

Econ 234C – Corporate Finance

Lecture 11: IPOs

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Outline

1. Organization
2. IPOs – basics and stylized facts
3. IPOs – Initial underpricing
4. IPOs – LR underperformance?
5. IPOs – conflicts of interest

1 Organization

- New Dates Review Sessions: Tu, 5/1, 3:30-4:30, and Mo, 5/7 (probably 6pm)
- Final exam
- Homework 3
- Missing topics: Suggestions for Sraer class?
- Additional reading related to today's class: Rock model

Midterm

<i>Points</i>	<i>Grade</i>	<i>freq</i>
36 – 40	A+	1
31 – 35	A	2
26 – 30	A–	6
21 – 25	B+	3
16 – 20	B	1
11 – 15	B–	3

2 IPOs - Basics and Stylized Facts

- Process by which a firm sells equity to the public for the first time.
- Role of underwriter in offering
 - Set offering price
 - Market (road shows, collect orders)
 - Allocation
 - Price stabilization
- Types of underwriters
 - Lead or book manager (controls the offering; conducts a due diligence of company = investigates prospects & financial statements & management team & strategy; assembles team with PR firm, law firm (prepare filings), auditor (books conform to accounting standards).
 - Co-managers (engaged by book manager to support process above)
 - Syndicate members (participate in distributing IPO / share risk; group of underwriters)

- Most are underwritten by an investment bank.

Two Types of Offerings

- Firm Commitment
 - Investment banker guarantees the sale of all shares.
 - Done for all “reputable” IPO’s in the US.
- Best effort offerings
 - Investment banker will try to sell the offering.
 - Typically done if firm smaller, less reputable.

Why go public?

1. Upside of going public

For firm

- New capital (typically \$20-40m; often more than 100m)
- Future capital (1/3 of IPO issuers return to public market [SEO] within 5 years; typically raise 3x as much as in IPO.)
- Mergers and acquisitions (Private firms not on the “radar screen” of potential acquirors. Being public makes it easier for other companies to notice and evaluate the firm for potential synergies.)

- Image (Higher profile than private firms. Profile important in industries where customers and suppliers need to make long-term commitments. Example: software [requires training and no manager wants to buy software from a firm that may not be around for future upgrades, improvements, bug fixes, etc.])
- Employee compensation (Why?)

For employees

- Cashing out/diversification

2. Downside of going public

For firm

- Loss of confidentiality (disclosing technology of profitability to competitors)
- IPO expenses (direct expenses: 15-25%; indirectly: management time, disruption of business)
- Legal liability (“routinely” sued for omissions in IPO prospectus when the public market valuation fell below the IPO offering price; *The Private Securities Litigation Reform Act* of 1995 protects disclosure of firm projections, and reduces the likelihood of successful suits and thus influences settlement terms.)

- Reporting and fiduciary responsibility (SEC reports, reports to stock exchange; compliance with state securities laws [“blue sky”], NASD and exchange guidelines)

For CEO / former owner

- Loss of return
- Loss of control
- No immediate cash-out (lock-up period)

IPO Market Windows

- Definition? (Investors interested in buying share of newly public companies. Why not continuous? Categories?)
- Open and close quickly.
 - Early 1980s and early 1990s are two of the most active periods.
 - 1970s were a no-man's land
- What causes them?
 - No one really knows, but ...
 - Sentiment
 - Future growth potential in economy
 - Some event (but: *Wright 1998, The Race to Market: An Examination of IPO Windows in the Semiconductor Industry*; see www.babson.edu/entrep/fer/papers98/XXI/XXI_C/XXI_C_text.htm)

IPO Market Characteristics

- Hot issue markets (Definition?)
- Underpricing (On the first day of trading, new equity earns a very high return on average.)
- Long-run underperformance (*Supposedly*, IPO's perform very poorly in the first few years.)

Why all the concern about performance anomalies?

- Corporate investment
 - Cost of capital
 - Allocational effects
- Market efficiency vs. investor sentiment
 - Can we implement trading strategies that systematically make money on a risk adjusted basis?
 - Are (some types of) investors systematically losing money / excluded from investment opportunities?

Glossary

3 IPO Underpricing

(Loughran-Ritter-Rydquest (1994), *Pacific Basin Finance Journal*)

- In US, average underpricing is about 15%; higher in best effort offerings.
- LRR summarize research on amount of under pricing in different countries
 - Korea, Thailand, Malaysia, Brazil 60-80%
 - European countries (Germany, Belgium, France) 3-10%
- No study yet to relate these to various characteristics of countries and methods of issuing equity!

Why are New Issues Underpriced

(Kevin Rock, JFE 1984)

- Question: Why do we observe underpricing of new issues?
- Approach: Model underpricing as a rational equilibrium (Adverse Selection).

Model Set-Up

- Two kinds of potential investors in IPO (asymmetrically informed agents)
 - Informed (I)
 - * Perfect information about the price of the firm.
 - Uninformed investors (N)
 - * Only know the probability distribution over values.
 - * Demand for risky asset is T per investors, which is some fraction of his/her wealth
 - Investors risk-neutral; wealth = 1.
- Firm
 - Firm is uninformed.
 - Sets price (p) and quantity (Z).
 - Need participation of uninformed agent to clear market.

- Value of the firm is random (\tilde{V}).
- Safe asset, with return of 1.
- No short-sales.
- Investors cannot bid/borrow more than their wealth.

Key Steps

- Informed investors have 0/1 demand.
 - If $p < \tilde{V}$, then demand all, I .
 - If $p > \tilde{V}$, then demand is 0.
- Total demand is therefore:
 - $NT + I$ if $p < \tilde{V}$
 - NT if $p > \tilde{V}$

- Pro-rata rationing \rightarrow uninformed agent is rationed if price is below value.
 - Probability of receiving shares if issue price is less than value, $p < \tilde{V}$
 * $b = \min[pZ/(NT + I), 1]$
 - Probability of receiving shares if issue price is greater than value, $p > \tilde{V}$
 * $b' = \min(pZ/NT, 1)$
 - Uninformed agent is more likely to receive shares if issue has been overpriced.

Terminal Wealth of Uninformed Agent

Expected Terminal Wealth of Uninformed Agent

First order condition for optimal bid of uninformed agent

Insight:

Choice of T determined by relative probability of being rationed if the issue is underpriced vs. overpriced (b/b')

Theorem 2

For large markets and any price below \tilde{V} , $d/dp[T(b(p, N), p)] < 0$.

In words:

- If price is below value, then as the price of the offering falls, uninformed investors demand more.
- Intuition: As price declines, increases in demand of uninformed investors increase the ratio b/b' , i.e., rationing still exists, but relative rationing is much lower (i.e. also rationing in the 'bad ste') and therefore the uninformed investor is willing to buy.

Model Implications

- Informed investors make money.
- Uninformed investors break even (participation constraint).
- PC determines price.
- Pooling equilibrium – firms bear cost of adverse selection.
- If there is some degree of risk aversion for firm's existing owners (undiversified), then there is an optimal selling price which, in equilibrium entails some underpricing.
- Or: to attract uninformed investors ("dogs"), must underprice on average, so that they are still willing to participate.
- "Burning money" models (good firms underprice more than bad firms as a signal to the market \rightarrow can afford to waste money); no evidence to support.