Optimal Priority Structure, Capital Structure, and Investment

Dirk Hackbarth

University of Illinois at Urbana-Champaign

David C. Mauer

University of Texas at Dallas

Discussion by

Josef Zechner

WU Wien

Synopsis

- Models a firm whose EBIT-process is given by:

$$dX(t) = \mu X(t)dt + \sigma X(t)dZ(t)$$

- The firm has a growth option: By investing ***I*** **,** the firm can instantaneously scale up its cash flow from X to Π X, where Π > 1.
- Paper derives optimal capital structure and investment decisions and valuation equations for the cases where
  - the growth option must be all-equity financed
  - the growth option can be (partly or fully) debt financed given equal priority
  - the growth option can be (partly or fully) debt financed given optimal priority structure

Major results

- All equity financing of growth option → equityholders exercise the growth option too late (relative to 1^{st} best). ***Intuition:*** Myers (77).
- Equal priority debt financing of growth option → equityholders exercise the growth option too early (relative to 1^{st} best). ***Intuition:*** equal priority debt financing of growth option allows wealth transfer from old bondholders to equityholders.

Major results (ctd)

- There is an optimal interior priority structure. ***Intuition:*** Trade-off between Myer's underinvestment against overinvestment induced by expropriation of existing debtholders via a new debt issue.
- BUT: At the optimal priority structure there seems to be some overinvestment. ***Intuition:*** One needs to maximize the net-benefit of debt: i.e. tax benefits minus bankruptcy costs minus investment distortions. Optimum not necessarily where investment distortions are zero!
- Priority structure only matters when investment decision is second-best.

Comments (1)

- Presents a nice formal analysis of the question: How do capital structure, debt priority structure and real investment interact?
- Nice insight: trade-off between Myer's underinvestment and overinvestment due to expropriating existing debtholders via the financing of the investment.
- Technically very competent!

Comments (2)

- Suppose you would not tie new debt financing to new investment?
  - New debt can only be issued once, namely when the investment is undertaken → linkage between investment and possible "exploitation" of old debtholders.
  - But if you could issue more debt any time, this link is broken.
  - Appendix: shows that firms would not wish to issue debt before or after the investment.
  - I wonder about the generality of this result. Suppose $\tau >> 0$ and take lim $\Pi \to 1$. → Xs $\to \infty$. It seems that firms will wish to issue more debt before they invest in this case.
  - Maybe the assumption can be better motivated. Are there bond covenants which only allow firms to issue more debt when they invest? Maybe one needs the new investment as collateral….

Comments (3)

- What can the equityholders commit to?
  - Cannot commit to timing of investment.
  - Can commit to financing mix of the new project.
  - Wouldn't it be more natural to either allow equityholders to commit to both the investment threashold and the financing mix or to assume that they cannot commit to when and how to fund the new project?
- Definition of Tobin's Q:
  - In the paper: Ratio of total firm value to the value of assets-in-place.
  - If there is a competitive market for the assets in place, shouldn't their value reflect the fact that they come with a growth and a leverage option? If not, wouldn't this open up arbitrage possibilities?

Comments (4)

- Definition of Tobin's Q (ctd):
  - Accepting the paper's definition of Q: What would happen if you vary Q by varying X, or I, rather than Π? How would leverage ratios and credit spreads respond?
  - Given my problems with the Q-definition it is hard to gain intution for the results in subsection 3.
- Definition of Book leverage:
  - Book leverage is defined as market value of debt divided by the market value of assets-in-place….
- Some numerical results do not seem robust
  - Panel D in Table 2: Overinvestment in the growth option leads to an increase in inital coupon
  - Table 3: Overinvestment in the growth option leads to a significant decrease in the initial coupon. Only difference is that now I=300 instead of 200.

Comments (5)

- Exposition:
  - Paper is well written BUT it is 65 pages long!
  - Radical suggestion: maybe drop section 3, i.e. stuff on Q.
  - I would rather focus more on the investment distortion that happens for optimal priority structure etc.
- Discussion of related Literature:
  - Christopher Hennessy, Tobin's Q, Debt Overhang, and Investment, Journal of Finance, 2004.
  - S. Bizer and P. M. DeMarzo, Sequential Banking, The Journal of Political Economy, Vol. 100, No. 1 (Feb., 1992), pp. 41-61.