Abstract

Debt Related Derivatives, US State and Municipal Governments, and Evolving Financial Reporting Standards

This paper examines the nature and extent of debt related derivative activities among US state and municipal governments. We reviewed the footnotes to the fiscal 2003 financial statements of the fifty states, the Commonwealth of Puerto Rico, and the 100 largest US cities (based on 2000 US census data) to ascertain the presence of debt – related derivative financial instruments. We found that there were 23 state governments and 23 municipal governments that have engaged in such transactions with an aggregate notional value approaching $32 billion. The most common motivation for these transactions reflects a desire to hedge the interest rate and cash flow risks associated with long term variable rate debt obligations. We found that the Government Accounting Standards Board's (GASB) technical bulletin 2003 has improved the transparency of state and municipal governments' financial statements with respect to their derivative activities. The GASB is currently contemplating accounting and reporting standards that would mandate the recognition of these derivative financial instruments at fair value on the statement of net assets.

Debt – Related Derivatives, US State and Municipal Governments, and Evolving Financial Reporting Standards

Introduction

Derivative financial instruments such as interest rate swaps, forward delivery swaps, swaptions, and interest rate caps have been an integral part of the nation's municipal debt markets for over a decade. McManus, Pfeil, and Zibit (2003) report that the general downward trend of interest rates over the past decade has presented many credit worthy municipal debt issuers with exceptional opportunities to reduce their debt service costs by refunding outstanding debt and financing new projects at historically low interest rates. In this environment, many state and municipal governments are utilizing interest rate swaps to synthetically change the cash flow and risk characteristics of the interest payment associated with their long term debt. McManus, Pfeil, and Zibit (2003) observed that an increasing number of municipal debt issuers have used interest rate swaps to synthetically refinance their fixed rate debt obligations by increasing their exposure to current market interest rates through the use of fixed to floating interest rate swaps and have hedged their exposure to variable interest rates by floating to fixed swaps. In addition, many state and municipal governments across the nation are also using other debt related derivative financial instruments such as forward delivery swaps, swaptions, and interest rate caps as an integral part of their debt management activities. My paper presents the first descriptive study of these activities among US state and local governments. This paper also summarizes the available authoritative and professional guidance for appropriate reporting and disclosure standards for debt related derivative transactions.

Table 1 below describes the wide variety of derivate financial instruments currently in use among US state and municipal governments.

[Insert Table 1 about here]

Some State Legislatures Enact Derivative Friendly Legislation

While the recent and ongoing volatility of interest rates in the nation's municipal debt markets creates an opportunity for investment bankers, swap advisors, and others to market a wide variety of risk management tools and services to governments, the regulatory environment for the use of derivatives by government officials has also been in a state of evolution as well. Many state legislatures and municipal governing bodies responded to the 1994 bankruptcy and financial default of Orange County (CA) by effectively banned the use of all types of derivatives (Miller and Stanko, 1995). Since that time, however, a number of states and municipalities have enacted statutes expressly authorizing public agencies to enter into swaps and similar transactions (Underwood, etal 2004). For example, on September 24, 2003, Pennsylvania Governor Edward G. Rendell signed H.B. 1148 into law. HB 1148 was specifically designed to provide the conditions under which municipalities and school districts can legally enter into agreements hedging interest rates. On June 3, 2003 the Illinois legislature enacted Public Act 93-9 which permits the State of Illinois to enter into interest rate exchange contracts, and to issue directly or to incur through entering an exchange contract, a mode of variable interest rate payment on a portion of the State's General Obligation debt. While there are many difference between these pieces of legislations across the states that enact them, these statutes usually impose major oversight, procedural and structural requirements on the public agencies entering into derivative transactions. Public agencies may, for example,

only enter into swaps following a determination by the Agency's governing body that the proposed swap is designed to achieve one of the purposes specified in the authorizing statute (e.g., reducing interest rate risk, lowering the cost of borrowing, enhancing the relationship between risk and return on investments). Some states require that swap providers to satisfy various credit criteria (e.g. a AAA bond rating).

Reporting Standards for Debt – Related Derivative Activities by State and Municipal Governments

Accounting and disclosure standards have been evolving continually over the past twelve years to adequately report the economic impact of these rapidly expanding derivative activities. GASB Technical Bulletin 94 – 1 (GASB 1994): *Disclosures about Derivatives and Similar Debt and Investment Transactions* (TB 94 – 1) was issued in October 1994 to provide state governments, municipalities, and other governmental entities with authoritative guidance on the disclosure of derivatives. GASB Technical Bulletin 2003 – 1 (GASB 2003*), Disclosure Requirements for Derivatives Not Reported at Fair Value on the Statement of Net Assets*, (TB 2003 – 1) became effective on June 15, 2003 and superseded TB 94 – 1. TB 2003 proceeds from a more expansive yet precise definition of derivatives based on Statement of Financial Accounting Standard 133 (FASB, 1998). The purpose of the disclosures required by TB 2003 – 1 is to provide information to financial statement users that will enhance their understanding of the significance of derivatives to a government's net assets and in assist assessing the amounts, timing, and certainty of future cash flows. Its provisions mandate that governments which are party to such a derivative financial instrument that was not reported at fair value on the statement of net assets as of the date of the financial statements should disclose the following information:

a. The objective of the derivative transaction

b. The significant terms of the derivative transaction

c. The fair value of the derivative instrument as of report date

d. The outstanding debt associated with the derivative transaction

e. The risks associated with the derivative transaction that could result in financial loss. These risks include:

    1. Credit risk
    2. Interest rate risk
    3. Basis risk
    4. Termination risk
    5. Roll over risk
    6. Market access risk

GASB's guidance for the reporting of debt – related derivatives has been supplemented by recommendations from the Government Financial Officers Association (GFOA) and the National Federation of Municipal Analysts (NFMA). The GFOA approved GFOA Recommended Practice: Use of Debt – Related Derivative Products and the Development of a Derivatives Policy in October 2005. This statement focuses on recommended practices for the management and control of derivative activities by state and local governments as well as suggested informational disclosures to investors and other financial statement users. The NFMA Swap Disclosure Task Force produced The White Paper on Disclosure of Swaps in November 2004 to offer suggested disclosure practices for swap and swaption transactions for bond issuers. In particular, the NFMA recommended that the following information should be included in the annual audited financial statements:

- A comprehensive statement of the government's broad risk management objectives and debt management policies as a context for the use of specific derivative financial instruments;
- The government's debt profile including its current mix of variable rate and fixed rate debt;
- A comprehensive summary of the government's swap transactions.

GASB's Derivatives and Hedging Task Force is considering the appropriateness of the existing mandated footnote disclosure (TB 2003 – 1) as well as the appropriate accounting treatment of debt related DFIs and all other derivatives. During 2005, the Board tentatively decided to pursue a method of reporting all derivatives, including debt related DFIs, at fair value on the statement of net assets. In general, the periodic changes in fair value would be recognized currently as a gain or loss on the government's statement of revenues, expenses and other changes in net assets. However, hedge accounting, which involves treating the gains and losses arising from periodic changes in the DFI fair value as a deferred credit or a deferred charge on the statement of net assets, would be permitted for derivatives deemed to be an "effective hedge" against fair value and interest rate risks based on specifically defined criteria. The GASB has begun the process of incorporating its tentative conclusions into its accounting and reporting standards by issuing a preliminary views document[1] in April 2006.

US State and Municipal Government FY 2003 Debt Related Derivative Activity

Our findings are based on our review of the fiscal 2003 Comprehensive Annual Financial Reports (CAFR) for the fifty states and the 100 largest US cities (based on 2000 US census data). We reviewed the footnotes to the financial statements of these fiscal 2003 CAFRs to ascertain the presence of debt – related DFIs. Table 2 indicates that twenty – three states and twenty – three cities were parties to debt related derivative

[1] "Preliminary Views of the Governmental Accounting Standards Board on Major Issues regarding the Accounting and Financial Reporting for Derivatives" GASB April 28, 2006

transactions approaching $32 billion in notational or principal value. These transactions were highly concentrated, over 52% of total debt related derivative notional value being concentrated among six governments: California, New Jersey, Massachusetts, New York State, Philadelphia, and New York City.

[Insert Table 2 about here]

[Insert Table 3 about here]

[Insert Table 4 about here]

The most popular debt – related derivative financial instrument among US state and municipal governments is the floating to fixed swap. The floating to fixed swap, also known as a plain vanilla fixed payer swap, involves the exchange of interest payment between a government whose payment is based on a fixed interest rate and an investment banking firm whose payment is based on a floating interest rate. Hildreth and Zorn (2005) note that the increasing popularity of various types of variable rate debt obligations (VRDO) has dramatically increased municipal debt issuers' exposure to interest rate risk. The objective of the plain vanilla fixed payer swap for a government is to hedge its exposure to the risk of rising bond market interest rates from their outstanding long term VRDOs. A governmental debt issuer can synthetically lock in the interest payments of its long term VRDO over its term at the fixed rate that it pays to the investment banking firm if:

1. the swap's notional value is equal to the face value of the government's variable rate debt obligation
2. the basis of the floating rate paid to the government by the investment bank is identical to the VRDO's floating rate of interest

3. and the maturity of the swap is matched to the maturity of the VRDO

Moreover, this synthetic fixed interest payment can afford a government issuing VRDO with considerable interest cost savings when compared to the interest cost associated with issuing traditional fixed rate bonds. Table 5 indicates that over three quarters of the state and municipal governments' debt – related derivative activities (when measured in terms of notional value) take this form.

[Insert Table 5 about here]

For example, the state of North Carolina issued its $499.87 million Variable Rate General Obligation Refunding Bonds, Series 2002B-F in December 2002. Concurrently, the State also entered into two plain vanilla fixed payer swaps whose total notional value equaled the face value of its newly issued VRDO. Under the swaps, the State pays an investment banking firm a fixed payment that is the product of the swaps' notional value and a fixed interest rate of 3.283% (Swap 1) and 3.089% (Swap 2). The investment banking firm pays the State a variable payment computed as a product of the swaps' notional value and a variable interest rate equal to 64 percent of the London Interbank Offered Rate (LIBOR).Conversely, the bonds' variables-rate coupons are closely associated with the Bond Market Association Municipal Swap Index (BMA). So long as the tax exempt BMA Municipal Swap Index equals 64% of the taxable LIBOR, the next effect of swaps 1 and 2 is to synthetically change the State's floating interest rate on its 2002 variable rate general obligation refunding bonds to a synthetic fixed rate of 3.283% and 3.089%. Moreover, the combination of two plain vanilla fixed payer swaps and VRDO also affords the State the opportunity for considerable interest cost savings when compared with the issuing traditional fixed rate general obligation bonds. The State of

North Carolina sold fixed rate general obligation bonds at a fixed interest rate of 4.4516% on the same day that swaps 1 and 2 were executed. The result of the synthetic fixed rate VRDO is an annual interest cost savings of $6.8 million for their 30 year term relative to traditional fixed rate general obligation bonds.

However, the structure of the floating to fixed swap can expose a government to a variety of risks. While the floating to fixed swap will function as a cash flow hedge against rising interest rates, falling interest rates such as those seen in the municipal securities markets during the first years of the 21st century can reduce the market value of a swap to a negative value (liability). This will occur when the floating rate used to calculate the interest payment that a government receives falls below the fixed rate that is used to calculate the government's swap interest payment. In the case of the state of North Carolina's two floating to fixed swaps, interest rates have declined since execution of the swaps; the swaps have negative fair values of $13,009,529 (Swap 1) and $13,572,228 (Swap 2) as of June 30, 2003. When a swap's fair value is negative, a government can be exposed to the risk of an unscheduled termination payment under certain circumstances. In the State of North Carolina's case, the swap counterparties, the investment banking firms, can only terminate the swaps if the State's General Obligation Bond rating falls below Baa1 with Moody's, or BBB+ with either S&P or Fitch for Swap 1 and on Swap 2 below Baa3 with Moody's or BBB- with either S&P or Fitch or an Event of Default such as the failure to make a scheduled payment. However, as of this writing, North Carolina's GO bonds are currently rated AAA by S&P.

A government can also face basis risk. Basis risk arises when the floating rate used to calculate the interest payment that it receives from its swap counter party, the

investment bank, is different from the floating rate that it uses to calculate the interest payments to its bondholders. The state of North Carolina faces basis risk from its two floating to fixed swaps. Its interest payments to its VRDO bondholders are based on the BMA Swap Index while the interest payments that it received from the two investment banking firms under its two swap agreements are based on the LIBOR. As of June 30, 2003, the rate on the State's Bonds was 0.92%, whereas 64 percent of LIBOR was 0.7168%. If this difference were to extend over a full fiscal year, its dollar impact would be to increase the State's net synthetic interest costs by approximately $1 million.

More than 14% of the aggregate debt related derivative activities took the contractual form of a forward delivery interest rate swap. A forward delivery swap is an interest rate swap that is executed to go into effect at a scheduled future date. A government can use a forward delivery swap to change the cash flow and interest rate risk characteristics of anticipated future bond issues. The forward delivery swap may be used by a municipal debt issuer to lock in a lower synthetic fixed rate for its future long term VRDO issues when it anticipates rising bond market interest rates. For example, the State of New Jersey's forward delivery swaps reflected eleven floating to fixed swaps that were executed in April and May 2003 but scheduled to go into effect commencing September 1, 2004. The effective date of the first swap agreement commences on September 1, 2004, and the others will become effective every six months thereafter through March 1, 2007. Under the swap agreements, the State pays a synthetic fixed interest rate between 4.0625 percent and 4.4074 percent and receives a variable payment computed as 75.0 percent of the one month LIBOR. The purpose of these fixed payer swaps is to synthetically fix the interest rate of $3.0 billion of future long term VRDO

issues that will be issued every six months commencing September 1, 2004. Accordingly, the eleven swaps' aggregate notional value of $3.0 billion matches the $3.0 billion face value of the State's anticipated long term VRDO issues. Due to the fact that interest rates have slightly declined since the execution of the swap agreements, the swap agreements have an estimated negative fair value equal to their termination value at March 1, 2032. Because the swaps have an aggregate negative fair value the State of New Jersey would be exposed to unscheduled termination risk should the State's GO bond rating fall below investment grade. However, the State's current GO bond rating is well above investment grade – AA by S&P and Aa3 by Moody's. The State of New Jersey also faces basis risk due to the fact that the actual variable rate paid to its future VRDO bondholders is not based on the floating rate that is used to determine the interest payment that it receives from the swap agreements.

Swaptions reflect more than 7% of the US state and municipal governments' aggregate debt related derivate activities. A swaption is an option on an interest rate swap that gives an investment banker the right but not the obligation to enter into an interest rate swap with a government. The investment banker pays the government a premium to hold this right. The state of Alabama, acting through one of its component units, the Alabama State Port Authority, entered into a swaption in December 2002. In December 2002, the Alabama State Port Authority entered into a swaption contract with an investment banking firm in order to take advantage of the potential debt service savings associated with the future refunding of the Authority's callable 1996 Series bond. The swaption gave the investment banking firm the option to enter into a floating to fixed interest rate swap on July 18, 2006. If the option is exercised, the interest rate swap will

commence on October 1, 2006 with the Authority paying a fixed interest rate of 5.38% and the Authority receiving a variable interest rate of 67% of the one month LIBOR. The swap agreement is based on a notional amount of $60.5 million and expires on October 1, 2021. Upon exercising of the option by the counterparty, the Authority anticipates issuing variable rate refunding bonds in an amount sufficient to refund the fixed rate Series 1996 bonds. If the option is exercised and refunding bonds are not issued, the 1996 Series Bonds will not be refunded and the Authority will make net swap payments as required by the terms of the swaption contract. The Authority does not anticipate any potential problems with being able to issue the refunding bonds at the future date. As of September 30, 2003, the swap had a negative fair value of approximately $7.6 million. In consideration for writing the option, the Authority received a premium payment of approximately $5.0 million.

Quality of Footnote Disclosure of Derivative Activities

We also reviewed the fiscal 2003 GASB TB – 2003 – 1 mandated footnotes to ascertain the extent of debt related derivative activities in effect prior to fiscal year 2003. From this review, we concluded that there were 18 state governments that were a party to debt related derivative transactions in fiscal 2002 or earlier. My review indicates that TB 94 – 1 mandated disclosure of these debt related derivative activities was not universally practiced. Seven of the eighteen states with pre – fiscal 2003 debt related derivative activity did not provided any footnote disclosure of those transactions whatsoever in their fiscal 2002 financial statements. Moreover, none of the eleven fiscal 2002 footnote disclosures provided anything like the level of detailed information found in the debt related derivative footnotes in the fiscal 2003 financial statements. In particular, we also

found that the GASB TB 2003 – 1 mandated footnotes located in the fiscal 2003 financial statements were universally very informative relative to the objectives, major terms, and risks associated with the debt – related derivatives reported by the 46 governments noted in Table 2. On the other hand, we also found that the disclosure of the fair value of debt – related derivative transactions were not universal. 4 states and one municipality did not report the fiscal 2003 ending fair value of any of their debt – related derivative financial instruments. Two other states and one municipality reported the fair value of some of their debt related derivative transactions while not disclosing the fair value of other debt related derivative transactions.

Conclusions & Directions for Future Research

Our study concludes that the continuing growth of the nation's municipal debt markets, the increasing popularity of VRDOs, and a more permissive regulatory environment with respect to the use of derivatives have encouraged the widespread utilization of debt – related derivative financial instruments by state governments and municipalities. The most commonly observed objective for the use of debt – related derivative financial instruments by state and municipal treasurers is to manage the interest rate risks associated with their long term VRDOs. Moreover, the use of floating to fixed interest rate swaps in combination with VRDOs can produce lower debt service cost when compared to traditional fixed rate bond issues. However, while debt – related DFIs can be a useful risk management and cost savings tool, they can also expose their users to other risks, such as basis risk and unscheduled termination risks. Governmental treasurers must develop the necessary expertise and appropriate governance policies to properly structure and monitor their debt related DFI transactions. In addition, the

implementation of GASB TB 2003 – 1 by these various state governments has improved the transparency of their financial statements relative to their use of swaps, swaptions, and other debt related derivative transactions. The GASB TB 2003 – 1 mandated financial statement footnote disclosure provides investors, bond rating agencies, and other financial statement users with useful information about the objectives, significant terms, fair value, and risks associated with debt related derivative financial instruments. The municipal securities investment community, government officials, and other interested parties should continue to follow GASB's currently ongoing deliberations on appropriate accounting and reporting standards for debt related and other derivative financial instruments. During June and July 2006, the GASB held several public hearings where it solicited and received public feedback on the Board's Preliminary Views Document. The Board has committed itself to issuing an exposure draft on accounting and disclosure standards for all derivative financial instruments. The issuing of an exposure draft by the GASB is typically the final step before revising generally accepted accounting principles (GAAP) for state governments, municipalities, and other government agencies.

One fertile area for future research would be a compilation of best practices in the field relating to the evaluation, management, control, and footnote disclosure of debt – related derivative activities among municipalities and other governmental agencies. Anecdotal evidence suggests that many governmental financial officers use of these derivative financial instruments with considerable skill to great effect. Their knowledge and experiences could be shared to assist other government financial officers to incorporate contemporary risk management practices within their overall debt

management responsibilities. Our findings indicate that debt – related derivatives are a common but not universal risk management tool that are used by some but not all governmental debt issuers. Accordingly, a future fruitful inquiry would involve an empirical analysis of financial and operating characteristics that explain the utilization of debt – related derivative financial instruments by state governments, municipalities, and other governmental agencies.

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Table 1

Debt Related Derivative Financial Instruments

Derivative Financial Instrument (DFI)	A DFI is an investment or obligation whose value or obligated cash flows is derived from the value or return of some other asset, collection of assets, or index.
Interest Rate Swap	A government will use an interest rate swap to synthetically exchange the interest payments arising from its long term debt with an investment bank. An interest rate swap is considered a DFI because the periodic interest payment of at least one party to the swap is determined by an underlying money market interest index such as the London Interbank Overnight Rate (LIBOR) or Bond Market Association (BMA) Municipal Swap Index. Common forms of interest rate swaps in use are: • Fixed to floating interest rate swap • Floating to fixed interest rate swap • Basis (floating to floating) interest rate swap
Forward Delivery Swap	A forward delivery swap is an interest rate swap that is executed currently to go into effect at some contractually specified future date.
Swaption	A swaption is an option on an interest rate swap that gives an investment banker the right but not the obligation to enter into an interest rate swap with a government. The investment banker pays the government a premium to hold this right.
Interest Rate Cap	A government will use an interest rate cap when it issues variable rate debt obligations (VRDO) or has a floating rate payer position in an interest rate swap. The government pays a premium to the investment banker in return for a commitment to pay the excess of its interest obligation when the floating interest rate exceeds a specified level.

Table 2
Summary Debt – Related Derivative Activities by
US State and 100 Largest Municipalities
Dollars in Thousands
As Reported in FY 2003 CAFR

	Notional Value $ in 000	% of Total
Type of Debt Related DFI users		
23 out of 50 state governments	$ 21,415,144	66.9%
23 out of 100 municipal governments	10,577,019	33.1%
Total	$ 31,992,163	100.0%

Table 3

Summary Debt – Related Derivative Activities by US State
Dollars in Thousands
As Reported in FY 2003 CAFR

State		Notional Value	% of Total
California	$	5,078,000	23.7%
New Jersey		3,720,000	17.4%
Massachusetts		2,821,185	13.2%
New York		2,210,000	10.3%
Texas		999,815	4.7%
Minnesota		884,674	4.1%
Alabama		770,670	3.6%
Pennsylvania		755,193	3.5%
North Carolina		704,450	3.3%
Connecticut		584,880	2.7%
Michigan		442,300	2.1%
Kansas		429,510	2.0%
Alaska		409,055	1.9%
Utah		359,130	1.7%
Illinois		356,660	1.7%
Wisconsin		288,040	1.3%
Ohio		226,300	1.1%
South Carolina		103,800	0.5%
Colorado		72,000	0.3%
West Virginia		63,900	0.3%
North Dakota		46,800	0.2%
Maine		45,132	0.2%
Arkansas		43,650	0.2%
Total	$	21,415,144	100.0%

Table 4

Summary Debt – Related Derivative Activities Among the 100 Largest US Municipalities Dollars in Thousands As Reported in FY 2003 CAFR

City	Notional Value	% of Total
Philadelphia PA	$ 1,784,500	16.9%
New York NY	1,286,295	12.2%
Atlanta GA	1,148,195	10.9%
Washington DC	1,102,685	10.4%
Jacksonville FL	1,027,775	9.7%
Denver CO	950,945	9.0%
Baltimore MD	857,849	8.1%
Chicago IL	403,540	3.8%
Cleveland OH	374,765	3.5%
Charlotte, NC	368,460	3.5%
Los Angeles CA	327,400	3.1%
Long Beach CA	194,280	1.8%
Indianapolis IN	143,085	1.4%
Oakland CA	137,500	1.3%
Colorado Springs CO	117,450	1.1%
Anaheim CA	87,950	0.8%
Sacramento CA	73,105	0.7%
Nashville-Davidson TN	53,400	0.5%
Greensboro NC	50,370	0.5%
Orlando FL	39,430	0.4%
Omaha NE	33,830	0.3%
Raleigh NC	7,440	0.1%
Norfolk VA	6,770	0.1%
Total	$ 10,577,019	100.0%

Table 5

Aggregate Debt – Related Derivative Activities by
US State and Municipal Governments
Types of Interest Rate Derivative Financial Instruments (DFI)
Dollars in Thousands
As reported in the FY 2003 CAFR

Type of Debt Related DFI	Notional Value $ in 000	% of Total
Floating to Fixed Interest Rate Swap	$ 24,041,542	75.1%
Fixed to Floating Interest Rate Swap	562,791	1.8%
Basis Interest Rate Swap	1,234,390	3.9%
Forward Delivery Swap	3,024,115	9.5%
Basis Cap	163,165	0.5%
Interest Rate Cap	74,170	0.2%
Swaption	2,891,990	9.0%
	$ 31,992,163	100.0%