

2024 SKKU BK21 Winter FinTech Research Workshop

Date and Time: February 5th (Monday), 14:00-17:30

Venue: Business Building #33527 (5th Floor), Sungkyunkwan University

The BK21 Department of FinTech at SKK Business School, Sungkyunkwan University is pleased to host the inaugural 2024 Winter FinTech Research Workshop. Three renowned invited speakers will present their recent research in a casual seminar format. We invite everyone interested to join and participate in a lively discussion.

Program

14:00-15:00 Measuring the Impact of Remote Work Using Big Data

Presenter: Alan Kwan (Hong Kong University)

15:00-15:15 Break

15:15-16:15 Passive Bond Fund Management is an Oxymoron (or the Case for the Active Management of Bond Funds)

Presenter: Jaewon Choi (University of Illinois Urbana-Champaign)

16:15-16:30 Break

16:30-17:30 Beyond Borders: Leveraging Machine Learning in Global Fundamental Analysis

Presenter: Johan Sulaeman (National University of Singapore)

Abstracts for the papers are as follows:

Paper 1. Measuring the Impact of Remote Work Using Big Data

Abstract: We develop a framework to measure remote work at the firm level using novel data of the daily internet activity for over 300,000 firms in the United States from 2019 to 2021. We observe whether employee internet activity originates from remote work locations or in-office and measure of the fraction remote work activity for each firm over time. Validating this classification, we document a 30% increase in remote IP traffic in March 2020 at the onset of the crisis and a negative covariance of -0.756 between the share of remote IP traffic in a county and mobile phone data on workplace visits. Next, we study the impact of remote work on firm performance using confidential tax filings data. Instrumenting remote work decisions with firm-level pre-pandemic commuting distance, we document an economically significant rise in output following a shift to remote work. Micro-evidence from employee reading patterns are consistent with a rise in overall productive activity. In the cross-section, we find that such benefits accrue primarily to firms with greater monitoring ability, lower monitoring costs, stronger worker incentives, tradeable sector, and urban firms. We also find evidence that remote work policies provide advantages to firms in the labor market as workers flow to firms which work remotely.

Paper 2. Passive Bond Fund Management is an Oxymoron (or the Case for the Active Management of Bond Funds)

Abstract: In sharp contrast to equity funds, passive bond funds underperform the majority of active bond funds. First, bond indexes include numerous illiquid bonds, making passive investing a near-impossible task. Facing a difficult trade-off between tracking their benchmark and maintaining liquidity, passive bond funds become active and hold relatively liquid bonds, while sacrificing performance. Second, the lack of positive skewness in bond returns reduces the advantages of holding a broad-market index. Holding individual bonds frequently outperform the benchmark, making passive investing less attractive. Consistent with these two channels, the average active bond fund outperforms the passive counterpart, while the most active ones—those with high active share in particular—substantially outperform passive funds (0.74% annually, t -stat = 2.40).

Paper 3. Beyond Borders: Leveraging Machine Learning in Global Fundamental Analysis

Abstract: We utilize an advanced machine learning (ML) based technique -- gradient boosted regression trees (GBRT) -- to conduct fundamental analysis of publicly listed companies globally. We start with a comprehensive global dataset constructed by Jensen, Kelly, and Pedersen (JF, 2023), which includes over 200 accounting-item-based features from financial statements provided by companies listed in about 90 exchanges over the past 30 years. Compared to conventional linear regression analyses, GBRT models generate a more precise estimation of firm valuation multiples. GBRT models (e.g., LightGBM) are more robust to outliers of features and do not require dropping or imputing missing values of features, making them compatible with an extensive set of features based on items on financial statements.

GBRT models are also adept at capturing complex, nonlinear relationships between these features and firm valuation. Our study restricts the sample to more tradeable and economically important stocks (i.e., those with a market capitalization above the 20th percentile of NYSE stocks) in global markets. After employing several regularization techniques and cross-validation to mitigate potential overfitting concerns, the resulting GBRT model identifies profitability, leverage, and investment as relevant feature categories driving valuation differences within countries, industries, and firm size groups. The model performs well: it produces market-to-book ratio estimates that are reasonably close to the corresponding observed ratios, with a median absolute valuation error of 20% and an R-squared of 74%. The model yields smaller valuation errors for larger firms, those based in developed economies, and those in highly regulated industries. After sorting stocks into three groups based on valuation errors, we find that about 40% of the valuation error differences between the top and bottom groups are eliminated within 12 months. However, we do not find a robust pattern of stock return predictability, with the long-short portfolio sorted on valuation errors generating negligible raw and factor-adjusted returns relative to the corresponding valuation-error gaps observed in the measurement and formation periods. These patterns indicate that the differences between prevailing stock market prices and GBRT model estimates contain forward-looking information regarding future changes in firm fundamentals.