Persistent Blessings of Luck: Endogenous Heterogeneity and Deal Flows in Venture Investment

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Introduction
An Age Old Question

- Delegated investment and asset management: USD $71.4 trillion AUM and about USD $100 billion manager profits
Performance Persistence as Skill

• Lack of persistence in investor returns.
  • Mutual funds: since Jensen (1968)
  • Hedge funds: Brown et.al. (1999) and Griffin and Xu (2009)
  • Institutional trading desks: Timmermann and Blake (2005), Busse et.al. (2010)
  • Investment newsletters: Graham and Harvey (1996)
  • Retail investors: Barber and Odean (2000)

• Capital flow and diminishing returns:
  • Berk and Green (2004), Pastor and Stambaugh (2012)
  • Skilled managers manage larger funds and get paid more.
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It depends

- Private equity: venture capital
  - Kaplan and Schoar (2005):
    - Returns persist strongly across subsequent funds correlation of 0.5, even 0.7 among VCs
  - Korteweg and Sorensen (2017): top quartile 7 – 8% more than bottom
  - Investment Level: Nanda, Samila, and Sorenson (2017)

- Managers differ in skills.
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“The best firms attract the best entrepreneurs and deals, which provide the best returns, which increases the brand recognition, which attracts the best entrepreneurs and deals.”

– Alexander Rampell
Founder of Trial-Pay &
Partner at Andreessen Horowitz
Our Approach

- Alternative channel for VC fund performance persistence
- How is private equity different? Endogenous deal flows.
- Generalization beyond private equity and contracting
  - Endogenous heterogeneity of fund characteristic.
  - Endogenous investment opportunity set.
  - Delegated investment, firm hiring, student loans.
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Preview of Main Results

- A dynamic model of venture investment with contracting focus:
  - Homogeneous managers.
  - Endogeneous design and allocation of funding contracts.
  - Two-sided matching of entrepreneurs and VCs.

- Main Findings
  - Persistence in performance for overall return, net-of-fee, and manager compensation.
  - Endogenous heterogeneity: continuation value and effort provision.
  - Assortative matching between innovative projects and funds.
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Illustration: Homogeneous New Funds

**Fund A**

\((\alpha, V_f, V_s)\)

**Fund B**

\((\alpha, V_f, V_s)\)
Illustration: One Period Luck

Fund A
\((\alpha_C, V_f^C, V_s^C)\)

Fund B
\((\alpha_C, V_f^C, V_s^C)\)

Good Luck
\((\alpha_I, V_f^I, V_s^I)\)

Bad Luck
\((\alpha_C, V_f^C, V_s^C)\)
Illustration: Endogenous Deal Flow

I-projects

Good Luck

Fund A
$(\alpha_I, V^I_f, V^I_s)$

Fund A
$(\alpha_C, V^C_f, V^C_s)$

Fund B
$(\alpha_C, V^C_f, V^C_s)$

Fund B
$(\alpha_C, V^C_f, V^C_s)$

Bad Luck

C-projects
Illustration: Performance Persistence

Fund A
\( (\alpha_I, V_f^I, V_s^I) \)

Good Luck

Fund A
\( (\alpha_C, V_f^C, V_s^C) \)

Good Performance

Fund B
\( (\alpha_C, V_f^C, V_s^C) \)

Bad Luck

Fund B
\( (\alpha_C, V_f^C, V_s^C) \)

Mediocre Performance

C-projects

I-projects
Interpretation of Results

- Persistent dispersion in performance does not necessarily imply skill difference.
- Amplification of skill differences.
- A framework to think about
  - Evolution of contracts and compensation: tiered contracts, inter-contract incentives, “incumbent” bias.
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Equilibrium & Contracts
Two Costs: Incumbent Rent and Replacement

- Replacement and job security are costly to LP: giving rent without incentivizing effort.
- **Job-for-Life Contract**
  - No replacement cost but high agency rent for incumbent GP.
- **Temporary-Worker Contract**
  - High replacement cost but low agency rent for incumbent GP.
- **Optimal contract**: renewal upon success.
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Equilibrium with Hierarchical Contracts

- Patient investor: $\beta \geq p_I(1 + \Delta)$

- I-contracts:
  1. Stay if success;
  2. Demoted to C-contracts if fail.

- Tiered contracts.

- New GPs start with C-contracts.

- C-contracts:
  1. If success, then with some prob. C-contract GPs promote to I-contract;
  2. Kicked out if fail.
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Discussions
Predictions

- **Skill vs luck (Nanda et al 2017):**
  - Other funds’ average performance as IV
    - Industry, Location and Timing can be thought of as common shock in luck
    - Predict agent’s next round performance
  - Long-term mean reversion
    - Persistence comes form the enduring impact of one period luck
    - Long term performance affected by many rounds of luck
    - Law of large number...
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Conclusion
Key Takeaways

- A dynamic model of delegated investment that produces performance persistence without skill heterogeneity.
- Persistent blessings of luck.
- Broadly consistent with empirical findings in VC.
- Generalized version of “Matthew Effect” and “Snowballing”.