
The Systemic Effects of Benchmarking

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CSRA Spring Meeting

MIT, May 2015

“To what extent can competitive pressures create incentives to alter portfolio allocation in ways that [...] do not take into account risks to the investment vehicle or the broader financial markets?”

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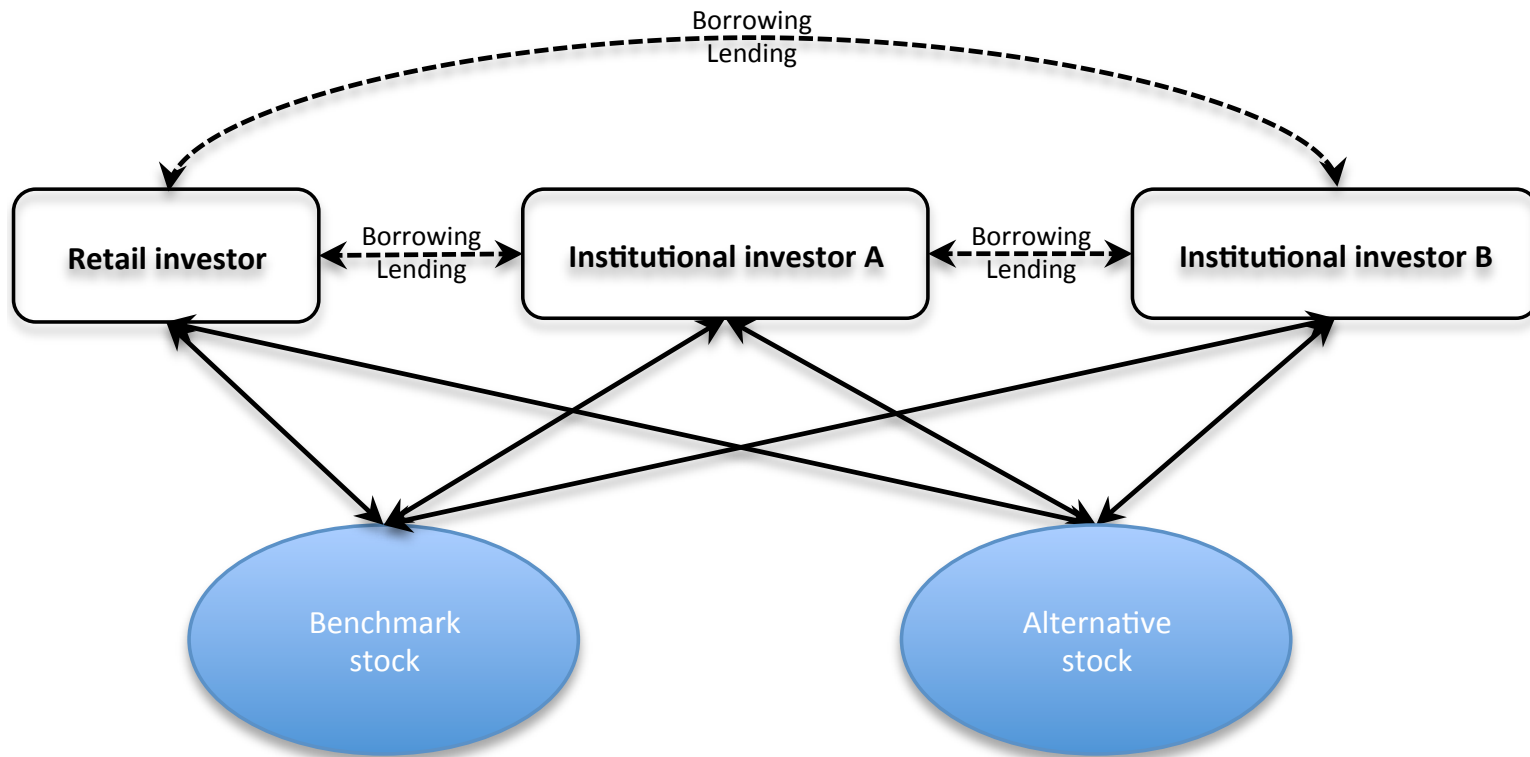
Financial institutions and benchmarking

- U.S. financial institutions manage more than \$50 trillion worth of assets (OFR (2013))
- One special feature of financial institutions is that their managers are rewarded for returns that “beat” the market as measured by a *benchmark*
- Therefore, institutional managers may have incentives to invest differently than predicted by the standard mean-variance theory
“As long as the music is playing, you’ve got to get up and dance.” Charles Prince, CEO Citigroup
- Because of their sheer size, the trading behavior of financial institutions may impact asset prices and risks on financial markets

Our findings

- Benchmarking may induce trading behavior by institutional investors that exposes market participants to tail risk
- This is particularly pronounced in scenarios in which the benchmark stock underperforms
- In such scenarios, institutional investors react strongly to any cashflow news, inducing large market volatility and potentially initiating fire sales when news shocks occur
- However, tail risk is only short lived: all investors survive in the long run under mild assumptions
- Our preliminary results suggest that strong benchmarking incentives may be welfare reducing for retail investors

The market



The investors

- The retail investor is a standard log-utility optimizer:

$$\sup \mathbb{E} \left[\int_0^\infty e^{-\rho_R t} \log c_t^R dt \right], \text{ s.t. } \mathbb{E} \left[\int_0^\infty \xi_t c_t^R dt \right] \leq \alpha^R W_0.$$

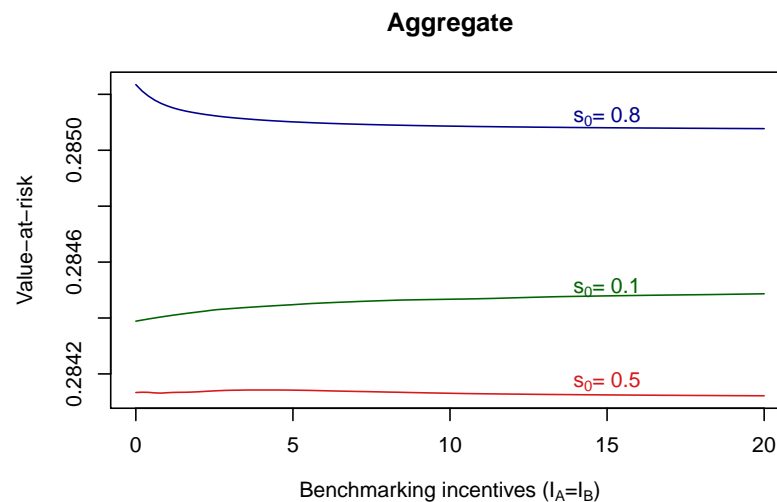
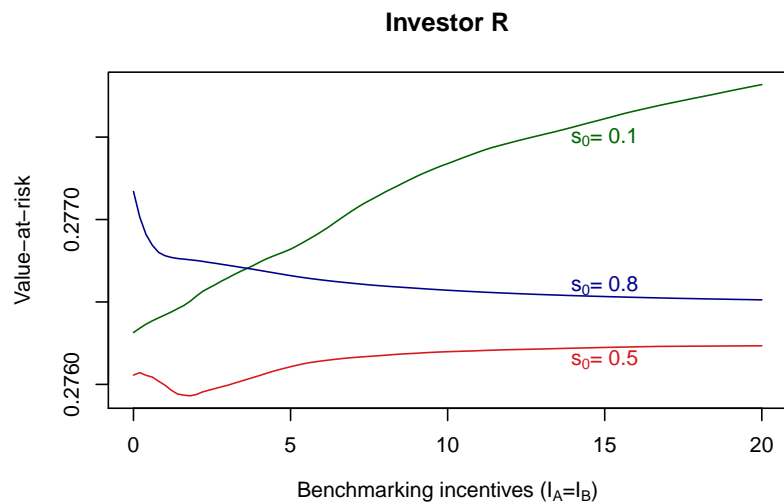
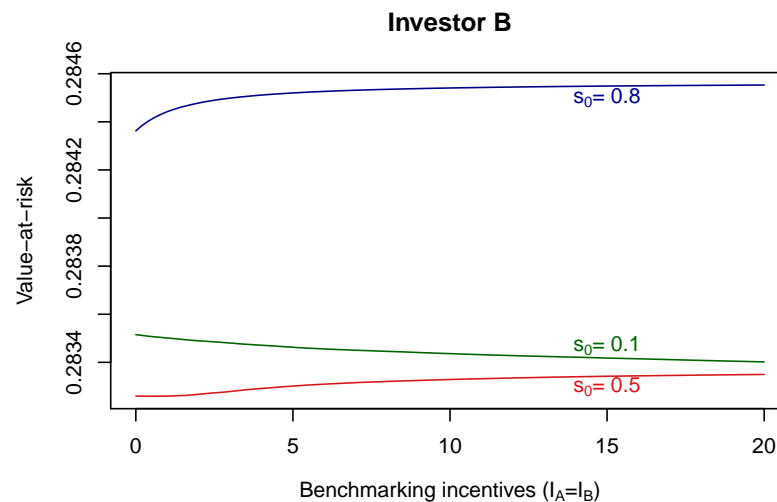
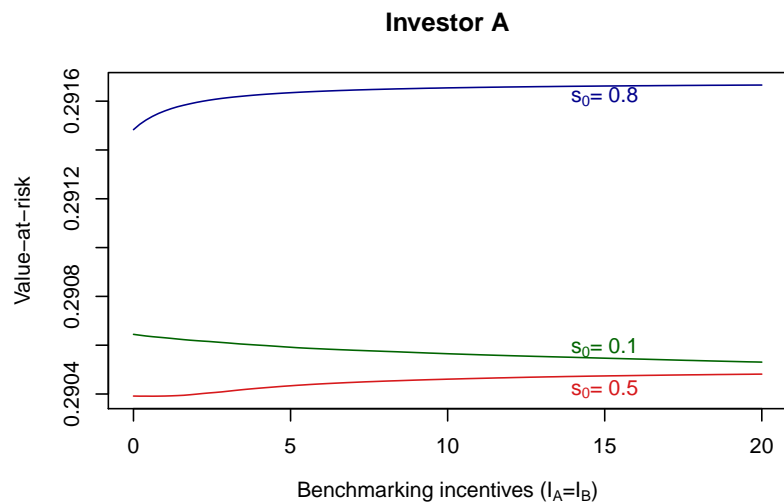
- We generalize the reduced-form model of institutional investors of Basak & Pavlova (2013)
- Institutional investor j solves:

$$\sup \mathbb{E} \left[\int_0^\infty e^{-\rho_j t} (1 + I_j s_t) \log c_t^j dt \right], \text{ s.t. } \mathbb{E} \left[\int_0^\infty \xi_t c_t^j dt \right] \leq \alpha^B W_0,$$

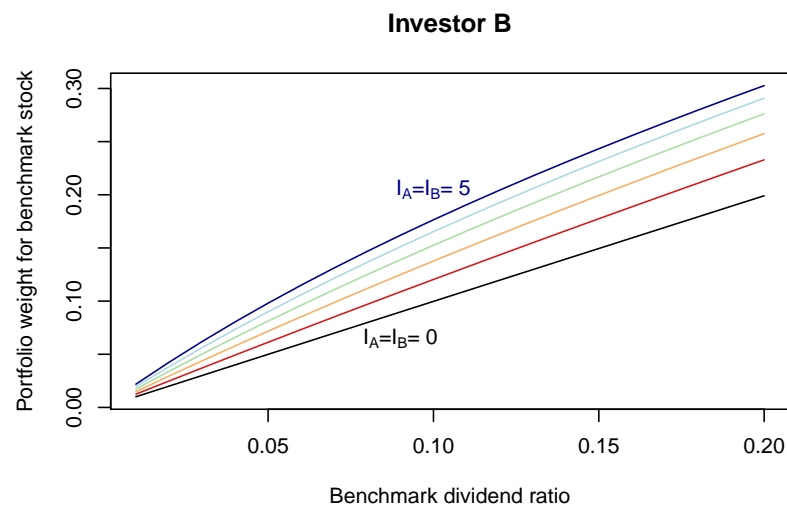
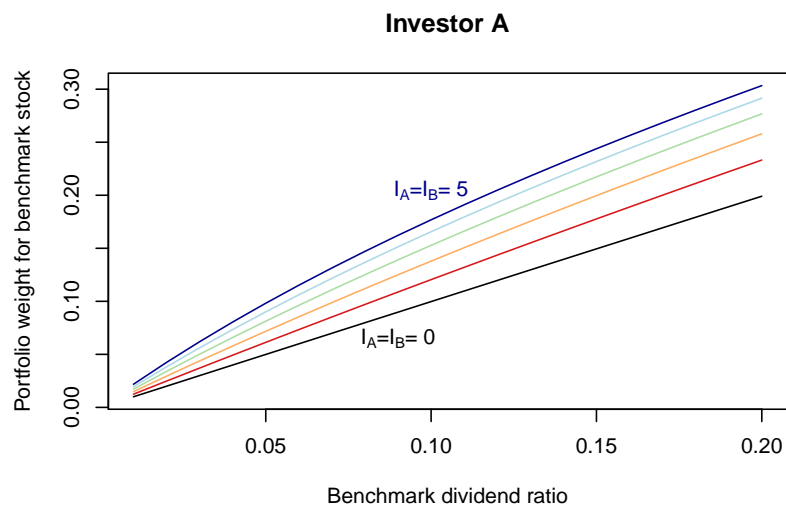
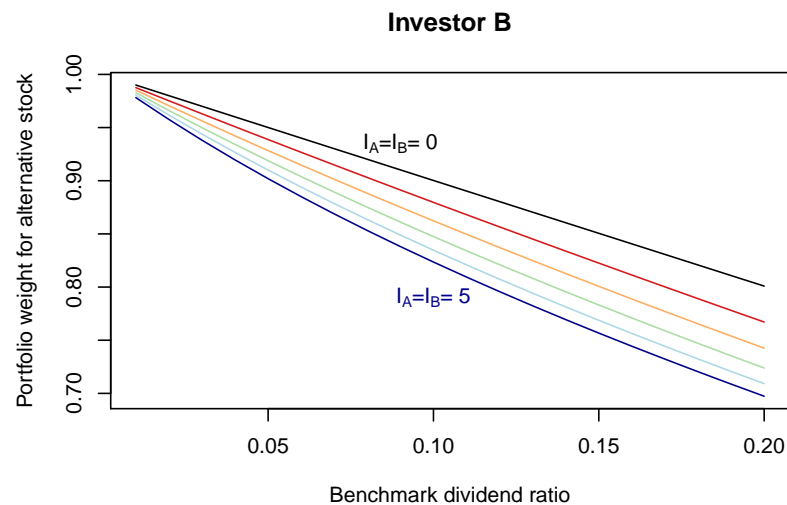
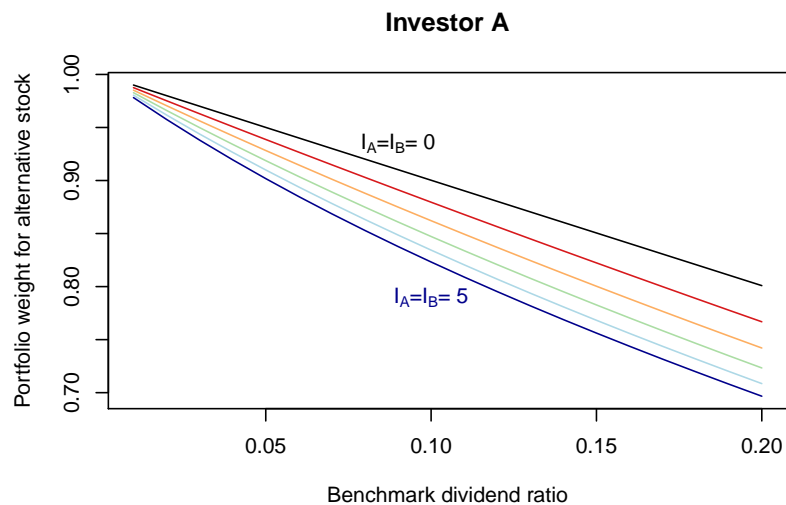
where s_t is the ratio of dividends attributed to the benchmark, and I_j measures the strength of the benchmarking incentives faced by the institutional investor

- This model capture several features of managerial compensation (Cuoco & Kaniel (2011), Li & Tiwari (2009), Stoughton (1993))

Value-at-risk over 1-year horizons



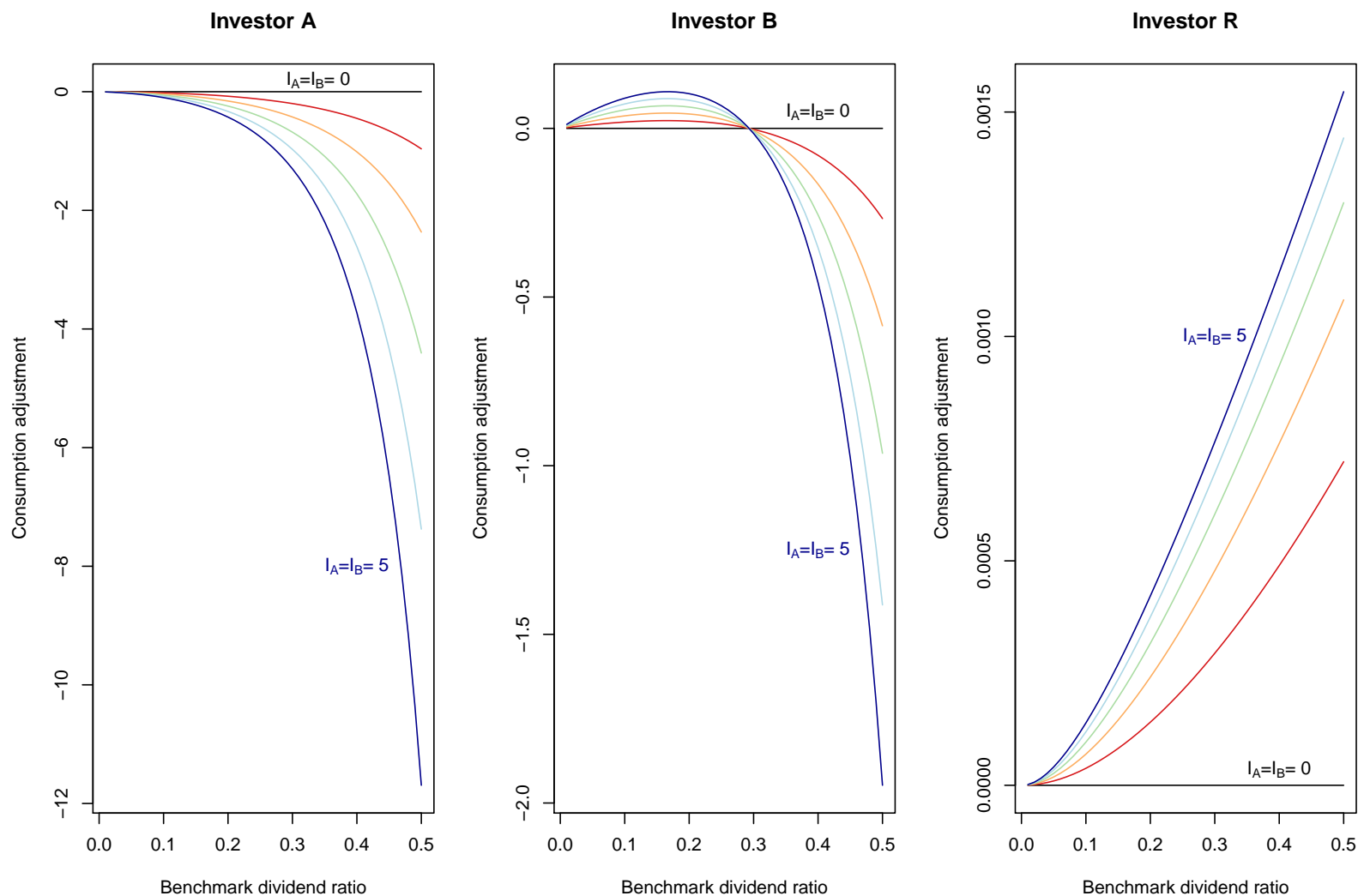
Portfolio weights



Survival

- In our model, either all investors survive or all investors fail in the long run as $t \rightarrow \infty$
- Failure can only occur with positive probability in the long run if one of the stocks has negative expected dividend growth rate
- Investors may be exposed to higher tail risk when benchmarking incentives are large, but these risks are only short-lived

Welfare analysis



Summary

- Benchmarking incentives may induce trading by institutional investors that exposes retail investors as well as the aggregate market to tail risk
- This occurs primarily because institutional investors become nervous when the benchmark underperforms, resulting in large trading volumes, potential fire sales, and higher volatility
- However, tail risk is short lived as all investors survive in the long run under basic assumptions
- Strong benchmarking incentives may be welfare reducing for retail investors, as well as for more patient institutional investors

References

Basak, Suleyman & Anna Pavlova (2013), 'Asset Prices and Institutional Investors', *American Economic Review* **103**, 1728–1758.

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