

Product Notes

January 1998

Product Management/Frequent User Group

<i>Justin Simpson, Principal</i>	<i>(212) 761-2560</i>
<i>Marc Getman, Vice President</i>	<i>(212) 761-2516</i>
<i>Martin Mann, Vice President</i>	<i>(212) 761-2518</i>
<i>Peter Flink</i>	<i>(212) 761-2670</i>
<i>Greg Glickman</i>	<i>(212) 761-2606</i>
<i>Udai Puramsetti</i>	<i>(212) 761-2614</i>
<i>Dev Sahai</i>	<i>(212) 761-1705</i>
<i>Monique Couppas</i>	<i>(212) 761-1724</i>

Introduction to Interest Rate Swaps

Contents

Introduction	1
Interest Rate Swaps	1
Currency Swaps	2
Derivative Swap Products	2
Applications of Swaps.....	3
Characteristics of Swaps	9
Variations of Basic Interest Rate Swaps	11
Market Participants	12
Settlement and Documentation	13
Accounting and Regulation.....	13
Morgan Stanley's Role in the Swap Market	14
Appendix—U.S. Dollar Interest Rate Swaps: Conventions.....	15

Introduction

The interest rate swap market has grown to be a vital tool in today's complex global financial markets. The relatively simple concept of exchanging a stream of cash flows on a specified amount has evolved into a US\$20.7 trillion market.¹ Today, the global swap market is used by sovereigns, agencies, corporations, depository institutions, insurers, money managers, and institutional investors to achieve a variety of financing and investment objectives. These institutions not only utilize interest rate swaps, but also achieve their investment/financing objectives by transacting in currency swaps, equity swaps, commodity swaps, real estate swaps, municipal swaps, mortgage swaps, credit swaps, and even electricity or insurance swaps. Additional potential markets and applications for swaps and swap products are continuously developing.

The importance of swaps and swap products can best be measured by what they can accomplish for the user, such as the following:

- Allowing capital market arbitrage between markets on a worldwide basis to lower financing costs for borrowers and/or increase asset yields for investors.
- More effectively accomplishing risk management of asset or liability portfolios against unpredictable movements in currency and interest rates.
- Providing access to flexible, liquid, custom-tailored investment vehicles that may not be available in a cash-market alternative.
- Creating a position analogous to owning a direct investment in a financed asset, which may be advantageous from a balance sheet, risk-based capital, or financing-cost perspective.

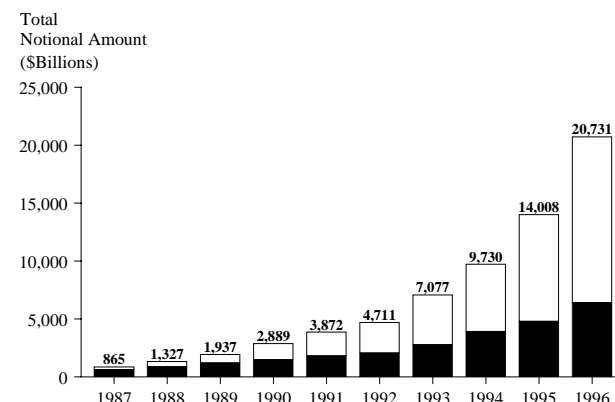
This product note is intended to familiarize the reader with the market, basic framework, and potential applications for interest rate swaps. These basic concepts, once understood, can often be applied to other swap markets. The pricing and economics of these structures, while current at the time of printing, are

¹ Source: International Swaps and Derivatives Association (ISDA). 1996 year-end notional amount outstanding.

subject to change with the economic environment. The applications described in this publication are intended merely as illustrative examples of the ever-growing use of swaps and swap products in the rapidly changing financial environment.

Exhibit 1

Swap Market Overview



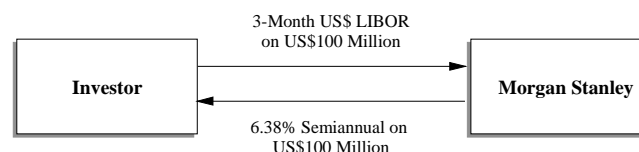
Source: ISDA

Interest Rate Swaps

An interest rate swap is the most widely used swap product. Two parties (called "counterparties") enter into a contractual agreement to exchange interest payments on a specified underlying notional amount over a period of time. Typically, one party pays a fixed interest rate and the other party pays a floating interest rate. This basic swap concept has numerous variations.

Exhibit 2

How an Interest Rate Swap Works



Source: Morgan Stanley

The above standard coupon swap illustrates the exchange of 3-month LIBOR for a fixed rate. Interest payments are determined by applying the respective rates to an agreed-upon notional amount, which remains constant over the life of the swap. There is no exchange of principal amounts (i.e., an interest rate swap is not an

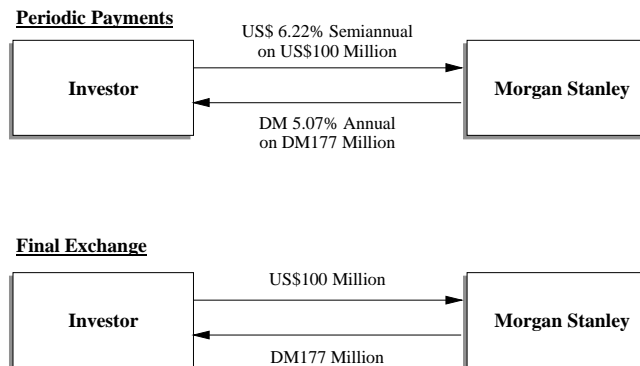
investment or a loan). The cash flow exchanges are analogous to an investor buying a US\$100 million bond, maturing in five years, with a 6.38% coupon and financing the bond at 3-month LIBOR flat.

Currency Swaps²

In a currency swap, counterparties exchange specific amounts of two different currencies at the outset and repay at maturity or according to a predetermined schedule that reflects interest payments and amortization of principal. A *traditional currency swap* involves the exchange of fixed interest rates in each currency. Principal may or may not be exchanged. A *cross-currency interest rate swap* involves the exchange of fixed and floating payments as well as payments in different currencies. In contrast to interest rate swaps, cross-currency swaps involve both interest rate risk and foreign exchange risk. More than the equivalent of US\$1.55 trillion in currency swaps were outstanding as of the end of 1996.³

Exhibit 3

How a Currency Swap Works



Source: Morgan Stanley

As illustrated, cross-currency swaps involve both periodic interest payments as well as an exchange of principal in each currency at the maturity of the swap. The exchange-at-maturity values are typically set at the foreign exchange rate at the time the swap is entered (assumed to be 1.77DM/US\$ in this example). An

optional initial exchange of principal may also occur at the beginning of the transaction.

Derivative Swap Products⁴

Derivative swap products are the options of the swap market. Standard derivative swap products include caps, floors, collars, swaptions and options on caps and floors. In the first half of 1996, approximately US\$1.415 trillion of derivative swap products were transacted.⁵

Swaptions

A swap option, or swaption, is a contract that gives a counterparty the right (but not the obligation) to enter into a new swap agreement or to shorten, extend, cancel, or otherwise change an existing swap agreement at some designated future time at terms agreed upon today. It is different from a forward swap in that a forward swap is a commitment to enter into a swap that starts at some future date with rates agreed upon today. A swaption may be structured European-style (exercisable on only one prespecified date), American-style (exercisable during a designated period), or Bermudan-style (exercisable on several prespecified dates). The buyer of the right to pay fixed is said to own a payor swaption. The buyer of the right to receive fixed is said to own a receiver swaption.

Caps and Floors

“Caps” provide the investor with protection when rates are anticipated to rise. An interest rate cap is a right to receive periodic cash payments equal to the positive difference (if any) between the actual level of interest rates in the future and the strike (or “cap”) level agreed upon today for a specified period of time. The cap buyer purchases protection from a floating interest rate index moving above the strike and, thus, effectively “caps” his interest rate exposure. The strike is based upon 3-month LIBOR or another floating index and is typically measured quarterly.

“Floors” provide the investor with protection when rates are anticipated to fall. An interest rate floor is the right to receive periodic cash payments equal to the positive

² For more information on currency swaps, see the Morgan Stanley publication *Product Notes: Introduction to Nondollar Swap Products*, April 1990.

³ Source: ISDA

⁴ For more information on derivative swap products, see the Morgan Stanley publication *Product Notes: Introduction to Derivative Swap Products*, July 1991.

⁵ Source: ISDA

difference (if any) between the strike (or “floor”) level agreed upon today and the actual level of interest rates in the future for a specified period of time. The floor buyer purchases protection from a floating interest rate index moving below the strike. The strike is based on 3-month LIBOR or another floating index and is typically measured quarterly.

Applications of Swaps

Swaps were initially developed to allow issuers to obtain the lowest cost of borrowing. Issuers could exploit anomalies resulting from different credit perceptions or technical market conditions to issue securities or acquire funding and then use swaps to translate a relative borrowing advantage into the desired form of liability.

Today, however, swaps have also become effective tools for managing fixed-income assets and liabilities. Swaps are principally used for three different purposes: creating synthetic securities, establishing trading opportunities, and effecting risk-management solutions.

Synthetic Securities

A synthetic security combines the purchase of a fixed-income instrument with an interest rate swap or derivative swap product that has payment dates and cash flow patterns coincident with those of the asset. By entering into such a package, an investor can create a new security with enhanced performance features. The value of such a transaction is derived from three sources:

- The relation of the swap rate to the yield of the underlying fixed income asset.
- The relative value of the security. Attractive synthetic securities can be created by taking advantage of undervalued sectors across markets or currencies, or both.
- The options inherent in the security. Synthetic securities can exploit the different values placed on calls and puts by the bond and swap markets.

Synthetic securities are most commonly used to create a floating-rate asset from a fixed-rate asset.

Exhibit 4

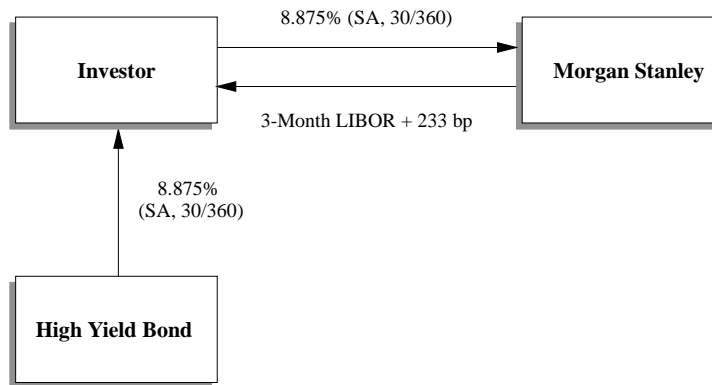
Synthetic High Yield Floating-Rate Note¹

Situation: A floating-rate investor wants to participate in the U.S. domestic high yield market, but high yield floating-rate securities are not readily available.

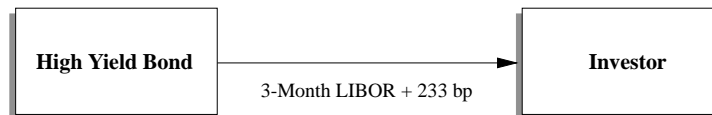
Synthetic Security: A LIBOR-plus-a-spread synthetic security can be created by buying a fixed-rate bond and simultaneously entering into a swap to transform the fixed-rate payments into floating-rate payments.

Example: The investor buys a high yield bond yielding 8.875% due 1/15/07.

Swap: Investor receives 8.875% (SA, 30/360) on the bond. In turn, the investor pays 8.875% (SA, 30/360) in the swap to match the cash flows on the bond, and receives 3-month LIBOR + 233 bp.



Net Result to Investor: By combining the swap with the bond purchase, the investor creates a synthetic floating-rate asset that pays LIBOR + 233 bp.



¹ Pricing indicative as of November 11, 1997.

Source: Morgan Stanley

Swaps As Trading Vehicles

Interest rate swaps can also be used as fixed income trading vehicles. For example, entering into a 5-year swap to receive fixed and pay floating is analogous to purchasing a 5-year bond financed at LIBOR. This position can readily be unwound or “sold” in the swap

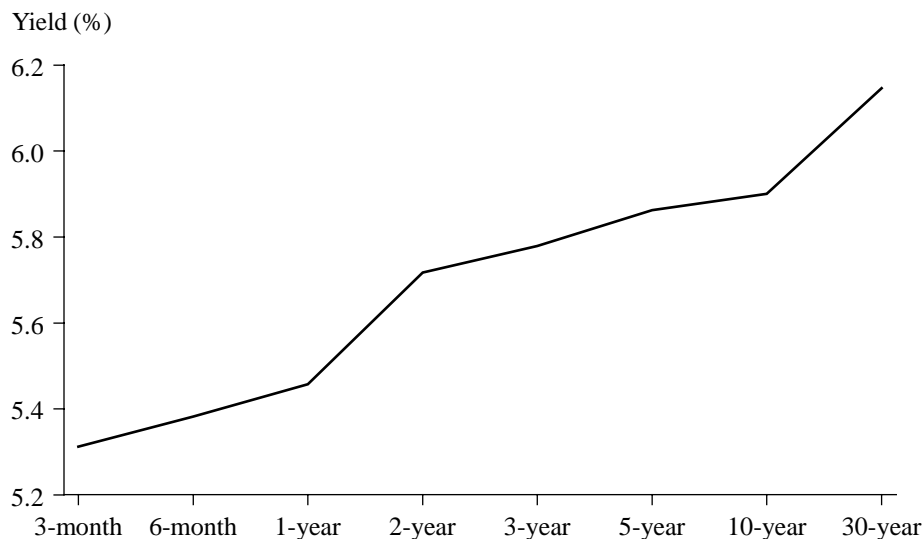
market at a gain/loss to the investor like an intermediate bond in the secondary bond market. For example, investors can take positions on the shape of the yield curve or the relative behavior of different indices. Exhibits 5 and 6 detail examples of such trades.

Exhibit 5

Yield Curve Trading Position

Situation: The shape of the U.S. dollar yield curve has been flat at certain points in time. An investor can enter into two interest rate swaps to profit from a yield curve steepening.

**Yield Curve As of
November 11, 1997:**



Swap 1: Investor pays 10-year fixed at 6.38% (SA, 30/360).
Investor receives 3-month LIBOR initially set at 5.875% (Q, Act/360).
Notional Amount: \$100 million.

Swap 2: Investor receives 2-year fixed at 6.10% (SA, 30/360)
Investor pays 3-month LIBOR initially set at 5.875% (Q, Act/360).
Notional Amount: \$384 million.

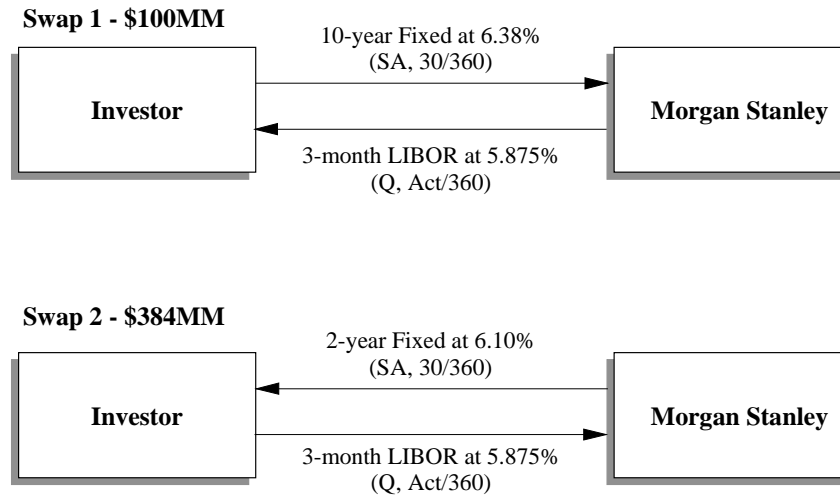
Note: The notional amounts are duration weighted to produce the same interest rate sensitivity.

This memorandum is based on information available to the public. No representation is made that it is accurate or complete. This memorandum is not an offer to buy or sell or a solicitation of an offer to buy or sell the securities or instruments or to participate in any particular trading strategy mentioned. Please refer to the notes at the end of this report. **Additional information on recommended securities is available on request.**

Exhibit 5 (continued)

Yield Curve Trading Position¹

Initial Position:



Carry for Six Months:

Fixed Legs:

Investor pays 6.38% (SA, 30/360) on \$100,000,000 * 180/360	=	(\$3,190,000)
Investor receives 6.10% (SA, 30/360) on \$384,000,000 * 180/360	=	<u>\$11,712,000</u>
Positive Carry	=	\$8,522,000

LIBOR Legs:

Investor pays 6.00% (SA, 30/360) on \$384,000,000 * 180/360	=	(\$11,520,000)
Investor receives 6.00% (SA, 30/360) on \$100,000,000 * 180/360	=	<u>\$3,000,000</u>
Negative Carry	=	(\$8,520,000)
Total Net Carry	=	\$2,000

Reversing the Trade

Six Months Later:

Investor takes advantage of steepening in 9.5- to 1.5-year swap rates and reverses the trade by unwinding the swaps.

Swap 1:	9.5-year fixed rate is 6.50%	Gain	=	\$852,000
Swap 2:	1.5-year fixed rate is 6.15%	Loss	=	(\$268,800)
		Positive Carry	=	\$2,000
		Total Net Gain on Trade	=	<u><u>\$585,200</u></u>

¹ Pricing indicative as of November 12, 1997.

Source: Morgan Stanley

Basis Swap Trading Position¹

Situation: A fixed income investor believes U.S. income tax rates are going to increase and this increase will be reflected in the relative level of short-term tax-exempt interest rates.

Transaction: An investor can enter a swap trade designed to profit from a readjustment in the relationship between tax-exempt and taxable interest rates at the short end of the yield curve. In this trade, the investor receives a percentage of LIBOR rates and pays the PSA municipal swap index.

November 15, 1997: Investor enters into a swap for five years on a notional amount of US\$100 million.

Investor pays: Daily average of PSA Municipal Swap Index (currently 3.94%), paid quarterly on an actual/actual basis.

Investor receives: 67.75% of 3-month LIBOR (3.98%).

Reversing the Trade: By November 15, 1998, short-term tax-exempt rates have started to trade at a much lower percentage of taxable rates, and the investor unwinds the swap at 66.75% of LIBOR.

Profit (present value) = 67.75% – 66.75% = 1% of LIBOR for four years. Using the 4-year swap rate of 6.17% as the proxy for future LIBOR and the discount rate, the investor receives an unwind payment equal to the present value of 16 quarterly payments of 6.17% x 1% = 0.0617%, discounted at 6.17%. This is equal to 0.217%, or \$217,230. Add to this the positive carry for one year of 0.04% of \$100,000,000 (the difference between what the investor pays and receives, assuming PSA and LIBOR remain constant), and the total gain to the investor is approximately \$257,230.

¹ Pricing indicative as of November 14, 1997.

Source: Morgan Stanley

Risk Management Tool

Swap products offer the fixed income manager new opportunities to actively manage portfolios. As with futures and options, swaps provide a means of limiting an investor's exposure to changes in rates and relative values among different sectors. Swaps provide an availability and degree of customization that make them a strong complement to listed futures and options products. For example, swaps can be used to reconfigure portfolios without trading bonds (Exhibit 7).

In addition, derivative swap products may offer opportunities to profit from valuation beliefs (e.g., create a mortgage-like position by benefiting from the swap market's strong bid for volatility) or market-direction sentiment (e.g., short the bond market using swap options). Derivatives may also enable the fixed income manager to monetize the value of the options that the manager has acquired through assets or liability-generating activities.⁶ For investors involved in nondollar markets, swaps often provide the most effective way of establishing long or short positions.⁷

⁶ For further information, see the Morgan Stanley publication *Product Notes: Introduction to Derivative Swap Products*, July 1991.

⁷ For further information, see the Morgan Stanley publication *Product Notes: Introduction to Nondollar Swap Products*, April 1990.

Exhibit 7

Swaps Portfolio Rebalancing

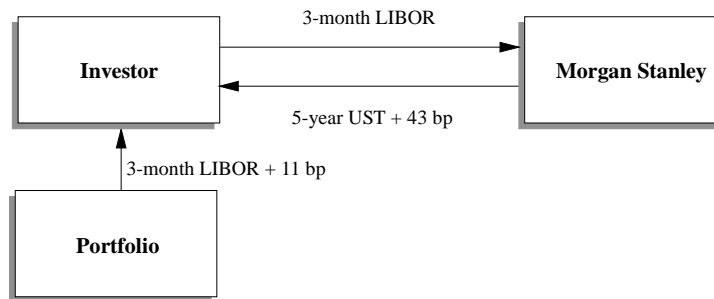
Situation: A fixed income investor is restricted from liquidating assets to effect a redeployment to a more attractive sector of the yield curve. The investor believes it would be opportunistic to lengthen (or shorten) duration to take advantage of relative value opportunities.

Short-Term Investor: An investor holding short-term instruments (e.g., LIBOR-based) enters the following swap:

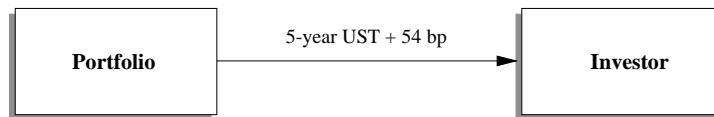
Pays 3-month LIBOR

Receives 5-year U.S. Treasury + 43 bp

Swap:



Net Result to Investor: Investor continues to hold short-term instruments but has reconfigured his position to synthetically hold higher-yielding intermediates (5-year U.S. Treasury + 54 bp).



Intermediate-Term Investor:

- An investor holding intermediate investments but who believes that short-term interest rates offer the safest investment or greatest return potential continues to hold 5-year fixed-rate assets yielding 5-year U.S. Treasury + 54 bp and enters the following swap:
 - Pays 5-year U.S. Treasury + 45 bp
 - Receives 3-month LIBOR
- Result: Investor continues to hold intermediate instruments but has reconfigured his position to synthetically hold LIBOR-based instruments yielding 3-month LIBOR + 10 bp.

Source: Morgan Stanley

This memorandum is based on information available to the public. No representation is made that it is accurate or complete. This memorandum is not an offer to buy or sell or a solicitation of an offer to buy or sell the securities or instruments or to participate in any particular trading strategy mentioned. Please refer to the notes at the end of this report. **Additional information on recommended securities is available on request.**

Characteristics of Swaps

Like most financial instruments, swaps have certain characteristics and conventions that affect the way they are traded and viewed by market participants.

Credit Risk

Inherent in every swap transaction is the credit risk of each counterparty. Since an interest rate swap is simply a contract to exchange only interest payments, the credit exposure of a swap participant is limited to the replacement value rather than the notional amount plus the interest payments.

In some situations, however, one counterparty does not meet the credit-quality standards of the other, so up-front or mark-to-market collateral may be required. This is comparable to a margin account. The considerations used to determine whether collateral is needed include the length of the swap, price volatility of the transaction, and the financial condition of the counterparty. However, swap rates are not affected by these considerations. The swap market is one of the few markets that does not explicitly charge for credit risk. Triple-B companies typically receive the same swap rates as Triple-A companies.

Swaps Spreads and Liquidity

The bid-offer spread for interest rate swaps in U.S. dollars and other actively traded currencies is usually one to five basis points. The interest rate swap market is most liquid for transactions with notional (principal) amounts of \$50 million to \$500 million and final maturities of 10 years or less, although much larger and/or longer-maturity swaps are often transacted. Fixed- and floating-rate payments can be netted or exchanged on a monthly, quarterly, semiannual, or annual basis to match an asset or liability.

A swap dealer facilitates swap transactions in one of two ways:

- As an agent, arranging the deal but not taking a principal position in the swap
- As a principal, using its own capital to be a counterparty while retaining the right of assignment to facilitate transactions.

Managing Risk in the Swap Business

In the early days of the swap business, dealers ran matched books of positions and simply paired payers and receivers (sellers and buyers). Today, risk management in the swap business resembles dynamic portfolio management. Rather than merely offsetting payers and receivers on matched positions, dealers run hedged books of swaps. For example, U.S. dollar interest rate swaps are hedged with Eurodollar futures contracts, U.S. Treasury issues, Treasury futures contracts and other swaps. Swap-spread risk remains an element of trading risk, much as corporate bond spread risk remains as an element of risk in trading corporate bonds.

Right of Assignment

The right of assignment gives each swap participant the right to transfer the swap agreement to a mutually agreed-upon party. The assignment provision is usually bilateral and mutually beneficial since it maximizes liquidity and facilitates management of exposure to specific credits. Since it requires mutual approval and only the counterparty changes, not the financial terms, it should pose little concern. Typical assignment counterparties are swap dealers. To assign a swap, a counterparty requests (and receives) approval from the original counterparty and then forwards a confirmation to both the original and new counterparties. The assigned swap is then redocumented under the respective ISDA documents.

Quotes

U.S. dollar swap pricing is quoted as a fixed rate, expressed as a semiannual bond-equivalent spread over the outstanding U.S. Treasury of comparable maturity, versus a floating-rate index. Floating-rate payments are typically based on 3- or 6-month LIBOR. (The Appendix on page 15 lists the most common swaps and their usual terms.) Price behavior for swaps with maturities of five years or less is linked to prices in the Eurodollar futures market, while swaps of longer maturities are usually priced according to supply and demand factors. On the “bid” side of the market, the dealer pays fixed and the investor pays floating. Exhibit 8 displays example quotes across the maturity spectrum for a LIBOR-based swap.

Exhibit 8

U.S. Dollar Interest Rate Swap Levels¹

Year	LIBOR Indexed	
	Client Receives Fixed from Dealer	Client Pays Fixed to Dealer
1	Dealer pays 5.95%	Client pays 5.97%
2	+35 bp	+36 bp
3	+37 bp	+38 bp
5	+38.5 bp	+39.5 bp
7	+40.5 bp	+41.5 bp
10	+44.5 bp	+45.5 bp

¹ Levels are semiannual on a 30/360-day basis, as of December 1, 1997.
Spreads are relative to benchmark U.S. Treasuries.

Source: Morgan Stanley

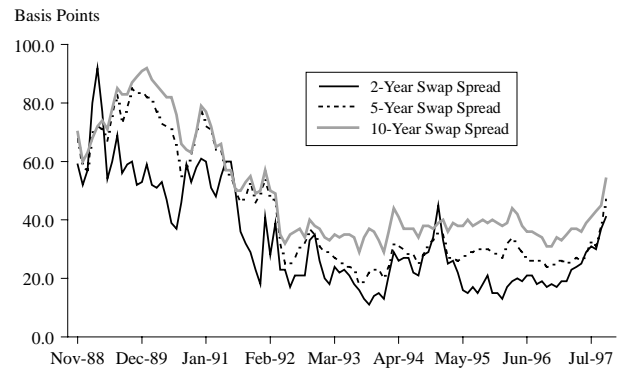
The dealer is willing to enter a 3-year swap in which it receives 3-month LIBOR flat and pays the counterparty a fixed rate equal to 36 basis points over the yield of the 3-year Treasury note (at the time of executing the swap).

Historical Spread Behavior

The swap curve represents a generic LIBOR curve that has the implied credit characteristics of AA banks and, therefore, trades at a positive spread to the U.S. Treasury curve. U.S. dollar swap spreads through five years imply a technical relationship between the U.S. Treasury curve and the Eurodollar futures contract curve. Swap spreads in the longer maturities (through 10 years and beyond) are influenced by supply and demand factors. The dominant cause of spread-tightening is excessive bid-side activity, which often occurs when new issues of fixed-rate bonds are swapped to floating by the issuers. This causes dealers to pay fixed, which results in a narrowing of swap spreads. The dominant cause of spread-widening is excessive offered-side activity, which typically occurs when corporates or financial institutions pay fixed to hedge against increases in interest rates. This causes spreads to widen as dealers are required to receive fixed (Exhibit 9). Repo specialness also typically causes spread-widening, as asset-swapping Treasuries become more attractive.

Exhibit 9

2-, 5-, and 10-Year U.S. Swap Spreads



Source: Bloomberg

Duration

The duration of a swap is determined separately for the payments received (assets) and the payments made (liabilities) with the notional amount counted as an amount received and paid. For example, in a swap in which the investor receives a fixed rate for five years and pays 3-month LIBOR, the swap's duration is equivalent to a 5-year asset with the same coupon payments minus a resetting 3-month liability. For synthetic securities, the duration of the swap in combination with the asset is the same as a fixed- or floating-rate instrument with the same coupon payments and price.

Valuation

Swaps are marked to market by calculating the Present Value (PV) of the swap's value at a particular point in time. In a basic swap, the PV is calculated by netting the projected cash flows received against the projected cash flows paid, assuming rates follow the forward curve. For example, from the investor's perspective, in a swap in which the investor receives a long-term fixed rate and pays floating (LIBOR):

- If long-term rates increase, the swap's value decreases; if long-term rates decrease, the swap's value increases.
- If LIBOR increases or decreases, the swap's value does not necessarily change.

- If there is a parallel shift upward of the yield curve, the swap's value decreases; if there is a parallel shift downward of the yield curve, the swap's value increases.

Variations of Basic Interest Rate Swaps

The inherent flexibility of swaps has also resulted in the development of structures that enable investors to use swaps in a variety of applications. Some well-known or frequently used variations are listed below:

Basis Swaps

These swaps enable fixed income managers to manage basis risk, defined as the yield differential between two floating indices, in their portfolios. For example, a bank could reduce the risk that the basis of its assets (typically Prime) does not match its liabilities (generally LIBOR) by using a basis swap which exchanges Prime for LIBOR. In addition, unusual relationships between indices can be arbitrated through such swaps (Exhibit 6). The Appendix details the specific conventions used with non-LIBOR floating legs.

Off-Market Swaps

A swap can be priced "off-market" to obtain a desired set of cash flows. The swap is structured so that the value of the fixed-rate side, including any up-front payments, equals the value of the floating-rate side under current market conditions. As part of such swaps, odd-dated or odd-sized cash payments between the counterparties; a lower- or higher-than-market coupon on the fixed pay leg; a spread added to or subtracted from the floating leg; or some combination of the above may be found.

Zero-Coupon Swaps

In zero-coupon swaps either one or both legs of the swap are recalculated periodically, but counterparties do not actually exchange an interest payment until the maturity of the swap. Zero-coupon swaps are often used to structure synthetic securities from zero-coupon bonds.

Prepaid Swaps

A prepaid swap is an interesting contrast to the zero-coupon swap. In a zero-coupon swap, one (or both) of the legs compound and payment is made when the swap

matures. In a prepaid swap the present value of the future payments due under a leg (usually the fixed pay side) is calculated and paid at the start of the swap. As such, a prepaid swap is analogous to an annuity.

Arrears Reset Swaps

In an arrears reset swap, LIBOR is set at the *end* of each floating-rate period instead of at the beginning. In a steep yield curve environment this will enhance the coupon earned by a receiver of fixed.

Forward Swaps

Forward swaps are interest rate swaps for which payments commence at a later date rather than the current date, thereby affording the opportunity to lock in a fixed rate today while accruals begin in the future. Unlike swap options in which the counterparty has the right but not the obligation to enter a swap, participants in a forward swap have a definitive commitment to participate at the agreed-upon future date. Forward swaps can be used to manage future interest rate risk in connection with an expected future receipt of funds such as Guaranteed Investment Contracts (GICs).

Extension Swaps

Forward swaps can also be utilized to create extension swaps. The term "extension swap" refers to an interest rate swap that effectively "extends" the maturity of an existing interest rate swap. Such transactions enable counterparties that have existing interest rate swaps to take advantage of current levels and lengthen the maturity of their swaps, hedging future exposure to adverse changes in interest rates.

Constant Maturity

Constant Maturity Swaps (CMSs) are interest rate swaps that typically use a long-term swap rate for one of the swap payments that is periodically reset. The swap may be quoted against either a LIBOR coupon or a fixed coupon; however, for purposes of price comparison, it is simplest to compare the constant maturity quoted coupon, plus or minus a spread against a LIBOR coupon without a spread (flat). (For example, a dealer pays 5-year CMS less 25 basis points versus LIBOR flat for three years with semiannual resets.)

There is no standard quoted market for CMSs. Nevertheless, certain conventions are operable. Constant Maturity Treasury (CMT) swaps typically use the Federal Reserve's H15 Form as a source and should use the Treasury market convention of actual/actual as a day-count basis. CMSs typically use as a source the simple average of quotes obtained by the calculation agent from four or five reference dealers who are prepared to deal on a swap of the size and term indicated. The quotes are normally for a spread that is added to a U.S. Treasury level to determine the new CMS coupon setting. CMSs typically use the swap market convention of 30/360 as a day-count basis.

The critical elements that affect CMS prices are the steepness of the swap curve, the maturity of the swap contract, the level of swap spreads, the tenor of the underlying swap benchmark, and the frequency of resets. The critical elements that affect CMT swap prices are the steepness of the U.S. Treasury yield curve, the level of forward swap spreads, the maturity of the swap contract, the tenor of the underlying CMT benchmark, and the frequency of resets.

Index Amortizing Swaps

Indexed Amortizing Swaps (IASs) pay the client an above-market fixed coupon rate in exchange for maturity uncertainty. The notional amount of the swap amortizes based on the path of a selected interest rate index, such as 3-month LIBOR or a designated CMT. These swaps typically pay a higher fixed rate than standard interest rate swaps.

These swaps emulate mortgage-type products, which lengthen in maturity as prepayments slow (typically as a result of rising interest rates). Similarly, the IAS will lengthen in maturity as interest rates rise. The advantages of these swaps over mortgages include flexibility in choice of index, shorter final maturity, their off-balance-sheet nature, and the elimination of the non-economic elements in mortgage prepayment uncertainty.

Step Up/Down

Step Up and Step Down swaps have multiple fixed rate payment levels. The levels are agreed to at the time the swap is established and are not subject to market movement.

Cancelable/Putable Swaps

Cancelable and putable swaps are interest rate swaps that contain an embedded option enabling the holder of the option to terminate or extend the swap on one specified date (European-style) or on several specified dates (Bermudan-style) after a pre-specified lockout period. Since there is an existing swap in place during the option period, the premium can be paid upfront or can be built into the fixed rate. When combined with callable, putable or straight bonds, these swaps allow issuers to create synthetic structures that provide hedges or lower cost funding.

Cancelable Zero-Coupon Swaps

Cancelable zero-coupon swaps are zero-coupon swaps that contain an embedded call feature enabling the holder of the option to cancel the swap. In contrast to plain vanilla cancelable swaps, no interim interest payments are made. Instead, the balance of accrued interest is paid at the earlier of the maturity date or call date(s).

Market Participants

The interest rate swap market consists of a wholesale market and a retail market. The wholesale market, commonly referred to as "Interbank," includes the major *investment banks and commercial banks* that take principal positions and maintain swap trading books. These dealers work either directly with counterparties or through brokers. The retail market is made up of investors, asset/liability managers, and issuers of securities.

Banks and finance companies typically use swaps to manage the basis and interest rate risk associated with their lending business, create synthetic securities as loan substitutes, achieve the lowest-cost funding, and help in asset/liability and portfolio management. The accounting treatment and comparatively low capital requirements of swaps have enhanced their attractiveness as trading vehicles. Recognizing the importance of swaps, the Bank for International Settlements (BIS) Risk Capital Guidelines (for banks) have established specific capital requirements for swaps.

Insurance companies frequently use swaps to manage the interest rate exposure and embedded options

associated with specific insurance products (e.g., single premium deferred annuities, universal life, GICs).

Investment managers use swaps to enhance yield, to express investment viewpoints not easily made in conventional instruments, and as a risk-management tool.

Nonfinancial corporations use swaps in conjunction with funding activities and as a liability-management tool.

Thriffs use swaps to hedge their mortgage portfolios and manage their asset/liability exposure.

Settlement and Documentation

A swap product without an up-front payment does not have an event analogous to settlement as with the purchase or sale of a security. Every swap product has an effective date, also called the “start date.” For an interest rate or currency swap, this is the date on which the swap begins accruing interest. It is typically two business days after the execution of the trade (known as a “spot start”); however, longer start dates are available (i.e., forward swaps). As a matter of payment convenience on interest rate swaps, fixed- and floating-rate payments are netted, when possible.

The International Swaps and Derivatives Association (ISDA) has established standardized forms to facilitate the documentation of swap trades. The counterparties typically enter into an Interest Rate and Currency Exchange Agreement, which sets forth the terms and conditions that govern each swap transaction. These agreements consist of a preprinted form and an attached Schedule, together generally called a “Master Agreement.” Once the Master Agreement is executed, individual swaps can be documented via a Confirmation, which incorporates the Master Agreement. Copies of swap documents are available from your Morgan Stanley representative.

Since a swap is a contract, all parties should seek legal counsel before entering into an agreement.

Accounting and Regulation

Swap counterparties should consult their own advisers to determine the appropriate accounting treatment for swaps. However, the following are some general observations.

Accounting

- If an investor normally carries securities at cost, then the swap position is also carried at cost. Payments received are accrued as revenue, and payments made are accrued as expense.
- If an investor normally marks securities to market, then swap products are marked to market.
- An up-front payment made or received is amortized over the life of the swap.
- If a bond and swap combination (i.e., a synthetic security) is sold in separate pieces, the gain or loss on the unwound piece is amortized over the life of the remaining piece.
- If the bond and swap combination are unwound simultaneously, the gain or loss is taken in the current quarter.
- Currently, the Financial Accounting Standards Board (FASB) and the SEC are reviewing reporting rules regarding derivatives. Investors should consult their accounting advisors for further details.

Regulation

Regardless of type, a swap is a separate contract that is generally not legally tied to any specific asset or liability. While no regulator is charged with overseeing the activities of the swap market as a whole, a broad range

of regulatory agencies (such as the SEC and CFTC) oversee the various participants in the market. Before entering into any contractual agreement, a counterparty should be aware of all the risks associated with the specific investment vehicle. In particular, customers subject to the Investment Company Act of 1940 or the Employee Retirement Income Security Act of 1974 (ERISA) should consult with legal counsel regarding the treatment of swap products. The swap community, through the ISDA, has developed standard swap documents to ensure standardization of practices (see Settlement and Documentation).

Morgan Stanley's Role in the Swap Market

Morgan Stanley participates in all aspects of the swap business worldwide, including engineering, origination, marketing, market-making, and book management. The firm manages a substantial principal book of swaps and derivative products worldwide, making markets in swaps and derivative products in U.S. dollars (taxable and tax-exempt), plus 21 major currencies and emerging market currencies. Swap product specialists and traders are located in New York, Toronto, London, Hong Kong, Sydney, and Tokyo to provide fixed income and capital markets clients with timely access to swap transactions.

U.S. Dollar Interest Rate Swaps: Convenient Conventions

The table below sets out some of the swap market's conventions for interest rate swaps. Customization is common; variability should be anticipated.

	Fixed Payment							
		LIBOR	Commercial Paper	Fed Funds	Prime	Treasury Bills	Constant Maturity Treasury (CMT)	PSA Municipal Swap Index
Day Count	30/360 semiannual bond ¹	Actual/360	Actual/360	Actual/360	Actual/360	Actual/360	Actual/Actual	Actual/Actual
Index Term	-- ²	1, 3 or 6 months	30 days	1 day	--	90 days	1, 2, 3, 5 or 10 years	1 day
Source	Dealer's bid or offer	Page "LIBO" on Reuters or page 3750 on Telerate	Federal Reserve's H15 Form	Federal Reserve's H15 Form	Federal Reserve's H15 Form	Federal Reserve's H15 Form	Federal Reserve's H15 Form	Municipal Market Data, Inc./ Telerate/Bond Buyer
Rate Calculation	Quoted as a spread to a Treasury of similar maturity. ³ Can also be quoted as an all-in fixed percentage rate.	1-, 3- or 6-month LIBOR is set two business days prior to the beginning of the period.	Unweighted average of the daily 1-month A1/P1 CP rate, converted to a money market basis, calculated monthly then compounded until the next payment date.	Weighted average of the overnight Fed funds effective rate.	Weighted average of the daily prime rate.	Simple average of the bond equivalent yield rate of the weekly average auction rate for 3-month U.S. T-Bill converted to an Act/Act yield.	Yields on actively traded issues adjusted to constant maturities.	Simple average of the daily rate, based on a weekly rate setting.
Payment Frequency ⁴	Semiannually ⁵	Monthly, Quarterly or Semiannually	Quarterly	Quarterly	Quarterly	Quarterly	Semiannually	Quarterly or Monthly ⁶

¹ Some dealers quote swap spreads in the Eurodollar futures-related portion of the yield curve on an actual/360-day basis. Occasionally, longer-term swaps are also quoted on this basis.

² In some cases the clients will want to exchange Treasury notes. If so, the trading desk should be notified and the notes should be specified.

³ At the time the trade is executed, a reference U.S. Treasury security is set. If the dealer pays fixed on the trade, it must buy Treasuries and the swap spread is added to the offered-side yield of the reference Treasury. The opposite applies when the dealer receives fixed.

⁴ Net payments are normally made on the same day.

⁵ Although typically quoted on a semiannual basis, this rate can be compounded to an annual rate or decompounded to a monthly or quarterly rate.

⁶ The fixed rate for a PSA swap is quoted on an all-in basis and not as a spread to Treasuries.

Source: Morgan Stanley

This memorandum is based on information available to the public. No representation is made that it is accurate or complete. This memorandum is not an offer to buy or sell or a solicitation of an offer to buy or sell the securities or instruments or to participate in any particular trading strategy mentioned. Please refer to the notes at the end of this report. **Additional information on recommended securities is available on request.**

MORGAN STANLEY DEAN WITTER

**20-3, Ebisu 4-chome
Shibuya-ku, Tokyo 150
Tel: (813) 5424-5000**

**3 Exchange Square
Hong Kong
Tel: (852) 2848-5200**

**1585 Broadway
New York, New York 10036-8293
Tel: (212) 761-4000**

**Canary Wharf / 25 Cabot Square
London E14 4QA
Tel: (0171) 513-8000; 425-8000**

The information and opinions in this report were prepared by Morgan Stanley & Co. Incorporated ("Morgan Stanley Dean Witter"). Morgan Stanley Dean Witter does not undertake to advise you of changes in its opinion or information. Morgan Stanley Dean Witter and others associated with it may make markets or specialize in, have positions in and effect transactions in securities of issuers mentioned and may also perform or seek to perform investment banking services for those issuers.

Morgan Stanley Dean Witter and/or its affiliates will deal as principal in the securities recommended herein.

Morgan Stanley Dean Witter and/or its affiliates or employees have or may have a long or short position or holding in the securities, options on securities, or other related investments of issuers recommended herein.

The investments discussed or recommended in this report may not be suitable for all investors. Investors must make their own investment decisions based on their specific investment objectives and financial position and using such independent advisors as they believe necessary. Where an investment is denominated in a currency other than the investor's currency, changes in rates of exchange may have an adverse effect on the value, price of, or income derived from the investment. Past performance is not necessarily indicative of future returns. Income from investments may fluctuate. Price and availability are subject to change without notice. The price or value of the investments to which this report relates, either directly or indirectly, may fall or rise against the interest of investors. Certain assumptions may have been made in this analysis which have resulted in any returns detailed herein. No representation is made that any returns indicated will be achieved. Changes to the assumptions may have a material impact on any returns detailed.

To our readers in the United Kingdom: This publication has been issued by Morgan Stanley & Co. Incorporated and approved by Morgan Stanley & Co. International Limited, regulated by the Securities and Futures Authority. Morgan Stanley & Co. International Limited and/or its affiliates may be providing or may have provided significant advice or investment services, including investment banking services, for any company mentioned in this report.

This publication is disseminated in Japan by Morgan Stanley Japan Limited and in Singapore by Morgan Stanley Asia (Singapore) Pte.