

Corporate Issuance Strategy

Salomon Brothers

Financial Strategy
Niso Abuaf
(212) 783-7328

Eckhard Arndt
(212) 783-1673

Michael Kurinets
(212) 783-7329

Heidi Learner
(212) 783-6097

Capital Markets
Howard Hiller
(212) 783-3703

Issuing Corporate Callable Bonds — The Time Is Right

- Callable bonds offer issuers maximum flexibility to respond to an improving interest rate environment or a changing balance sheet.
- In the current environment, a typical single-A borrower would be able to issue a 30-noncall-10 bond at 80 basis points over the 30-year Treasury; in contrast, a 30-year bullet could be issued at 60 basis points over the 30-year Treasury.
- Call provisions in new corporate bonds are priced below "theoretical" value because of the following: (1) investors have not yet adjusted their option valuation for the current flatter yield curve; and (2) investors stretching for yields in a narrow-spread environment often prefer call risk to credit risk.
- In addition, callable bonds offer issuers an attractive and often hidden tax advantage that is typically worth about eight to 12 basis points.

Question 1*What is a callable bond?***Answer 1**

A callable bond gives an issuer the right, but not the obligation, to call a bond back from the investor at par or at a specified call schedule after a given time (call protection period) from the issuance date.

Ordinarily, callable bonds have deferred American call schedules¹ with the first call price usually set at a premium. Typical callable issues include 30-noncall-10, 30-noncall-5 and 10-noncall-7 structures. To illustrate the various structures, Figure 1 lists selected callable corporate bonds issued in March 1995.

Figure 1. Callable Bond and Note Issuance in the U.S. Corporate Public Bond Market, Mar 95 (Dollars in Millions)

Issue Date	Princ. Amt.	Issuer	S&P/ Moody's Rating	Coupon	Structure	New Issue Spread to Treasuries
29 Mar 95	\$100	Federal Home Loan Bank	NR/NR	8.350%	10-NC-1	120bp
29 Mar 95	150	Monsanto	A1/A	8.200	30-NC-10	80
22 Mar 95	200	Virginia Electric and Power	A2/A	8.250	30-NC-10	85
22 Mar 95	200	SAFECO	Aa3/AA	7.875	10-NC-8	75
22 Mar 95	150	New York Times	A1/A+	8.250	30-NC-10	80
16 Mar 95	110	Tultex	Ba3/BB-	10.250	10-NC-5	360
15 Mar 95	100	First Interstate Bancorp	A3/BBB+	8.150	7-NC-3	110

bp Basis points. NC Noncall. NR Not rated.
Sources: Securities Data Co. and Salomon Brothers Inc.

Question 2*How is a callable bond priced?***Answer 2**

Issuing a callable bond is equivalent to issuing the corresponding bullet bond and buying a call option from the investor. The call option's premium determines the borrower's cost over the corresponding bullet bond. The pricing of the bullet bond depends on the Treasury yield curve and a spread to reflect the borrower's credit.

The pricing of the call option, however, primarily depends on the maturity and structure of the call, on how deep the call is struck in- or out-of-the-money and on the implied volatility of interest rates.

In general, we expect that a call option would be more valuable to the issuer under the following conditions:

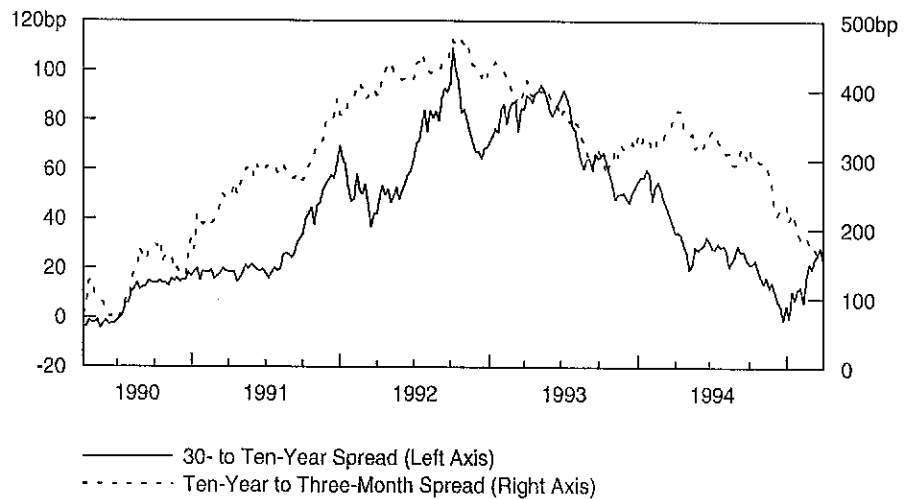
- the greater the likelihood of lower interest rates;
- the greater the volatility of interest rates; and
- the shorter the period of call protection.

The current environment is characterized by a relatively flat yield curve, particularly in the ten- to 30-year segment (see Figure 2). Such a flat yield curve implies that forward interest rates are only slightly higher than current interest rates, increasing the probability of future exercise of the call option. This increased probability makes the option theoretically more valuable to the issuer. In addition, because of the low level of recent corporate bond issuance relative to demand, investors likely will discount this value, thereby enhancing the value to the issuer.

¹ That is, callable at anytime after a call protection period according to a specified call price schedule.

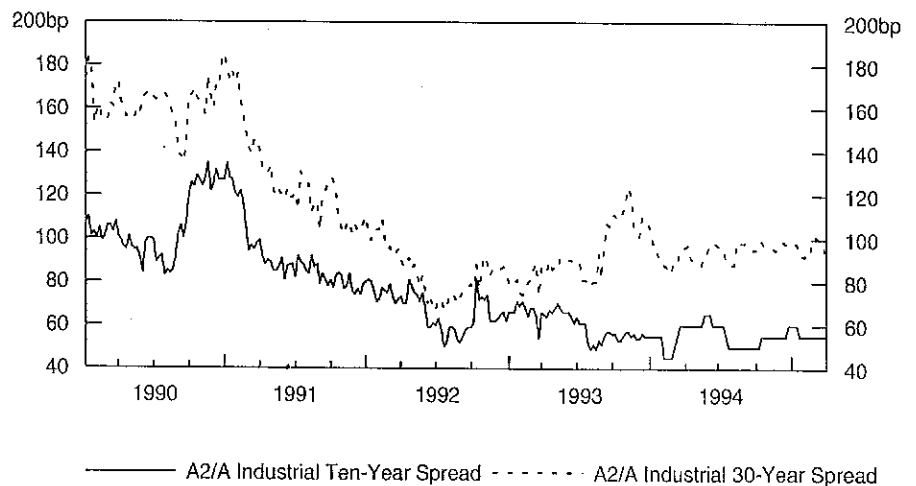
Tight corporate spreads (see Figure 3) relative to historical levels cause investors to stretch for yields, allowing callable bonds to be priced at attractive levels. In addition, as Figure 4 shows, recent implied Treasury bond price volatility, which influences the price paid for a call option, has been low relative to historical levels. If the actual volatility of interest rates between the issuance date and the call date rises, the likelihood of exercise increases, making the option even more valuable to the issuer.

Figure 2. 30-Year Treasury Yields Minus Ten-Year Treasury Yields and Ten-Year Treasury Yields Minus Three-Month Treasury Yields, Jan 90-Apr 95



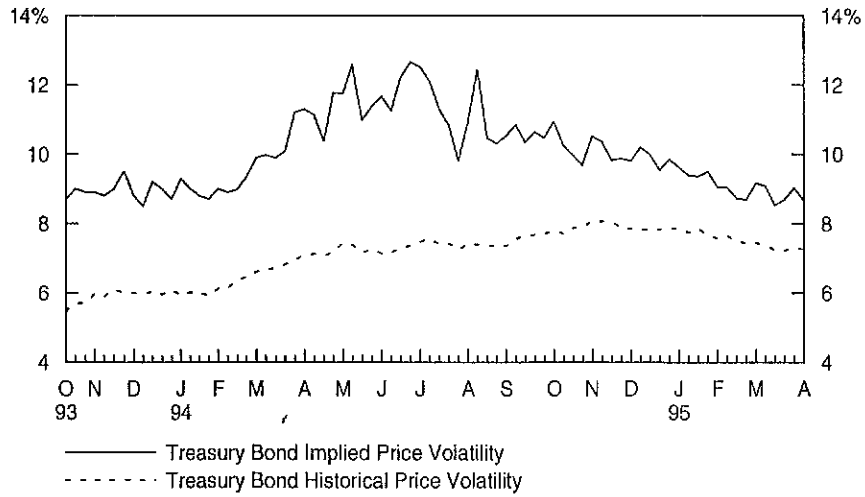
bp Basis points.
Source: Salomon Brothers Inc.

Figure 3. Historical Credit Spreads for A2/A Industrial Issuers, Jan 90-Apr 95



bp Basis points.
Source: Salomon Brothers Inc.

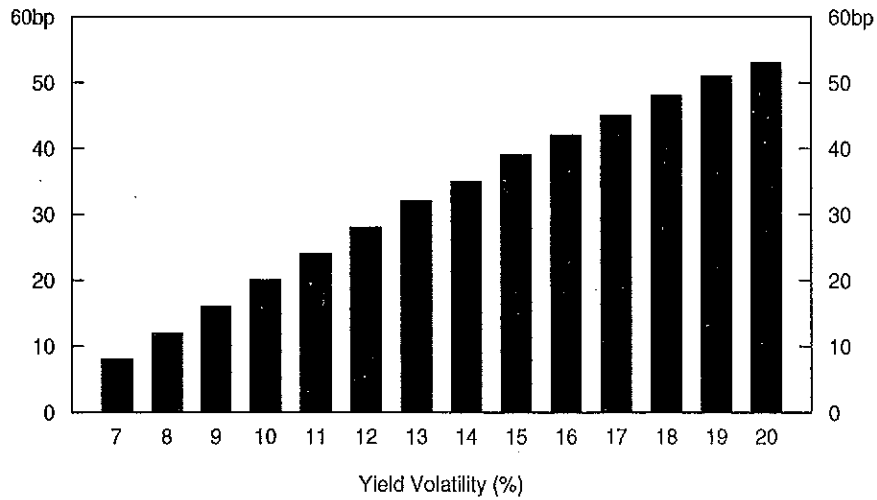
Figure 4. Historical and Implied Treasury Bond Price Volatilities, Oct 93-Apr 95



Source: Salomon Brothers Inc.

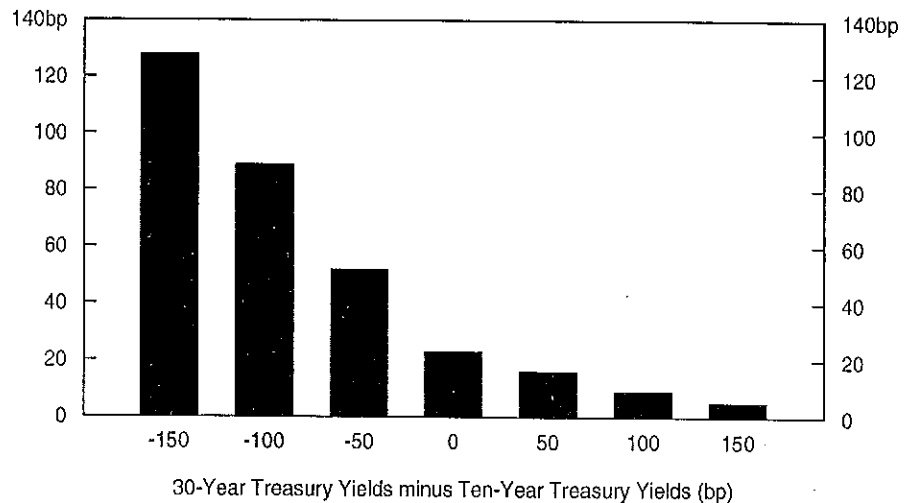
Because heightened volatility implies increased probability that the call option will be exercised, a borrower's cost of issuing callable bonds climbs as volatility rises (see Figure 5). Similarly, the issuer's call option is significantly more valuable in an inverted or flat yield curve environment. (see Figure 6).

Figure 5. Incremental Coupon Rate of a 30-Noncall-10 Bond over an 8% 30-Noncall Life Bond versus Yield Volatility



bp Basis points.
Source: Salomon Brothers Inc.

Figure 6. Incremental Coupon Rate of a 30-Noncall-10 Bond over an 8% 30-Noncall Life Bond versus the 30- to Ten-Year Treasury Spread



bp Basis points.
Source: Salomon Brothers Inc.

Question 3

How does the coupon of a 30-noncall-10 bond compare with that of a 30- and a ten-year bullet, assuming that the bonds are issued at par?

Answer 3

The coupon of a 30-noncall-10 bond always will be more than the maximum of the coupons of a 30- and a ten-year bullet bond, regardless of the shape of the yield curve. The reasons are as follows:

- The issuer can view the 30-noncall-10 bond as a 30-year bond with a call option in ten years or a ten-year bond with an option to extend to 30 years.
- Because these options have positive value, a 30-noncall-10 bond's coupon will be higher than that of a 30- or a ten-year bullet bond, assuming that the bonds are issued at par.

Question 4

What kind of borrowers should issue callable bonds?

Answer 4

The best candidates will be borrowers who hold the following views:

- expect that Treasury rates will fall;
- expect that their credit spreads to Treasuries will tighten;
- expect that implied interest rate volatility will rise, enabling them to sell or neutralize their purchased calls in the future;
- believe that they can immediately neutralize the option by selling a richer call option in the derivatives market (typically, this can only be accomplished for short-to-intermediate-term maturities)²; or
- need added optionality in their debt portfolios.

² For further information, see *The CFO Quarterly, First Quarter 1995*, Niso Abuaf, et al., Salomon Brothers Inc., March 1995.

Question 5

What are the risk-return trade-offs of issuing callable bonds for the issuer?

Answer 5

By issuing a callable bond, a borrower may reduce its interest expense over the borrowing horizon if interest rates fall. During the call protection period, the issuer faces a higher interest expense relative to issuing a bond without embedded calls. After the protection period, however, if the Treasury rate falls and/or the issuer's spread narrows, the bond may be called, allowing the issuer to refinance the bond with lower interest rates.

To illustrate how an issuer might evaluate these trade-offs, consider the financing alternatives presented in Figure 7.

Figure 7. Financing Alternatives for a Typical Industrial Corporation (Assumes Par Issuance)

Structure	Treasury Yield	Nominal Spread	Coupon	OAS ^a	All-In Cost ^b
30-NCL	7.40%	60bp	8.00%	60	8.08%
10-NCL	7.14	45	7.59	45	7.68
30-NC-10	7.40	80	8.20	45	8.28

^a OAS stands for option-adjusted spread. Option-adjusted spread (OAS) is a common way of comparing spreads of bonds and reflects the credit spread implicit in the bond after the optionalities are removed. ^b Includes underwriting costs. bp Basis points. NC Noncall. NCL Noncall life.

We will limit our analysis by focusing only on the first call date.

To evaluate the performance of a 30-noncall-10 bond, we compare it with a 30-year bullet and a ten-year bullet. By issuing a 30-noncall-10 bond, an issuer currently would pay 20 additional basis points in annual interest expense relative to issuing a straight (noncallable) 30-year bond (see Figure 8). In exchange for this 20-basis-point premium, the issuer retains the right to refinance its debt in year ten at a lower cost. The extent of the issuer's gain depends on how far interest rates fall in year ten. In this example, the borrower breaks even with the 30-year bullet bond by calling the 30-noncall-10 bond if the 20-year borrowing rate in year ten falls to 7.21%.³ In addition, lower rates in year ten may result not only from declining Treasury levels, but also from rolling down the Treasury and/or spread curves or an improving credit rating.

The borrower's cost of issuing the 30-noncall-10 bond also should be compared with the cost of issuing a ten-year bond that will be refinanced in year ten by issuing a 20-year bullet bond. The risk of issuing such a 30-noncall-10 is that interest rates may rise and the call option may expire out-of-the-money. Although the issuer is paying an additional 61 basis points in the coupon of a 30-noncall-10 bond relative to a ten-year bullet bond, the 30-noncall-10 issue will outperform the ten-year bullet if the 20-year rate in year ten climbs to 9.13% or higher (see Figure 8).

³ We assume that the call occurs on the first call date at the scheduled call price of 104%.

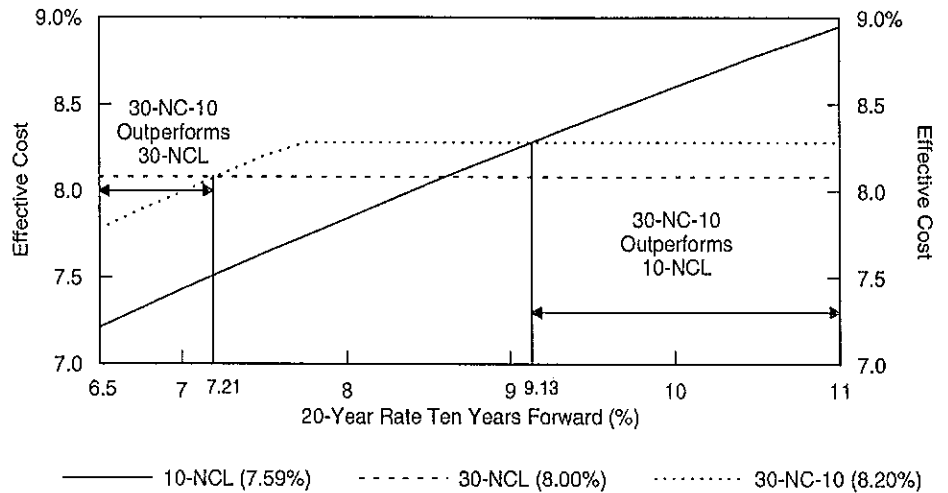
Figure 8. Break-Even Analysis of Issuing a 30-Noncall-10 Bond (Pretax IRR Basis)

Comparison With	Incremental Coupon Expense of 30-NC-10	Break-Even or Beneficial 20-Year Rate Ten Years From Issuance
30-Year Bullet	20bp	7.21% or below
Ten-Year Bullet	61	9.13% or above

bp Basis points. IRR Internal rate of return. Assumes issue is called after year ten at a call price of 104%. NC Noncall.

The effective costs of the three issuance alternatives are shown in Figure 9. The ten year bullet is rolled over at maturity into a 20-year instrument, while the 30-noncall-10 is called in year ten when the 20-year refinancing rate is sufficiently low. The 30-noncall life remains fixed over the entire 30-year horizon.

Figure 9. Effective Cost of 30-Noncall-10 versus Ten-Year and 30-Year Bullets



NC Noncall. NCL Noncall life.
 Note: Numbers in parentheses indicate current coupon.
 Source: Salomon Brothers Inc.

Question 6

How do investors view the risk-return characteristics of a callable bond?

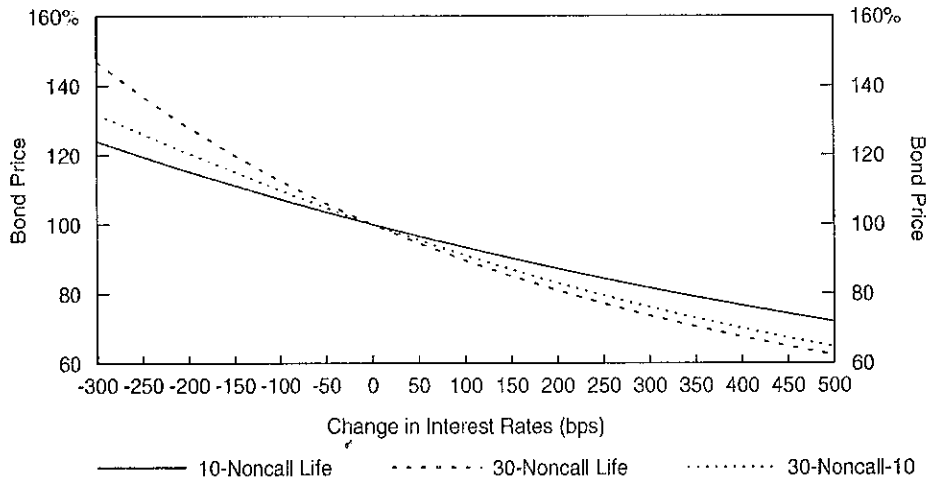
Answer 6

Typically, when analyzing the risk-return characteristics of a bond, investors look at such measures as duration and convexity. Duration measures the approximate price sensitivity of an instrument to changes in interest rates. Convexity, however, measures how the linear relationship known as duration changes with interest rates. Because duration and convexity are mere summary statistics, the best way to analyze the risk-return trade-off of a bond is to look at the sensitivity of its price to yield changes.

Figure 10 presents the price versus yield sensitivities of a 30-year bullet bond, a 30-noncall-10 bond and a ten-year bullet bond. The price-yield sensitivity of the 30-noncall-10 bond falls between the 30-noncall life and the 10-noncall life. As interest rates rise, the callable bond behaves similarly to the 30-year straight bond because the call option is likely to expire out-of-the-money. Conversely, as rates decline, the call option is likely to be exercised, causing the callable bond to behave similarly to a ten-year straight bond.

Investors buy callable bonds to express their views on interest rates and credit spreads, match duration targets and enhance yields.

Figure 10. Price versus Yield — 30-Noncall Life, 30-Noncall-10 and 10-Noncall Life Bonds



bp Basis points.
 Note: Assumes all instruments are issued at par.
 Source: Salomon Brothers Inc.

Question 7

Are callable bonds priced fairly?

Answer 7

Fixed-income investors use sophisticated option models to calculate the so-called "option-adjusted spreads" (OAS) of callable bonds.⁴

This OAS assesses the implied credit spread in a callable bond after the call provision is removed. The 30-noncall-10 bond in Figure 7 has an OAS of 45 basis points. This spread should be sandwiched between the nominal spreads of the noncallable 10-year and 30-year bonds. Because this OAS is at the low end of the range, we conclude that the 30-noncall-10 bond offers high relative value to the issuer in the current interest rate environment.

Question 8

Are callable bonds priced fairly from the perspective of tax-paying issuers?

Answer 8

Taxable issuers of callable bonds enjoy an attractive, although often hidden, tax advantage. We illustrate this tax benefit using the bonds in Figure 7. As we have already observed (see Figure 8), if the 20-year rate in year ten falls to 7.21%, issuers would be indifferent on a pretax basis between issuing either a 30-year bullet or a 30-noncall-10 bond, calling the latter in year ten and refinancing it with a 20-year bullet. The pretax internal rate of return (IRR) of either strategy is 8.08%.

But for an issuer with a 35% tax rate, the taxable-equivalent cost of the 30-noncall-10 bond is lower than that of the bullet bond. This tax advantage arises because the after-tax cash flows for the 30-noncall-10 bond involve considerably higher tax shields in the years before the bond is called and lower tax shields after the call date. This acceleration of tax benefits makes the taxable-equivalent IRR lower for the callable bond than for the noncallable bond. Specifically, the taxable-equivalent IRR for the callable bond is 8.01%, compared with the 8.08% cost for the noncallable bond (see Figure 11).

⁴ See *Effective Duration of Callable Bonds*, William M. Boyce, et al., Salomon Brothers Inc., April 1987, for a discussion of option-adjusted spreads.

Figure 11. Effective Cost of Issuing a 30-Noncall-10 Bond Relative to a 30-Year Bullet (Assumes 30-Noncall-10 Is Refinanced at 7.21% in Year Ten)

Bond	Tax Rate=0%	Tax Rate=35%
30-NC-10	8.08%	8.01%
30-Year Bullet	8.08	8.08

bp Basis points. IRR Internal rate of return. NC Noncall. Assumes 30-NC-10 is called in year ten at a call price of 104%.

Figure 11 shows that if refinancing rates fall to 7.21% in year ten, the 30-noncall-10 bond is seven basis points less expensive on a taxable-equivalent basis than the 30-year bullet. Furthermore, over the entire range of rates on or after year ten, the expected savings from the callable bond for a 35% tax payer is eleven basis points. If rates do not fall, the callable bond will not be refinanced and there will be no tax advantage.

Question 9

What is the tax treatment of issuing callable bonds?

Answer 9

The tax treatment of callable bonds is similar to the tax treatment of bullet bonds; that is, coupon payments are treated as tax-deductible interest for income tax purposes. If the issue is called on the call date, then the tax implications are as if the bond matured on the call date, and the additional call premium immediately yields an additional tax benefit. In addition, remaining unamortized underwriting expenses are expensed on the call date.

Question 10

What is the accounting treatment of issuing callable bonds?

Answer 10

Corporations should account for original issuance premiums or discounts on callable debt as if the debt will be outstanding until maturity; that is, the amortization or accretion period is based on the maturity date, not the call date. If debt is called prior to maturity, the issuer recognizes a gain or loss in the income statement for the difference between the reacquisition price and the net carrying amount of the debt (that is, the face amount less any unamortized discounts or plus any premiums). If material, the gain or loss should be reported in the income statement as an extraordinary item.

The Securities and Exchange Commission (SEC) recently issued Staff Accounting Bulletin No. 94 regarding the period in which a gain or loss should be recognized on the early extinguishment of debt. The SEC staff stated that even if an entity announces that it intends to call a debt obligation prior to maturity, the issuer should not accrue an expected loss for the early extinguishment. Rather, the loss should be recognized only in the period in which the debt is extinguished. Moreover, any debt discount or premium should continue to be amortized based on the life of the debt assumed when the obligation was originally recorded. A planned extinguishment and its likely effects, however, should be disclosed in the footnotes to the financial statements and in *Management's Discussion and Analysis*, if material.

The authors wish to acknowledge Jeff Kotowitz, Allison Kraver, Eric Lindenberg, Marwan Marshi, Shalabh Mehrish, Ardavan Nozari, Mark Perwien, and Shahab Sajadian for their helpful comments and suggestions. We would also like to thank Mike DeMeo, Kimberly Grigas, Pamela Johnson and Jim Padilla for their assistance in the production of this report.

Salomon Brothers Inc and/or its affiliates ("the Firm") usually make a market in the debt securities described in this report and, accordingly, may at any time have a long and/or a short position in any such security or option on any such security.

Although the information in this report has been obtained from sources that Salomon Brothers Inc believes to be reliable, we do not guarantee its accuracy, and such information may be incomplete or condensed. All opinions and estimates included in this report constitute our judgment as of this date and are subject to change without notice. This report is for information purposes only and is not intended as an offer or solicitation with respect to the purchase or sale of any security. This publication has been approved for distribution in the UK by Salomon Brothers International Limited, a member of the SFA.

© Salomon Brothers Inc 1995

Salomon Brothers

Salomon Brothers Inc
Atlanta (404) 827-7600
Boston (617) 348-9000
Chicago (312) 878-8700
Dallas (214) 880-7300
Los Angeles (213) 253-2200
New York (212) 783-7000
San Francisco (415) 951-1777
Seoul* 822-754-6500
Taiwan* 886-2-719-6647

AFFILIATES
Bangkok 662-263-3800
Salomon Brothers Asia Pacific Ltd.*
Beijing 861-505-5260
Salomon Brothers China Limited
Frankfurt 49-69-2607-0
Salomon Brothers AG
Hong Kong 852-2501-2000
Salomon Brothers Hong Kong Limited
Salomon Brothers Hong Kong Futures Limited
Salomon Brothers Hong Kong Nominee Limited
Salomon Brothers Asia Management Services Limited
London 44-1-71-721-2000
Salomon Brothers International Limited (SFA Member)
Salomon Brothers U.K. Limited (SFA Member)
Salomon Brothers U.K. Equity Limited (SFA Member)
Madrid 34-1-310-3000
Salomon Brothers International Limited*
Melbourne 613-650-8555
Salomon Brothers Australia Limited*
Milan 39-2-430-0911
Salomon Brothers SIM S.p.A.
Osaka 81-6-252-9611
Salomon Brothers Asia Limited**
Paris 33-1-47-63-7907
Salomon Brothers SA
Singapore 65-359-0200
Salomon Brothers Singapore Pte. Limited
Sydney 61-2-232-4455
Salomon Brothers Australia Limited
Taipei 886-2-719-6647
Salomon Brothers Taiwan Limited
Tokyo 81-3-5255-4111
Salomon Brothers Asia Limited
Salomon Brothers AG*
Toronto (416) 866-2300
Salomon Brothers Canada Inc
Zug 41-1-366-4111
Salomon (International) Finance AG
Zurich 41-1-366-4111
Salomon Finanz AG
Representative Office*
Branch Office**

First Class Mail
US Postage
Paid
New York, NY
Permit No 8155

B A R M
(211)
1995-R1520



Printed on recycled paper