

Arbitrage Portfolios  
By  
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- ▶ Enter the long & ongoing debate:

What is the underlying driver of abnormal returns?

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  3. The sorting by design has implications at the portfolio level (not individual assets)

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- ⇒ Estimation: (1) using PPCA to obtain  $\widehat{\mathbf{G}}_\beta$ , (2) estimate  $\widehat{\mathbf{G}}_\alpha$  using regression given  $\widehat{\mathbf{G}}_\beta$ , (3) construct arbitrage portfolios from  $\widehat{\mathbf{G}}_\alpha$



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- ▶ Main take-away: There is substantial mispricing. Arbitrage portfolios have significant alphas relative to several popular asset pricing models with annual SR ranging from 0.67 to 1.12

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1. Put the paper in an array of the recent horse race
2. What about the economics?
3. Technical details: Check estimation stability (36 months; cross section subsamples; robustness checks)

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  - ⇒ Main take-away: All risk! 5 IPCA factors produce characteristic-associated anomaly intercepts that are small and statistically insignificant.

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- ▶ But that looks like, results do depend on the choice of methods

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- ▶ Why?
  1. Increase the confidence in your estimates
  2. Compare results with KPS
  3. Infer useful information for structural asset pricing and macro theories,  
after carefully controlling the possibility and the degree of mispricing:  
What are the behaviors of the latent PCA factors in the U.S. market?  
Are betas time-varying and what are salient relations between betas and firm characteristics?

# Conclusion

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- ▶ To make it more convincing:
  1. It might be quite important to formally address some of the competing papers in this recent “horse race”
  2. The model has the power to provide some unique insights into structural asset pricing theory, e.g. systematic risk, time-varying betas, relation between beta and firm characteristics. Some economic discussions would be appreciated
  3. More robustness checks can be done (e.g., rolling window sizes etc.)



Thank You!  
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