Litigation Risk and IPO Underpricing

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Overview of

- Problem in hand and related literature
- Model proposed and problems with previous literature
- Data and Methodology
- Results and Conclusions

Persistent and systematic phenomenon:

IPO's earn an average 15% return on the 1st trading day

Possible explanations:

- **Signaling Theory**
- **Information Asymmetry Theory**
- **Litigation Risk Theory**

Signaling Story:

- *Allen and Faulhaber (1989), Grinblatt and Hwang (1989), Welch (1989)*: high quality firms underprice their issues to signal their quality to the market.
- Little empirical support is found by *Jegadeesh, Weinstein and Welch (1993), Garfinkel (1993); Spiess and Pettway (1997).*

Information Asymmetry Story:

- *Benveniste and Spindt (1989); Beatty and Ritter (1986); Rock (1986); Baron (1982)*: higher cost of learning about the firm's true value is associated with higher IPO underpricing.
- Evidence seems to support this explanation: *Hanley (1993); Megginson and Weiss (1991); Koh and Walter (1989); Beatty and Ritter (1986)*

Litigation Insurance Story

- *Ibboston (1975) and Tinic (1988)*: issuers intentionally underprice IPO's to insure themselves against future liability.

Tinic model:

$E(\text{Litigation Cost})_t = f(P_0/P_t)*g(P_0-P_t)$

s.t. $g'(.)>0$ and $f'(.)>0$

- *Hughes and Thakor (1992); Hensler (1995)*: extend the model yielding similar predictions

Empirical testable prediction: positive relation between underpricing and litigation risk

Previous tests of the litigation insurance hypothesis:

- *Tinic (1988)*:compares underpricing of IPO's prior and subsequent to the 1933 Securities Act (1923-1930 vs.. 1966-71), finding that returns in the latter period are significantly higher.
  - **Main problem: expected initial returns fluctuate over time** - *Ibboston, Sindelar and Ritter (1988); Drake and Vetsuypens (1993).*

Previous tests of the litigation insurance hypothesis (cont'd):

- *Drake and Vetsuypens (1993)*: compare a sample of 93 IPO's for which the issuers were subsequently sued with a "matched" sample of non-sued IPO firms (based on year, underwriter rank and offer size).

Main findings:

1. $E(R_0)_{sued} > E(R_0)_{nonsued}$
2. (#sued:#IPO's / $E(R_0)>0$) > (#sued:#IPOs / $E(R_0)\leq 0$)

?? Endogeneity Problem??

Endogeneity Problem:

1) High Litigation Risk $\Rightarrow$ High Underpricing

2) High Underpricing $\Rightarrow$ Low Litigation Risk

Main contribution of the paper is in that it analyzes both ways the relation between Underpricing and Litigation Risk:

1) ***litigation insurance hp***: does litigation risk affect issuer's incentives to underprice?

2) ***litigation deterrence hp***: does underpricing lower the probability of being sued?

The model:

1) Insurance effect:

$IR_i = \gamma_1 * LR_i + \beta_1 * X_{1i} + \varepsilon_1$

2) Deterrence effect:

$LR_i = \gamma_2 * IR_i + \beta_2 * X_{2i} + \varepsilon_2$

IR=Initial Return; LR=Litigation Risk; ($X_2 X_1$)=exogenous variables

The Methodology (*Maddala, 1983, ch8*):

Structural Model:

(1) $IR = \gamma_1 * LR + \beta_1 * X_1 + \varepsilon_1$

(2) $LR = \gamma_2 * IR + \beta_2 * X_2 + \varepsilon_2$

where LR=1 if sued

LR=0 otherwise

Reduced Form:

(3) $IR = \Pi_1 * X + \eta_1$

(4) $LR = \Pi_2 * X + \eta_2$

where $X = (X_1\ X_2)$

- Since LR is only observed as a dichotomous variable $\Rightarrow$ by probit can only estimate Π_2/σ_2 where σ_2=Var(η_2), and the Reduced Form is:

(3) $IR = \Pi_1 * X + \eta_1$

(5) $LR' = LR/\sigma_2 = \Pi_2/\sigma_2 * X + \eta_2/\sigma_2 = \Pi_2' * X + \eta_2'$

The Structural Model can now by be written as:

(6) $IR = \gamma_1 \sigma_2 * LR' + \beta_1 * X_1 + \varepsilon_1$

(7) $LR' = (\gamma_2 / \sigma_2) * IR + (\beta_2 / \sigma_2) * X_2 + (\varepsilon_2 / \sigma_2)$

2-stage estimation procedure:

1st - Estimate Π_1 in (3) by OLS and Π_2' in (5) by probit ML $\Rightarrow$ $\underline{\Pi}_1$ and $\underline{\Pi}_2$

2nd- Estimate (6) by OLS after substituting $\underline{\Pi}_2$'*X for LR' and estimate (7) by probit ML after substituting $\underline{\Pi}_1$*X for IR $\Rightarrow$

$\Rightarrow$Estimated Parameters:

- $\gamma_1 \sigma_2$
- β_1
- σ_1
- γ_2 / σ_2
- β_2 / σ_2
- σ_{12} / σ_2

DATA: Table 1,2 and 3

Results

Litigation Insurance Hypothesis - Tab. 4

Results (cont'd)

Litigation Deterrence Hypothesis - Tab. 5/A

Results (cont'd)

Litigation Deterrence Hypothesis - Tab. 5/B

Conclusions:

- Evidence supports both Insurance and Deterrence Hp
- More importantly, highlights the importance of controlling for endogeneity of the explanatory variables employed

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