Estimating the Cost of Capital Market Distortions: Evidence from Chinese Overseas IPOs by Feng, Wei, Wu and Yuan

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Existing literature on China’s capital market distortion

- **misallocation between SOEs and POEs**: Dollars and Wei (2007), Hsieh and Klenow (2009), Song et al. (2011), Wu (2018), Huang et al. (2020)
- **misallocation among industries**: Brandt et al. (2013), Chang et al. (2016), Chen et al. (2023)
- **distortion on firm entry**: Brandt et al. (2012), Midrigan and Xu (2014)
- **capital control**: Liu et al. (2020)

This paper: Role of capital market distortion on stock valuation discount puzzle.
China’s capital market distortion

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- This paper: Role of capital market distortion on stock valuation discount puzzle.
Summary of Main Findings

- A model of IPO location choice: capital market distortion v.s. negative selection
- An endogenous treatment effect model to estimate the effects of capital market distortion: unobservables can affect both the IPO location and post-IPO valuation.
  - Using (1) IPO waiting time and relative market index between overseas and (2) domestic stock market prior to a firm’s IPO application date as IVs.
  - Using policy shocks (IPO suspension, PE restrictions, capital controls) to validate capital market distortions
- A structural estimation of the welfare loss due to capital market distortion.
- Takeaway: a 66% valuation discount to bypass China’s capital market distortions and a 22% welfare gain from removing such distortions.
A recap with $q$ Theory

- The firm solves the following problem

$$V(K) = \max_{I,K',x,\alpha} \frac{1}{1 + r'} \left[-H(x) + V(K')\right]$$

s.t.

$$I \left(1 + a\frac{I}{K}\right) + wL \leq F(K, L) + x$$

$$K' = (1 - \delta)K + I$$

$$0 \leq \alpha \leq 1$$

where the equity issuance cost function

$$H(x) = H_1(\alpha x) + H_0((1 - \alpha)x)$$

- $H_1(H_0)$ denotes the equity issuance cost in the overseas (domestic) market
 Choices of equity issuance and capital investment

- Euler equation

\[ \mu = \frac{1}{1 + r'} \left[ H_x(x') \left( F_{k'} + a \left( \frac{l'}{K'} \right)^2 \right) + \mu'(1 - \delta) \right], \]

where \( \mu \) is Tobin’s q.

- Let \( \delta = 1 \), we have

\[ \mu = \frac{1}{1 + r'} H_x(x') \left( a \left( \frac{l'}{K'} \right)^2 + F_{k'} \right) \]
The choice to go listed in overseas ($\alpha = 1$) or in China ($\alpha = 0$)

$$x [H_{1,x}(\alpha x) - H_{0,x}((1 - \alpha)x)] = \gamma - \eta$$

where $\gamma$ and $\eta$ is the Lagrangian multiplier associated with $\alpha \geq 0$ and $\alpha \leq 1$

- Assume that for a firm $i$, $H^i_h(x) = c^i_h x^i + b(x^i)^2$, $h \in \{0, 1\}$, $c^i_1 \neq c^i_0$.

- Case 1: A firm $j$ choosing to list domestically ($\gamma > 0$ and $\eta = 0$):
  $H_x(x') = H_{0,x}(x')$.
  $$c^j_1 > c^j_0 + 2bx^j$$

- Case 2: A firm $i$ choosing to list overseas ($\gamma = 0$ and $\eta > 0$):
  $H_x(x') = H_{1,x}(x')$.
  $$c^i_1 + 2bx^i < c^i_0$$
The gap of Tobin’s q between a firm \( i \) listed overseas and a firm \( j \) listed domestically:

\[
q_i^1 - q_j^0 = E(q_1 | t = 1) - E(q_0 | t = 0)
\]

\[
q_i^1 - q_j^0 = MPK^i_1 - MPK^j_0 + \tilde{H}_1^{i,x'} - \tilde{H}_0^{j,x'}
\]

\[
= MPK^i_1 + \tilde{H}_0^{i,x'} - \left( MPK^j_0 + \tilde{H}_0^{j,x'} \right) + \tilde{H}_1^{i,x'} - \tilde{H}_0^{i,x'}
\]

\[
= MPK^i_1 + \tilde{H}_0^{i,x'} - \left( MPK^j_0 + \tilde{H}_0^{j,x'} \right) + \underbrace{E(q_1|t=1)}_{E(q_0|t=1)} - \underbrace{E(q_0|t=0)}_{E(q_1-q_0|t=1)}
\]

where \( q_h^i \equiv \log(\mu_h^i) \), \( MPK^i \equiv \log(F_k^i + a \left( \frac{l_i}{K_i^j} \right)^2) \), \( \tilde{H}_h^{i,x'} \equiv \log(H_h^{i,x}(x')) \).

For a marginal firm: \( q_1^i - \tilde{H}_1^{i,x'} = q_0^i - \tilde{H}_0^{i,x'} = MPK^i - \log(1 + r') \).
Explanations for Overseas Valuation Discount: $q_1^i - q_0^j < 0$

- $q_1^i = q_0^j$ if (1) symmetric capital market distortion (2) MPK the same between domestically and overseas listed firms
- $q_1^i - q_0^j < 0$ caused by either
  - asymmetric capital market distortion: $\tilde{H}_{1,x'}^i - \tilde{H}_{0,x'}^i < 0$, or
  - negative selection: $MPK_1^i < MPK_0^j$ (since $H_{0,x}(x') > H_{0,x}^j(x')$)
- This paper finds empirically that $MPK_1^i > MPK_0^j$ and $\tilde{H}_{1,x'}^i \ll \tilde{H}_{0,x'}^i$
Discussion
General Comments

- An excellent paper! Learned a lot while enjoying reading.
- Comments mainly focusing on the paper’s policy implications
private v.s. social cost of capital market distortion

Listing domestically increases $q$ and, thus, $qK$.

However, higher $q$ crowds out $K$ in equilibrium, implying exacerbated capital misallocation.

- Intuition: given that firms face the same asset demand curve in domestic and overseas markets, higher $q$ in the domestic market implies higher asset supply $qK$.
- Households (stock investors) demand a higher asset returns, increasing the funding cost of capital.

Since originally overseas listed firms have higher MPK, this implies higher MPK dispersion.
Asset Market Equilibrium

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Crowding-out Effects on Capital Investment

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Comments 2: Policy distortion or microprudential policy?

- How to interpret the higher cost of domestic equity issuances (listing) for overseas listed firms?
  - may reflect microprudential policy: e.g. IPO suspension for real estate firms
- April 2010: State Council mandated CSRC to pause IPO for real estate developers.
- Oct. 2010 (Reinstated in May 211): CSRC announced postponement of reviewing applications for M&A by real estate developers
- In the decade following 2012, few real estate developers got listed in A share.
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2021-03-24 09:47
The paper uses IPO suspension (2012-2014) and PE restrictions (2014-2020) as policy shocks.

However, IPO suspension in 2012 could endogenously respond to fast growth in IPO in 2010 and 2011.

- In 2010, 345 firms IPO, 82.54% of total applications; in 2011, 265 IPOs, 76.81% of total applications.

Parallel pretrend test between domestic and overseas listed firms.
Comment 4: Speculation as an alternative explanation for H-A puzzle?

- To what extent higher domestic stock valuation capture difference in expected capital gains?

\[
\mu = \frac{1}{1 + r'} \left[ \mu'(1 - \delta) + H_x(x') \left( a \left( \frac{l'}{K'} \right)^2 + F_{k'} \right) \right],
\]

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Overseas IPO

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Comment 5: quantitative importance of capital control

- Does overseas IPO as regulatory arbitrage against capital control apply to FIE only?
- If not, what kinds of non-FIE have such incentives?
- How important is this channel?
Concluding Remarks

- Big question, novel idea, and careful empirical design
- If any, more discussion on the cost of capital market distortions
- Look forward to publication in a top journal with revision