Municipals Educational Series

Market discount taxes

Key takeaways

- Investors need to be conscious of market discount taxes' effect on discounted tax-exempt bond prices.
- Market discount bonds can be good or poor investments - depending on yield. Always analyze on an after-tax basis.
- In this report, we answer two key questions: What tax rate applies to the accrual of the discount? And when is it paid?

Overview

Investors need to be aware of market discount taxes' effect on discounted tax-exempt bond prices. Discounts are ordinarily the result of an increase in secondary market yields after the bond's sale. As a muni bond falls in price, taxes may accrue on the bond.

The two main questions that arise regarding market discount bonds are: What tax rate applies to the accrual of the discount? And, when is it paid? The size and type of accrued discount depends on the period held and the discount's size. For munis, the tax is paid upon disposition of the bond. Usually, the yield calculations assume that the tax is paid at maturity. See Exhibit 1.

Exhibit 1: Types of tax due
What tax rate applies and when it is due

Amount of tax	Tax rate	Time when tax is due
Accrued tax = accrued discount X tax rate	Accrued original issue discount is tax-exempt Capital gains rate if the discount is small or within *de minimis* Ordinary income rate otherwise	On disposition sale, call, put, maturity or sink

Source: BofA Global Research

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Market discount bonds can be good or poor investments, depending on their yields. They should always be analyzed on an after-tax basis.

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Municipals
United States

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27 October 2023

The ABCs of market discounts

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Most investors equate a market discount to a discount bond; however, a market discount is a special type of discount bond defined by the tax code. Market discount bonds can be good or poor investments, depending on their after-tax yield.

Holding market discounts can produce taxable income

The IRS defines a market discount as follows: A *"[m]arket discount arises when a debt instrument purchased in the secondary market has decreased in value since its issue date, generally because of an increase in interest rates. An [Original Issue Discount (OID)] debt instrument has market discount if your adjusted basis in the debt instrument immediately after you acquired it (usually its purchase price) was less than the debt instrument's issue price plus the total OID that accrued before you acquired it. The market discount is the difference between the issue price plus accrued OID and your adjusted basis."*

In other words, the accretion of a market discount bond is the increase in the price resulting solely from the passage of time. The IRS treats this accretion as ordinary income rather than a capital gain because a discount bond matures at par, unless the bond defaults. Very few muni bonds default; thus, the gain is seen as not subject to market risk and not a capital gain.

A municipal bond is a discount bond when it trades in the secondary market at a price below its face value – or, in the case of OID, below the *Revised Issue Price* which is defined as the issue price plus the accrued OID. The accretion of the discount is subject to ordinary income taxation at the individual's marginal tax rate unless there is an exception. There is an exception for small discounts called the *de minimis* rule.

The rule, which gets its name from the Latin word for small, applies to any discount less than 0.25 x the number of full years to maturity at the time of a bond's purchase. When the discount is within the *de minimis* limit, the market discount rule is not applied, and the entire discount is taxed as a capital gain. If the discount is at or outside the *de minimis* limit, the bond is a "market discount bond," so its accreting discount is taxed as ordinary income. The tax is due on disposition – either call, put, sink, sale or maturity – but is assumed to be paid at maturity for calculation purposes. As a result, the present value of the tax is larger for short maturity bonds than for long maturity bonds for the same discount.

When an investor purchases the bond in the primary market at any price – discount, par or premium – or as a par or premium bond in the secondary market, they will not be subject to the market discount tax even if the bond trades as a discount in the secondary market. If an investor buys a new issue bond at par, and it trades at a steep discount a few years later after yields rise, the investor can hold the bond to maturity to avoid any market discount tax.

The bond's price, however, does not operate in that way, as it is always calculated as if the holder will immediately sell the bond. The calculator assumes that the original buyer will sell the bond to a new bondholder who will have to pay tax at maturity. The bond price will have to fall to compensate the new buyer for the tax.

When a bond approaches the price at which its accretion is taxed as ordinary income – the *de minimis* price – it begins to trade at a penalty relative to par and premium bonds; specifically, it is the price of the bond less the present value of the market discount tax. As a result, when yields rise on a market discount bond, the price falls faster than on a non-market discount bond.

To that end, market discount bonds' duration must be adjusted for the tax effect. In this formula below, "y" is the pre-tax yield and "ya" is the after-tax yield.

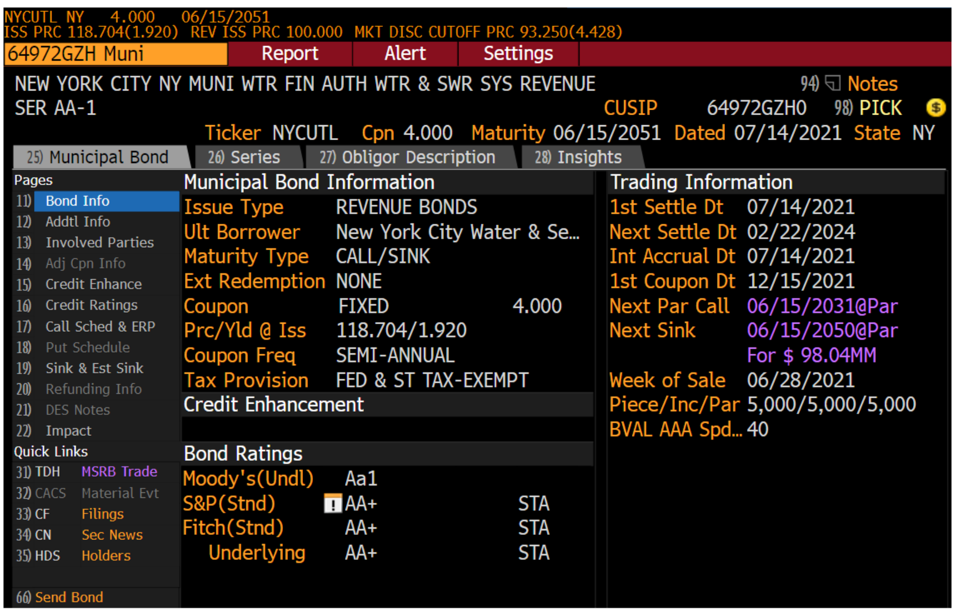
Tax Adjusted Modified Duration = Modified Duration x dy/dya

Market discount bond tax calculations

How to calculate taxes for non-OID bond

Here, we demonstrate how to calculate taxes for non-OID bonds using a NYC MUNI WTR FIN AUTH 4% of 06/15/2051 bond, CUSIP 64972GZH, as an example. See Exhibit 2. By typing QTAX<GO> in Bloomberg, we can see that this bond's price when issued in July 2021 was 118.704, with a new issue yield of 1.920%

Exhibit 2: Non-OID bond example, NYC TFA 4s 06/15/2051 (CUSIP 64972GZH0)
Market discount cutoff at $93.25 on 20 February 2024



Source: Bloomberg

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For a bond sold as an Original Issue Premium (OIP), it becomes a discount when the price falls below 100.000. This is a very important point about OIPs. These bonds are more defensive in a bear market than a par or discount bond.

If its price falls below the market discount cutoff price, it becomes a market discount bond. In this example, if an investor purchased this bond on 20 February 2024, it would have approximately 27.33 years to maturity. This is 27 full years to maturity, as the convention is to truncate, rather than round up, the years. The de minimis limit is 0.25 for each full year; here, that is 6.75 points (27 x 0.25), so the market discount cutoff is 93.25. The yield at a dollar price of 93.25 is 4.428%, so this is the de minimis limit.

When the discounts are small, the de minimis rule applies. In this example, the discount's accretion would be taxed as capital gains at a price of more than 93.25. See Exhibit 4. When the discount is larger, however, the de minimis rule does not apply. In this example, the discount's accretion would be taxed as ordinary income when purchased at 93.25 or less. See Exhibit 3. A simple way to calculate this is with Bloomberg's FTAX calculator. Note that the tax rates used in all of the following examples assume the taxpayer is in the highest Federal individual tax bracket (40.8% for ordinary income and 23.8% for long-term capital gains).

Exhibit 3: Non-OID bond purchased at/below market discount cutoff
$3.5 gain is taxed as ordinary income

NYC MUNI WTR FIN AUTH
Coupon 4.000 Maturity 06/15/2051 Issued 7/14/21 @ 118.704 (1.920)
Revised Issue Price 100.000 Market Discount Cutoff Price 93.25 (4.428)
NYC MUNI WTR FIN AUTH CUSIP 64972GZH0

Investor information		Tax item	Amt x Rate	Tax[2]
Face amount	1,000,000.00	Capital gain	0.000 x 23.80	0.000
Purchase 2/20/24	93.25[1]	Income gain	6.75 x 40.80	2.754
Sell (Maturity) 6/15/51	100.00	Interest gain	0.000 x 0.00	0.000

Total tax due 6/15/51: **$27,540.00**

Source: Bloomberg. [1]Non OID Bond with Market Discount. [2]Per 100 par amount.
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Exhibit 4: Non-OID bond purchased above market discount cutoff
$3 gain is treated as capital gain

NYC MUNI WTR FIN AUTH
Coupon 4.000 Maturity 6/15/51 Issued 7/14/21 @ 118.704 (1.920)
Revised Issue Price 100.000 Market Discount Cutoff Price 93.250 (4.428)
NYC MUNI WTR FIN AUTH

Investor information		Tax item	Amt x Rate	Tax[2]
Face amount	1,000,000.00	Capital gain	6.000 x 23.80	1.428
Purchase 2/20/24	94.00[1]	Income gain	0.000 x 40.80	0.000
Sell (Maturity) 6/15/51	100.00	Interest gain	0.000 x 0.00	0.000

Total tax due 6/15/2051: **$14,280**

Source: Bloomberg. [1]Non OID Bond with Market Discount. [2]Per 100 par amount.
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Examples of market discount tax calculations

Here, we use the same bond as above, but assume that an investor purchased the bond for $90 on 20 February 2024 in the secondary market, holding it to maturity. In this case, the market discount (redemption - purchase price) is $10. The discount is larger than the *de minimis* cut off. All of the gain (sale price - adjusted basis = $10) is taxed as ordinary income. We show this in Exhibit 5.

Exhibit 5: Tax calculation for a non-OID bond purchased at discount & sold at maturity
$10 gain is taxed as ordinary income

Tax Item	Amount	Tax rate	Tax
Capital gain	$0.00	23.80	$0.000
Income gain	$10.00	40.80	$4.080
Interest gain	$0.00	0.00	$0.000

Source: Bloomberg
BofA GLOBAL RESEARCH

Exhibit 6: Tax calculation for a non-OID bond purchased at discount & sold at maturity with applying *de minimis* rule
$2 gain is taxed as capital gain

Tax Item	Amount	Tax rate	Tax
Capital gain	$2.00	23.80	$0.476
Income gain	$0.00	40.80	$0.000
Interest gain	$0.00	0.00	$0.000

Source: Bloomberg
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For the same bond, we now assume the bond is bought for $98 in the secondary market and held to maturity. The price discount (redemption - purchase price) equals $2. This is within the *de minimis* limit, so the *de minimis* rule applies. Under this scenario, the bond is a discount bond but not a "market discount" bond. Looking at Exhibit 6, the $2 gain (gain/loss = sale price - adjusted basis) is a capital gain.

What about a situation where both capital gains and income tax applies? Let's assume an investor bought the bond for $90 on 20 February 2024 but sold it at par after three years on 20 February 2027. The effective discount is $10, so the *de minimis* rule does not apply. In this scenario, the market discount accrued in three years is 0.588 and taxed as ordinary income. The rest, however, is taxed as a capital gain since it is sold at a gain before maturity. See Exhibit 7 below.

Exhibit 7: Tax calculation for a non-OID bond purchased at discount and sold before maturity
$10 gain will split to $0.588 ordinary income and $9.412 capital gain

Investor information		Tax Item	Amount	Tax rate	Tax
Face amount	1,000,000.00	Capital gain	$9.412	23.80	$2.240
Purchase 2/16/23	90.00	Income gain	$0.588	40.80	$0.240
Sell 2/16/26	100.00	Interest gain	$0.00	0.00	$0.000

Total tax due 2/20/27: **$24,799.00**

Source: Bloomberg
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Looking at Exhibit 8, we assume the same bond is purchased at $90 on 20 February 2024 and sold three years later on 20 February 2027 at $90.520. The total gain is only 0.520, but market discount accrued in three years is 0.588. So here, 0.520 is treated as ordinary income and there is no capital gains/loss for tax purpose.

As another example, what happens if the bond is sold on 20 February 2027 at $89 instead of $90.520? In that case, the -$1.00 loss is treated as a capital loss for tax purposes, and the tax calculation is presented in Exhibit 9.

Exhibit 8: Tax calculation for a non-OID bond purchased at discount and sold before maturity
$0.520 is treated as market discount accretion, no capital gain

Investor information		**Tax Item**	**Amount**	**Tax rate**	**Tax**
Face amount	1,000,000.00	Capital gain	$0.00	23.80	$0.000
Purchase 2/20/24	90.00	Income gain	$0.52	40.80	$0.212
Sell 2/20/27	90.520	Interest gain	$0.00	0.00	$0.000

Total tax due 2/20/27: **$2,121.60**

Source: Bloomberg

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Exhibit 9: Tax calculation for a non-OID bond purchased at discount and sold before maturity
$1 loss is treated all as capital loss

Investor information		**Tax Item**	**Amount**	**Tax rate**	**Tax**
Face amount	1,000,000.00	Capital gain	-$1.00	23.80	-$0.238
Purchase 2/20/24	90.00	Income gain	$0.00	40.80	$0.000
Sell 2/20/27	89.00	Interest gain	$0.00	0.00	$0.000

Total tax due 2/20/27: **-$2,380.00**

Source: Bloomberg

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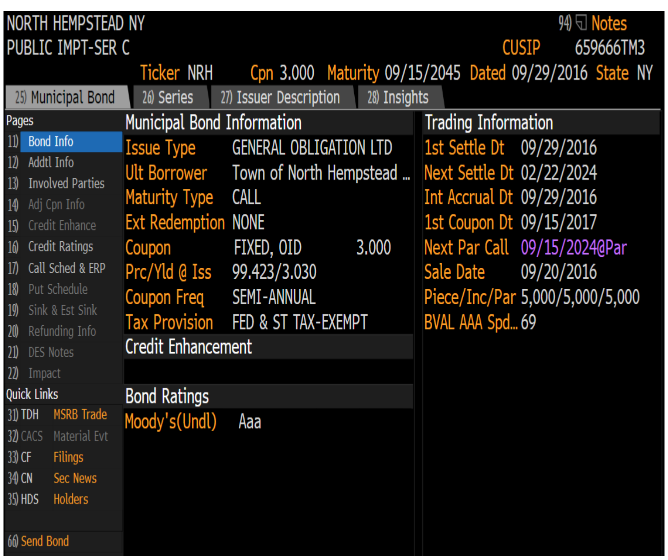
For a bond sold as an Original Issue Discount (OID), we look at the math on market discount bonds. The accretion of the original issue discount is considered tax-exempt interest, while the accretion of the market discount may be ordinary income or capital gains. To be sure, it is very complicated to calculate one's tax basis for OID bonds as there are two accretions at the same time. Again, tools such as Bloomberg's FTAX function may be helpful.

Here, we assume a 3% OID bond was issued at $99.423 (3.030% yield) in 2016, and an investor purchases it two years later on 1 September 2018 in the secondary market at $90, only to sell it at par after holding it for three years on 1 September 2021.

On 1 September 2018, the revised issue price is 99.448 (issue price + accreted OID), and the full number of years to maturity is 27, so the market discount cutoff price is 92.698 (=99.448 – (27 x 0.25)). As the investor purchases the bond at $90, below *the de* minimis cutoff, the effective discount is 9.448 (revised issue price - purchase price) and the *de minimis* rule does not apply. Upon sale at par on 1 September 2021, the OID accrued would be 0.041, which is tax-exempt. As such, the adjusted basis would be 90.041 (=90+0.041), so the investor's gain would be 9.959 (=100-90.041) for tax purposes, in this example.

Exhibit 10: Example OID bond that is also a market discount bond
The bond was issued an OID price $99.423


NORTH HEMPSTEAD NY
PUBLIC IMPT-SER C

94) Notes

CUSIP 659666TM3

Ticker NRH Cpn 3.000 Maturity 09/15/2045 Dated 09/29/2016 State NY

25) Municipal Bond | 26) Series | 27) Issuer Description | 28) Insights

Pages: 11) Bond Info; 12) Addtl Info; 13) Involved Parties; 14) Adj Cpn Info; 15) Credit Enhance; 16) Credit Ratings; 17) Call Sched & ERP; 18) Put Schedule; 19) Sink & Est Sink; 20) Refunding Info; 21) DES Notes; 22) Impact

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60) Send Bond

Municipal Bond Information	
Issue Type	GENERAL OBLIGATION LTD
Ult Borrower	Town of North Hempstead ...
Maturity Type	CALL
Ext Redemption	NONE
Coupon	FIXED, OID 3.000
Prc/Yld @ Iss	99.423/3.030
Coupon Freq	SEMI-ANNUAL
Tax Provision	FED & ST TAX-EXEMPT

Credit Enhancement

Bond Ratings	
Moody's(Undl)	Aaa

Trading Information	
1st Settle Dt	09/29/2016
Next Settle Dt	02/22/2024
Int Accrual Dt	09/29/2016
1st Coupon Dt	09/15/2017
Next Par Call	09/15/2024@Par
Sale Date	09/20/2016
Piece/Inc/Par	5,000/5,000/5,000
BVAL AAA Spd...	69

Source: Bloomberg

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Exhibit 11: Taxes of OID bond bought as market discount bond
Gains of $9.959 = $9.297 capitals gains + $0.662 ordinary income


NORTH HEMPSTEAD NY PUBLIC IMPT-SER C State NY Cusip 659666TM3
Coupon 3.000 Maturity 9/15/45 Issued 9/29/16 @ 99.423 (3.030) original issue discount
Revised Issue Price 99.448 Market Discount Cutoff Price 92.698 (3.416)

Investor Information		
Face Amount ($)	1,000,000.000	
Purchase	09/01/18	@ 90.000 *
Sell	09/01/21	@ 100.000

*OID Bond with Market Discount

Tax Item	Amount	Rate	Tax
Capital Gain	9.297 X	23.80 =	2.213
Income Gain	0.662 X	40.80 =	0.270
Interest Gain	0.000 X	0.00 =	0.000

Total Tax($) 24,827.42 due 9/01/21

Footnotes	Par Amount	Face Amount	Explanation
REVISED ISSUE PRICE	99.448	994,479.97	REVISED ISSUE PRICE (AT PURCHASE) = ISSUE PRICE + ACCRETED OID.
MARKET DISCOUNT	9.448	94,479.97	MARKET DISCOUNT = REVISED ISSUE PRICE - PURCHASE PRICE.
EFFECTIVE DISCOUNT	9.448	94,479.97	"DE MINIMIS" RULE DOES NOT APPLY.
MARKET DISCOUNT ACCRUED	0.662	6,617.66	MARKET DISCOUNT ACCRUED TOWARDS EFFECTIVE DISCOUNT.
ACCRUED OID	0.041	410.00	OID ACCRUES FROM REVISED ISSUE PRICE TO REDEMPTION.
ADJUSTED BASIS	90.041	900,410.00	ADJUSTED BASIS (AT SALE) = PURCHASE PRICE + ACCRUED OID.
GAIN (LOSS)	9.959	99,590.00	GAIN/LOSS = SALE PRICE - ADJUSTED BASIS (AT SALE).

Source: Bloomberg

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Part of those gains would be taxed as ordinary income due to market discount accretion, and the rest would be taxed as capital gains. The accretion of market discount over that three years would be 0.662, which would be taxed at the current ordinary income tax rates of 40.80%, and the rest of the gains is 9.297 (=9.959-0.662) will be taxed at the capital gains tax rate of 23.80%.

Coupon effects on tax-adjusted duration

It is well understood that as coupons go up, all else equal, durations fall. Smaller coupons have longer durations but this effect becomes much more dramatic when market discount taxes are considered.

For valuing discount bonds, the examples below show the importance of utilizing after-tax duration when selecting bonds. For this example, we have a 3% State of Illinois sales tax revenue bond maturing in June 2034 (CUSIP 452227MC). On a pre-tax basis, the effective duration is 8.06. On an after-tax basis, we can see that effective duration is much longer at 10.86. See Exhibit 13.

Exhibit 12: Yields and effective durations under current tax regime
After-tax duration longer than pre-tax duration.

Price	**Yield Pre-tax**	**Yield After-tax**
92.500	3.889%	3.631%
92.750	3.858%	3.608%
Change		
0.250	-0.031%	-0.023%
Effective duration (years)		
Pre-tax duration	8.06	
After-tax duration	10.86	

Source: BofA Global Research

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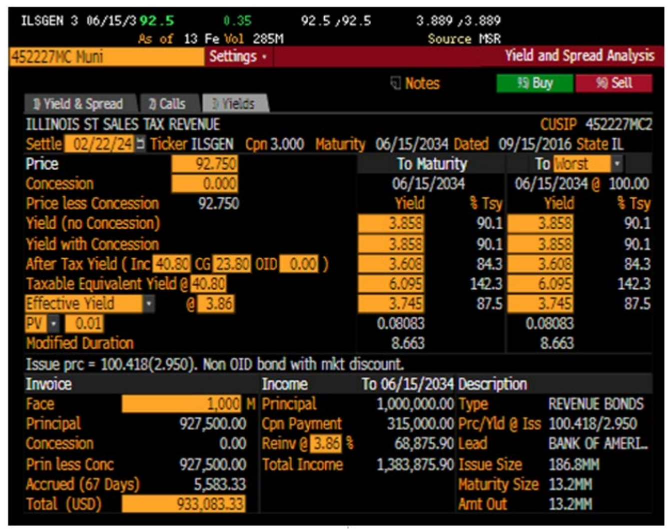
Exhibit 13: After-tax yield
The price $92.75 implies a pre-tax yield 3.858% & after-tax yield 3.608%



Source: Bloomberg

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