

Ph.D. Dissertation Defense

Candidate:	John Robson Leite Jasmim
Degree:	Doctor of Philosophy
School/Department.:	School of Business / Financial Engineering
Date:	Thursday, June 26, 2025
Time:	9:00 – 11:00 am
Location:	Virtual (https://stevens.zoom.us/j/94945712671)
Title:	Three Papers on the Application of Statistical Relative Valuation to Stock Portfolio Allocation
Chairperson:	Dr. Josep A Tribo, Management and Finance, School of Business
Committee Members:	Dr. Anand Goel, Finance/FE, School of Business Dr. George Calhoun, Finance/FE, School of Business Dr. Majeed Simaan, Finance/FE, School of Business

Abstract

The first paper *"Synthetic Sector Classification Applied for Statistical Relative Valuation"*, we delved into the theoretical Statistical Relative Valuation model put forward by Aswath Damodaran and conducted an extensive evaluation of its performance in real-world market conditions. Building on Damodaran's model, we developed innovative methodologies, including a novel stock sector classification system that groups comparable firms endogenously, based on shared characteristics. Our sector classification approach demonstrated, on average, stock correlations within the same sectors that were twice as high as those observed in the standard GICS classification. This improvement in sector clustering not only outperformed GICS in terms of portfolio returns but also enhanced diversification, reducing overall risk. Furthermore, we conducted an exhaustive analysis of all U.S. stocks over the past decade, leveraging financial statements to identify undervalued companies. This analysis was done using both the traditional statistical relative valuation methods and our proposed sector classification. We then evaluated the performance of a quarterly rebalanced portfolio comprising the top assets identified each quarter over the last 24 quarters. The findings clearly demonstrate the superiority of our approach over conventional relative valuation models and even show enhancements to Damodaran's method. Notably, our model more accurately captures the interrelationships between comparable firms, surpassing the GICS classification. This led to a substantial improvement in the detection of undervalued assets, resulting in enhanced portfolio profitability while maintaining low risk.

Second paper *"Integrating ESG Metrics into Statistical Relative Valuation: Building Portfolios for Profitability and Sustainability"*, uses a relative valuation model applied to corporate social responsibility (CSR). We construct undervalued portfolios in terms of CSR. We show that following this methodology, we end up forming portfolios that not only overperform in terms of CSR, but also in terms of financial performance. In particular, we have developed new regression models that incorporate ESG data as the dependent variable and compare predicted values of ESG with real values. This will allow portfolios to be built that are expected to perform better than several benchmarks in ESG. Relying on stakeholder theory, we connect improvements in CSR (or ESG) to improvements in financial performance, and we find evidence that this is the case. In the end, we build portfolios that not only deliver strong financial performance but also contribute positively to societal impact and sustainability. ESG scores are commonly used by investors, analysts, and stakeholders to assess the sustainability, corporate responsibility, and ethical performance of companies and incorporate these considerations into investment decision-making processes. Using such ESG information, we extend existing Statistical Relative Valuation methods to build portfolios in line with our commitment to advancing socially competent investment strategies that, at the same time, perform better in terms of financial performance.

Third paper *"Construction of ESG indexes and application to build ESG-robust and profitable portfolios"*, we extended our methodology to apply our endogenous sector classification to other types of valuation models and/or portfolio selection strategies. This study leverages Refinitiv ESG scores and the S&P 500 composition to construct ESG indexes for each Sector SPDR. By aligning stocks with sectors that best reflect their socially responsible behavior, we enhance the accuracy of ESG-sector classification. This refined approach improves the performance of social valuation models and enables the identification of portfolios that are significantly undervalued in terms of social performance. We can infer that such stocks are not symbolically using CSR, but they are using it in a substantive way. Such stocks end up defining a virtuous cycle connecting social performance and financial performance sustained over time that outperforms both sector-level ESG benchmarks and traditional financial indices.