Journal Article

Principal Portfolios

December 14, 2022

We propose a new asset pricing framework in which all securities' signals predict each individual return. While the literature focuses on securities' own-signal predictability, assuming equal strength across securities, our framework includes cross-predictability—leading to three main results. First, we derive the optimal strategy in closed form. It consists of eigenvectors of a "prediction matrix," which we call "principal portfolios." Second, we decompose the problem into alpha and beta, yielding optimal strategies with, respectively, zero and positive factor exposure. Third, we provide a new test of asset pricing models. Empirically, principal portfolios deliver significant out-of-sample alphas to standard factors in several data sets.

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