

Econ 234C – Corporate Finance

Lecture 3: Internal Investment (II)

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Outline

1. Change of requirements
2. Homework 1
3. WRDS + other CF data introduction (Gary Peete)
4. Corporate Investment (II): Myers-Majluf

1 Change of requirements

New grade composition:

- 40% for theoretical & empirical assignments;
- 20% for the midterm exam;
- 40% for the final exam;
- Class participation (evidence of intelligently reading the required papers and discussing them) leads to $\pm 10\%$.

For 3rd-years and higher (who have passed field exams and are preparing for orals or beyond):

- You can substitute the assignments with a paper. You should only do so if you are already working on a (serious) paper and are sure that you will be able to submit a complete paper at the end of the course.
- Even if you fall into this category, it is not clear you should choose this option. Hands-on work on problem sets is very often the start of a thesis paper ...

2 Homework 1 (10 points)

- Myers-Majluf focus on the analysis of internal financing versus external *equity* financing. In Subsection 3.3 they introduce risky debt, without fully modelling it.
- Use the modeling framework from class and introduce safe debt. Make sure you write out the IR constraint for creditors. Show that safe debt functions like cash. (2 points)
- Then introduce risky debt. Make sure you write out the IR constraint for creditors. First assume that the firm pre-announces whether it will use debt or equity. Show that the ex-ante value of the firm is higher under debt- than under equity-financing. How will the firm choose between cash, safe debt, risky debt, equity under which circumstances? (3 points)
- Now assume that the firm announces the issuance of safe debt, risky debt, equity. Consider the case in which safe debt does not suffice to finance the project. How will the firm decide now? (5 points)

Note: We will develop some initial set-up in class.

3 WRDS and other finance data sets

4 Corporate Investment (II)

- Empirical evidence on investment-cash flow sensitivity (since FHP 1988): investment increases with internal cash.
- Related evidence: investment decreases with leverage.
- Fundamental empirical difficulty: cash balances, leverage are endogenous.
- Empirical answer: exploit shocks to C such as oil prices, pension fund requirements, windfall gains from lawsuits.

Theoretical underpinnings

(1) Asymmetric information \implies underinvestment

(2) Moral hazard \implies overinvestment

Today: (1) Asymmetric information (Myers, 1977 and 1984; Myers-Majluf, 1984)

Introduce lemons problem

- Akerlof (1970): gains from trade can remain unexploited when sellers are better informed about their quality than buyers
 - sellers (of investment idea) = firms
 - buyers (of investment idea) = investors
- Implication for investment financing: firms prefer to use funds that do not suffer from informational asymmetries (cash, safe debt), then hybrid securities (convertibles), only then equity.

Assumptions

A1. Managers maximize the value of old shareholders' stake in the firm.

Note: MM split the up into 'maximize shareholder value to old investors' and 'old investors do not rebalance their portfolio in response to financing and investment choices.'

A2. $\tilde{A}, \tilde{R}(\cdot)$ stochastic.

A3. Asymmetric information between managers and investors about the realization of the future value of current assets (A) and the return to investment ($R(I)$).

Notation

As before.

Will introduce debt with face value W and market value D later (Homework 1); but start (again) with equity as the only form of external financing.

Timing

- $t = 0$:
distribution of returns conditional on I , $\tilde{R}(I) \sim F_I$, known to CEO + investors;
distribution of future value of $\tilde{A} \sim G$ known to CEO + investors.
Simplification: $I \in \{0, I^*\}$ with $\tilde{R}(I^*) =: \tilde{R} \sim F$
Cash flow C is realized (firm's new net worth $A + C$);
- $t = 1$:
CEO learns realization of $\tilde{R}(I^*)$, denoted as R , and of \tilde{A} , denoted as A .
CEO chooses I .
- $t = 2$: A realized; if CEO chose to invest $R(I)$ realized.

Note: Information is symmetric at $t = 0$, asymmetric at $t = 1$, and symmetric at $t = 2$.

Consider the case $I^* > C$.

With symmetric information and no uncertainty, maximization problem was:

$$\begin{aligned} \max_I \quad & \frac{s}{s + s'}(A + R(I)) \\ \text{s.t.} \quad & \frac{s'}{s + s'} \cdot (A + R(I)) = I - C \end{aligned}$$

What is the new maximization problem?

What is the solution for s' ?

What is the decision rule for investment?

Let's graph the decision rule for investment.

What happens as C increases? (Intuition + graph)

What happens as A is known?