Generalized Portfolio Sorts For Factor Validation

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Discussion
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SUMMARY (1/3): WHY REVISIT PORTFOLIO SORTS?

- Portfolio sorts are the workhorse for validating return predictors.

- Imagine sorting on a characteristic that is **stable over time**
  - ▶ **Operating profitability** (used in the paper)
  - ▶ Difficult to distinguish from a firm fixed effect (or another stable characteristic)
  - ▶ **Identification** problem in whether the characteristic actually predicts returns

- This paper: provide an estimation specification that **nests** portfolio sorts *and* can **separate** characteristic effects from firm effects by including **firm fixed effects**

SUMMARY (2/3): THE GPS SPECIFICATION

- **Generalized portfolio sorts (GPS)** regression:

$$r_{it} = (z_{it} \otimes x_t)\theta \, + \, c_i \, + \, \nu_{it}$$

- r_{it}: excess return of firm i in month t
- z_{it}: firm characteristics (e.g. operating profitability, momentum)
- x_t: market factors (e.g. constant, Fama–French, Carhart)
- c_i: firm fixed effect (firm-specific means)
- Key points:
    - ▶ Without c_i: regression **exactly replicates** standard tests (e.g., portfolio sort)
    - ▶ With c_i: separates **characteristic-driven** from **stable firm-driven** predictability
    - ▶ Provides a Hausman-style specification test: do FEs matter?

Summary (3/3): Empirical findings

- Data: 94 proposed return predictors (Gu et al.), 1963–2019

- Across 1,128 specifications:
    - **Standard approach (no FEs):** 532 predictors significant

    - **With firm FEs:** only 270 remain significant

    - Nearly **50% lose significance or flip sign**

- Implication:
    - Many anomalies reflect **persistent firm traits**, not genuine characteristic-based alpha

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  - ▶ the candidate characteristic Z
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- Lack of evidence *for* Z does not mean evidence *against* Z
  - ▶ In a factor zoo, it could always be the that you have OVB from missing some characteristic

- Paper's stance is consistent with a Bayesian view: priors against characteristics with weak identification

COMMENT 2: WHY DO WE CARE?

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- Where it does matter:
    1. Economic *interpretation* for us academics
    2. If one signal is in-sample a noisy version of the "true" signal, you want to use the "true" predictor, which will have *better out-of-sample properties*
    3. Practicality: characteristics are easy to use, but so is computing a firm's historical av return

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  - ▶ e.g., if the firm consistently earns $+1.25\%$ every month
- But with short time series, or time-varying vol, the FE may be driven by extreme events
- There is a danger of **overcontrolling**
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- Two ideas to check whether FEs are appropriate:
    1. Split into subperiods. Are firm's average returns the same across subperiods?
        - ★ Develop a formal test... but limited by low power (hard to get time-varying average returns)
    2. Does the impact of the firm FEs depend on the length of time-series for the firm?
        - ★ The longer the time-series for a firm, the more precisely we estimate the FE
        - ★ If FEs are important, they should play a role for firms with large T

COMMENT 4: A TRADEOFF

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    - ▶ **Good:** little risk of being absorbed by firm FEs

    - ▶ **Bad:** implies high portfolio turnover $\Rightarrow$ higher trading costs

- **Tradeoff** between **econometrician** and **investor**
    - ▶ Stable characteristics $\Rightarrow$ easier to trade, but harder to identify (confounded with FEs)

    - ▶ Varying characteristics $\Rightarrow$ easier to identify, but costly to trade

CONCLUSION

- Great paper! Helps us think about a specific enclosure of the factor zoo

- Puts into perspective how strong the evidence is for anomalies whose signals don't vary across time
  - ▶ Burden of proof higher than a simple portfolio sort

- Needs to sharpen interpretation of how firm fixed effects alter specifications