Editors’ Introduction to the Special Issue on Novel Risks and Sources of Volatility: Identification and Measurement Challenges for Portfolio Management

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INTRODUCTION

In a broad sense, novel risks arise from environmental-, governance-, healthcare-, social responsibility–, sustainability-, and technology-related shortcomings of or challenges faced by firms, as well as the uncertainty caused by potential domestic and global regulatory policy responses. The recent announcements made by the Securities and Exchange Commission during the first quarter of 2021 highlight the importance of environmental, social, and governance (ESG) risk and climate change risk, as well as how rapidly the regulatory and policy framework is evolving for these risks. The most recent ransomware attacks in May 2021 targeting a major US energy distributor and a major US food processor underscore the proliferation of potential vulnerabilities from cybersecurity risk. These developments have been taking place as the financial markets process the impact of COVID-19 pandemic, which has been affecting the world since February 2020 (as of writing in August 2021), bringing pandemic risk to the forefront of risk taxonomy and heightening sensitivity to geopolitical risk as the perfect storm of novel risks seems to converge on economies across the globe.

In the lead article, “Novel Risks: A Research and Policy Overview,” Ahmet K. Karagozoglu presents a review of the recent academic literature, identifying common themes for data and measurement and discussing future directions for research and regulatory policy development. According to the author, recent academic literature suggests that there are parallels among ESG risk, climate change risk, cybersecurity risk, and geopolitical risk in terms of measurement challenges, including but not limited to emerging data and measurement methods; similarities in terms of their insufficient, noncomparable, less-specific, and non–decision-useful disclosures; and the potential interaction between these risks. Karagozoglu concludes that the establishment of consistent disclosure policy and reporting requirements and improvement in measuring the impact of these novel risks on asset prices, volatility, and global financial stability are at the forefront of contemporary financial economics and portfolio management.
Introduction:

Many corporations will have to adjust their operations and/or their products and services to meet their countries’ nationally determined contributions and future climate policies, which vary significantly across countries, to reduce greenhouse gas emissions in line with the 2015 Paris Agreement’s goal of keeping the increase in global average temperatures to well below 2°C. In their article, “Foundations of Climate Investing: How Equity Markets Have Priced Climate-Transition Risks,” Guido Giese, Zoltán Nagy, and Bruno Rauis examine the extent to which climate risk has been priced into equity markets by developing fundamental economic transmission channels to explain the potential impact of climate change on equity prices. They find that carbon-intensive companies have seen a relative downward trend in their price-to-book ratio valuation, which means markets started to effectively discount book values that can be linked to carbon-intensive activities. In contrast, their results show that companies with high exposure to green revenue have seen their price-to-earnings ratio rise, which means investors are willing to pay an increasing premium to gain exposure to technology that has the potential to replace the existing carbon-intensive infrastructure. They conclude with a discussion of how to measure and categorize companies’ climate-risk exposures and how to integrate climate-transition risks into risk models.

Climate risk has become another important dimension, especially because minimum-variance strategies are massively implemented by ESG institutional investors. Therefore, the question of carbon metrics is important for portfolio construction. In “The Market Measure of Carbon Risk and Its Impact on the Minimum Variance Portfolio,” Theo Roncalli, Theo Le Guenedal, Frederic Lepetit, Thierry Roncalli, and Takaya Sekine decompose carbon financial risk into a common (or systematic) risk factor and a specific (or idiosyncratic) risk factor. Focusing on the common risk factor that drives carbon risk, the authors assert that the carbon betas they introduce in their article are market-based measures that are complementary to carbon intensities or fundamental-based measures when managing investment portfolios. They show that this market measure is very different from a traditional fundamental measure of carbon risk because, according to their findings, carbon intensity is not the only dimension that is priced by the market. Their results show that investors that are sensitive to relative carbon risk prefer stocks with a negative carbon beta over stocks with a positive carbon beta, whereas investors that are sensitive to absolute carbon risk prefer stocks with a carbon beta close to zero. The authors conclude that managing relative carbon risk implies having a negative exposure to the carbon risk factor, whereas managing absolute carbon risk implies having zero exposure to the carbon risk factor.

Climate change is a source of considerable uncertainty, especially for long-term investors. The transition to a sustainable economy in various climate change scenarios poses significant risks and opportunities for investors’ portfolios. In “Top-Down Portfolio Implications of Climate Change,” Yesim Tokat-Acikel, Marco Aiolfi, Lorne Johnson, John Hall, and Jessica (Yiwen) Jin present a quantitative assessment of the impact of climate change on expected returns and strategic portfolio allocation across major public assets from a top-down macroeconomic perspective. They use estimates in well-accepted risk scenarios to assess the potential impact of alternative climate scenarios on economic growth, inflation, and asset returns for major asset classes. Their top-down cross-asset analysis suggests that the most direct impact will be on growth-oriented assets, such as equities and corporate credit. They find that the impact on developed sovereign bonds, real-estate investment trusts, and commodities is likely to be more localized at the micro level of individual securities than at the asset-class level. Using hypothetical portfolios designed based on top-down assumptions, the authors explore portfolio allocation implications and show that a climate risk-aware portfolio would tilt away from regions and assets that are expected to be adversely affected to obtain better risk-adjusted returns.

Among nonfinancial drivers of financial risk, perhaps none is at the forefront of investors’ minds more than geopolitical risk. Financial markets are governed by...
institutions that are part of the connective tissue of nation-states, which in turn are the primary actors in international affairs. Therefore, the interactions of states with one another and important non-state actors can have significant impacts on market performance. Joseph Simonian, in “Geopolitical Risk in Investment Research: Allies, Adversaries, and Algorithms,” defines and explains the basic dimensions of geopolitical risk as it pertains to portfolio management, in particular considering the challenges of uncovering and analyzing the sources, dimensions, and potential impacts of geopolitical risk on investment outcomes. Simonian’s article provides an overview of the rational choice paradigm and its applicability to the analysis of geopolitical risk, especially discussing how game-theoretic methods can be combined with machine learning to build detailed simulations of strategic interactions. The author also demonstrates how a well-known matching algorithm can be used to analyze international alliances and how the incorporation of geopolitical views in portfolio construction can be achieved by presenting a concise and simple optimization approach.

The recent prevalence of ransomware attacks shows that cybersecurity exposure has a direct impact on targeted firms’ operating cash flows and how it affects the financial situation of targeted firms more directly than reputational damage. Such incidents highlight the vulnerability of the overall economy and the necessity of managing and controlling cybersecurity risk at the firm level. Nazli Sila Alan, Ahmet K. Karagozoglu, and Tianpeng Zhou, in their article “Firm-Level Cybersecurity Risk and Idiosyncratic Volatility,” develop a measure of firm-level cybersecurity risk by employing a pattern-based sequence-classification method from computational linguistics to determine the proportion of time devoted to issues related to cybersecurity risk during earnings conference calls. They use this new firm-specific cybersecurity risk measure to investigate the relationship between cybersecurity risk and firm-level return volatility, which in turn is a novel intraday return-based measure of idiosyncratic volatility. The authors find that firm-level cybersecurity risk is positively correlated with idiosyncratic volatility on the days that earnings calls are held, suggesting that the discussion of issues related to cybersecurity risk during earnings calls is related to an increase in the component of volatility that responds only to firm-specific news. Their results indicate that this positive relationship is robust to alternative measurements of the language in the earnings call discussions and to industry classifications.

Environmental issues, including mitigating climate change, reducing pollution, and halting exhaustion of natural resources, are no longer marginal cultural issues but have become parts of serious government plans, with substantial funding in both the United States and Europe. Government plans explicitly call for sustainable growth with no (or minimal) use of resources. In “Investment Management Post Pandemic, Post Global Warming, Post Resource Depletion,” Frank J. Fabozzi, Sergio Focardi, and Zenu Sharma argue that moving from the current notion of quantitative growth to a new notion of growth that is both quantitative and qualitative requires changes in economic activity and theoretical changes in economics that should allow policymakers to gain a proper understanding of qualitative growth. They assert that the green transition has two aspects. The first is that a progressive reduction of emission of greenhouse gases is a major change of technology that will offer several profit opportunities; the second is that sustainable growth without the use of natural resources will require profound social changes. The authors suggest that in aggregate the green transition might not reduce the amount of profit available to investors; however, the redistribution of profit opportunities from conventional to more complex and environmentally friendly goods and services would result in a substantial overhaul to investment management.

Early in 2020, the world was severely disrupted by COVID-19 as the pandemic triggered extensive health, environmental, and social devastation. As the scale of the effects quickly escalated, investors—probably for the first time—witnessed how a medical phenomenon can have an enormous financial impact on businesses and investors worldwide. Dominique Outlaw, Aimee Hoffmann Smith, and Na Wang, in
their article “The Implications of Contemporary Research on COVID-19 for Volatility and Portfolio Management,” synthesize recent and ongoing research in finance and economics on pandemic and disaster risk related to the COVID-19 pandemic, which is characterized by pronounced market movements and extreme volatility. They indicate that the uniqueness of the COVID-19 pandemic’s shock to market returns and volatility has shed light on several puzzles in finance and motivated the updating of asset-pricing models by incorporating novel risk factors. According to the authors, financial economists now have fresh perspectives on the transmission of pandemic-induced uncertainty to the financial markets via channels pertaining to investor beliefs and behaviors and corporate strategies and outcomes. Although some effects of the pandemic on market volatility are transitory in nature, there is evidence suggesting long-lasting impacts resulting from investors’ updated risk perceptions and corporate management’s evolving approaches to investing and financing decisions.

It is certainly too early to claim that the COVID-19 pandemic will mark a turning point in favor of a better integration of environmental, social, and governance issues—the so-called ESG factors—into firms’ valuation. In “Socially Responsible Investing Strategies under Pressure: Evidence from the COVID-19 Crisis,” Gunther Capelle-Blancard, Adrien Desroziers, and Olivier David Zerbib investigate the resilience of socially responsible (SR) strategies during the COVID-19 crisis using SR indexes from a worldwide sample and comparing them to conventional benchmarks to control for sectoral and geographic biases. The financial performance of SR strategies is shown to have substantial heterogeneity, whereas SR impact strategies slightly outperform corresponding benchmarks. The authors find that the resilience of SR strategies is a little stronger in countries and during periods in which the number of COVID-19 cases was increasing. They control for public attention to the COVID-19 pandemic, as well as the economic effects of new policies implemented during the crisis, including lockdowns and fiscal and monetary policy changes. The authors conclude by recommending a careful review of SR investment selection because not all such investments have provided equal returns in the face of the pandemic.

Over the past decade, sustainable and responsible investing have gained momentum and continue to grow in popularity among investors, and it is increasingly recognized that the financial system has a particularly important role to play in the transition toward a low-carbon and climate-resilient economy. In “Measuring and Managing ESG Risks in Sovereign Bond Portfolios and Implications for Sovereign Debt Investing,” Lionel Martellini and Lou-Salomé Vallée examine the impact of ESG factors on the risk and return of sovereign bonds. In particular, they investigate how to measure and manage ESG risks in sovereign bond portfolios and the implications for sovereign bond portfolio strategies. They show that implementation choices matter with respect to how ESG constraints are incorporated into sovereign bond portfolio construction and present evidence that negative screening leads to more diversified portfolios and lower levels of tracking error, whereas positive screening leads to higher levels of improvement of ESG scores at the cost of an increase in absolute and relative risk budgets. Martellini and Vallée conclude that sound risk management practices are critically important in allowing investors to incorporate ESG considerations into investment decisions at an acceptable cost in terms of dollar or risk budgets.

**TOPICS:** Risk management, tail risks, ESG investing, legal/regulatory/public policy*

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