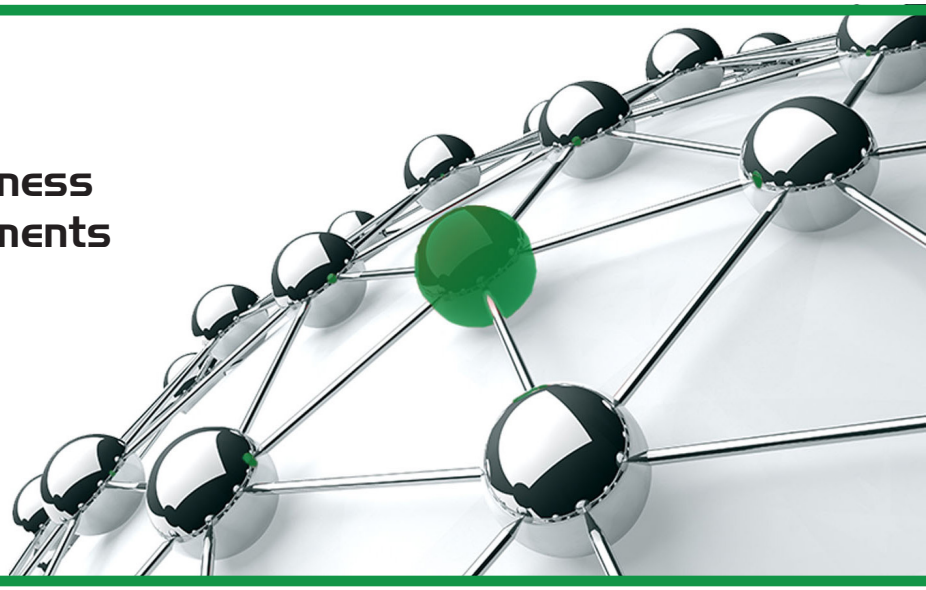
Determining Hedge Effectiveness for State and Local Governments Under GASB 53



Introduction

In recent years, the volume and number of derivative contracts entered into by governmental entities has grown substantially. With this growth there has also been an increase in the complexity and types of derivative transactions. For these reasons, the Government Accounting Standards Board ("GASB") issued Statement No. 53 ("GASB 53") that requires the fair value of derivatives be reported in the financial statements of state and local governments. GASB 53 states that if a derivative effectively hedges an identified risk of increasing or decreasing cash flows or fair values, then the periodic changes in the fair value of the derivative can be deferred until the derivative ceases to be effective or the hedged transaction terminates. If the derivative fails to effectively hedge the identified risk, then the change in fair value is reported immediately as investment income or loss. Also, footnotes to the financial statements must disclose additional information about the derivative including the identification of risks being hedged and identification of other risks that the governmental entity is exposed to as a result of the derivative instrument. Implementation of GASB 53 is required for financial periods beginning after June 15, 2009.

GASB, when referenced in this white paper, stands for the Governmental Accounting and Standards Board which has been established to improve standards of state and local governmental accounting and financial reporting

Definition of Derivatives under GASB 53

GASB 53 defines derivatives as financial arrangements with values or cash payments that are based on what happens in separate transactions or agreements and have the following characteristics:

a. The financial arrangements are able to be settled early with a cash payment or transfer of an equivalent asset.

b. The financial arrangements are leveraged – this means that the agreement requires minimal or no initial investment or cash payment on the part of the governmental entity but the agreement achieves changes in fair value that would have required a far larger initial investment.

The most common examples of derivatives for governmental entities are interest rate swaps, interest rate lock agreements or futures contracts (contracts that are settled with cash that lock in the cost in advance of interest rates, diesel fuel or gas, for example). An interest rate lock agreement is a transaction that locks in the interest rate on a future project. This instrument is typically used when a governmental entity is worried about increases in interest rates before long term bonds can be sold to finance a project. A commodity contract or commodity futures contract locks in the future price of a commodity, such as natural gas. Futures contracts are agreements to buy (or sell) the specific commodity for fixed prices on future dates. The governmental entity does not "take delivery" of the contracted item, but instead uses the contract to offset the change in price of the commodity (this is referred to as "cash settling" the contract). An interest rate swap is a contract or agreement to exchange payments with a counterparty for a specified period of time. A common interest rate swap would be a pay fixed, receive floating swap. In this type of swap, the governmental entity agrees to pay a fixed rate in exchange for receipt of a floating index. The floating index received is designed to offset or partially offset the variable rate of interest paid on the debt that was issued to finance the project.

GASB 53 identifies several types of agreements that are not considered derivatives. Those types of agreements include purchase and sales contracts in the normal course of business (for example contracts that call for physical delivery of gasoline at a fixed price at future dates and that commodity is expected to be used by the governmental entity), insurance contracts that are already accounted for under GASB 10, financial guarantee contracts where there is a reimbursement when the specified debtor fails to honor the contract terms, loan commitments and contracts that are based on climate, geological or other physical attributes and not traded on an exchange.

A derivative under GASB 53 will be either a hedging derivative instrument, if the derivative passes one of the effectiveness tests outlined in this paper or an investment derivative instrument. Under a hedging derivative instrument, all changes in the fair value will be deferred inflows or outflows on the statement of net assets. If the derivative is an investment derivative, then the fair value changes in the derivative are recorded as investment loss or gain.

Transparency of Financial Statements

GASB spent considerable time and energy setting standards that allow for more transparancy into transactions that governmental entities are utilizing. The additional reporting requirements ensure the public, investors, and government officials have the information necessary to make informed decisions.

Evaluation of Hedge Effectiveness Under GASB 53

GASB 53 outlines four methods for evaluation of hedge effectiveness. A governmental entity can use any of the evaluation methods outlined in GASB 53 and is not limited to using the same method from period to period. The four methods available under GASB 53 are the Consistent Critical Terms Method, Synthetic Instrument Method, Dollar Offset and Regression Analysis. In addition, GASB 53 allows a governmental entity to use other quantitative methods that are based on "established principles of financial economic theory."

GASB outlines four methods for evaluation of hedge effectiveness: Consistent Critical Terms Method, Synthetic Instrument Method, Dollar Offset, and Regression Analysis

Consistent Critical Terms Method

The Consistent Critical Terms Method ("CCTM") is the only non-quantitative method under GASB 53. Basically, if all of the critical terms of the derivative match the item being hedged, the derivative is presumed to be effective. In order to qualify for the CCTM, the swap must have a zero fair value at inception, the fixed rate must remain the same throughout the life of the swap and the notional amount of the swap must equal the principal amount of the item being hedged throughout the life of the derivative.

In addition, the following criteria must be met:

a. The reference rate for the variable payment under the derivative is the same as the reference rate or payment of the item being hedged. For example, a cost of funds swap where a governmental entity receives a variable payment based on the payment of the hedged item would meet this definition. In addition, a swap based on a benchmark interest rate, such as SIFMA, would also qualify under the CCTM. LIBOR based swaps where the variable payment is multiplied by a coefficient, such as 68% of LIBOR do not qualify for the CCTM but a SIFMA swap where the formula is SIFMA plus a constant (such as SIFMA + 15 bps) would qualify if all the other criteria are met.

b. The term of the derivative is less than or equal to the term of the hedged item.

c. The reference rate cannot have a floor or cap unless the item being hedged has the same floor or cap.

d. The time interval between rate resets is the same as the underlying hedged item. For example a variable rate demand bond with a 7 day reset and a derivative with SIFMA (a 7 day index) would qualify. A LIBOR swap with a designated maturity of 1 month with that same variable rate demand bond would not qualify.

e. The rate reset dates of the derivative must be within 6 days of the rate resets of the item being hedged and the periodic payments on the derivative must be within 15 days of the periodic payments on the item being hedged.

The following example illustrates the application of the CCTM to a cash flow hedge where a governmental entity issued variable rate demand bonds and hedged with a pay fixed receive floating swap. Note that this example will be used throughout the paper and is not an actual transaction.

TABLE 1: Consistant Critial Terms Method

Qualitative consideration of critical terms

PASS

Interest Reate Derivative Contract		Variable Rate Demand Bonds	
Swap Value at Inception	0		
Swap Fixed Leg	Fixed for life of swap		
Notional Amount	10,000,000 (no amortization)	Bond Principal	10,000,000 (no amortization)
Termination Date	12/01/2030	Maturity Date	12/01/2030
Variable Index	SIFMA	Benchmark Interest Rate	SIFMA
Floor or Cap?	NO	Floor or Cap?	NO
Frequency of Reset	Weekly	Frequency of Reset	Weekly
Rate Reset Date	Wednesday	Rate Reset Date	Thursday
Swap Payment Dates	1st business day of each month	Bond Coupon Payment Dates	1st business day of each month

In Table 1 the governmental entity is able to use the CCTM and would be able to defer any changes in fair value, as long as this method or any of the quantitative methods demonstrates effectiveness of the hedge in future periods.

If we change one assumption in the above example, we get a different result as demonstrated in Table 2.

TABLE 2: Consistant Critial Terms Method

Qualitative consideration of critical terms

FAIL
due to Benchmark Rate

Interest Reate Derivative Contract		Variable Rate Demand Bonds	
Swap Value at Inception	0		
Swap Fixed Leg	Fixed for life of swap		
Notional Amount	10,000,000 (no amortization)	Bond Principal	10,000,000 (no amortization)
Termination Date	12/01/2030	Maturity Date	12/01/2030
Variable Index	70% of 1 month LIBOR	Benchmark Interest Rate	SIFMA
Floor or Cap?	NO	Floor or Cap?	NO
Frequency of Reset	Weekly	Frequency of Reset	Weekly
Rate Reset Date	Wednesday	Rate Reset Date	Thursday
Swap Payment Dates	1st business day of each month	Bond Coupon Payment Dates	1st business day of each month

In Table 2, the CCTM fails due to the use of a percentage of LIBOR as a benchmark interest rate on the swap.

Quantitative Methods

GASB 53 outlines three quantitative methods that can be used to determine effectiveness. Those methods are synthetic instrument method, dollar offset and regression. It is important to note that from period to period, the governmental entity can use any method that verifies effectiveness. For example, for FY ending 2010, an entity may find that their hedge passes the synthetic instrument method. In FY 2011, upon failure of the synthetic instrument method, the governmental entity may use dollar offset or regression to prove effectiveness. In addition, the governmental entity can perform the calculations using the prior annual period or perform the calculations from inception of the contract.

Synthetic Instrument Method

The Synthetic Instrument Method ("SIM") is used for cash flow hedges and is limited to those hedges where the item being hedged is a variable rate of interest. Basically, the SIM combines the cash flows on the derivative with the cash flows on the hedged item and creates a new instrument. The synthetic rate on the cash flows is calculated based on the combination of all the cash flows and is compared against the fixed rate on the derivative. If the newly calculated synthetic rate is no less than 90% or no greater than 111% of the fixed rate on the derivative, then the hedge passes the test and is considered effective under GASB 53. The following is an example of the SIM for a case when the result passes and fails the effectiveness testing.

TABLE 3: Synthetic Instrument Method

Swap National Amount	10,000,000
Swap Fixed Rate	4.00%
Swap Index	70% 1 month LIBOR

FY Ended	Fixed Swap Payments to Counterparty	Variable Swap Receipts From Counterparty	Net Derivative (Payment) Receipt	Variable Bond Interest	Total Payments	Synthetic Rate
6/30/2009	(400,000)	100,000	(300,000)	(95,000)	(395,000)	3.95%

Analysis of Synthetic Instrument Test	**FY Ended:** 6/30/2009
Synthetic Rate (Annual Basis):	3.95%
Swap Fixed Rate:	4.00%
Percentage Ratio:	98.75%
Is ratio between 90% - 111%?	**Pass**

In Table 3, the governmental entity's hedge was determined to be effective based on the synthetic rate falling within the band of 90% to 111% of the fixed rate on the derivative.

TABLE 4: Synthetic Instrument Method

Swap National Amount	10,000,000
Swap Fixed Rate	4.00%
Swap Index	70% 1 month LIBOR

FY Ended	Fixed Swap Payments to Counterparty	Variable Swap Receipts From Counterparty	Net Derivative (Payment) Receipt	Variable Bond Interest	Total Payments	Synthetic Rate
6/30/2009	(400,000)	45,000	(355,000)	(95,000)	(450,000)	4.5%

Analysis of Synthetic Instrument Test	**FY Ended:** 6/30/2009
Synthetic Rate (Annual Basis):	4.50%
Swap Fixed Rate:	4.00%
Percentage Ratio:	112.50%
Is ratio between 90% - 111%?	**FAIL**

In Table 4, the test failed due to the variable receipts not effectively hedging the variable bond payments. This can happen when the variable receipt on the hedge deviates substantially from the cost of debt financing.

Some of the additional criteria for using the SIM are highlighted below:

a. The derivative has a zero value at inception.
b. The fixed rate on the derivative is the same throughout the life of the derivative.
c. The notional amount of the derivative matches the item being hedged.
d. Derivative term is equal to or less than term of item being hedged.

Dollar Offset

Under the Dollar Offset Method ("DOM"), the governmental entity divides the changes in the value or changes in the expected cash flows of the derivative by the changes in value or changes in the expected cash flows of the item being hedged. The result of the calculation must fall within the band of 80 to 125 percent in order for the derivative to be considered effective under the DOM. The important distinction between the DOM and the SIM is that the DOM is a measure of the expected future cash flows rather than a calculation of the actual historic cash flows. The following example uses the same swap as the prior examples and shows a case when the DOM passes the test and the swap is effective and a case where the swap is not effective.

TABLE 5: Dollar Offset Method

	FY Ended 6/30/2008	FY Ended 6/30/2009	Change in Fair Value
Fair Value of Derivative	(1,000,524)	(1,254,755)	(254,231)
Fair Value of item being hedged	(802,445)	(1,044,589)	(242,144)
Dollar Offset			104.992%
Does dollar offset fall within the 80% - 125% band?			**PASS**

TABLE 6: Dollar Offset Method

	FY Ended 6/30/2008	FY Ended 6/30/2009	Change in Fair Value
Fair Value of Derivative	(1,000,524)	(1,254,755)	(254,231)
Fair Value of item being hedged	(802,445)	(955,447)	(153,002)
Dollar Offset			66.162%
Does dollar offset fall within the 80% - 125% band?			**FAIL**

Regression Analysis

Regression Analysis measures the statistical relationship between the fair value or the cash flows of the derivative and the item being hedged. Linear regression is a common statistical tool used to measure correlation and to produce a linear function that can be used to predict results if the data is highly correlated. For Regression Analysis under GASB 53, the derivative is the independent variable and the item being hedged is the dependent variable. In order to provide statistical significance, at least 30 data points are needed.

The output from the analysis must produce:

a. An R^2 of at least .80
b. A regression coefficient for the slope of the line between -1.25 and -.80
c. The regression model is significant using a 95% confidence level

The use of Regression Analysis requires an understanding of statistics. The results will need to be interpreted correctly in order for the test to have any relevance. The following are two examples of regression analysis (regression output shown) using the example transaction.

TABLE 7: Summary Output - Effective Hedge

Regression Statistics	
Multiple R	0.966385523
R-Square	0.933900979
Adjusted R Square	0.932464044
Standard Error	31364.71069
Observations	48

R-Square	0.933900979	PASS
Slope	-1.143120921	PASS
Significance F	0.00008545	PASS

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	6.39361E + 11	6.394E + 11	649.9255915	0.00008545
Residual	46	45252273540	983745077		
Total	47	6.84613E + 11			

	Coefficients	*Standard Error*	*t State*	*P-Value*	*Lower 95%*	*Upper 95%*
Intercept	-21715.03528	10664.97362	-2.036108	0.04752127	-43182.51342	-247.5571494
X Variable 1	-1.143120921	0.044839458	-25.49364	0.00008545	-1.233378067	-1.052863774

In Table 7, the three tests under GASB 53 are met and the hedge is effective. Changes in fair value are deferred.

TABLE 8: Summary Output - Failed Test

Regression Statistics	
Multiple R	0.874967503
R-Square	0.765568131
Adjusted R Square	0.764005251
Standard Error	0.663309166
Observations	152

R-Square	0.765568131	FAIL
Slope	0.922718488	FAIL
Signigicance F	0.000015795	PASS

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	215.5214261	215.5214261	489.8447464	0.000015795
Residual	150	65.99685748	0.43997905		
Total	151	281.5182836			

	Coefficients	*Standard Error*	*t State*	*P-Value*	*Lower 95%*	*Upper 95%*
Intercept	0.358475483	0.115067338	3.115353917	0.002201769	0.13111332	0.585837646
X Variable 1	0.922718488	0.041690778	22.13243652	0.00000158	0.84034146	1.005095517

In Table 8, two of the three statistical tests failed so the hedge would not be effective based on this analysis. Changes in fair value are reported as investment income or loss if any one of the regression tests fails.

Other Quantitative Methods

In addition to the methods outlined above, GASB does allow for the use of other quantitative methods to calculate effectiveness, so long as the method demonstrates that the changes in cash flows or fair value between the derivative and the item being hedged substantially offset each other, the method is documented and sufficiently demonstrates the ability to be replicated and the replication would produce similar results and the substantive characteristics of the transaction are considered. The method must also be based on what GASB 53 describes as “established principles of financial economic theory.”

Hybrid Instruments

So far in this report we have focused on standalone derivatives (simple derivatives). Many governmental entities have entered into complex derivative transactions or hybrid instruments. A hybrid instrument, according to GASB, is any derivative instrument that accompanies a companion instrument such as a lease, insurance contract, or sale and purchase contract or an embedded derivative such as a call option or cap or floor. In addition, derivatives that contain a borrowing component (cash upfront) may be classified as a hybrid instrument.

Under GASB 53, the governmental entity must separate the derivative from the companion instrument and report the derivative separately. Once the derivative is separated, the same tests outlined earlier in this paper can be performed on the derivative component to determine whether the hedge is effective.

Some examples of derivatives that meet the definition of a hybrid instrument are:

a. Upfront payments with off-market terms (a higher fixed pay rate than market, for example)
b. An in-the-money option that is written (has intrinsic value)
c. Inconsistent reference rate
d. Potential for a negative yield
e. Leveraged yield

Payments in a Derivative on Behalf of the Government Entity

When a governmental entity enters into a derivative, often times the derivative contains off market terms that are there to recover costs of putting the transaction together. One example would be when a governmental entity asks the counterparty to the transaction to pay its swap advisor a fee, the amount of the fee having had the effect of increasing the fixed rate paid on the derivative (or reducing the fixed rate received). The upfront costs paid should be reported as expenditures or expenses consistent with the manner in which those payments would have been reported if the governmental entity had made the payment directly.

Disclosures Required

Under GASB 53, governmental entities must provide information in their footnotes regarding their use of derivatives. Specifically, the entity must include information regarding the objective for entering into the derivative, a summary of the significant terms of the derivative instrument, details about the item being hedged (for example the net cash flows of debt being hedged), and the risks that the governmental entity is exposed to through its derivative instruments.

With regard to the risk disclosure, GASB 53 instructs the governmental entity to highlight the following risks (if they apply):

Credit Risk	Termination Risk	Interest Rate Risk
Basis Risk	Rollover Risk	Market Access Risk
Foreign Currency Risk		

A governmental entity must provide additional detail regarding any termination triggers in the derivative, any contingent liability that may result from the derivative, details of any collateral requirements and netting arrangements and the net exposure to credit risk, including any concentration of credit risk.

Termination of Hedge Accounting

Hedge accounting under GASB 53 terminates if the hedge is no longer effective based on the qualitative or quantitative methods. In addition, if the hedge was done in anticipation of a transaction occurring, and that transaction is no longer likely to occur, hedge accounting can no longer be used. If the hedged asset or liability is sold or retired or if the governmental entity is re-exposed to the hedged financial risk, hedge accounting will no longer apply. Once the hedge no longer qualifies for hedge accounting, the fair value changes are recorded as investment gain or loss.

Summary

The goal of GASB 53 is to provide the reader of a financial report with more detailed information regarding the use of derivatives by governmental entities. Since derivatives continue to be a useful tool for managing risk, complying with GASB 53 has become a necessary element of derivative transactions. Since GASB 53's inception, HedgeStar has been providing hedge accounting and quantitivative calculations to our governmental clients. We deliver everything our clients need to comply with GASB 53.

About HedgeStar

Founded in 2004, HedgeStar (formerly DerivActiv) is a global provider of valuation and hedge accounting services. HedgeStar helps clients comply with fair value measurements for ASC 820 and with hedge accounting standards related to ASC 815, GASB 53, IFRS 9, CICA 3865, AASB 139, CPC 38, HKFRS 9, and AS30. As an independent entity, HedgeStar is not affiliated with any individual bank, dealer, or financial product and has no relationships that can influence the integrity of our services or valuations. For more information visit www.hedgestar.com.

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