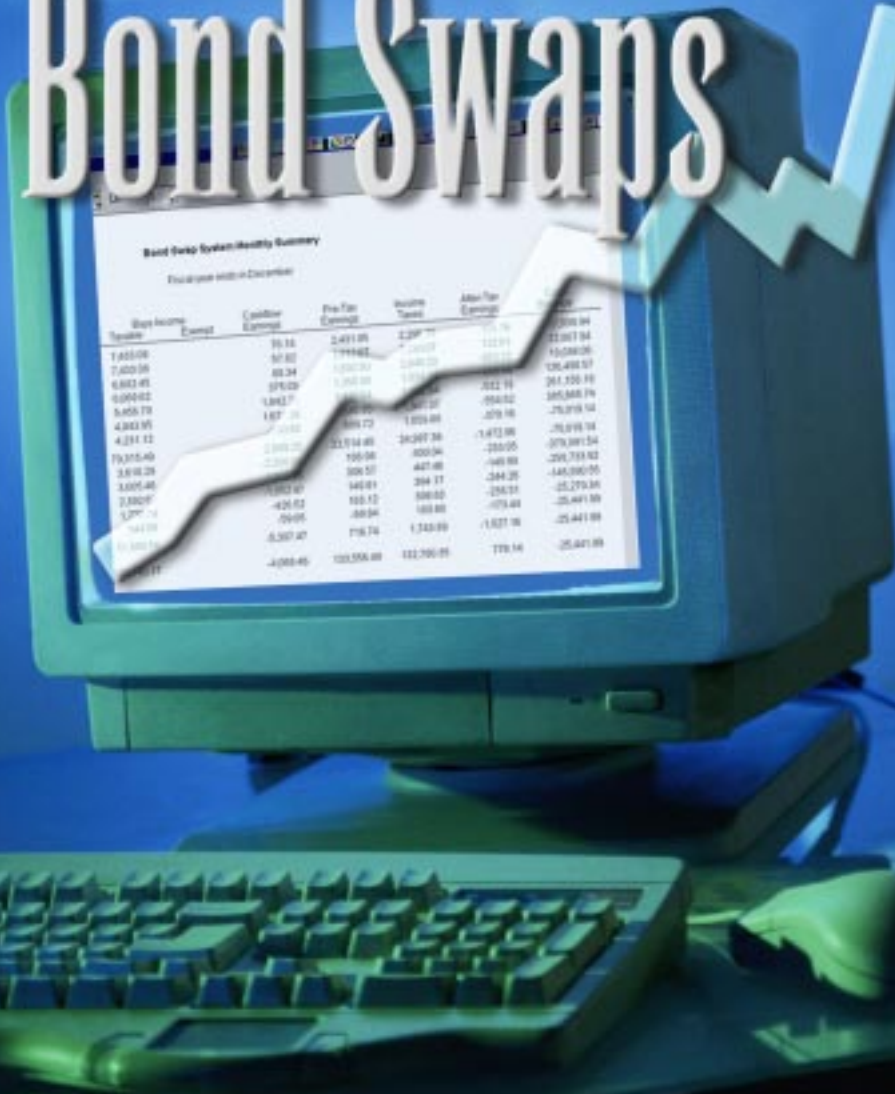


Improving Performance Through Bond Swaps



by
C.J. Pickering
and Mark Evans, CFA

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Don't touch that dial!

This phrase was used decades ago to let listeners know to stay tuned for an important, popular radio program. It is used here to let you know that even if you have never considered swapping bonds, you may want to read on in order to understand the mechanics and the advantages/disadvantages of bond swaps.

Although many bankers actively manage their banks' portfolios with periodic planning and bond swapping, other bankers never consider selling a bond before maturity. This is not a question of aggressive management versus conservative management, but a question of comfort.

The vast majority of community bankers are conservative in their lending, their capital management and their investment practices. Conservative bankers who use bond swapping see this as a conservative portfolio management tool. Unlike many other decisions, the consequences of bond swap decisions are well known and documented before execution. The sale price and gain/loss are known, the purchase price and new yield are known and the overall breakeven period and yield enhancement are pre-calculated. What could be more conservative?

However, many bankers are not comfortable selling bonds before maturity. This was a very understandable position a few years ago, but today's rules justify a new understanding.

Bond swapping was a very useful tool prior to the 1980's. At that time, examiners began to tell bankers that selling bonds early

might indicate trading. And, if caught trading, the banker could be forced to mark the entire bank portfolio to market. This brought the bond swap management technique to a screeching halt.

Fortunately, the regulators changed the rules and now allow bankers to classify bonds as held to maturity (HTM), available for sale (AFS) or trading. Bonds in the available for sale category are eligible for early sale without jeopardizing the rest of the portfolio. This important change was due in part to the OCC's Owen Carney who said that there is no way to know for sure that every bond purchased will always fit the bank's needs. Changes in the bond market, changes in the bank's characteristics and/or changes in the environment can lead to needed changes in the bank's portfolio.

How Do Swaps Work?

A simple example will illustrate the mechanics of a bond swap. Assume that rates rise immediately after the purchase of a 3-year Treasury and that the value of the Treasury has dropped by \$100,000. Further assume that the investment manager decides to sell the Treasury, take the loss and reinvest in the same Treasury at the new, higher yield. (Assume that

Table I

Swapping Similar Bonds Taxable Swaps vs. Tax Free Swaps (\$100,000 Bond)

Year	Taxable Swap		Tax Free Swap	
	Loss on Sale	Gain in Income	Loss on Sale	Gain in Income
1	(1,377)	455	(1,379)	456
2		455		456
3		455		456
Total	(1,377)	1,364	(1,379)	1,369
Taxes	468	(464)	469	
Net	(909)	900	(910)	1,369

wash sale rules do not apply for purposes of the illustration.)

When a taxable bond is sold at a loss and the proceeds are reinvested in virtually the same taxable bond, the swap is a break-even swap; i.e., the loss on the sale will be made up almost exactly by the increase in income over the life of the replacement bond. **Table I** shows a \$1,377 loss in year one

a net economic gain to the bank in an amount that approximates the recovered taxes on the initial loss – in this example approximately \$459 (\$1,369 – \$910).

What about swaps of unlike bonds?

Table II shows examples of several types of swaps. With one exception, the bond sold is a three-year,

is reduced from three years in example one to about two years in examples two and three. This significant change results from the fact that no taxes are deducted from the increased income of the tax-free bonds and, therefore, the loss on the sale is made up much more quickly.

The fourth and fifth examples show purchases of a three-year corporate with a 5.5% coupon and a 15-year GNMA mortgage backed security with a 3.9-year average life at a prepayment speed of 15 CPR.

As shown, the breakeven period decreases dramatically as the yield of the purchased security increases.

There is an easy way to estimate approximate breakeven periods. Divide the book loss as a percentage of the book value by the increase in yield. Using the fourth example in **Table II**, the equation would be:

Example	1	2	3	4	5
Item Sold	3 yr. Treas.	3 Yr. Treas.	3 Yr. GO	3 Yr. Treas.	3 Yr. Treas.
Coupon	4.50%	4.50%	3.38%	4.50%	4.50%
Item Bought	3 Yr. Treas.	3 Yr. GO	3 yr. GO	3 Yr. Corp.	5 Yr. GNMA
Yield	5.00%	3.70%	3.70%	5.25%	6.00%
Loss	(1,377)	(1,377)	(901)	(1,377)	(1,377)
After Tax Loss	(909)	(909)	(595)	(909)	(909)
Annual Income Pickup	300	461	299	464	954
Net Gain	(9)	473	304	482	1,953
Break-even period in years	3.0	2.0	2.0	2.0	1.0

followed by four years of \$455 in increased income. Interest on the differences in cash flows have some impact, but basically, sales and purchases of taxable bonds with the same characteristics are break-even swaps.

Now look at the tax implications of the previous swap. At a 34% tax rate, the bank will recover \$468 in taxes on the \$1,377 loss and will pay out \$464 in taxes on the \$1,364 increase in income over the next three years. However, if the bank sells and repurchases virtually identical *tax-free* bonds, the bank will recover \$469 in taxes on the \$1,379 loss but the \$1,369 in increased income comes back tax-free. This type of swap will always result in

\$100,000 Treasury with a coupon of 4.5%, a book value of par and a market value of \$98,623. Purchases are at par.

The first example shows the sale of a 4.5%, three-year Treasury and the purchase of a 5.0%, three-year Treasury. As shown in the example in **Table I** (discussed earlier), this bond swap breaks even in three years. This type of swap is done when the objective is to reduce current income in favor of increased future income.

The second and third examples are very similar to example one, except that the purchases are 3.70% tax-free bonds (tax equivalent yields of 5.25% at a tax rate of 34% including the TEFRA adjustment). The breakeven period

Equation

$$\frac{\text{Loss \$}}{\text{Book Value \$}} = \text{Pre-tax Loss \%}$$

$$\text{Reinvestment Yield of New Bond} - \text{Book Yield on Bond Sold} = \text{Yield Increase}$$

$$\frac{\text{Pre-Tax Loss \%}}{\text{Yield Increase}} = \text{Years to Recoup Loss}$$

Illustration of Example 4

$$\frac{\$1,377 \text{ Loss}}{\$100,000 \text{ Book}} = 1.377\% \text{ Pre-tax Loss}$$

$$5.25\% - 4.50\% = 0.75\% \text{ Yield Increase}$$

$$1.377\% \div 0.75\% = 1.84 \text{ Year Breakeven}$$

Portfolio Management with Bond Swaps

While the economic impact of a bond swap is always important, swaps should be consistent with – and are often dictated by – non-economic portfolio management needs. In fact, some bond swaps do not generate additional income. Instead, they maintain income or give-up a tolerable amount of income while achieving other objectives. For example, a bank may sell fixed rate securities and reinvest in lower-yielding floating

rate securities to reduce asset/liability exposure. Although curing an asset/liability problem may be one of the most obvious motivations for doing a bond swap which does not increase income, there are plenty of other reasons, most are unique to a given bank.

Bond swaps are used to manage the bank's portfolio under changing conditions. It is a good idea to periodically check the portfolio to make sure it is meeting the bank's needs. Sometimes adjustments need to be made in order to:

- Eliminate undesirable securities,
- Restructure the portfolio to meet asset/liability imbalances,
- Decrease the bank's tax liabilities,
- Increase/decrease liquidity or
- Reduce over-reliance on one market sector; e.g., callable agencies.

A recent survey of bankers who have high performance portfolios revealed that these people develop portfolio plans at least once and sometimes as many as four times a year when conditions are rapidly changing. These planning sessions sometimes reveal needs for investment changes. Sometimes the changes can be made by reinvesting current cash flows, but other times the changes require bond swaps. The survey also revealed that few portfolios attain high performance status in all markets without bond swap adjustments when appropriate.

Understanding Take-Out Yield

Take-out yield is the market yield of a bond in the bank's portfolio. A bond in the portfolio at par with a book yield of 6% will have a take-out yield of less than 6% if rates have fallen or a take-out yield of more than 6% if rates have risen. In other words, the book yield of a bond is usually constant, but its take-out yield will rise and fall with the market.

Assume that the bank owns a three-year, 6% Treasury with a book yield of 6% and a take-out yield of 5.4%, and that the proceeds can be reinvested in a comparable three-year agency at 5.8%. At first glance, this may not seem like a good alternative since the bond to be sold is yielding 6% and the bond to be purchased is yielding 5.8%.

Look at the chart below and consider that the bank can earn an immediate profit of 1.6% by selling the Treasury now and reinvesting the proceeds at 5.8% in a new three-year agency. Alternatively, the bank can earn 6.0% on the original bond for the next 3 years and forego any profit since the bond will mature at par.

It is easy to see that the 1.6% premium spread out over three years is about .5% a year, which added to the 5.8% that can be earned on the new bond gives an average annual yield of about 6.3%.

Although the rationale can become a little convoluted, the rule-of-thumb is simple - any bond in the portfolio with a take-out yield of less than the market yield of a replacement bond is possibly a profitable swap candidate.

	Hold Treasury	Sell Treasury Buy Agency
Maturity	3 Year	3 Year
Book Yield	6.0%	5.8%
Gain on Sale	0%	1.6%
Effective Yield	6.0%	6.3%

Bond swaps when rates are high

When rates are relatively high, the market values of investment securities are typically less than book values. And, the investment securities available in the market place usually yield more than those in bank portfolios. The examples given earlier in this article show swaps with losses on the sale; i.e., in general, rates were higher at the time of the swap than when the securities were originally purchased.

The majority of the swaps done when rates are relatively high generate losses and are done at the beginning or at the end of each fiscal year. Many swaps done at the beginning of each year are designed to breakeven before the end of the year. This means that the loss on the sale is equal to or less than the additional income on the purchase during the balance of the year.

Losses at the end of a fiscal year are taken for a number of reasons. The bank's profits may be above budget – bonuses have been made and additional profits may make it more difficult to post sustainable growth in the future. Bond swap losses can reduce the excess profits for the current year and generate additional income for subsequent years.

Conversely, many swaps are done when a bank is having a bad year and a few losses in the investment portfolio won't make the year that much worse. This can be a good time to clean up a poorly performing portfolio by selling low yielding securities, taking the losses and immediately improving investment yields for the upcoming year.

Bond swaps when rates are low

When rates are relatively low, the market values of investment securities are typically more than book values. There may, however, still be some securities in the portfolio with low market values. Many times, the losses on poorly performing securities can be offset by gains on other securities. The increased income on the bonds purchased makes this swap profitable from the beginning.

Special swaps

There are certain external conditions that create swap opportunities. For example, pre-refunded municipal bonds are excellent swap candidates.

When rates fall over time, many issuers will "pre-refund" their callable debt; i.e., all pre-refunded callable debt will be called at the first call date. The chart to the right shows an excellent bond swap opportunity:

Since the municipal bond curve is usually very steep, the pre-refunded five-year tax-free can be sold at a profit and the proceeds reinvested in a higher yielding 15-year tax-free.

Callable agencies

Bond swaps to reduce exposure to calls are necessary from time-to-time to prevent a build-up of call exposure which could force the bank to reinvest a significant portion of the investment portfolio at one given point in time. One obvious fact is that when a callable security (except for one with a one-time call) passes its first call date, its lockout has expired and it remains callable until maturity. As a result, even an investor who staggers the call dates of securities purchased can, assuming rates rise and calls are not exercised, end up with all of their securities being callable at the same time. Managing this optionality can easily be accomplished through swaps to reduce the portion of the investment portfolio which is callable within the next year.

Identifying bond swap candidates

When looking for swap candidates, the portfolio manager should first set parameters.

- What is the overall objective of the swap; (e.g., higher yields, interest rate risk management, changes in liquidity, etc.)?
- Which types of bonds are to be kept and which are sale candidates?

■ Which types of bonds in the market place are acceptable for purchase?

■ How much gain or loss is acceptable?

■ What is an acceptable breakeven period?

Once the parameters are set, the search for swap candidates can begin.

First, eliminate those bonds that have been subjectively ruled out as sale candidates. Second, eliminate those bonds whose sales would not meet the overall objectives. For example, if the bank is liability sensitive, it might not make sense to sell short-term or adjustable rate securities. Then eliminate those with losses or gains that fall outside of the established parameters (or change the parameters).

Finally, review the remaining bonds to identify those that have the lowest book yields relative to their gain or loss. Selling these bonds will eliminate the lowest yielding securities while generating the smallest losses.

These tasks may seem daunting, especially with a large portfolio. However, there are analytical systems available to establish parameters and to identify the swap candidates quickly and easily. And to evaluate both the buy and sell side of each swap in order to identify the most beneficial transactions. Of course, after the mechanical systems have done their work, the portfolio manager must review each transaction to ensure rationality.

	Prior to Pre-Refunding	After Pre-Refunding
Final Maturity	15 Year	5 Year
Call Date	5 Year	5 Year
Coupon	6.1%	6.1%
Market Value	102.2	105.4
Book Value	100	100
Current 5 Year Rate = 4.9%		
Current 15 Year Rate = 5.6%		

Decision Matrix Guide

Life is always a little bit easier if there are a few rules of thumb to help simplify complex decisions. The Decision Matrix was developed many years ago to help simplify the process of determining the types of securities that should be bought or held vs. those that should be sold. While the list and complexity of securities and conditions have changed since the matrix was first developed, the premise still holds. The matrix is not very sophisticated and it should be relied upon for general guidance only.

Table III is the Securities' Decision Matrix Guide. For each condition listed across the top, the Guide classifies the types of securities that should be bought, held or sold. The classifications range from +3 for a highly recommended buy to a -3 for a highly recommended sell.

For example, if a bank has exposure to rising rates and if no other conditions apply, the Guide says that the bank should sell

long-term securities (MBS and tax-frees) and purchase ARMAs with neutral or bearish indices (a bearish index is one that rises quickly when rates move up).

One example

What happens when several conditions apply? **Table IV** shows an example bank that has too much liquidity, an exposure to rising rates and a low-yielding portfolio. Each of those conditions is highlighted and the buy/sell numbers are totaled in the far left-hand column. Note that the two-year ladder gets a total of -3 while the bearish ARMAs get a total of +6. This is an indication that the bank should consider swapping some of its short-term securities for ARMAs indices that react quickly to changes in market interest rates.

This swap will reduce the bank's excess liquidity and raise its portfolio yield. Since short-term securities were swapped for ARMAs, the exposure to rising rates might still be a problem. It might now make sense to look at the

next lowest rated security type; i.e., intermediate debentures at -1. The interest rate risk exposure could be reduced by selling the intermediates and buying bearish ARMAs.

Another example

Table V shows a bank that is paying AMT (Alternative Minimum Tax), has too much liquidity and has exposure to falling rates. The total of -6 indicates that the bank could sell liquidity items. The +4s and +5s indicate that replacement bonds could be fixed-rate securities, such as MBSs, CMOs, and intermediate debentures. The bank also could consider bullish ARMAs; i.e., ARMAs with lagging indices whose coupons do not fall as fast when rates go down. (Note: It may not make sense to buy bullish ARMAs for this bank if rates are historically low.)

Table V did not identify clearly one obvious sale candidate – the tax-free securities. Under AMT, swapping tax-frees for equivalent taxables will increase current

yields by approximately 200 basis points. Depending on future earnings and AMT tax loss carry-forwards, the 200 basis-point increase may be permanent or it may just push the tax consequences into the future. Either condition will benefit the bank in the short run.

Reviewing the results

Any swap ideas generated by the Guide should be followed up with additional research to make sure the general ideas are supported by specific analysis.

Table III

Decision Matrix Guide

Liquidity Alternatives	C O N D I T I O N S							
	Total	Not Enough Liquidity	Too Much Liquidity	Low Yield vs. Peer Group	Exposed to Rising Rates	Exposed to Falling Rates	Need Tax Free Income	Reduce Tax Free Income
Money Market (2 year ladder)	3	-3	-3	3	-3			
Short CMOs (< 3 years)	1	-1	2	1	-1			1
Core Alternatives								
Intermediate Debentures (3-7 years)	-2	2	-2	-1	2			1
Fixed Rate MBS	1	1	2	-1	2			1
Bullish ARMAs	1	1	2	1				1
Bearish ARMAs	1	1	2	3	-3			1
Intermediate CMOs (3-7 years)	-1	1	2	-1	2			1
Municipal Securities	-1	2	2	-3	3	3		-3

1 - Possible Buy

2 - Recommended Buy

3 - Highly Recommended Buy

-1 - Possible Sell

-2 - Recommended Sell

-3 - Highly Recommended Sell

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ICBA SECURITIES is ready to help you improve the performance of your investment portfolio through bond swaps. Our analytic systems and experienced consultants (including CPAs and CFAs), can make the process simple and the results profitable.

The **STEPS** below are all that is required to:

- Identify bond swaps that improve one or more of the following important characteristics:
 - Liquidity
 - Earnings
 - Interest Rate Risk
 - Tax Position
 - Cash Flows
- Generate a Performance Profile to quantify your bank's characteristics

Steps to Improving Performance Through Bond Swaps



Call your ICBA Securities account representative to begin the process or contact C.J. Pickering at (800) 422-6442 or cj@icbasecurities.com.