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PRACTITIONER'S DIGEST

The "Practitioner's Digest" emphasizes the practical significance of manuscripts featured in the "Insights" and "Articles" sections of the journal. Readers who are interested in extracting the practical value of an article, or who are simply looking for a summary, may look to this section.

A TRANSPARENT ALTERNATIVE TO NEURAL NETWORKS WITH AN APPLICATION TO PREDICTING VOLATILITY

PAGE 4

Megan Czasonis, Mark Kritzman and David Turkington

Neural networks extract information from complex datasets that is beyond the reach of conventional prediction methods, such as linear regression analysis, by applying layers of linear combinations and non-linear transformations to an initial set of inputs to manufacture a vast number of parameters. Because a neural network is a model, it is intended to handle all prediction tacks in a single calibration; hence, the requirement for a vast number of parameters. A key limitation of a neural network is its opaqueness. The transformations that yield the final parameters make it nearly impossible to explicitly connect the observations to the outcomes. Moreover, a neural network is incapable of giving forward guidance about a specific prediction's reliability. Finally, a neural network may not adapt well to new prediction circumstances. It is constrained by its derived parameters.

Relevance-based prediction (RBP) also extracts information from complex datasets that cannot be obtained by linear regression analysis, but that is where the comparison ends. RBP is model free. It forms a prediction as a weighted average of observed outcomes in which the weights are a precise statistical measure called relevance which captures the importance of an observation to a prediction. Unlike a neural network, which is intended to solve all prediction tasks in a single calibration, RBP operates task by task curating the observations and predictive variables for each individual prediction task. Along with its prediction-specific focus, RBP generates its predictive power by recombining observations and predictive variables many times based on the unique circumstances of each prediction task. RBP also differs from a neural network by virtue of its transparency. It explicitly reveals how each observation informs a prediction, and it gives advance guidance of a prediction's reliability. Finally, RBP automatically adapts to each new prediction task.

The practical significance to RBP is that it serves as a transparent and adaptive alternative to neural networks as well as to other machine learning models and conventional techniques for forming predictions.

BUILDING NET ZERO PORTFOLIOS OF SOVEREIGN BONDS PAGE 18

Gong Cheng, Eric Jondeau and Benoît Mojon

Portfolio Construction and Adjustment: The paper proposes a strategy for constructing portfolios of sovereign securities that progressively reduce their carbon footprints. The strategy is designed for passive investors seeking to align their portfolios with the Paris Agreement's "net zero" emissions target. Investors can use the proposed strategy to reevaluate and adjust their portfolios, emphasizing sovereign securities from countries with lower carbon emissions per capita. This could involve reallocating assets towards countries making significant progress in reducing their carbon intensity, thus actively contributing to a global reduction in emissions. The strategy provides a clear metric for this adjustment, which can be particularly appealing for passive investors who traditionally might not engage in frequent trading based on short-term market dynamics.

Signal to Sovereign Issuers: By adopting the strategy outlined in the paper, investors can send a clear market signal to sovereign issuers about the increasing importance of environmental sustainability in investment decisions. This could incentivize countries to adopt more aggressive policies for reducing their carbon emissions, knowing that it could improve their attractiveness to global investors, potentially lowering their borrowing costs in international markets.

Risk Management: The paper touches on the implications of rebalancing portfolios towards lower carbon intensity for credit and currency risks. Investors can use the insights provided to manage these risks more effectively, ensuring that their pursuit of sustainability does not come at the expense of portfolio stability and returns. By maintaining creditworthiness while reducing carbon intensity, investors can support environmental goals without compromising on financial safety and performance.

Contribution to Sustainable Development Goals (SDGs): Investors increasingly seek not only financial returns but also to contribute positively to global challenges, including climate change. By applying the strategies discussed in the paper, investors can directly contribute to SDG 13 (Climate Action) and indirectly support other SDGs through the promotion of sustainable practices among sovereign issuers.

OPTIMIZING LARGE LANGUAGE MODELS FOR SUSTAINABLE INVESTORS PAGE 49

Andrew Chin, Che Guan, Promod Rajaguru, Qifeng Sun and Yuning Wu

Our research provides a framework for sustainable investors to integrate advanced Natural Language Processing (NLP) models into their decision-making processes. By leveraging BERT-based and transformer-based models, investors can systematically analyze real-time news to identify ESG-relevant content and extract sentiment-driven investment signals surrounding that content. In particular, transformer-based models such as GPT, Llama, and Mistral offer a deep understanding of contextual

sentiment and nuanced language, allowing for more accurate ESG classification and assessment. These models enhance investors' ability to detect financially material ESG events, enabling them to identify potential risks or opportunities.

Beyond sentiment analysis for ESG news, our research also highlights the role of model fine-tuning in improving ESG classification accuracy and investment insights. While pre-trained models provide a solid foundation, our findings suggest that fine-tuning with expert annotations from investment analysts significantly enhances model performance. We also observe that few-shot or in-context learning techniques may not always yield consistent improvements and can sometimes hinder accuracy. Additionally, language models can assess the causal relationship between news events and company performance, offering deeper insights into how ESG factors influence stock prices. By optimizing the use of expert annotations and refining model confidence levels, asset managers can enhance their predictive capabilities, strengthening their competitive edge in sustainable investing.

VOLATILITY MANAGED MULTI-FACTOR PORTFOLIOS PAGE 72

Christoph Reschenhofer and Josef Zechner

This paper shows that multi-factor portfolio performance can be significantly improved by dynamically adjusting factor exposures based on both historical factor volatilities and option-implied market volatilities (VIX). The most substantial performance gains occur during periods of elevated VIX and right-skewed option-implied market returns, highlighting that portfolio factor exposures should be adjusted more dynamically under these conditions. Estimating model parameters separately for distinct volatility regimes further improves risk-adjusted returns. These results remain robust out-of-sample.