

Alternative Minimum Tax and Effective Returns from Municipal Bonds

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Abstract

Taxpayers must pay the alternative minimum tax (AMT) if a minimum tax rate applied to a broad measure of income results in an amount greater than the regular tax. The AMT rate is 20 percent for corporations and 24 percent for other taxpayers. Currently, this broad measure of income includes 100 percent of private activity bond interest and, for corporations, encompasses up to 75 percent of other tax-exempt interest. This paper explains the computation of the AMT and shows the effect of the AMT on after-tax yields from investments in municipal securities. In particular, it demonstrates that the after-tax return on municipal bonds declines with an increase in the number of years until the AMT credit resulting from previous years' AMT paid is utilized. The paper then analyzes the AMT in terms of the tax clientele it creates and the implicit tax it may reduce.

Introduction

Taxpayers must pay the alternative minimum tax (AMT) if a minimum tax rate applied to a broad measure of income results in an amount greater than the regular tax. The AMT rate is 20 percent for corporations and 24 percent for other taxpayers. Currently, this broad measure of income includes 100 percent of private activity bond interest and, for corporations, encompasses up to 75 percent of other nominally tax-exempt interest.

Investors who incur AMT due to tax-exempt interest have an incentive to avoid investing in municipal debt. The incentive occurs because investors not likely to pay the AMT will bid up the price of these securities and accept a lower pre-tax return. This lower pre-tax return, sometimes referred to as "implicit tax,"¹ forces investors who pay the AMT to accept an even lower after-tax return.

This paper explains the computation of the AMT and shows the effect of the AMT on after-tax yields from investments in municipal securities. In particular, it demonstrates that the after-tax return on municipal bonds declines with an increase in the number of years until the AMT credit resulting from previous years' AMT paid is utilized. The paper then analyzes the AMT in terms of the tax clientele it creates and the implicit tax it may reduce.

An Explanation of the AMT as it Relates to Tax-Exempt Interest The AMT Computation.

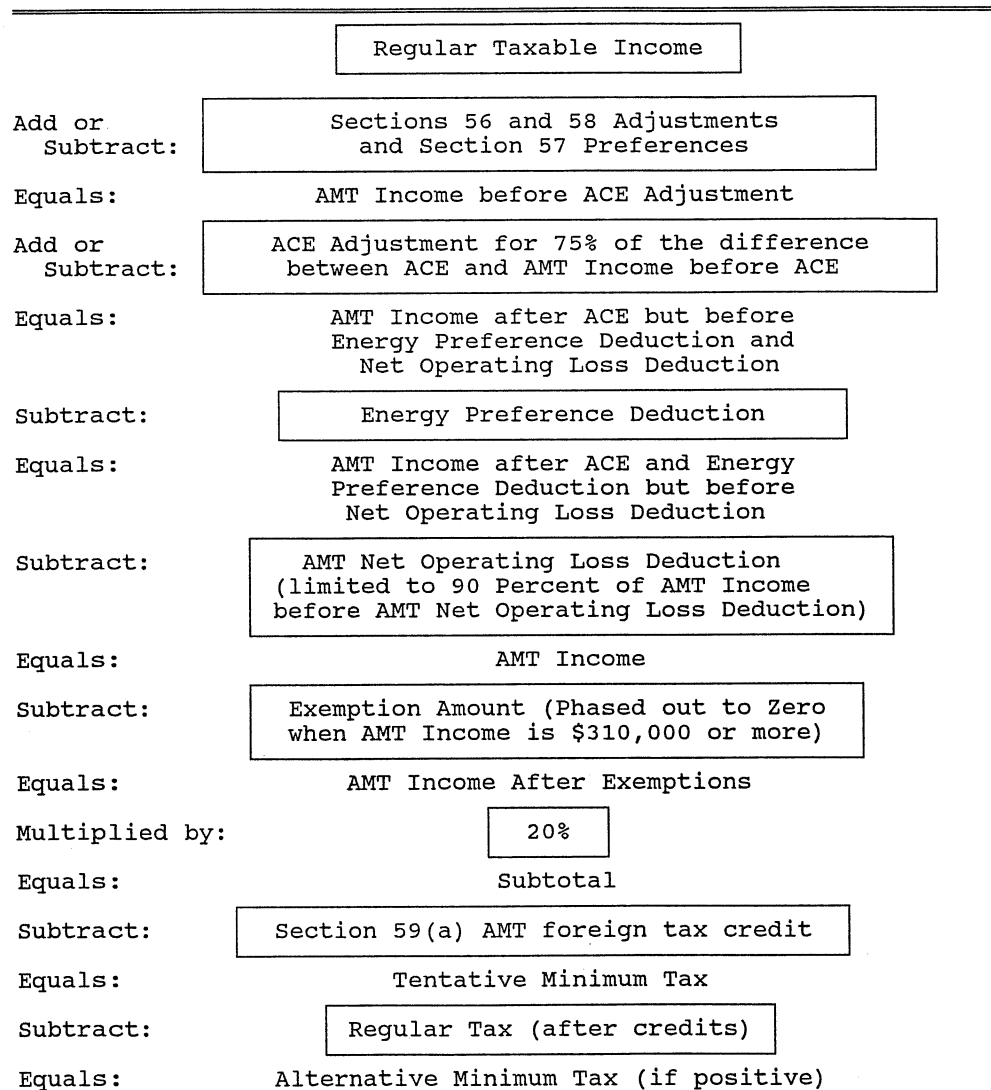
AMT is defined as the excess of "tentative minimum tax" over "regular tax."² See Figure 1 for an overview of the AMT computation. Tentative minimum tax is 24 percent (20 percent for corporations) of "alternative minimum taxable income" (AMTI) less the "exemption amount", and reduced by the AMT foreign tax credit.³ Regular tax is the regular tax liability, net of all nonrefundable tax credits, reduced by the foreign tax credit.⁴

AMTI is taxable income modified by the adjustments of IRC Sections 56 and 58 and increased by the preferences described by IRC Section 57.⁵ The basic difference between *adjustments* under IRC Sections 56 and 58 and *preferences* under IRC Section 57 is that adjustments may either increase or decrease AMTI, while preferences always increase the AMT tax base. The exemption amount is \$40,000 for corporations and individuals filing joint returns, \$30,000 for single individual taxpayers, and \$20,000 for estates, trusts, and married individuals filing separately.⁶

Private Activity Bond Interest.

Interest on private activity bonds is a Section 57 preference which must be added in the computation of AMTI,⁷ although it is excluded from regular taxable income.⁸ To be qualified as private activity bonds, the securities must meet either the dual private use and

FIGURE 1
STRUCTURE OF ALTERNATIVE MINIMUM TAX DETERMINATION



security test or the private loan financing test.⁹

The dual private use and security test is comprised of the private business use test and the private security or payment test. The private business use test requires that more than 10 percent of the proceeds of the bond offering be used for private business.¹⁰ The private security or payment test is met if more than 10 percent of the bond issue proceeds either is secured with private business property or is to be repaid out of payments from private business.¹¹

The private loan financing test is met when the portion of the bond proceeds used to finance loans to private individuals or organizations is greater than five million dollars or five percent of the bond proceeds, whichever is less.¹² If either the dual private use and

security test or the private loan financing test is met, then the securities qualify as private activity bonds. In such case the interest on these bonds is excluded from regular taxable income but included in AMTI.

The ACE Adjustment.

One of the adjustments in determining AMTI relies on adjusted current earnings (ACE), a term that is loosely based on the tax concept of "earnings and profits."¹³ ACE is determined by making several adjustments to pre-ACE AMTI that remove or reduce certain "preference" deductions. For instance, accelerated depreciation, excess percentage depletion, and the income-decreasing effect of the last-in, first-out (LIFO) inventory method are at least partially disallowed in the computation of ACE.¹⁴ While these adjustments gen-

erally increase ACE, some of them, such as accelerated depreciation, can have reversal effects that decrease ACE.

Effective in 1990, AMTI includes the ACE adjustment, which is 75 percent of the difference between ACE and AMTI before the ACE adjustment.¹⁵ One approach to computing the ACE adjustment is to calculate ACE, subtract pre-ACE AMTI, and multiply the difference by 75 percent. Another way is to sum all of the adjustments in determining ACE¹⁶ and multiply the total adjustments by 75 percent. Negative ACE adjustments are only possible up to the amount of cumulative previous positive ACE adjustments.¹⁷

Tax-exempt interest, other than private activity bond interest, is included in ACE as a result of a blanket provision requiring the inclusion of all income that must be included in "earnings and profits."¹⁸ The Internal Revenue Code provides a general definition of earnings and profits,¹⁹ and the Treasury Department has issued a regulation specifying that municipal bond interest income must be included in earnings and profits for the purpose of determining ACE.²⁰

Related Deductions Allowed.

Expenses incurred in the production of tax-exempt income are not deductible in determining regular taxable income.²¹ For instance, investors may not deduct interest incurred on debt used to finance the purchase of tax-exempt securities.²² However, when tax-exempt income is included in the AMT computation, related expenses can be deducted in arriving at the net inclusion.²³

The Value of the AMT Credit.

AMT paid by corporations because of tax-exempt interest can be used as credit against subsequent regular tax, reducing the cost of the AMT.²⁴ The credit can be used in later years to the extent that the regular tax exceeds the tentative minimum tax.²⁵ In other words, AMT paid currently can be used to offset future regular tax, but the future regular tax cannot be reduced below the level of the future tentative minimum tax. Thus, for corporations, the after-tax return on tax-exempt bonds depends on the present value of the AMT credit.

Estimating the present value of the credit can be a difficult task. The selection of the appropriate discount rate may be arbitrary and the timing of the credit utilization is a function of many future events, including revisions in tax laws, changes in the business environment, and managerial decisions about financing, investment, and production.

The Effect of AMT on After-Tax Rates of Return

AMT reduces after-tax returns from otherwise tax-exempt bonds for those investors who incur this minimum tax. In this section, the effect of the AMT on after-tax returns is demonstrated. For corporations, after-tax returns are shown to depend on the timing of AMT credit utilization and on the discount rate used to value the AMT credit.

After-tax Returns on Private Activity Bond Interest.

Taxpayers other than corporations must consider only private activity bond interest income in the AMT computation. No related AMT credit is available for non-corporate bondholders. The following equation represents the after-tax return from private activity bond interest for non-corporate investors:

$$r = R - tR \quad (1)$$

where r is the after-tax rate of return, R is the pre-tax rate of return, and t is the AMT rate of 24 percent. A noncorporate taxpayer affected by the AMT who holds a 10 percent municipal bond receives a 7.6 percent after-tax rate of return $[0.10 - (.24)(0.10)]$.

For corporations, the present value of the AMT credit increases the after-tax return from municipal bonds. Taking into account this credit, the effective yield on private activity bond interest is:

$$r = R - tR + \left[\frac{tR}{(1 + y)^n} \right] \quad (2)$$

where n is the number of years until the AMT credit is utilized and y is the discount rate applied to the AMT credit. Note that the AMT rate (t) is 20 percent for corporations.

Equation (2) is only useful when the discount rate (y) is known. If the appropriate discount rate cannot easily be determined, then the after-tax rate of return (r) can be substituted for y in the equation:

$$r = R - tR + \left[\frac{tR}{(1 + r)^n} \right] \quad (3)$$

Table 1, Panel A, presents computer-generated

solutions for the after-tax rate of return (r). The table presents even values of pre-tax rates of return (R) between 4 and 12 percent, and five-year increments of the number of years (n) until the AMT credit is utilized. The graph accompanying Panel A indicates that the after-tax rate of return declines with an increase in the number of years until the AMT credit is utilized. The rate of decline is more severe for higher pre-tax rates of return and for smaller values of the number of years until the AMT credit is utilized.

Panels B and C of Table 1 present comparable data for equation (2), when the discount rate (y) is assumed to be 4 percent and 12 percent, respectively. A comparison of these panels reveals that the after-tax rate of return (r) declines at a faster rate with the higher discount rate. For example, assume an 8 percent pre-tax return and a 10 year period until the AMT credit is utilized. In this scenario, the after-tax return is 7.48 percent when a 4 percent discount rate is applied to the AMT credit and 6.92 percent when a 12 percent discount rate is applied.

After-Tax Rate of Return on ACE Tax-Exempt Interest.

Recall that AMT income includes only 75 percent of tax-exempt interest, other than private activity bond interest (ACE tax-exempt interest). Equations (1)-(3) above must therefore be modified to determine the after-tax rates of return on ACE tax-exempt interest, as follows:

$$r = R - .75 tR \quad (4)$$

$$r = R - .75 tR + \left[\frac{.75 tR}{(1+y)^n} \right] \quad (5)$$

$$r = R - .75 tR + \left[\frac{.75 tR}{(1+r)^n} \right] \quad (6)$$

Solutions for equations (6) and (5) comparable to the solutions presented in Table 1 are presented in Panels A, B, and C of Table 2. Because only 75 percent of the interest is taxable, the after-tax rates of return (r) are higher in Table 2 than in Table 1.

Tax Clienteles and Implicit Tax

Tax clienteles are groups of taxpayers who are drawn to similar investments because the taxpayers share certain tax characteristics.²⁶ For example, investors

who pay the AMT have an incentive to prefer fully-taxable bonds over equally risky municipal bonds. The reduced demand by this tax clientele could lower the price of municipal bonds and increase the pre-tax return.

Related to tax clienteles is the concept of an implicit tax. This tax is the reduction in the pre-tax return that occurs when investors are willing to pay a premium for tax-favored assets. The implicit tax rate ($t_{I,a}$) on a tax-favored investment can be calculated as follows:

$$t_{I,a} = \frac{(R_b - R_a)}{R_b} \quad (7)$$

where R_b is the pre-tax rate of return on fully taxable bonds, and R_a is the risk-adjusted pre-tax rate of return on an alternative investment, such as municipal bonds.

The implicit tax rate on the tax-favored investment is the tax rate that equates the after-tax rates of return on the two investments. After-tax rates of return tend to be forced toward equivalence across investments by competitive investors who seek to maximize risk-adjusted after-tax returns. In equilibrium, a taxpayer facing a 20 percent explicit tax rate would be ambivalent in the choice between a fully-taxable bond paying 10 percent (R_b) and an equally risky tax-exempt bond paying 8 percent (R_a).

Investors who pay the AMT may continue to hold municipal bonds for non-tax reasons, including portfolio diversification, transaction costs, and loyalty to the region. These investors should be aware that the AMT can have various effects on after-tax rates of return. For instance, the rate of return on tax-exempt securities decreases with an increase in the number of years until the AMT credit is utilized. Also, the rate of return declines for AMT investors as the discount rate on the AMT credit grows.

Conclusion

The AMT imposes federal income taxation on nominally tax-exempt municipal bond interest. Both individuals and corporations can be subject to the AMT due to private activity bond interest income. In addition, corporations can be required to pay AMT on other municipal bond interest earned. However, corporations may reduce the cost of the AMT by using AMT credit which results from AMT paid. The value of the AMT credit, and thus the cost of the AMT, depends on the number of years until the credit is used and on the rate at which it is discounted.

**TABLE 1
AFTER-TAX RATES OF RETURN FOR PRIVATE ACTIVITY BONDS**

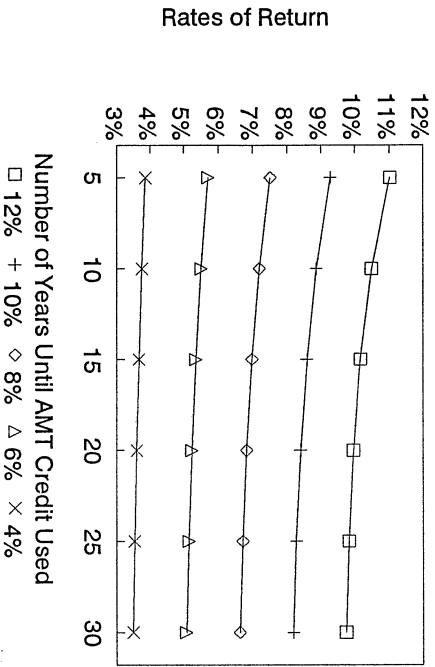
Panel A – Discount Rate on AMT Credit is After-Tax Rate of Return (r)

Number of Years, n	Pre-Tax Rates of Return, R				
	4%	6%	8%	10%	12%
5	3.86%	5.71%	7.51%	9.28%	11.02%
10	3.75%	5.50%	7.20%	8.86%	10.49%
15	3.67%	5.35%	6.98%	8.58%	10.16%
20	3.59%	5.23%	6.83%	8.40%	9.96%
25	3.54%	5.14%	6.72%	8.27%	9.83%
30	3.49%	5.07%	6.63%	8.19%	9.75%

Panel B – Discount Rate on AMT Credit Given as 4 Percent

Number of Years, n	Pre-tax Rates of Return, R				
	4.00%	6.00%	8.00%	10.00%	12.00%
5	3.86%	5.79%	7.72%	9.64%	11.57%
10	3.74%	5.61%	7.48%	9.35%	11.22%
15	3.64%	5.47%	7.29%	9.11%	10.93%
20	3.57%	5.35%	7.13%	8.91%	10.70%
25	3.50%	5.25%	7.00%	8.75%	10.50%
30	3.45%	5.17%	6.89%	8.62%	10.34%

After-Tax Returns as a Function of Years Until AMT Credit is Used



Equation:
$$r = R - tR + [tR / (1 + r)]$$

where:
 r = after-tax rate of return,
 R = pre-tax rate of return,
 t = AMT rate (20% for corporations; 24% for other taxpayers), and
 n = the number of years until the AMT credit is utilized.

Panel C – Discount Rate on AMT Credit Given as 12 Percent

Number of Years, n	Pre-tax Rates of Return, R				
	4.00%	6.00%	8.00%	10.00%	12.00%
5	3.65%	5.48%	7.31%	9.13%	10.96%
10	3.46%	5.19%	6.92%	8.64%	10.37%
15	3.35%	5.02%	6.69%	8.37%	10.04%
20	3.28%	4.92%	6.57%	8.21%	9.85%
25	3.25%	4.87%	6.49%	8.12%	9.74%
30	3.23%	4.84%	6.45%	8.07%	9.68%

Equation:
$$r = R - tR + [tR / (1 + y)]$$

where:
 r = after-tax rate of return,
 R = pre-tax rate of return,
 t = AMT rate (20% for corporations; 24% for other taxpayers),
 n = the number of years until the AMT credit is utilized, and
 y = the assumed discount rate, 12%.

**TABLE 2
AFTER-TAX RATES OF RETURN FOR ACE TAX-EXEMPT INTEREST**

Panel A – Discount Rate on AMT Credit is After-Tax Rate of Return (r)

Number of Years, n	4.00%	6.00%	8.00%	10.00%	12.00%
5	3.90%	5.78%	7.63%	9.45%	11.26%
10	3.81%	5.62%	7.39%	9.13%	10.84%
15	3.75%	5.50%	7.22%	8.92%	10.60%
20	3.69%	5.41%	7.10%	8.78%	10.45%
25	3.65%	5.34%	7.02%	8.69%	10.35%
30	3.61%	5.29%	6.96%	8.63%	10.30%

Panel B – Discount Rate on AMT Credit Given as 4 Percent

Number of Years, n	4.00%	6.00%	8.00%	10.00%	12.00%
5	3.89%	5.84%	7.79%	9.73%	11.68%
10	3.81%	5.71%	7.61%	9.51%	11.42%
15	3.73%	5.60%	7.47%	9.33%	11.20%
20	3.67%	5.51%	7.35%	9.18%	11.02%
25	3.63%	5.44%	7.25%	9.06%	10.88%
30	3.58%	5.38%	7.17%	8.96%	10.75%

Equation: $r = R - .75tR + [.75tR / (1 + y)]$

where:

- r = after-tax rate of return,
- R = pre-tax rate of return,
- t = AMT rate (20% for corporations),
- n = the number of years until the AMT credit is used, and
- y = the discount rate on the AMT credit, 4%.

Panel C – Discount Rate on AMT Credit Given as 12 Percent

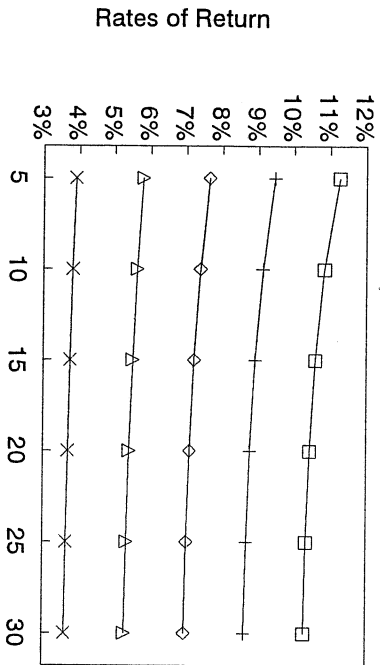
Number of Years, n	4.00%	6.00%	8.00%	10.00%	12.00%
5	3.74%	5.61%	7.48%	9.35%	11.22%
10	3.59%	5.39%	7.19%	8.98%	10.78%
15	3.51%	5.26%	7.02%	8.77%	10.53%
20	3.46%	5.19%	6.92%	8.66%	10.39%
25	3.44%	5.15%	6.87%	8.59%	10.31%
30	3.42%	5.13%	6.84%	8.55%	10.26%

Equation: $r = R - .75tR + [.75tR / (1 + y)]$

where:

- r = after-tax rate of return,
- R = pre-tax rate of return,
- t = AMT rate (20% for corporations),
- n = the number of years until the AMT credit is used, and
- y = the discount rate on the AMT credit, 12%.

After-Tax Returns as a Function of Years Until AMT Credit is Used



Equation: $r = R - .75tR + [.75tR / (1 + r)]$

where:

- r = after-tax rate of return,
- R = pre-tax rate of return,
- t = AMT rate (20% for corporations), and
- n = the number of years until the AMT credit is used.

Suggestions for Future Research

Future research should estimate the cost of the AMT to issuers of nominally tax-exempt bonds. Conceptually, bidders subject to the AMT are willing to bid less for these bonds, and the reduced price increases their pretax yield. If the capital market for tax-exempt securities is efficient, then the federal government's revenue from the AMT would be equal to the increase in the pretax yield on these bonds. In effect, this research would indicate that a tax on tax-exempt interest is simply a wealth transfer from state and local governments to the federal government. ❧

The authors wish to thank Timothy Guggenmos of Edward D. Jones & Co. for suggesting the topic of this paper. Helpful comments from Alice Douthwaite are especially appreciated.

References

1. An in-depth discussion of the implicit tax concept is provided in Chapter 5 of MS Scholes and MA Wolfson, *Taxes and Business Strategy: A Planning Approach*, 1992 ed, Prentice-Hall, Inc., Englewood Cliffs, NJ.
2. IRC Section 55(a).
3. IRC Sections 55(b)(1) and 59(a).
4. IRC Sections 55(c), 26(b), and 27(a).
5. IRC Section 55(b)(2).
6. IRC Section 55(d)(1). The exemption phases out at the rate of \$0.25 for every dollar of "alternative minimum taxable income" (AMTI) in excess of \$150,000, \$112,500, and \$75,000 for the respective exemption amounts of \$40,000, \$30,000, and \$20,000 [IRC Section 55(d)(3)].
7. IRC Section 57(a)(5).
8. IRC Section 103(b)(1).
9. IRC Section 141(a).
10. IRC Section 141(b)(1).
11. IRC Section 141(b)(2).
12. IRC Section 141(c)(1).
13. Earnings and profits is discussed in IRC Section 312, although no clear definition is given. Traditionally, earnings and profits has been computed to determine the taxability of corporate dividends.
14. IRC Section 56(g)(4)(A), (F), and (D)(iii).
15. IRC Section 56(g)(1).
16. These adjustments are found in IRC Section 56(g)(4).
17. IRC Section 56(g)(2).
18. IRC Section 56(g)(4)(B).
19. IRC Section 312.
20. Regulation Section 1.56(g)-1(c)(6)(ii).
21. IRC Section 265(a)(1).
22. IRC Section 265(a)(1).
23. IRC Section 57(a)(5) provides a deduction for expenses incurred in the production of private activity bond interest income. A similar deduction is provided for expenses related to other tax-exempt income [Treasury Regulation Section 1.56(g)-1(c)(3)].
24. AMT credit is also available for taxpayers other than corporations, but for them it specifically does not apply to AMT arising from private activity bond interest income [IRC Section 53(d)(1)(B) (ii)(II)].
25. IRC Section 53(c).
26. See supra note 1 at 96.