Taxable versus Tax-exempt Bonds

1. Tax rates and implicit taxes

r_b pretax yield on taxable bonds. r_t pretax yield on U.S. Treasury securities of similar duration. Which security is preferred by an investor facing tax rates t_fed and t_{state} ?

$$r_t(1 - t_{fed}) > r_b(1 - t_{fed} - t_{state}(1 - t_{fed}))$$
$$r_t(1 - t_{fed}) > r_b(1 - t_{fed})(1 - t_{state})$$

The higher are state taxes, the more attractive Treasury securities become. Demand for Treasuries pushes their yield down. This example is an illustration of tax clienteles. It also shows that ignoring implicit taxes leads to overestimation of the risk premium applicable to corporate debt.

$$ImplicitTaxRate = \frac{BenchmarkReturn - AssetReturn}{BenchmarkReturn}$$

Bond example:

	Coupon	Maturity	Price	Yield
Amoco Aaa/AAA	8.625	12/2016	105.953	8.060
U.S. Gov	7.5	11/2016	99.4375	7.55

Ignoring the differences in risk, the implicit tax is:

$$\frac{8.060 - 7.55}{8.060} = 6.3\%$$

Questions:

- Which asset should a pension fund invest in?
- Which asset should a resident of Florida or Texas invest in?
- Which asset should a resident of California, Minnesota, or New York invest in?

2. Tax Rate Progressivity

How progressive are tax rates? The answer you reach depends on where you look for evidence:

2.1 Enacted Tax Rates

- Explicit tax rates are often sharply progressive. In the United States at various times, income tax rates have ranged between zero and 70 percent, suggesting that tax rates are very progressive.

2.2 Tax Returns

- For low income, low tax rate taxpayers, the amount of explicit tax paid to the taxing authority as a fraction of income may be quite large. The fraction may even be higher than the corresponding fraction for wealthy, high income individuals. For instance, a very wealthy individual may have a large investment in municipal bonds on which no tax is paid to the Treasury. This suggests that taxes are, in fact, not very progressive.

2.3 Combined Productivity

- By considering the sum of explicit and implicit taxes paid by each taxpayer, it becomes apparent that substantial implicit taxes are often paid by high tax rate taxpayers in place of explicit taxes that would be even greater.
- Thus, tax rates are more progressive than an examination of tax returns would suggest, but less progressive than enacted tax rates would suggest.
- The erosion of the progressivity in enacted tax rates depends upon the nature and availability of differentially taxed assets that investors facing varying marginal taxes may choose to trade.

3. Arbitrage

3.1 organizational form arbitrage

If there are no limits on **organizational form arbitrage**, then all taxes can be eliminated.

- Pensions and certain life insurance policies are organizational forms that are favorably taxed.
- To eliminate taxes on personal income earned outside these vehicles there are two possible strategies. Suppose you anticipate salary income in the future which you wish to shelter from tax.
- For the insurance policy strategy, issue tax-deductible debt on personal account. Use the proceeds to buy similar taxable bonds inside the insurance policy. Borrow enough money so that the interest deductions equal taxable

salary. Surrender the policy for its cash value and receive tax-free a payment equal to the principal and interest due on your borrowings.

- To take advantage of the pension, contribute all of you taxable income to the pension. Then borrow for current consumption needs. Secure your borrowings with the pension assets. Repay you borrowings when you draw on your pension. You pay no tax on the funds distributed from the pension because you have unused interest expense deductions from your borrowings.

3.2 clientele-based arbitrage

If there are no limits on clientele-based arbitrage, then all taxpayers must face the same marginal rate of tax, namely zero!

- Suppose a taxable bond yields $R_B = 10\%$ and a muni bond yields $R_M = 7\%$.
- Universities and municipalities issue munis and buy taxable bonds so long at $R_B > R_M$.
- This drives down the yield on corporates, because each tax-exempt organization able to issue munis wants to buy taxable bonds. Also, the marketplace is flooded with muni debt issued by the tax-exempt entities, so the yield offered on munis has to rise.
- When the pre-tax yields on munis and taxable debt equilibrate, say at 8%, then it become possible for all entities that face a positive explicit rate of tax to generate sufficient deductions to eliminate all tax payments.
- The strategy used by taxpayers who would otherwise have taxable income is as follows: Issue taxable bonds at 8%. Each dollar of debt issued generates 8 cents of tax deductions that can be used to reduce other taxable income. The proceeds from the debt issue are invested in tax-exempt muni bonds, so cash flows from borrowing and lending wash.