Mutual Fund Performance: Using Bespoke Benchmarks to Disentangle Mandates, Constraints and Skill

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Motivation

- Mutual fund managers face significant investment constraints, which should reduce their performance.
- The paper proposes a new benchmark that incorporates the impact of various investment constraints.

Comments

1. Objective Function
2. Alternative Performance Measures
3. Out-of-Sample Performance
4. Economic Significance
5. Endogeneity of Constraints

(1) Objective Function

- Expected utility maximization for fund returns:

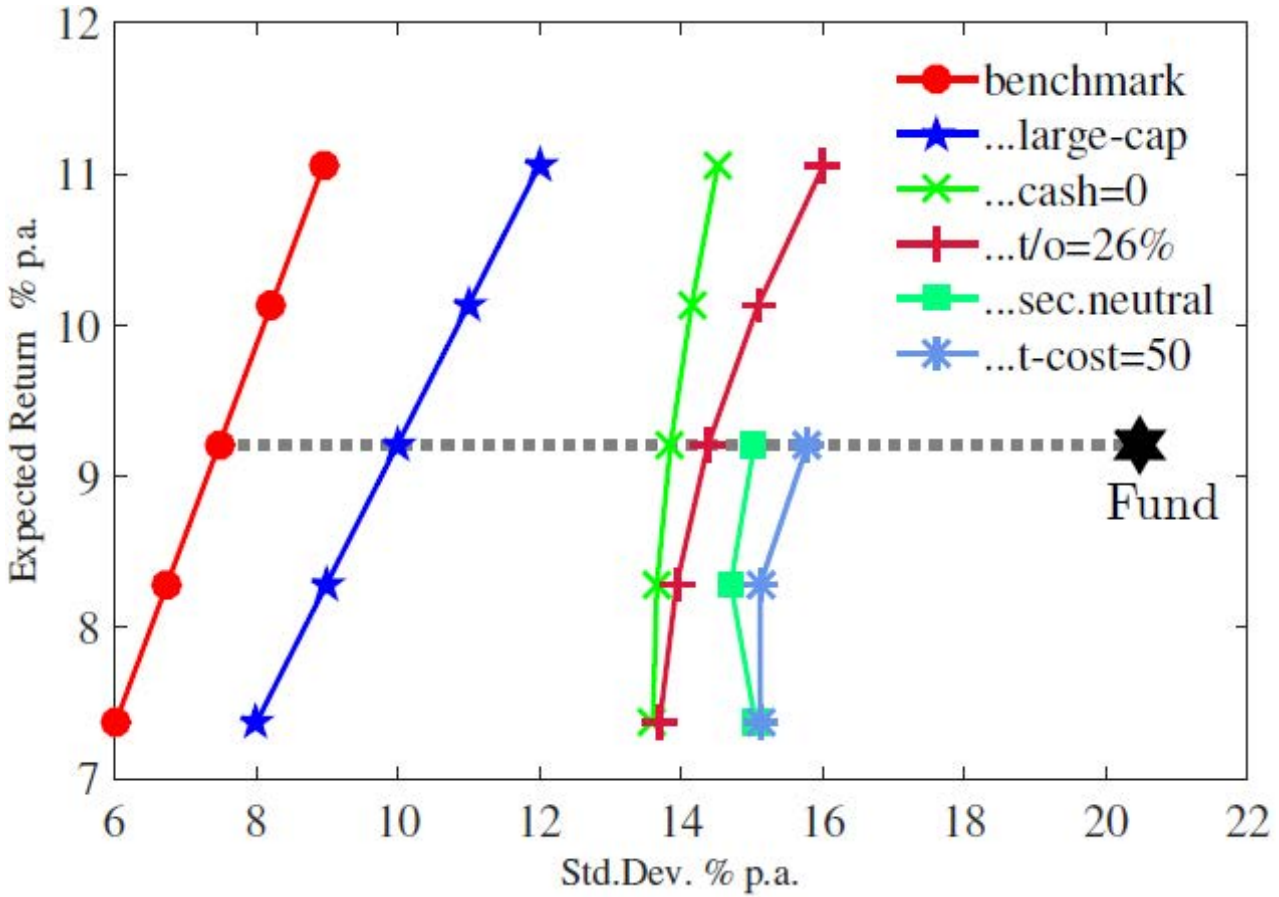
$$max_w E_t \left[u \left(\sum_{i=1}^{N_t} w_{t,i} r_{t+1,i} \right) \right]$$

- Linear parameterization of fund's portfolio weights using stock characteristics (Brandt, Santa-Clara, and Valkanov (2009)):

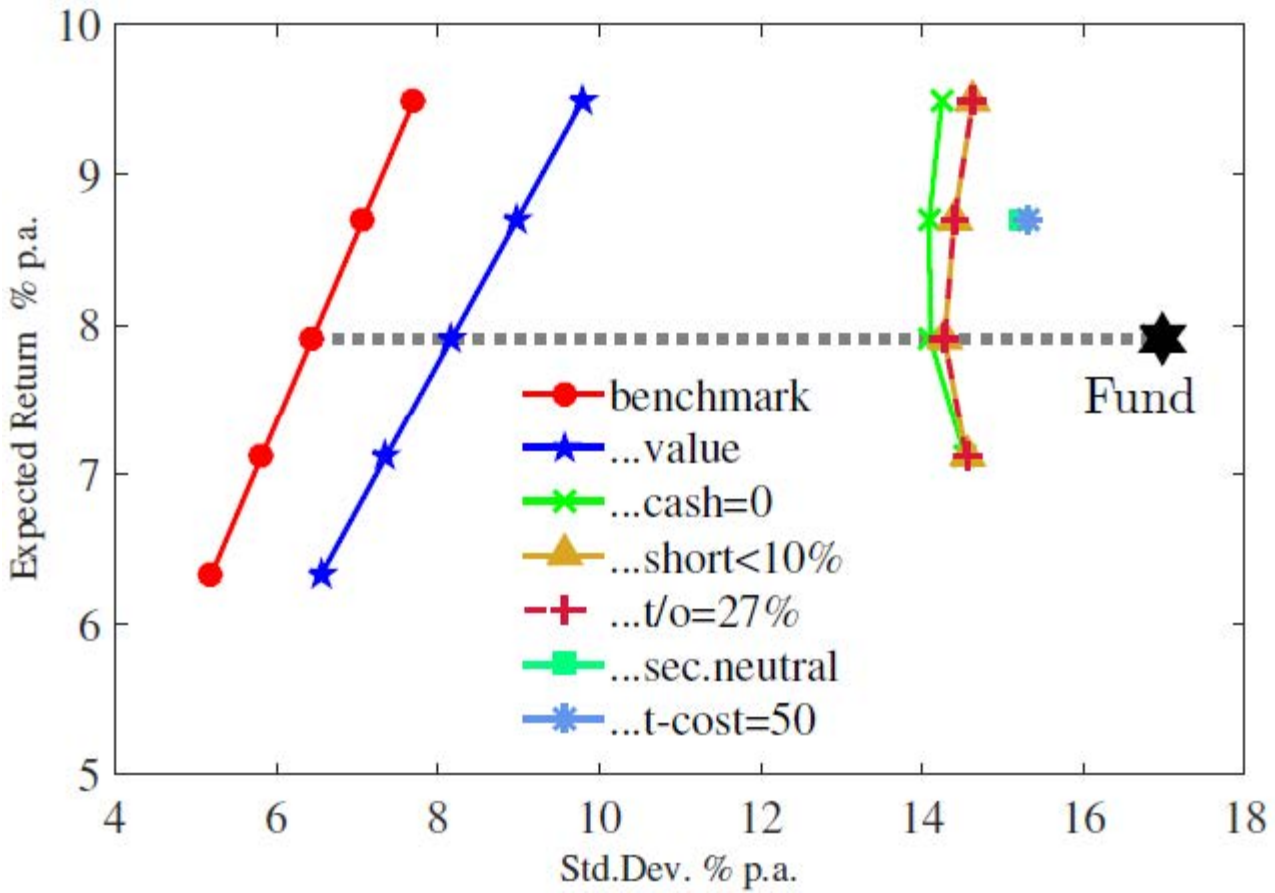
$$w_{t,i} = \overline{w}_{t,i} + \frac{1}{N_t} \theta^\intercal \tilde{C}_{t,i}$$

- Inclusion of portfolio constraints:
  - Investment styles
  - Cash and leverage
  - Short sales
  - Portfolio turnover
  - Transaction costs

Imposing Fund-Specific Mandates and Constraints: Value Line Large Companies Fund



Imposing Fund-Specific Mandates and Constraints: Janus Investment Fund



Objective Function

- Typical mutual fund investors are fairly well diversified:
  - The median mutual fund investor owns five different mutual funds (ICI).
  - Mutual fund investor can adjust portfolio leverage through bank accounts, Treasury securities, loans, and mortgages.
- The utility of an investor depends on the complete portfolio and not just on an individual fund.
- Total risk of a fund is less relevant than its contribution to the risk of the portfolio.

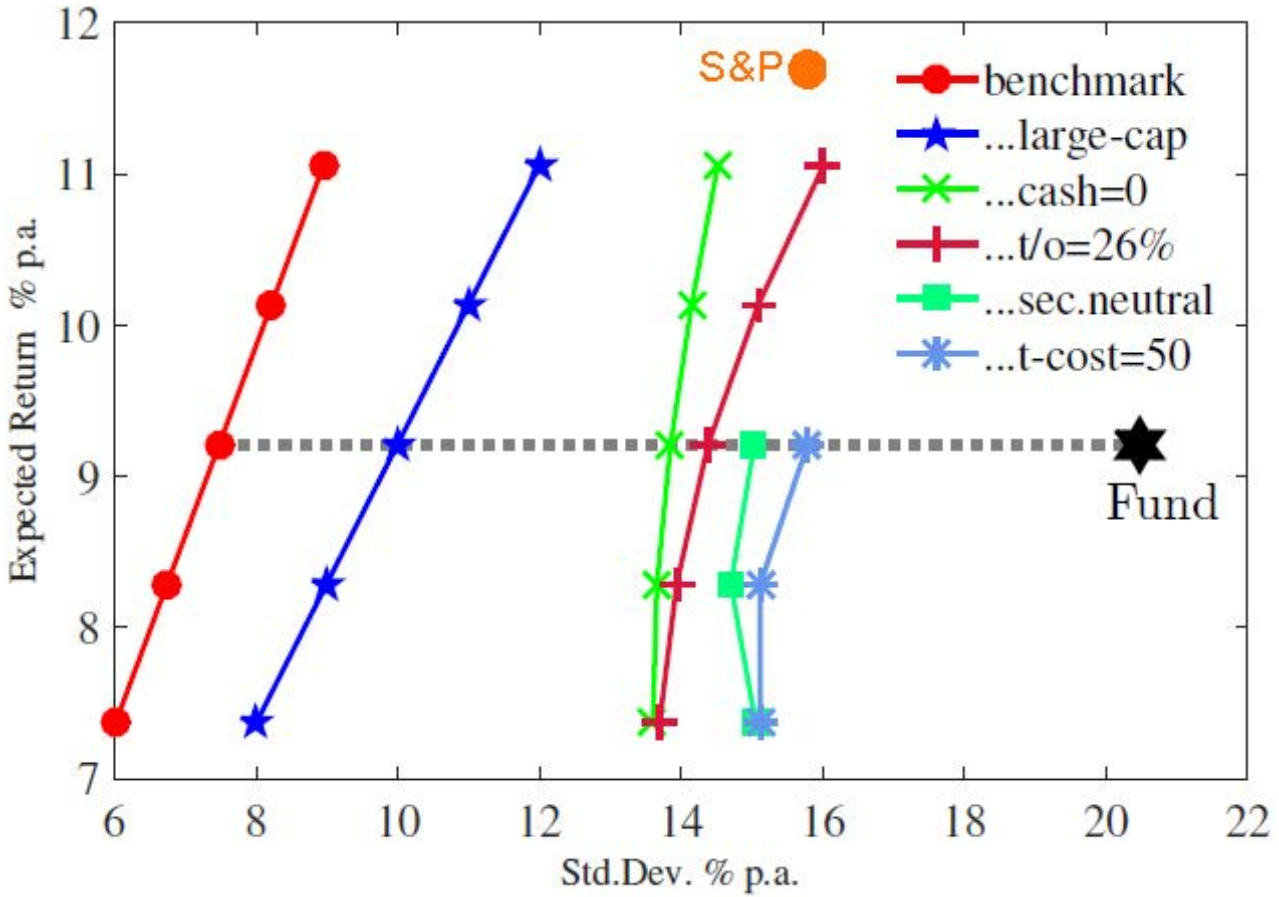
(2) Alternative Performance Measures

- Measures like the Information Ratio, which is the ratio between the benchmark-adjusted return and the tracking error, may better capture the value added of an individual mutual fund:

$$IR_i = \frac{E(r_i - r_b)}{\sqrt{VAR(r_i - r_b)}}$$

- Index benchmark is typically a highly-constrained portfolio:
  - Fixed investment universe
  - No leverage or cash holdings
  - No short-selling
  - Minimal turnover
- Thus, the most commonly used benchmark indices in practice are highly constrained.

Imposing Fund-Specific Mandates and Constraints: Value Line Large Companies Fund



Alternative Performance Measures

- Academic-based performance measures:
  - Factor-based performance measures
    - For example, Jensen (1968), Carhart (1997), Berk and van Binsbergen (2015)
  - Holdings-based performance measures
    - For example, Daniel, Grinblatt, Titman, and Wermers (1997), Kacperczyk, Sialm, and Zheng (2008), Hoberg, Kumar, Prabhala (2018)

(3) Out-of-Sample Performance

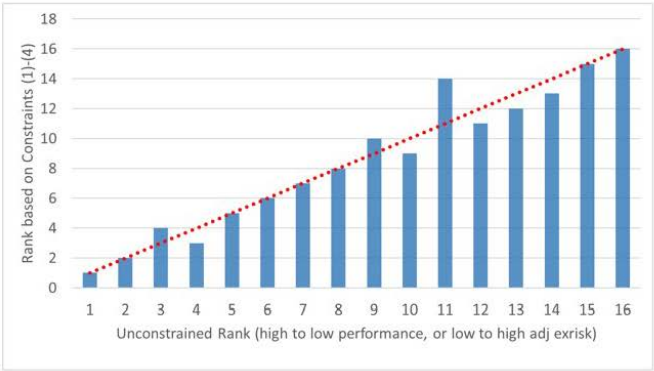
- The characteristics used in the portfolio optimization are market capitalization, book-to-market ratio, and momentum.
- Optimizing over these characteristics over the period 1974-2013 creates very high maximum Sharpe ratios:
  - In-sample Sharpe ratio: 1.2
  - Out-of-sample Sharpe ratio: 1
- "Out-of-sample" results are not truly out-of-sample, since they rely on characteristics that performed well ex-post.
  - McLean and Pontiff (2016) document a performance deterioration after the publication of various anomalies (e.g., Banz (1981), Fama and French (1992), Jegadeesh and Titman (1993))

(4) Economic Significance

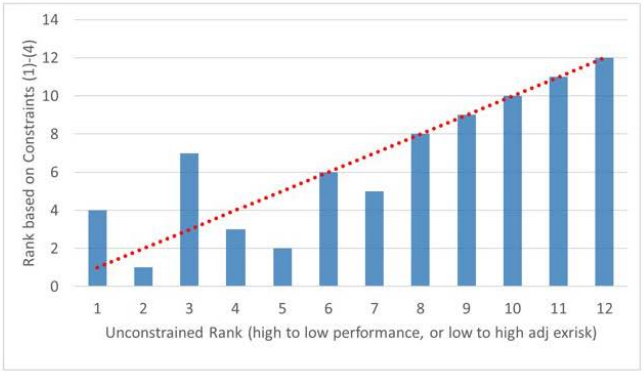
- The authors argue that the rankings of funds differ significantly before and after adjusting for constraints and mandates.
- However, the differences are economically relatively small, especially for large-cap funds.
- Differences may be smaller in the limited sample of 71 funds analyzed by the authors.

Change in Group Rankings based on Bespoke Benchmark Performance

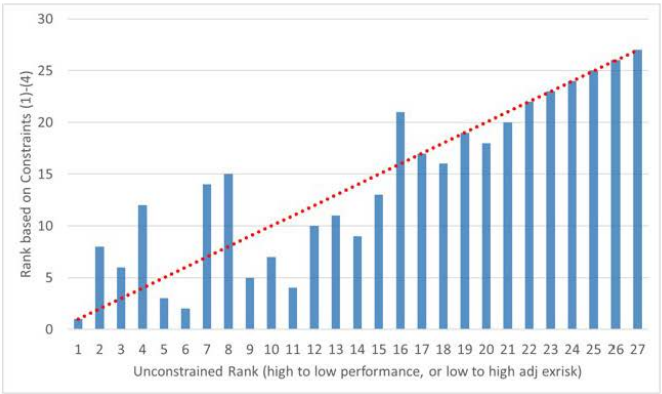
Panel A: Large-Cap



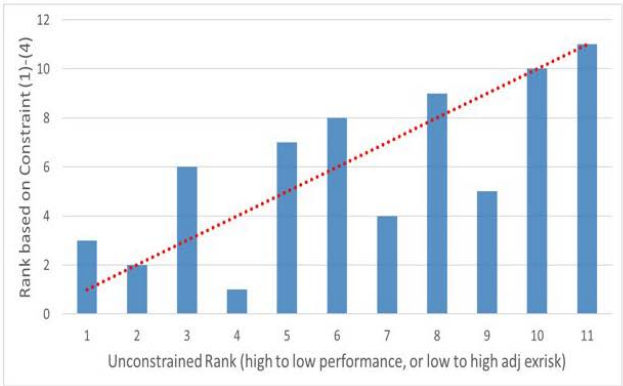
Panel B: Small-Cap



Panel C: Growth

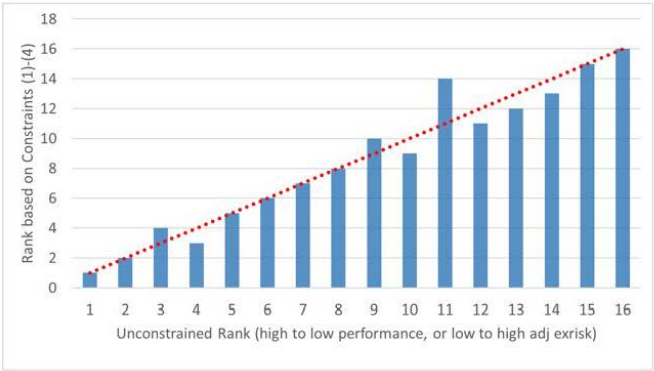


Panel D: Value

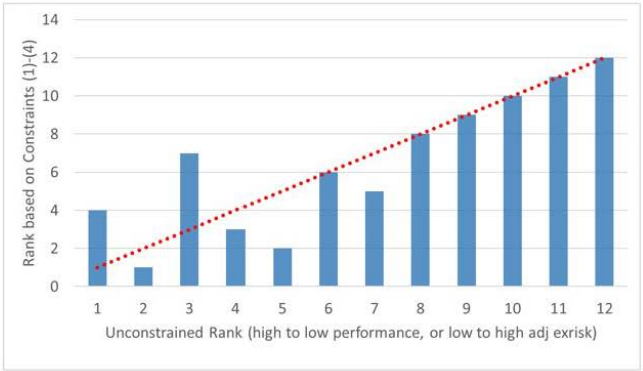


Change in Group Rankings based on Bespoke Benchmark Performance (with Spearman Rank Correlations)

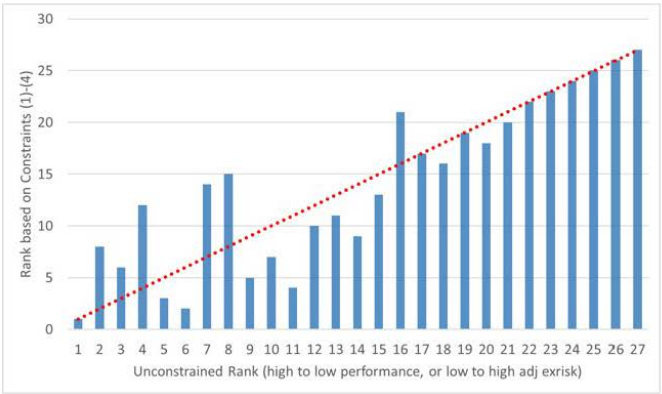
Panel A: Large-Cap (ρ=0.98)



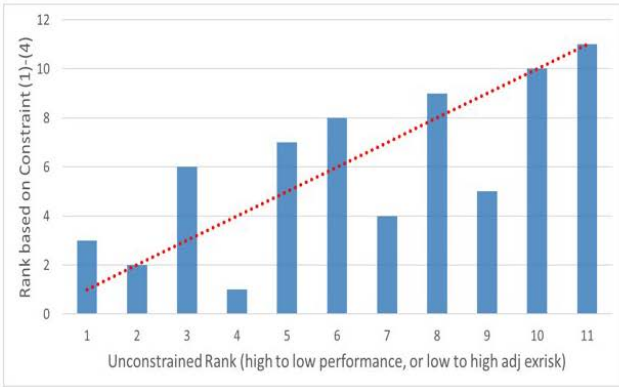
Panel B: Small-Cap (ρ=0.86)



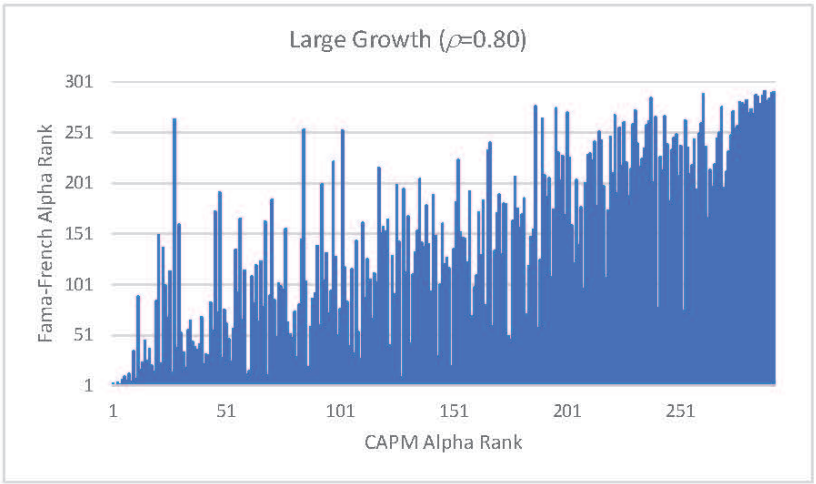
Panel C: Growth (ρ=0.88)

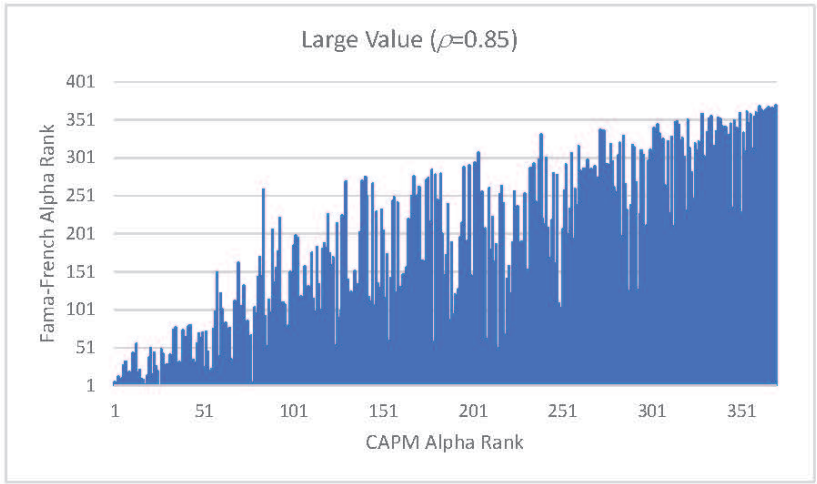


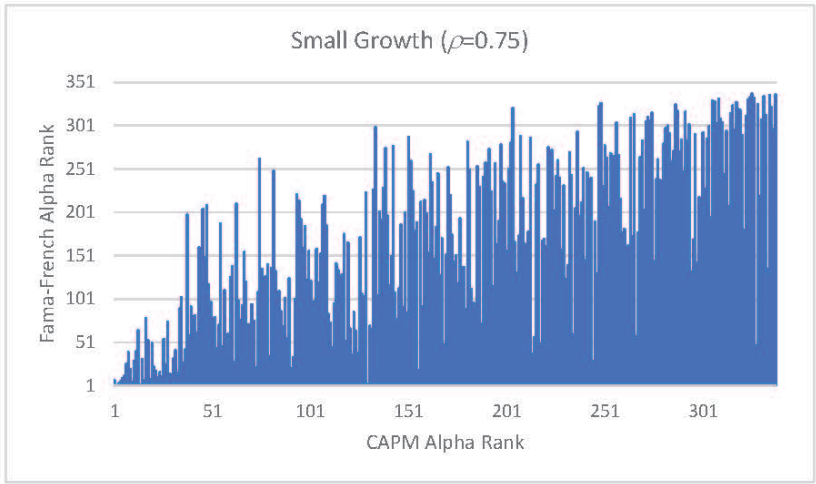
Panel D: Value (ρ=0.75)

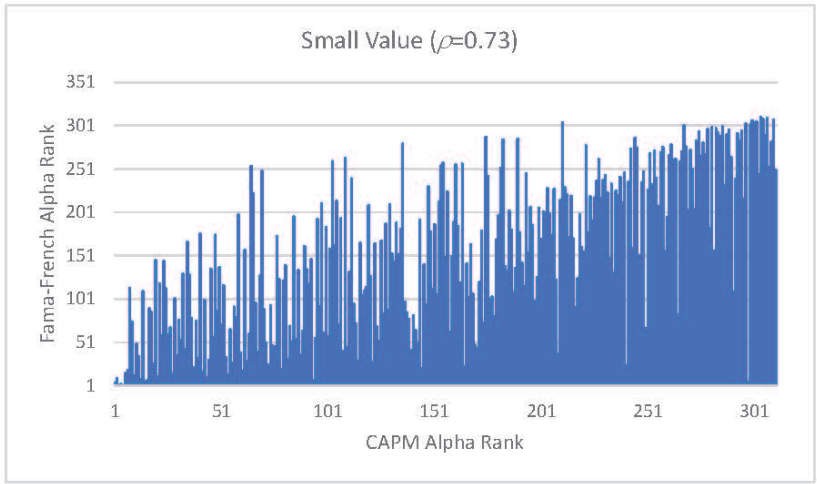


Change in Group Rankings based on CAPM and Fama-French Alphas









(5) Endogeneity of Constraints

- Constraints and mandates are not exogenously imposed, but are selected by fund advisors and boards for several reasons:
  - Monitoring mechanisms with agency costs,
  - Risk-management,
  - Family-diversification strategies,
  - Reduction of frictions (e.g., trading costs, taxes)
  - Attraction of flows.
- Thus, it is not necessarily the case that one should adjust for these constraints when evaluating a fund's performance.
- Adjusting for constraints depends on whether the performance measure is used by a fund investor, by a fund advisor, or by a fund director/trustee.

Miscellaneous Comments

- How does the bespoke performance measure compare to other measures? Does it exhibit a superior future performance predictability?
- Sample size is small (71 funds) and is subject to survivor and selection biases.
- Mandates and constraints change over time and may depend on prior fund performance. Using constraints from 2009 will cause a look-ahead bias.
- Current parametrization of portfolio weights likely over-invests in illiquid securities. Alternatively, active weights could be proportional to benchmark weights.
- Parameters may change over time and with the business cycle.
- Are Wilcoxon matched-pair signed-rank tests really significant for all groups in Chart 9?
- Explain in more detail the numerical values of the constraints in Table II.

Conclusions

- Paper studies the impact of mandates and constraints on the performance of mutual funds.
- These mandates and constraints close to a large extent the performance gap relative to unconstrained portfolios.

Summary Statistics on Sample Mutual Fund Mandates and Constraints

Sample Funds	AUM million $	# of Names	Constraints			
			Leverage	Cash	Short-sale	Turnover
Large	1055.76	16	1.42	0.54	1.54	0.44
Small	541.17	12	1.70	0.70	1.58	0.56
Growth	1378.86	27	1.59	0.53	1.34	0.79
Value	1637.41	11	1.65	0.48	1.65	0.54
All	1147.49	71	1.48	0.59	1.46	0.73
Unconstrained			2.00	1.00	2.00	2.00

Comparison of Standard and Bespoke Skill Distributions

Metrics	Unconstrained	Bespoke with mandates and constraints: 1	1+2	1+2+3	1+2+3+4
Excess Risk					
Mean	14.39	12.49	10.71	9.92	8.51
Std. Dev.	4.16	4.91	6.02	6.07	6.53
Skew	0.40	0.42	0.25	0.32	0.52
Kurtosis	3.23	2.79	2.42	2.46	2.32
Return-adjusted excess risk					
Mean	2.37	2.13	1.92	1.82	1.67
Std. Dev.	2.02	2.05	2.16	2.12	2.18
Skew	2.56	2.49	2.32	2.21	2.18
Kurtosis	9.57	9.22	8.42	7.76	7.55