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Chapter 7.2.2

Underwriting syndicates

Outline

- Problem and model assumptions
- Optimal syndicate size for issuers
- Co-underwriters
- Lead underwriter
- Summary

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Benefits of syndicates

- Investment banks rely on their network of investors to solicit bids for securities they underwrite
- Each investment bank will have a limited network, not covering the whole market
- Issuers could appoint multiple banks to reach a wider pool of potential investors
- Such syndicates are routinely appointed

Lead underwriters

- When appointing a syndicate to manage the underwriting, a moral hazard problem emerges that allows investment bank to shirk their efforts to identify potential investors
- Typically, a lead underwriter is appointed who has overall responsibility for the underwriting process
- Such a lead underwriter can mitigate the moral hazard problem

Search efficiency

- The issue has a potential value of V, which is realised if all possible investors are contacted and the highest bids considered
- Search is inefficient in that only a fraction γ of this value can be realised
- We set $\gamma = 1 - \frac{\eta}{N}$
- The more investors are contacted, the more of the value can be obtained
- If search is fully efficient $\eta = 0$, then the full value can be realised
- If search is not fully efficient $0 < \eta < 1$, then only part of the value is realised

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Issuer proceeds

- The issuer receives a fraction γ of the value of the security V
- They have to pay a underwriting fee f based on the proceeds of the security γV to each of the N syndicate members
- Net proceeds: $\Pi_C = \gamma V - N f \gamma V$
- The optimal syndicate size if given if $\frac{\partial \Pi_C}{\partial N} = 0$, giving $fN^2 = \eta$
- This gives proceeds $\Pi_C = \left(1 - 2\frac{\eta}{N}\right) V$
- If $N \geq 2 > 2\eta$, then $\Pi_C > 0$ and using a syndicate is profitable

Preferred syndicate size

- Issuers prefer the largest possible syndicate size
- This is because the underwriting fee is reducing in the syndicate size
- A larger syndicate increases the moral hazard of investment banks not performing their tasks
- We propose that using a lead underwriter mitigates this moral hazard problem and allows for larger syndicate sizes

Problem and model assumptions

Optimal syndicate size for issuers

Co-underwriters

Lead underwriter

Summary

Investment bank profits with effort

- Co-underwriters receive a fraction λ of the total fee income $Nf\gamma V$
- Investment banks exerting efforts to identify potential investors face costs c_H
- Profits: $\Pi_B^H = \lambda N f \gamma V - c_H V$

Investment bank profits without effort

- An investment bank exerting no effort faces lower costs $c_L < c_H$
- As it exerts no effort, a smaller fraction of the value is realized: $\hat{\gamma} = 1 - \frac{\eta}{N-1}$
- Profits: $\Pi_B^L = \lambda N f \hat{\gamma} V - c_L V$

Inducing effort for co-underwriters

- If $\Pi_B^H \geq \Pi_B^L$, the investment bank will make effort to identify investors
- This implies $\lambda f \geq \frac{c_H - c_L}{\eta}(N-1)$
- Underwriting needs to be profitable: $\Pi_B^H \geq 0$ giving $\lambda f \geq \frac{c_H}{N-\eta}$
- To ensure underwriting is always profitable, we need the first constraint to be more binding: $\frac{c_H - c_L}{\eta}(N-1) \geq \frac{c_H}{N-\eta}$
- This solves for $N \geq N^* = \frac{1}{2}(1+\eta) + \sqrt{\frac{1}{4}(1+\eta)^2 + \frac{\eta c_L}{c_H - c_L}}$

Minimum syndicate size

- We have a minimum syndicate size N^* that is compatible with co-underwriters exerting effort and in this case always making profits
- Too small syndicates do not raise enough proceeds from the issue, despite having to share the fee income among fewer members
- The exertion of effort requires a minimum share of the underwriting fee
- Lead underwriters must also be induced to participate in the syndicate, hence the fee available to them cannot be too small

Problem and model assumptions

Optimal syndicate size for issuers

Co-underwriters

Lead underwriter

Summary

Investment bank profits

- Lead underwriters allocate tasks and distribute the revenue among syndicate members
- They obtain the fraction of the fee not distributed, $1-(N-1)\lambda$
- Their profits are similar to that of co-underwriters, replacing λ with $1-(N-1)\lambda$
- Exerting effort: $\hat{\Pi}_B^H = \left(\left(1-\frac{\eta}{N}\right) Nf\left(1-(N-1)\lambda\right) - c_H\right) V$
- Not exerting effort: $\hat{\Pi}_B^L = \left(\left(1-\frac{\eta}{N-1}\right) Nf\left(1-(N-1)\lambda\right) - c_L\right) V$

Incentives to exert effort

- To induce effort into lead underwriters we need $\hat{\Pi}_B^H \geq \hat{\Pi}_B^L$ and underwriting must be profitable $\hat{\Pi}_B^H \geq 0$
- This gives the same condition on the minimum size of the syndicate as for co-underwriters
- Using the constraint to exert effort for co-underwriters and lead underwriters we combine them to get $\frac{c_H - c_L}{\eta^2} N^2 (N-1) \leq \lambda \leq \frac{1}{N-1} - \frac{c_H - c_L}{\eta^2} N^2$
- A viable solution for λ requires $N^3 (N-1) \leq \frac{\eta^2}{c_H - c_L}$, the maximum syndicate size is limited

Optimality for issuers

- If we want the syndicate to be optimal for issuers then we need $f = \frac{\eta}{N^2}$
- The lead underwriter will extract all surplus from the co-underwriters, hence $\Pi_B^H = 0$
- This gives $\lambda = \frac{N^2 c_H}{\eta(N-\eta)}$
- The lead underwriter will also not provide more incentives than necessary for co-underwriters to exert effort, hence $\Pi_B^H = \Pi_B^L$, this gives $N = N^*$
- This is only feasible if it meets the condition $N^2 (N-1) (\eta c_H + (N-\eta)(c_H - c_L)) \leq \eta^2 (N-\eta)$ for $N = N^*$ from the constraint on λ
- The syndicate must not be too large

Need for lead underwriters

- If all underwriters are equal, then $\lambda = \frac{1}{N}$
- For optimality and inducing effort, we would need $N^3 c_H = \eta (N - \eta)$ for $N = N^*$
- This is unlikely to be fulfilled
- Optimal syndicates require lead underwriters

Syndicate size

- If search is less effective, syndicates are bigger: $\frac{\partial N^*}{\partial \eta} > 0$
- If the costs for not exerting effort are higher, syndicates are bigger: $\frac{\partial N^*}{\partial c_L} > 0$
- If cost difference to exerting effort is bigger, syndicates are smaller: $\frac{\partial N^*}{\partial (c_H - c_L)} < 0$
- As $0 \leq \eta \leq 1$, the syndicate size generally will be small

Problem and model assumptions

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Increasing offer price

- Syndicates extend the search for potential investors and increase the offer price
- This is balanced against higher costs and the possible free-riding of syndicate members
- Lead underwriters can provide incentives for co-underwriters to exert effort
- The resulting syndicate size will be small

Constraints on syndicates

- The lead underwriter can extract all surplus from co-underwriters
- Strict conditions to be met for syndicates to be viable
- Dominance of syndicates in practice suggests these constraints are fulfilled

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