Andreas Krause

Chapter 7.2.2

Underwriting syndicates

Outline

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

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

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

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

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

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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Andreas Krause
Department of Economics
University of Bath
Claverton Down
Bath BA2 7AY
United Kingdom

E-mail: mnsak@bath.ac.uk