SHRIHARI SANTOSH

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EMPLOYMENT

University of Colorado at Boulder, Leeds School of Business — 2019 –
Assistant Professor of Finance

University of Maryland, R.H. Smith School of Business — 2014 – 2019
Assistant Professor of Finance

TEACHING

Corporate Finance (BA)
Investments (BA)
Capital Markets (MS Finance, MBA)
Financial Programming (MS Quantitative Finance)
Empirical Asset Pricing Methods (PhD)

EDUCATION

University of Chicago, Booth School of Business — 2008 – 2014
Ph.D. in Finance

University of Pennsylvania, Wharton School — 2001 – 2006
B.S. in Finance and School of Arts and Sciences, *B.A. in Economics*

FIELDS Asset pricing, market structure, behavioral finance, machine learning

PUBLISHED AND FORTHCOMING PAPERS

Interpreting Factor Models (with Serhiy Kozak and Stefan Nagel)
Journal of Finance, June 2018, 73(3), 1183-1223.

Abstract: We argue that empirical tests of reduced-form factor models do not shed light on competing theories of investor beliefs. Since asset returns have substantial commonality, absence of near-arbitrage opportunities implies a stochastic discount factor (SDF) that is a function of a few dominant sources of return variation. Consistent with this view, we show: an SDF based on the first few principal components explains many recently studied anomalies; if this was not true, near-arbitrage opportunities with extremely high Sharpe Ratios would exist; in-sample near-arbitrages vanish out-of-sample. However, a reduced-form factor SDF of this kind is perfectly consistent with an economy in which all cross-sectional variation in expected returns is caused by sentiment. Components of sentiment-investor demand that line up with common factor loadings affect asset prices because it is risky for arbitrageurs to take the opposite position, while components orthogonal to these factor loadings are neutralized. If investor sentiment is time-varying, the SDF can take the form of an ICAPM. For these reasons, tests of reduced-form factor models, horse races between "characteristics" and "covariances," and firm investment-based models that take as given an arbitrary or a reduced-form factor SDF cannot discriminate between alternative models of investor beliefs.

Shrinking the Cross-Section (with Serhiy Kozak and Stefan Nagel)
Forthcoming in the *Journal of Financial Economics*

Abstract: We construct a robust stochastic discount factor (SDF) that summarizes the joint explanatory power of a large number of cross-sectional stock return predictors. Our method achieves robust out-of-sample performance in this high-dimensional setting by imposing an economically motivated prior on SDF coefficients that shrinks the contributions of low-variance

principal components of the candidate factors. While empirical asset pricing research has focused on SDFs with a small number of characteristics-based factors---e.g., the four- or five-factor models discussed in the recent literature---we find that such a characteristics-sparse SDF cannot adequately summarize the cross-section of expected stock returns. However, a relatively small number of principal components of the universe of potential characteristics-based factors can approximate the SDF quite well.

Why do Discount Rates Vary? (with Serhiy Kozak)
Forthcoming in the *Journal of Financial Economics*
Abstract: We argue that the price of "discount-rate" risk reveals whether increases in equity risk premia represent "good" or "bad" news to rational investors. We employ a new empirical methodology and find that the price is negative, consistent with "rational" models with stochastic technology or preferences. Our approach relies on using future realized market returns to consistently estimate covariances of asset returns with the market risk premium. Covariances drive observed patterns in the broad cross-sections of stock and bond expected returns.

WORKING PAPERS

Factor Timing (with Valentin Haddad and Serhiy Kozak)
revision requested at the Review of Financial Studies
Abstract: An optimal factor timing portfolio is equivalent to a conditional SDF. We use economic restrictions to determine and characterize both empirically. With these restrictions, we find that long-short equity factors are strongly and robustly predictable. A number of these portfolios have small or zero average price of risk, suggesting that the economic risks investors worry about conditionally are often very different from those they worry about on average. This manifests in the very different compositions of the conditional and unconditional SDFs. For bonds and foreign exchange strategies,long-short portfolios sorted on maturity or interest rate differential are also predictable.

Public Information and Price Discovery: Trade Time vs Clock Time?
Abstract: I develop a new measure of the speed of price discovery using public information shocks as an instrument for changes in firm value. I find that price discovery occurs largely through trading. In event (clock) time, prices converge to fundamental value faster when markets are more liquid. Nearly all cross-sectional variation in the speed of convergence measured in clock time is eliminated when measured in trade time. These findings support the hypothesis in Kyle and Obizhaeva (2016) that apparent heterogeneity in market processes disappear "when trading...is scaled in units of business time instead of calendar time."

Behavioral Biases, Order Imbalance, and Expected Returns (with Yuan Hou)
Abstract: We test the hypothesis that anomalous expected returns are caused by biased investor demand coupled with imperfect competition among rational investors. A unique data set on short-horizon digital options, which allows us to track prices as well as the imbalance between "buy" and "sell" orders, enables us to trace the path from behavioral biases to order imbalance to distorted prices and expected returns. The conditional information ratio (Sharpe ratio) from exploiting these behavioral biases is on average 0.18 per event net of transaction costs.

CONFERENCE AND SEMINAR PRESENTATIONS

2018: American Finance Association Meetings, UBC Winter Finance Conference, UCSD Rady, Financial Intermediation Research Society Conference, Western Finance Association Meetings, Front Range Finance Seminars (discussion) NBER Summer Institute Asset Pricing Meetings, Red Rock Finance Conference, Arrowstreet Capital, CU Boulder, New Methods for the Cross Section of Returns Conference (presentation and discussion), UF Warrington, SFS Finance Cavalcade (discussion)

2017: American Finance Association Meetings, NBER Asset Pricing Meetings, UCSD Rady, UCLA Anderson, Colorado Finance Summit, Financial Intermediation Research Society Conference (discussion), SFS Finance Cavalcade (discussion)

2016: American Finance Association Meetings, Finance Down Under Conference, SFS Finance Cavalcade, Kyle Conference (discussion), Maryland Information Acquisition and Disclosure Conference (discussion)

2015: American Finance Association Meetings, NBER Summer Institute Asset Pricing Meetings, Finance Down Under Conference, European Finance Association Meetings, UF Warrington

PROFESSIONAL ACTIVITIES AND SERVICE

Co-organizer (with Francesco D'Acunto) of the Second Maryland Junior Finance Conference

Maryland Finance Seminar co-organizer, 2017 – 2018

Referee: Journal of Finance, The Review of Financial Studies, Review of Finance, Journal of Econometrics, Journal of Banking and Finance, Journal of Empirical Finance, Management Science

Conference committees: Conference on Derivatives and Volatility, Colorado Finance Summit, Finance Down Under, Midwest Finance Association, Conference in honor of Pete Kyle

Dissertation committee member: Bo Hu, Matt Peppe, Sylvain Delalay, Wei Zhou

University committees: Undergraduate curriculum review, student run investment fund oversight