit estimates are due for annual surveillance, and should provide Standard & Poor’s updated financial information on each credit.

Second, a complete disaggregation of the portfolio should include a breakdown by relevant parameters and asset categories, such as the following:

- Issuer concentrations;
- Industry concentrations;
- Regional concentrations;
- Country concentrations;
- Rating distribution;
- Zero coupon or assets paying less frequently than liabilities;
- Baskets: bivariate risk assets (credit derivatives, participations, emerging market debt) structured finance securities (ABS), other (unrated or ‘CCC’ or lower rated assets), etc.;

- Maturity buckets;
- Fixed interest rate versus floating interest rate collateral;
- Bonds versus loans;
- Senior secured, senior unsecured and subordinated classes; and
- Term versus revolving debt or loans (for revolvers, utilization or funding rates).

In addition to the collateral portfolio, all other assets, support agreements, counterparty arrangements, and forms of credit enhancement should be reported in detail. For example, account and reserve inflows, outflows, balances, and investment of same in highly rated eligible investments should be reported, and draws on a support agreement quantified.

Third, all portfolio transactions since the last reporting date should be reported. Designated assets to be traded, such as “credit risk” or “credit improved” securities, asset sales, purchases, or additions should all be identified.

Analysts rely on the servicing report for necessary surveillance information. The frequency of servicing reports depends on transaction-specific parameters (for example, the absence or presence of trading restrictions, ramp-up period, and increasing or decreasing credit/liquidity support). Critical transaction dates, which should be flagged in all reports, are the end of the ramp-period, at which time the rating may be affirmed, and the end of the revolving period.

In balance sheet transactions, whether the vehicle is a discrete trust or a master trust, regular reporting is important, given the heterogeneity of the assets. In general, the servicer should run the CBO/CLO model at least quarterly during the life of the transaction, and report those results to the Surveillance Group. If there has already been an asset addition during the calendar quarter and the addition was reviewed by Standard & Poor’s, then the quarterly reporting condition is considered met. If a bank has correlated its own risk grade system to Standard & Poor’s rating scale, this correlation should be refreshed annually. Under most circumstances, a monthly or quarterly reporting cycle is appropriate.

Basic CBO/CLO Surveillance Information

The following basic transaction data will be requested as part of the rating review process:

- Current portfolio data,
- Defaulted asset information,
- Portfolio composition changes,
- Current obligor ratings or “surrogate” assigned for unrated assets,
- Mapping matrix between internal bank and Standard & Poor’s ratings,
- Updated transaction cash flows,
- Trigger events,
- Coverage tests, and
- Default model results.

In addition to the periodic performance reports, portfolio and transaction performance data will be reviewed. Analysts also request and review new cash flow runs reflecting current portfolio CBO/CLO default model results as input for default frequency, with other portfolio and transaction parameters set at then current levels. Analysts may also request additional information on an ad hoc basis, based on performance data or on developments in the transaction. Generally, the servicer, trustee or investment banker should provide additional information in the following situations:

- Provision of all necessary information in order for Standard & Poor's to affirm in writing that any proposed changes that should satisfy the "rating agency condition" (often called "RAC events") do not have an adverse impact on the ratings on the CBO/CLO liabilities;
- Prompt notification of any transaction amendments—even if they are not specifically "RAC" events—or any change in the parties to the transaction, for example, replacement of the collateral manager, loan servicer or trustee;
- Prompt notification if the transaction fails certain tests, such as coverage ratios or applicable CBO/CLO model thresholds (for example, the scenario loss rate for the portfolio transaction exceeds the break-even loss rate for the rating of the transaction);
- Provision of changes to a bank's internal scoring system (for example, due to a merger or a risk management policy revision) that occur between annual updates, and of a revised mapping or correlation matrix;
- Additional independent testing and agreed-upon procedures before and after the closing of the transaction; and
- Additional transaction cash flow runs if CBO/CLO model thresholds are breached, the cash flow characteristics of the assets change from those assumed in the original cash flow runs, or transaction data show potential deterioration in the portfolio credit risk profile or in the level of credit enhancement.

Asset cash flows could change, for example, due to asset additions, portfolio composition differences from closing assumptions (for example, if the ratio of fixed vs. floating assets with a certain index changes "substantially"), or appointment of a replacement manager replacement with a new fee arrangement. Portfolio credit quality could change or available credit enhancement could be depleted from high or spiking default experience in a short time period, or from substantial concentration shifts or increased "lumpiness" in the pool.

Standard & Poor's should be informed promptly of any changes concerning the original parameters of the transaction including management, investment policies, system changes, or any change that may materially affect the transaction.

Evaluating Credit Risk For CBO/CLO Transactions

The approach to rating CBOs and CLOs is similar to that of rating other structured transactions. The three main areas of CBO/CLO rating analysis are described in this section:

- The credit analysis of the asset pool, alternative forms of credit enhancement, appropriate credit enhancement level for the desired transaction rating, and cash flow analysis;
- The analysis of the risks related to the transaction structure, collateral, and management considerations; and
- The legal analysis of the transaction. The rated structured securities usually are issued by a special-purpose entity (SPE).

Determining Credit Enhancement

Obligor credit risk in the asset portfolio is at the heart of all cash flow CBO and CLO transactions. The credit risk of the portfolio is evaluated based on several factors, including the credit quality of each obligor, tenor of each underlying asset, obligor concentration, industry concentration, as well as the adequacy of the credit enhancement.

Default frequency or probability can be defined as the likelihood that a loan or debt instrument of a particular obligor will default. To determine default frequency or probability, several alternative measures of obligor credit risk can be used. If Standard & Poor's has assigned an issuer credit rating (or ICR, sometimes called the "corporate" or "counterparty credit rating"), then that rating will be used. In the absence of an issuer credit rating, the default probability may be estimated in several ways.

Loss severity can be defined as the expected loss upon default after factoring in or netting any recovery proceeds on the defaulted asset. To determine loss severity, analysts primarily use the ranking of the debt in an insolvency and the existence of collateral, if any, to estimate recovery levels and resulting loss severity. Each pool, however,

contains unique credit risks arising from the specific obligor and industry risks that may vary the analysis (*see Recovery And Loss Severity Assumptions*).

A transaction may also involve swaps, and/or other hedging or support arrangements. If so, the credit risk of the swap counterparty or support provider also is taken into account, generally as a linked or dependent rating high enough to support the CBO/CLO's seniormost rating (*see Interest Rate And Currency Risks*).

Alternative Credit Risk Measures

Many banks worldwide have realized that they can significantly improve their returns and their regulatory reserve status by selling off large portions of their loan portfolios to SPEs and concentrating on loan origination and servicing. The securitization of these loans in CLOs uses the familiar techniques of CBOs. A great deal of innovation has taken place to accommodate differences in individual bank portfolios and differences in banking systems.

The distinguishing feature of this type of CLO is the limited information about the specific assets (the individual loans) that are sold into the issuing vehicle. In some instances, the identity of the individual borrowers is not disclosed. Generally, the reason is either for client confidentiality that the lender must conform to secrecy laws, which apply in several countries outside the U.S., or based on logistical constraints, such as the portfolio's inclusion of many hundreds of names. In addition, the lender may be concerned with client sensitivity to having its loan sold into a securitization vehicle and its "banker relationship" disrupted.

Unlike credit card or home mortgage receivables, corporate loans are not sufficiently homogenous to be analyzed as a pool. Nonetheless, rating techniques have been developed that enable transactions to be analyzed without a full rating of each asset in the securitized portfolio. These techniques can be applied to bonds in CBOs and loans in CLOs alike.

Standard & Poor's, working with banks, has developed several options to allow a bank's loans to be assessed for securitization. The following is a brief description of six different methodologies used to quantify a portfolio's credit risk. The approaches are discussed in descending order in terms of analytical knowledge of the assets being sold. In a given transaction, there can be a combination of methods applied to different pieces of the portfolio.

Ratings On Each Obligor. The rating on each loan obligor is considered. In the U.S., for example, many bank loan obligors are corporations already rated by Standard & Poor's. The level of credit quality of the obligor is expressed as an ICR, rather than a rating on a specific debt issue. The assigned ICR should be used as the measure of that obligor's creditworthiness, instead of the debt-specific senior secured rating or subordinated rating. The issuer credit rating is the functional rating for the default and rating transition studies that underlie the calculations used in the

CBO/CLO models for estimating cumulative default rates in CLO portfolios and requisite credit support levels.

Often the bank is lending to a parent or subsidiary of a rated entity. If there is no unconditional guarantee, the rating of the parent cannot automatically be transferred to the affiliate. But, in some cases, with additional analysis, the affiliate rating evaluation can be based on the rating of the entity that has already been done.

The bank loan itself may be rated. Standard & Poor's rates a substantial number of syndicated bank loans. Loan ratings take into account the superior recovery potential of well-secured loans. This can benefit the securitization in terms of assessing the recovery levels associated with defaulted loans. To the extent analysts have assessed an individual loan to have superior recovery characteristics, they would assign the higher end of the recovery level range for secured and unsecured loans (*see table 1, Recovery Range Assumptions*). The issuer credit rating would still be used as the measure of the obligor's default risk. If the structure allows for addition and replacement of loans, the new loans must have similar recovery characteristics, that is, if the recovery assumption for the CLO had been enhanced due to the presence of rated loans. If a bank wants to include a portion of unrated loans in a portfolio in which most loans are rated, a basket can be carved out for these.

Public Information Ratings And Credit Estimates. In the absence of issuer credit ratings, Standard & Poor's may still provide analytic products or use its own resources to assess the loans in the portfolio. In some countries, public information ('pi') ratings are assigned, which may rely entirely on publicly available information. These are always identified with the 'pi' subscript, and do not have the plus/minus refinements within rating categories.

Alternatively, in most countries, rating or credit estimates, commonly referred to as "shadow ratings," can be provided. Based on essential data about the operations

Loans	Recovery range assumptions (%)	Recovery Timing
Senior secured bank loans	50 to 60	2-3 years after default
Senior unsecured bank loans	25 to 50	2-3 years after default
Subordinated loans	15 to 28	2-3 years after default
Bonds		
Senior secured bonds	40 to 55	1 year after default
Senior unsecured bonds	25 to 44	1 year after default
Subordinated bonds	15 to 28	1 year after default

*Using the example from table 5, the default amount is assumed to equal \$100 million in collateral. If all collateral consisted of senior secured bonds, then the assumed total recovery amount could range from \$40 million to \$55 million, depending on the recovery time period and sponsor workout history.

and finances of the borrower, which the bank could provide, the analyst would estimate what ratings would likely result if the entire rating process were carried out. The assignment of credit estimates is a very abbreviated process. While a credit estimate is not the equivalent of a rating, the estimate can be used appropriately in the context of assessing a commercial loan portfolio. An annual update is necessary as long as that obligor remains in the securitized portfolio. It may be possible to assign an estimate on a no-name basis. However, if the specific name is not known, analysts would probably be more conservative, which could be reflected in a lower estimate.

Ratings From Other Nationally Recognized Statistical Rating Organizations (NRSROs). If ratings from other rating agencies—specifically NRSROs designated by the U.S. Securities and Exchange Commission—are available, they may be able to be used. However, Standard & Poor’s distinguishes among rating agencies and rating products, based on its own knowledge and perception of the standards of other rating agencies. Those with similar standards are accepted in certain cases with a small reduction of one or two notches.

Rating or credit estimates, or public information ratings of other rating agencies, generally receive a significant adjustment downward. It is not clear what the standards of due diligence are with respect to such ratings. Since some rating agencies assign unsolicited ratings without disclosing the distinction from ratings requested by the obligor, it may be hard to discern if a rating is based only on public information. Nonetheless, analysts would ordinarily be aware of such situations.

Quantitative Models. Quantitative models have been available for many years, are widely in use, and can be deployed to assess obligor default risk. Applications and extensions to default estimation models employ regression analysis, discriminant analysis, or neural networks. Quantitative model output should be correlated with the Standard & Poor’s ratings scale. Generally, the correlations of these models with Standard & Poor’s ratings, plus or minus two rating notches, range from 65%-80%, depending on the quality of the model and the breadth of application to various industries.

For portfolio assessments, the rating analyst is prepared to accept the output of these models with an appropriate downward adjustment. Correlation with ratings for the specific model must be established, which is not an insignificant task. At that point, a discount to reflect the extent of the correlation and the comfort with the model can be calculated.

Bank Internal Credit Scoring Systems. Most banks have a credit scoring or rating system that reflects a combination of ratio evaluation and qualitative assessment. If a bank wants rating analysts to rely on that bank’s own credit scoring, as opposed to assessing each obligor name, then its internal credit scoring system may be “mapped” or correlated to equivalent ratings. The process of determining the “mapping” requires a team of corporate and bank analysts endeavoring to learn, in depth, the bank’s

credit underwriting capabilities. This involves understanding the resources, organization, and processes used. A team of corporate and bank analysts reviews the depth of credit reviews and the extent of surveillance. The team aims to determine the selectivity of the process in terms of rejection rates at the various approval stages. Random sampling of credit files helps to provide a sense of how stated policies are implemented.

However, this review in and of itself is insufficient to gauge the credit quality of the portfolio. A “mapping” exercise is conducted to establish correlation between the bank’s credit assessments and those of Standard & Poor’s.

In general, a statistically significant random sample of corporate borrowers who have both a bank rating and an ICR is examined, and the bank’s ratings are compared with Standard & Poor’s ratings or credit estimates. This exercise can be used to compute rating equivalents at various confidence levels. As the percentage of the portfolio that relies on this method increases, so does the level of conservatism introduced into the calculation.

If a bank simply employs NRSRO public ratings, in lieu of independent credit scoring, the mapping exercise would be meaningless. But the very existence of public ratings on the borrower could also bias the bank’s credit evaluation. Accordingly, the bank must demonstrate that its judgment is independent. In the end, evaluation through multiple economic cycles indicates the consistency and robustness of the bank’s scoring system.

The result of the mapping exercise allows analysts to rely on the bank’s internal assessments. Furthermore, there may be no need to even identify the specific loans that are being sold into the securitization, but merely the bank’s rating for the particular asset, its size, and its tenor. However, this assessment usually would apply only to the type of loan and only to the office or country that was involved in the exercise, and could not be transferred to the bank’s other units. Indeed, it might be difficult to perform the necessary sampling and mapping exercise for portfolios that include middle-market loans or loans to borrowers in countries where there was an insufficient universe of ratings to form a reliable comparison. If the bank’s internal credit scoring system is relied upon in the CLO, the “mapping” exercise must be repeated at least annually to monitor the consistency of the bank’s credit scoring or rating system over the life of the securitization (*see Appendix A, “Mapping Bank Loan Scoring Models to Standard & Poor’s Ratings in CBO/CLO Transactions”*).

Bank Track Record. Some issuers have proposed relying on extrapolation from the sponsoring bank’s historical record for loan losses and charge-offs. Some have dubbed this the “actuarial method.” However, this analytical approach raises certain issues in its application to relatively heterogeneous assets such as corporate loans.

Typically, the record for the bank’s portfolio in its current configuration does not extend over a long enough time span. Accordingly, this track record may not cover

any serious stress period, and may be misleadingly benign. In addition, the bank's overall results may not be representative of its experience with the subportfolios that will be securitized.

Moreover, banks have demonstrated great flexibility and creativity regarding the recognition of loan quality problems. For example, a bank may avoid classifying a loan by practicing forbearance—extending additional credit that allows the borrower to remain current. Apart from the difficulties this poses for getting an accurate view of the past, the presumption is that the bank would be less inclined in the future to bail out or rescue borrowers whose loans have been sold into the securitization. Finally, the rating on the securitization would inevitably be closely linked to the bank's rating on an ongoing basis.

Nonetheless, the potential for rating a transaction on this basis has not been ruled out. However, several important conditions must be met with respect to the applicable loan book and securitized portfolio, in terms of size and diversification, uniformity, and historical performance data. Specifically, the conditions that must be met include:

- The number of individual obligors in the pool exceeds 500, and no single obligor accounts for more than 1% of the pool balance.
- The pool is meaningfully diversified, and the bank demonstrates that the pool is fully representative of the loan book “subportfolio” that is analyzed. In order to avoid the potential for adverse selection, the pool would likely have to include all of the bank's loans of a certain type, or a random share of those loans.
- The loan characteristics of the portfolio are relatively uniform in terms of amount, tenor, amortization, pricing, collateral security, and covenants.
- The institution provides accurate, detailed, and extensive historical information that demonstrates a long track record for its specific line of business. This information includes monthly and annualized delinquency, default, recovery, and charge-off amounts and rates. Similar information would be needed for payment, purchase, and draw rates. Static pool analysis that tracks credit performance and payment history for specific loan pools by date of origination is strongly preferred. The data must be detailed enough to show the differences, if any, between the amount of loans that were nonperforming versus the amounts actually charged off.
- The number of years of history provided is sufficient to demonstrate the credit and payment performance of the portfolio through different economic cycles, and that history spans a time period (or periods) of stress for each particular loan or asset type and its market. The bank's loss performance for the loan type covers an extended period, and includes at least one serious stress period for the particular asset class and market sector. As a result, historical data requirements on the performance of particular loan or asset types will be case-specific. In general, analysts rely on information on the bank's historical loss experience for a minimum of ten years, and for a number of years sufficient to demonstrate the performance of the portfolio

through a full economic cycle of the bank's gross provisioning, releases and actual write-offs. A detailed account of any relevant losses suffered by the bank on its corporate loans in the last five years should also be provided.

- Historical information on the specific loan type is disaggregated and categorized in a meaningful way for risk analysis, at least in terms of industry, size, and risk classification. The extensive performance, delinquency, and loss data mentioned above should be similarly disaggregated for risk analytical purposes.
- Management has applied transparent and consistent underwriting standards and write-off policies throughout the period(s) being analyzed. The impact of bulk asset sales and acquisitions on the historical performance data, as well as "bailout" practices that might obscure the numbers, can be ascertained.
- There are no fundamental changes occurring in the environment that might adversely affect the willingness or ability of financial institutions to service the loans in the same manner as they have in the past.

It has been difficult for sponsoring banks to meet the extensive information standards necessary to implement the actuarial approach with a high degree of confidence. To date, most loan portfolios securitized have been relatively heterogeneous and small in size, and typically contain some large obligor concentrations. Some institutions are not able to provide more than five years of detailed historical portfolio performance data. In general, the information management systems most institutions have in place to capture portfolio performance data have not been designed with securitization in mind.

If an institution is able to meet these conditions, however, it is not clear that an actuarial approach will yield a lower default rate versus the obligor-specific approach used in the CBO/CLO default model. The combination of an asset portfolio's characteristics, applicable historical data limitations, and actual historical performance could well result in a higher default rate and credit support level under the actuarial approach.

When an actuarial approach is used in rating a CLO, the historical loss experience of the institution is an important consideration. In addition, securitized portfolio and structural strengths will be important complements to the underwriting and credit policy factors in the CLO rating. Examples include short tenor asset portfolios, as there is a lower probability that losses will arise in such a short time, or the provision of liquidity facilities or advance mechanisms. In the end, however, it is important to note that should there be a change in the bank's underlying underwriting or credit management policies, this could have an impact on the potential loss level and CLO rating. Given the complexity of actuarial analysis, the scarcity of requisite data, and the nature of bond/loan assets, analysts will generally apply the actuarial approach in conjunction with the more traditional obligor-specific approach.

Assets of obligors that cannot be evaluated under the six methodologies outlined above may be treated as ‘CCC-’ assets. This simplifying assumption can work in portfolios with a very small portion of such assets, although it can quickly become prohibitively expensive. Apart from the six main methodologies, there will always be unique situations that analysts will evaluate on their particular merits.

Sizing Default Risks And Credit Enhancement Levels

Analysts use various techniques to determine the potential loss characteristics of an asset pool in a structured financing. The analytical method may vary, depending on the size of the pool being examined. For example, the “weak link” approach, which assumes the default of all assets rated lower than the structured financing, is often employed when the asset pool is comprised of a small number of credits. By contrast, an actuarial approach may be appropriate for extremely large asset pools that have relatively homogenous performance characteristics.

Traditionally, analysts have used an obligor-specific approach when analyzing the small to medium-sized asset pools found in many CBO/CLO transactions. The obligor-specific asset analysis accounts for the distribution of any combination of potential obligor defaults that may occur in the collateral pool. In this approach, each obligor in the asset pool has a separate credit assessment—if not an actual rating, then any of the “surrogate” measures described above, even in combination. These ratings or assessments, along with the size, tenor, and amortization schedule for each loan or bond in the pool, are the key inputs into Standard & Poor’s CBO/CLO default model.

The CBO/CLO default model consists of two versions: a single-jurisdictional model that is used to analyze most U.S. dollar denominated CBOs/CLOs, and a multi-jurisdictional version that is used to analyze CBOs/CLOs with emerging market concentrations (*see Cash Flow Analysis, Default Estimation, and Multi-jurisdiction/ Emerging Market CBO sections*). The default model produces appropriately stressed default scenarios for different rating levels.

Forms Of Credit Enhancement

Credit enhancement, or credit support, provides protection to holders of the rated CBO/CLO securities against obligor defaults in the asset pool. Each transaction may use one or more of the following forms of credit enhancement:

- Subordination,
- Cash collateral/reserve accounts,
- Excess spread/interest,
- Financial guarantee insurance, and
- Other forms of support

Subordination. One of the most common forms of credit enhancement is subordination. In the multitranche or senior/subordinated CBO or CLO, the subordinated or junior tranches support the senior tranches. The issuance of subordinated debt and equity purchases collateral (assets) with a principal balance in excess of the rated debt amounts (liabilities). The tranches differentiate payment priorities to debtholders. Holders of the senior debt tranche have priority of payment over the holders of any junior debt tranche.

As a result of their subordinated status, the junior debt tranches generally are rated lower than the senior debt. However, the junior debt carries a higher interest rate, which reflects the reward to these subordinated debtholders for taking greater risk. If overcollateralization comprises all the credit enhancement in a senior/subordinated transaction, the overcollateralization amount equals the estimated level of credit losses that the structure is expected to withstand without causing a loss to the holders of the rated senior tranche, in accordance with the risk expectations of the senior tranche rating.

Consider, for example, a cash flow transaction involving the issuance of \$80 million of rated senior debt supported by a collateral pool with a total par value of \$100 million. This “80/20” liability structure consists of 80% rated senior debt, and 20% unrated supporting debt or equity. The level of overcollateralization equals 125%, which equals the ratio of assets over liabilities. The funds used for the purchase of surplus assets (\$20 million in this example) are raised by the issuance of subordinated debt, equity, or a combination of both. This \$20 million subordinated portion provides overcollateralization to the senior debtholders. If subordinated debt was issued in the amount of \$5 million and equity was issued in the amount of \$15 million as the third and juniormost tranche, overcollateralization for the \$5 million second class of junior debt would be provided by the equity investment.

The payment structure—how a transaction allocates collateral cash flow to pay down principal—has a large impact on the buildup of overcollateralization or credit enhancement over time. All payment structures represent different trade-offs between paydown and support of the senior class, versus return of cash to the junior and equity holders. There are several types of payment structures most commonly used:

- Sequential pay,
- Fast pay/slow pay, and
- Pro rata.

Sequential pay structures require payment of senior debt in full before the payment of junior debt. In the 80/20 example discussed earlier, the \$20 million subordinated class would remain outstanding until the entire \$80 million senior class was retired. Clearly, as the \$80 million senior notes pay down and are reduced in principal balance, the effective overcollateralization of the senior noteholders builds to well above 20%. In such structures that pay senior debt first, senior debtholders benefit from an

increase in credit enhancement as the portion of subordinated debt grows in relation to total debt.

Fast pay/slow pay structures pay down senior and junior debt, but pay down senior debt faster than the junior debt and at a higher rate than pro rata. Like sequential pay structures, these structures typically require a “minimum par value overcollateralization ratio,” in which the ratio of assets over liabilities must be maintained at a minimum level, for example, at least 125%. If this test is breached, a higher percentage or all of the collateral cash flow will be used to pay senior debt until compliance is restored. If excess funds are available after meeting senior and junior debt service and coverage requirements (for interest, principal, reserves, and so on), they may be used to pay down junior debt, even before senior debt maturity.

Some structures have proposed a pro rata paydown, in which the above 80/20 percentage is used to allocate collateral principal to the rated debt. Overcollateralization is kept at the same 80/20 percentage, until retirement of the senior class. Subordinated investors can receive up to their 20% share of cash flow prior to the maturity of the senior class. Available funds are applied first to make scheduled payments on the senior debt, so that if losses occur, senior holders are protected. Pro rata payment structures are expected to withstand middle to back-end default stress scenarios in which, for example, defaults occur near the tail end of the transaction, when the dollar amount of credit enhancement has decreased. In general, this has proven to be a difficult stress to withstand at the rating of the senior class. However, it is anticipated that issuers will develop structural solutions that may allow greater use of pro rata structures.

Cash Collateral Or Reserve Accounts. Cash collateral or reserve accounts are another form of credit enhancement. Excess cash is held in highly rated investments that provide security to the debtholders, generally in an account under the control of a trustee or custodian (*see Standard & Poor's Structured Finance, August 1995, "New Restrictions Apply to Qualified Investments"*). Cash reserves are often used in the initial phase of a cash flow transaction. During this phase, cash proceeds from the sale of CBO/CLO securities can be used to purchase the underlying collateral and to fund reserve accounts. Cash reserves may not be the most efficient form of credit support, because of the relatively low assumed interest rate earned on the eligible investments held in the reserve account. As interest owed on the CBO/CLO securities is typically higher than the interest earned on these reserves, allocation of cash to reserve accounts can result in “negative carry”. The benefits of accumulating cash balances in the structure somewhat offset the lower interest earnings.

Excess Spread Or Interest. When the interest rate earned on the assets is higher than the interest rate paid on the rated CBO/CLO securities, excess spread or interest is generated. The difference, commonly seen in arbitrage structures, occurs because the bond and loan assets are rated lower than the rated debt, and thus earn higher

interest. This excess interest also may result from assets yielding higher interest, due to the term structure. Generally, the likelihood of generation of excess spread or interest is not rated. However, if excess spread is captured within the transaction for the benefit of the rated noteholders, it provides an additional layer of loss protection. Excess spread can be used to purchase additional assets and/or to build reserves against future credit losses and liquidity risks, or it can be passed along to the investors. If excess spread is released to the subordinated debtholders or equity holders, the senior debtholders do not benefit from it.

Alternatively, excess spread can be passed through to the senior noteholders, under certain circumstances. One example is when credit losses on the bond/loan portfolio occur earlier than expected, or exceed the level up to which the structure provides loss protection to investors. Excess spread also may be used to pay down the rated securities sequentially in cases when certain covenants (such as minimum par value overcollateralization and interest coverage ratios) are not met. To provide protection to rated debtholders, excess spread should be held in investments that are rated as high as the seniormost securities, in accordance with Standard & Poor's eligible investment criteria.

Financial Guarantee Insurance. A common method of credit enhancement involves insuring or “wrapping” the rated securities with a financial guarantee insurance policy rated as high as ‘AAA’. This insurance transfers the credit risks associated with the underlying assets from the holders of the rated securities to the insurance company, which typically guarantees timely payment of principal and interest. The insurance policy is generally written by a monoline insurer. Debt that is fully insured is rated based on the rating of the insurer, assuming the terms of the policy meet Standard & Poor's criteria. The credit analysis for bond-insured transactions is the same as for “stand-alone” transactions, such as senior/subordinated structures. The main difference is that the analytical focus in a bond-insured transaction is the assessment of risk borne by the insurer. The credit quality of the bond insurer's portfolio of transactions is also monitored.

Credit enhancement can include any combination of the alternatives discussed above. In addition, other customized arrangements may be used to provide the requisite credit support for the requested rating. Examples include guarantees of collateral or noteholder payments, liquidity puts on note principal payment dates, or credit derivatives that can be exercised by the SPE upon obligor defaults. In general, these forms of credit enhancement are provided by entities rated at least as high as the senior tranche of the CBO/CLO, or structured to support the senior tranche rating.

Credit Enhancement Level: Cash Flow Analysis And Default Estimation

Cash Flow Analysis

CBO/CLO rating analysis addresses credit and liquidity considerations for the rated securities, to ultimately determine if asset cash flows will assure timely payment of rated liabilities. Relevant assumptions for cash flow analysis include default rates/timing, recovery amounts/timing, up-front and recurring expenses, interest rates, amortization, and payment priorities.

Cash flow analysis is aimed at evaluating the availability of funds for full and timely payment of interest and principal in accordance with the terms of the rated securities. This is done by analyzing the payment structure and the amount of debt to be supported. If a transaction has multiple tranches, analysts will assess whether the level of credit support provided by subordination is consistent with the rating each tranche is assigned. Cash flow analysis also is used for sizing liquidity and other reserves. The analysis takes into account the structural elements of a transaction including the principal and interest payment allocations; early amortization, “fast pay”, or redemption events; excess spread accumulation; and reserve levels.

CBO/CLO cash flow analysis takes into account application of available cash flow to pay down notes based on a transaction’s priority of payments. In general, the cash flow model assumes that scheduled principal and recovery receipts will be used to pay down rated notes after the revolving period and when certain tests are failed. As an example, arbitrage transactions typically have coverage tests which are similar to early or rapid amortization triggers in bank balance sheet CLOs. Coverage tests in arbitrage deals are the “O/C” or par value ratio (for example, collateral principal and cash balances divided by the rated note principal balance must equal at least 115%), and the interest coverage or “I/C” ratio (for example, collateral interest receipts divided by the rated note interest payable and senior expenses must equal at least 150%). When these O/C and I/C ratios are breached, the structure should trigger—and the cash flow model typically shows—paydown of senior notes from scheduled principal and recovery receipts to “delever” the deal and restore coverage.

A structure that does not have to pay down notes to maintain the original O/C and I/C ratios, and instead permits temporary noncompliance and subsequent improvement over time, increases risk. The reason is that a CBO/CLO cash flow model typically assumes that an O/C or I/C test failure triggers a note paydown from scheduled principal payments on collateral and post-default recoveries. If a structure permits reinvestment of these proceeds in order to come closer to compliance for an O/C or I/C test violation, then the CBO/CLO cash flow model does not accurately reflect this risk.

CBO/CLO cash flow analysis normally does *not* take into account collateral prepayments, either from optional redemption of bonds or from unscheduled amortization of loans. Such prepayment analysis would require a complex model that both generated interest rate term structures and forecast corporate bond and loan prepayment rates across yield curve evolutions. In addition, interest rate models are unreliable over more than very short horizons. This, coupled with a portfolio's own deviation from aggregate behaviors, would tend to make this type of modeling exercise less than productive for analytical purposes. Given the unreliability of interest rate modeling, cash flow models cannot currently account for price depreciation risk on performing assets traded out of the portfolio. For this and other reasons discussed in the section on collateral risk factors, such trading should be limited in cash flow CBOs/CLOs.

Because CBO/CLO transaction structures vary, a standard cash flow model is not used. Instead, analysts rely on the transaction-specific proprietary cash flow model prepared by the sponsor or its advisor. Each cash flow model is evaluated to assess

Table 2
Example Of Typical CBO/CLO Cash Flow Model Assumptions

Liabilities	Par amount (Mil. \$)	Coupon/spread (%)	Price (%)*	Maturity (yrs.)	
Senior notes (AA)	1,000.0	LIBOR + 0.40	99.9	12	
Mez. notes (BBB)	75.5	9.0	100.0	12	
Equity	125.5	—	100.0	12	
Total	1,201.0				
Assets	Par amount (Mil. \$)	Yield (%)	Avg. life (yrs.)	Price (%)*	
Bonds	1,088.0	9.00	8.50	99.50	
Loans	100.0	9.26	5.20	101.00	
Asset total/W.A.	1,188.0	9.02	8.22	99.63	
Asset defaults (%)	Default timing	Recovery (%)	Recovery delay (yrs.)		
37.5	Series 1	33	1		
Overcollateralization	Result	Interest coverage	Result		
Trigger: 115%	Pass	Trigger: 125%	Pass		
Fees	Amount (%)	Reinvestments and reserve (%)		LIBOR information (%)	
Trustee	0.05	Yield	9.00	LIBOR series	S&P up
Other	0.02	Spread	0.00	Min. LIBOR	2.0
Mgmt.	0.55	Int. res.	0.50	Max. LIBOR	22.0
		Res. yield	5.00		

*Percent of par. W.A.—Weighted average.

whether it accurately reflects the transaction structure, and can measure a variety of risk factors for collateral assets, and debt or equity liabilities. Examples of such risk factors include payment terms of the collateral versus debt; interest rate mismatch (for example, fixed-rate collateral versus floating-rate debt); interest rate risks arising from multiple loan indices, payment frequencies, and different amortizing schedules of each asset; and a variety of delinquency, default, and recovery risk scenarios. A qualified, independent accounting firm should review the cash flow model results, ideally “tie-in and tie-out” the model, in order to verify in writing that the model properly reflects and analyzes the transaction structure and relevant risks. This verification should be performed in accordance with an agreed upon procedures letter. Table 2 illustrates a typical set of assumptions for a CBO/CLO cash flow model.

As cash flow analysis is based on the terms and conditions of each asset included in the pool, an independent verification by a third party of the material terms and conditions of each loan/bond should be performed. This verification of the asset characteristics, as well as the cash flow model verification mentioned above, should both be provided upon transaction closing. Typically, the information verified includes:

- Outstanding principal amount;
- Applicable interest rate;
- Obligor credit ratings or “surrogate” assigned for unrated assets;
- Options to change interest rate bases and payment terms;
- Fee income;
- Maturity date;
- Amortization schedule for amortizing assets;
- Position of the loan in the borrower’s capital structure (seniority);
- Cross-default provisions;
- Collateral value (if applicable; including the last valuation date and valuation methodology);
- Brief description of the collateral/lien; and
- Embedded options; including option terms.

The verification should also include any other term or condition that may enable the borrower to restrict or alter payment terms on an asset, or that may materially impact the cash flow from the asset.

Default Estimation

Standard & Poor’s default model is a flexible tool for assessing the default risk of small to medium-sized pools commonly found in CBO/CLO transactions. The “traditional” CBO/CLO default model described here is the single-jurisdictional CBO/CLO model used to analyze “traditional” U.S. dollar denominated CBOs/CLOs, which are collateralized by corporate assets from the U.S. Unless otherwise

noted, the “CBO/CLO model,” “default model” or “model” as used in this book refer to the single-jurisdictional version. *(For a fuller discussion on the single-jurisdictional CBO/CLO model, and the expanded multi-jurisdictional CBO/CLO model used to analyze CBOs/CLOs with emerging market concentrations, see the Cash Flow Analysis, Default Estimation, and Multi-jurisdiction/Emerging Market CBO sections.)*

The model takes into account underlying obligor credit risk, obligor concentration, and debt maturity. Industry concentration is addressed by making adjustments to some of the information entered into the model. Although the input adjustments and model look at obligor and industry concentration risk, exposure limits can diversify credit risk in a corporate loan pool. Obligor and industry limits in CBO/CLO collateral guidelines spread default risk over a larger number of assets, and limit loss exposure to any one industry *(see sections on Obligor and Industry Concentration Risk. For geographical concentration risks and related issues in multi-jurisdiction pools, see Multi-jurisdiction/Emerging Market CBO Criteria section).*

The model calculates default frequency in terms of the proportion of debt assumed to default as a percentage of the original pool principal. This default model-calculated default frequency at the applicable CBO/CLO rating(s) is one of the key input assumptions an issuer or investment banker will use in their respective proprietary cash flow model.

The CBO/CLO model was built to answer the question: “At a given rating level, how much collateral in a pool of obligors would we assume defaulted?” To answer this question, each asset is assigned a default probability, which reflects the obligor’s credit rating and the remaining tenor of the obligation. The higher the obligor rating and the shorter the term, the lower the default risk for the asset.

The model also analyzes and gives credit for amortizing assets. All else equal, the credit risk of an asset increases with the period it remains outstanding. Amortizing assets partially repay principal periodically, reducing the amount of credit exposure over time. Nonamortizing or “bullet” assets repay the full principal amount at maturity, and have a longer risk horizon than amortizing assets. Cash flow transactions that use amortizing bonds or loans as collateral benefit from their shorter average life and loss exposure, compared with nonamortizing assets with similar final maturity dates.

The following information is requested in order to determine the default risk of any pool of assets:

- Number of obligors and obligations in the pool,
- Obligor credit ratings,
- Principal amount outstanding,
- Maturity date of each obligation, and
- Amortization schedules for amortizing assets.

Table 3 illustrates the model's calculations. In this example, it is assumed that there are three equal-sized bonds with statistically independent default behavior, each with a probability of default of 20%, and a probability of nondefault of 80%. Step 1 shows the probability of losing no bonds in a one-bond pool to be 80%, and the likelihood of losing one bond to be 20%.

In Step 2, a second bond has been added to the pool. The probability of losing no bonds in a two-bond pool equals the probability of not losing bond 1 multiplied by the probability of not losing bond 2, or 64%. The probability of losing one bond is the probability of losing bond 1 multiplied by the probability of not losing bond 2 plus the probability of not losing bond 1 multiplied by the probability of losing bond 2 (16% plus 16%.) The probability of losing two bonds is the probability of losing bond 1 multiplied by the probability of losing bond 2, or 4%.

Step 3 illustrates the effect of adding a third bond. Step 3 uses the summary distribution of bond 1 and bond 2 taken together, and the distribution of the third bond. The probability of losing no bonds in the three-bond pool is the probability of losing no bonds in the two-bond pool multiplied by the probability of not losing bond 3,

Table 3
Standard & Poor's Default Model Calculations

		Summary Distributions		Calculations
STEP 1: one bond				
Loss level in bonds	Probability			Probability
0	80%			80%
1	20%			20%
2	0%			0%
3	0%			0%
STEP 2: two bonds				
Loss level in bonds	Bond 1 Probability	Bond 2 Probability	Bonds 1 & 2 Probability	
0	80%	80%	64%	= 0.8 x 0.8
1	20%	20%	32%	= 0.2 x 0.8 + 0.2 x 0.8
2	0%	0%	4%	= 0.2 x 0.2
3	0%	0%	0%	—
STEP 3: three bonds				
Loss level in bonds	Bonds 1 & 2 Probability	Bond 3 Probability	Bonds 1, 2, and 3 Probability	
0	64%	80%	51.2%	= 0.64 x 0.8
1	32%	20%	38.4%	= 0.32 x 0.8 + 0.64 x 0.2
2	4%	0%	9.6%	= 0.04 x 0.8 + 0.32 x 0.2
3	0%	0%	0.8%	= 0.04 x 0.2

or 51.2%. The probability of losing one bond in the three-bond pool is the probability of losing one bond in the two-bond pool multiplied by the probability of not losing bond 3, plus the probability of losing no bonds in the two-bond pool multiplied by the probability of losing bond 3 (25.6% plus 12.8%, or 38.4%). The probability of losing two bonds is the probability of losing two bonds from the two-bond pool multiplied by the probability of not losing bond 3 plus the probability of losing one bond from the two-bond pool multiplied by the probability of losing bond 3 (3.2% plus 6.4%, or 9.6%.) The probability of losing all the bonds in the three-bond pool is the probability of losing two bonds in the two-bond portfolio multiplied by the probability of losing bond 3, or 0.8%.

Referring to the final distribution of step 3, the number of bonds that a three-bond pool can lose without breaching a transaction-specific loss threshold can be determined. Assume that the transaction-specific loss threshold is 12%. We need to find the number of bonds that may be lost so that the probability of losing any more bonds is less than or equal to 12%. If the probability of losing no bonds is 51.2%, then the probability of losing more than that is 100% minus 51.2%, or 48.8%. Since 48.8% is more than 12%, we know we must cover the probability of losing at least one bond. If we subtract the probability of losing one bond (38.4%) from the 48.8% remaining, then the resulting residual probability is 10.4%. This is less than our 12% threshold. From these calculations, we see that a 12% loss threshold allows for the loss of one bond from the portfolio. The requested rating and the weighted average tenor of the assets in the pool establish the loss threshold.

Obligor Concentration Risk. Specific obligor concentration guidelines are not provided, as the model accounts for the relative size of each asset. However, obligor concentration limits are viewed as a strength because they diversify the pool and decrease potential loss exposure per obligor. Sensitivity analysis of sample pools indicates that default frequency or expected loss increases sharply as the pool size shrinks to fewer than 30 obligors, an approximate 3% concentration limit per obligor.

Increasing the number of obligors in any pool diversifies credit risk for the investor by spreading such risk over a larger number of assets. A pool of 40 'BB' rated obligors or 2.5% concentration limit per obligor is likely to experience lower pool losses than a pool of 20 such obligors or 5% concentration limit per obligor.

Despite the benefits of diversification, portfolio limitations may create transactions with a relatively small pool of assets that is highly concentrated in obligors and/or industries. In such transactions, the cash flows become increasingly sensitive to the default of one obligor, or to an economic downturn faced by obligors in one industry. For analytical purposes, "small pools" consist of bond or loan obligations of fewer than 10 obligors. In these collateral pools, analysts may conduct an obligor-by-obligor default analysis. In this obligor-specific assessment, selecting one obligor's loan(s) or

bond(s) over others may materially impact the amount of credit enhancement required to achieve the desired rating level. In rating transactions that rely on cash flow from a small pool of assets with relatively large exposures to a few obligors and/or industries, the approach takes into account the incremental default risk.

Industry Concentration Risk. Industry diversification limits exposure to any particular industry, and thus limits the potential loss exposure in a given economic environment. Experience suggests that companies within an industry tend to perform similarly, especially in an economic downturn. This implies a high correlation of credit risk among companies within any particular industry. Examples in the airline, auto, banking, savings and loan, oil and gas, steel, and selected high technology industries illustrate this point. However, companies in some industries may be more highly correlated than companies in other industries.

There is a diminishing marginal benefit to diversifying a portfolio by industry. In cash flow transactions, Standard & Poor's assumes that a pool of bonds or loans representing 13 industries, each accounting for no more than 8% of assets per industry, is fairly diversified. The marginal benefits to the debtholders of further diversification may not warrant the incremental effort and costs.

The higher default risk posed by higher industry concentrations is accounted for as follows:

- If concentration in a particular industry exceeds 8% of the pool, analysts will adjust for the additional risk by assuming a rating level one notch lower than the actual ratings for each obligor within that industry, provided the concentration does not exceed 12%.
- For concentrations between 12% and 16%, a rating level three notches, or one full rating category, lower than the actual ratings for each obligor within that industry will be assumed.
- Transactions that involve a concentration in one industry in excess of 16%, and in the extreme, single industry transactions, will be reviewed on a case-by-case basis. In such cases, the risk will generally be analyzed on an industry-specific basis, and the investor should assess his comfort with the industries in which the portfolio is concentrated, as well as correlations within and across industries.

It is difficult, but necessary to define industries and their members, and classify a corporate obligor in a single industry. Standard & Poor's classifies industries into 39 categories, which were defined broadly, in part, to help mitigate credit risk correlation among industries (*see table 4 for Suggested Industry Classification*). Classifications may be reevaluated should changes in credit risk correlations within or among industries change.

CBO/CLO Model Applications

There are three main applications of the single-or multi-jurisdictional CBO/CLO default models. First, as a structuring model, issuers use the applicable model as a tool to size credit enhancement at each tranche's rating in the initial CBO/CLO rating process. Second, as a trading model, the manager may use it on an ongoing basis to monitor the impact of any purchase, sale or reinvestment on portfolio default risk. Third, as a substitution model, the originator/servicer may use it to test the portfolio at regular intervals and to monitor the impact on portfolio default risk of permitted or substantial asset additions with credit losses experienced to date. The last two applications are choices of the collateral manager or bank sponsor to monitor portfolio credit risk at each CBO/CLO tranche's assigned rating.

Both the trading and substitution applications use the model as a monitoring tool to help assess changes to the portfolio, such as rating downgrades and the marginal impact of substitutions. The main difference between the trading and substitution applications is that the trading model is run upon each purchase or sale of collateral, usually by collateral managers in arbitrage transactions. The substitution model is run at regular intervals, at least quarterly, and upon certain asset additions, usually by the seller/servicer in balance sheet transactions. In the trading model application, the closing or Day 1 portfolio may be assumed for estimating portfolio default risk and necessary credit enhancement. If a portfolio parameter or limit breaches the closing or Day 1 assumption, notification must be made, and additional cash flow analysis may be run.

The model can be formatted as a structuring model for use by investment bankers and issuers to determine the loss rate on a prospective portfolio of assets, at various rating levels, to come up with scenario loss rates. To determine the loss rate for any transaction on any collateral pool, the structuring model determines the collateral portfolio tolerance for loss at a given rating level. This loss tolerance can be expressed as a probability of default of a benchmark bond. The rating of this benchmark bond is the requested rating of the CBO/CLO liabilities. The tenor is equal to the weighted average maturity of the transaction's collateral pool, based on portfolio parameters. The loss scenario used corresponds to the rating level for the CBO/CLO transaction or tranche. The model identifies a scenario loss rate at which the probability of exceeding that rate is less than or equal to the probability of default of the benchmark bond. For example, the probability of exceeding a scenario loss rate (or asset portfolio default rate) of 24.30% is less than or equal to the probability of default of an 'A' rated benchmark bond (the requested rating on the CBO/CLO liabilities) *(see chart 1 for a sample output)*.

The trading model is an extension of the structuring model, but is programmed for a specific transaction rating level to come up with a scenario loss rate. The main

difference between the trading model and the structuring model is that the trading model compares the scenario loss rate to a break-even loss rate. The break-even loss rate is established during the CBO/CLO rating process. The break-even loss rate reflects factors external to the CBO/CLO default model, which are input and analyzed in the proprietary cash flow model. Examples of these factors are interest rate disparities between assets and liabilities, assumed recovery values and timing, and the transaction's priority of payments. The trading model reports whether the resulting pool composition causes the pool to exceed the transaction break-even loss rate (*see chart 2*).

Because the trading model takes a “snapshot” of the portfolio upon each trade, the closing portfolio, as opposed to a portfolio stressed to lowest ratings, longest tenors, and highest concentrations, may be assumed for purposes of sizing credit enhancement. The trading model is then used to monitor the effect of any “drift” towards limits or parameters on an ongoing basis. The trading model compares the scenario loss rate to the maximum loss rate a transaction's cash flow model can withstand, which is called the break-even loss rate. If the scenario loss rate is greater than the transaction's break-even loss rate, then the trading model test is “failed.” The model will report a test failure and inform the user of both the break-even loss rate and scenario loss rate. This should trigger such responses as notification of failure to Standard & Poor's and rerun of cash flow stress scenarios.

What events could cause the scenario loss rate to increase to a “fail” level? Examples are certain collateral substitutions, downgrades, defaults, or principal rollofs, particularly if “adverse selection” occurs (for example, relatively short tenor, high credit quality obligors prepay, or mature, while relatively long tenor, less creditworthy obligors do not). Application of the substitution model is very similar to that of the trading model, comparing the transaction's break-even loss rate with the scenario loss rate.

Any default analysis (of a bond or loan portfolio that can turn over) needs to be flexible enough either to size the additional risks, if any, at the front end of a transaction, or to allow for a more dynamic analysis and monitoring effort to maintain the rating on a transaction. The CBO/CLO default models can recognize and analyze the effects of asset rating changes and asset substitutions on potential default loss exposure, while giving credit to the reduction of the remaining term of assets over time in any given portfolio. The underlying methodology can allow both dynamic analysis and effective monitoring. Additionally, the model is designed to handle amortizing assets, which can especially benefit loan transactions by acknowledging limited exposure to individual obligors as obligations amortize.

Using the CBO/CLO Model

As previously described, the “traditional” CBO/CLO model assigns a probability of default to each asset in a transaction's collateral pool based on the rating of the obligor

Table 4

Suggested Industry Classification

- | | |
|--|--|
| <p>1. Aerospace and defense</p> <ul style="list-style-type: none"> ■ Aircraft manufacturer/components ■ Arms and ammunition <p>2. Air transport</p> <p>3. Automotive</p> <ul style="list-style-type: none"> ■ Manufacturers ■ Parts and equipment ■ Tire and rubber <p>4. Beverage and tobacco</p> <p>5. Broadcast radio and television</p> <p>6. Brokers/dealers/investment houses</p> <p>7. Building and development</p> <ul style="list-style-type: none"> ■ Builders ■ Land development/real estate ■ REITs <p>8. Business equipment and services</p> <ul style="list-style-type: none"> ■ Graphic arts ■ Office equipment/computers ■ Data processing service bureaus ■ Computer software <p>9. Cable and satellite television</p> <p>10. Chemical/plastics</p> <ul style="list-style-type: none"> ■ Coatings/paints/varnishes <p>11. Clothing/textiles</p> <p>12. Conglomerates</p> <p>13. Containers and glass products</p> <p>14. Cosmetics/toiletries</p> <p>15. Drugs</p> <p>16. Ecological services and equipment</p> <ul style="list-style-type: none"> ■ Waste disposal services and equipment <p>17. Electronics/electric</p> <p>18. Equipment leasing</p> <ul style="list-style-type: none"> ■ Auto leasing/rentals ■ Commercial equipment leasing ■ Data processing equipment service/leasing <p>19. Farming/agriculture</p> <ul style="list-style-type: none"> ■ Agricultural products and equipment ■ Fertilizers <p>20. Financial intermediaries</p> <ul style="list-style-type: none"> ■ Bank/thrifts ■ Finance companies | <p>21. Food/drug retailers</p> <p>22. Food products</p> <p>23. Food service</p> <ul style="list-style-type: none"> ■ Food service/restaurants ■ Vending <p>24. Forest products</p> <ul style="list-style-type: none"> ■ Building materials ■ Paper products/containers <p>25. Health care</p> <p>26. Home furnishings</p> <ul style="list-style-type: none"> ■ Appliances ■ Furniture and fixtures ■ Housewares <p>27. Lodging and casinos</p> <p>28. Industrial equipment</p> <ul style="list-style-type: none"> ■ Machinery ■ Manufacturing/industrial ■ Specialty instruments <p>29. Insurance</p> <p>30. Leisure goods/activities/movies</p> <p>31. Nonferrous metals/minerals</p> <ul style="list-style-type: none"> ■ Aluminum producers ■ Mining (including coal) ■ Other metal/mineral producers <p>32. Oil and gas</p> <ul style="list-style-type: none"> ■ Producers/refiners ■ Gas pipelines <p>33. Publishing</p> <p>34. Rail industries</p> <ul style="list-style-type: none"> ■ Railroads ■ Rail equipment <p>35. Retailers (except food and drug)</p> <p>36. Steel</p> <p>37. Surface transport</p> <ul style="list-style-type: none"> ■ Shipping/shipbuilding ■ Trucking <p>38. Telecommunications/cellular communications</p> <p>39. Utilities</p> <ul style="list-style-type: none"> ■ Electric ■ Local gas ■ Water |
|--|--|

and asset tenor. It is important to note that the rating employed for the obligor is the local-currency issuer credit rating and not the rating on the specific piece of debt. The issuer credit rating may be higher or lower than the issuer's specific debt rating due to the seniority of the issue's claim in the capital structure. The issuer credit rating is used because it reflects Standard & Poor's estimate of the creditworthiness of the obligor. The priority of the claim and whether it is secured are reflected outside the model in the recovery value assigned to such defaulted assets in the cash flow model. Default probabilities are assigned to each piece of collateral in the pool and are used to construct a distribution of potential losses arising from the default of obligors in the pool in a method substantially similar to the method shown above (*see table 3*).

To run the model, the data on the assets must be submitted in a set format. A computer file needs to be created in an ASCII format with the file extension .PRN. The first line of that file must contain the number of instruments to be processed, which is equal to the number of lines following this first line and the date to be used as the start date in the form MM/DD/YYYY. These items must be separated by a comma. Following this, each asset must be represented by (in order) a six-digit company identifier, the maturity date of the asset (also in the form MM/DD/YYYY), the face amount of the asset, and the local currency issuer credit rating of the obligor, which also must be separated by commas. Amortizing loans can be entered as a series of bonds of the same obligor with different maturities for each scheduled principal amortization. Chart 3 provides an example of the input file format for the single-jurisdictional CBO/CLO model.

Chart 1
Structuring Model Output

File: TEST.PRN					
Total Principal Balance: 100					
WAM: 6.5 years					
Number of Bonds/Loans: 20					
Number of Obligors: 15					
Rating Requested	AAA	AA	A	BBB	BB
Loss Rate in Percent	33.10	29.32	24.30	20.22	16.03

Scenario Loss Rates for each rating scenario

Chart 2
Trading Model Output

Special Purpose Entity Loss Tabulator

The Break-Even Loss Rate For The Above Transaction Is 32.29%

The Scenario Loss Rate For The Current Portfolio Is 12.14%

Assuming Appropriate Asset Information, The Test Is Passed

To run the program, both the model and data file must be in the same operating directory. To call up the model within MS-DOS, just type the model's name and follow the instructions, by inputting the file name without its .PRN file extension. When the structuring model has finished running, it will inform the user that it has stored the results in a file that has a name composed of the first five letters of the input filename followed by the letters "OUT" with the file extension. PRN. For the trading model, the output will be displayed on the screen.

In certain situations, the model inputs may require modification. For instance, if a pool contains unrated corporate obligors, acceptable proxy ratings or credit estimates should be used, or the obligors will be treated as 'CCC-' credits. Defaulted assets should be assigned a rating of 'D'. If a material amount of unrated debt is included in the asset pool, a different rating methodology may be used to assess the default frequency of the assets for the transaction.

A minimum pool size of 10 equally sized rated obligors is required to use the default model. Additionally, if one obligor represents too large a portion of a pool of more than 10 obligors, an alternative rating methodology or a modified model approach may be used.

The model is designed for use with assets that mature beyond one year. When a material portion of the pool has short remaining tenors—less than one year—the analyst may choose to modify the model's default frequency output for analytical purposes. As an alternative, current short-term loan criteria may be used to analyze

Chart 3

ASCII Data File Format For Running Single-jurisdictional CBO/CLO Model

```

12, 10/31/1997
000001, 12/31/1998, 1000, BB-
000002, 06/30/1998, 500, B+
000003, 09/30/2000, 2500, BB+
000003, 09/30/2001, 2500, BB-
000004, 04/30/1999, 7000, BB-
000005, 11/30/2000, 3000, B
000006, 03/31/2000, 1500, B-
000007, 12/31/1999, 1000, B-
000007, 12/31/2000, 1000, B-

```

Number of datalines to be read
Expected closing or trade date, whichever is later
Obligor number
Maturity/
payment date
Amount due on maturity/payment date
Issuer credit rating

such pools. In addition, the model is designed for use where the sizes of individual asset amortization amounts are fixed. Other forms of analysis must be used when the principal flow size fluctuates. Standard & Poor's will work with the sponsors to adapt the model or use an alternative rating methodology for certain portfolio characteristics.

Default Timing and Scenario Analysis

In addition to the amount of defaults, the timing of the defaults affects the ability to withstand portfolio losses in cash flow transactions. Stress scenario assumptions for the timing of defaults are needed to determine the level of credit enhancement required for each transaction.

The CBO/CLO default timing assumptions reflect the belief that credit enhancement should be sufficient to absorb losses and pay the rated liabilities under appropriate stress scenarios. The timing of defaults in the cash flow model should be tailored to the payment allocations within a transaction and to the characteristics of the asset pool. In general, if there is a substantial change in the credit support level during the life of a transaction, then stress should be applied at several intervals to test the ability to pay the rated liabilities according to their terms.

“Front-end” default stress scenarios assume that defaults occur early in a transaction's life, typically starting at the end of year 1. If credit support increases over time, as in a sequential pay structure or a structure that traps excess spread, front-end defaults can cause more cash flow loss than defaults that occur later. This is because interest income on the defaulted assets is eroded over a longer period of time. Default scenarios 1 and 2 are examples of front-end default stresses that these structures should pass (*see table 5*).

Depending on a transaction's structure, payment terms, and collateral pool, analysts may test other default scenarios. Given the multivariate nature of CBO/CLO analysis, transaction complexity, and the nuances of each cash flow model, it is difficult to predict a priori what cash flow runs will prove more stressful to the transaction. A zero default run will be helpful to “benchmark” a model and structure, and examine a scenario in which all coverage tests should be passed over the transaction's life. For example, interest rate risk in the transaction may call for runs based on stressing variables other than default frequency. A zero default run may be appropriate to stress the potential interest rate risk between fixed rate collateral and floating rate CBO/CLO liabilities that are “under-hedged”—that is, the notional amount of the hedging agreement is less than the principal amount of the liabilities.

The collateral pool itself also defines default scenarios and cash flow assumptions. For example, in collateral debt obligations, or CDOs that combine different asset types such as loans and bonds, it may be appropriate to look at the impact of “biasing” default occurrences toward one asset type. The presence of revolving credit facility

assets in the collateral pool also calls for its own stress scenarios with respect to funding levels.

Another input assumption to the cash flow scenarios that deserves mention is the fee structure. Generally, fees for roles that are integral to the CBO or CLO—that is, trustee, collateral management and servicing—are senior or pari passu with payments to rated noteholders. Given their position in the priority of payments, or “waterfall,” these fees should be capped, so as not to threaten payments to rated noteholders. In addition, in order to assure that collateral cash flow will be adequate to pay and therefore motivate these parties to perform their essential functions, these fees should be run in all default and cash flow scenarios at their capped or maximum amounts. If the replacement fee cap is higher than the initial fee cap, then it may be appropriate to model the higher replacement fee cap. For example, if the original trustee, manager or servicer fees are below market, or the collateral manager can sell its equity position, then the replacement fee, if higher, should be modeled in the cash flows.

Examples of types of default scenarios applicable to CBO/CLO structures include some or all of the following:

- Zero defaults may be assumed for the life of the transaction.
- Defaults may be assumed to occur evenly over the life of the transaction.

Table 5
**Examples Of Default Scenarios
Assumed Percent Of Default Amount For Original Collateral Pool***

Year	1	2	3	4	5	6	7	8-10
Scenario 1	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0
Scenario 2	15.0	30.0	30.0	15.0	10.0	0.0	0.0	0.0
Scenario 3	0.0	0.0	20.0	20.0	20.0	20.0	20.0	0.0
Scenario 4	0.0	0.0	15.0	30.0	30.0	15.0	10.0	0.0
Scenario 5	40.0	20.0	10.0	10.0	10.0	10.0	0.0	0.0
Scenario 6	40.0	20.0	20.0	10.0	10.0	0.0	0.0	0.0
Scenario 7**	33.0	33.0	34.0	0.0	0.0	0.0	0.0	0.0
Scenario 8**	25.0	25.0	25.0	25.0	0.0	0.0	0.0	0.0
Scenario 9**	0.0	0.0	33.0	33.0	34.0	0.0	0.0	0.0

*The default percentages in the table are a percent of the default amount which the transaction should withstand, as calculated by the Standard & Poor's Default Model. Assumed default amounts are calculated as a percent of the original collateral balance, namely the aggregate principal balance of the initial collateral pool. For example, for a \$1 billion collateral pool with a 10% scenario default rate, or \$100 million assumed default amount, \$20 million in annual defaults would be modeled in default scenario 1. Actual default scenarios will depend on the collateral pool.

**Scenarios 7 through 9 are typically run in balance sheet CLO transactions, which are typically shorter in tenor than arbitrage transactions. Default runs are tailored to the revolving period, legal final maturity and structure of the transaction.

-
- Defaults may be assumed to occur unevenly over the life of the transaction. For example, defaults in every other year of the deal from the end of year 1 through the end of one year before final maturity. These are often referred to as “sawtooth” default runs.
 - Defaults may be assumed to occur after year 1, and continue in the middle years of the transaction’s life (so called “middle” default stress scenarios).
 - Defaults may be assumed to occur in the tail end or later years of the transaction’s life, and continue as late as the last year of the transaction (so called “back-end” default stress scenarios).
 - Defaults may be more compressed over the stress time horizon, depending on the revolving period, legal final maturity and structure of the transaction. Default scenarios 5 through 9 in Table 5 are typically run in balance sheet transactions, which are typically shorter in tenor than arbitrage transactions.

Transaction structure and payment terms or priorities are critical to the design of default stress scenarios. In general, if credit support is released over time, as in a pro rata structure or a structure that relies on excess spread as credit support (but may release it over time), middle or back-end default assumptions may be more appropriate. This is because additional credit support or excess spread that may be relied upon to pay off the rated liabilities has been released before the assets default. If excess spread acts as credit support, different default scenarios should be combined with varying prepayment and reinvestment assumptions to test the transaction for excess spread diminution. Default scenarios 3 and 4 are examples of middle default stresses that these structures should pass (*see table 5*). It should be noted that back-end default assumptions can significantly stress a transaction. A default that occurs close to the final maturity date of the transaction may cause substantial loss by not allowing sufficient time within the structure to benefit from the full recovery on defaulted assets.

Generally, default scenarios assume that the volume of defaults will be based on the original collateral balance. There may be situations where a middle or back-end default timing scenario may dictate the use of a different level of defaults. In addition, if the collateral pool grows to supply necessary credit support, then default scenarios may be applied to both the original and additional collateral pools. Finally, the assumed time period over which the defaults occur may differ from transaction to transaction. In the end, the terms and payment structure of each transaction and asset characteristics will play an important part in the allocation of defaults in cash flow runs.

Recovery And Loss Severity Assumptions

Like default assumptions, recovery or loss severity assumptions are an intrinsic part of cash flow transactions. They directly determine the loss severity or expected loss on an asset upon default by the obligor, and thus the credit enhancement needed to

cover this default. Recovery depends on three main factors: seniority, timing, and post-default management.

The recovery rates applied in the U.S. for U.S. assets—corporate bonds or loan agreements which are governed by a jurisdiction within the United States—are not necessarily appropriate for other jurisdictions. A number of important factors, including specific insolvency provisions of a given jurisdiction and historic experience may warrant very different treatment. The recovery assumptions explained in this section can serve as a general benchmark for assets originated in other countries, or CBO/CLO transactions done outside of the U.S. The actual numbers applied will be determined based on a thorough review of the relevant system and infrastructure.

Benchmark recovery assumptions were developed from U.S. asset markets based on two factors:

- To reflect CBO/CLO transaction experience and empirical recovery data on defaulted bond and loan recoveries, primarily in U.S. asset markets; and
- To address the nuances in different transaction structures, including post-default liquidation timing, and management constraints.

Recovery rate assumptions shown in table 1 are expressed as a percentage of principal amount of defaulted assets. A range applies to each bond or loan class by seniority or position in the capital structure, as opposed to a uniformly applied discrete value for each bond or loan class. All else equal, post-default recoveries increase with seniority in the capital structure. Timing of disposition is also important. If an indenture specifies that a defaulted asset be sold within a certain time frame, the recovery rate may have to be discounted to reflect an accelerated sale scenario. For example, recovery rates for senior unsecured loans may range from 25% for CLOs with “forced sale” time frames, such as 30 days, to 50% for CLOs with a disciplined three-year workout or a rated-sponsor repurchase or redemption feature. Effective post-default management of the recovery process helps establish recovery “credit” in the upper end of the range.

Standard & Poor’s generally assumes that the recovery rate on defaulted senior secured loans will be higher than the recovery rate on senior secured bonds. This is because bank loans generally are subject to workouts between the lender and its obligors. Bank loans benefit from tighter covenant restrictions and closer scrutiny by the lenders, such as reviews of quarterly covenant compliance statements, and collateral reports, which provide a good picture of a borrower’s ability to meet its financial obligations. Bank loans also benefit from flexible restructuring, presumably because of the ongoing dialogue between the lenders and the borrowers, and other favorable aspects of the lender-borrower relationship.

Lack of historical recovery data has made it difficult to precisely quantify recovery values. However, it is possible to assume higher recovery rates within the range in well-developed markets, if warranted by the lending institution’s or asset manager’s

historical recovery experience, and/or the asset characteristics and performance. In such cases, the role of the originator/servicer or asset manager becomes even more important to the transaction.

The recovery assumptions can be used as general guidelines for transactions done outside the U.S., but the actual recovery levels applied will be largely based on the applicable jurisdiction's legal and market infrastructure. For defaulted emerging market assets, recovery assumptions are 25% for sovereign debt, and 15% for senior unsecured corporate debt. These more conservative recovery levels are based on lower recovery realizations and lower liquidity in secondary markets for emerging market obligations (*see section on Multi-jurisdiction/Emerging Market CBO Criteria*).

For special asset classes, such as asset-backed securities (ABS), more conservative recovery levels are applied, depending on such factors as the ABS credit rating, the position of the ABS tranche in the capital structure, and the CBO/CLO liability rating. Application of the recovery assumptions is generalized and, for secured bond or loans, does not as a rule involve asset-specific review and appraisal of underlying pledged collateral. However, in certain cases, such as small pools or pools very concentrated in an industry or region, a more asset-specific analysis may be warranted.

Within a particular jurisdiction and market system, recoveries are dependent upon the actions of a particular collateral manager or financial institution. When there is evidence of strong historical underwriting and effective market or workout remedies, analysts are willing to give credit to higher recovery levels. Conversely, if the collateral manager or financial institution's default and recovery experience is below that set forth above, conservative (that is, lower) recovery levels will be applied. A certain amount of management flexibility is a strength, especially with respect to loan assets, where maximizing recovery may be more dependent on a gradual workout process. Forced loan sales within a constrained time horizon could result in lower realized recoveries. There is a trade-off between recovery level and timing. If the manager requests the flexibility to accelerate recoveries, rapid recoveries at a discounted level will be assumed. The reason for the assumed lower recovery levels is that most historical data from which the recovery ranges are derived are based on workout scenarios, and not "fire sale" value.

Two general assumptions are made for the timing of recoveries on defaulted assets. Recoveries on defaulted sovereign and corporate bonds are assumed to occur one year after default through secondary market liquidation. Recoveries on defaulted loans are assumed to occur over a three-year workout period, with half of the recovery received at the end of the second year and the remaining half at the end of the third year. A longer recovery horizon is assumed on defaulted loans, because the loan markets are not generally as liquid as bond markets. Therefore, it is easier to sell a defaulted bond than it is to sell a defaulted loan. Although liquidity in the secondary loan market has increased, "vulture" and distressed debt funds mainly supported this liquidity in

the early 1990s. Only time will tell if the secondary loan market will remain liquid. Until then, it will generally be assumed that the recovery on a defaulted loan will be extended over a longer period because of the workout process.

Risk Factors: Structure And Collateral

Interest Rate And Currency Risks

Cash flow transactions involve assets with different interest rate and payment terms. In addition, the interest rates and payment terms of the assets may be different from those of the rated liabilities. For example, all or a portion of the assets may pay fixed interest rates, while rated debt may pay floating interest rates. If both assets and liabilities pay floating interest rates, indices may differ, creating basis risk. Even if the indices are the same, reset and payment dates may differ. In general, interest rate and payment date mismatches add several liquidity risks to the transaction. These liquidity risks are even more important in transactions that do not have a hedge agreement, and instead rely on a presumed “natural hedge” between assets and liabilities. Examples are CLO and CDO transactions with potentially LIBOR (London inter-bank offered rate)-based loan assets and LIBOR-based liabilities.

There are seven major forms of risk tied to these types of mismatches:

Differences in periodicity. This risk arises when the frequency with which payment is received on assets differs from the frequency with which payments must be made on the rated securities. The risk is compounded when payments on different assets are received with different frequencies. For example, some of the assets may pay interest quarterly, while others may pay semiannually. If the assets pay interest more frequently than the liabilities, then the transaction is subject to negative carry. If the assets pay interest less frequently than the liabilities, then the transaction is subject to liquidity risk. These mismatch risks can be addressed in various ways. One example is a hedge agreement, such as a total return swap, with a ‘AAA’ rated counterparty that will pay the interest deficiency. Another example is a set of collateral and portfolio guidelines designed to limit the risks, such as a maximum limit on assets paying interest less frequently than liabilities (as well as coverage calculations to properly track this). In addition, a reserve can be funded for differences between the interest coverage ratio for different due periods.

Differences in payment dates. This risk arises when the dates on which payments are received on assets are different from the dates on which payments must be made on the rated securities. This risk may partly be a result of differences in periodicity, or simply a result of differences in payment dates without any differences in periodicity. For example, in a transaction in which all the assets pay quarterly interest, some

assets may pay in January, April, July, and October, while other assets may pay in February, May, August, and November.

Basis risk. This risk arises when different indices are used for the determination of interest rates on assets and rated securities. For example, interest rates on some of the assets may be based on LIBOR, while others may be based on certificate of deposit (CD) rates in the U.S. Basis risk also results from differences in periodicity. For example, a bond that pays interest every six months may be based on six-month LIBOR, while a bond that pays interest every quarter is most likely to be based on three-month LIBOR.

Reset risk. This risk arises when the rates on different assets and/or rated securities reset on different dates. Floating rates, such as LIBOR, may fluctuate significantly between different reset dates on assets and liabilities. Assets and liabilities based on the same index bearing similar interest rates (three-month LIBOR plus 100 basis points) may still pay different interest amounts because of the different dates on which three-month LIBOR is reset on each.

Spread “compression” risk. This risk arises when credit spreads compress over time, reducing interest receipts on the assets. Arbitrage transactions built on high-yield asset portfolios are vulnerable to this risk. The risk may be exacerbated when older, higher coupon bonds are redeemed away, thereby increasing reinvestment in newer bonds paying lower interest. This risk can be mitigated to some degree by robust minimum weighted average spread tests for floating rate assets and minimum weighted average coupon tests for fixed rate assets. Further complicating this risk is the fact that defaults tend to be biased towards more risky assets with a higher risk premium (and therefore a higher coupon or higher spread). This can result in a precipitous violation of the weighted average coupon and spread tests. Cash flow analysis should assume that collateral earns no more than the minimum weighted average spread or fixed rate amounts, or, if feasible, even test spread movements.

Cross-hedging risk. This risk arises in portfolios across asset types that have different cash flow behaviors and different embedded optionality. This risk is more prevalent as portfolios continue to invest in a wider variety of nonvanilla assets, such as ABS. ABS have extra optionality, and are callable in a variety of complicated amortization events, many of which cannot be predicted with certainty and are not related to interest rate movements. The presence of such callable assets in the pool can introduce additional interest rate and reinvestment risks, particularly if a portion of CBO/CLO cash balances or note proceeds are invested in noncallable assets, such as U.S. Treasury securities.

Yield curve risk. This risk arises in several ways. Portfolios with assets across a maturity spectrum will be impacted by the term structure of rates as represented by the yield curve, its shape and its steepness, as well as any changes or shifts. A change in interest rates on any part of the yield curve for a collateral maturity, or across the yield curve (a shift), may affect the CBO/CLO in a similar way to spread compression.

Falling interest rates, whether due to a drop in the risk-free rate, or a decrease in credit spreads or risk premiums, may result in erosion of positive spread on assets. Higher rate collateral is likely to be redeemed and replaced with lower rate collateral.

The shape of the yield curve also affects CBOs/CLOs. For example, the positively sloped yield curve that has prevailed in the U.S. for most of the 1990s results in lower earnings on cash balances in the transaction, and negative carry. Conservative assumptions should be made with respect to earnings on reserves or cash balances, which should be held in highly rated, short-term eligible investments. In 'AAA' rated CBOs/CLOs, the assumed reinvestment rate should be 2 1/2% flat, or alternatively, LIBOR minus a spread of "x" basis points (assuming LIBOR-indexed liabilities).

In addition to interest rate risk, cross-currency risk is important in transactions originating outside the U.S. and in multicurrency emerging market CBOs. There are various hedging arrangements available to transactions with multicurrency assets, or with assets denominated in a different currency from liabilities. However, collateralization and counterparty replacement arrangements may not be viable in highly rated transactions with assets from emerging market countries, which are subject to wide volatility swings. Customized alternatives to arrangements with counterparties rated as high as the CBO or CLO will be evaluated on a case-by-case basis.

Cash flow transactions can use a variety of methods to mitigate the risks arising from interest rate or currency mismatches. If the issuer chooses to structure a hedge, he has a range of alternatives for counterparties who can participate in 'AAA' rated transactions. The counterparty criteria outlined below apply to interest rate swaps, basis risk swaps, caps and floors (except for collateralized arrangements), as well as currency swaps in currencies recognized by ISDA. Total return swaps, or other swap products that provide any potential credit support, do not qualify for these criteria. In summary, the new hedge counterparty criteria for 'AAA' rated structured transactions require the following (*for a full description, see Appendix B: "New Hedge Criteria"*):

- A hedge agreement with, or guaranteed by, a counterparty rated at least 'A-1+', if the counterparty agrees to collateralize or replace upon downgrade to 'A-1'.
- A hedge agreement with, or guaranteed by, a counterparty rated at least 'A- / A-1' with a pledge of collateral. In addition, the counterparty should follow various legal, investment, operational and auditing procedures for posting collateral and marking (pricing) the hedge to market.
- A hedge agreement with, or guaranteed by, a derivative product company rated 'AAA' or 'AAAt'. Terminating derivative product companies are rated 'AAAt' based on their ability to pay the mark to market at termination. In order to protect the 'AAA' rated structured transaction against movement in hedge values between termination and replacement, the 'AAAt' rated derivative product company should post additional collateral with the trustee to ensure sufficient funds are available to replace the hedge during market swings. In addition, the 'AAAt' rated derivative

product company should follow certain procedures for posting collateral and marking the hedge to market.

In all cases described above, “first loss” subordinated investors should bear any losses relating to insufficient hedge payments, counterparty default, or insufficient collateral to find a replacement counterparty. In addition, it should be noted that these collateralization and replacement provisions, which apply to below ‘AAA’ rated counterparties, may reduce but not eliminate rating dependency. For example, a counterparty may fail to post adequate collateral to replace itself upon downgrade.

In any case, there are still situations that call for a ‘AAA’ rated counterparty in a ‘AAA’ transaction, and therefore create a rating dependency on the counterparty. This rating dependency applies to total return swaps, or other hedge arrangements that may provide credit support to the CBO/CLO. For example, a total return swap may in effect provide credit support if it continues to pay interest to the trust on assets not paying interest, namely delinquent or defaulted assets.

Another less commonly used but available alternative is a hedge agreement that is jointly supported by two unaffiliated counterparties, for example, through a financial guarantee or contingent backup arrangement. The arrangement should satisfy several conditions, some of which are noted here. The credit risk of the two supporters or counterparties should be substantially independent (for example, in different and uncorrelated industries). In addition, the issuer credit ratings of each supporter should satisfy rating thresholds to support the transaction rating, and should not depend on collateralized arrangements (*see Standard & Poor’s Structured Finance, November 1995, “Criteria Revised for Jointly Supported Obligations”*).

Another alternative to structuring a hedge agreement with a counterparty is to size the credit enhancement so that it includes a liquidity reserve. This reserve should cover the entire interest rate shortfall over the life of the transaction, based on interest rate stress assumptions for floating rate collateral assets and liabilities at the CBO/CLO rating (*see section on Liquidity Risk*). Given the customized nature of these hedging arrangements, they will be reviewed on a case-by-case basis.

In all cases, any hedge agreement should meet Standard & Poor’s swap agreement criteria. The criteria primarily relate to the payments over the life of the CBO/CLO transaction, but also focus on the early termination provisions (*see Appendix C: “Swap Agreement Criteria”*). In addition, in balance sheet CLOs, if the hedge counterparty may be an obligor in the loan pool, he should waive his right of set off. Standard & Poor’s continues to evaluate new interest rate and cross-currency hedging solutions to support structured ratings.

Liquidity Risk

Interest rate mismatches introduce liquidity risk into the structure. Liquidity risk refers to the possibility of temporary shortfalls, which may result in an issuer’s not being

able to make timely payment on rated securities. Liquidity risk could arise from differences between the dates on which payments are received on assets and the dates on which payments must be made on the debt.

Cash flow analysis does not necessarily capture liquidity risk. This is mainly because cash flow runs generally aggregate intra-payment period cash flows and show a “snapshot” of inflows and outflows on payment dates. I/C tests do not necessarily capture and quantify liquidity risk, because they do not necessarily measure actual *cash* interest inflows and *cash* interest/expense outflows. If an I/C test in each CBO/CLO payment period evenly allocates what are actually “lumpy” collateral interest receipts for the year, (for example, dividing annual interest receivables by 2 for a semi-annual pay deal), shortfalls will likely occur on actual CBO/CLO payment dates.

Accrued interest introduces liquidity and cash allocation issues. When the asset manager purchases collateral between its interest payment dates, the CBO/CLO transaction pays any accrued interest to the purchase date. The CBO/CLO receives interest for the full period on the next collateral interest payment date. Depending on the timing of interest payment dates on rated liabilities, accrued interest may result in temporary cash shortfalls, especially during the ramp-up period when bulk collateral purchases are made.

The investment banker and issuer should size and cover the liquidity risk discussed above, whether due to “lumpiness” unaccounted for in the I/C test, or accrued interest. In addition, they should provide a written accounting—specifically, a “cash-in/cash-out” statement—of how the first interest payments on all rated CBO/CLO tranches will be met.

Liquidity is even more of a concern in transactions that do not have hedging agreements in place, but rely on a so-called “natural hedge” between assets and liabilities to mitigate interest rate risk. In addition to reserving for this risk under interest rate stresses appropriate for the CBO/CLO rating, it is important that these transactions test liquidity on an ongoing basis, either as a separate test or as part of their interest coverage tests.

Accrued interest received by the collateral manager presents cash allocation concerns. When the asset manager sells collateral between its interest payment dates, the CBO/CLO transaction receives any accrued interest to the sale date. A structure that reinvests the entire net sales proceeds, including accrued interest, is retaining accrued interest in the transaction, whereas a structure that pays out accrued interest through the interest waterfall is releasing accrued interest to junior debt or equity holders. This latter case is a concern if principal proceeds, for example from matured or sold collateral, is used to pay accrued interest on the initial portfolio. Furthermore, when interest is received on that collateral, if it is paid out as an interest distribution on the first payment date, it is in effect released from the transaction. The cash flow model should at least reflect this release of monies.

Many transactions, especially arbitrage CLOs and CDOs, are structured without a hedge agreement in place, thereby saving transactions costs. The rationale is that floating rate loans may price based on the same LIBOR index commonly used to price the CLO liabilities. If assets and liabilities price with the same basis, there is in theory a “natural hedge” between them. However, this is based on a broad assumption: that the loan assets will consistently price on the same index as the liabilities for the life of the transaction. However, commercial loans typically give the borrower optionality with respect to the underlying rate he can choose at regular intervals—for example, 1-month, 3-month and 6-month LIBOR, Fed Funds, CD, Commercial Prime or Prime.

In the absence of a hedge agreement (such as a basis swap or total return swap in this case), credit enhancement or a liquidity reserve can be sized to cover the entire interest rate shortfall over the life of the transaction based on interest rate stress assumptions for floating rate collateral assets and liabilities at the CBO/CLO rating (*see box, and Appendix D, “Interest Rate Assumptions for Structured Ratings”*).

In sizing credit enhancement/liquidity reserves, cash flow analysis should include Standard & Poor’s interest rate stress assumptions, as well as spread stress assumptions for floating-rate collateral assets (for example, Prime-based) versus liabilities (for example, 3-month LIBOR based). Other relevant parts of the analysis include an assumption of what portion of portfolio assets may be differently indexed from liabilities. If the CLO or CDO sponsor can limit the optionality in the loan agreements to specific indices, this may mitigate the risk. Furthermore, the issuer or investment banker can analyze historical data to answer the question of how much of the asset manager’s or direct lender’s portfolio was in, for example, Prime versus LIBOR. If eligible loan agreements incorporate an alternative minimum base rate, which in effect establishes a minimum rate over the liability index, this may also mitigate the risk.

In summary, credit enhancement and liquidity reserves can be used instead of a hedge agreement to cover partially or fully any interest rate risks. Provisions important to protecting rated noteholders include robust liquidity and interest coverage tests to cover risks often covered in hedge agreements. For example, interest coverage ratios should properly account for accrued interest, actual cash interest inflows/outflows, and mismatches on assets and liabilities (which may have different reset and payment dates, even if interest rate bases are the same). Finally, reinvestment criteria should act to limit interest rate risk. Assets should not be automatically added without meeting liquidity, basis or spread guidelines.

Ramp-up Risks

A CBO/CLO transaction may involve an initial period during which the manager acquires the underlying bonds and loans from the proceeds of the rated securities

over a stated period of time. The period during which CBO/CLO portfolio assets are purchased in the market or are originated is called the “ramp-up” period. Typically, in arbitrage transactions, the ramp-up period ranges from 3 to 6 months. If all the notes are issued at closing, which is usually the case, and assets are acquired over a period of a few weeks or months, the transaction is subject to several interest rate and liquidity risks, some of which are discussed in the interest rate risk section.

The most prevalent risks during ramp-up, when bulk purchases of collateral are made over uncertain market conditions and time horizons, include the following: negative carry between short-term earnings on undeployed cash proceeds and the already issued note liabilities; liquidity risks due to accrued interest flows and payment date differences; “origination risk” due to unavailability of the bonds and loans the manager intended to buy; adverse credit spread or price movements, which increase the cost of purchased assets; interest rate movements or “spikes,” which increase the interest cost on any floating rate liabilities; and concentration risk in the portfolio prior to full ramp-up.

Concentration risk can arise despite portfolio diversification guidelines because the investment may initially be concentrated in a small number of obligors, few industries, or relatively weaker credits as compared to the portfolio’s intended composition at the end of the ramp-up period. Though the transaction is underleveraged during ramp-up based on the “injection” of equity and mezzanine debt proceeds on Day 1, these risks can be significant, especially when interest rates, or credit spreads for

Sizing Liquidity Reserves To Cover Interest Rate Shortfalls

Liquidity reserves for hedging are sized to hold sufficient cash in eligible low-risk investments to ensure timely and uninterrupted payment on debt. In sizing the reserve amount, the analyst makes the same interest rate assumptions as for most structured transactions (see Appendix D, “Interest Rate Assumptions for Structured Ratings”). If the reserve or other interest rate hedge fluctuates over time, interest rate scenarios may be tailored to test if liquidity needs are met throughout the life of the transaction. Liquidity should also be tested regularly in the asset coverage tests and/or separately. Liquidity testing is especially important when additional credit enhancement in the form of overcollateralization is used to hedge interest rate risk.

A liquidity reserve may be funded from proceeds of rated securities, from a deposit by a third party, or from the accumulation over time of excess spread

in the transaction. In general, the reserve amount should be invested in eligible investments rated at least as high as the rating on the senior debt. Instruments with short-term ratings qualify as permitted investments as long as they are rated at least as highly as the rated debt on the short-term scale. Instruments with the ‘r’ symbol, which signifies material market risk, do not qualify as permitted investments.

Investments should mature by the next payment date on rated securities or when needed. Typically, the trustee will be responsible for selecting the appropriate investments for the issuer’s funds, including liquidity reserves. For the purpose of cash flow analysis, it is assumed reserve accounts will earn no more than 2.5% per year, or the floating rate liability index minus a spread—for example, LIBOR minus “x” basis points.

corporate debt over applicable risk-free rates, become volatile, or when corporate debt market liquidity diminishes.

Arbitrage CBOs and CDOs have designed numerous solutions to mitigate these risks. Many structures have incorporated a “phased” ramp-up, for example, a 9-month ramp-up period divided into three 3-month periods, during which notes are redeemed if collateral purchase targets have not been met at the end of each of the 3-month periods. Another protective feature is to fix the interest rate on floating rate note liabilities during the ramp-up period, which usually differs in length from a regular interest accrual period. Standard & Poor’s expects to affirm its rating on the fully ramped up portfolio, or, if less than full ramp-up occurs, on the date that marks the end of the ramp-up period.

Revolving Period And Reinvestment Risks

The period during which assets may be traded under specified conditions is called the “revolving” or “reinvestment” period. During this time, asset cash flows can be reinvested or used to purchase eligible assets as long as certain tests are met, mainly coverage, collateral quality and portfolio profile tests. After the revolving period, in the typical sequential pay structure, collateral principal proceeds are used to pay down senior notes until they are retired, even if the coverage tests are passed.

Typically, in arbitrage transactions, the revolving period ranges from 3 to 6 years. Reinvestment of collateral cash receipts during this time has several advantages. Reinvestment can be used to maintain collateral quality and portfolio diversification, as rating changes, or as maturities, amortization, prepayments, or defaults reconfigure the pool. In addition, if prepayments during the revolving period are reinvested in eligible collateral, they may preserve yield for investors. The revolving period also enables a transaction to profit purely from limited trading activities, that is, buying and selling bonds and/or loans, which will be discussed in a later section.

Replacing bonds or loans, however, instead of paying down notes, can add credit and market risk to any transaction. Failure of some or all of the coverage, collateral quality or portfolio diversification tests may trigger delevering or paydown of the rated notes in order of seniority. These tests, and their remedies upon failure, are very important to the integrity of the structure. The coverage tests—overcollateralization or par coverage ratio, and the interest coverage ratio—are the main financial ratios that drive the manager’s decision to “recycle” cash in new collateral or pay down noteholders during the revolving period.

The investor should be aware that there are very important subtleties in how coverage tests are managed. Most structures require that the issuer “maintain compliance at all times” and trigger a special redemption whenever a coverage test is failed and not brought back into compliance with the original minimum ratio. If one or more of the coverage tests is not met, principal proceeds should not be allowed to be

reinvested unless the coverage tests are brought in compliance as a result of the reinvestment or trade. This early amortization trigger works to return available cash to rated noteholders, thereby converting risk into a prepayment.

Other structures have the provision to “maintain compliance or improve” and may permit intra-period noncompliance and collateral substitution. This allows the manager to bring himself closer to compliance after a trade. In such “maintain or improve” structures, there may not be cash available to redeem liabilities sequentially and restore compliance on the next payment date. The investor in a “maintain or improve” structure is buying a CBO/CLO that gives the collateral manager more flexibility than a “maintain at all times” structure. One noteworthy “carve-out” in many CBO/CLO structures is for credit risk sales proceeds, which may be reinvested under limited circumstances in order to protect noteholders from credit losses, even if compliance is not immediately restored.

The timing and frequency of test performance is also an important aspect of the effectiveness of reinvestment criteria. In addition to regular monthly and due period measurement dates, any date on which there is a proposed collateral purchase or change in the portfolio (for example, downgrade, default, maturity, or redemption) should trigger recalculation of the coverage tests.

In addition to coverage tests, collateral quality tests serve as a “blueprint” for eligible collateral and for portfolio parameters during the revolving period. For example, an arbitrage transaction may allow collateral debt securities that are U.S. dollar denominated from U.S. issuers with a minimum issuer credit rating of ‘B-’, and no more than 8% total principal balance of collateral debt securities may be from the same industry.

Other trading and reinvestment criteria may include par replacement criteria (for example, the principal amount of the purchased collateral debt security at least equals 100% of the principal amount of the sold or paid down collateral debt security). In contrast to coverage tests, many of these reinvestment and trading criteria are qualitative and dependent on availability of desired collateral in the market. Consequently, some structures give the issuer the flexibility to reinvest cash to be closer to compliance if a failure occurs.

One particular collateral quality test that deserves mention is designed to limit individual asset and/or portfolio maturity. Typically, collateral eligibility definitions include individual or discrete maturity restrictions (for example, all collateral debt securities must mature prior to the stated maturity of the notes). Pool parameters may include a weighted average maturity (WAM) limit on the portfolio.

Any number of portfolios could satisfy these guidelines, including the following three sample portfolios: A portfolio of all short-term securities maturing within one year, a portfolio of all long-term securities maturing in the same year as the notes, or a portfolio with equal amounts of principal maturing in every year of the transaction.

However, corporate bond and loan portfolios tend to exhibit “lumpiness,” and consist of relatively small numbers of assets with different principal amounts, amortization schedules and maturities.

As much as it would simplify the credit analysis and management of collateral, the portfolio with equally sized, evenly distributed maturities is not typical in CBOs/CLOs. In fact, a “barbell” distribution with a portfolio concentrated in the short- and long-term ends of the maturity spectrum can occur, given that the cash flow characteristics of the assets differ, and that the portfolio changes over time. Yet, such a skewed portfolio may be permissible under collateral stated maturity limits or a portfolio WAM requirement.

For “barbell” or at least “lumpy” CBO/CLO portfolios, investors should be aware that sole reliance on arithmetic weighting, averaging or aggregation of maturities, may not effectively measure the risk or effect a prudent reinvestment decision.

Analysts review the issuer-provided reinvestment or trading guidelines—the collateral quality and portfolio parameters discussed above—to determine that each new asset meets certain eligibility requirements before it replaces an asset. The manager may choose to run the applicable default model, in addition to checking coverage ratios and collateral quality tests to assess the portfolio and the impact of reinvestment on an ongoing basis. Such regular testing gives the manager access to “updated” portfolio information for his consideration in the decision to reinvest cash. If the manager chooses to use the default model for a replacement test, analysts will request copies of the results. If the default rate of the pool after replacement is less than or equal to the default rate of the pool before replacement, the replacement can occur without causing deterioration in the pool credit quality or significantly increasing expected defaults over time. The manager may run the model to see the default rates on the pool with and without replacement, compare the results with the “break-even” default rate and portfolio assumptions applied in the transaction, and make his decision. A rating action may be taken if, upon replacement, the portfolio quality deteriorates.

Alternatively, if the manager is not using the default model, he need only check that both the “before” and “after” positions are within the collateral eligibility criteria. In this latter case, the original credit enhancement level is based on “stressed” eligible portfolio composition with maximum allowable asset credit risk. Therefore, in general, the original credit support should still cover this risk as long as the portfolio quality remains within these assumed stressed collateral quality parameters, and the manager tests and maintains compliance with coverage tests. Standard & Poor’s requests that the issuer provide pool information monthly or every time a new loan is added to the pool, whichever is sooner.

Payment Structure Risks

The principal and interest “waterfalls” drive the transaction’s allocation or distribution of cash flow down the capital structure. As one would expect, in senior/subordinated structures, the most senior, highly rated tranche should have priority in the principal and interest waterfalls. Subordinated tranches are in place to provide credit support, which, for example, translates into deferring interest receipts (*see section on Forms of Credit Enhancement*). Junior investors, however, have their own return hurdles. Usually, the investor will focus on a single rated or unrated tranche position in the capital structure. When several tranches are rated, however, the “trade-offs” across classes and waterfall mechanics can become quite complex, as differing interests compete for the same collateral cash flow. Investment-grade rated mezzanine CBO/CLO tranches that pay current interest but, in certain loss scenarios are unable to make current interest payments and have the ability to defer, will be highlighted with an ‘r’ subscript to the rating.

In general, the analyst looks closely at what is released through both the principal and interest waterfalls to junior debt holders and equity holders while senior debt is outstanding. In addition, a broad range of default patterns are assessed over the life of the deal (for example, sawtooth default patterns discussed in the Default Timing and Scenario Analysis section), which reflect potential release of cash flow to subordinated holders in certain structures.

Asset Risks

Collateral cash flow is affected by the terms of the bonds or loans, including interest, call, prepayment, and convertibility provisions. For fixed-rate debt, declining interest rates and/or credit spreads provide incentives to borrowers to refinance at lower rates and, therefore, to prepay an existing higher-rate debt. Callable bonds and loans also increase the variability of cash flows. If the bond or loan includes a call option, it is assumed that the debt will be called on the call date that stresses the transaction cash flows. In some cases, the asset optionality may preclude it as eligible collateral. For example, bonds rated with an ‘r’ symbol are not eligible for inclusion in the asset pool, as they introduce cash flow and market-related risks that cannot be adequately measured and mitigated.

Bank loans include provisions that require prepayment upon breach of certain covenants. Prepayments during the revolving period usually are reinvested directly in similar bond or loan assets. After the revolving period, the proceeds of the prepayments are usually invested temporarily in short-term eligible securities until reinvested, or if coverage tests are failed, used to pay down notes. The interest earned on the eligible investments is assumed to be lower than the interest paid on the rated securities. Therefore, this amount must either be reinvested in bonds and/or loans within a

reasonable period, usually one to three months, or be used to reduce the outstanding rated securities. The cash flow analysis should reflect the maximum negative carry that may occur on cash balances from prepayments or recoveries, generally based on an assumed fixed reinvestment rate of 2.5%, or a fixed spread below the floating rate index on the rated notes.

Convertible bonds, exchangeable bonds, and bonds with warrants attached introduce other risks. These instruments are convertible, at the investor's option, from debt into a specified amount of common stock of either the bond issuer (convertible bonds and bonds with attached equity warrants), or of another issuer (exchangeable bonds). Prior to conversion or exchange, convertible and exchangeable bonds that meet collateral eligibility guidelines will be permitted in collateral valuation and coverage tests. After conversion into equity, such securities are no longer considered eligible collateral debt securities, and should be marked to zero. If the equity is sold, proceeds must be reinvested in eligible collateral. Equity warrants can remain attached to bonds in the collateral pool, but should not themselves be assigned any value in the collateral tests. As a result, bonds with equity warrants are generally limited to a small portion of the collateral pool.

A growing number of CBO/CLO structures are including "baskets" for assets with bivariate credit risk. These baskets can enhance yield, or expand the eligible collateral universe, especially later in the reinvestment period when a collateral manager's asset maturity profile contracts. Bivariate risk arises when the probability of default on an asset is the combination of the probabilities of default of two obligors or counterparties. These "bivariate risk assets" include loan participations, credit-linked notes (CLNs) or credit derivatives, securities loans, and corporate debt from obligors domiciled in countries rated lower than the transaction.

A payment default may occur on a participation if either the borrower, the lending bank selling the participation, or both, default. A credit derivative, such as a CLN, in which a counterparty promises payment based on performance of an underlying reference obligor or security, can default if either or both parties default. Similarly, securities loans can default if the counterparty (cash borrower and collateral pledgor), the obligor on the underlying collateral securities held by the lender, or both default. Finally, emerging market debt denominated in a foreign currency (for example, U.S. dollar-denominated assets from corporate obligors domiciled outside the U.S.) may default if the corporate obligor defaults, if sovereign government actions adversely affect the ability of the obligor to make timely payment on its obligations, or both.

Not only is the risk of default higher on such assets, but it is also more difficult to assess. In addition, transparent, consistent pricing of such assets and secondary market liquidity are often not available for such assets. As a result, default, recovery and therefore loss levels are difficult to estimate.

In order to help protect CBO/CLO noteholders from this incremental risk, bivariate default risk exposure should be limited. Specifically, assets subject to bivariate risk should comprise no more than a certain portion of the aggregate collateral pool. If total bivariate risk exposure is substantial, then the portfolio may be analyzed using the multi-jurisdictional model, which assesses the incremental default risk these assets introduce. This typically results in higher default estimates and credit enhancement levels (*see sections on Master Trust And Synthetic CLO Structures and Multi-jurisdiction/Emerging Market CBO Criteria*). Corporate debt from countries rated as high as the transaction at closing can be “exempt” from this basket (for example, countries with foreign currency ratings of ‘AAA’ in a ‘AAA’ rated CBO). However, there should be disclosure to investors of the presence of multiple jurisdictions and the potential impact of subsequent downgrade of a country.

CBOs/CLOs continue to expand the collateral universe to other asset categories, such as other CBOs or commoditized asset-backed securities. Limited provisions for ABS that include other rated cash flow CBO tranches, and for collateral purchases from other CBOs, have been permitted. CBOs are increasingly investing in other cash flow CBOs, and even considering market value CBO debt tranches, as well as equity tranches of other CBOs. Managers have an appetite not only for senior tranches, but also for mezzanine pieces in senior-subordinated transactions, typically rated in the range of ‘BBB’ or ‘BB’. Although these investments give the seller an additional distribution channel, and a liquidity or funding source for its CBO, investors in the buying CBO may face certain additional risks that need to be addressed.

As structured transactions, the credit quality of ABS, such as CBOs or CLOs, is generally very strong, with predominantly high investment grade ratings. Often, ABS comprise the highest rated collateral in portfolio, especially for arbitrage transactions. However, there are other considerations for inclusion of CBOs or CLOs as assets in a CBO or CLO portfolio. Although highly rated secured financings, the secondary ABS market is not as mature or deep as the unsecured corporate debt market. Default and recovery history is scant, and ABS are complex and difficult to price, especially for the mezzanine tranches often targeted. In order to limit exposure to an asset class that, although creditworthy, presents uncertainty in loss and recovery estimates, basket provisions are appropriate in CBOs/CLOs. Generally, asset managers should not “cross-invest” in their transactions by purchasing CBO tranches in other CBOs under their management. Investors in such CBO-backed CBOs may face the risk of highly correlated defaults if managers encounter portfolio losses.

In any case, lower recovery assumptions are made, based on the relationship between the ABS rating assigned, and the CBO/CLO tranche rating. For example, a ‘BBB’ ABS may be given no recovery credit in sizing credit enhancement for a ‘AAA’ CBO tranche, but 40% recovery credit in sizing credit enhancement for a ‘BBB’ CBO tranche.

Collateral purchases from one rated CBO to another may present additional risks. There may be legal risks for both the buyer and seller (for example, is the transfer an arm's length transaction, priced at fair market value, and/or a true sale, and is the CBO as collateral free and clear of other liens, etc.). In addition, credit risk may increase in the CBO that is the collateral buyer, particularly if the purchased collateral is a credit risk security (more vulnerable to default) from the selling CBO.

Price Depreciation Risk

Although cash flow CBOs/CLOs do not rely on collateral market value to pay debt service, they can be impacted by changes in market value. The reason is that, although limited, some trading and secondary market sales are allowed. The risk of price depreciation and liquidity diminution in the secondary market, particularly in post-default asset sales for recovery, is important in cash flow transactions. Substantial price depreciation of defaulted bonds and loans is therefore assumed. As dynamic structures that allow for active management, adequate disclosure should be made to investors regarding a manager's ability to sell assets that may have appreciated or depreciated in value.

Issuers prefer the option of trading CBO/CLO portfolio assets throughout the term of the transaction. Credit enhancement in cash flow CBOs/CLOs is sized to account for losses on defaulted assets, but not on performing assets. As a result, trading and portfolio turnover is limited, either by reinvestment criteria during the revolving period or by specific trading rules.

The majority of rated CBO/CLO transactions provide that the collateral manager may trade what are categorized as "credit risk" (or "credit impaired") assets, and "credit improved" (or "credit appreciated") assets. Assets judged to be credit risk securities can be sold to avert default losses, while credit improved securities can be sold to preserve yield and boost returns to equity investors. The intention of such trading should be to protect against default by selling credit risk assets with a deteriorating credit profile, or to protect against spread diminution by selling credit improved assets with a decreasing credit spread. The intention of such trading should not be to exercise greater discretion and flexibility in asset management, particularly to proffer gains for the manager or other equity holders at the expense of rated noteholders.

There are two aspects of disciplining the trading of these assets in order to protect the portfolio from high turnover and undue exposure to price erosion: designation, and application of proceeds. The designation or definition of credit risk and credit improved securities controls how often the sale occurs, and should be specific. The application of proceeds controls use of the sales proceeds, reinvestment in new assets and payment of all or part of the sales proceeds to investors according to the priority

of payments or “waterfall.” These guidelines should protect senior noteholders from releasing cash to equity holders.

First, in terms of the definition of credit risk and credit improved securities, there are many variations. However, there are at least two elements important to carving out these assets. First, the concept of a *significant change* in credit standing should be clear. Second, the *manager’s responsibility* to judge that an asset fits the applicable definition should be clear. The manager should certify to the trustee in writing his opinion that the asset should be so designated and sold, and that any replacement asset meets applicable reinvestment criteria.

The application of sales proceeds is more complicated. General reinvestment criteria should apply, as well as additional guidelines to fulfill the purpose of the trade. Proceeds from the sale of a credit risk asset exhibiting significant default risk should be used to buy a better-quality asset in order to minimize loss from default. Proceeds from the sale of a credit improved asset should be used to buy an asset that is at least a “par replacement” with a principal balance equal to at least 100% of the sold asset. If coverage tests are not met, then sales proceeds should be used to pay down senior notes on the payment date. All credit risk and credit improved trades should be identified in the monthly portfolio or servicing report.

Credit improved securities often sell at a premium or capital gain, which can be sizable because of their higher credit standing. The allocation of these premiums and capital gains is important, especially since they can be substantial. It is important that capital gains are not paid out as interest to junior noteholders or equity holders, particularly if there is not a par replacement provisions, and trading gains and losses are not tracked on an ongoing basis.

A structure that continues to reinvest premiums and capital gains in a par replacement of collateral during the revolving period, is stronger from an overcollateralization perspective. For example, if a collateral debt security (CDS) with a par amount of \$100 was originally purchased for \$50, but sold for \$90 (for example, as a credit improved security), a \$40 capital gain is realized upon sale. If the collateral manager reinvests the entire \$90 sale proceeds to replace the \$100 par amount sold, the new \$100 CDS will maintain the overcollateralization test and remain in the transaction for the benefit of the rated noteholders. However, if the collateral manager “bifurcated” the \$90 sales proceeds by releasing the \$40 capital gain as excess interest through the interest waterfall, he would be left with \$50 to reinvest as principal. Even if the structure had a par replacement provision, the manager is at a disadvantage, being hard-pressed to buy \$100 of an eligible CDS at 50 cents on the dollar in order to maintain overcollateralization. It is more likely that the replacement collateral would have a par amount significantly lower than \$100. From the vantage point of rated noteholders, the first structure which reinvests the capital gain is stronger from an

overcollateralization perspective than the second structure, which “flows out” the capital gain to enhance the return of equity holders.

An increasing number of CBOs aim to combine the benefits of arbitrage with those of off-balance sheet treatment. Under FASB 125 in the U.S., the collateral manager must relinquish control over his ability to trade the transferred assets, and trade only credit risk securities, which are defined based on “objective” criteria. The investor should note that some interpretations of FASB 125 can translate into automatic sale of broadly defined credit risk securities. In these situations, there could be higher asset turnover and increased exposure to market value risk, thereby warranting a more price-based analysis of credit enhancement.

In addition to credit risk and credit improved trades, CBOs/CLOs often allow discretionary trades during the revolving period, subject to coverage tests and reinvestment criteria. In general, these trades are limited to a small basket which caps the principal amount purchased in a calendar year or one-year period to a percent of the pool principal balance. The concerns cited above regarding release of premiums and capital gains to equity holders prior to the repayment of rated notes also apply to discretionary trades. As discussed in the next section, some transactions may choose to manage trading risk by using the single- or multi-jurisdictional CBO/CLO model.

Overall, the trading flexibility discussed above represents an additional level of risk to the investor, who is exposed to the collateral manager’s decisions. As a result, there is a greater risk in CBOs/CLOs (versus more commoditized asset-backed paper in which assets tend to be homogeneous) that the rating on a prospective CBO/CLO can change over time as the composition of the asset pool deteriorates. These changes can be a result of long revolving periods, credit upgrades or downgrades in the underlying assets, and active management. Transactions permitting portfolio turnover, whether through discretionary trading, or the trading of credit risk or credit assets, should adequately disclose that the ultimate rating of the respective transaction may be affected by the changing composition of the asset pool. As discussed in the next section, some issuers choose to manage the risk by using the applicable CBO/CLO default model.

Portfolio Composition And Asset Additions

The sponsor or collateral manager may choose to use the CBO/CLO model as a surveillance tool in managing the portfolio during the revolving period. (Note: Any reference in this section to the CBO/CLO model can apply to the single-jurisdictional or multi-jurisdictional version.) Alternatively, the sponsor or manager may choose not to use the model, but to manage the portfolio within “stressed” eligibility criteria. Each of these management choices has important ramifications for the relationship between the portfolio assumptions used in sizing credit enhancement, and the actual portfolio composition as it changes over the life of the transaction.

Credit enhancement may be analyzed based on a closing portfolio if regular ongoing tests are performed, including running the CBO/CLO model upon substitution and reinvestment. Notification to Standard & Poor's should occur when limits are reached, or when the potential default rate exceeds the threshold established at closing. In this application, reliance on the manager may increase, particularly if the manager changes strategy or is replaced. The portfolio may evolve differently from that assumed in the original rating, and the transaction may be subject to a rating change. Sponsors and investors alike should be aware of the trade-offs between the level of credit support and potential rating volatility, and carefully consider them in structuring a transaction and setting up management guidelines.

Credit enhancement also may be analyzed based on a "stressed" eligible portfolio. Based on transaction investment parameters, the assumed portfolio will be constructed by filling the rating, concentration, and maturity buckets with the riskiest assets. In this application, the manager does not regularly run the CBO/CLO model during the reinvestment period. For example, consider portfolio eligibility guidelines that permit up to 10% 'CCC' rated assets, 50% 'B', and 40% 'BB'; 100 obligors or 1% obligor limits; and a maturity distribution of 20% in 10-year, 20% in seven-year, and 60% in five-year assets. Analysts would expect an assumed stressed eligible portfolio, and fill the buckets as follows: The 20% maximum 10-year maturity bucket would comprise the lowest rated 'CCC' assets totaling 10%, with the remaining 10% comprising the next lowest rated 'B' assets. The next longest seven-year maturity bucket would comprise another 20% of 'B' assets. The remaining 20% of 'B' assets would be placed in the five-year maturity bucket, along with the remaining 40% of 'BB' assets. No more than 100 obligors and assets would be assumed, as this would fill the 1% obligor limit.

The highest risk, lowest rated assets are distributed in the buckets to maximize credit exposure assuming the manager exercises his full flexibility to the limits of the eligibility criteria. As a result, the credit enhancement level will be higher to cover this "stressed case." Under these assumptions, the manager does not use the default model, and can trade to eligibility criteria. The benefit is the simplicity in managing to eligibility guidelines for which initial credit enhancement has been sized. All else equal, a change in manager or strategy may not adversely affect the CBO/CLO rating, as long as the manager does not breach eligibility criteria.

Portfolio turnover and active management also are recognized. Analysts review various assumptions on portfolio composition, and evaluate the ability of active management to maintain portfolio credit quality. The collateral manager may choose to maintain eligibility criteria not just upon asset purchase or initial transfer, but also over time. The manager may also choose to maintain portfolio credit quality within the portfolio composition assumptions—not necessarily the stressed portfolio—made in the cash flow analysis for the rating. The collateral manager may choose the option to use the CBO/CLO model to help monitor normal credit degradation in

the pool, to test the portfolio against the default rate used to size credit enhancement, and to regularly update the cash flow stress runs.

Consider two examples using a high risk bucket to show how this benefit might be reflected in a transaction. A transaction's original parameters may permit 10% of the collateral debt securities to be invested in 'CCC+' rated bonds. If the closing pool is invested almost fully in this bucket and expected to remain relatively static, an issuer or banker would size credit enhancement assuming a full 10% allocation of the high risk bucket. On the other hand, the closing pool may only be invested in 2% 'CCC+' bonds. The collateral manager may covenant to check the 'CCC+' bucket against a 5% "soft limit", notify Standard & Poor's when 5% is reached, and run the CBO/CLO model to monitor the effect of reinvestment on the portfolio. This 5% difference between the 5% "soft limit" and the 10% "hard limit" or parameter in effect acts a buffer. In this latter case, a portfolio assumption may be applied with the lower 5% 'CCC+' bucket, instead of 10%.

Revolving Credit Facility Risks

CBOs and CLOs are increasingly tapping into the advantages of revolving credit facility assets and liabilities. Revolvers introduce payment, liquidity, and portfolio concentration risks in exchange for the flexibility they provide. Revolving credit facilities are more prevalent in bank balance sheet CLOs than in arbitrage CBOs and CDOs (*for a fuller discussion, see Master Trust And Synthetic CLO Structures*). In arbitrage transactions, revolvers generally comprise a small portion of the portfolio, and their purchase and funding is often done through the SPE. Below is a general discussion of revolving credit facility risks, and key analytical issues, including those germane to funding via the SPE. The main financial risks that must be covered are:

- The ability of the CBO/CLO sponsor SPE as lender to make unfunded commitments, in full and on time, to its borrowers on the asset side of the CBO/CLO;
- The ability of the CBO/CLO sponsor or SPE as borrower to make payments on its funded commitments, in full and on time, to its lenders on the liability side of the CBO/CLO; and
- The sufficiency of credit enhancement to withstand default and interest rate stresses in cash flow tests under various revolver origination and funding scenarios.

On the asset side, revolvers affect the portfolio and the transaction cash flows because they affect the relative balance of the pool. For example, if 50% of revolver assets with higher-rated obligors are not fully funded, the resulting portfolio may be smaller, lower in credit quality, and more highly concentrated per obligor. The weakness, however, is partially offset by the higher spread from the higher margins on the loans of weaker borrowers. In general, these risks should be covered by credit enhancement as demonstrated in the cash flow analysis, by reserves, or by liquidity or support agreements from providers rated as high as the senior tranche.

Revolving credit facilities on the asset side of a CBO/CLO transaction impact portfolio composition, based on varying drawn and undrawn amounts from different borrowers of different credit quality. In a difficult economic environment, it will be likely to see lower-credit quality borrowers making more use of the funding sources at their disposal, even with a weakened lending institution. In other situations or for higher credit quality borrowers, however, some assumption of portfolio payment or purchase rates may be warranted. In order to assess the many asset portfolios and cash flow risks that can arise, revolver stress scenarios are analyzed that generally vary the CBO/CLO portfolio in terms of size, drawn versus undrawn percentages, credit quality, obligor/industry concentrations, and interest rate spread. CBO/CLO criteria focuses on the impact of revolving credit facility assets and liabilities on the transaction's cash flows, liquidity, and portfolio composition, which are summarized below:

Cash flow analysis. Changes in the amount outstanding under revolving facilities impact CBO/CLO liquidity and cash flow. Analysts will request that cash flows be stressed using a default frequency assumption at several drawdown levels on revolving assets and liabilities.

Reserves. If the SPE is obligated to fund revolving assets, it may set up a cash reserve to fund its draws. Credit enhancement must be sufficient to cover the resulting negative carry between the earnings on reserve fund eligible investments and the CBO/CLO interest cost.

Liquidity or support agreements. If the SPE is obligated to fund revolving assets, it may also fund draws by purchasing liquidity lines or standby commitments from providers rated as high as the seniormost tranche. Eligible providers should be rated as high as the seniormost tranche. Alternatively, an 'A-1+' rated entity may participate in an 'AAA' CBO/CLO with appropriate replacement provisions upon downgrade. To cover negative carry, the commitment fees earned on the unused revolving credit facility assets should be higher than the commitment fees charged on the unused revolving credit facility liability. These liquidity agreements can also be put in place to support revolving rated liabilities issued by the SPE.

Revolving loans also introduce additional legal risks to the transaction. These should be adequately addressed (*see Legal Considerations*).

Other Considerations

The collateral manager and servicer (often the sponsors) are integral to cash flow transactions. The two most important roles are servicer collection of payments on the underlying assets and collateral management. As part of the rating process, analysts evaluate the capabilities of the entities acting as servicer and manager, particularly in managing to collateral guidelines, enforcing obligor payment performance, and

realizing value on nonperforming assets (*see Sponsor/Asset Manager Review section*). CBOs usually do not raise commingling issues because the trustee directly collects bond asset payments in a trust account. However, balance sheet CLOs do raise commingling issues because they are generally structured so that the bank that originated the loans will continue to receive and process loan payments, prior to pass through to the trustee (*see commingling risk discussion in Master Trust And Synthetic CLO Structures section*).

Given the importance of servicing/asset management, another analytical consideration is the servicing and management arrangements in the original transaction rating. This concern is relatively more important in CLOs than in CBOs. This is because loans generally involve a workout process between lender/servicer and obligor following default, whereas bonds can rely on a more developed, liquid secondary market. The trustee may play a larger role in the event of insolvency of the lender/servicer in a balance sheet CLO, or in the event of a wind-down in an arbitrage CBO or CDO, if no replacement collateral manager is appointed.

In addition to a review of the servicer and manager, several aspects of servicing/asset management arrangements are important. The fee arrangement is expected to provide incentive to the servicer or collateral manager to perform its duties. The fee amount and priority in the flow of funds are both relevant to adequacy and certainty of payment. The servicing/management fees may be senior to or pari passu with rated noteholder payments, as long as the fees are capped. The transaction must specify and cover these fees, for example, through a reserve or positive spread. A portion of these fees may be payable from “residuals” lower in priority or at the bottom of the flow of funds, where they do not necessarily have to be capped. The fees at the top of the “waterfall” or priority of payments should be sufficient to motivate a replacement manager or substitute servicer to bid for servicing rights, and reasonably compensate the trustee in the interim. The reason that the senior fees must be high enough is that in a wind-down or amortization event, the residual portion will not likely be available. Provisions that indemnify the trustee against additional expenses or liabilities as part of the compensation arrangement may not be viable if they divert cash flow from rated noteholders.

Analysts also expect provisions in the transaction for a substitute servicer, should the original servicer become unable to service the portfolio or be relieved of its responsibilities due to a downgrade or default. At a minimum, the trustee should be able to appoint a qualified substitute servicer/manager or act as backup servicer/manager.

These substitution provisions do not necessarily require that there be a “warm” backup servicer in place from the beginning of the transaction. However, certain factors may dictate appointment of a warm backup servicer, as well as ongoing involvement with the transaction, such as receipt and review of collateral reports or loan

performance data. Examples of such factors are the track record of the original servicer, the rating of the servicer, the transaction's level of active management, and the complexity of the business.

Investors should have the ability to at least vote to terminate the manager or the servicer under certain circumstances, for example, if the servicer defaults. In order to appoint a replacement manager or servicer, the consent of at least a majority of the seniormost noteholders should be required.

In actively managed CBOs and CLOs, there is the additional concern that assumptions made in the original rating and credit enhancement determination may no longer apply when a new manager/servicer takes over. For example, if the rating assumed higher recovery levels based on a manager's/servicer's favorable asset disposition and workout history, these assumptions may not be accurate for the successor. In addition, the successor fee structure may be revised. Standard & Poor's should be notified of any appointment of a successor manager, servicer or trustee. Rating action may be appropriate in certain cases in which recovery levels are impacted, or the fee structure is revised. Issuers may want to consider building a cushion in the initial credit enhancement levels to protect against such events that may affect the rating in the future.

Finally, CBOs and CLOs typically have optional redemption features. These should be designed so that only the timing of payment of principal to rated noteholders may be affected. This section focuses on the more typical optional redemption "in whole." Partial optional redemption features, which may leave senior rated notes outstanding with a lower dollar amount of subordination, generally should be RAC (rating agency condition) events. Optional redemptions are effected mainly to permit sale of collateral to allow the issuer to take advantage of collateral appreciation, or to do a "clean up call" when only a small amount of notes remain outstanding. Some transactions even provide for payment of a premium to certain classes of noteholders to compensate them for reinvestment risk.

Several provisions should be in place to protect rated noteholders. In general, an optional redemption should only occur if net collateral sales proceeds (after payment of transaction costs and senior fees) are sufficient to pay rated note principal and interest accrued to the redemption date. Any hedge agreements in place to pay rated noteholders should only unwind after all notes are redeemed and paid with interest to the redemption date. The collateral buyer should be rated as high as the seniormost tranche, at least on a short-term equivalent basis. Optional redemption provisions sometimes permit counterparties who are unrated, or rated lower than the seniormost CBO/CLO tranche on a short-term equivalent basis. Sale of collateral to unrated or lower rated counterparties may raise legal issues with respect to protecting the noteholders from bankruptcy or insolvency of those counterparties. Standard & Poor's will evaluate such arrangements on a case-by-case basis.

Legal Considerations For CBO/CLO Transactions

Cash flow CBO and CLO transactions are rated primarily on the basis of the credit quality of the assets supporting the rated securities. The transaction seeks to insulate the assets from entities that are either rated lower than the transaction or unrated. Standard & Poor's assumes the bankruptcy of each transaction participant that is not a "bankruptcy-remote entity" or that is rated lower than the transaction, and analyzes the effect of such bankruptcy on the timely payment of debt service on the rated securities. The analysis of legal documents, and where appropriate, receipt of opinions of counsel that address insolvency and other issues, can resolve most legal concerns. Understanding the implications of assumptions made and criteria used enables an issuer to anticipate and resolve most legal concerns early in the rating process. *(For a more detailed analysis of some of the issues discussed in this section, see Standard & Poor's April 1998 publication "Legal Issues in Rating Structured Finance Transactions.")*

It is beyond the scope of this publication to describe in depth the CBO/CLO criteria used in each of the jurisdictions that has one or more rated transactions. Rather, this publication broadly describes the methodology used in reviewing the legal aspects of CBO/CLO securitization structures and the application of that methodology to the most commonly used U.S. structures. Nevertheless, it provides a useful guide to structuring CBO and CLO transactions in non-U.S. jurisdictions.

Bankruptcy-Remote Entities

The first level of analysis relies on the fact that entities that issue rated securities or (in the case of certain two-tier structures) transfer assets are deemed "bankruptcy remote." The criteria seek to ensure that the entity is unlikely to become insolvent or be subject to the claims of creditors. The following criteria must be satisfied to ensure that such entity is a special-purpose entity (SPE) and thus, bankruptcy remote:

-
- The entity should be prohibited from engaging in a merger, consolidation, or asset transfer with an entity not rated at least as high as the rated securities or that does not meet the SPE criteria, so long as the rated securities are outstanding.
 - The entity should be restricted from incurring additional debt, or the entity's organizational documents should prohibit additional debt other than debt rated at least as high as the rating on the issue in question or other than debt that is fully subordinated to the rated debt; is nonrecourse to the issuer or any assets of the issuer other than cash flow in excess of amounts necessary to pay holders of the rated debt; and does not constitute a claim against the issuer to the extent that funds are insufficient to pay such additional debt.
 - The entity should not engage in any other business or activity.
 - The entity should have at least one "independent director" on the board of directors. The consent of the independent director should be required in order to institute insolvency proceedings. An independent director of an entity means a duly appointed member of the board of directors of such entity who shall not have been, at the time of such appointment or at any time in the preceding five years, a direct or indirect legal or beneficial owner in such entity or any of its affiliates; a creditor, supplier, employee, officer, director, family member, manager, or contractor of such entity or any of its affiliates; or a person who controls (whether directly, indirectly or otherwise) such entity or its affiliates or any creditor, supplier, employee, officer, director, manager, or contractor of such entity or its affiliates.
 - The parties to the transaction documents should covenant that so long as the rated securities are outstanding, they will not file or join in any involuntary bankruptcy proceeding against the entity.
The entity should also agree to abide by certain "separateness covenants" whereby the entity covenants:
 - To maintain books and records separate from any other person or entity;
 - Not to commingle assets with those of any other entity;
 - To conduct its own business in its own name;
 - To maintain separate financial statements;
 - To pay its own liabilities out of its own funds;
 - To observe all corporate formalities;
 - To maintain an arm's-length relationship with its affiliates;
 - To pay the salaries of its own employees;
 - Not to guarantee or become obligated for the debts of any other entity or hold out its credit as being available to satisfy the obligations of others;
 - To allocate fairly and reasonably any overhead for shared office space;
 - To use separate stationery, invoices, and checks;
 - Not to pledge its assets for the benefit of any other entity; and
 - To hold itself out as a separate entity.

If the bankruptcy-remote entity is wholly owned by a parent that is not bankruptcy remote, Standard & Poor's will request an opinion of counsel to the effect that, in an insolvency of the parent, the bankruptcy-remote entity would not be substantively consolidated with the parent under applicable insolvency laws (for example, bankruptcy laws for Bankruptcy Code entities, applicable insurance laws for insurance companies, and applicable banking law for banks). Standard & Poor's will continue to monitor developments in banking and insurance law and evaluate the need for nonconsolidation opinions on a case-by-case basis.

In addition, the following criteria would apply to limited partnerships:

- At least one general partner must be a special-purpose, bankruptcy-remote entity.
- The assets of the general partner(s) and all successor general partners should not be commingled with any assets of the limited partnership.
- If a partner has a controlling interest in the partnership (50% or more), an acceptable nonconsolidation opinion with respect to the partner and partnership must be given. In the absence of such an opinion, no partner should own at any time 50% or any greater percentage interest in the profits and losses of the limited partnership (either as a general or a limited partnership interest).
- An opinion of counsel to the effect that the partnership will not be taxed as an association taxable as a corporation must be given at closing.

For limited liability companies, in addition to the criteria set forth above, it is required that:

- The limited liability company conduct its business at arm's-length with, and maintain its existence separate from, its members.
- An opinion of counsel be given at closing to the effect that, in an insolvency of a member, the limited liability company would not be consolidated with such member.
- The limited liability company have at least one outside member that is an SPE and the vote of all members must be required for filing a voluntary bankruptcy petition.
- An opinion of counsel be given at closing to the effect that the limited liability company will not be taxed as an association taxable as a corporation.

Although the criteria set forth above were developed based on U.S. corporate and bankruptcy law, they provide a useful guide to structuring an SPE in non-U.S. jurisdictions. In addition, if the issuing SPE or (in the case of a two-tier transaction) the intermediate SPE is a non-U.S. entity, Standard & Poor's examines (usually with the help of local counsel) the corporate and bankruptcy laws and securitization statutes (if any) of the relevant jurisdiction to determine whether the entity is bankruptcy remote under the law of such jurisdiction. Standard & Poor's will focus on the validity and enforceability of any covenants against the entity's incurrence of indebtedness and filing of a voluntary bankruptcy or reorganization. For example, in some jurisdictions where voluntary bankruptcy filing or dissolution of a company is, by statute, a shareholder decision, Standard & Poor's will examine any structural feature that

may be offered by the participants to reduce the likelihood of a voluntary filing of the SPE.

Also, Standard & Poor's inquires into the existence in the SPE's jurisdiction of any theory similar to the U.S. theories of substantive consolidation, alter ego, or piercing the corporate veil. Most common law jurisdictions recognize both alter ego or piercing corporate veil theories. Many civil law jurisdictions have theories or statutes that allow for consolidation of affiliates upon the showing of confusion of patrimony (assets) or exclusive dealings. To the extent these theories exist in the jurisdiction and are relevant to the particular structure, we will generally require an opinion from local counsel concluding that these theories would not be applicable in the particular transaction.

In addition to applying the SPE criteria set forth above, it is required that, depending on the jurisdiction and the transaction structure, the trustee, collateral agent, or other entity acting on behalf of the holders of the rated securities (all referred to herein as the trustee) has the equivalent of a first ranking perfected security interest in the assets of the SPE under applicable law. Opinions to confirm that proper steps have been taken to perfect the security interest under applicable law, including filing documents, financing statements, notification, book entries in the records of financial intermediaries, or delivering promissory notes or other instruments to the trustee are required. This first priority perfected security interest reduces the incentive for creditors or equity holders to initiate an insolvency or reorganization proceeding against the SPE, because all of the SPE's assets are pledged as security first to pay its obligations to the holders of the rated securities.

Transfer Of Assets And Perfection

The second level of analysis involves the evaluation of the nature of each party's rights in the assets and whether third parties (that may be unrated or that are not bankruptcy remote) have retained rights that may impair the timely payment of debt service on the rated securities.

In most transactions, the originator of the assets transfers them to an issuing SPE or (in the case of a two-tier transaction) an intermediate SPE. As a general matter, we will review the bankruptcy and reorganization laws of the transferor's jurisdiction of organization to determine the effect of a transferor's insolvency proceeding on timely payment of the rated securities. Standard & Poor's typically will review the circumstances in which a bankruptcy court in the relevant jurisdiction may avoid a transfer of assets effected by the transferor prior to a bankruptcy filing and require that safeguards be incorporated in the transaction documents addressing that risk. The transfer of the assets should be effected in a manner that will shield the assets

from the bankruptcy risk of the transferor, and a local counsel opinion will be requested concluding that is the case.

As a general matter, in many jurisdictions, a pledge of the assets by the transferor would not ensure holders of the rated securities timely access to the assets if the transferor were to be the subject of a bankruptcy or corporate reorganization proceeding. Although, as a matter of law, a creditor ultimately may be able to realize the benefits of pledged collateral, the creditor may experience delays in payment and in some cases receive less than the full value of its collateral. Accordingly, in most cases a “true sale” or absolute assignment of the assets, rather than a pledge of the assets as collateral, will be required in order to separate the credit risk of the transferor from that of the assets (see, however, discussion of transfers from FDIC-insured banks and Secured Loan Transactions Ratable As Structured Finance, below).

CLO Transactions

In some instances, the loans being securitized contain restrictions or limitations on the outright sale of a loan to a third party, but may permit the creation of a participation. In other cases, the transferor may be able to declare a trust over the assets without violating the anti-assignment clauses. This approach has been used under English law. In some jurisdictions, the law may provide that these anti-assignment clauses are not effective to prohibit the assignment of the receivables to third parties, and that the assignment would be enforceable against the borrower, third-party creditors, receiver, or liquidator of the transferor.

In all these instances, it is generally required that the transaction participants and counsel be comfortable that the method of transfer does not constitute a breach of the loan agreement or applicable law. Opinions of counsel addressing this point are generally requested (see discussion of Restrictions on Participations, below). In addition, counsel must provide an opinion that such alternate methods result in the isolation of the assets from the bankruptcy risk of the transferor.

Transfer Issues In U.S. Transactions. Most of the U.S. CLO transactions rated by Standard & Poor’s to date have involved asset transfers that are structured as participations. In these transactions the transferor is either an FDIC-insured bank or a U.S. branch of a foreign bank. In the case of participations from FDIC-insured banks, the transfer generally would not need to qualify as a true sale. Instead, Standard & Poor’s obtains comfort that a security interest granted by the bank in the loans would not be avoidable in the event of the bank’s insolvency. An opinion regarding creation and perfection of the security interest, as well as an FDIC opinion to the effect that the security interest in the loans will be enforceable notwithstanding the insolvency of the transferor is required.

In the case of participations from non-FDIC-insured banks, the participation must be structured as a true sale and appropriate opinions confirming such characterization

must be provided at closing. In addition, appropriate regulatory comfort that, in an insolvency of the bank, the state banking regulator will treat the participation as a sale of the loans and will not treat the loans as property of the bank is required.

Although the case law in this area is limited, Standard & Poor's believes that participations can be structured and documented such that the transfer can be viewed as a sale of an equitable interest in the underlying loans. A participation may be deemed a sale if the participation agreement includes the following provisions.

- Segregation of funds. For discussion of requirements for the segregation of funds, see the section "Master Trust And Synthetic CLO Structures".
- Document segregation. The loan agreements that are part of the securitized pool should be physically segregated from other transferor loan or participation agreements. These loan agreements should be held in custody by the transferor and clearly segregated in files conspicuously labeled to show that the loans or participations are held by the transferor as custodian for the issuing SPE and for the transferor as lender. The portion of each loan participation participated to the issuing SPE at any point in time should be specified in the loan or participation files.
- Promissory notes. To the extent that there are promissory notes that are instruments under the applicable state's UCC for the loans being participated, the notes should either be transferred to the issuing SPE or held pursuant to a formal custody agreement, with a third party acting as custodian for the benefit of both the transferor and the issuing SPE.
- Recordkeeping and reporting requirements. The transferor should keep complete, accurate and separate records for each loan, including records sufficient to monitor: the amount of each loan that is participated to the issuing SPE; the transfers of loan receivables from the transferor's general and custody/trust accounts to the issuing SPE; and the use of such receivables for reinvestment during the revolving period.

Documentation of the transaction should delineate clearly the transferor's various roles and its duties. In particular, documentation should reflect the extent to which the transferor remains in the role of a lender for some portion of the participated loans. In addition, the transferor's duties as the lender of record and servicer of the loan participations should be governed by a formal written agreement. The agreement should either: Specify that the transferor shall not, without written consent of the participant:

- Make or consent to any alteration of the terms of the underlying loans,
- Undertake to release any of the collateral or security (if any) for underlying loans,
- Accelerate or extend the maturity of the underlying loans,
- Alter or amend the underlying loan or,
- Waive any claim upon the borrower or any guarantor in connection with the underlying loans, or

- State clearly that the transferor's duties, as servicer and lender of record of the loans, to the issuing SPE are equivalent to the fiduciary obligations that a trustee owes to its beneficiaries.

As a backup position, the participation generally must be analyzed also as a borrowing by the transferor, secured by the underlying loans. This requires the transferor to grant to the issuing SPE a first priority perfected security interest in the underlying loans and loan receivables and to file UCC financing statements to perfect the security interest. In addition, to the extent that the loans are evidenced by promissory notes that are instruments under the applicable state's UCC, the necessary steps should be taken to perfect the issuing SPE's first priority security interest in the instruments. Standard & Poor's will require an opinion to the effect that, if a court reviewing the transaction does not characterize the participation as effecting a sale of a beneficial interest in the loans, the creation of the participation in accordance with the transaction documents and the procedures required to be followed thereunder nonetheless would create a first priority perfected security interest in favor of the SPE in the underlying loan receivables.

Restrictions On Participation. As noted above, the participation approach whereby the transferor retains legal title to the loan and transfers all beneficial interest in the loan to the SPE has been used in order to comply with the restrictions on outright transfer of the loan which are contained in many loan agreements. It should be noted, however, that loan agreements may contain restrictions or limitations on the transferor's right to create a participation in the loan. In such cases, transaction participants and counsel must be comfortable that the granting of the participation to the SPE does not constitute a breach of the loan agreement. Generally an opinion of counsel addressing this point is requested. If there is a reference in the loan agreement to consent of the obligor in connection with the granting of a participation (even where such reference is permissive rather than restrictive or exclusive in nature), it is required that the transferor obtain such consent prior to its participation of the loan.

Set-Off. The analyst examines the risk of borrower set-off in all CLO transactions, regardless of whether the transfer of loans is structured as a participation or an outright assignment. If the borrower is not notified of the sale of, or granting of a participation in, the loan by the transferor, it would continue to have set-off rights against the transferor. Accordingly, in an insolvency of the transferor the borrower may reduce its loan payments by the amount of any deposits held with the transferor or any amounts otherwise owed by the transferor to the borrower. If the loan agreement contains an explicit waiver of set-off by the borrower, reserves for borrower set-off are generally not required. In certain jurisdictions, opinions of counsel that the waiver of set-off provisions would be enforceable against the borrower in an insolvency of the bank may be required. If, on the other hand, the documents do not contain a waiver of set-off provision, the transaction should provide sufficient credit support

(either as a reserve fund or a transferor's interest) to cover potential set-offs by the borrower.

In some non-U.S. jurisdictions there are several types of set-off, some of which may be mandatory (and, therefore, not capable of being waived by the borrower). In such cases, the set-off risk generally must be addressed by providing additional credit support. In some cases, failure of the transferor to lend to the borrower when a draw is requested under undrawn commitments can result in a set-off by the borrower with respect to its repayment obligation for already drawn amounts under a revolving credit facility. This risk must be addressed through one of the methods discussed above.

For FDIC-insured institutions, Standard & Poor's also is concerned that the FDIC, as receiver or liquidator of an insolvent bank, would have the incentive to mandate a borrower set-off even if the borrower had waived its right of set-off against the bank. In asking the borrower to set off against the loan any amounts that the borrower has on deposit with the bank, the FDIC would maximize the amount available for distribution to the depositors and would also comply with the depositor-preference statutes. Accordingly, in the case of CLO transactions out of FDIC-insured banks, additional credit enhancement to cover set-off risk will generally be required (even if the loan agreements contain a waiver of set-off), unless the transfer of loans from the bank is structured as a true sale and an appropriate true sale opinion is given at closing.

Lender Liability. The question arises whether the issuing SPE could be held liable to the borrower for actions taken by the transferor, or for failure of the transferor to lend to the borrower if a draw is requested under undrawn commitments or lines of credit. This analysis is jurisdiction specific and involves review of relevant legislation and, if appropriate, case law in the jurisdiction. (Depending on the law and the nature of the loan, the inquiry also may extend to any potential liabilities incurred in enforcement of the loans, such as environmental liabilities, taxes, and so on.) Under U.S. law, lender liability claims, although possible in theory, are unlikely to affect the issuing SPE's ability to pay rated securities in a full and timely manner.

If an unfunded commitment is transferred to the issuing SPE, the analyst will evaluate whether the issuing SPE will have funds available to lend to the borrower when a draw is requested (*see Revolving Credit Facility Risks, Risk Factors: Structure and Collateral in Evaluating Credit Risk, and Master Trust And Synthetic CLO Structures*).

Selected Specific Criteria

CBO Transactions

In CBO transactions, the issuing SPE purchases a pool of high-yield bonds issued by a variety of entities (including sovereign borrowers). If the issuing SPE purchases the

bonds in the open market, there is no true sale issue. In these circumstances, a certificate from the sponsor confirming the open market purchase may be required. If the bonds have been held in the transferor's portfolio for more than approximately three months, or they had been reported by the transferor other than as assets held for resale, an opinion confirming that the transfer from the transferor to the issuing SPE qualifies as a true sale will generally be required.

Secured Loan Transactions Ratable As Structured Finance

In some jurisdictions, it may be possible to structure transactions as first priority perfected secured loans if neither an insolvency nor a reorganization proceeding would interfere with the full and timely payment on the rated securities, or the interference is limited and quantifiable (for instance in the Netherlands, where the stay following bankruptcy is limited to two months). In these transactions, there could be a liquidity source to cover timing delays that may occur in an insolvency proceeding.

To receive a rating divorced from the originator's credit rating, there must be significant certainty that the holders of the rated securities have true control over the disposition and enforcement of the assets. In jurisdictions in which a liquidator or receiver could substitute collateral or force its public sale, secured loan securitizations are unlikely. Secured loan transactions also may use trigger events to anticipate commencement of insolvency proceedings. Failure to foreclose or enforce the collateral before insolvency, however, would not result in a default on the rated securities (see Appendix E, "An Example of Structured Financing Without True Sale: English Secured Loans).

Master Trust And Synthetic CLO Structures

Balance sheet CLO securitizations have utilized a variety of structures. This chapter focuses on two customized products: master trust vehicles, and synthetic CLO structures.

Overview Of The Master Trust Structure

The properly implemented master trust structure should allow an issuer to sell multiple series from the same trust, with each series sharing the credit risk and cash flow from one large pool of assets. This structure is attractive to issuers because it is cheaper to issue an additional series out of a master trust than it is to create a new, discrete trust. Investors often benefit as well. Depending on the issuer, securities issued out of a master trust may be backed by one large, diverse pool of assets containing a mix of seasoned and newly originated loans. Master trusts may contain other features that benefit investors, such as the sharing of excess principal and excess finance charge collections among series.

Each series of certificates issued from a master trust represents an undivided interest in the trust's receivables and an allocable interest in the collections on the receivables based on the invested amount of such series. There is also an interest in the trust assets that has not been allocated to any series, known as the seller's interest. The seller's interest is equal to the amount of trust receivables, which is not matched with corresponding certificated liabilities.

For example, assume a master trust contains \$107 of receivables and it has issued one series, which has a certificate balance of \$100. The seller's interest is defined as the positive difference, if any, between the receivables and the certificated interest in the master trust. In this example, the seller's interest would be \$7. The size of the seller's interest will change with fluctuations in either the amount of trust certificates issued or in the balance of principal loans in the trust. In the absence of defaults and dilutions, during any month if draws on revolving assets exceed payments on all assets, the

pool of assets and the seller's interest will grow. Conversely, if account payments exceed account draws, the seller's interest will shrink.

Relevant Periods

Revolving Period. All master trust series have three main periods: the revolving period, the controlled amortization period and the rapid amortization period. Each begins with the revolving, or interest-only, period. During this period, which has ranged from two to ten-plus years depending on the issuer's preference, investors receive interest-only each month. Principal collections are paid back to the seller for reinvestment in additional assets. The seller's interest is reduced by the amount of principal collections paid back to it and it is increased by any additional loans that are conveyed to the trust. Unlike mortgage-backed securities or auto loan securities, bonds issued from master trusts are not intended to amortize during the revolving period. This interest-only period mirrors the interest-only period found in many corporate and municipal bonds.

Controlled Amortization Or Controlled Accumulation Period. Typically, in a master trust, if the transaction performs as the issuer expects, the revolving period is followed by a period in which principal is returned to investors pursuant to a predetermined schedule. CLO master trusts have widely adopted this mechanism. The period during which principal is returned to investors is referred to as the "controlled amortization period." During a controlled amortization period, investors receive a partial amortization payment each month until the bonds are retired at the end of the specified period. The date on which the issuer intends to return all principal to investors is called the expected final payment date. Any principal in excess of this partial amortization payment will be shared with the other series issued out of the master trust.

By contrast, during a controlled accumulation period, principal is not used to amortize investor certificates; rather, it is trapped in a trust account for the benefit of investors and held there until the expected final payment date. Cash will be trapped in this account, which is called a principal funding account or PFA, until its balance equals the face value of the rated certificates. At the expected final payment date, the funds in the PFA will be swept out and paid in a lump sum to investors. This one-time payment is called a soft bullet. As cash accumulates in the PFA, credit risk to investors declines but negative carry risk grows. If reinvestment income on the PFA balance is less than the coupon payments due on the notes, full and timely interest payments will not be made. In order to mitigate this risk, most structures employ either a reserve fund or a swap from a highly rated counterparty.

Early Amortization Period. The final period common to all master trust structures is the early amortization period. There are certain events, many of which relate to the performance of the assets or the selling bank, which will prematurely amortize the bonds. These early amortization events can occur at any time during the revolving, controlled amortization or controlled accumulation periods. All these events share a

common theme: Something has occurred that may threaten the interests of certificateholders. Rather than subject certificateholders to additional risk, all principal collections that are allocated to investors are used to amortize the bonds as quickly as possible.

Examples of early amortization events include the dollar amount of credit enhancement falling below its required level, the seller's interest falling below the required level, failure of the seller to make a required payment, the insolvency of the seller, the failure to retire rated notes by their expected final payment dates and the failure or inability of the seller to transfer receivables to the trust. The rating assumes that each transaction will enter early amortization at some time during its life. Consequently, if a transaction enters early amortization, this does not necessarily mean that the rating will be affected.

Allocation Methodologies

Regardless of whether the transaction is in its revolving, controlled amortization or early amortization period, three things must be allocated between the certificate interest and seller's interest every month: finance charge collections, principal collections, and defaults. These items are allocated in different ways depending on the period (see *table 1*).

During all periods, interest collections and defaults are allocated in the same manner. They are allocated to each series on a pro rata basis; that is, based on the current month's invested amount. This is commonly referred to as the "floating" allocation percentage—as a particular series amortizes, its pro rata share of the trust declines, or "floats" down. By the same token, *within* each series, interest collections and defaults are allocated among the classes on a pro rata basis.

For example, if a series enters rapid amortization with \$100 in certificates and \$107 in receivables in that month it will be allocated 100/107 of both interest collections and defaults and the seller's interest will be allocated 7/107. If the series amortizes down to \$70 in the second month and the receivables balance remains constant, the certificates will be allocated 70/107 of interest collections and defaults and the seller's interest will be allocated 37/107 of those amounts.

	Revolving	Controlled Amortization	Rapid Amortization
Interest Collections	Float	Float	Float
Defaults	Float	Float	Float
Principal Collections	Float	Fix	Fix

Unlike interest collections and defaults, principal collections during the early amortization period are allocated on a “fixed” basis. That is, each series is allocated principal based on its aggregate invested amount as of the *end* of the revolving period. In the example above, although the certificate balance has amortized down to \$70 in the second month, certificateholders will still be entitled to 100/107 of all principal collections that enter the trust. In some scenarios, this fixed percentage will amortize certificates more rapidly, subjecting them to asset deterioration over a shorter period of time.

Distributions And Priority of Payments

Interest Waterfall. Traditional master trust structures use the “fixed” and “floating” allocation percentages described above to initially split or “bifurcate” interest collections from principal collections. Interest collections are then used to cover fees, certificate interest and defaults (“interest waterfall”) and principal collections, during the amortization periods, are used to retire certificates (“principal waterfall”).

Every month, each series in a master trust receives its “floating” or pro rata share of asset interest collections (“available funds”). If the structure contains a swap and a net swap receipt is due to the trust, the net swap receipt is also included in available funds. Available funds are then allocated to all classes within a series on a pro rata basis. Class A available funds will be used to pay class A interest, servicing fee and defaults. Any remaining class A available funds will be used in the secondary or “excess spread” waterfall. Class B available funds will be used to pay class B interest and servicing fee. Any remaining class B available funds will be allocated to the excess spread waterfall. In structures that do not utilize a swap, the subordination of class B defaults creates better liquidity in the excess spread waterfall and, consequently, improves the probability that the class A certificates will receive timely interest payments.

In some master trust structures, class C available funds are used to pay only class C’s share of the servicing fee and any remaining class C available funds are allocated to the excess spread waterfall. The subordination of the class C interest entitlement achieves two things. It improves liquidity in the excess spread waterfall and it creates additional credit enhancement in the deal. Any interest collections, which may have been used to pay the class C coupon, are available to pay interest on the class A and B certificates and to cover defaults. Additional credit enhancement is created because class C available funds are not used to pay the class C coupon but instead are used to cover class A and B defaulted amounts. If defaulted amounts are covered by current monthly cash flow, subordinated certificates are not written down. While such a structure benefits the class A and B certificates, the class C certificates suffer because their interest entitlement is subordinated in the excess spread waterfall and, as a result, there is no guarantee that they will receive timely interest payments.

Required Amounts. If available funds are insufficient to pay the costs of interest, servicing fees and investor defaults as outlined above, a shortfall or “required amount” exists. Required amounts are paid from the following sources, in priority:

- Any interest collections available in the excess spread waterfall,
- If the deal contains a cash collateral account, withdrawals from it, and
- Reallocated principal from the subordinated classes.

As described above, master trust structures initially bifurcate interest and principal collections. However, if interest collections are insufficient to satisfy all required amounts in any period and the cash collateral balance is zero, principal collections that have been initially allocated to the subordinated certificates will be re-characterized as interest collections available to cover required amounts. The most subordinated certificate in the capital structure will be reduced by the dollar amount of reallocated principal collections used to cover required amounts. The ability to reallocate principal collections is the main reason why principal collections are allocated every month to each series even if a series is in its revolving, “interest-only” period. If required amounts exceed interest collections, cash collateral amounts and reallocated principal amounts, the most subordinated certificate in the capital structure will be reduced by the dollar amount of uncovered defaults.

Principal Waterfall. During the controlled and rapid amortization periods, each series is allocated principal as described in “Allocation Methodologies” above. The amount of series principal collections available to amortize the certificates will be reduced by the amount of reallocated principal collections used to cover required amounts and it will be increased by the amount of shared principal collections from other series. Other series will share principal collections if they are in their revolving periods or their principal collections exceed their respective scheduled amortization amounts.

Available principal collections will also be increased by the amount of defaults which have been “covered” in the interest waterfall. When defaults are “covered” in the interest waterfall, interest collections are re-characterized as principal collections.

For example, if defaults are covered by interest collections during an amortization period, the bucket of available principal collections will grow and, as a result, the most senior certificates will amortize more quickly. If defaults are covered with current monthly interest collections, the most subordinated certificates will not be written down.

Once the available principal collections have been defined, the traditional master trust structure will apply them in a sequential fashion: first to the class A certificates until the class A certificate balance has been reduced to zero, then to the class B certificates until zero and finally to the class C certificates until zero.

Master Trust Structural Issues

Seller's Interest

The seller's interest is equal to the amount of trust receivables that is not matched with corresponding certificated liabilities. In commercial loan securitizations, the seller's interest provides a buffer against two major potential risks: loan amounts which an obligor may set-off and loan amounts which exceed obligor or industry concentration limits.

In any pool of commercial loans, there may be some obligors that have additional contractual relationships with the lender. For example, ABC Bank may have extended a loan to a XYZ Financial Inc. XYZ Financial Inc. may also have cash on deposit at the bank or it may be a party to a derivatives contract with the bank. If ABC Bank goes insolvent and it does not perform on the derivatives contract or the cash deposit is stuck in the bank's receivership estate, XYZ may choose to "set-off" or reduce the balance of its commercial loan by the value of the derivatives contract, or the dollar amount of the cash deposit (*see Set-off section in Legal Considerations*).

Within the securitization context, statutory and equitable set-off may create the risk that some borrowers would be entitled to set-off against amounts transferred to the trust, thereby affecting amounts available to pay the rated securities. If the loan documents contain provisions waiving set-off, the analyst will examine the enforceability of those provisions. If the loan documents do not contain these provisions, the seller's interest must be sized to cover set-off risk. For deposit-taking financial institutions, additional coverage may be needed for insurable amounts. For example, for FDIC-insured institutions in the U.S., even if the loan agreements have full waiver of set-off or counterclaim, a reserve fund or the seller's interest should cover at least \$100,000 for each loan securitized.

Standard & Poor's does not provide specific obligor concentration guidelines. Obligor concentration guidelines, however, strengthen the credit risk profile of the pool because they limit loss exposure per obligor. Likewise, a pool of bonds or loans with industry concentrations restricted to 8% of assets per industry is fairly diversified. Once an issuer establishes overconcentration parameters, if an obligor or industry exceeds them, the dollar amount of loans in excess of the limitation must be allocated solely to the seller's interest. In addition, the analyst may increase default probabilities to adjust for industry overconcentrations in the CBO/CLO default model and assessment of credit enhancement (*see Level of Credit Enhancement section in Evaluating Credit Risk*). Any defaults with respect to these overconcentration amounts will not be allocated on a "floating" basis between the seller's interest and the invested amount; rather, 100% of the excess loss amount will be allocated to the seller's interest.

The minimum required seller's interest in a CLO master trust securitization should equal the following: 5% of the aggregate principal receivables in the trust plus obligor overconcentration amounts plus industry overconcentration amounts plus unwaived set-off amounts, which should include \$100,000 for all U.S. FDIC-insured depositors regardless of the waiver. The main reason for the 5% buffer is that set off exposures are dynamic and difficult to track on a daily basis. In any month, if assets are insufficient to service the aggregate invested amount plus the minimum required seller's interest, the seller should be required to add assets. Any shortfall in the seller's interest below the minimum should trigger early or rapid amortization.

In addition to the minimum required seller's interest, periodic monitoring and reporting of exposures to those borrowers that have not waived their right to set-off are required. If a bank maintains a short-term rating of A-1 or higher, quarterly monitoring and reporting is required. If the bank's short-term rating falls below A-1, monitoring and reporting increases to a monthly basis. If cash is released to the seller more frequently than monthly, banks rated below A-1 should monitor and report this set-off exposure as frequently as the intended distribution.

Collateral Additions

There are three ways to add collateral to a master trust: a required addition, a permitted addition and an automatic addition. As described previously, a required addition will occur if there are insufficient assets to support the aggregate invested amounts issued out of the trust plus the minimum required seller's interest.

The second way to add collateral to the master trust is through a permitted addition. In this case, the seller will present a computer file that contains the current pool of loans plus the proposed addition. The analyst will run the pro forma pool through the applicable default model. Cash flow runs need to be done to determine whether the proposed addition negatively impacts the credit risk profile of the pool. If the risk profile remains within acceptable boundaries, the analyst will approve the addition.

Collateral may also be added to a master trust automatically subject to a number of conditions that include the following:

- The aggregate balances of loans added during any 12-month period shall not exceed 10% of the aggregate loan balances at the beginning of such 12-month period and the aggregate commitments under such loan facilities added during any 12-month period shall not exceed 10% of the aggregate commitments under covered loan facilities at the beginning of such 12-month period;
- Each obligor should meet some minimum ratings threshold;
- Each obligor shall have agreed to make payments without setoff against the lender(s);
- After giving effect to the additional loan, the trust is in compliance with any maturity distribution test;

-
- The scheduled maturity of the additional loan may not exceed the series termination date of any outstanding series; and
 - After giving effect to the addition, minimum requirements for revolving credit facilities, secured loans, and industry and obligor concentrations are satisfied.

The preceding list is not exhaustive and proposed automatic addition constraints will be reviewed on a deal-by-deal basis.

Not all transactions allow permitted or automatic additions. Instead, the sellers in these deals use the applicable CBO/CLO model, either the single-jurisdictional or multi-jurisdictional version, when they contemplate adding collateral (*see Cash Flow Analysis in the Evaluating Credit Risk section*). If the proposed addition plus the current pool results in a expected default percentage that is less than the maximum expected default percentage established at closing, the seller will add the loan without prior review. If, however, the additional loan causes the expected default percentage to exceed the maximum expected default percentage, the seller will notify Standard & Poor's and subsequently if these loans are added, the validity of the ratings on the notes will be re-evaluated.

Series Termination Date

In master trust structures, there are two important payment dates: the expected final payment date and the series termination date. The expected final payment date is the date on which certificateholders expect to receive their final payment of principal. Sometimes, however, certificate balances may extend beyond the expected final payment date. This can occur, for example, if the total sum of principal payments received by the expected final payment date is less than the certificate balance to be retired. This extension risk is present in any securitization where there is a mismatch between the tenor on the assets and the tenor on the notes. The series termination date, which occurs months after the expected final payment date, is the date on which all rated notes must be retired. After the series termination date, investors have no legal right to cash flows from the assets in the trust.

An actuarial method cannot be applied to pools of commercial loans because these pools are heterogeneous in nature. Pools of commercial loans have some of the following characteristics:

- Relatively small number of obligors;
- High loan balances, which can be hundreds of millions of dollars;
- Highly customized loan documentation;
- Wide variance in maturity profiles; and
- Pools contain revolving and term loans, each of which perform very differently.

To date, most master trust CLOs have combined three structural mechanisms in order to meet series termination date requirements: A maturity distribution test, a minimum payment rate test, and a minimum number of months between the expected

final and the series termination date. The maturity distribution test measures the aggregate amount of scheduled amortization payments due between the current month and the series termination date for the class in question. Unlike credit card pools, since the payment characteristics of this asset type are so unpredictable and “lumpy,” no credit is given to principal prepayments. In order to satisfy the test, each month the scheduled amortization payments must equal the principal balance of the class in question plus all maximum expected losses for that rating category (*see table 2*).

If the maturity distribution test is applied to Class A in table 2, on each monthly testing date scheduled principal payments must equal to \$100. Since there is no discernible loss curve with respect to this asset, we must assume that the \$10 of “AAA” credit enhancement may disappear at any time between the testing date and the series termination date. When “AAA” defaults do occur, \$10 of scheduled principal payments will vanish. If the maturity distribution test is not satisfied, principal collections that would have been paid back to the seller are trapped in a trust account called an excess funding account.

While the maturity distribution test is the most important structural feature when determining the series termination date, a minimum payment rate test and a minimum number of months between the expected final and the series termination date provide additional comfort. If the minimum monthly payment rate test (which has typically been around 4%) is tripped, principal collections that would have been paid back to the seller are trapped in the excess funding account. In some structures, failure to meet the minimum payment rate test will also result in an early amortization of the bonds. Finally, with respect to the required number of months between expected final and series termination date, 36 months has been the norm.

Currently, none of the CLO master trusts have issued a subsequent series. Upon the issuance of a subsequent series, each trust will have to arrive at a series termination date for the second series. Since principal in a master trust is allocated among series on a pro rata basis, the maturity distribution test as described above will not work for a second series. A number of solutions exist.

First, the seller can represent that none of the assets has a longer maturity than the shortest series termination date for any series. This solution, however, severely limits the funding flexibility inherent in a master trust. Alternatively, an issuer may establish “firewalls” among pools of assets in a master trust, so that each series that is issued

Table 2

Example of Master Trust Scheduled Amortization Payment Allocation

Class	Rating	Size
A	AAA	90
B	NR	10

from the master trust is backed by cash flows from a discrete pool of assets. Ironically, this solution converts a master trust into a number of discrete trusts. If this solution is implemented, investors lose one of the main advantages of a master trust: obligor diversity. These and other proposals will be reviewed on a case-by-case basis.

Modified and Restructured Loans

During the life of a securitization, a percentage of loans supporting certificateholders will be modified or restructured. Often a loan is restructured with respect to payment terms and tenor when the obligor is having difficulty performing under its original terms. Frequently the obligor's creditworthiness has declined and it wishes to extend its repayment schedule. Since the analyst makes certain assumptions as to the tenor of each loan and the credit worthiness of each obligor, any variance in these two variables should be constantly monitored.

This issue has been addressed in two ways. Some structures automatically remove a modified loan and add it back into the securitized pool subject to rating agency review. This is the preferred method because it causes the recalculation of default percentages based on the current pool and the terms of the modified loan. Other structures notify certificateholders and Standard & Poor's when any loan is modified or restructured. If an issuer chooses the notification option, the following conditions must be satisfied:

- Tenor of the loan may be extended only once, subject to a maximum extension cap of six months;
- If tenor is extended, the maturity distribution test must be satisfied on a pro forma basis;
- No modification can reduce the principal amounts owed; and
- Monthly servicer report must track aggregate amounts that are being restructured.

Other modifications (for example, interest rate reductions) can be made with notification as long as they are consistent with the seller/servicer's practices, and the appropriate coverage or spread tests in the securitization are met.

Commingling

As discussed above, unlike other assets, commercial loans are characterized by "lumpy" payment rate behavior. Thus, on any given day, the seller may receive a large dollar amount of loan repayments. If the seller goes insolvent shortly after receiving a large amount of repayments, that money may be trapped in the seller's receivership estate and it may be unavailable to service the interest and principal payments on rated notes. For this reason, each CLO securitization should limit the circumstances under which the seller may "commingle" or hold cash payments in its own account. The commingling restrictions should tighten depending on the seller's credit rating as follows:

- If the seller maintains a rating of AA-/A-1+ or higher, it may commingle all collections for 30 days and deposit collections into an eligible deposit account at the end of the month. (An Eligible Deposit Account can either be a segregated trust account held in the name of the transferor or SPE on the corporate trust side of a federal or state chartered depository institution, or an account in the name of the SPE maintained with a federal- or state-chartered institution rated A-1+.)
 - If the seller maintains a rating of A-/A-1, it may commingle collections up to 20% of the outstanding principal balance of rated notes for 30 days. All collections above the 20% limitation must be deposited into an eligible deposit account within two business days of receipt.
 - If the seller maintains a rating of BBB/A-2, all collections must be deposited into an eligible deposit account within two business days of receipt.
 - If the seller's rating falls below BBB/A-2, it must notify each obligor to remit all payments directly to an eligible deposit account maintained by an institution that has a rating of AA-/A-1+. This requirement applies even if the account had been held in the corporate trust department of the seller.
- In the U.S., these requirements apply to both FDIC and non-FDIC insured institutions.

Credit Considerations

Tenor

A mixture of term and revolving asset collateral backs most CLOs. With respect to term loans, no prepayment credit will be given. Simple amortizing term loans may be entered into the model in one of two ways:

- Each amortization payment is entered into the model as separate loan, or
- The loan is entered as one line in the model, using its weighted average life to establish its tenor.

With respect to revolving loans, it is assumed that each is retired in a bullet payment at its facility maturity date. Unlike term loans, which are typically used as long term funding mechanisms, many companies use revolving loans as short-term liquidity facilities that are drawn upon and repaid frequently. As an empirical matter, as long as the seller remains solvent, its portfolio of revolving commercial loans will experience a much higher percentage of prepayments than its term loan portfolio. For this reason, on a case-by-case basis, the analyst will give a small amount of revolving loan prepayment credit only at each tranche rated at or below the long term unsecured rating of the seller. This prepayment credit is linked to the rating of the sponsor because bank regulators will probably negate the unfunded portion of revolving commercial loans if the sponsoring bank goes insolvent. If this occurs, any obligor which still

has a relationship with the bank will have no incentive to prepay its loan, and its revolving loan will have effectively been transformed into a term loan.

Prepayment credit for revolving commercial loans will be given only if there is clear and thorough disclosure in the offering document that the rating on each tranche rated at or below the rating of the sponsoring bank is directly linked the financial health of the bank. With adequate disclosure and extensive portfolio performance data, the following prepayment credit may be given (by tranche):

- “A” Lesser of 1.5% monthly or 15% of the issuer’s historic net prepayment rate;
- “BBB” Lesser of 3.0% monthly or 33% of the issuer’s historic net prepayment rate; or
- “BB” Lesser of 6.0% monthly or 50% of the issuer’s historic net prepayment rate.

If prepayment credit is given, it will be used to shorten the tenor of each revolving loan as it is entered into the applicable CBO/CLO default model. This credit will be based on an analysis of the historical payment rate in the issuer’s portfolio, net of intra-month draws. Prepayment rate proposals for tranches rated higher than “A” will be reviewed on a case-by-case basis.

Utilization Rate

As discussed above, two of the key variables that determine the probability of default for a loan are the creditworthiness of the obligor and the tenor of its obligation. A third variable is also important: the loan amount at the time of default. Term loans have fixed amortization schedules that can be entered into the CBO/CLO default model. As such loans amortize, obligors cannot make additional draws. By contrast, obligors under revolving facilities differ because an obligor may pay down and redraw the loan at any time prior to the loan’s facility maturity date, resulting in a vacillating utilization rate. On any day, a revolving loan facility’s utilization rate is determined by dividing its current loan balance by its maximum loan cap. As utilization rates fluctuate, the rating distribution in a pool of securitized loans can differ significantly from the rating distribution at closing.

Research indicates that as an obligor’s credit quality deteriorates its utilization rate climbs. In fact, defaulted obligors, on average, have utilization rates that exceed 75%. For these reasons, multiple default model iterations are required when analyzing a pool that contains both term and revolving commercial loans. The iterations may include some or all of the following:

- The closing date portfolio with closing date balances;
- The closing date portfolio, assuming all revolvers have 100% utilization rates (subject to obligor concentration limits);
- The closing date portfolio, assuming all revolvers are drawn down on a pro rata basis until the aggregate pool balance equals the aggregate investor interest plus the minimum seller’s interest;

- The closing date portfolio, assuming the most highly-rated revolvers are drawn down until the aggregate pool balance equals the aggregate investor interest plus the minimum seller's interest;
- If applicable, a hypothetical pool based on the automatic loan addition parameters in the indenture; and
- If applicable, a hypothetical pool which assumes all highly-rated loans are replaced through the automatic addition mechanism and all lower-rated loans remain at their loan caps.

Also, pools of assets that contain 100% unfunded revolvers have been reviewed by analysts. For these proposals, a combination of industry research and issuer-specific portfolio analysis will be used to establish a utilization rate for each of the rated tranches.

Draw Rate

An obligor under a revolving credit facility can increase its utilization rate in any given month by making additional draws under its facility (subject to its maximum loan cap). As long as the seller is solvent, obligors will be able to continue to draw upon their facilities. If these additional loans are transferred to the trust and in any given month, the aggregate amount of draws exceeds the aggregate amount of payments, the asset pool will grow. These additional draws are a benefit to any securitization, because certificateholders are entitled to their allocable share of any payments on these additional draws.

While new draws benefit a securitization, if the issuer becomes insolvent it may no longer have the financial resources to fund additional draws. The draw rate will probably equal zero upon the seller's insolvency. For this reason, a small amount of draw credit in the cash flows will be given only at each tranche rated at or below the long term unsecured rating of the seller. Similar to the methodology applied for prepayment credit, draw rate credit for revolving commercial loans will be given only if there is clear and thorough disclosure in the offering document that the rating on each tranche rated at or below the rating of the seller is directly linked the financial health of the bank. With adequate disclosure and extensive portfolio performance data, the following draw rate credit may be given (by tranche):

- "A" Lesser of 1.5% monthly or 15% of the issuer's historic net draw rate;
- "BBB" Lesser of 3.0% monthly or 33% of the issuer's historic net draw rate; or
- "BB" Lesser of 6.0% monthly or 50% of the issuer's historic net draw rate.

Obligor and Industry Concentration Risks

Although specific obligor concentration guidelines are not provided, the applicable default model accounts for the relative size of each asset. In addition, adjustments are made to some of the information entered into the model to analyze industry

concentration risk. Since obligor and industry concentration limits diversify the pool and decrease loss exposure per obligor, they can strengthen a CLO from a credit standpoint (*see Obligor and Industry Concentration Risk in Evaluating Credit Risk section, and Multi-jurisdiction/Emerging Market CBO Criteria section*).

Default Timing

Once the CBO/CLO model has calculated a default frequency for a pool of loans, the default frequency will be multiplied times the initial invested amount of the certificates, resulting in the cumulative dollar amount of defaults that the transaction must withstand in the cash flow runs. The cumulative default rate should be applied across different timing vectors. The analyst will review cash flow runs with many different default curves (*see table 5, Examples of Default Scenarios, and Credit Enhancement Level: Default Estimation, in Evaluating Credit Risk section*).

Different default curves test the sufficiency of the capital structure to absorb losses and still pay timely interest and ultimate principal to the rated liabilities. The default timing scenarios will be customized for each CLO in order to capture its specific structural characteristics.

For example, changes in credit support over the life of a transaction may make certain default timing scenarios more stressful than others. If a transaction traps excess spread as additional credit enhancement, front-ended defaults may stress the transaction ability to pay rated liabilities. Alternatively, if a transaction allows early repayment of subordinated tranches, a back-ended default scenario may be more appropriate.

Recoveries

It is generally assumed that the recovery rate on defaulted commercial loans will be higher than recovery rates on defaulted corporate bonds (*see table 1, Recovery Range Assumptions, and Recovery And Loss Severity Assumptions in Evaluating Credit Risk section*). With respect to the timing of recoveries, the analyst assumes that recoveries on defaulted loans will occur over a three year work out period, with half of the recovery received after the second year and half received at the end of the third year. If the bond indenture requires that a defaulted loan be sold within less than three years after it defaults, the recovery rate on the loan will be discounted to reflect a forced sale scenario.

Interest Rate Risks

Commercial loans are carefully customized, and may have underlying interest rate bases or indices, and/or payment terms different from those of the rated debt. To mitigate such interest rate risks, various hedging and structural solutions are available, and these are explained in the Evaluating Credit Risk section. It is important to note that if a swap potentially provides credit support to a transaction, the swap

counterparty must be rated as high as the highest rated tranche on a long-term basis. A swap can be deemed to provide credit support if, for example, it continues to pay to the trust interest due but not received from delinquent or nonperforming obligors.

Bivariate Risk

Bivariate risk occurs when a loan is subject to the non-payment risk of more than one counterparty. For example, this risk occurs whenever a bank (Bank A) makes a loan and then sells a participation interest in that loan to another entity (Bank B). Bank B does not have a relationship with the obligor; there is no privity of contract between Bank B and the borrower because Bank B was not a party to the loan agreement. Bank B, therefore, must rely on Bank A to pass through any repayments from the borrower. If either the borrower or Bank A does not perform, Bank B will not receive repayment on its participation.

Sovereign risk can also subject a CLO to bivariate risk. Sovereign risk is defined as the likelihood that actions by a sovereign government might directly or indirectly affect the ability of an obligor to meet its obligations in a timely fashion. Direct foreign risk encompasses intervention by a foreign government that directly impedes the obligor's capacity to meet its financial obligations on time. Examples include the imposition of foreign exchange controls, restrictions on the cross-border transfer of funds (transfer risk), or a moratorium on the repayment of foreign debt.

The analyst is able to quantify bivariate risk in a portfolio, by using the multi-jurisdictional CBO/CLO model. The multi-jurisdictional version of the CBO/CLO model is essentially the same as the single-jurisdictional CBO/CLO model, except that the multi-jurisdictional CBO/CLO model can assess bivariate risk. Since this model incorporates multiple default probabilities with respect to each obligation, the resulting default frequency for a pool of these assets will be more conservative than the default frequency for a pool which does not contain bivariate risk, all other things equal. If a seller promises to limit bivariate risk to a certain percent of the asset pool, the single-jurisdictional CBO/CLO model may be used. Such limits will be evaluated in combination with collateral eligibility rating and diversification guidelines for bivariate risk exposures, on a case-by-case basis (*see Evaluating Credit Risk and Multi-jurisdiction/Emerging Market CBO Criteria sections*).

Data Requirements

If the seller provides a thorough, accurate and complete data set, the future performance of the asset pool can be more accurately gauged. If a data set is poor in quality or sparse, accuracy may be compromised, and the analyst will be more conservative when estimating credit enhancement. In order to facilitate the rating process, the issuer should provide the information outlined in the Rating Process, Asset Management

and Surveillance section, primary among which is the closing portfolio profile including the following characteristics:

- Number of loans and obligors;
- Concentration of each obligor, industry, and foreign obligor (if any) including country of domicile;
- Individual loan balances, amortization schedules, and tenor or term to maturity;
- Rating distributions;
- Utilization rates on revolvers;
- Description of any derivative instruments in the portfolio;
- Setoff amounts;
- Secured vs. unsecured; and
- Bivariate exposures

In addition, at least the following data for the CLO should be provided:

- Historical net prepayment rates and net draw rates on revolvers. If loan-by-loan prepayment and draw rate behavior is not available, this can be derived by comparing the differences between the aggregate revolving loan balances at the beginning of the month and the end of the month.
- Percentage of loans that have not waived the right of set off, and calculation of potential set off liability.
- Information on “secured loans”, namely, how they are defined, the type of collateral used to secure a loan, and the percentage of the loan balance secured.
- Percentage of loans that are bilateral versus syndicated.

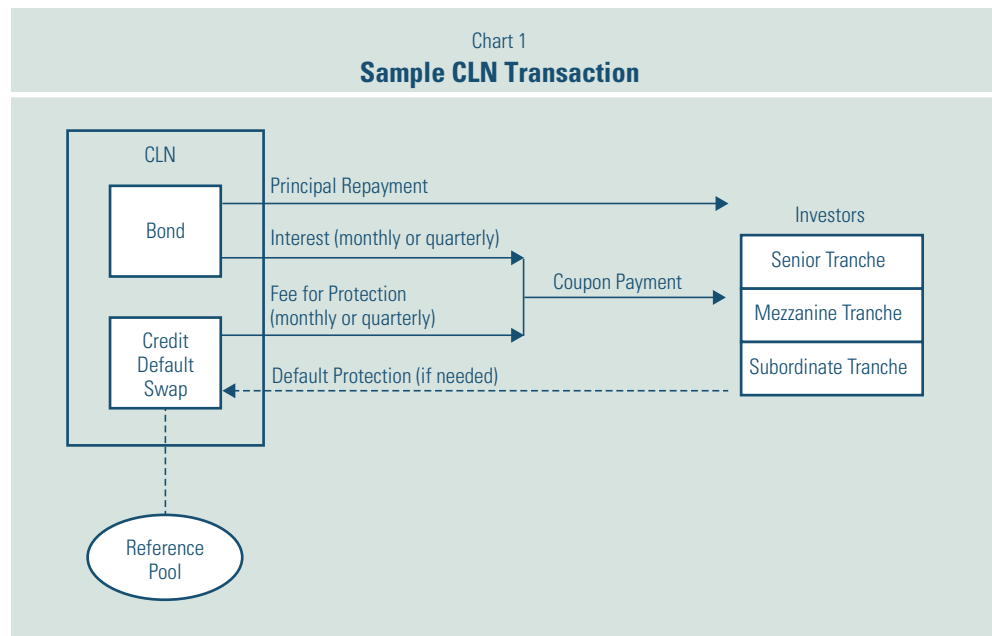
Surveillance of the transaction after it is rated calls for updates of the above information (*see Rating Process, Asset Management and Surveillance*). In addition, the servicer should run the applicable CBO/CLO default model at least on a quarterly basis and give the results to the Structured Finance Surveillance Group. This requirement may be satisfied if there has already been an addition during the quarter that was also subject to rating agency review. If a bank has correlated its own risk grade system to the ratings scale, this correlation must be refreshed annually.

Credit-Linked Notes And Synthetic CLOs

In contrast to the master trust structure, some issuers have used credit derivatives to achieve the same credit risk transfer as a traditional cash flow CLO without transferring the assets from the sponsor bank to the trust. In these structures, the sponsor sells bonds to investors and buys credit protection from them in the form of a credit default swap. The credit default swap refers back to a list of reference credits, each reference credit having a specified notional amount. If, over the life of the bonds, any referenced obligor defaults, the resulting credit loss will be born by investors, not the bank. Alternatively, the issuer transfers credit-linked note (CLN) assets, synthetic

securities that are debt obligations of the sponsor, who is contractually obligated to pass through reference obligor payments underlying the CLN. This section uses the term “credit-linked note” or “CLN” to describe the broad category of synthetic credit derivative structures.

Credit-linked structures, often referred to as “synthetic CLOs,” have collateral in the form of a credit derivative, such as a credit swap, a credit-linked note, or a combination thereof. A synthetic CLO using, for example, a CLN allows the issuer to achieve the same transfer of risk as a CBO or a CLO without the need to legally transfer the assets that created the credit exposure. The term “synthetic CLO” is somewhat limiting, in that these synthetic structures can “bundle” corporate credit exposures, not only “traditional” corporate loans. The sizing of the overcollateralization/subordination for the CLN is done using the default model. The subordinated tranches differentiate payment priorities to the debt holders. Holders of the senior debt tranche have priority over holders of any junior debt tranche. The overcollateralization amount equals the estimated level of credit losses that the structure is expected to withstand without causing a loss to the holders of the rated senior tranche. Because there is a high probability that the reference pool will experience at least one credit event, many CLNs are structured with a “deductible”, that is the first \$X of losses to the reference pool are not protected by the credit swap, but are absorbed by the sponsor.



CLNs have been structured using a master credit default swap, which references a pool of reference credits. CLNs have also been constructed out of a pool of credit linked notes each a bond and a swap by itself (*see chart 1*).

In the credit default swap the issuer, who is receiving the credit protection, pays a fee to the investor who is assuming the credit risk. In a CLN this fee takes the form of a higher coupon rate. Should the underlying reference credit experience a credit event, such as bankruptcy, then a valuation is made as to the size of the loss a holder of a reference security issued by the reference credit would have experienced. The investor would then make a payment to the issuer to compensate for the loss suffered due to the credit event. This payment takes the form of a reduction in the principal value of the bonds.

Credit events could include bankruptcy, failure to pay, restructuring of the underlying reference credit, suspension of payments by the underlying credit, and other events similar to those described by the ISDA Master documentation. To avoid a frivolous triggering of the credit swaps:

- The events must be material in size, for example \$10 million;
- The events must continue uncured for a period of time, for example 30 days; and
- The occurrence of the event must be publicly documented in either a newspaper such as the Wall Street Journal, a broker screen such as Bloomberg, or via a court filing.

Once a credit event has occurred there is the difficult task of determining the losses (net of recoveries) that would have been experienced by the holder of the reference credit. Several methods are available:

Fixed recovery. At the inception of the transaction the issuer and the investor agree that should a credit event occur the principal of the bonds will be reduced by some preset percentage of the notional value of the affected reference credit. This method may not give the issuer all of the protection that he needs since it is possible for the loss to exceed this fixed percentage.

Zero recovery. This is an extreme version of fixed recovery. If a credit event were to occur the principal of the bonds would be reduced by 100% of the notional value of the affected reference credit. This method gives the issuer the complete protection that it needs, but the assumption of zero recovery will increase the size of the subordinate tranches since they must be sized to absorb losses on all reference events without benefiting from any recovery.

Reliance on the bankruptcy court. The recovery will be the notional value of the affected reference credit times a recovery fraction. The recovery fraction is the amount *delivered* by the bankruptcy estate to holders of allowed claims divided by the aggregate amount of such allowed claims. The difficulty in this method is the amount of time the bankruptcy court may take before all of the assets have been

delivered, as well as the difficulty in determining the value of any non-cash assets so delivered.

Market polling. Market polling requires that a determination be made at the inception of the transaction as to which of the securities issued by the reference obligor will act as the reference security for determining the loss after a credit event. For example the reference security could be senior unsecured debt, subordinated debt, or some particular issuance. The loss may be calculated by polling several reference dealers as to the value of these securities and then using the highest price or an average of the prices so found. Since the issuer frequently acts as the calculation agent, the polling must be conducted in a fair and objective manner and there must exist a market for these securities.

The determination of loss may be made during the life of the CLN in which case the principal of the CLN is reduced immediately. This has the advantage to the issuer of lower interest costs over the life of the CLN. Alternatively, the determination of loss may be made at maturity. This has the advantage of allowing the maximum amount of time to accurately determine the severity of loss and the amount of recovery.

The credit rating for a CLN can normally be no higher than the rating of the sponsor. Some issuers have used the proceeds of the CLN sale to buy U.S. Treasury securities, which act as collateral for the payment of the highest tranche and in that way achieve a “AAA” rating. It is important to remember that the CLN is not being used to finance the purchase of the underlying reference credits, but only to protect the issuer against losses from the reference pool. For this reason it is not unusual for the dollar value of the issued CLNs to be smaller than the sum of the notional values of the reference credits. The issuer does not receive protection, nor are the investors liable for losses in excess of the proceeds from the CLN issuance.

Multi-jurisdiction/Emerging Markets CBO Criteria

Multi-jurisdiction CBO portfolios may include both sovereign and corporate debt obligations from various countries. In general, a transaction is considered an Emerging Markets CBO (EMCBO) if the asset portfolio has substantial (generally more than 20%) exposure to countries rated lower than ‘AA’, and to currencies that are not the currency of the rated liabilities. To date, the country exposures have predominantly been limited to emerging markets or developing nations. As a result, we will refer to multi-jurisdiction CBOs and emerging market CBOs interchangeably.

The rating methodology for emerging markets CBOs is analogous to traditional cash flow CBO/CLO transactions. Traditional CBOs/CLOs are typically collateralized exclusively by corporate bonds and loans from a single country, that is, the U.S. or other developed countries. The analysis includes the following:

- A credit analysis of the collateral portfolio;
- A structural analysis, focusing on the payment priority and the proposed capital structure;
- A cash flow analysis taking into account the portfolio’s credit quality and the transaction’s structural characteristics; and
- A legal analysis of the assets, the transfer of the assets, and the formation of the issuer.

There are, however, additional factors that need to be taken into account when analyzing emerging markets CBOs. Direct sovereign risk can adversely affect the default risk on individual obligations in the portfolio, and there may also be a significant correlation of defaults among obligors from the same country or geographic/economic regions. Additionally, the characteristics and the existing market for the emerging market debt requires modifications to the standard CBO criteria developed for industry concentrations and for recovery rates applied to defaulted obligations.

The primary credit risk in the EMCBOs portfolios emanate from the risk of default by the obligors of the underlying securities. However, another substantial

element of credit risk in EMCBOs relates to the risk that sovereign entities, where the underlying obligors reside, may:

- take actions to restrict convertibility of the local currencies into hard currencies,
- specifically, direct borrowers to default on all or some of their cross-border obligations, or
- require that all hard currencies held be converted in to local currency.

Such actions would effectively restrict the corporate entities' ability to make repayment of their debt obligations denominated in U.S. dollar or other hard currencies. Since the rated liabilities of the EMCBOs are generally denominated in U.S. dollars and other hard currencies, any such action will have an adverse impact on the credit performance of the portfolio. As a result, in transactions that involve substantial emerging market corporate exposures, the portfolio is exposed to bivariate credit risks which consist of corporate default risk and sovereign risk.

Sovereign Risk

Sovereign risk is defined as the likelihood that actions by a sovereign government might directly and/or indirectly affect the ability of an obligor to meet its obligations in a timely fashion. Direct and indirect sovereign risks vary by country, by the obligation's currency of denomination, and by obligor. Direct sovereign risk encompasses intervention by the sovereign government that directly impedes the obligor's capacity to meet its financial obligations on time. The timely servicing of foreign currency debt is typically more vulnerable to direct sovereign risks. However, direct sovereign risks may also affect local currency debt obligations because the potential for acute monetary and/or political instability creates the possibility of a government-mandated restructuring of not only its own local currency obligations, but also those of the banking system.

While higher-rated sovereigns are not expected to interfere with an issuer's ability to meet its offshore foreign currency denominated obligations, the same cannot be said for obligors domiciled in lower-rated emerging market sovereigns. The exception would be obligors that are domiciled in certain "dollarized" economies (see *Standard & Poor's CreditWeek, April 30, 1997, "Less Credit Risk For Borrowers In 'Dollarized' Economies"*).

Indirect sovereign risks are sometimes referred to as country or economic risks. These are broadly described as actions by the government that may adversely affect the economic environment in which the obligor operates and, in turn, may negatively impact the obligor's capacity to meet its obligations in a timely fashion. Country or economic risks incorporate the impact of government policies that influence the business and financial environment facing the obligor, including uncertainties related to the exchange rate, interest rates, labor market conditions, taxation, regulation,

and infrastructure. Such policies may impact an obligor's cost of debt service, the availability and costs of inputs, and the demand for its products. Accordingly, both foreign and local currency obligations are affected by indirect sovereign risks.

Local currency obligations are those that are denominated in the home currency of the obligor. For example, Mexican peso debt is a local currency obligation for a Mexican company, while U.S. dollar debt is a foreign currency obligation for that company. An obligor's foreign currency rating may be lower than its local currency rating due to direct sovereign risks.

Direct sovereign risk may also affect the debt rating assigned to a CBO. If the obligors represented in the collateral pool are all from the same country, the issuer credit rating assigned to that sovereign government will most likely limit the CBOs rating to that of the sovereigns. The impact of direct sovereign risk, however, can be substantially reduced if the obligors hail from many geographically diverse countries.

For obligations of a sovereign government, which figure prominently in many emerging markets CBOs, the sovereign's foreign currency issuer credit rating should be used to gauge default risk if the obligation in the collateral pool is denominated in a foreign currency (for example, a U.S. dollar bond of the Brazilian government). The sovereign's local currency rating would be used for a local currency obligation. When the pool consists exclusively of sovereign debt from various countries, the sovereign issuer currency ratings can be applied to the "traditional" single-jurisdictional CBO/ CLO model. There is generally no incremental bivariate risk component, and therefore no additional adjustments are required.

For an emerging market corporate obligor, the default risk of its foreign currency debt should combine the company's independent probability of default (as indicated by the company's local currency issuer credit rating) with the incremental risks of direct sovereign intervention. The latter can be estimated as the risk differential between the sovereign's local and foreign currency ratings. As one would expect, this risk is more evident in low investment-grade and speculative-grade countries. Consequently, an emerging markets corporate portfolio will usually have higher estimated losses and, therefore, require greater credit enhancement than a similarly rated portfolio of U.S. obligors.

In order to factor the incremental effects of sovereign risk to the credit performance of an emerging markets CBO portfolio, analysts use the multi-jurisdictional CBO/CLO model. This model is an enhanced version of the "traditional" single-jurisdictional CBO/CLO model, taking into account both sovereign risk and concentrations. As a result, the multi-jurisdictional model requires more portfolio data. Specifically, the input file should specify the countries that the portfolio is exposed to and the foreign and local currency ratings of those countries. Execution and application of this model is similar to the traditional single-jurisdictional CBO/CLO default model. The

single-jurisdictional model is used for single jurisdiction CBOs and CLOs that do not have significant bivariate risk exposure, as explained below.

To calculate the default rate of an EMCBO portfolio, the multi-jurisdictional CBO/CLO model requires the following information:

- Number of obligations/number of data lines to be read (each installment of an amortizing loan is treated as a separate obligation of the same issuer),
- Date of determination or closing date,
- Rating requested on the liabilities,
- Country in whose currency the rated liabilities will be/are issued,
- Obligor concentration for each obligor,
- Maturity date of each obligation,
- Standard & Poor's Foreign Currency Issuer Credit Rating of each obligor,
- Standard & Poor's Local Currency Issuer Credit Rating of each obligor,
- Sovereign identification,
- Standard & Poor's Foreign Currency Issuer Credit Rating of the country of each issuer's domicile, and
- Standard & Poor's Local Currency Issuer Credit Rating of the country of each issuer's domicile.

This information is entered into the computer program for each obligation in the portfolio. The model then calculates an expected default rate based on historical default data (*see default model in Evaluating Credit Risk section*).

Bivariate credit risk refers to the possibility that credit events relating to one entity may adversely impact the ability of another entity to service its debt. In terms of the emerging markets CBO, bivariate credit risk refers primarily to the default probability of a corporate bond issued by a corporate entity domiciled in an emerging markets country, and is affected by:

- the likelihood of a default by the corporation, and
- the likelihood of a default that could be caused by the actions of the sovereign (for example, by imposing exchange controls).

Similarly, bivariate credit risk is also present in credit-linked swaps, synthetic securities, loan participations, and securities lending, etc. In the case of credit linked notes, for example, the transaction is generally exposed to the credit risk of the referenced obligor as well as credit linked swap counterparty. Bivariate risk, however, is not present in an emerging market CBO whose liabilities are collateralized solely by obligations issued by sovereigns, since the only risk of default is that of the sovereigns.

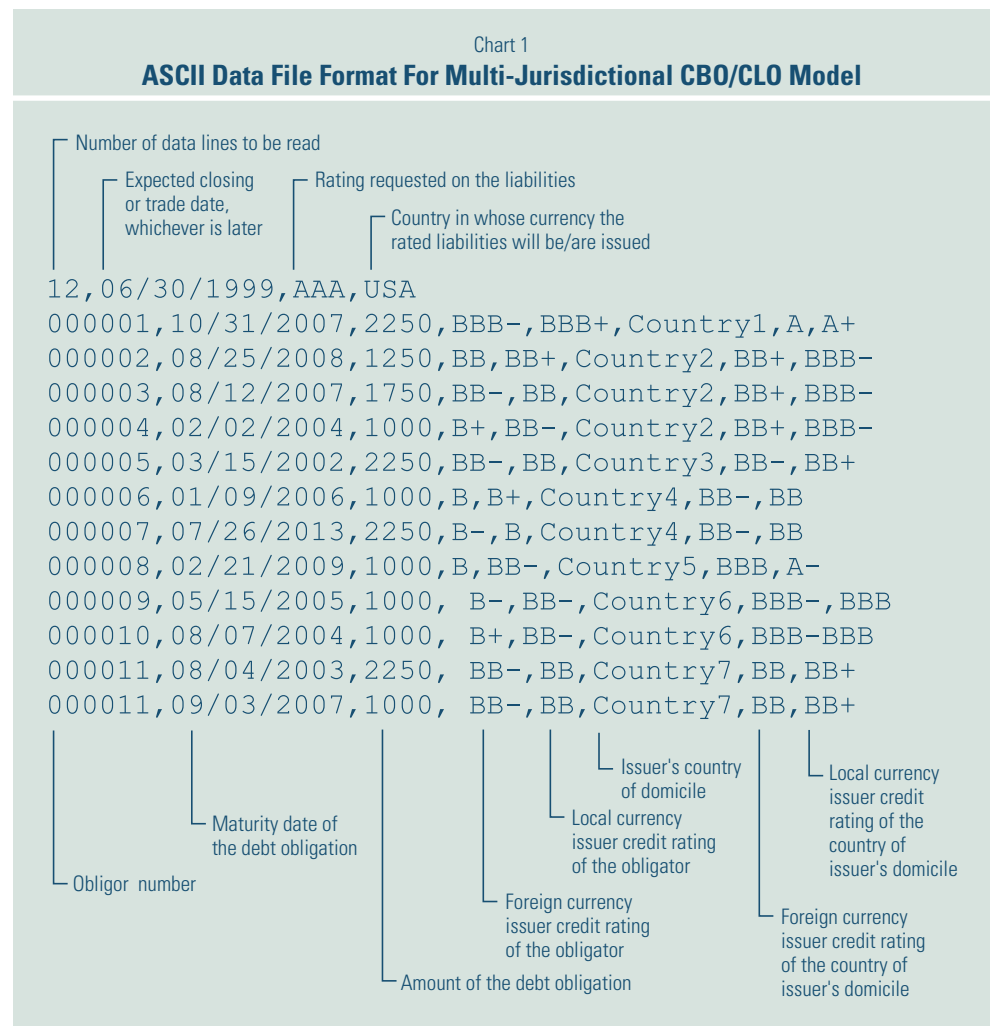
In any transaction that has substantial total bivariate risk—including the exposures mentioned above and corporate obligations from obligors in countries rated lower than the seniormost tranche—the multi-jurisdictional CBO/CLO model is used for estimating default risk (*see Evaluating Credit Risk and Master Trust And Synthetic*

CLO Structures sections). Chart 1 illustrates an example of the input file for the multi-jurisdictional CBO/CLO model.

Concentration Risks

Country Concentration

In emerging market countries, where corporate obligors are exposed to direct sovereign risk, these risks can be compounded if the CBO portfolio contains a concentration of obligors from the same country. Economic difficulties encountered during the past few years by countries such as Brazil, Russia, Thailand, Indonesia, Korea, and Mexico, clearly illustrated the correlation of credit risk among obligors from the same country or region.



Some national risk correlation exists among large mature economies, such as the U.S., Japan and Germany, but it is much more pronounced in developing countries. Thus, a CBO requires more credit enhancement when the portfolio contains certain country concentrations in the emerging markets. The multi-jurisdictional CBO/CLO model takes country concentration into account when calculating a portfolio's potential loss or default rate.

Concentrations in 'AA' or higher countries are less of a concern because direct sovereign risk in those countries is much less meaningful.

Adjustment For Regional Concentration

Based on the high degree of credit correlation experience between emerging market countries, emerging market regions have been classified into 13 categories (*see table 1 for Emerging Markets Regions*). Any emerging market cash flow CBO portfolio that is exposed to less than 15% in any of these categories is considered fairly diversified. Adjustment for the additional risks posed by regional concentration is factored by adjusting the credit assigned to each country in that concentrated region as if it had a lower rating, that is, higher default risk.

The higher default risk posed by higher regional concentrations can be accounted for as follows (*see table 2*):

- If concentration in a particular emerging markets region equals or exceeds 15% of the pool but is less than 25%, adjustment for the additional risk will consist of

Table 1 Emerging Markets Regions	
<ul style="list-style-type: none"> ■ Latin America & Caribbean ■ Chile & Columbia ■ Southeast Asia & Korea ■ India & Pakistan ■ Sri Lanka, Bangladesh & Nepal ■ China, Hong Kong, Taiwan ■ Russia & CIS 	<ul style="list-style-type: none"> ■ Eastern & Central Europe, Turkey ■ Gulf States ■ North Africa & Middle East ■ Sub-Saharan Africa ■ South Africa ■ Pacific Islands

Table 2 Adjustment For Regional Concentration Risk In Emerging Markets	
No ratings adjustment	less than 15% in any one region
1 notch downgrade	15% to less than 25% in any one region
2 notches downgrade	25% to less than 30% in any one region
3 notches downgrade	30% to less than 35% in any one region
Case by case ratings adjustment	35% or more in any one region

assuming a rating level one notch lower than the actual foreign currency rating for each sovereign within that region.

- If concentration in a particular emerging markets region is 25% or more but less than 30%, adjustment for the additional risk will consist of assuming a rating level two notches lower than the actual foreign currency rating for each sovereign within that region.
- If the concentrations in a particular emerging markets region is 30% or more but less than 35%, adjustment for the additional risk will consist of assuming a rating level three notch notches, or one full rating category, lower than the actual foreign currency rating for each sovereign within that industry.
- Transactions that involve a concentration in one emerging markets region of 35% or more are reviewed on a case-by-case basis. In these cases, the additional risk is analyzed based on a number of factors including the number of obligors and industry diversity within the region.

It should be noted, however, that in portfolios to which the multi-jurisdictional model applies, any rating adjustment for excess regional concentration should only be made to the sovereign foreign currency ratings. No adjustment is necessary to the ratings of the corporate obligors unless unmitigated industry concentration exists (as described below). If the sovereign obligations are also included in a region with excess concentration, the ratings would be adjusted just like the ratings of the corporate obligations. It should also be noted that any sovereign or corporate obligor from a country rated 'AA' or higher may be excluded from the calculation of a portfolio's regional concentration.

Adjustment For Industry Concentration

Emerging markets CBO portfolios are also sensitive to the risks of regional and industry concentration. Economic downturns can affect a large number of corporate and sovereign obligors within the same region as well as corporate obligors within the same industry.

In a U.S. domestic CBO or CLO, if any industry accounts for more than 8% of the portfolio, a one-notch rating downgrade is assumed for all obligors in that industry. If the industry concentration exceeds 12%, a three-notch downgrade is assumed. Industry exposures of more than 16% are analyzed on a case-by-case basis (*see table 4, "Suggested Industry Classification" in the Evaluating Credit Risk section*).

In a multicountry CBO or CLO portfolio, these guidelines (which are applied to U.S. obligors) may be modified to recognize that some industries exhibit different trends from country to country. For example, the credit risk of retailers in Indonesia is not correlated with the credit risk of retailers in Poland. In general, industry concentrations are measured regionally and are assumed to be adequately sized within the methodology for penalizing excess regional concentration. Industry concentration

will be measured globally, however, for industries that are globally correlated such as energy exploration and production and metal mining that are driven by global supply and demand.

Recovery And Loss Severity Assumptions

Recovery assumptions for defaulted emerging markets assets are (*see table 3*):

- 25% for defaulted sovereign debt, and
- 15% for defaulted senior unsecured corporate debt.

Due to the peculiar nature of emerging markets and potential obstacles to the recoveries of defaulted assets, no credit is given to the position of the debt in the obligor's capital structure. These recovery rates are applicable to fairly diversified emerging markets bond portfolios. Recovery rates applicable to portfolios that exhibit high regional concentration or consist predominantly of loan obligations will be assigned on a case by case basis. As in traditional single jurisdiction CBOs, the cash flow analysis assumes that recoveries on defaulted assets will be realized one year after default through secondary market liquidation of bonds. For the less liquid loans, recovery is assumed to occur after a protracted workout period. Therefore, in cases where the analyst has reason to believe that the secondary market for an asset (such as emerging markets bank loans) is less liquid than for emerging markets bonds, the recovery timing may be extended beyond one year.

Generally, assumed recovery levels for defaulted emerging markets assets are more conservative than they are for U.S. obligors, reflecting both a record of lower ultimate recovery and less assured liquidity for emerging markets obligations. As in the case of U.S. domestic CBOs and CLOs, recoveries may be assumed to be lower if the terms of the transaction require sale of defaulted assets within a period shorter than one year after default.

Depending on the terms of the transaction, the analyst may employ an appropriate discount factor for recovery rates in cases where the asset manager may be required to sell assets within a short time after default. Further modification, if warranted, to the ratings methodology employed for emerging markets CBOs and CLOs will continue to be made in the light of newly available market information, continuously evolving nature of the transaction structures and dynamic portfolio characteristics.

	% of par	Timing of recovery
Sovereign Obligations	25	one year after default
Corporate Obligations	15	one year after default

Appendix A

Mapping Bank Loan Scoring Models To Standard & Poor's Ratings In CBO/CLO Transactions

The author of this research report is Francis Parisi, director, Structured Finance Research Group. The report was previously published in November 1998.

Recently, there has been heightened activity in the CBO/CLO market. As a result of this growth in activity, an increasing number of bank loan scoring systems must be mapped into Standard & Poor's ratings. To date, this has been achieved by fitting regression models to the scored loan data in order to produce an estimate of the mapping, and with that a quantification of the associated errors. While fundamentally sound, this method becomes less effective with pools that are not well distributed.

This research report presents an alternative method of mapping bank scores. This new approach improves upon the accuracy of this mapping and adjusts for sample size and distribution. It is based on sampling theory, and estimates the true mean of the credit score being mapped. It makes use of all the information available from the data, and reduces the arbitrariness often encountered in the present regression method.

Linear Regression Approach To Mapping Scores To Ratings

To date, more than 10 bank loan scoring systems have been mapped to Standard & Poor's ratings. The data sample consists of a set of mutually rated loans. First, Standard & Poor's ratings are converted to default rates from its annual corporate default study. The default rates are regressed against the bank loan scores. Using the

regression, an estimate of the default rate and a 95% prediction interval is estimated. Finally, the upper and lower bounds of the prediction interval are converted back into Standard & Poor's ratings. However, this approach has three weaknesses.

- A characteristic of every system is that there is greater variability of Standard & Poor's ratings at the lower bank scores than at the higher bank scores, which is built into the fitted model. The result is that the estimated ratings for the higher (better) scores have greater variance than that actually observed. This results in wide confidence bands for these scores.
- The rating assigned for CBO modeling purposes is selected from the range estimated from the regression.
- No explicit consideration is made for the sample size with ratings within scores, and the sample size with ratings overall.

The first weakness sometimes leads to conservative and unsubstantiated results. For example, the rating corresponding to the upper bound of the default rate estimate is lower than the lowest observed rating in the data set for a given score.

The second weakness could lead to errors in assessing the risk. For example, suppose there are 20 loans at a given score with ratings and only five without ratings. We would assume adverse selection and pick a lower rating for the five loans. What if there were five with ratings and 20 without ratings? The average result from the five would be used to infer something about the 20 on the basis that the 20 will behave like a portfolio and tend to average out. However, in the first case the sample of 20 gives a better estimate than the second sample of five. In the first case, there is less chance of being wrong, and if we are wrong we have made an error on five loans. In the second case, there is a greater chance of some error in the estimate, and applying a less reliable estimate to a larger number of loans. Therefore, there is a greater risk of being wrong in the estimate and applying it to more loans.

The third weakness is that no explicit adjustment is made for the Standard & Poor's rated and unrated proportions, except that the overall sample size determines the number of standard errors for the confidence interval.

Sampling Approach To Mapping Scores

An alternative method to the regression approach is one based on sampling theory. Using this method, given a sample of loans with scores and ratings, inferences are made about the population mean. In this case, the population is the overall class of loans at a given score. This method is simpler conceptually and more intuitive to someone who is not a statistician. Additionally, an adjustment factor is used to account for the rated and unrated portions.

The first step of this sampling approach is to assign default rates to the scored loans as in the regression approach. Then we compute the mean default rate and

variance for each score. Finally we estimate the population mean by adding a number of standard errors of the mean to the sample mean, to give us a one-tailed 95% confidence interval. The risk is “one-sided” in that we are not concerned about overstating the default rate estimate, as this would give a more conservative mapping.

The one-tailed 95% confidence interval for an estimate of the population mean \bar{P} is:

$$\bar{p} + t \sqrt{\frac{\hat{\sigma}^2}{n}}$$

where:

- \bar{p} is the sample mean default rate;
- t is the number of standard errors of the mean, which is a function of the sample size n , and the level of significance; and
- $\hat{\sigma}^2$ is the sample variance.

The square root of the sample variance divided by the sample size is the standard error of the sample mean.

While this gives an estimate based on the sample with Standard & Poor's ratings, the estimate is adjusted for the proportion of unrated loans at a given score and the proportion of unrated loans in the whole portfolio to be rated. Therefore, we introduce the Standard & Poor's adjustment factor γ , which is defined as:

$$\gamma = \sqrt{\frac{E_u}{E_r} + \frac{n_u}{n_r} \frac{E_u}{E_r} + \frac{N_u}{N_r} \frac{E_u}{E_r}}$$

and we have as the estimate:

$$\bar{p} + \gamma t \sqrt{\frac{\hat{\sigma}^2}{n_r}}$$

In the adjustment factor, n_u is the number of unrated loans at a given score and n_r is the total number of loans at a given score. Similarly, N_u is the number of unrated loans in the portfolio, and N_r is the total number of loans in the portfolio. In the estimate, n_r is the number of rated loans at a given score.

In the adjustment factor, the first term under the square root is increasing when the number of unrated loans within a score increases, therefore, penalizing the issuer because an inference must be made for a larger number of loans from a given sample size. Similarly, the second term increases as the proportion of unrated loans in the

whole portfolio increases. We take the square root of the product as a geometric average of the two factors.

Results Of Using Sampling Approach To Mapping Scores

Using this method yields several general results. For large samples with ratings, we have greater confidence in the estimate and need to add fewer standard errors to our sample mean. Conversely, smaller samples will require more standard errors to achieve the same level of confidence.

The “within score” and portfolio factors add comfort in several ways. There may be a large number of rated loans within a score, but if overall (at the portfolio level) we have a small proportion of loans with ratings, we adjust for the overall portfolio uncertainty. Conversely, we may know a lot about the overall portfolio, but have a few rated loans within a given score, so again the two factors balance each other. At the extremes, we know a lot (little) about the portfolio and within a given score, therefore, we have greater (less) certainty in our estimate. For example, if 30% of the loans are unrated at a given score, and overall 40% of the loans in the portfolio are unrated, the adjustment factor is $\sqrt{1.3 \times 1.4} = 1.35$. Thus, the number of standard errors is increased by a factor of 1.35 for that score’s mapping.

Conclusions

In almost all of the mappings done to date using the regression method, the results have generally been conservative. With the sampling method, the mappings are more realistic and in line with the market’s expectations. Standard & Poor’s believes this revised approach will facilitate the issuance of CBOs and CLOs while providing an appropriate level of credit support to the transactions it rates.

Appendix B

Structured Finance Interest Rate And Currency Swap Criteria

This article was previously published in Standard & Poor's "Structured Finance" in January, 1999.

New interest rate and currency swap criteria allows 'A-1' and 'A' rated counterparties with collateral to participate in structured financings. The criteria combines a blend of market risk protection, economic incentives, counterparty credit strength, and the ability to substitute. Together these factors combine to provide the credit strength necessary to maintain the quality associated with the highest ratings.

Under the new criteria:

- 'A-1+' rated entities can now provide swaps in 'AAA' rated transactions if they agree to collateralize or replace upon downgrade to 'A-1'.
- 'A-/A-1' rated entities together with a pledge of collateral can also participate in 'AAA' rated transactions subject to the conditions below.
- Basis risk swaps, caps, and floors are also eligible in this expanded criteria. Caps and floors collateral levels will need to be developed and are not available at this time.
- Total return swaps do not qualify for this criteria.

Limited To ISDA-Recognized Currencies

The new criteria is limited to those currencies recognized by the International Swap Dealers Association (ISDA). These include: Australian dollars, Belgian francs, British pounds sterling, Canadian dollars, Danish kroner, Deutschemarks, Dutch guilder, the Euro, European Currency Units, French francs, Hong Kong dollars, Italian lire,

Japanese yen, New Zealand dollars, Spanish pesetas, Swedish kronor, Swiss francs, and U.S. dollars.

For interest rate and currency swaps in these currencies, 'A-1+' rated counterparties do not have to post collateral. The new collateral levels will equal greater of zero or the mark to market of the swap plus the amount equal to the appropriate value as a percentage of the notional value of the swap. All collateral should be pledged to the trustee or other independent third party acting as agent for investors. An enforceability opinion indicating that securityholders have full rights in the collateral notwithstanding the insolvency of the swap counterparty should be delivered at closing.

Table 1

Volatility Buffer For AAA Rated Transactions In Group 1 Currencies*

Counterparty 10 years (%)	Maturities up to 5 years (%)	Maturities up to 10 years (%)	Maturities more than 10 years (%)
A+	0.6	1.05	1.5
A	0.9	1.10	1.9
A- [¶]	1.2	2.25	4.5

*Group 1 currencies are: Belgian francs, Deutschemarks, Dutch guilders, Euro, European Currency Units, French francs, Japanese yen, Swiss francs, and U.S. dollars. ¶The 'A-' category is limited to 'A-' rated credits or 'A-/A-1' rated credits. If an 'A-' counterparty has an 'A-2' commercial paper rating, it must find an eligible replacement.

Table 2

Volatility Buffer For AAA Rated Transactions In Group 2 Currencies*

Counterparty rating	Maturities up to 5 years (%)	Maturities up to 10 years (%)	Maturities more than 10 years (%)
A+	1.05	1.75	3.0
A	1.35	2.45	4.5
A- [¶]	1.5	3.15	6.0

*Group 2 currencies are: Australian dollars, British pounds sterling, Canadian dollars, Danish kroner, New Zealand dollars, and Swedish kronor. ¶The 'A-' category is limited to 'A-' rated credits or 'A-/A-1' rated credits. If an 'A-' counterparty has an 'A-2' commercial paper rating, it must find an eligible replacement.

Table 3

Volatility Buffer For AAA Rated Transactions In Group 3 Currencies*

Counterparty rating	Maturities up to 5 years (%)	Maturities up to 10 years (%)	Maturities more than 10 years (%)
A+	1.5	2.45	4.5
A	1.8	3.15	6.0
A- [¶]	2.1	3.85	7.5

Group 3 currencies are: Hong Kong dollars, Italian lire, and Spanish pesetas. ¶The 'A-' category is limited to 'A-' rated credits or 'A-/A-1' rated credits. If an 'A-' counterparty has an 'A-2' commercial paper rating, it must find an eligible replacement.

Chart 1

Examples Of Currency Swap Calculations

Example 1

**Fixed To Floating U.S. Dollars Swap On
A Seven-Year Credit Card Transaction:**

Counterparty rating: 'A+'
Notional amount = \$100,000,000

MTM = The counterparty is in the money for \$500,000.
VB = 1.05%

$$\begin{aligned} \text{MTM} + \text{VB} &= \text{CR} \\ -\$500,000 + (100,000,000 \times 0.0105) \\ -\$500,000 + 1,050,000 \\ &= \$550,000 \end{aligned}$$

Example 2

**Fixed U.S. Dollars To Floating French Francs Swap On
A Four-Year Auto Transaction:**

Counterparty rating: 'A'
Notional amount = \$100,000,000

MTM = The counterparty is out of the money for \$1,000,000.
VB = 0.9%

$$\begin{aligned} \text{MTM} + \text{VB} &= \text{CR} \\ \text{CR} \times \text{CM1} \times \text{CM2} &= \text{CCR} \\ \$1,000,000 + (1,000,000,000 \times 0.009) \\ \$1,000,000 + 900,000 \\ &= \$1,900,000 \\ \text{CR} \times \text{CM1} \times \text{CM2} &= \text{CCR} \\ \$1,900,000 \times 1.04 \times 1 \\ &= \$1,976,000 \end{aligned}$$

Example 3

**Fixed Japanese Yen To Floating Canadian Dollars Swap On
A 30-Year Mortgage Transaction:**

Counterparty rating: 'A\A-1'
Notional amount = C\$100,000,000

MTM = The counterparty is in the money for \$750,000.
VB = 1.35%

$$\begin{aligned} \text{MTM} + \text{VB} &= \text{CR} \\ \text{CR} \times \text{CM1} \times \text{CM2} &= \text{CCR} \\ -\text{C}\$750,000 + (\text{C}\$100,000,000 \times \text{greater of } 0.06 \text{ or } 0.045) \\ -\text{C}\$750,000 + (100,000,000 \times 0.06) \\ -\text{C}\$750,000 + 6,000,000 \\ &= \text{C}\$5,250,000 \\ \text{CR} \times \text{CM1} \times \text{CM2} &= \text{CCR} \\ \text{C}\$5,250,000 \times 1.04 \times 1.02 \\ &= \text{C}\$5,569,200 \end{aligned}$$

MTM—Mark-to-market VB—Volatility buffer CR—Collateral requirement for interest rate swaps
CM1—Currency multiplier 1 CM2—Currency multiplier 2 CCR—Collateral requirement for currency swaps.

Entities whose ratings fall below 'A-1' commercial paper or 'A-' long-term will have to be substituted for.

Calculating Swap Collateral

The collateral formula for interest rate (other than basis risk) swaps equals the greater of:

1. $MTM + VB = CR$

2. 0

The collateral formula for basis risk swaps equals the greater of:

1. $MTM + (VB \times 0.1) = BR\text{CR}$

2. 0

Currency swaps will be calculated as:

$$CR \times CM1 \times CM2 = CCR$$

Where:

- MTM = Mark-to-market of the swap.
- VB = Volatility buffer that equals the amount of any given currency derived by taking the appropriate percentage of the swap's notional balance (*see tables 1, 2, and 3*). If two currencies are in different groups, use the higher of the two buffers.
- CR = Collateral requirement for interest rate swaps.
- BR\text{CR} = Basis risk swap collateral requirement
- CM1 = Currency multiplier 1
- CM2 = Currency multiplier 2
- CCR = Collateral requirement for currency swaps
- Basis swap = Single currency, floating-to-floating, basis risk swaps.

For currency swaps, the derived collateral requirement needs to be multiplied by a factor for the appropriate currency (*see table 1, Appendix C*).

The accompanying chart demonstrates some sample currency swap calculations.

In the event of a downgrade of the swap counterparty, a new required amount of collateral must be calculated and posted within 30 days in order for the rating of the transaction to remain unaffected. Guarantees or third-party credit support may be substituted for collateral at any time.

The collateral should be segregated and pledged under normal ISDA requirements and in the possession of the trustee or some other third party.

Collateral is to be invested in eligible investments (other than debt of the counterparty) in the currency of the rated securities and should be deposited in an account in the name of the trustee or issuer. The funds should be invested with an eligible institution other than the swap provider collateralizing its obligations. If the funds do not mature before the next interest payment due on the rated securities, additional

collateral may be required. The costs associated with posting the collateral should be borne by the swap provider.

Swap providers will have to mark the swap to market and post collateral on a weekly basis, with a cure period of three days. The mark-to-market valuation should reflect the higher of two bids from counterparties that would be eligible and willing to provide the swap in the absence of the current provider. Annual audits should be amended to specifically verify a sample of swap calculations and collateral postings.

First loss classes should take any loss arising to senior classes because of the failure of a swap counterparty. Transactions will need to explicitly state that all subordinated cash flows will be diverted to make up any shortfalls. Claims resulting from insufficient swap payments, a counterparty default, or insufficient collateral necessary to find a replacement counterparty will be the obligation of the first loss class. Swap collateral terms may be individually tailored to a transaction, provided that they have been reviewed and approved by Standard & Poor's derivative group.

Appendix C

‘AAAt’ Swaps Approved In Structured Finance Transactions

This article was previously published in Standard & Poor’s “Structured Finance” in January, 1999.

As a result of the growing and increasingly liquid market for swaps, Standard & Poor’s will rate structured finance transactions with swaps from ‘AAAt’ rated derivative product companies. The derivative product company will have to post additional collateral with the trustee to ensure sufficient funds are available to replace the swap during market swings.

Terminating derivative product companies are rated based on their ability to pay the mark to market at termination. Structured financings, however, need additional protection against movement in swap values between termination and replacement.

Volatility buffers for ‘AAA’ rated transactions are:

- Maturities up to five years: 0.60%
- Maturities up to 10 years: 1.05%
- Maturities more than 10 years: 1.50%

Collateral will be expressed as a percentage of the notional amount.

These amounts were derived from data and research pertaining to interest rate and currency fluctuations in the last 7-10 years. They will be updated when currency regimes change.

Single currency, floating-to-floating, basis risk swaps will require only 10% of the above amounts. For currency swaps, the volatility buffer needs to be multiplied by a factor for the appropriate currency (*see table 1*).

Calculating Swap Collateral

Currency swaps will be calculated as:

$$VB \times CM1 \times CM2 = CCR$$

Where:

- VB = Volatility buffer that equals the amount of any given currency derived by taking the appropriate percentage of the swap's notional balance.
- CM1 = Currency multiplier 1.
- CM2 = Currency multiplier 2.
- CCR = Collateral requirement for currency swaps.

The collateral should be segregated and pledged under normal ISDA requirements and in the possession of the trustee or some other third party.

Collateral is to be invested in eligible investments (other than debt of the counterparty) in the currency of the rated securities and held in the name of the trustee or issuer. The funds should be invested with an eligible institution other than the swap provider collateralizing its obligations. If the funds do not mature before the next interest payment due on the rated securities, additional collateral may be required. The costs associated with posting the collateral should be borne by the swap provider.

U.S. dollars	1.000
Canadian dollars	1.020
New Zealand dollars	1.020
Australian dollars	1.030
Hong Kong dollars	1.030
Belgian francs	1.040
British pounds sterling	1.040
Danish kroner	1.040
Dutch guilders	1.040
European Currency Units	1.040
Euro	1.040
French francs	1.040
German marks	1.040
Japanese yen	1.040
Italian lire	1.045
Spanish pesetas	1.045
Swedish kronor	1.045
Swiss francs	1.045

Derivative product companies will have to post collateral on a weekly basis, with a cure period of three days. Annual audits should be amended to specifically verify a sample of swap calculations and collateral postings. All swaps will be reviewed to ensure that the swap is consistent with the overall risk profile of the derivative product company. Guarantees or third-party credit support may be substituted for collateral at any time.

First loss classes should take any loss arising to senior classes because of the failure of a swap counterparty. Transactions will need to explicitly state that all subordinated cash flows will be diverted to make up any shortfalls. Claims resulting from insufficient swap payments, a counterparty default, or insufficient collateral necessary to find a replacement counterparty will be the obligation of the first loss class.

Appendix D

Swap Agreement Criteria For CBO/CLO Transactions

This appendix substantively restates the swap criteria for structured finance transactions that were originally published in Standard & Poor's 1995 publication *Global Synthetic Securities Criteria*. Structured finance transactions frequently include swap agreements that transform the cash flow characteristics of an issuing special-purpose entity's (SPE's) assets into payment terms desired by investors. The swap agreement criteria for a particular issue depends on the applicable rating approach. There are three rating approaches that reflect the differing roles of swap agreements in transaction structures: the swap-dependent approach, the asset-independent approach, and the swap-independent approach.

A majority of the swap agreements reviewed by Standard & Poor's are contracted under the International Swap Dealers Association Inc. (ISDA) agreement forms. The ISDA documentation for a swap transaction consists of a swap master agreement and a schedule and confirmation that modify the terms of the master agreement. The schedule and confirmation should modify the master agreement to reflect Standard & Poor's swap agreement criteria based on the applicable rating approach.

This appendix discusses specific sections of the 1992 ISDA Multicurrency-Cross Border Master Agreement as it pertains to Standard & Poor's swap agreement criteria. This "1992 agreement" updates the 1987 ISDA form documents. The discussions of criteria that follow are cross-referenced to the appropriate section of the 1992 agreement. Separate comments are provided when the "1987 agreement" treats a topic differently. Although the ISDA form agreements are most frequently used to document a swap transaction, other forms of agreements may be used provided that the comparable sections incorporate Standard & Poor's swap agreement criteria.

Rating Approaches

In both the swap-dependent rating approach and the asset-independent rating approach, the issuer credit rating of the swap counterparty, or its guarantor, is a supporting

rating and may be the weak-link rating if its rating is the lowest of all the supporting ratings in the transaction. In addition to evaluating the creditworthiness of the swap counterparty or its guarantor, the swap-dependent approach reflects the creditworthiness of the issuing SPE's other assets. The asset-independent approach reflects only the creditworthiness of the swap counterparty or its guarantor.

Swap-Dependent Approach

When the issuing SPE's other assets also are a supporting rating, the issue credit rating addresses the credit risk of the swap counterparty, the other assets, and the transaction's structure. Each element affects the issuing SPE's ability to provide transformed cash flows to holders of the rated securities in a full and timely manner.

In many of these transactions, as well as in most asset- and mortgage-backed issues, the counterparty does not expect to take the credit risk of the issuing SPE's other assets. Therefore, the counterparty desires a swap contract that deviates as little as possible from the market standard. Investors in rated securities, however, also need reasonable assurance that the swap counterparty will not cause an early termination of the swap. An early termination of the swap may result in a termination payment by the issuing SPE to the swap counterparty out of funds that otherwise would be payable to the holders of the rated securities. A list of acceptable default and termination events that would enable the swap counterparty to terminate the swap agreement in securities in which the swap counterparty and the issuing SPE's other assets are supporting ratings is included here (*see box*).

Analysts will assume that the issuing SPE would not have an incentive, or the ability, to terminate the swap agreement absent a default on its other assets, and then only if it is in the best interests of investors and is generally subject to their vote. The criteria for securities in which the swap counterparty and the issuing SPE's other assets are supporting ratings, as the criteria apply to specific sections of the 1992 agreement,

Events Of Default And Termination Events

The following are acceptable default and termination events that would enable the swap counterparty to terminate the swap agreement for rated securities in which the swap counterparty and the issuing SPE's other assets are supporting ratings:

Events of Default

- Failure to pay or deliver [Section 5(a)(i)]
- Bankruptcy [Section 5(a)(vii)]
- Merger without assumption [Section 5(a)(viii)]

Termination Events

- Illegality [Section 5(b)(i)]

are discussed below. These criteria are applicable to synthetic securities and asset-and mortgage-backed transactions. The provisions of the 1992 agreement that are not referenced below are acceptable provided that they are not modified.

ISDA Cross-References

Section 2. Payments.

Netting. The 1992 agreement allows for the party that owes a higher swap payment to the other party to make a net payment to the other party. It does not apply to swapped currency payments. The parties should elect that netting across different series will not apply to vehicles that can issue multiple classes or series of securities and use the same master agreement, to avoid netting across different classes or series. Further, the swap agreement for each class or series must be written as a separate agreement. For a given series, payment netting for that series is acceptable. The parties also should elect that netting will not apply when there are timing gaps between swap payments by the counterparty and the issuing SPE, to avoid the potential for confusion. These gaps generally occur in structures that issue rated securities that pay interest or principal more or less frequently than does the issuing SPE's other assets.

Deduction or Withholding for Tax. The 1992 agreement also requires a party to gross up its swap payment if an indemnifiable tax is imposed on the payment. As in the previous criteria, this definition should not be limited to an indemnifiable tax but should include any withholding taxes. Otherwise, Standard & Poor's treatment of withholding taxes on swap payments is generally broader than it has been in the past.

If a withholding tax already applies to the swap payments to be made by either the swap counterparty or the issuing SPE at the time the transaction closes, Standard & Poor's will continue to require the swap counterparty to accept swap payments from the issuing SPE that are net of tax and make payments to the issuing SPE that are grossed up for tax. If a third party, such as a guarantor or insurer, guarantees the swap counterparty's obligations under the swap agreement, the terms of the guarantee also should provide that swap payments are grossed up for tax.

If no withholding tax currently applies to swap payments, analysts will, in general, require both (i) an issuing SPE swap tax opinion, stating that, under current law, no such tax applies and that there is no pending legislation to create such a tax and (ii) a swap counterparty/guarantor tax opinion to the same effect. This requirement regarding pending legislation arises from a concern that an issue could be adversely affected shortly after its sale date as a result of pending laws that could have been discovered before issuance. Standard & Poor's ratings do not address change in law risk and its criteria recognize that it is up to the parties to fashion the remedies for the eventual imposition of taxes.

A variety of remedies for this are acceptable provided that the risks are properly disclosed to investors. Therefore, the swap counterparty can select one of the following options before a rating is assigned to a transaction to address future imposition of, or an increase in, withholding taxes on swap payments made by itself or the issuing SPE:

- The swap counterparty can gross up payments to the issuing SPE to take into account withholding tax and accept payments from the issuing SPE grossed up for withholding tax. In most cases, however, the issuing SPE will not have the funds to gross up its swap payments to the counterparty. Under this option, if the issuing SPE is able to make grossed-up payments, the swap counterparty will not have the right to terminate the swap if a withholding tax is imposed unless it makes a termination payment to the issuing SPE equal to the principal and accrued interest on outstanding rated securities minus proceeds from the sale or liquidation of the issuing SPE's other assets. In this event, the formula for calculating the termination payment (*see 6(e)*) will have to be amended accordingly. If the counterparty knows that the issuing SPE will not be able to make grossed-up payments, as is ordinarily the case for an issuing SPE, one of the remaining options should be selected.
- The swap counterparty can gross up payments made to the issuing SPE to take into account withholding tax and accept payments from the issuing SPE net of tax.
- The swap counterparty can make payments to the issuing SPE net of withholding tax and accept payments from the issuing SPE net of withholding tax.
- The swap counterparty can terminate the swap. It will not be obligated to make investors whole, however, as in the first option. The swap counterparty or the issuing SPE will be owed a termination payment (*see section 6(e) below*).

If an option will cause investors in rated securities to receive lower payments from the issuing SPE, the transaction documents should adequately disclose that investors' payments from the issuing SPE may be affected if a withholding tax is imposed on swap payments and the counterparty is not obligated to gross up payments to the issuing SPE, or that the counterparty has the right to terminate the swap if a withholding tax is imposed on payments by the issuing SPE to the swap counterparty.

The documents also should provide that if the swap is terminated, proceeds from the sale of the issuing SPE's assets may not be sufficient to repay the full principal amount plus accrued interest on the outstanding rated securities. In addition, the documents should adequately disclose that part or all of the proceeds from the sale or liquidation of the issuing SPE's assets may be used to make the termination payment due to the swap counterparty.

Section 3. Representations.

- In an effort to facilitate standardization of the swap agreement, and to allow for proper due diligence, representations may be included in the swap agreement.

Standard & Poor's believes that breach of these representations by the issuing SPE, however, should not constitute an event of default or give the swap counterparty the right to terminate the swap agreement in most circumstances.

Standard & Poor's will review whether investors are protected from termination events resulting from facts that could have been discovered by the counterparty before entering into the swap. Therefore, some issuing SPE representations may be accepted even if breach of those representations would enable the counterparty to terminate the swap agreement. The likelihood that the issuing SPE's representations may be inaccurate is the key factor for Standard & Poor's in determining whether they will be acceptable. In most cases, the swap counterparty should derive significant comfort from the issuing SPE's status as an SPE created for the transaction at hand.

Basic Representations

Part (a) of Section 3 of the 1992 agreement pertains to certain basic representations:

- Status,
- Powers,
- No violation or conflict,
- Consents, and
- Binding obligations.

As an SPE, the issuer typically is not an operating company, but a bankruptcy-remote, structured vehicle that is completely dependent on third parties to perform certain functions. The failure to perform these functions could cause the issuing SPE to breach the basic representations in part (a) of this section of the 1992 agreement. As a general matter, Standard & Poor's will review the structure to ensure that the proper parties—a manager or administrator—are in place to perform activities needed by the issuing SPE and that the issuing SPE has the ability to pay for the necessary services. Standard & Poor's analyses and ratings, however, do not address the likelihood or ability of these parties to perform as contracted. Their failure to do so should not cause the swap to terminate in most circumstances, which will be reviewed by Standard & Poor's. The swap counterparty, as a participant in the transaction, is in the best position to assess the likelihood that the manager or administrator will comply with their respective undertakings in the documents.

Therefore, these representations can be included in the swap agreement for due diligence purposes. However, breach by the issuing SPE should not constitute an event of default or give the swap counterparty the right to terminate the swap agreement unless Standard & Poor's is comfortable that the likelihood of breach is commensurate with the transaction's issue credit rating.

Other Representations

For representations concerning the absence of certain events [Section 3(b)], the absence of litigation [Section 3(c)] and the accuracy of specified information [Section 3(d)], breach of these representations by the issuing SPE should not constitute an event of default or give the swap counterparty the option to terminate the swap. These representations involve facts that the swap counterparty should have had the opportunity to review for accuracy before entering into the swap agreement with the issuing SPE. Therefore, the swap counterparty will need to perform due diligence to assure itself that these issuing SPE representations are accurate.

The payor tax representation [Section 3(e)] and the payee tax representation [Section 3(f)] will be reviewed on a case-by-case basis. When necessary, Standard & Poor's may require legal comfort as to the accuracy of the representations. In structures that allow for multiple issuances, payor and payee representations will be revisited before each issuance.

Section 4. Agreements.

- Parts (a) through (d) of this section obligate both parties to agree to:
- Furnish specified information,
- Maintain authorizations,
- Comply with laws, and
- Notify the other party that it breached a payee tax representation under Section 3(f) when the breach occurs.

In general, the issuing SPE's failure to comply with these agreements should not constitute an event of default or give the swap counterparty the right to terminate for the reasons stated above (*see Section 3. Representations. Basic representations.*) Standard & Poor's, however, recognizes that there will be circumstances in which the breach of certain agreements by the issuing SPE should enable the swap counterparty to terminate the swap. These agreements generally will be reviewed on a case-by-case basis.

Concerning payment of stamp tax [Section 4(e)], Standard & Poor's may request a local tax opinion confirming whether any stamp duty or other documentary tax will be payable by the issuing SPE. If so, the issuing SPE should be able to meet this expense.

Section 5. Events of Default and Termination Events.

(a) Events of Default

- (ii) *Breach of Agreement.* For the reasons stated above (see Section 3. Representations) the issuing SPE's breach of representations or identified agreements will not be acceptable events that give the swap counterparty the option to terminate the swap agreement unless Standard & Poor's considers that the rating would not be affected by breach of these representations and

agreements that may cause the swap to terminate (or the likelihood of termination is a factor in the rating).

- (iii) *Credit Support Default.* The 1992 agreement provides that a credit support default can lead to an event of default under the swap agreement. This provision should be removed from the agreement when the swap counterparty's obligations under the swap agreement are not supported by another entity because it is not relevant in these transactions.
- (iv) *Misrepresentation.* Under this provision, a misrepresentation by either party or its credit support provider, other than a misrepresentation relating to payor or payee tax representations [Sections 3(e) or 3(f)] would enable the other party to declare the swap in default under Section 5(a)(iv). Given the rationale for removing representations from the default and termination events under the swap agreement, as explained above, this provision should be modified to address only those representations with which Standard & Poor's is comfortable. The counterparty is urged to perform whatever due diligence is necessary to become comfortable with the transaction.
- (v) *Default Under Specified Transaction.* This provision allows the nondefaulting party to terminate the swap if the other party defaults under a specified swap or transaction whether or not the swap or transaction is a part of the current swap agreement. Allowing the swap to default for this reason can be used to create a cross default. As noted below, cross-default provisions are not appropriate in structured finance transactions. (In the 1987 agreement, this section is called default under specified swaps. The same comments apply.)
- (vi) *Cross Default.* The cross-default provision enables a party to declare the swap in default if the other party or its credit support provider defaults on obligations in excess of an agreed-upon threshold amount. Because Standard & Poor's may rate particular categories of debt of an entity differently (for example, senior debt, subordinated debt, preferred stock, etc.) and structured transactions rely on the credit quality of particular assets, this provision should be removed from the swap agreement.

The risk of different ratings on different categories of debt also applies to an issuing SPE with deeply subordinated instruments outstanding, on which the relevant creditor has agreed not to enforce its claim upon a default. Nonetheless, this arrangement could inadvertently trigger the cross-default provision. Cross-default provisions may be acceptable in insured transactions in order to give the insurer more control over the structure.

- (vii) *Bankruptcy.* Under this provision, if a party becomes bankrupt, the other party can declare the swap in default. As it applies to the issuing SPE, this provision generally is acceptable because the issuing SPE is usually structured to be an SPE. A bankruptcy or downgrade of the swap counterparty or its

guarantor or insurer, on the other hand, would cause the transaction's issuer credit rating to be lowered accordingly.

Clause (2) of this provision, presents an issue because it refers to a party's insolvency, inability to pay its debts, failure to do so, or admission in writing that it cannot pay its debts as they become due. This clause could be triggered by an issuing SPE that has subordinated debt outstanding (rated or unrated) because credit losses on the underlying collateral may cause technical payment default or losses on the subordinated debt. Many transactions use subordinated debt to provide credit support to more senior rated debt. In that event, the definition of bankruptcy in clause (2) should be removed from the swap agreement so that the swap continues even if the issuing SPE is technically insolvent because it cannot pay its subordinated debt, as anticipated by the structure of the transaction.

(b) Termination events

- (ii) *Tax Event*. Under this provision, the affected party has the right to terminate the swap. The affected party is the party that is obligated to pay tax or receive a payment net of tax if an indemnifiable tax is imposed on a party's swap payments or is the party that will receive swap payments net of this tax from the other party because a tax is imposed and neither party is obligated to gross up its payments under the swap agreement. This right to terminate the swap should be removed when the swap counterparty is obligated to pay gross and accept net or is otherwise obligated to continue the swap (*see Section 2. Payments. (d) Deduction or Withholding for Tax*). It may be retained when the swap counterparty has not obligated itself to continue the swap.
- (iii) *Tax Event Upon Merger*. Under this provision, the burdened party has the right to terminate the swap. The burdened party is the party required to pay an amount relating to an indemnifiable tax or receive a payment net of this tax because it or the other party merged and there is no obligation on the burdened party to gross up the swap payments to take this tax into account. This provision should be removed when the swap counterparty is obligated to pay gross and accept net (*see Section 2. Payments. (d) Deduction or Withholding for Tax*). In all other cases, it may be retained.
- (iv) *Credit Event Upon Merger*. Under this provision, the nonaffected party has the right to terminate the swap if the affected party, its credit support provider, or any entity specified by the affected party merges, which does not constitute merger without assumption under Section 5(a)(viii), and the resulting entity is materially weaker than the affected party, its credit support provider, or other specified entity. If the issuing SPE is not the affected party and is the only party with the right to terminate the swap, the swap agreement can retain this provision. The swap counterparty should not be concerned with

its inability to terminate the swap in an issuing SPE merger. The issuer, as an SPE, will be prohibited from merging when doing so would materially prejudice investors.

- (v) *Additional Termination Event.* Standard & Poor's will review any additional termination events to ensure that they comply with criteria within the context of the transaction. In general, Standard & Poor's considers that there will be very few transactions in which additional termination events would be appropriate. (This provision appears only in the 1992 agreement. The 1987 agreement, however, also allows the parties to agree to additional termination events.)

Section 6. Early Termination.

- (a) *Right to Terminate Following Event of Default.* The basic agreement allows the nondefaulting party to terminate the swap following an event of default under the swap agreement by the other party. The ability to terminate the swap immediately or automatically after such default should be removed from the agreement in certain circumstances. This provision is generally included to buttress netting in several jurisdictions.

Most transactions will waive netting across different swap agreements and, consequently, this provision should not be necessary. One important reason for this criterion is that in structures where a guarantor or insurer guarantees the swap counterparty's obligations under the swap agreement, automatic early termination may not allow enough time to access the guarantee or insurance policy.

- (b) *Right to Terminate Following Termination Event*

- (ii) *Transfer to Avoid Termination Event.* This provision is acceptable as long as both parties have the right to transfer and any successor counterparty to which the counterparty has transferred its obligations under the swap agreement has a rating at least equal to the then current rating on the issue.

- (e) *Payments on Early Termination.* Provided that the swap counterparty is not otherwise obligated to pay a different amount when the swap terminates (for example, as a result of tax events), Standard & Poor's will generally accept the termination payment agreed upon by the issuing SPE and the counterparty. Market quotation should be the first alternative for payment measure, with a provision for loss if market quotation is not available. Either is acceptable as the payment method. Previous criteria required market quotation and loss primarily to avoid a situation in which the issuing SPE would owe a termination payment to a defaulting swap counterparty. The change in termination payment calculations largely reflects Standard & Poor's recognition of market convention and that the possibility of two-way payments promotes greater market liquidity, which could have beneficial effects on swap pricing and the availability of replacement swap counterparties.

Ranking

Although the 1992 agreement does not stipulate any sharing of proceeds resulting from selling or liquidating the issuer's assets upon a swap termination, Standard & Poor's continues to be concerned with the relative rights of the counterparty and investors in the event of termination. In the context of structured transactions, Standard & Poor's has sought to balance these rights to provide for the fair expectations of the transaction participants. Therefore, in all circumstances other than default on the issuer's other assets, Standard & Poor's general view is that the swap counterparty should share *pari passu* and *pro rata* in all proceeds from selling or liquidating such assets. Thus, the swap counterparty's termination payment will be added to the amount due to investors. This sum will then be shared by the counterparty and investors on a *pro rata* and proportionate basis. In the event that default on the issuer's assets caused the swap to terminate, the swap counterparty can rank ahead of investors in receipt of its termination payment. Like other modifications to the 1992 agreement, provisions for ranking should be addressed in the schedule and confirmation.

Section 7. Transfer.

This section prevents the parties from transferring their rights under the swap agreement to a third party without the prior written consent of the other party to the swap agreement. As under the previous criteria, this section should be modified so that the issuing SPE can assign or mortgage all of its benefit and interest in the swap agreement to a trustee in the context of the structured transaction and so that the issuing SPE may transfer its interest in the swap agreement to avoid a tax event or illegality in its current jurisdiction. Standard & Poor's will generally only allow swap counterparties to be released from their obligations under the swap agreement after they assign the agreement to an entity with a rating at least as high as that currently assigned to the transaction.

Section 9. Miscellaneous.

(b) *Amendments.* Any amendments to the swap agreement reviewed in advance by Standard & Poor's for possible rating action.

Section 10. Multibranch parties

Each party should represent that it is not a multibranch party for purposes of the swap agreement.

Asset-Independent Approach

Rated securities can be structured so that the issuing SPE's other assets will not be a supporting rating and thus achieve a rating that is higher than or irrespective of the issue credit rating of these other assets. This can be accomplished by including a swap agreement that commits the counterparty to make payments to the issuing SPE even

if there has been a default on the issuing SPE's other assets. In effect, the swap agreement becomes the issuing SPE's only asset from a rating perspective. The swap counterparty is still a supporting rating, but the other assets are not.

Default and termination events for swaps in these transactions are more flexible than they are in transactions in which the issuing SPE's other assets are also a supporting rating. Recent structures have included the following default and termination events under the swap agreement:

- Failure to pay,
- Misrepresentation,
- Bankruptcy,
- Merger without assumption,
- Illegality, or
- Events of default under the indenture.

Events of default under the indenture include failure to pay interest on any note when due, failure to pay principal on any note when due, an event of default or early termination of the swap agreement, and the bankruptcy of the issuing SPE.

If the swap is terminated for any of the above reasons, however, the swap counterparty would make a termination payment to the issuing SPE equal to the principal of and accrued interest on the rated securities minus proceeds from sale of the issuing SPE's other assets. In other words, investors in the rated securities are paid full principal and interest up to the redemption date even if the swap is terminated. In this structure, the formula for calculating the termination payment [Section 6(e)] will have to be amended accordingly.

If no withholding tax currently applies to swap payments by the swap counterparty and its guarantor, if any, Standard & Poor's will generally request legal opinions from counsel confirming that under current law no such tax applies and that there is no pending legislation to create such a tax.

Swap-Independent Approach

These types of securities also use swaps to transform the cash flows generated by the assets as an accommodation to investors. Standard & Poor's issue credit rating, however, does not address the swapped cash flow, only the likelihood of payment on the issuing SPE's other assets. If the swap counterparty defaults for any reason, either the transaction terminates and investors receive their pro rata share of the assets, or the investors agree to accept the cash flows on the other assets without the benefit of the swap and the transaction continues.

The swap counterparty's issuer credit rating is not a supporting rating. Therefore, default and termination events under the swap agreement are more flexible than those for swap-dependent securities in which the issuing SPE's other assets are also

a supporting rating. The following events have been included in swap-independent structures:

- Failure to pay,
- Breach of agreement,
- Credit support default,
- Misrepresentation,
- Default under specified transaction or swaps,
- Cross default,
- Bankruptcy,
- Merger without assumption,
- Trust termination, and
- Default on the issuer's other assets.

If the swap terminates, neither party would be owed a termination payment or swap breakage fees. Generally, the 'r' symbol is attached to the ratings of these transactions to indicate that investors may be subject to market risk upon termination of the swap.

Additional Criteria

Section 11 of the 1992 agreement provides that the defaulting party will pay certain reasonable out-of-pocket expenses incurred by the other party related to the enforcement and protection of that party's rights under the swap agreement or any credit support document. This section should not apply to the issuing SPE for asset-independent or swap-independent structures because swap agreements employed by these structures may terminate as a result of noncredit events. The occurrence of an event of default under the swap agreement for an asset-independent transaction should not create a liability for the issuing SPE that will result in payment shortfalls to investors. In the case of swap-independent structures, since the swap provider is not a supporting rating, the occurrence of an event of default should be transparent to the issuing SPE and not result in the creation of an expense under this section.

For all swap agreements, the swap counterparty should agree that it will not petition the issuing SPE into bankruptcy, or join in any petition to file the issuing SPE, during the term of the rated securities and for a period equal to the preference period plus one day applicable to the issuing SPE after all outstanding rated securities have matured.

In transactions where the issue credit rating is dependent on a swap agreement and guarantee, if any, Standard & Poor's generally requests the following legal opinions for the swap counterparty and guarantor, as applicable, under the law of the jurisdiction of organization of the relevant entity and under the governing law of the swap agreement and guarantee, as applicable:

- An enforceability opinion in connection with the swap agreement and guarantee against the swap counterparty and the guarantor, as applicable, according to their respective terms;
- A pari passu opinion stating that payments due under the swap agreement and the guarantee, as applicable, rank at least pari passu with the unsecured and unsubordinated obligations of the swap counterparty and the guarantor, as the case may be;
- A choice of law opinion stating that local courts in the jurisdictions of the swap counterparty and the guarantor, as applicable, would recognize the choice of law in the swap agreement and the guarantee, as the case may be, and the choice of law is prima facie valid and binding under such local law;
- A recognition of claim opinion stating that local courts in the jurisdictions of the swap counterparty and the guarantor, as applicable, would recognize and enforce as a valid judgment any final and conclusive civil judgment of a court of competent jurisdiction for monetary claims under the swap agreement and the guarantee, as the case may be; and
- Relevant withholding tax opinions on payments under the swap agreement and the guarantee, as applicable. *(See the discussions above under Swap-Dependent Approach, ISDA Cross-References, Section 2, Payments, (d) Deduction or withholding for tax, and under Asset-Independent Approach.)*

Standard & Poor's will also typically request from counsel for the issuer the relevant withholding tax opinions on payments by the issuer under the swap agreement. *(For the tax opinion requirements, see the discussion above under Swap-Dependent Approach, ISDA Cross-References, Section 2. Payments. (d) Deduction or withholding for tax.)*

Standard & Poor's may waive the enforceability opinion described above for swap counterparties and guarantors if Standard & Poor's previously has received similar opinions under the same governing law in similar transactions. *(For a fuller discussion of these rating approaches, see Standard & Poor's Legal Issues In Rating Structured Finance Transactions, "Criteria Related to Global Synthetic Securities.")*

Appendix E

Interest Rate Assumptions For Structured Ratings

Standard & Poor's interest rate assumptions follow a study that focused on the historical level of rates and the extreme changes in rates to determine interest rate floors and caps, and upward and downward spikes over various periods of time (see Floor and Caps, and Spikes below). Table 1 shows the floors and caps, and the mean plus and minus 1.96 standard deviations, which are the upper and lower bounds of the 95% confidence interval. The table also shows the mean plus and minus one standard deviation for each of the rates studied.

Table 1
Interest Rate Floors And Caps

Level	11th Dist. COFI	Prime	1-year CMT	6-month CD	1-month LIBOR	2-month LIBOR	3-month LIBOR
Floor (%)	3.12	3.35	2.36	1.94	1.41	1.19	1.62
Cap (%)	12.74	21.50	17.29	18.75	24.06	22.31	22.06
Mean - 1.96 s.d.	3.12	3.35	2.36	1.94	1.41	1.19	1.62
Mean + 1.96 s.d.	12.74	16.51	13.74	14.73	15.56	15.81	15.76
Mean - s.d.	5.47	6.57	5.15	5.07	4.87	4.77	5.08
Mean + s.d.	10.39	13.28	10.95	11.60	12.10	12.23	12.29
	6-month LIBOR	30-day CP	60-day CP	90-day CP	120-day CP	180-day CP	270-day CP
Floor (%)	1.98	1.49	1.72	1.96	2.01	2.09	2.32
Cap (%)	20.00	19.45	17.57	16.35	15.89	15.81	16.21
Mean - 1.96 s.d.	1.98	1.49	1.72	1.96	2.01	2.09	2.32
Mean + 1.96 s.d.	15.74	14.00	13.64	13.22	13.06	12.88	12.52
Mean - s.d.	5.35	4.56	4.64	4.71	4.71	4.73	4.82
Mean + s.d.	12.37	10.94	10.72	10.46	10.35	10.23	10.03

s.d.—Standard deviation.

Table 2
Interest Rate Multiples

Index	Spike	1-month	2-month	3-month	4-month	5-month	6-month	7-month	8-month
COFI	Up	1.0508	1.0960	1.1362	1.1763	1.2194	1.2484	1.2759	1.2972
	Down	0.9431	0.9245	0.8900	0.8584	0.8273	0.7979	0.7702	0.7444
Prime	Up	1.3548	1.5556	1.7551	1.9545	1.9545	1.8182	1.7273	1.7021
	Down	0.7000	0.6125	0.5641	0.5500	0.5750	0.6250	0.6170	0.5833
1-year CMT	Up	1.2859	1.3821	1.5048	1.6706	1.8576	2.0110	1.8686	1.8870
	Down	0.6440	0.5187	0.4863	0.5204	0.5600	0.5811	0.5707	0.5682
6-month CD	Up	2.0335	1.7416	1.6083	1.8657	2.1739	2.3034	2.2470	2.0783
	Down	0.5582	0.4530	0.4417	0.4720	0.5186	0.5204	0.5061	0.5204
1-month LIBOR	Up	1.6524	1.8510	2.0694	2.6014	2.5734	2.7305	2.5329	2.2345
	Down	0.5112	0.4554	0.4434	0.4688	0.4654	0.4664	0.4435	0.4118
2-month LIBOR	Up	1.4408	1.6890	1.9396	2.2342	2.4286	2.4859	2.2083	2.0634
	Down	0.5481	0.4737	0.4438	0.4713	0.4937	0.5714	0.5525	0.5384
3-month LIBOR	Up	1.4309	1.6667	1.8617	2.1333	2.3691	2.4615	2.1189	2.0490
	Down	0.5769	0.4831	0.4469	0.4665	0.5000	0.4887	0.4795	0.4463
6-month LIBOR	Up	1.3652	1.5215	1.6308	1.8382	2.0526	2.2238	1.9533	2.0490
	Down	0.5877	0.5000	0.4469	0.4887	0.5112	0.5181	0.5112	0.5043
30-day CP	Up	1.3838	1.5990	1.8637	2.2453	2.3452	2.6501	2.3864	2.2313
	Down	0.4911	0.4270	0.4409	0.4858	0.4928	0.5223	0.5130	0.4889
60-day CP	Up	1.3092	1.5159	1.6441	1.9645	2.1471	2.2323	2.1811	2.1331
	Down	0.5268	0.4538	0.4444	0.4481	0.5162	0.5436	0.5277	0.5212
90-day CP	Up	1.2749	1.4575	1.5630	1.8127	2.0065	2.2030	2.0782	2.0909
	Down	0.5861	0.4722	0.4796	0.5077	0.5636	0.5630	0.5535	0.5429
120-day CP	Up	1.2749	1.4239	1.5359	1.7713	1.9656	2.1711	2.0596	2.0000
	Down	0.6039	0.5066	0.4735	0.5249	0.5692	0.5621	0.5483	0.5479
180-day CP	Up	1.2741	1.4296	1.5233	1.7556	1.9620	2.2314	2.0777	2.0275
	Down	0.6311	0.5178	0.4680	0.5282	0.5784	0.5843	0.5708	0.5621
270-day CP	Up	1.2481	1.4624	1.5506	1.7162	2.0086	2.2964	1.9924	1.9588
	Down	0.7272	0.5997	0.5354	0.5916	0.5934	0.5803	0.5773	0.5703
COFI	Up	1.3218	1.3438	1.3636	1.3798	1.2530	1.1782	1.0849	0.9751
	Down	0.7205	0.6982	0.6772	0.6586	0.5028	0.4134	0.3866	0.4121
Prime	Up	1.8636	1.8636	1.8636	1.8636	2.5000	3.2000	3.4400	3.0370
	Down	0.5833	0.5702	0.5472	0.5259	0.2623	0.0076	FLOOR	FLOOR
1-year CMT	Up	1.9057	2.0255	2.1399	2.0333	2.2291	2.9494	2.9353	3.3634
	Down	0.5549	0.5261	0.4976	0.4700	0.2297	0.0734	FLOOR	FLOOR
6-month CD	Up	2.0783	2.1574	2.2823	2.2727	2.4862	3.6633	3.5782	3.5833
	Down	0.4953	0.4660	0.4351	0.4046	0.1240	FLOOR	FLOOR	FLOOR
1-month LIBOR	Up	2.0878	2.2585	2.3623	2.3407	3.0465	3.9756	5.0658	4.6045
	Down	0.4030	0.3575	0.3617	0.3948	0.0771	FLOOR	FLOOR	FLOOR
2-month LIBOR	Up	2.0189	2.1736	2.1944	2.1448	2.7946	4.0000	4.3008	4.2526
	Down	0.5119	0.4795	0.4501	0.4310	0.1180	FLOOR	FLOOR	FLOOR

Table 2 (continued)
Interest Rate Multiples

Index	Spike	1-month	2-month	3-month	4-month	5-month	6-month	7-month	8-month
3-month LIBOR	Up	2.0124	2.1918	2.1905	2.0671	2.7542	3.8690	4.1173	4.0571
	Down	0.4229	0.3948	0.4141	0.4095	0.0973	FLOOR	FLOOR	FLOOR
6-month LIBOR	Up	1.9096	2.0197	2.0671	2.0364	2.5574	3.6364	3.5333	3.2449
	Down	0.4843	0.4777	0.4520	0.4285	0.1412	0.3517	FLOOR	FLOOR
30-day CP	Up	2.0485	2.2079	2.4563	2.2757	2.7208	3.8371	4.4071	4.3072
	Down	0.4653	0.4492	0.4144	0.3886	0.0969	FLOOR	FLOOR	FLOOR
60-day CP	Up	1.9025	2.1961	2.2353	2.1699	2.6669	3.7855	3.9318	3.6322
	Down	0.4934	0.4651	0.4332	0.4083	0.1222	FLOOR	FLOOR	FLOOR
90-day CP	Up	1.9522	2.1316	2.1861	2.2028	2.3440	3.3099	3.5967	3.1522
	Down	0.5176	0.4873	0.4567	0.4336	0.1699	FLOOR	FLOOR	FLOOR
120-day CP	Up	1.8571	2.0526	2.1543	1.9715	2.3353	3.2714	3.5107	3.0848
	Down	0.5232	0.4943	0.4646	0.4422	0.1813	FLOOR	FLOOR	FLOOR
180-day CP	Up	1.7915	1.9747	2.1696	1.9808	2.2602	3.0708	3.4174	2.9973
	Down	0.5388	0.5108	0.4824	0.4603	0.2083	FLOOR	FLOOR	FLOOR
270-day CP	Up	1.7451	1.9375	2.0624	1.9808	2.0851	2.6670	3.4325	2.9844
	Down	0.5589	0.5297	0.5017	0.4794	0.2461	0.0775	FLOOR	FLOOR

Table 2 shows the assumed spikes over 16 different time horizons. These spikes are multiples of the starting rate. Some of the entries in the table are “floor”. These entries indicate that the result of the calculated downward spike was greater than 1.0 times (x) and would result in a negative interest rate. For these few cases, the floor is assumed automatically. Tables 1 and 2 include the more frequently-used indexes that are analyzed.

Floors And Caps

To determine the floors and caps, analysts studied the distribution of interest rates over a 22-year period from June 1973-June 1995. The study examined the historical maximum and minimum values as well as the mean and variance of each rate’s distribution. This resulted in a total of more than 5,000 observations. Given this large number of observations, analysts can assume that the sample approaches a normal distribution and the normal distribution can be used as a good approximation. In the study, the historical maximum and minimum values were compared to the upper and lower bounds of a 95% confidence interval. For each rate, Standard & Poor’s chose the floor as the lesser of the actual historical maximum and the confidence interval lower bound. Similarly, the greater of the maximum historical value and the 95% confidence interval upper bound was chosen as the cap.

For example, in an analysis of a transaction based on three-month LIBOR, it would be assumed that the highest the index would go over the life of the transaction is about 22% (*see table 1*). This value happens to be the maximum historical value for the period studied. Considering the historical distribution of this interest rate, the probability of exceeding 22% is close to zero. By comparison, the 95% confidence interval upper bound is about 15.76%.

Spikes

Determining the spikes was more involved. Analysts wanted to determine how much any given rate could change over a number of periods of time. To make these determinations, the same historical data was used for each of the rates, and an average of 21 business days was assumed per month. Working through the data, the percentage change every 21 days was calculated. In other words, the percentage change was calculated from the first day to the 22nd day, from the second day to the 23rd day, and so on. This resulted in a large sample of 21-day percentage changes.

Similarly, for the two-month horizon, the 42-day percentage changes were calculated, 63-day changes were calculated for three months, and so on for the longer periods. Using these sets of data, the extremes and the mean and variance of each distribution were examined. Analysts compared the extremes to the 95% confidence interval bounds. Again, the greater of the historical maximum and the 95% confidence interval upper bound are used for the upward spike. Standard & Poor's uses the lower of the historical minimum and the 95% confidence interval lower bound for the downward spike.

The spikes are constrained by the floors and caps for that particular rate. For example, if today's rate is 8% and the assumed 12-month upward spike is 2.5x, then the product gives a rate of 20%. However, if the cap were 17% then the spike would be limited and a 17% cap assumed. The spikes were determined for five years out, with monthly steps for the first year. This provides a mechanism for applying the floors and caps over various periods of time. Beyond five years, analysts will use the lifetime floors and caps in table 1. For some of the more volatile indexes and longer horizons, the lower bound of the 95% interval is change greater than 100% that yields nonsensical results. In those cases, the floor will be assumed as the limit.

Computing Interest Rate Assumptions

The first step in calculating interest rate assumptions is a function of the time horizon. If the exposure or reset period is more than five years use the floors and caps from table 1. If the time horizon is five years or less, find the appropriate multiples from table 2. Multiply today's rate by the up-spike to get the upper limit, and by the down-spike to get the lower limit. Compare these values to the caps and floors in table 1.

If the calculated upper value is greater than the cap from table 1, use the cap. Similarly, if the lower limit is lower than the floor from table 1, use the floor as the assumed rate.

As an example, consider sizing a reserve in a transaction with fixed-rate assets, and floating-rate bonds tied to one-month LIBOR. Assume:

- One-month LIBOR equals 6%
- Assets at fixed rate equal 8%
- A four-year transaction

Using table 2 results in a multiple of about 5.0 for this index for four years. Applying this multiple results in a rate of 30% that exceeds the 24% cap from table 1. Therefore, 24% will be used as the cap. In this case, analysts will assume that the liability rate for 50% of the cash flows is equal to the mean plus one standard deviation. For 40% of the cash flows, the assumed liability rate is equal to the mean plus 1.96 standard deviations (the 95% confidence interval upper bound).

Next, assume the rate on the remaining 10% of the cash flows is equal to the cap rate. To avoid weighting the cash flows too heavily, the following assumptions are applied evenly to the beginning and the end of the cash flow stream:

- The rate for the first 25% of the cash flows is the mean plus one standard deviation.
- The rate for the next 20% is the mean plus 1.96 standard deviations.
- The rate for the next 10% is at the cap.
- The rate for the next 20% returns to the mean plus 1.96 standard deviations.
- For the last 25% the rate is the mean plus one standard deviation.

With the assumed term in this example, there will be 48 payments. For the one-month LIBOR, the cap is 24.06%, the mean plus one standard deviation is 12.10%, and the mean plus 1.96 standard deviations is 15.56%. Therefore, for the first 12 payments the assumed liability rate builds up from today's rate until it reaches 12.10%. For the next 10 payments (payments 13-22) the rate is 15.56%. For the next five payments (payments 23-27) the rate is at the cap of 24.06%. For the next 10 payments (payments 28-37) it again is 15.56%. The rate returns to 12.10% for the last 11 payments.

The discount rate used to compute the present value of the cash flow stream is Standard & Poor's assumed minimum reinvestment rate of 2.5%. The step-up in the rates is limited by the up-spike for the period. That is, if today's rate is 6.0% it would be illogical to assume a rate of 12.1% next month, since the one-month up-spike is 1.65x, giving a rate of 9.90% for the second month. The two-month spike is 1.851x, resulting in a rate of 11.11% the third month. The three-month spike is 2.0694x. Therefore, the rate in the fourth month would be 12.42%, but is limited to 12.10% according to the guidelines described above (*see table 3 for rate assumptions*).

Similarly, for the tail end of the transaction, if a step-down from the cap to the next level rate would result in a change greater than the down-spike, then it would take a few periods to reach the lower rate again.

Potential Outcomes

There can be four potential outcomes when determining the rates and what level to use when. The multiple multiplied by today's rate may be:

- Greater than or equal to the cap rate,
- Less than the cap but greater than or equal to the mean plus 1.96 standard deviations,
- Less than the mean plus 1.96 standard deviations but greater than or equal to the mean plus one standard deviation, or
- Less than the mean plus one standard deviation.

For each of these outcomes, determine the rates and levels as follows:

Outcome 1

Assume the rate is equal to:

- The mean plus one standard deviation for 50% of the payments (the first 25% and the last 25%),
- The mean plus 1.96 standard deviation for 40% of the payments (the next 20% and second to last 20%), and
- The cap for the middle 10% of the payments.

Outcome 2

Assume the rate is equal to:

- The mean plus one standard deviation for 50% of the payments,
- The mean plus 1.96 standard deviation for 40% of the payments, and
- The multiple multiplied by today's rate for the middle 10% of the payments.

Outcome 3

Assume the rate is equal to:

- The mean plus one standard deviation for 50% of the payments,
- The multiple multiplied by today's rate for 40% of the payments, and
- The mean plus 1.96 standard deviation for the middle 10% of the payments.

Month	Rate (%)	Month	Rate (%)
1	6.00	13	15.56 ($\bar{X}+1.96S_n$)
2	9.90	23	24.06*
3	11.11	28	15.56
4	12.10 ($\bar{X}+S_n$)	38	12.10

*Moves to cap.

Outcome 4

Assume the rate is equal to:

- The multiple multiplied by today's rate for 50% of the payments,
- The mean plus one standard deviation for 40% of the payments, and
- The mean plus 1.96 standard deviation for the middle 10% of the payments.

While the use of this method is not limited to these examples, it may not be applicable in some cases depending on a particular transaction's structure. As transactions are presented using different rates, Standard & Poor's will determine the assumptions for that particular rate or, if necessary, transaction structure. Standard & Poor's may revise its assumptions as necessary based on the availability of new data.

Appendix F

Structured Financing Without True Sale: English Secured Loans

Traditionally, Standard & Poor's has not rated secured debt significantly higher than unsecured debt of the same transferor. This is because, among other things, studies show that the frequency of default of secured debt and of unsecured debt is generally the same and because there is no obvious or certain methodology for sizing liquidity risk flowing from the timing risks inherent in the enforcement of security. With the maturing of the structured finance markets, Standard & Poor's is willing to consider rating secured loan structured financings, provided full and timely payment objectives are met. This section examines some of the English legal and structural requirements relevant to secured loan structured financings and describes a methodology that can be adapted for use in other jurisdictions, depending on local laws. Its use may expand the range of rated transactions that employ structuring techniques to mitigate timing and/or ultimate recovery risks.

Four Levels of Review

A review of any proposed secured loan structured financing will focus on the risks to full and timely payment. There are four levels to this review of secured loan securities.

Status Of The Originator

As a general matter, a secured loan security has the greatest chance of achieving a rating that is significantly higher than the rating of the transferor if the transferor is a single-business/single-activity entity.

Full Enforceability Of Secured Loan And Security

Analysts must be comfortable that, as a legal matter, the secured loan transaction and the security in favor of the issuer are fully enforceable and cannot be challenged either under the general law or under insolvency law.

True Control

A review of the security package over the transferor's assets granted in favor of the issuer will be conducted. Standard & Poor's should receive comfort that the issuer has true control over its security. If the security package is such that the issuer has the conduct of (has control over) the enforcement of its security, the issuer has priority over all competing creditors, and the security is over appropriate assets and is adequate to repay investors, analysts can conclude that the issuer has true control over its security.

Liquidity Support And Additional Structural Requirements

Analysts will review the liquidity risk in any secured loan structured financing will be reviewed, and a requirement will usually be made for liquidity support at a level that mitigates such risk. Generally, a review will also assess the need for additional structural requirements, such as credit enhancement and measures to reduce any incentive to file for the insolvency of the issuer or otherwise challenge the secured loan structure.

Rating Perspective On Secured Loan Structured Financings

When an issuer seeks to structure a securitization transaction around a secured loan to the transferor, risks that affect the likelihood of full and timely payment need to be fully understood. The four-level review of secured loan securities is designed to assess whether risks to full and timely payment have been dealt with. It should be noted that:

- *Risks will arise from the status of the transferor.* For example, it is possible that the secured loan will, in the transferor's insolvency, be avoided as a transaction at an undervalue. Standard & Poor's has rated securitization transactions structured around secured loans. In all such cases, however, the special nature of the transferor has made the use of the secured loan acceptable as a means of separating the creditworthiness of the assets from that of the transferor. For example, in the U.S. structured finance market, some entities, such as state-funded housing agencies and military agencies, are deemed analytically bankruptcy remote because of their governmental purpose and the lack of creditor incentive to file for their bankruptcy. The risk of default and of any security having to be relied on for the purposes of satisfying the claims of creditors is low. A secured loan, therefore, provides the

required comfort. Bank originators of credit card receivables are another example from the U.S. structured finance market.

- *Legal risks will flow from the transferor's entry into the secured loan transaction or will arise in relation to true control.* This risk can be illustrated, in the context of English law, through the administration procedure under the Insolvency Act 1986. Administration is an English procedure similar to Chapter 11 in the U.S., with the important difference that the debtor is not in possession and the debtor's business and assets are controlled by the administrator (an officer of the court). If a transferor is in administration, no steps may be taken to enforce any security over the transferor's assets unless leave is given by the court or the administrator. Thus, there is a risk that this automatic stay (or moratorium) will create a payment delay. Further, the administrator has power to dispose of the transferor's charged assets (with or without the leave of the court, depending on the nature of the security). From a rating perspective, an administrator's forced sale of charged assets will increase the risk that investors are not paid in full.
- *Structural risks may arise in certain cases.* Any proposed structure may, in certain circumstances, create additional incentives for creditors of the issuer or other transaction parties to file for the insolvency of the issuer or otherwise to challenge the secured loan structure.

Status Of Transferor

The first level of review is to examine the status of the transferor. Arrangers and transferors of secured loan securities will invariably wish to achieve a rating higher than the transferor's issuer credit rating. As a general matter, Standard & Poor's will focus on the scope of the commercial risks associated with the transferor's business activities to determine whether this is possible. A higher rating will depend on whether it is possible to identify the risks relating to a given asset or asset pool and whether it is possible to assess with sufficient certainty the likely impact of such risks on full and timely payment.

For this reason, significantly enhanced ratings are more likely to be given if the transferor is a single-business/single-activity entity. If the transferor is a multiple-business/multiple-activity entity, it is far more complicated to identify and measure liabilities and risks because of the variations possible as a result of the numerous combinations of risks between different business activities. As an analytic matter, the risks may be too numerous and too immeasurable for it even to be conceptually possible to depart from the transferor's issuer credit rating.

In practice, if there is a significant possibility of a delay in timely payment, whether because the transferor is a multiple-business/multiple-activity entity or for any other reason, the level of enhancement above the transferor's issuer credit rating available

on a secured loan structure will be small (*see Standard & Poor's Legal Issues In Rating Structured Finance Transactions, Appendix IV, Ultimate Recovery Rating Criteria*). On the other hand, if the transferor is a single-business/single-activity entity, which makes it possible to closely identify and analyze the risks relating to the given assets or asset pool being securitized, and there is ample liquidity support for a transaction structured as a secured loan, then a significant enhancement above the transferor's issuer credit rating, perhaps even up to 'AAA', might be possible.

A pledge or mortgage of the shares of the issuing special-purpose entity (SPE) is one structural factor that may be relevant, especially if the issuing SPE remains on the balance sheet of the transferor. Legal opinions that there are no grouping risks arising from the issuer remaining on-balance sheet and/or nonconsolidation opinions also will be relevant in most jurisdictions.

Full Enforceability Of Secured Loan And Security

The second level of review is to ensure that, as a legal matter, the secured loan and the security are enforceable and not subject to any legal challenge. In a proposed secured loan structured financing, any significant risk of challenge to the enforcement of security has obvious and serious implications for any rating. Where security is unenforceable and the originator is insolvent, investors will not be paid in full. As collective insolvency proceedings begin, there also will be delay in payment.

The enforcement of security over the transferor's assets may be challenged under the general law or under insolvency law. These grounds are now well understood in an English law context. It should not be difficult in the context of a proposed secured loan transaction to establish whether there is any significant risk of challenge that will affect any rating.

General Law Challenge

The general law grounds for challenge are that:

- The (corporate) transferor did not have capacity to grant the security;
- The grant of the security was known by the issuer not to be for the benefit of the transferor;
- Factors such as misrepresentation and fraud vitiate the creation of the security; or
- The grant of security was, or was part of, a transaction defrauding the transferor's creditors (*see Insolvency Law Challenge*).

Insolvency Law Challenge

The loan agreement and/or the repayments under the loan and/or the security granted in the loan agreement may be avoided as a result of being vulnerable in the transferor's insolvency. The main grounds for avoidance are:

- Transaction at an undervalue;
- Preference;
- Extortionate credit bargain;
- Transaction defrauding the transferor's creditors (this is not an insolvency specific ground of challenge but the current law is found in the English Insolvency Act 1986);
- The grant of floating security for past value; and/or
- The security is not properly perfected; for example, the security is a registrable but unregistered security.

Insolvency law challenge on these grounds is equally relevant to true sale structured financings and the legal risks are well understood. Legal opinions rendered by law firms representing the parties to the transaction usually confirm that there is no appreciable risk of the true sale being vulnerable or avoidable in the transferor's insolvency. This understanding of insolvency law legal risks also can be applied to any proposed secured loan structured financing so that the risk of avoidance on the above grounds is reduced to an acceptable minimum.

True Control

The third level of review is to ensure that the issuer has true control over its security; in other words, the assets that make up its collateral. The factors that determine whether the issuer has true control are:

- Whether the issuing SPE, as a secured creditor, has the conduct of (has control over) the enforcement of its security;
- Whether the security confers priority in favor of the issuing SPE against all other creditors; and
- Whether the security is over appropriate assets and whether the proceeds of such security, once realized, are adequate to repay investors.

Thus, from a rating perspective, control, priority, and adequate realization are crucial. Control affects the likelihood of full and timely payment. The greater the lack of control, the greater the risk that full receipt of interest and principal due on an asset-backed security will only be possible after a delay caused by an insolvency, or even that (in addition to delay in payment) full recovery of interest and principal will not be possible. Priority is almost universally effective, though naturally any structure should have it. Whether the proceeds of any security, once realized, are enough to repay the investors will depend, in part, on the control that the issuer has

over the timing of the realization of the security and, in part, over the assets over which security is granted.

Standard & Poor's will focus on whether the transaction structure of a proposed secured loan structured financing meets the requirements of control, priority, and adequate realization. Where these requirements are met, analysts will generally conclude that the issuer has true control over its security and that, as a result, full and timely payment objectives are capable of being met. Where there is no true control, there can be no rating.

Achieving True Control

Ensuring that the issuer has conduct of the enforcement of security. Under English law, a secured creditor is not always fully able to have the conduct of (thus, control over) the enforcement of its security. Where the secured creditor does lose control, there is a risk that full receipt of interest and principal due on an asset-backed security will only be possible after a delay caused by an insolvency. There is an additional risk that full recovery of interest and principal will not be possible at all. Where a secured creditor is able to maintain control over the enforcement of its security, these risks will be avoided. In any given jurisdiction, the balance between such control and lack of it will have an impact on the viability, from a rating perspective, of a secured loan structured financing.

The following analysis concentrates on the legal position under English law. Similar principles of analysis will be relevant to the position under the laws of other jurisdictions. In the context of insolvency proceedings recognized in English law, there are four matters that are relevant to determining where the balance of control lies for rating purposes.

Insolvent liquidation. Insolvent liquidation (winding up) is a collective insolvency proceeding brought about voluntarily by a resolution of the transferor's members or, alternatively, compulsorily on the order of the court pursuant to a petition by, for example, a creditor. A holder of a first priority fixed security is largely unaffected by the liquidation because, technically, assets subject to such security do not fall within the liquidation and such a creditor will usually have full control over the secured assets.

If insolvent liquidation was the only insolvency proceeding recognized by English law, a fixed charge (but not a floating charge) in favor of the issuer would give satisfactory comfort in terms of control. However, English law recognizes other insolvency proceedings that impact directly on control.

Administration. Administration is an English procedure similar to Chapter 11 in the U.S., with the important difference that the debtor is not in possession. An administration order would be made in respect of the transferor pursuant to a petition to the court presented by, for example, the transferor's creditors or directors. The

petition could be presented only at a time when the transferor was insolvent or was likely to become so. The order would usually only be made to achieve a better realization of the transferor's assets than would be achieved on a liquidation and/or the survival of the transferor as a going concern. The transferor's business and assets would come under the control of an administrator, an officer of the court.

If a transferor is in administration, no steps may be taken to enforce any security over the transferor's assets unless leave is given by the court or the administrator. As a result of the secured creditor losing control in this fashion, there is a risk that this automatic stay (on the enforcement of security) will create a payment delay.

The administrator has power to dispose of the transferor's charged assets (assets subject to a security interest). The administrator's duty in relation to disposal of charged assets is to choose the right time to realize the charged assets and to obtain the market value for the sale at such time. The time of sale will be determined by reference to the purposes of the administration, not necessarily by reference to the interests of secured creditors. Where the security is floating (created by floating charge), the administrator may dispose of the charged property without the consent of the secured creditor and without the leave of the court. Where the security is fixed (created by a fixed or specific charge), the administrator requires leave of the court to dispose of the charged property without the consent of the secured creditor. This leave will be granted where to do so would help in the realization of one of the purposes of the administration order referred to above. The administrator's control, and the corresponding loss of control by the secured creditor, over the realization of charged assets thus creates a risk (both as to timing and as to value) to payment.

The balance of control in administration is weighted against the secured creditor. If the originator is in administration, there can be no true control.

Blocking an administration. Secured creditors can protect themselves from the risk of loss of control in an administration by taking a floating charge, or a mixed floating and fixed charge, over the whole or substantially the whole of the transferor's assets. Creditors secured in this way have power to appoint an administrative receiver. Once an administrative receiver has been appointed, no administration order will be made without the consent of the appointing secured creditor. Such creditors are entitled to notice of an administration petition (they are given advance notice that the transferor may be put into administration), and therefore have time (before the transferor is in fact put into administration) to appoint an administrative receiver for the transferor.

A secured creditor may block an administration order by appointing an administrative receiver. Administrative receivership is the means by which the creditor's security is realized. As a result, and from a rating perspective, an assessment must be made as to whether a secured creditor has control over the enforcement of its security through administrative receivership.

Administrative receivership. An administrative receiver is appointed on behalf of a secured creditor to enforce its security. The administrative receiver's appointment is pursuant to a general charge. A general charge is a charge that, as created, was a floating charge, or a fixed and floating charge, over the whole or substantially the whole of the property, assets, and undertaking, present and future, of a company. An administrative receiver appointed for a transferor will take control of all its assets and all its charged assets, with a view to receiving income from them or preserving them before disposing of them and applying the proceeds to discharge the security of the creditor that made the appointment.

Thus, when an administrative receiver of a transferor is appointed on behalf of the issuer, the issuer retains a greater degree of control than would ever be possible in the transferor's administration. From a rating perspective, the likelihood of full and timely payment is higher.

Priority, nature of assets, and adequate realization. A general charge, which is necessary to block administration, is central to any true control structure. It will not, however, of itself be sufficient. True control further depends on both priority and security over appropriate assets that, on realization, are adequate to repay investors.

True control legal structure. In any proposed secured loan structured financing, Standard & Poor's will focus on whether, as a legal matter, the transaction structure gives the issuer true control over its security in the transferor's assets. It is inevitable that some control will be lost as compared with a transaction structured as a true sale, and therefore, that there will always be an incremental risk that payment will not be full and timely. Analysts will focus, in addition, on whether the transaction structure adequately addresses these incremental risks consistent with the rating level requested, by some combination of increased credit enhancement, increased liquidity support, and other structural means.

A true control legal structure for secured loan transactions should encompass five areas:

- The issuer should hold a first priority fixed charge over the assets of the transferor. The rating review will focus on whether the security package defeats the claims of existing or potential creditors of the transferor, including any preferential creditors. Considerable emphasis will be placed on first priority fixed security interests (which as a matter of English law rank ahead of all other creditors, including preferential creditors and holders of floating security). First priority fixed security interests should secure in full the principal and interest on the asset-backed securities.
- There are appropriate assets and adequate realization (cash flow security not market value security). The assets over which the first priority fixed security is granted by the transferor will be highly relevant and security over them, when realized, must be adequate to repay investors. A transaction that relies on the cash flow generated

by the assets could default if forced to rely on the market value realized through the sale of assets. Where the assets are receivables representing a known and certain income stream (including receivables that are expected to generate the repayments for the secured loan), security over them should be realized through the transfer of the originator's rights in those assets to the issuer (and not a sale on the open market). True control is achievable under such a cash flow security as there should be little risk to full and timely payment.

Where the security is over the transferor's real property assets, the administrative receiver may have to sell those assets to realize the security. A forced sale may mean that the security over the real assets, once realized, is insufficient to provide full payment to the investors. Under such a market value security, there is clearly a threat to true control. Standard & Poor's will focus on the security package in favor of the issuer to determine whether, and to what extent, it meets full payment concerns.

- There is a first priority floating charge over all the transferor's present and future assets not caught by the fixed charge (floating charge). The combination of floating charge and fixed charge (or the floating charge alone, if it is over substantially the whole of the originator's assets) is needed to block administration and appoint an administrative receiver. Under English law, secured creditors with lower priority than the issuer may appoint an administrative receiver in relation to the transferor. Theoretically, the issuer loses control (but not priority) over the enforcement of its security if another general charge is first to appoint an administrative receiver. From a rating perspective, if the secured loan transaction is properly structured, this risk may not necessarily lead to the conclusion that there is no control. For example, the fixed charge and floating charge mean that the issuer has priority over other existing secured creditors. Where there is no prospect of the issuer subordinating its security to existing or subsequent secured creditors, the issuer will usually be able to overreach the appointment of another administrative receiver by appointing its own. By doing so, this issuer also takes control of the transferor's charged assets. Insofar as this involves additional cost to the issuer, Standard & Poor's will generally look for appropriate support in the structure.
- The balance between fixed and floating security should be such that the floating charge is not primarily relied on to generate funds to repay investors. Floating charge holders do not have priority over preferential creditors (including employees and tax authorities). Further, a secured creditor's realization is always subject to equities so that where, for example, valid general law set-off rights are exercised by a borrower against the transferor, the resulting reduction in the value of the security will be borne by the issuer. It is possible to cut short the build up of set-off rights in relation to assets secured by a fixed charge by giving notice of the charge to borrowers (in true sale structures the set-off risk may be similarly contained).

Notice of floating charges does not cut short the build up of set-off risk, which is a risk that continues until the floating charge crystallizes.

- There is an agreement by the transferor not to create any further fixed or floating security over its assets that secure the secured loan structure or not to do so until any new secured creditor is party to an intercreditor agreement giving priority to rated debt.

Where appropriate, additional features could assist in increasing the level of enhanced rating above the transferor's corporate rating. For instance, either an intercreditor agreement to create the priorities referred to above for the fixed charge and the floating charge, or an intercreditor agreement to prevent general charges, other than the issuer, from appointing receivers or administrative receivers may affect the balance of true control. Thus, either of these agreements could affect how much a rating could be enhanced above the transferor's issuer credit rating.

Similarly, in circumstances where a transferor has other creditors apart from those involved in the securitization, the absence of appropriate intercreditor arrangements may affect the analysis of the level of liquidity/credit enhancement required for a particular rating. In general, Standard & Poor's will seek legal opinions concerning all these aspects of the transaction's legal structure.

In addition to the legal considerations outlined above, the analysis of financings structured as secured loan transactions will focus on whether the transaction structure adequately addresses the incremental legal risk flowing from loss of true control. Factors relevant to this analysis will include:

- Increased liquidity support to cover adequately the timeliness risk associated with the enforcement of security, including automatic stays and moratoriums. As an analytical matter, sizing timeliness risks will always be a difficult task.
- Incremental credit enhancement to cover the increased risk of loss of value of collateral resulting from the loss of true control.
- Structural and analytical factors present in the transaction to assure that the secured loan structure achieves bankruptcy remoteness from the transferor and to reduce the risk that creditors of the transferor or any other persons have any perceived incentive to file for bankruptcy of the issuer, or otherwise to challenge the secured loan structure.