A study of principal eigenportfolios for US equities

George Papanicolaou[1]

[1] Stanford University

It is well known empirically that principal eigenportfolios are a good proxy for the market portfolio. I will describe how to quantify this property through a large-dimensional asymptotic analysis of a spike model, which is comprised of a rank-1matrix and a random matrix. Historical returns data supports this analytical explanation for the correspondence between the top eigenportfolio and the market portfolio.I will also describe how alternative data structures can be used to construct proxies for the market portfolio as well as an application to option portfolios.