CHAPTER 1

The Basics of High Yield Municipal Bonds

For most investors, the mere mention of high yield recalls the high-risk, speculative "junk bonds" of the Michael Milken era and its well-documented excesses. In the municipal arena, high yield also means higher risk, but the term encompasses a much broader class of securities with an astonishing variety of security structures and risk characteristics.

What Is a High Yield Municipal Bond?

Let's start with the traditional definition: A high yield municipal bond is a bond issued by a state or local governmental entity (including conduit entities created just for the purpose of issuing tax-exempt bonds), which is either nonrated or rated below investment grade (i.e., below BBB). The coupon income for these securities is generally tax-exempt, although it may also be taxable or subject to the alternative minimum tax (AMT) in the case of so-called private activity bonds. Because of their lower or nonexistent ratings, high yield municipals are priced with an additional yield premium to compensate investors for the perceived higher credit risk.

In some cases, the term *municipal* may actually be something of a misnomer: While traditional high-grade munis are issued to finance public-purpose projects such as schools, utilities, and the like, most high yield munis are actually issued to finance private-purpose projects. Because the tax code allows private projects access to tax-free financing to achieve such goals as economic development or pollution control, governmental entities sometimes act as merely a conduit to issue bonds on behalf of such projects.

The municipal issuers have no obligation to repay the bonds, and the private obligors are the real credits securing debt service.

Away from the private-activity bonds, other tax-exempt entities such as acute care hospitals (rated A or below), nursing homes, and retirement facilities also have access to tax-free financing, and their bonds are also included in the high yield muni universe. We should also throw into the mix the so-called "fallen angels," formerly investment-grade issues that have been downgraded or have suffered adverse credit developments and are being penalized with higher yields in the marketplace. The affordable housing sector is an exception to the rating rule: While housing bonds are often higher-rated due to various credit enhancement arrangements, they usually offer higher yields to boot, as compensation for structural (rather than credit-related) issues (with the exception of non-rated multi-family housing projects).

Last but not least, with the collapse of the bond insurers over the past two years, there is a whole new category of formerly insured bonds that now potentially belong to the high yield category, simply because they were never traded based on their own credit. At the end of the day, the broadest definition of a high yield municipal opportunity is *any issue whose investment performance is driven primarily by the underlying credit, and not as much by general moves in interest rates.*

What might the size be of this high yield municipal sector? For an estimate, one can look at the market value of bonds that are included in Barclays Capital's various municipal indexes, although such an estimate will likely be conservative due to the various rules used by Barclays to define their indexable universe. With that caveat, as of August 30, 2011, the market value of outstanding noninvestment-grade bonds included in the Barclays high yield index was $60.64 billion.[1] If you add to that number about $91.75 billion in A1/A2–rated hospital bonds, $19.60 billion in housing bonds, and $36.23 billion in industrial revenue/pollution control bonds rated A3 to Baa1, you will come up with about $211 billion in outstanding bonds that potentially fall within the purview of a high yield municipal investing strategy, not including defaulted and distressed issues. From a supply standpoint, according to Thomson Reuters,[2] a total of $11.74 billion in nonrated and below-investment-grade new issues supply was brought to market in 2010, spread over 2,173 issues. During the first half of 2011, another 676 issues came to market, totaling $7.17 billion.

Common Yield Measurements

There are several different ways to measure the yield on a municipal bond investment, or any bond, for that matter. One should always be clear about

which yield metric is being used to transact, as each metric reflects very different assumptions about the potential return on your investment. In the fixed-income sector, the most common yield measurements are: (1) current yield; (2) yield-to-worst (YTW); and, less frequently, (3) yield-to-average-life. Instead of rehashing the mathematical yield formulas (for which numerous reference works are available), let's focus instead on how you should interpret these yield calculations for everyday trading.

Current Yield

Current yield is computed by dividing the coupon rate by the dollar price of the bond. For instance, a 6.00 percent coupon bond purchased at a price of 98 ($980 per $1,000 of face value) will have a current yield of 6.12 percent (6.00/.98 = 6.12). Current yield is a rather crude measure that allows you to quickly gauge how much tax-exempt income you can buy per dollar invested. It is potentially misleading since it does not take into account the time value of your money or any other technical features of the bond that may affect the actual return (e.g., call or put provisions).

Yield-to-Worst

Yield-to-worst, as its name implies, is the most conservative yield measurement you can use. It tells you what you're likely to earn in a worst-case scenario, taking into account all the technical features of the bond. It takes into account the time value of money and is, in effect, a rate-of-return measure that incorporates both the coupon and the dollar price on the bonds. Yield-to-worst is defined as the lower of two measurements: (1) the yield-to-call and (2) the yield-to-maturity.

Yield-to-call is the most conservative yield calculation for bonds that are subject to early redemption (or "call") and are trading at a premium to face value (the higher the premium, the higher the likelihood that the bonds will be called early). Most municipal bonds have early call provisions (usually exercisable within the first five to 10 years from the date of issuance), which allow the issuer to redeem the bonds ahead of their stated maturity date and refinance into a lower rate environment. As discussed below, bond callability gives the issuer financing flexibility but creates potential reinvestment risk for bondholders. In some cases, instead of an early call provision, the issue may offer a so-called "put" option, which allows you to tender the bonds back to the issuer at par ahead of the maturity date. In this instance, the "worst case" would be the put date.

Yield-to-maturity is self-explanatory. It assumes that you will be able to earn your coupon income for the full stated term of the bonds. As such, it is most applicable to bonds trading at par or at a discount. Why? Because bonds currently trading at a discount have coupons that are lower than prevailing interest rates and, therefore, are unlikely to be called or prepaid by the issuer. Thus, they should logically be priced to maturity.

As you can see, yield-to worst will always give you the most conservative yield measurement in any interest rate environment.

Yield-to-Average-Life

Some municipal bonds, such as housing bonds, also benefit from a fixed-principal amortization feature (above and beyond the regular call provisions), called a sinking fund schedule. This allows the issuer to use excess revenues to retire a fixed amount of principal ahead of the stated maturity date. As a result, the actual projected life of the bonds will be much shorter than the nominal maturity and is usually referred to as the average life. Bonds that have sinking funds should most appropriately be evaluated based on their yield-to-average life. Instead of pricing to the "worst" date (either call date or maturity date), one should price to the projected average life.

Taxable Equivalent Yield

In case you want to compare the yield on a tax-exempt bond with other taxable securities, you can convert the tax-free yield to a taxable equivalent yield with this simple formula:

$$\text{Taxable equivalent yield} = \frac{\text{Tax-exempt yield}}{1 - \text{Federal tax bracket}}$$

Unless you know precisely what your effective tax rate is (always preferable), the current market convention is to use the top 35 percent tax bracket. Thus, a tax-exempt yield of 6.00 percent would translate into a 9.23 percent taxable equivalent yield [6.00/(1 − .35)].

The formula above assumes exemption from federal taxes only. Some municipal bonds are exempt from both federal and state income taxes (and even local income taxes in the case of New York City). Since state income taxes are deductible from federal income taxes, you cannot just add up the two tax rates. The overlapping deductibility must be eliminated. The following

formula should be used to compute your combined federal and state marginal tax rate:

$$\text{Federal tax bracket} + (1 - \text{Federal tax bracket}) \times \text{State tax bracket} = \text{Combined tax bracket}$$

For example, if the federal bracket is 35 percent and the state bracket is 5 percent, the combined bracket will be $.35 + (1 - .35) \times .05 = .35 + .0325 = .3825$, or 38.25 percent.

Then, the taxable equivalent yield formula becomes:

$$\text{Taxable equivalent yield} = \frac{\text{Tax-exempt yield}}{1 - \text{Combined tax bracket}}$$

For simplicity's sake, throughout the rest of the book, only a single federal tax bracket will be assumed whenever taxable equivalent yield is mentioned.

Key Risk Factors

Getting down to brass tacks, what are the key risks involved in a high yield tax-free investment?

Interest Rate Risk

Before all else, a high yield municipal bond is still a fixed-income instrument and, as such, is affected by changes in the general level of interest rates. Bond fundamentals dictate that as rates go up, the value of a fixed coupon bond must go down, and vice versa. Most investors tend to think of their interest rate exposure in terms of maturity, that is, how long the exposure will last. It makes sense that the longer the maturity of your bond holdings, the more exposed you are to interest rate fluctuations and the more extra yield you need to be paid for the additional risk (that's why the yield curve is normally positively sloped, except under exceptional economic circumstances). If you are bullish on rates (i.e., you expect rates to *decline*), you would want to extend out on the curve and, conversely, if you're bearish you should aim for shorter-term maturities.

Fixed-income professionals have found maturity to be too crude a yardstick since it fails to take into account the time value of the coupon

income and other cash flows you may receive before the final maturity. As a result, they have devised a couple of more sophisticated ways to gauge the potential interest rate volatility of a single bond or a bond portfolio, namely *duration* and *convexity*.

Duration, or more precisely Macaulay duration, is expressed in years and can be thought of as the length of time it takes to recoup the price of a bond. As such, it is a better measure of your exposure to interest rate risk than just plain time-to-maturity.

One of the neat side effects of Macaulay duration is that it can be mathematically manipulated to become modified duration, defined as the price sensitivity of a financial instrument with fixed cash flows to a small change in yield. You can use modified duration to estimate how much the market value of your bonds will move given a finite change in yield levels. For example, the price of a 15-year bond may have a modified duration of only eight years. Its price would fall roughly by 8 percent if rates rise by 1 percent (100 basis points). Notice that, even though the nominal maturity is 15 years, the actual duration of the bonds may be shorter due to the heavier weight assigned to coupon payments.

The longer the nominal maturity, the longer the duration. This should make intuitive sense. However, the higher the coupon, the shorter the duration. Why? Because the formula for duration takes into account the time value of the bond's cash flows. Think of it this way: The more money you get back through the coupon payments and the sooner you get it back, the less exposure you have to future rate volatility, hence you assume less risk. When you compare two bonds with identical maturity and call features, the bond with the lower coupon will always have a longer duration than the bond with a higher coupon. At the extreme, a noncallable zero coupon bond—which does not return any income until its final maturity—should have the longest duration for the same stated maturity, and its duration is in fact equal to its maturity. Conversely, bonds with high coupons will tend to have durations that are much shorter than their nominal maturities. This is an important point to remember when thinking about the volatility characteristics of high yield municipals.

Last but not least, keep in mind that duration assumes a small and parallel shift in the yield curve, that is, yields for all maturities change by the same amount. If the curve changes its shape (e.g., flattens, steepens, or gets twisted) as it moves up or down, duration may not necessarily capture all your interest rate exposure. Nevertheless, it is still a much better gauge of your potential rate exposure than plain old bond maturity.

Another measure of interest rate volatility used by fixed-income professionals is convexity. Bond convexity is defined formally as the degree to

which the duration changes when the yield to maturity changes. Positive convexity is preferred to negative convexity (or, to be precise, concavity). To see why this property should matter to you as the investor, think about a bond that goes up faster in price when the market rallies (i.e., when yields drop) but goes down more slowly when the market declines. Wouldn't that be the ideal bond to own? Well, that's how a positively convex bond acts. For technical reasons that we will not go into here, noncallable bonds (i.e., bonds that cannot be redeemed early) are usually positively convex. Callable bonds, on the other hand, are not. Bonds that are trading at a deep discount are more convex than bonds trading near par (fixed-income purists will lament our oversimplification here, but it is still a useful rule of thumb). As a result, noncallable zero coupon bonds are the most convex instruments you can ever find. One caveat to keep in mind: A bond's convexity properties only hold over a particular range of interest rate change. Instead of asking "What is the convexity of this bond?" one should really ask, "What is the convexity of this bond over the next *x* basis point move in rates in either direction?"

Positive convexity is a highly desirable trait, yet very few municipal bonds have it. Most municipal issues come to market with only five to 10 years of call protection, particularly lower-rated debt. Municipal issuers like to issue long-term debt, but they are loath to lock in their financing costs for 20 or 30 years. High yield issuers who have to pay a credit premium fancy the notion that they may be able to refinance their debt at more advantageous terms when their credit profile improves. Almost by definition, *most high yield issues are quite negatively convex*, as they tend to come to market as callable par bonds. In other words, they tend to depreciate faster in a rising rate environment than they appreciate in a declining rate scenario, assuming no significant change in credit quality.

Before you get too intimidated by these fancy volatility concepts, note that nowadays there are plenty of free analytical tools online that will compute duration and convexity for you. If you are a retail investor, you should ask for one, and your broker should be able to provide you with the duration on the bond offering.

Credit Risk

Credit risk is the first thing that comes to mind when one thinks about high yield. However, one needs to make a distinction between spread risk and actual default risk.

For buy-and-hold investors, default risk matters most. Default risk is defined as the risk that the borrower will not be able to repay interest and

principal as scheduled. A creditor may be deemed in technical default before an actual monetary default occurs, that is, before bond interest payments are missed. The term *technical default* covers a wide range of credit events from the benign (e.g., a short-term covenant violation, which may be promptly remedied by the issuer) to the more serious (e.g., an unscheduled draw on the debt service reserve fund, a standard security feature on most—but not all—high yield issues). Because it signals a shortfall in the regular revenue stream that secures the bonds, an unscheduled draw on the debt service reserve fund or an unscheduled draw on any credit enhancement feature acts as an early warning device for investors. It triggers certain reporting and disclosure requirements to the Municipal Securities Rulemaking Board (MSRB) well before an actual monetary default occurs, if it ever does. While covenant violations don't usually bother market participants, at least not initially, an invasion of the reserve fund will have a definite negative impact on the market value of your high yield holding. Of course, any event of technical default ultimately has to be judged in the context of the individual credit situations.

For active investors, including institutional holders who manage competitive money, spread risk matters just as much as default risk because it impacts their portfolio's *relative performance* versus either an index or their competitive universe. The credit spread is the difference in yield between the yield on your bond and the benchmark yield for the highest grade (usually AAA-rated) security with the same maturity. You can think of it as the *credit risk premium* on your bond. This yield premium will increase or decrease depending on two factors: (1) whether the market perceives that the credit is improving or worsening and (2) the relative desirability of credit products in general, which is a function of investors' appetite for risk at any particular time.

When it comes to credit spreads, the trading rule is "buy wide, sell tight." Professional money managers look for bonds that trade at spreads that they deem too wide relative to where they think the credit is heading. Their presumption is that future credit improvement will translate into tighter spreads, thus allowing their holdings to outperform. Thus, spread tightening is a highly desirable objective for a high yield holding, all other factors equal. Conversely, spread widening negatively affects relative performance, particularly when it occurs during a market sell-off. For example, let's assume you purchased a BBB-rated bond at a yield of 6.25 percent versus a AAA-rated muni at 5.00 percent for a spread of +125 basis points (6.25 − 5.00). If the AAA scale remains at 5.00 and the spread tightens to +100, your bond will be worth 6.00 percent, which translates to a higher

price than what you paid for it (6 percent versus your original 6.25 percent cost). On the other hand, again assuming no change in the AAA scale, if spreads widen to +150, then your bonds will now trade at 6.50 percent for a 25 basis point paper loss (higher yield, lower price). If AAA yields go up by 25 basis points and the spread tightens by another 25 basis points, your bond will yield 6.25 percent, the same as the original yield, resulting in no loss. In the worst-case scenario, if AAA yields rise *and* spreads widen, you will be hit with a double whammy. The upshot: When it comes to credit-sensitive investment, tighter spreads are always the desired outcome. So, tighter spread equals relative outperformance.

Liquidity Risk

A financial instrument's liquidity is normally defined as its ability to be converted into cash in the shortest amount of time and at the smallest transaction cost. Note that there are two elements to this concept: a *time* element and a *transaction cost* element. U.S. Treasury bonds are regarded as the most liquid securities in the world because they literally can be sold electronically in a fraction of a second and at a very minimal bid-to-ask spread.

In the over-the-counter world of municipals, liquidity is a more relative notion. Only the highest-rated bonds (i.e., AA or above) in the most stable sectors (e.g., state general obligations or utilities) may be viewed as really liquid to the extent that they can be sold within a few hours for a modest transaction cost, say, less than 1/8 of a point, under normal market conditions. Anything else is just more or less illiquid. Selling a lower-rated or nonrated municipal bond usually requires the holder to communicate the credit story, establish some kind of offering level (i.e., a price where he or she would sell the bonds), ask a broker-dealer to show the bond to prospective buyers, and then negotiate in response to a bid, if any. It is a time-consuming process that may stretch over a period of days, even longer if the potential buyer needs to do research on the bonds or make a site visit to the underlying project. The bid/ask spread may also be quite wide, as much as several points instead of a few basis points. The more complicated the credit story gets, the less liquid the bond is. This is what is meant by liquidity risk. It shouldn't necessarily deter one from considering high yield municipals, but it should be built into return expectations. As a trader, I have what I call the "two-minute rule": If you cannot tell the basic credit story on a bond in less than two minutes, that bond should be deemed illiquid.

Reinvestment Risk

Most municipal bond issues come to market with typically 10 years of call protection. As we discussed above, callable bonds usually display poor convexity characteristics. Callability also exposes the investor to reinvestment risk: The issuer is most likely to call the bonds for early redemption when things are going well and rates have declined significantly below the original coupon level—in other words, at the worst possible time for the investor. Not only does the call provision put a cap on the upside potential, the investor finds him- or herself having to reinvest in a lower yield environment.

Legal Risk

All municipal bond transactions rest on a foundation of legal opinions, because they are public financings, subject to the approval of voters or their representatives. Any technical defect in the bond authorization process could be used by the borrower at a later date to invalidate the bonds and relieve the borrower of the obligation to pay. That's why all muni issues come with a bond counsel's legal opinion. Bond counsel must opine that the bond issue has been legally authorized, is a valid and enforceable obligation of the borrower, and, where appropriate, does provide tax-exempt interest income. In a negotiated underwriting, underwriter's counsel may also be hired to help and opine on the deal structure, conduct due diligence, and draft disclosure documents, among other things.

For a nonrated high yield issue, the legal stakes are even higher, as there may be esoteric financial arrangements (such as a lock-box mechanism designed to capture revenue dollars for the benefit of the bondholders, etc.) that may help support the transaction in the event of credit problems, but that may or may not be legally enforceable. In that case, potential bondholders may ask for an additional opinion from special counsel to confirm that certain legal remedies they have negotiated into the deal are in fact valid and enforceable when needed.

However, even the best of intentions can get derailed by an unforeseen legal loophole. The bondholders of a recent private placement to finance a Native American tribe's casino in Wisconsin had successfully negotiated what they thought was a water-tight security package giving them solid control over casino operations in the event of default, with the tribe agreeing to waive its sovereign immunity in that event. A special opinion from the tribe's own counsel had confirmed the legal enforceability of this arrangement. Yet, when

the project ran into financial trouble and the tribe defaulted on the debt, the bondholders bumped into an unexpected obstacle: A district judge ruled that the tribe was not required to repay the debt because the trust indenture gave bondholders significant control over casino operations, rendering it a management contract. That management contract was then declared invalid because it was never approved by the National Indian Gaming Commission (under the 1988 Indian Gaming Regulatory Act, all managerial contracts must be approved by the commission). By the same logic, the judge's decision also invalidated the tribe's waiver of sovereign immunity.

It's fair to say that, once the investor starts to get away from tried-and-true security structures that have historically been upheld in court, the legal risk becomes exponentially more significant.

Political Risk

Political risk is a fact of life in the municipal arena. Bond issues are approved through a political process; the people who ensure that revenues will be available to pay municipal debt are either politicians or politically motivated individuals. When financial crunch time comes and local politicians are faced with the choice between raising taxes, cutting services to their constituents, or paying debt service, more often than not political expediency will prevail. Even public support for a previously popular project may wax and wane over the years, particularly during hard economic times. Normally, the potential loss of future market access may deter politicians from sticking it to the bondholders, but this may be cold comfort for investors who have agreed to purchase bonds with maturities as long as 30 years. Because of this political dimension, ability to pay is sometimes less of an issue than willingness to pay in the tax-exempt market.

As of this writing, the case of Harrisburg, the state capital of Pennsylvania, provides one of the best illustrations of the political risk inherent in public finance. This city of 49,000 had been struggling under the weight of a $300 million, financially troubled waste incinerator project that bears the city's guarantee (although in this case, bond insurers are on the hook for much of that debt). Political infighting had been an obstacle to any reasonable solution, and the fractious city council had previously rejected a proposed financial recovery plan under the Act 47 program for distressed Pennsylvania communities. Concerned about the potential ripple effect of a Harrisburg bankruptcy filing, Pennsylvania Governor Tom Corbett pushed to put the city under state receivership. Needless to say, Harrisburg fought tooth-and-nail to preserve its independence and, in the end, the

City Council voted to file for Chapter 9 bankruptcy on October 11, 2011, by a mere 4 to 3 margin. Thankfully, a federal judge ruled on November 23, 2011, that the city had no legal right to file Chapter 9. On the back of that ruling, Governor Corbett declared a state of fiscal emergency in Harrisburg and appointed a receiver. At this writing, the political wrangling continues, as various local groups have filed suit to stop the state-appointed receiver from implementing a financial recovery plan.

Another aspect of political risk is politicians' propensity to change the rules of the game after the facts. One recent glaring example is the California legislature's decision in July 2011 to force the state's redevelopment agencies (RDAs) to either shut down or divert some of their revenues to the state as a partial solution to the state's budget crisis. Never mind that many agencies have already pledged their tax-increment revenues to prior bond issues. While the agencies can still keep enough revenues to meet debt service, their bondholders must now contend with reduced coverage on their debt, which will leave them more vulnerable to future declines in assessed valuation. No wonder the redevelopment agencies brought suit to stop enforcement of the new law. Ultimately, in January 2012, the state supreme court upheld the state's authority to abolish all RDAs, but struck down the provision allowing the RDAs to survive in exchange for shared revenues.

It has been said that many municipal financings are only a legislative pen stroke away from becoming credit problems.

Taxability Risk

Being tax-exempt instruments, all municipals are potentially vulnerable to any revision in the tax code that might affect the tax exemption. Certain sectors of the high yield muni market may have more specific taxability issues. Since the Tax Reform Act of 1986, issuers of private-activity bonds can only gain access to tax-exempt financing by complying with a fairly stringent set of rules from the IRS. For instance, there are restrictions on the types of projects that are financeable, arbitrage rules, and so on. A violation by the issuer of any of these restrictions may trigger an IRS audit and lead to the coupon income on the bonds being declared taxable instead of tax-exempt. In that case, the investors will be subject to a double hit: Not only will they have to pay taxes on their interest income, but the market value of their bonds will also decline because the market will price those bonds using a taxable yield instead of a tax-exempt yield.

This is what could have happened to the holders of 11 tax-exempt solid waste bonds sold by various municipal entities from 1995 to 2004 on behalf

of Georgia-Pacific Corp. (GP). In 2006, the IRS determined that about $81 million in bonds issued by the Effingham County Development Authority in Georgia on behalf of GP violated the so-called "no value rule" for solid waste facilities. The federal tax code allows tax-exempt financing for solid waste projects that process materials with no market value at the place they are processed and at the time bonds are issued. Upon audit, the IRS found that the materials coming into the Effingham facility did have economic value because the company paid some nominal amount for them. As a result, the bonds were declared taxable.[3] Although GP promptly appealed the ruling on behalf of the bondholders, the dispute between the company and the IRS went on for about four years and cast a pall on the value of the tax-exempt bonds during that period. GP did ultimately prevail in early 2010, but mainly because the "no value rule" was abandoned by the IRS the previous year.[4]

In all fairness, taxability issues such as the one that dogged GP have been relatively rare, but investors should always be aware of the potential risk. Many private activity bonds do have a "taxability call" provision, which forces the issuer to redeem the entire issue at par if it was ever found taxable. This has provided a powerful incentive for conduit borrowers to do their best to protect the tax-exempt status of their bonds. Many have opted to settle any tax liability with the federal government outside of the bond indenture just to preserve the tax exemption on their bond issues.

Notes

1. Barclays Capital Municipal Credit Research, "August 2011 Municipal Index Performance," September 7, 2011.
2. Securities Industry & Financial Market Association (SIFMA), "Municipal Bond Credit Report," 4Q and Full Year 2010, 1Q2011, 2Q2011, www.sifma.org.
3. *The Bond Buyer*, "Disclosure IRS, Georgia-Pacific Battle Ongoing," December 8, 2006.
4. *The Bond Buyer*, "IRS Takes a New Look at Waste," March 17, 2010.