Capital Structure: With **Corporate** Income Taxes

(Welch, Chapter 18-2)

Ivo Welch

Adding Personal Taxes

We now add personal income taxes.

Double Asymmetric Insight III

Which form of financing is preferable, if debt and equity are not treated symmetrically? I.e.,

- payments to creditors **but not to shareholders** can be deducted from profits.
- **shareholders pay lower taxes than creditors on receipts.**

Tax Recap: Capital Gains

Capital gains are effectively taxed at lower rates.

- Lower statutory tax rate.
- Occurs only at realization... if ever.
- Can be offset with capital losses.
- Can be moved to foreign locales.
- Are stepped up "for free" at death.
  - The "warm rain" pedigree bonus.
  - The US oscillates between insanely high and insanely low inheritance taxes (given tax evasion "industry").

Tax Recap: Interest Receipts

Interest receipts are taxed at high ordinary W-2 income tax rates, which are 40-50%!

- Unless interest receipts are from tax-exempt munis (which corporations cannot issue).
- Taxation of interest receipts is similar for corporations, except these can deduct non-mortgage interest payments more easily.

Personal Tax Effect?

Intuitively, what will be the effect of *personal* income taxes on tilting aggregate preferences on corporate debt vs corporate equity?

PS: Retail vs 401-K Accounts

Given ownership of fixed-income and equities, and given both a retail-brokerage account and a 401-K, where should you stick what?

Strict Pecking Order: All fixed income should go into the 401-K (by arbitrage).

Thought Experiment

As a family, you rule the economy,
. . . except for Uncle Sam.

The less Uncle Sam gets, the more you get.
The more Uncle Sam gets, the less you get.

Game Pieces: Firms

Your corporate economy consists of two firms:

1. One firm is a high-tax firm (cash cow).
   - Think of this firm as a cash cow, low-growth, producing tons of profits: $\tau = 30\%$.
2. One firm is a zero-tax firm (growth).
   - Think of this firm as a fast-growing firm (or firm with large NOLs): $\tau = 0\%$.

Game Pieces: Owners

Your family economy consists of two investors:

1. One is a retail investor (brokerage account).
   - Taxed at the highest personal income tax rate: 40%. Think "retail" investor.
2. One is a retirement vehicle (401-K account).
   - Stands in not only for retirement vehicles but also for tax-exempt institutions.

Tax Rate Assumptions

Corporate Income Tax= 30%.
Personal Income Tax= 40%.
Capital Gains Tax= 10%.

Permitted Game Moves

For either type of firm, you can choose the method of payout:

1. capital gains (retained earnings), or
2. interest payments.

For either type of investor, you can determine holdings:

1. debt (paying interest), or
2. equity (retaining profits).

Start

Play Sim City! (Or Heinlein's puppet-master!)
Who should own what?

(No, you cannot assume that the economy is all growth firms held by tax-exempt investors. You have to allocate both.)

Arrangements: Growth Firms

Arrangements: Cash Cow Firms

Coincidence?

But there is no puppet master!

How could such “holding coincidences” ever happen in the real world?

No Coincidence! I

Prices!

Example:

- Assume risk-neutrality.
- Say, E(r) were 10% on taxable corporate interest, and 8% on cap gains.

No Coincidence! II

Taxable retail investors prefer the 8% capital gains from growth firms.

Tax-exempt investors prefer the 10% RoR from cash cows.

Cash cows prefer to pay 10% for debt, because effective cost is $10\% \cdot (1 - \tau) = 7\%$.

Growth firms prefer to pay the 8% for equity.

Omitted Forces Footnotes

This example has abstracted away from discounts and premia (e.g., risk),

but the example does indeed generalize.

Capitalist markets are good at moving resources to their best uses. Here “best” simply means cutting out Uncle Sam.

Empirical Evidence?

This model is not complete.

- There are non-tax considerations, too.

But by-and-large, it is pretty accurate.

Retail investors tend to be comparatively more invested in the stock market; institutions and endowments more in the bond markets.

Treasuries and Muni Bonds?

What calibrates the movement of tax-exempt investors towards Treasury bonds and taxable retail investors towards muni bonds?

WACC w/ Corp Inc Tax

Write down the WACC formula with corporate income taxes *from memory*!

General WACC Formula?

How do you (the corporate manager doing capital budgeting) adjust the WACC or APV formulas not only for your own corporate income taxes, but also for your investors' personal income taxes?