Term Structure of Firm Characteristics and Multi-Horizon Investment

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February 27, 2025

Abstract

Keywords:

1 Introduction

2 From 2D to 3D Factor Models

2.1 Notation

2.2 The CP/PARAFAC Decomposition

2.3 Interpretation of PARAFAC

2.4 Other Decompositions

3 Methodology

4 A Multi-Horizon Perspective

4.1 The (Interpretable) Single-Characteristic Tensor Factor Model

4.1.1 Lag Loadings and Smoothness

Show graphs of the first 6 tensor factors illustrating smoothness; talk about functional dependency of stock returns on lagged value portfolios being smooth, and relate to Markus' other paper.

4.1.2 SDF Weights as a Function of Horizon

4.2 The Full Tensor Factor Model

We need to figure out why the PooledPCA approach isn't working or if there was a code error because the toy model is very similar although simpler.

4.2.1 Lag Loadings

Lag loadings are a lot more shaped how we expect signals to die out; just linear-ish decreasing, but I still do need to check the generalized correlations here.

4.2.2 SDF Weights as a Function of Horizon

(Didisheim et al., 2023)

5 Data

6 Empirical Findings

6.1 Variant Models on the Tensor Framework

6.2 Model Performance

Report the aforementioned statistics, Multihorizon Sharpe Ratio plots that we already have.

Also interested in pairwise model comparisons for the tensor model 1-month returns to determine alpha of one model over every other – interested to see the lagged factors compare vs traditional factors extracted from 2D factor models

7 Conclusion

8 Appendix A

References

Didisheim, Antoine, Shikun (Barry) Ke, Bryan T Kelly, and Semyon Malamud, "Complexity in Factor Pricing Models," Working Paper 31689, National Bureau of Economic Research September 2023.