Mutual Fund Flows and Performance in Rational Markets (Berk, Green 2004 JPE)

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Empirical facts:

- Mutual fund managers on average cannot outperform passive benchmarks
- Relative performance of mutual fund managers is mostly unpredictable from past relative performance
- Investors chase mutual fund performance

Traditional view: mutual fund managers have no skill and superior performance is the result of luck (Negative story), asymmetric information or moral hazard based explanations

This paper: empirical facts can be generated under rational and competitive market settings (Positive story)
Methodology and assumptions

This is an industrial organization paper not a typical "finance" paper

Key ingredients:
- Theory of firms
- Convex cost function
- Bayesian updating rule

Key assumptions:
- Diseconomies of scale (high cost in trading large block, price impact)
- Free entry of investors (competitive market, no budget constraint)
- Differential intrinsic manager ability to generate high return
- Learning by observing past returns
- Risk neutrality
- Fixed fee but no performance fee (applicable to mutual funds)
Different schools of thoughts

School of evil managers:

- Asymmetric information - managers have superior information over investors and managers extract rent from investor
- Moral hazard - managers’ effort levels are unobservable and there is principal agent problem

Why are these imperfections absent in the model?

- Neither investors nor managers know the true managerial talents and even if managers know, they do not have credible ex-ante signalling mechanism
- There is no effort in the model thus no moral hazard (but still misaligned incentive?)

School of angel managers (this paper):

- Managers are skilled so they should earn rent
- Market is efficient and optimal despite all the pie goes to managers (managers have all the property rights)
Gross return:

\[ R_t = \alpha + \varepsilon_t \]

Idiosyncratic risk:

\[ \varepsilon_t \sim N(0, \sigma^2) \]

Cost function (\( q \) is the fund size):

\[ C(q) \geq 0, \quad C'(q) > 0, \quad C''(q) > 0, \quad C(0) = 0, \quad \lim_{q \to \infty} C'(q) = \infty \]

Investors get:

\[ TP_{t+1} = q_t R_{t+1} - C(q_t) - q_t f \]

Investors’ prior on managerial ability:

\[ \alpha \sim N(\phi_0, \eta^2) \]

Precisions:

\[ \omega = 1/\sigma^2, \quad \gamma = 1/\eta^2 \]
Excess return:
\[ r_{t+1} = \frac{TP_{t+1}}{q_t} = R_{t+1} - \frac{C(q_t)}{q_t} - q_t f \]
By perfect competition for managerial talent:
\[ \mathbb{E}_t(r_{t+1}) = 0 \]
Bayesian learning:
\[ \phi_t = \phi_{t-1} + \frac{\omega}{\gamma + t\omega} r_t \]
\[ c(q_t) = c(q_{t-1}) + \frac{\omega}{\gamma + t\omega} r_t \]
Implications

- Good performance (a positive realization of $r_t$) leads to fund inflow ($q_t > q_{t-1}$).
- Fixed fee is equivalent to optimal fee with passive indexation.
- Old and large funds have larger portion of passive investment.
- Less informative returns imply less responsive flows.
- Longer time implies better learning and thus flows are less responsive to new returns.
- Higher fees make mutual funds less attractive relative to passive ones and thus flows are less responsive to new returns.
Fig. 1.—Flow of new funds as a function of return. The curves plot the response in the flow of new funds to the previous period’s return (i.e., eq. [35]). The steepest curve shows the response for two-year-old funds (i.e., the return is from year 2 to year 3). The remaining curves show the response for five-, 10-, and 20-year-old funds, respectively. The parameter values used are $\phi = 0.03$, $\phi_0 = 0.065$, $f = 0.015$, $\gamma = 277$, and $\omega = 25$. 
Fig. 2.—Percentage of surviving funds. The bars show the fraction of funds as a function of the number of years in business. Light bars are the actual survival rates computed from the CRSP mutual fund database. The dark bars are what the model predicts the survival rates should be. The scale is marked on the left-hand axis. The line marks the total number of funds that could have survived at each age. The scale for this line is marked on the right-hand axis.
Fig. 3.—Flow of funds. The dashed line shows the flow of funds for two-year-old funds produced by the model (using the parameters reported in table 1) superimposed over the actual flow of funds plot (solid lines) for these funds as reported in Chevalier and Ellison (1997, fig. 1). Chevalier and Ellison report the estimated curve (middle line) as well as the 90 percent confidence intervals, the outer lines.
Intuitions

- Flows are driven by investors’ imperfect learning.
- If they know managerial ability in advance, there will be no flow as they make efficient allocation instantly.
- Learning is the substitute for asymmetric information under efficient framework.
- Investors earn zero expected return which is similar to perfect competitive firms earn zero economic profits ($P = mc$).
Follow up questions

- Can investors invest in a lot of funds to diversify away the idiosyncratic risk?
- Can the model explain asymmetric response in fund flows? (Chase winners but hold on with losers)
- How about the predictability of past relative performance?
- This is a partial equilibrium model. Would flows affect the aggregate?
- What are the implications on close-ended funds without free entry of investors?
- Do performance fees in hedge funds motivate managers to increase alpha rather than NAV?
- Should we ignore market imperfections completely?
- From political economy standpoint, should managers get all the rent? They may have the skill but lack capital. Would that induce excessive risk taking?
- What does it mean by optimal in financial market (Pareto efficiency)? Isn’t everything zero-sum game?