Synthetic Collateralised Debt Obligations

and

Credit Linked Notes

A Fresh Look at Rating Issues

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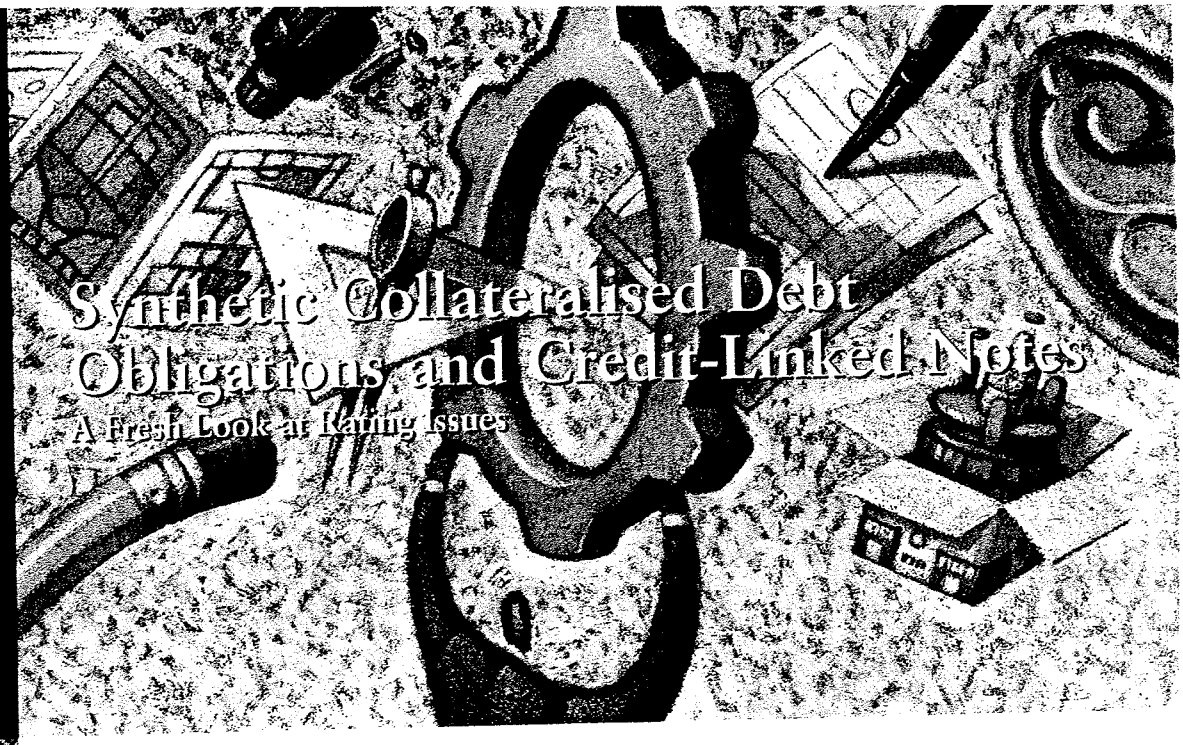
STANDARD &POOR'S



Synthetic Collateralised Debt Obligations and Credit-Linked Notes

A Fresh Look at Rating Issues

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The credit derivatives market has demonstrated staggering growth over the last five years, both globally *(see chart 1)* and in Australia *(see chart 2)*. This growth has been reflected in the global synthetic collateralised debt obligation (CDO) market *(see chart 3)* and the Australian/New Zealand credit-linked note (CLN) and repack market *(see chart 4)*. It is worth noting that in chart 2 the apparent contraction in the Australia credit derivatives turnover in 2001-2002 is due to exchange rate fluctuation. As the credit derivatives were mainly traded in U.S. dollars, the strong appreciation of the Australian dollar against the U.S. dollar in that year had an adverse impact on the conversion of turnover to Australian dollars. In chart 3, while there was a sharp increase in the number of rated synthetic CDO deals in 2003, globally, the swap notional amount decreased. This is attributed to the emergence and dominance of small single-tranche CDOs in that year compared to large bank balance sheet and arbitrage synthetic CDOs in previous years.

In Australia and New Zealand, Standard & Poor's has rated a variety of repacks and synthetic structures involving special-purpose vehicle (SPV) issuers and bank issuers, referenced to a single corporate debt, a small basket of corporate debt, or a portfolio of corporate debt *(see chart 5)*. Australia and New Zealand are the first countries in the world to issue CLNs to retail investors *(see chart 6)*.

This article outlines the typical synthetic structures rated by Standard & Poor's in the Australian and New Zealand markets, and explains the ratings approach to these transactions. It discusses default risk, which is the most obvious risk, other less apparent documentation risks (such as early termination, credit events, and valuation), and cash flow/ structural risks (such as payment priorities/swap counterparty ranking, early redemption events, and currency and interest rate). The article also explains how these risks may be mitigated.

WHAT IS A SYNTHETIC CDO OR CLN?

Unlike a cash flow CDO transaction, synthetic CDO and CLN transactions do not involve the physical transfer of corporate debt. The sponsor of the transaction (the credit protection buyer) transfers only the credit risk of the corporate debt, either directly or through

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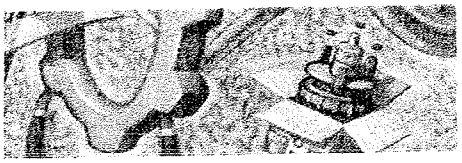
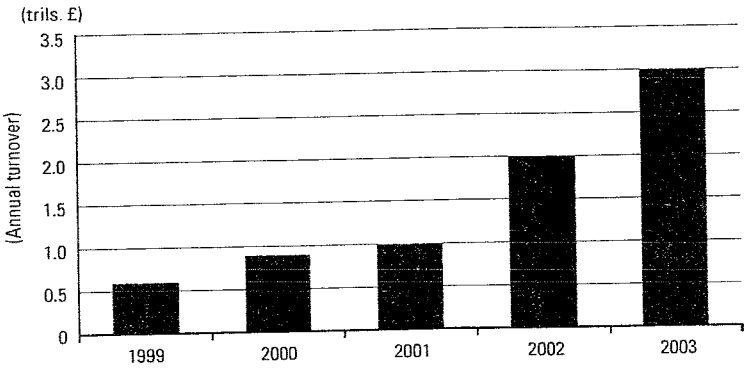
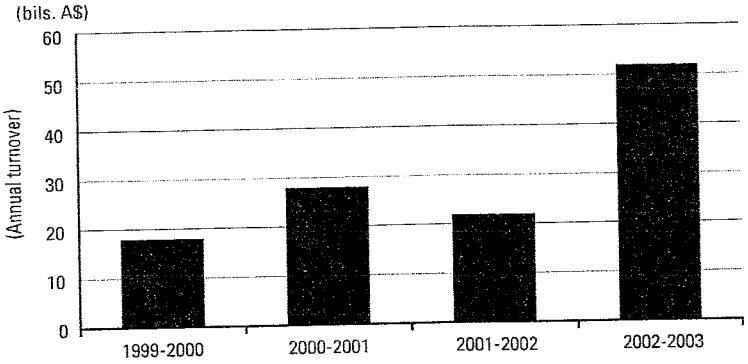


Chart 1
Global Credit Derivatives Volume 1999-2003



Source: British Bankers Association.

Chart 2
Australia Credit Derivatives Volume 1999-2003



Source: Australian Financial Markets Association.

Chart 3
Global Rated Synthetic CDO Volume 1999-2003

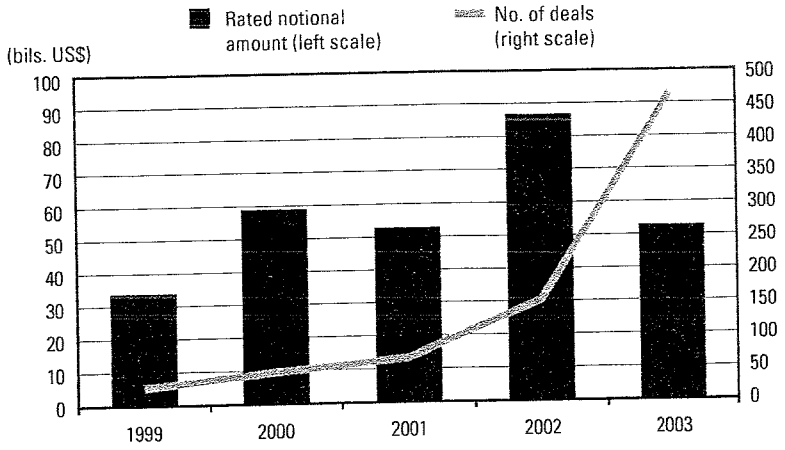


Chart 4
Australia/New Zealand Rated Credit-Linked Notes/Repack Volume—By Region 1999-2003

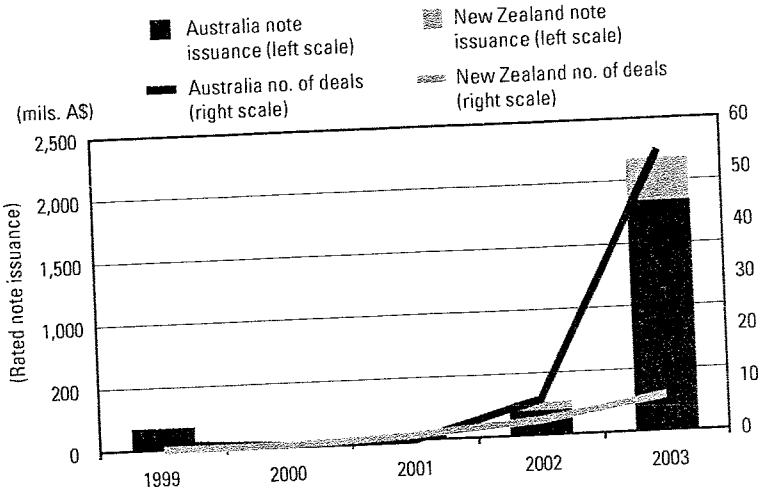
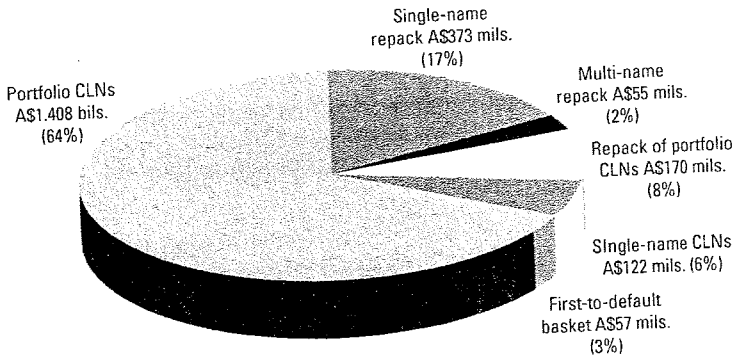


Chart 5
Australia/New Zealand Rated Credit-Linked Notes/Repack—By Product Type 2003



CLN—Credit-linked note.

Chart 6
Australia/New Zealand Rated Credit-Linked Notes/Repack Volume—By Investor Type 1999-2003

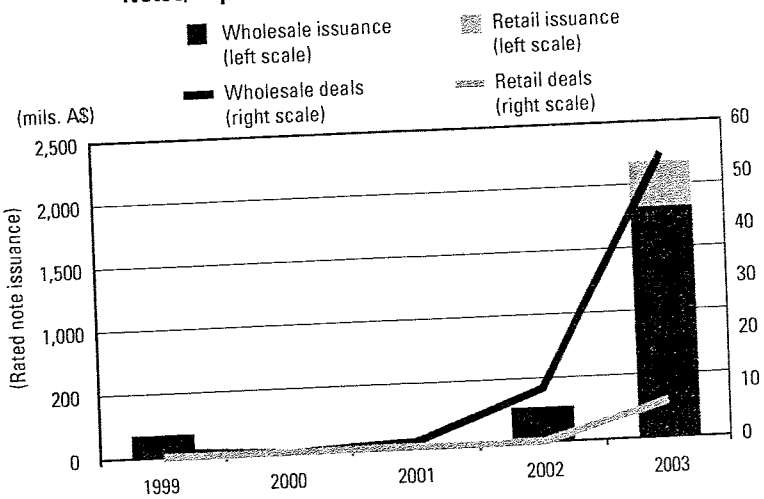
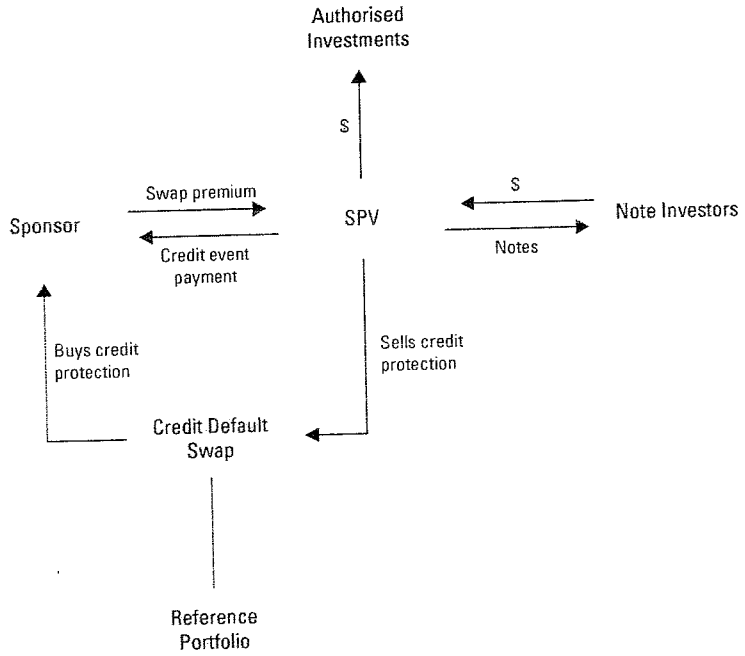
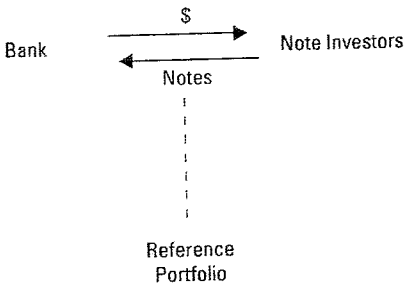


Chart 7
Typical SPV Issuer Structure



SPV—Special-purpose vehicle.

Chart 8
Typical Bank Issuer Structure (Funded)



an SPV, to investors (the credit protection seller) in the form of a credit default swap (CDS) or CLNs. The synthetic structures are used mainly by banks and insurance companies to transfer credit risk and manage regulatory or economic capital, or for arbitrage purposes. Typical "SPV issuer" and "bank issuer" structures are described below.

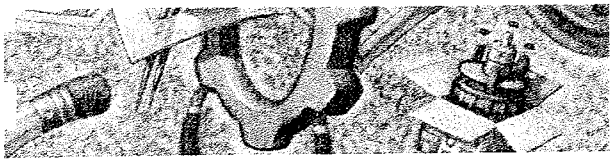
SPV Issuer

In this structure *(see chart 7)*, the sponsor and an SPV enter into a CDS under which the sponsor agrees to buy credit protection from the SPV. The CDS may be referenced to a single entity (the reference entity) or a portfolio of entities (the reference portfolio). The sponsor pays a premium to the SPV in return for a contingent payment, should a reference entity experience a credit event such as bankruptcy. The SPV issues notes to investors and invests the note proceeds in authorised investments until required for credit event payments and/or note principal repayment.

The performance of the notes is linked to the performance of the reference entity or reference portfolio. Interest payments on the notes are funded by the swap premium and interest earned on the authorised investments. If a credit event occurs, the SPV uses the authorised investments to make a credit event payment to the sponsor equal to the actual loss less any first loss assumed by the sponsor. Any remaining authorised investments are used to repay principal to noteholders on maturity of the CDS.

Bank Issuer

In this structure, the bank enters into a CDS directly with investors under which the bank agrees to buy credit protection from the investors. The CDS may be funded or unfunded. If funded *(see chart 8)*, the bank will issue notes to investors, with the note



proceeds held by the bank. The interest and principal payments on the notes are direct obligations of the bank. As a result, the rating on the notes is typically capped at the rating on the bank.

As in the SPV issuer structure, the performance of the CDS or notes is linked to the performance of the reference entity or reference portfolio. If a credit event occurs in an unfunded CDS, investors will make a credit event payment to the bank equal to the actual loss less any first loss assumed by the bank. If the CDS is funded, the original note principal will be written down.

DEFAULT RISK

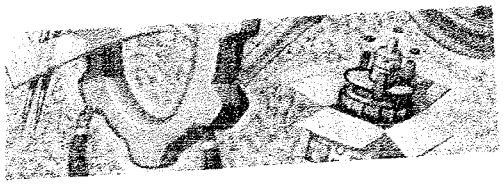
The main and most obvious risk for investors in synthetic CDOs and CLNs is the default risk of the single corporate debt or portfolio of corporate debt that is referenced in the CDS.

Default Probability

For a single corporate debt, Standard & Poor's rating on the corporate debt indicates the default probability. Hence, the rating on a single-name CLN is typically capped at the rating on the corporate debt ("weak-link" rating approach).

For a portfolio of corporate debt, the default probability increases since there is exposure to more names. For example, if there are 20 five-year 'AAA' rated bonds, the probability of any one or more of the bonds defaulting is greater than the probability of one five-year 'AAA' rated bond defaulting. The default probability will also depend on the correlation between the 20 bonds in terms of industry and country. If all the bonds were issued by mining companies in Australia, for example, then it is likely that, when one company has financial difficulties, the others also will be operating in a difficult environment. The high correlation of such companies will cause a higher portfolio default risk.

A powerful tool for estimating the probability of default of a portfolio is Standard & Poor's CDO Evaluator. This is a computer model that can be used for corporate loans, corporate bonds, asset-backed securities (ABS), or a mixture of asset types. Using Monte-Carlo methodology, the CDO Evaluator evaluates the credit quality of a portfolio, taking into account the credit rating, size, and exposure period of each asset; as well as the correlation within and between asset types in terms of industry and geographic location. The credit quality of the portfolio is presented in terms of a probability distribution for potential default rates. From this distribution, a set of stressed default rates is derived. The stressed default rates identify the maximum level of portfolio defaults a CDO tranche should be able to withstand at a given rating level. The default probabilities used in the CDO



Evaluator are based on Standard & Poor's corporate and ABS default studies over the past 15 to 20 years.

Recovery Rate

Following a default, some recoveries may be possible. Recovery rate assumptions used by Standard & Poor's for synthetic CDO and CLN transactions depend on a combination of factors, including:

- *Market liquidity/recovery data.* Recovery assumptions will vary for different markets depending on liquidity and availability of recovery data for defaulted debt. Higher recovery assumptions are used for the U.S., the U.K., and Canada where there are secondary markets and recovery data for defaulted debt. Lower recovery assumptions are used for Asia Pacific, including Australia, New Zealand, and Hong Kong where there are no substantial secondary markets or recovery data.
- *Bankruptcy laws.* Lower recovery assumptions will be used for jurisdictions where bankruptcy laws are protective of defaulting obligors, such as secrecy provisions in Switzerland.
- *Ranking of obligations.* Recovery assumptions will vary directly with the seniority and security of the debt obligation. For instance, senior secured debt will have higher recovery assumptions than subordinated debt.
- *Type of obligations.* The debt obligations that are referenced in a CDS may range from a bond or loan to any borrowed money or payment obligations. If convertible obligations or consent-required loans are included, haircuts will be applied to the base recovery assumptions.
- *Valuation method.* Recovery assumptions will depend on the robustness of the valuation method employed. This may include a workout value through liquidation, a market value based on dealers' bids, or an estimated value by independent valuers.
- *Valuation date.* After a credit event, a long period until valuation will generally assist recovery prospects as it gives the market time to stabilise and to review the situation.
- *Single-name CLN.* No recovery is assumed due to the weak-link rating approach; once defaulted, the rating is lost.

As a starting point, Standard & Poor's has derived a set of base-case recovery assumptions for senior unsecured obligations on a country-by-country basis, which is based on historical bond recoveries from ultimate workout. Haircuts are then applied to estimate the net base recovery assumptions for synthetic CDOs and CLNs (table 1), taking into account the following:

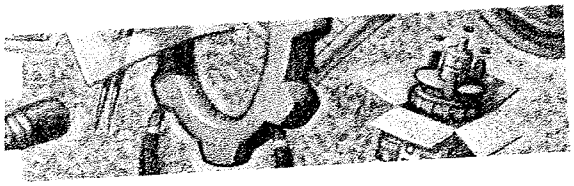


Table 1

Recovery Assumptions for Cash-Settled Synthetic CDOs (Senior Unsecured Obligations)

Country	Base-case recovery rates (%)*	Standard haircut (%)¶	Net base-case recovery rates (%)*
Australia	27.0	2.7	24.3
Austria	31.0	3.1	27.9
Belgium	29.0	2.9	26.1
Canada	37.0	3.7	33.3
China	18.0	1.8	16.2
Denmark	31.0	3.1	27.9
Finland	31.0	3.1	27.9
France	29.0	2.9	26.1
Germany	34.0	3.4	30.6
Greece	29.0	2.9	26.1
Hong Kong	25.0	2.5	22.5
Indonesia	13.0	1.3	11.7
Ireland	36.0	3.6	32.4
Italy	29.0	2.9	26.1
Japan	15.0	1.5	13.5
Korea, Republic of	18.0	1.8	16.2
Luxembourg	29.0	2.9	26.1
Malaysia	18.0	1.8	16.2
Netherlands	34.0	3.4	30.6
New Zealand	27.0	2.7	24.3
Norway	31.0	3.1	27.9
Philippines	13.0	1.3	11.7
Portugal	29.0	2.9	26.1
Singapore	25.0	2.5	22.5
Spain	29.0	2.9	26.1
Sweden	31.0	3.1	27.9
Switzerland	34.0	3.4	30.6
Taiwan	18.0	1.8	16.2
Thailand	18.0	1.8	16.2
U.K.	36.0	3.6	32.4
U.S.	37.0	3.7	33.3
Emerging Market	10.0–15.0	1.0 –1.5	9.0 –13.5

*Current as at the date of this report. ¶Standard haircut applied to base-case recovery rates for the general cheapest-to-deliver phenomenon, specified currencies, and convertibility or consent-required loans. There will be additional haircut if a minimum period of 45 business days before the first bidding is not allowed in the valuation process (50% reduction of the assigned recovery rate) or if the modified restructuring is not used (deduction of 10% from the base recovery rate). For subordinated obligations, recovery rates of 5%-10% are generally assumed. CDO—Collateralised Debt Obligation.

- *Cheapest-to-deliver phenomenon:* The natural incentive of the calculation agent to find the worst-priced obligation for bidding after a credit event;
- *Specified currencies:* The pricing discrepancies that arise where the obligations of a reference entity are denominated in different currencies, and the inclination of the calculation agent to choose the worst-priced obligation; and
- *Convertibility/consent-required loans:* The lower valuations that arise from convertible, exchangeable, or accreting obligations in a restructuring credit event, and from consent-required loans.

Please see further discussion under "Valuation/Recovery Value".

Credit Enhancement

Once a portfolio's stressed default rate and weighted recovery rate are determined, the net loss rate and credit enhancement amount are calculated as follows:

Net Loss Rate = Stressed Default Rate x (100% - Weighted Average Recovery Rate)

Credit Enhancement = Notional Amount of Reference Portfolio x Net Loss Rate

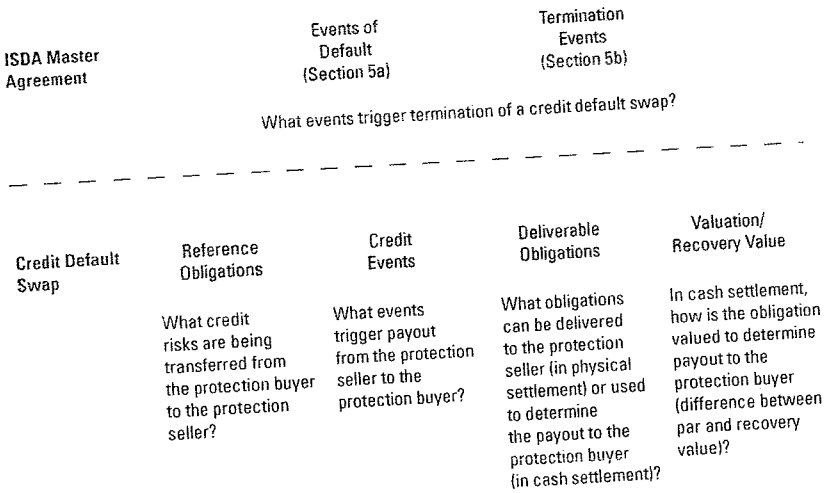
DOCUMENTATION RISKS

The less obvious risks for investors of synthetic CDOs and CLNs are documentation risks arising from the swap agreements, as depicted in chart 9.

Early Termination

In synthetic CDO and CLN transactions, the CDS usually incorporates the events of default and termination events specified in the 2002 *International Swaps and Derivatives Association, Inc. (ISDA) Master Agreement.* As these events are broader than the definition of default used by Standard & Poor's in its ratings

Chart 9
Documentation Risks



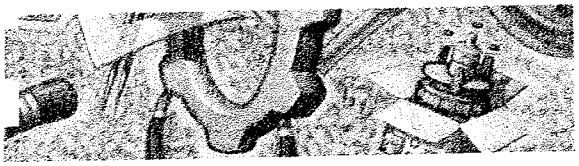


Table 2

ISDA Events of Default and Termination Events

	Event of default/ termination event	Acceptable for synthetic CDOs or CLNs?
Section 5 (a)	(i) Failure to pay	Yes
	(ii) Breach of agreement	No
	(iii) Credit support default	No
	(iv) Misrepresentation	No
	(v) Default under specified transaction	No
	(vi) Cross default	No
	(vii) Bankruptcy	Yes
	(viii) Merger without assumption	Yes
Section 5 (b)	(i) Illegality	Yes
	(ii) Tax event	Yes, subject to satisfactory tax opinions
	(iii) Tax event upon merger	Yes, subject to satisfactory tax opinions
	(iv) Credit event upon merge	No
	(v) Additional termination event	No

CDO—Collateralised Debt Obligation. CLN—Credit Linked Note.

and default studies, investors may be exposed to risk of loss not normally included in a rated transaction. This may arise from, for example, swap break costs or enforced sale of the authorised investments at market value on an early termination of the CDS.

Standard & Poor's considers any of the following events to be a default:

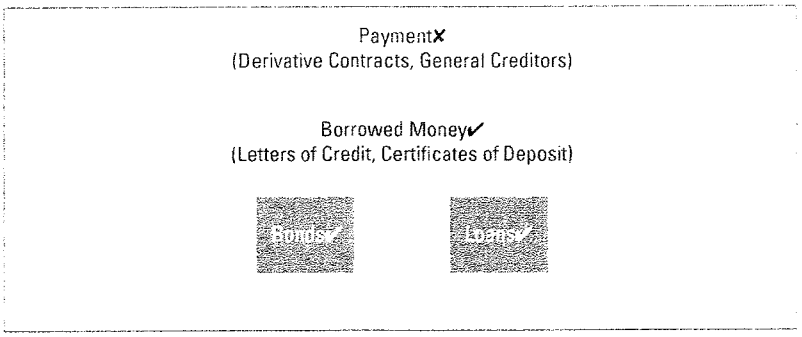
- A missed interest or principal payment, taking into account any grace period and excluding bona fide commercial dispute;
- Bankruptcy; and
- A distressed exchange where debtholders are offered substitute instruments with lower coupons, longer instruments, or any other diminished financial terms.

In rating synthetic CDOs and CLNs, Standard & Poor's accepts only certain ISDA swap events of default and termination events that are consistent with its definition of default. Tax events are also accepted if satisfactory tax opinions are provided stating that no withholding tax applies under current law and there is no pending legislation to create such a tax. These acceptable events are listed in table 2.

Reference Obligations

In a CDS, the reference entity is the debt-issuing entity and the reference obligation is the debt obligation issued by that reference entity. Under the *2003 ISDA Credit Derivatives Definitions*, reference obligations can be limited to any bond or loan obligations, or broadly defined to include any borrowed money or payment obligations of the reference entity. A credit event on any reference obligation triggers a payment from the investors to the protection buyer. Hence, the broader the definition of reference obligations, the broader the credit risk to investors. Standard & Poor's does not accept payment as a reference

Chart 10
ISDA Reference Obligation Category



✔Acceptable for rated credit-linked notes.
✘Not acceptable for rated credit-linked notes.

obligation category, as it may include commercial contracts, such as utility bills, which are unlikely to be captured in Standard & Poor's default study *(see chart 10)*.

Credit Events

Synthetic CDOs and CLNs typically incorporate credit events listed in the *2003 ISDA Credit Derivatives Definitions*. These credit events are broader than the definition of default used by Standard & Poor's. This means that investors may be allocated losses on more occasions than in a rated transaction.

When assigning a rating to a single-name CLN where a weak-link approach is used, Standard & Poor's accepts only the credit events that are consistent with its default definition *(see table 3)*.

Table 3
ISDA Credit Events

	Credit event*	Acceptable for single-name CLNs?
1.	Failure to pay	Yes
2.	Bankruptcy	Yes
3.	Repudiation/moratorium	Yes
4.	Restructuring (i) Reduction in interest payment amounts (ii) Reduction in principal payment amounts (iii) Deferral of interest or principal payments (iv) Change in an obligation's priority, causing it to be subordinated (v) Change in the currency or composition of any payment of interest or principal	Yes Yes Yes No No
5.	Obligation acceleration (i.e. actual acceleration due to default other than payment failure)	Yes, subject to physical delivery, or cash settlement at the option of the protection seller (i.e. the investor). Physical delivery would ensure that investors' credit risk exposure does not differ from cash market investment.
6.	Obligation default (i.e. default other than failure to pay that renders an obligation capable of being accelerated)	No

*Each credit event should be subject to a materiality test and publicly documented. CLN— Credit Linked Note.

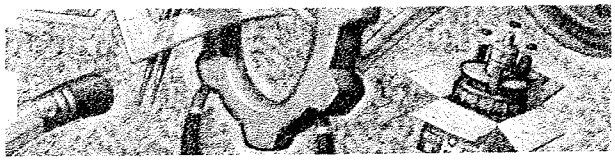
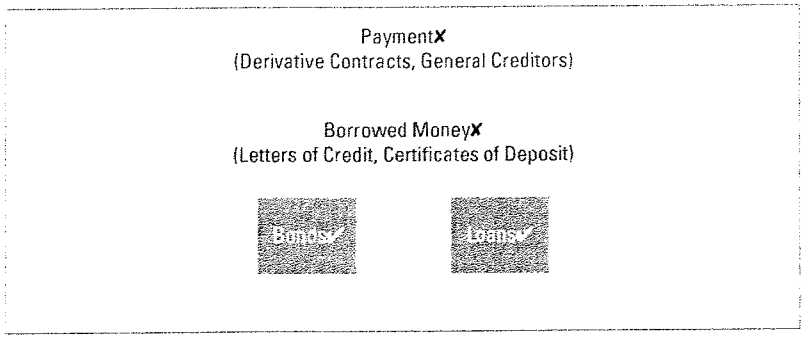


Chart 11
ISDA Deliverable Obligation Category



✓Acceptable for rated credit-linked notes.
✗Not acceptable for rated credit-linked notes.

For portfolio synthetic CDOs and CLNs, broader credit events may be acceptable, as an actuarial approach is adopted, and the credit enhancement can be sized to take into account the broader credit events.

Deliverable Obligations

The deliverable obligations in a CDS define the defaulted assets that will be physically delivered to the protection seller (in a physical settlement) or used to determine the payment to the protection buyer (in a cash settlement). As with reference obligations, deliverable obligations may range from a bond or loan to any borrowed money or payment obligations under the ISDA definitions. Standard & Poor's does not accept borrowed money or payment as a deliverable obligation category, as it is difficult to establish a recovery value for payment obligations other than bonds and loans *(see chart 11)*.

Valuation/Recovery Value

In a cash settlement, the deliverable obligations are valued and the protection buyer is reimbursed for the loss between the par value and the defaulted value of the deliverable obligations. The value of deliverable obligations is typically established by requesting bids from various market participants. Certain elements in the cash settlement process, such as the valuation date, size of bids, number of bids, and selection of bids, will have an impact on the recovery value that can be achieved.

Standard & Poor's will review the terms of the CDS and may apply further haircuts to the net base-case recovery rates (see previous discussion under "Recovery Rate") if any of the following conditions are not met:

- *Valuation date:* At least 45 business days after a credit event;
- *Size of bids:* Minimum quotation amount of $1 million and maximum of $15 million;
- *Number of bids:* Minimum of five bids requested, of which a minimum of three are obtained; and
- *Selection of bids:* Highest or average highest of bids.

Additionally, if restructuring is a credit event, further haircuts will be applied to the net base-case recovery rates if "modified" or "modified modified" restructuring, as defined in the *2003 ISDA Credit Derivatives Definitions*, is not used. These restructuring definitions limit the maturity of the obligations that can be delivered, requires the deliverable obligation to be fully or conditionally transferable, and do not allow bilateral obligations to trigger a restructuring credit event.

CASH FLOW/STRUCTURAL RISKS

The cash flow and structural elements of a transaction will have an impact on the likelihood of investors receiving full and timely payment. The main cash flow/structural risks are discussed below.

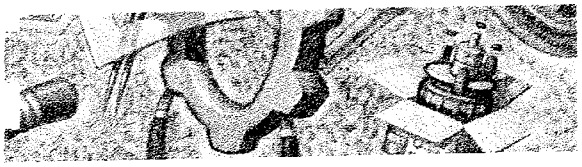
Bankruptcy Remoteness/ Segregation of Series

In the case of an SPV issuer, the assets owned by the issuer are meant to secure the debt securities that it issues. It is therefore crucial for the issuer to be structured as a bankruptcy-remote entity such that it is unlikely that equityholders or creditors, other than the debtholders, will resort to voluntary or involuntary insolvency proceedings to try and reach the assets of the issuer.

Where an SPV issues multiple series of debt securities that are secured by assets of different credit quality, the creditors of a defaulted series may attempt to reach the assets of another series by taking actions that may result in the issuer's bankruptcy. The issuer should be structured as a segregated vehicle such that the debt and assets of each series are completely segregated and the recourse of the creditors of a series are limited to the assets of that series.

Payment Priorities/Swap Counterparty Ranking

For rated synthetic CDOs and CLNs, Standard & Poor's typically requires a set of pre-default and post-default payment priorities that determine which parties receive their entitlement first. Pre-default, a swap



counterparty may rank ahead of noteholders if the cash flows need to be swapped to pay the noteholders. Post-default, or on an early termination event, a swap counterparty should rank behind noteholders if the swap counterparty is the defaulting party, for example, the swap counterparty failed to pay under the swap. If the swap counterparty is not the defaulting party, then it may rank pari passu with, or ahead of, noteholders, depending on the cause of the default or early redemption.

Early Redemption

Some transactions are structured such that certain early redemption events will cause the transaction to terminate before the maturity date, with the assets being sold and the proceeds distributed to various parties in accordance with the early redemption payment priorities. This avoids the need to call an event of default and involve the security trustee in enforcing the security and assets.

Early termination exposes investors to market value risk, as the market price achieved from the sale of the assets at the time of early termination will determine the amount noteholders receive. Additionally, there may be swap break costs arising from early termination of the swap that may result in noteholders receiving less than the outstanding balance of the notes.

Standard & Poor's accepts only those early redemption events that are consistent with its ratings on the notes, such as payment default of the asset or swap counterparty, as the ratings on the notes would have taken into account the ratings on the asset and the swap counterparty. Early redemption events, such as a drop in market value of the swap or early redemption at the issuer's option, are not acceptable, as those events can occur at any time and cannot be factored in the ratings on the notes.

Currency Risk

If synthetic CDOs or CLNs are denominated in a different currency than the reference obligations, there will be an exchange rate risk that needs to be mitigated. This can be achieved by using predetermined exchange rates at the outset.

For example, assume there is a reference obligation in U.S. dollars of $10 million, over which are issued CLNs in Australian dollars. If an exchange rate of 0.5000 is agreed at the outset, the Australian dollar-equivalent of the reference obligation will be A$20 million. If the reference entity defaults, and US$2 million is recovered, the recovery rate, based on the

U.S. dollar reference obligation, is 20%. The recovery rate of 20% is then applied to the Australian dollar-equivalent of the reference obligation of A$20 million to calculate the credit loss of A$16 million. Hence, the loss to investors in Australian dollars is not dependent on the actual exchange rate at the time of the loss calculation.

Interest Rate Risk

If there are mismatches in the interest rate benchmark or timing of payment between the assets and the notes, noteholders may not receive full and timely payment. These mismatches will need to be mitigated by use of interest rate swaps, a liquidity facility, or physical match funding.

Rating Dependencies

Apart from assessing the credit quality of the corporate debt in a synthetic CDO or CLN transaction, Standard & Poor's also considers the credit quality of other parties to the transaction to ensure that exposures to those parties are either mitigated or accounted for by the ratings.

In a bank issuer structure, the rating on the notes is typically capped at the long-term rating on the bank. To de-link from the bank's rating, an SPV issuer structure may be used. In an SPV issuer structure, the short-term rating on the sponsor may be relied on provided the sponsor agrees to find a replacement swap counterparty at its cost or it provides cash collateral for the payment of the swap premium if its short-term rating is lowered. The note proceeds must be invested in authorised investments that are rated as high as the rating on the notes.

CONCLUSION

When investing in synthetic CDOs or CLNs that are rated by Standard & Poor's, investors can gain confidence from the fact that the rating addresses not only the default risk of the reference entity or the reference portfolio but also the documentation and cash flow/structural risks in the transaction. In addition, the rated notes are under surveillance by Standard & Poor's to ensure that appropriate ratings are assigned to the notes throughout the term of the transaction. Investors and other interested parties can have access to Standard & Poor's CDO Evaluator, which is a powerful tool for assessing the default risk of a portfolio of corporate or ABS debt.

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