

15.415 Finance Theory

Lecture 1: Introduction
The Tobacco Settlement

Spring 1999

A Comprehensive Example

Scenario: It is now Summer 1997, and attorneys for the government and the tobacco industry have just developed a proposed settlement for pending lawsuits.

Main Question: How do we determine whether the proposed settlement should be accepted or rejected by the tobacco industry?

The Firm's Objective

Possible objectives of the firm:

- Reduce liability exposure
- Maximize social welfare
- Maximize sales
- Maximize expected profit
- Maximize EPS
- Maximize value of the firm
- Maximize perks/job security of top management
- Maximize the wealth of its shareholders

Some of these objectives are conflicting, so which should have the highest priority?

Benefits vs. Costs

Some benefits:

- “Peace at last”
- Reduced exposure to large future judgments
- Reduced deadweight costs

Some costs:

- Money – “\$368.5 billion over 25 years”, “\$750 billion over 50 years”
- Loss of domestic growth opportunities, mandated destruction of markets
- Increased likelihood of a successful suit (?)

Questions

- How do we evaluate the benefits and the costs in the context of the firm's objective?
- What factors are relevant for the decision to accept or reject?

The Costs

Assume that the settlement is signed into law on December 31, 1997.

	now	1998	1999	2000	2001	2002 – 2022
Total Pmt	\$10 b	\$8.5 b	\$9.5 b	\$11.5 b	\$14 b	\$15 -\$15 b

In addition,

- The industry will pay up to \$2 billion per year if teenage smoking is not reduced by preset percentages.
- Beginning in 2023, the industry will pay \$15 billion forever.
- All dollar amounts are in real terms – the actual payment depends on inflation as measured by the CPI.

Timing of Payments

The timing of the payments is one of the most important considerations in evaluating the settlement.

Why?

Adjusting for Time-Value of Money

A conservative figure for the real rate of interest is 2.5% per annum.

	now	1998	1999	2000	2001	2002 – 2022
Total Pmt	\$10 b	\$8.5 b	\$9.5 b	\$11.5 b	\$14 b	\$15 -\$15 b
PV of \$1	\$1.00	\$0.98	\$0.95	\$0.93	\$0.91	\$0.88-\$0.54
PV of Payment	\$10 b	\$8.3 b	\$9.0 b	\$10.7 b	\$12.7 b	\$13.3-\$8.1 b

- Sum of unadjusted payments over 25 years equals \$368.5 billion
- Present value of this payment stream is \$270.6 billion

Taxes

The proposed settlement calls for the treatment of payments as business expenses. This allows the firm to reduce its tax bills.

Is this an important factor?

- The tobacco industry calls it a “deal-breaker.”
- Reports indicate that it will reduce industry tax payments by \$147 billion.

How do we evaluate the importance of taxes in the settlement?

Adjusting for Taxes

The marginal tax rate for the industry is 40%.

	now	1998	1999	2000	2001	2002 – 2022
Total Pmt	\$10 b	\$8.5 b	\$9.5 b	\$11.5 b	\$14 b	\$15 -\$15b
Tax Reduction	\$4.0 b	\$3.4 b	\$3.8 b	\$4.6 b	\$5.6 b	\$6.0-\$6.0 b
After-Tax Payment	\$6.0 b	\$5.1 b	\$5.7 b	\$6.9 b	\$8.4 b	\$9.0 -\$9.0b
PV of \$1	\$1.00	\$0.98	\$0.95	\$0.93	\$0.91	\$0.88-\$0.54
PV After Tax Pmt	\$6.0 b	\$5.0 b	\$5.4 b	\$6.4 b	\$7.6 b	\$8.0-\$4.9 b

- Sum of payments adjusted for taxes but not timing equals \$221.5 billion.
- Value of payments adjusted for taxes and timing equals \$162.4 billion.

The Perpetuity Portion

We have not yet addressed the portion of the settlement that calls for \$15 billion to be paid forever. This is a perpetuity.

- The sum of the payments equals ∞ , so how do we value it?
- Suppose it is now 25 years later.

Present value of the first payment is not \$15 billion. Why?

Present value of the second payment less than that of the first. Why?

This continues...

We have a sum of geometrically declining terms; the after-tax sum is \$360 billion.

- The value of this perpetuity today is \$194.2 billion.
- Note: $\$162.4 + \$194.2 = \$356.8 < \368.5

Other Benefits and Costs

It is important to consider incremental costs and benefits. Why?

- Elimination of extraordinarily large punitive judgments for past misbehavior
- Increased likelihood of successful suits in the future
- Fines/penalties for not meeting underage smoking targets
- Reduction in advertising
- Reduction in legal department expenses
- Benefit of returning attention to core business

These are harder to quantify, partly because they are more uncertain. Indeed some of them may be second-order (e.g., domestic advertising is “only” \$175 million per year).

Method of Payment

Industry and the government want to generate additional free cash flow by raising the price of a pack of cigarettes by \$0.62 per pack.

- Cigarette volume declines 4% for each 10% increase in prices
- Higher prices reduce demand by underage smokers
- What about competition from firms not joining the settlement?
- What about antitrust laws?

Conclusions

- Corporate financing decisions are complex.
- We need to learn how to attach values to projects, and we need to learn how to compare them so that the best project is chosen.

This course will not help you make estimates of cash flows, but it will teach how to evaluate given estimates.

Rules

- Money has time value. Present value rule.
- Only incremental cash flows matter.

What is Missing?

Uncertainty

- Cash flows are generally uncertain.
- Need to know how uncertainty affects that value of a project.
- Study how capital markets work.
- Present value rule does not apply. Need to adjust for risk.

What is Missing?

Financing decisions

- How do firms finance their investments? Stocks, bonds, retained earnings, etc.
- Need to know which financing method is best for a given situation.