



THE FUNDAMENTALS OF INTEREST RATE SWAPS

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Editor's Note: CDIAC has published an Issue Brief providing a comprehensive review of interest rate swaps. It will be available in October 2004 as a stand-alone publication on CDIAC's website at www.treasurer.ca.gov or by contacting CDIAC at (916) 653-3269. The following article is excerpted from this Issue Brief.

Introduction

Interest rate swaps have emerged from the domain of giant global organizations to become an integral part of the larger world of governmental and corporate finance.

The first interest rate swap was a 1982 agreement in which the Student Loan Marketing Association (Sallie Mae) swapped the interest payments on an issue of intermediate term, fixed rate debt for floating rate interest payments indexed to the three month U.S. Treasury bill. The interest rate swap market has grown rapidly since then.

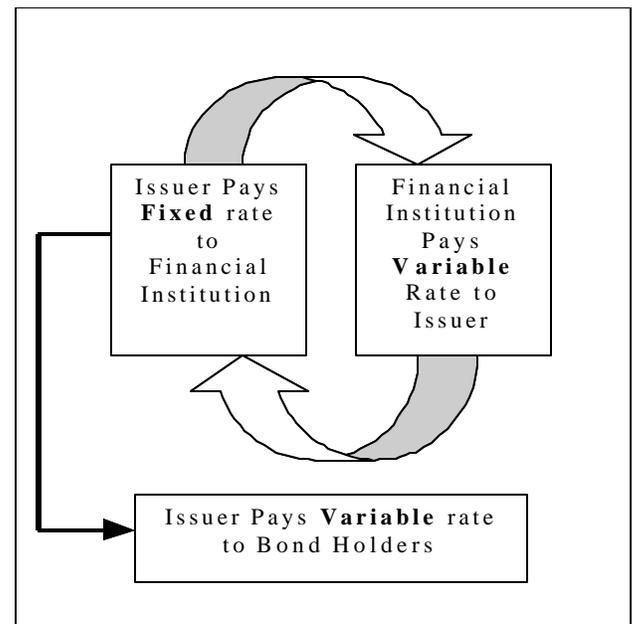
This article attempts to provide some basic information regarding the use of interest rate swaps in municipal finance. It reviews data a financial manager would need to know when considering the use of interest rate swaps in an organization's borrowing program.

What are Interest Rate Swaps?

An interest rate swap is a contractual arrangement between two parties, often referred to as "counterparties" (see Figure 1). The counterparties agree to exchange payments based on a defined principal amount, for a fixed period of time. In an interest rate swap, the principal amount is not actually exchanged between the counterparties and therefore is referred to as the "notional amount" or "notional principal".

Interest rate swaps do not generate new sources of funding themselves; rather, they convert one interest rate basis to a different rate basis (e.g., from a floating or variable interest rate basis to a fixed interest rate basis, or vice versa).

Figure 1 – Swap Process



A floating to fixed rate swap allows an Issuer with variable rate debt to hedge the interest rate exposure by receiving a variable rate in exchange for paying a fixed rate, thus decreasing the uncertainty of an Issuer's future net debt service payments, after consideration of the swap and bond interest payments in aggregate.

A fixed to floating rate swap allows an Issuer with fixed rate debt to take advantage of variable interest rates. The Issuer's net debt service costs will be lower if the floating swap rate paid by the Issuer to the Counterparty remains below the fixed swap rate received by the Issuer.

Either of the two structures noted above can be used in conjunction with existing debt or can be combined with newly issued debt. In addition, there is an increasing use of the interest rate swap as a tool for asset and liability matching.

Basics of an Interest Rate Swap

The payments on an interest rate swap are a function of the (1) notional principal amount, (2) interest rates, and (3) the time

elapsed between payments. The counterparties to the swap agree to exchange payments on specific dates, according to a predetermined formula. Exchanges typically cover periods ending on the payment date and reflect differences between the fixed rate and the floating rate during the specific period. If the floating rate exceeds the fixed swap rate, the floating ratepayer pays the differential to the fixed ratepayer. On the other hand, if the floating rate index is less than the fixed swap rate, the fixed ratepayer pays the interest rate differential to the floating ratepayer.

A swap does not involve an actual exchange of bond obligations and has no direct effect on existing bondholders.

Example of Generic Floating- to Fixed-Rate Swap

The Issuer issues \$10,000,000 of variable rate bonds. The variable rate bonds initially bear interest at 1.5 percent, but the rate can change weekly. The Issuer then enters into a swap contract with a financial institution (the “Counterparty”). Under the swap contract, the Issuer agrees to pay the Counterparty a fixed interest rate of 4.0 percent, and the Counterparty agrees to pay the Issuer a variable rate based on an index, which approximates the variable rate on the Issuer’s bonds. Both payment streams assume a notional amount of \$10,000,000. The net effect is that the Issuer has synthetically converted a variable rate obligation (the bonds) to a fixed rate obligation (the swap).

Pricing

Pricing of an interest rate swap is often complex but can be broken down into two basic components:

- The “break-even” rate, which represents the rate at which the swap dealer can create the swap itself, and
- The “markup” or profit added to the break-even rate by the swap dealer.

The individual swap dealer determines the break-even rate for any swap, using actively traded, liquid financial instruments, widely accepted modeling techniques, and dealer-to-dealer hedging. As a result, the break-even swap rate for any particular swap is basically the same for all swap dealers.

Terminating the Swap

An interest rate swap can be terminated at any time with the consent of both parties. The termination amount (i.e., market value) will depend on the relationship between the fixed rate on the swap and current market rates. In practice, early termination fees are significant and may eliminate any interest rate savings achieved through the swap.

Costs

The cost of executing an interest rate swap includes the markup charged by the Counterparty as noted above. However, obtaining the swap through a competitive bid can minimize this component of the swap price. In addition, the Issuer may hire a swap advisor to assist in securing the best terms and pricing for the swap either through competitive bid or a supervised negotiation. Swap advisory fees typically range from 1–5 basis

points per year based on transaction size and complexity. Swap advisory fees can be paid by the swap Counterparty via an adjustment to the fixed swap coupon or directly by the Issuer. Legal fees typically include a one time flat fee to draft/review swap documentation. All fees should be fully disclosed in the swap documentation.

Documentation

The International Swaps and Derivatives Association, Inc. (ISDA) is the global trade association for the derivatives industry. The ISDA Master Agreement is the standard governing document used throughout the industry that serves as a framework for all derivative transactions between two counterparties, including interest rate swaps. It is typically negotiated once, prior to the first transaction, and remains in force for all subsequent transactions.

Swap Policy

The purpose of the swap policy is to establish guidelines for the execution and management of the swap program. The swap policy confirms the commitment of the elected body, management, staff, advisors, and other decision makers to adhere to sound financial and risk management practices, including achieving the lowest possible cost of capital within prudent risk parameters.

Advantages to Using Swaps

Benefits of using interest rate swaps may include:

Lowering Debt Service Costs. The Issuer may be able to lower debt service in periods of declining short-term interest rates by swapping fixed rate payment obligations for variable rate payments.

Hedging Against Variable Interest Rates. Employing an interest rate swap, either fixed to variable in a decreasing rate market or variable to fixed in an increasing rate market, might be an appropriate method of changing the risk/return profile associated with the Issuer’s current and future debt needs.

Synchronizing Cash Flows to Reflect Asset/Liability Mix. Interest rate swaps also allow Issuers to structure their asset/liability mix to better reflect the timing of capital projects and investments.

Broadening the Issuer’s Investor Base. By adding the interest rate swap, the Issuer can convert its payments associated with the bonds to a fixed rate but utilize the variable rate market for the issue. This may allow the Issuer to access an investor base not previously used.

Risks Associated with Interest Rate Swaps

The following potential risks are inherent in the typical swap contract:

Counterparty Risk is the risk that the Counterparty will not honor its payment obligations under the swap contract because the Counterparty has defaulted. If that happens, the Issuer no longer receives payments from the Counterparty.

Basis Risk occurs in situations when the variable rate paid by the Issuer on its bonds is different than the floating interest rate received under the swap.

Termination Risk is the risk that a swap may terminate or be terminated prior to its planned expiration. This risk can be managed by assessing possible events that could trigger the early termination of a swap. If a swap is terminated earlier than expected due to the default of the Counterparty, the Issuer still may be required to make a termination payment.

Rollover Risk occurs when the term of the bond does not coincide with the term of the swap. It refers to the possibility that the Issuer is unable to enter into a satisfactory new contract when the original one expires.

Amortization Risk is defined as the mismatch of the expiration of the underlying obligation and its hedge, the swap agreement. Amortization risk is the possibility that, as a result of an early redemption of the underlying bonds, the repayment schedule of the bonds differs from the underlying notional amount of the swap agreement.

Tax Risk is the risk associated with changes to the marginal tax rate. Interest rates on tax-exempt municipal bonds are, in part, a function of the marginal income tax rate for current and potential bondholders. For example, as the marginal tax rate increases, municipal bonds become more attractive, and conversely, as tax rates fall, tax-exempt bonds become less attractive.

Conclusion

Entering into an interest rate swap may be appropriate for an Issuer in certain situations; however, the Issuer should carefully consider the risks and rewards of such an agreement.

New and complex financial strategies are constantly being created to meet Issuers' needs. Treasury officials should incorporate new products into their debt strategy only if they have the time and commitment to adequately understand and monitor the product. They must have the staff to monitor the debt instruments and related risks and be able to respond to changing financial conditions.

Below are some basic tenets to assist Issuers in determining if interest rate swap agreements are appropriate for their situation:

1) Swaps are complicated and involve risks. Know what you are buying.

If the Issuer does not fully understand the workings of a particular interest rate swap or its effect on the Issuer's debt portfolio in different interest rate environments and market conditions, the swap contract should not be undertaken.

2) Recruit and work with experienced professionals. Experience counts.

The complexity and potential financial exposure, along with the myriad of risks associated with interest rate swaps, necessitate strong consideration of the team working with the Issuer.

3) Adopt a written Swap Policy.

Issuers should develop and adopt a swap policy that details and clarifies objectives and the procedures and constraints necessary to reach those objectives. A swap policy set forth in adequate detail, combined with appropriate controls, can guide the activity of treasury officials, financial advisors, credit rating agencies and bondholders.

4) Develop comprehensive controls and oversight and implement them.

Issuers should implement adequate controls and oversight to ensure that financing decisions are made within the parameters of the established swap policy. Issuers also should establish a reporting and review process. Financing decisions should be closely reviewed by financial management and effectively communicated to the appropriate government body.

This Offprint was previously published in DEBT LINE, a monthly publication of the California Debt and Investment Advisory Commission (CDIAC). CDIAC was created in 1981 to provide information, education, and technical assistance on public debt and investment to state and local public officials and public finance officers. DEBT LINE serves as a vehicle to reach CDIAC's constituents, providing news and information pertaining to the California municipal finance market. In addition to topical articles, DEBT LINE contains a listing of the proposed and final sales of public debt provided to CDIAC pursuant to Section 8855(g) of the California Government Code. Questions concerning the Commission should be directed to CDIAC at (916) 653-3269 or, by e-mail, at cdiac@treasurer.ca.gov. For a full listing of CDIAC publications, please visit our website at <http://www.treasurer.ca.gov/cdiac>.

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