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

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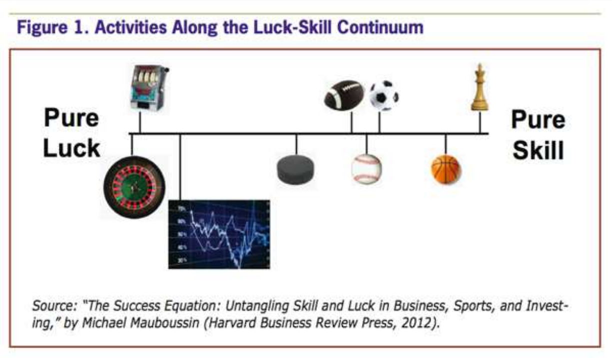
Introduction

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)
  - Individual Partner level: Ewens and Rhodes-Kropf (2015)
- Managers differ in skills.

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Skill vs Luck

"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
(α, V_f, V_s)

Fund B
(α, V_f, V_s)

Illustration: One Period Luck

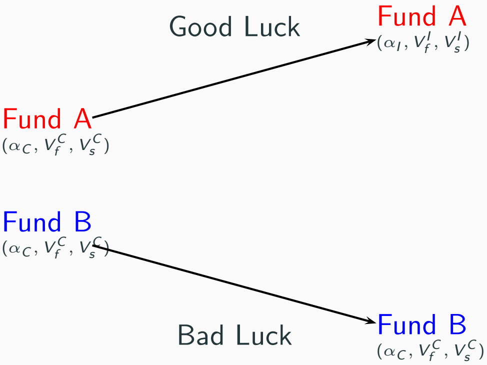


Illustration: Endogenous Deal Flow

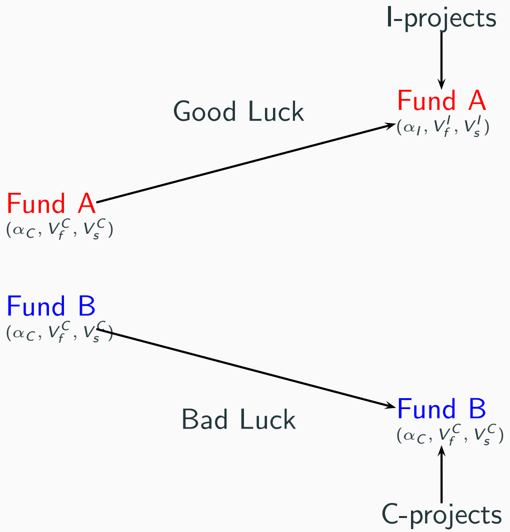
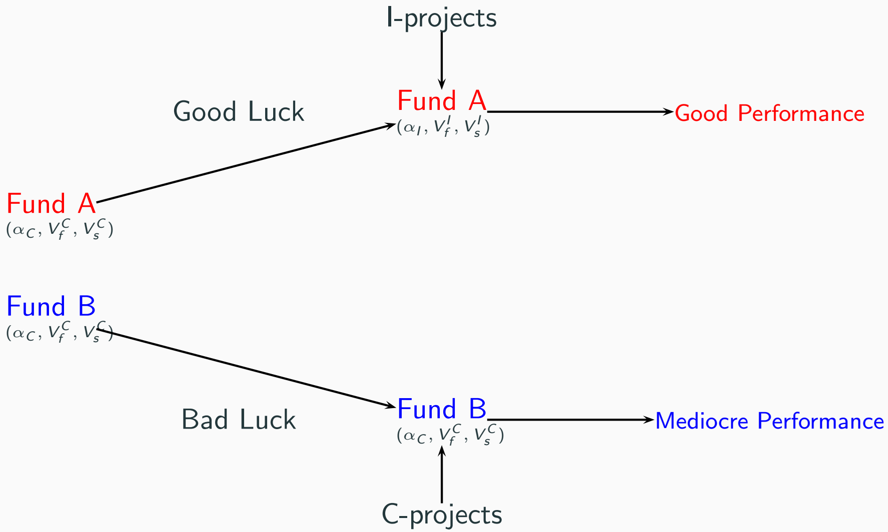


Illustration: Performance Persistence



Interpretation of Results

- Persistent dispersion in performance does not necessarily imply skill difference.
- Amplification of skill differences.
- A framework to think about
  - Motivating Innovation: Manso (2011), Tian and Wang (2014).
  - Entrepreneur's fund choice: Hsu (2004)
  - 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;
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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".