STANDARD &POOR'S CORPORATE RATINGS

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Public Finance Criteria: Debt Derivative Profiles

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Standard & Poor's Ratings Services is introducing Debt Derivative Profile (DDP) scores to provide the public finance market with a simple measure of the complexities of municipal debt-related derivatives by translating that exposure into an easily understandable measurement of risk.

Background

Over-the-counter debt derivatives, such as swaps and caps, have for decades been used as hedges in the capital markets, but appreciably by municipal issuers only in the last several years. Issuers, investors, regulators, and citizens have become increasingly focused on public purpose entities' involvement in what was once exclusively a corporate risk management tool. Many issuers—traditionally, fiscally conservative entities--spurred by a sluggish economy and rising expenses, have started to use derivatives as hedges to lower borrowing costs and reduce interest rate risk. As a fixed cost, debt service is a difficult budget item to control and swaps can provide some relief to both costs and tax law-limited refundings. Several states, including Pennsylvania, Michigan, and North Carolina, have granted statutory authority to local jurisdictions to enter into hedges for debt, further fueling the surge in municipal derivatives activity. In all cases, debt derivatives have altered the credit profiles of issuers--in some cases heightening risk, although in most cases reducing it.

Standard & Poor's developed DDP scores to enhance the transparency of municipal derivative structures and the impact on credit quality. Derivative impact is already part of Standard & Poor's analysis; the DDP scoring method incorporates existing municipal swap rating criteria and codifies that criteria into an easy-to-understand risk score. Scores range from 1 to 5, with 1 representing the lowest risk and 5 representing the highest risk. Although many factors are considered, the DDP scores principally indicate an issuer's potential financial loss from over-the-counter debt derivatives (swaps, caps, collars) due to early termination resulting from credit or economic reasons. DDPs will be integrated into Standard & Poor's rating analysis for swap-independent issuers and, as is now the case, can be a key financial rating factor. Standard & Poor's considers tax-secured GO bonds and general revenue bonds—health care, transportation, and utility--as swap-independent, as failure of the swap would not preclude the issuer from repaying its bonds. Swap dependent issuers, mostly housing and structured financings, are not eligible for DDPs since ratings on these transactions already incorporate cash flow stress testing of all derivative risks.

It is important to note that the expectation of public finance issuers is that swaps and other derivatives are used as hedges and will be related to debt instruments. Hedges are designed to offset risk. Derivatives entered into to generate revenues or relieve rate pressures are viewed as essentially gambling on interest rates and are viewed negatively in the overall analysis.

Scores and Interpretation

The Standard & Poor's DDP scoring system has four components. Each will first be individually scored and then aggregated to reach the DDP:

- Issuer termination and collateral posting risk;
- Counterparty termination credit risk;
- Economic viability of the derivative portfolio; and
- Quality of swap and debt management policies and procedures.

Each of the factors will be scored on a scale of 1 to 5 and in most cases equally weighted at 25%. The DDP will be the weighted average score of the factors.

Final DDP scores of 1 and 2 indicate that the impact from debt derivatives on an issuer's financial profile is manageable and represents a neutral credit factor; a DDP of 3 indicates moderate credit risk, while DDPs of 4 and 5 may be an indicator of increased credit risk. Depending upon other credit fundamentals, DDP scores of 3, 4, and 5 may influence the rating. Other factors that influence a DDP score include:

- Issuer's rating and outlook, which indicates the tolerance for a high DDP score;
- Swap exposure, which indicates the absolute level of involvement with swaps and, therefore, the overall importance of the DDP score. Swap exposure is defined for this purpose as total derivative notional divided by total debt outstanding.
- Value-at-risk vis-à-vis reserve levels, which is a stress test for the potential worst-case market value loss resulting from a derivatives trade. Value at risk is incorporated into the rating analysis if the DDP score indicates the potential for early termination; and
- Net variable rate exposure, which measures the potential risk to an issuer's revenue stream and reserve levels resulting from rising interest rates. The exposure ratio will be calculated on a current basis, although Standard & Poor's will use the net variable rate ratio to model "what-if" scenarios in order to gauge prospective levels of variable interest exposure, given either proposed derivatives structures or future bond issuance.

While there is no appropriate DDP score for any given rating level, issuer, or sector, Standard & Poor's expects investment grade issuers to have scores of 1, 2, or 3. While higher rated issuers could theoretically withstand higher DDP scores, a high DDP would likely be a negative rating factor for lower rated issuers.

Standard & Poor's considers issuer termination and collateral posting risk, along with counterparty termination risk, as the two most important factors influencing whether an issuer could experience a significant financial loss from derivatives. As municipal derivative durations are typically 20 and 30 years, however, the economic viability of an issuer's derivative structures and its management practices heavily influence the outcome of termination. Therefore, if one or more derivatives contracts are in danger of terminating, the DDP score will reflect the increased risk, placing more emphasis on the potential of early termination and less emphasis on management and economic viability.

Debt Derivative Profile Criteria

The Debt Derivative Profile (DDP) is a weighted average of four factors, each of which is scored on a scale from 1 (low risk) to 5 (high risk). To reach the

overall score, each swap will be evaluated and then the DDP will be based on the aggregated swap scores. The four factors that comprise the DDP are:

- Issuer termination and collateral posting risk;
- Counterparty termination credit risk;
- Strength of the hedge and economic viability of the swap structure (basis risk); and
- Quality of swap and debt management policies and procedures.

Each scored factor is initially weighted at 25%. Weights may be changed if the potential credit and liquidity exposure to the issuer resulting from early swap termination is significant, since early termination poses financial risks to issuers that may be difficult to manage. Standard & Poor's believes that management experience and skill in negotiating and structuring a derivatives program is fundamental to ensuring a low DDP score. Therefore, it is likely that DDP scores equal to or above 4, which typically would include counterparty or termination risk scores of 4 or 5, would be reflective of management's philosophy on risk management and derivatives structures.

Termination/collateral posting risk.
Termination and collateral posting risk is based on the risk that the issuer defaults under the swap or triggers a collateral posting under credit support documents. As part of the financial analysis component of the bond rating, we will measure the risk that the issuer will be exposed to a credit or liquidity shortfall as a result of being forced to terminate the swap or post collateral. Analytically, collateral posting is equivalent to payment of termination fee due to the typically long-dated nature of municipal swaps and the restricted nature of collateral.

To determine a final termination and collateral risk score to be used in the DDP, Standard & Poor's will score and weight seven factors which could lead to, or exacerbate, a collateral posting by the issuer, or pose a threat for an early swap termination and payment of a termination fee.

The seven factors are:

- The likelihood of an issuer triggering an event of default or termination or collateral posting, weighted 50% due to is significance to the analysis;
- The issuer's historical ratings volatility (number of rating or outlooks changes in last three years);
- Swap duration (less than 10 years, 10-15 years, 15-20 years, greater than 20 years);
- Termination payment methodology (first or second method, market quotation or loss);
- Cross default provisions (parity debt, subordinate debt, or other debt);
- Lien of termination payments (parity or subordinate);
- Source of termination payments (taxes, net revenues, etc.); and
- Provisions for payment of termination fee (term-out or lump sum).

For this analysis, the issuer is assumed to have executed one International Swaps and Derivatives Association (ISDA) master agreement with each counterparty, necessitating only one termination risk score per counterparty. The final score for termination and collateral posting risk will be the weighted average of each counterparty's ISDA swap document score, with weightings based on the total notional amount of swaps provided by a counterparty relative to the issuer's total swap notional amount outstanding. Notional

amount is used as a proxy for potential value at risk under the assumption that larger swap valuations would result from relatively larger notional amounts and smaller swap valuations would result from relatively smaller notional amounts.

If an issuer has scored a 4 or 5 on any of its ISDA documents or on the termination risk score itself, Standard & Poor's will evaluate value-at-risk under the applicable transaction(s) and compare it to the issuer's unrestricted reserves; that financial analysis will be factored into the rating.

Half of the termination and collateral posting risk score reflects the likelihood of an issuer triggering an event of default or termination or collateral posting. Of the myriad events of default and termination contained in a typical municipal interest rate swap, the "additional termination event" of a rating downgrade trigger or collateral posting are the most likely to occur. Standard & Poor's will score the likelihood of an issuer triggering termination or collateral posting based on the downgrade potential using Standard & Poor's rating transition data. The data will continually be updated through our CreditPro model. In the event that Standard & Poor's rating is not used as the trigger, Standard & Poor's will use the actual rating trigger (as opposed to one rating notch below the rating trigger) to determine the score. The scores will reflect the likelihood of triggering events based on the spread between the issuer's current rating and the potential for transitioning to the rating trigger level, rewarding issuers having a wide ratings trigger spread under the swap and penalizing issuers for having a narrow trigger spread.

Standard & Poor's expects that issuers rated in the 'A' and 'BBB' categories will post higher scores in this portion of the termination risk analysis because rating trigger minimums are typically 'BBB', which makes rating trigger spreads for these issuers narrow. In the rare event that an event of default or termination, other than the ratings trigger, is considered more likely to occur, Standard & Poor's will score event of default and termination a 5 based on the assumption that this event will occur over the life of the swap.

Standard & Poor's will assign the lowest scores for low ratings volatility, short swap duration (reduced likelihood of a rating transition), first method, market quotation termination calculation method, parity debt cross defaults, subordinate termination payment lien, and term-out structure for termination payments. Gradually higher scores are assigned for alternate options.

There may be mitigating factors which would warrant a termination risk score of 1 for any swap. These factors include:

- Issuer provides a non-reimbursable insurance policy for swap termination payments from a 'AAA' or 'AA' rated monoline bond insurer;
- Issuer has an option to terminate the swap at any time at little or no cost; or
- There are no material events of default or termination under swap.

Counterparty risk.
Counterparty risk is scored based on the risk that a counterparty will default and terminate a swap and the issuer will lose a positive swap valuation, thereby diminishing its ability to replace its hedge position. Similar to the termination and collateral posting risk-scoring methodology, each counterparty is assumed to have executed one ISDA master agreement.

Like termination and collateral posting events discussed above, the "additional termination event" of a rating downgrade trigger or collateral posting by the

counterparty are a real risk, particularly given the length of most contracts. The standard ISDA swap event of default and termination factors--failure to pay or deliver, misrepresentation, bankruptcy, illegality, merger without assumption, and so forth-are permitted events for municipal swaps since they are already incorporated into counterparty ratings. Therefore, Standard & Poor's will score counterparty risk based on the potential for counterparty credit deterioration and default under the swap. Similar to issuer termination and collateral posting risk, Standard & Poor's will use rating transition data to determine the likelihood of counterparty default. As discussed above, rating thresholds and the use of Standard & Poor's ratings will determine the measurement of the spread between actual ratings and default triggers; the narrower the spread, the higher the score will be. In essence, the scoring scale gives issuers credit for securing highly rated counterparties and penalizes issuers for securing lower rated counterparties. In addition, counterparty concentration will be reflected in the score. The counterparty concentration ratio is calculated by dividing total notional amount for any one swap provider by an issuer's total swap notional amount outstanding.

Many municipal swaps require counterparties to post collateral, secure third-party guarantees, or replace itself in the event of ratings downgrades, effectively mitigating counterparty credit risk. However, in absence of any such requirement, Standard & Poor's views positively issuers which seek replacement swap counterparties to the extent a counterparty is downgraded to the 'BBB' rating category. Acceptable collateral levels and collateral posting methods are detailed in the article "Swap Counterparty and Collateral Criteria Expanded" (RatingsDirect, Jan. 13, 2004).

Mitigating factors, which would warrant a counterparty termination risk score of 1, include if the swap is plain vanilla (highly liquid) and:

- The counterparty has provided insurance for termination payments from a 'AAA' or 'AA' rated monoline bond insurer; or
- The counterparty must replace itself prior to being downgraded to 'BBB' with a higher rated counterparty, or
- The counterparty must collateralize prior to being downgraded to 'BBB'; or
- The counterparty will remain swap provider and produce a third-party guarantee rated at least 'BBB prior to being downgraded to 'BBB.'

Economic viability.
The issuer's swap portfolio structure is scored based on whether the issuer could have an incentive to restructure or voluntarily terminate a transaction due to ineffectiveness of the swap over the longer term. Standard & Poor's will stress test the issuer's hedges for economic viability through a basis exposure model, which measures payments from hedges versus payments due on bonds or versus expected returns (for basis trades). Assessment of long-term viability of a hedge through economic cycles is important since the unwinding, restructuring, or execution of additional hedges is potentially costly and time consuming, accompanied by real economic and opportunity costs. These costs are in addition to the additional, unexpected interest costs resulting from the ineffective hedges. For example, the recent and prolonged low interest rate environment has proven that certain derivative strategies once thought effective can quickly become ineffective. In the past year, a number of issuers have restructured or terminated LIBOR-based floating-to-fixed rate swaps (entered into only in the last five years) to reduce or eliminate basis exposure. The basis exposure occurred as the percentage of LIBOR paid under the swap to the issuer by the counterparty proved insufficient to properly hedge the associated variable rate tax-exempt Bond Market Association Municipal Swap Index (BMA)-based debt.

The initial weight of 25% for swap structure and economic viability reflects the potential for hedge ineffectiveness and voluntary termination of hedges. As previously mentioned, the economic viability weighting may be reduced since involuntary termination of the swap by either the issuer or counterparty represents a greater risk to the issuer's credit quality.

Hedge ineffectiveness of a swap portfolio is calculated through a proprietary basis exposure model, which incorporates Standard & Poor's stressful interest rate curves and tax-exempt bond price assumptions. The basis exposure for an issuer's swap portfolio is measured by a ratio equal to the average annual additional interest paid on bonds divided by total swap notional amount. Scores are assigned based on this ratio. The lower the basis exposure, the lower the score will be. Lower scores reflect the potential for higher economic viability for the issuer's swap structure while higher scores indicate lower economic viability over the longer term.

Management.
Management is scored based on Standard & Poor's assessment of management experience and the quality of its swap and debt management plan, using 10 factors including:

- Plan or policy on swaps and other debt related derivatives;
- Plan formally approved by governing body;
- Swap risks identified and discussed (oral or written);
- Annual management review of swaps;
- Comprehensive disclosure of swaps in audited financial statements;
- Valuation of swaps (semi-annual minimum);
- Counterparty diversification or minimum ratings policy;
- Optional swap termination policy;
- Collateral or insurance policy; and
- Net variable rate exposure policy.

A comprehensive swap management plan will include the above consideration and should also include a discussion of risks and rewards of swaps and variable rate debt, senior management personnel responsible for monitoring swap risks, maximum level of variable rate debt and swap exposure, counterparty exposure limitations, collateral policies and procedures, and a detailed description of and rationale for all derivative transactions entered into or that are contemplated.

Management is initially weighted at 25%, but under the previously mentioned scenarios, may be reduced.

Additional Rating Factors

Swap/derivative exposure.
Standard & Poor's will calculate a swap exposure ratio for all swap-independent issuers in order to lend a contextual reference for the DDP score. For example, a DDP score of 3, 4, or 5 may not necessarily constitute a credit weakness if the issuer only has one debt derivative outstanding. The swap exposure ratio--calculated by dividing total outstanding derivative notional amount by total outstanding issuer debt--is a proxy for an issuer's overall involvement with swaps and other derivatives. Derivative notional amounts will include all swaps, including floating-to-floating (basis) swaps, interest rate caps, and collars. Standard & Poor's considers the swap exposure ratio a consistent measure of the size of an issuer's swap portfolio as opposed to

mark-to-market or value-at-risk calculations. Valuations can fluctuate greatly based on interest rates, while the statistics used in the swap exposure ratio--swap notional and issuer debt amounts--do not exhibit the same volatility. Nevertheless, Standard & Poor's remains concerned about an issuer's swap valuation, particularly if there is an impending termination of a swap.

Swap valuation.
An issuer's swap valuation is stress tested to determine the value-at-risk (VAR). The VAR for derivatives will be factored into the rating analysis only if risk of derivative termination is heightened, indicated either by a final DDP score of 4 or 5 or individual termination and counterparty risk scores of 4 or 5. Issuers engaging in derivative transactions should be disclosing the derivative's fair valuation, or mark-to-market (MTM) in the notes to audited financial statements in accordance with GASB's 2003 Technical Bulletin ("2003-01- Disclosure Requirements for Derivatives Not Reported at Fair Value"). Using certain MTM data points, Standard & Poor's will ask the issuer to calculate a VAR for swaps which are in danger of terminating early (as indicated by a termination or counterparty risk score of 4 or 5), assuming a 200 basis point positive/negative shift in interest rates. Standard & Poor's will use the worst-case VAR and measure it against the issuer's unrestricted reserves to determine the credit impact of early, involuntary swap termination. Unless otherwise indicated by the issuer, Standard & Poor's assumes that voluntary swap terminations would occur only for a net economic benefit.

Net variable rate exposure.
In addition to swap exposure, Standard & Poor's will calculate net variable-rate interest exposure for use in conjunction with any DDP score. The net variable exposure measures the potential risk to an issuer's revenue stream and reserve levels resulting from rising variable rates. The exposure ratio will be calculated on a current basis, although Standard & Poor's will model "what-if" scenarios to gauge prospective levels of variable exposure, given either proposed derivatives structures or future bond issuance. For example, some issuers have entered into swaptions, which may become effective in the future depending upon the level of interest rates. If Standard & Poor's is concerned that a counterparty may have an incentive to terminate a fixed-to-floating rate swaption on an issuer, Standard & Poor's will assess the potential exposure of future variable interest rates for the issuer through the net variable rate exposure calculation. Another example is an issuer that partially hedges a 30-year variable rate issue for 10 years with a floating-to-fixed rate swap. Through this simulation, Standard & Poor's is able to determine the impact of rollover risk, or the risk that the issuer will not be able to re-hedge its variable rate exposure upon expiration of the swap.

Conclusion

In an effort to hedge risks, many entities are entering into derivative instruments that have a long, successful history. Understanding the risks associated with these types of agreements is critical. With our DDP, Standard & Poor's will add an independent evaluation of the risks associated with certain derivatives and the potential impact on credit quality and ratings.

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