# Preface

Public investors are facing a host of challenges. One is the macroconomic environment, which – for many years – has been characterised by low yields and compressed risk premia across a range of reserve assets. At the same time, an evolving regulatory environment, potential shifts in the geopolitical landscape, dramatic changes in financial technology, and an awareness of the challenges stemming from investments in less-conventional reserve assets, such as equities and corporate bonds, have added complexity to the investment process for many institutions. As a result, there is now a confluence of factors raising questions about public investors' governance, decision-making processes, risk preferences, modelling approaches, and investment strategies.

Against this backrop, the Bank for International Settlements and the World Bank – jointly with Bank of Canada and the Banca d'Italia – held the Seventh Public Investors Conference in October 2018 at the headquarters of the Banca d'Italia in Rome, Italy. The conference aimed to explore advances in the practice of public investment management on topics such as strategic asset allocation, reserve management frameworks, sustainability considerations for official institutions, portfolio construction, market inefficiencies and risk premia, and risk management.

This book covers many of the papers presented at the Conference, including some of the most up-to-date research and ideas on public asset management. This book is relevant to at least four categories of readers: (1) practitioners of public investment management, (2) investment consultants advising public managers, (3) academics/researchers, and (4) regulatory and oversight bodies of public investors. By engaging with readers on both the state-of-the-art research dealing with, and policies adopted by, public investors, this book aims to provide important context and perspective to a variety of interested audiences.

The book is organised into four parts, each covering one of the major topics covered during the Seventh Public Investors Conference:

- Part 1 focuses on central bank reserve management. The first chapter illustrates the methodological aspects of a strategic asset allocation process at a central bank that integrates the full balance sheet of the institution. Chapter two narrates how central bank reserve management procedures have evolved over the last two decades, and ponders the question of why central banks are so risk-averse.

- Part 2 presents sustainability considerations for official institutions. The first chapter provides an overview of environmental, social and governance (ESG) investing from the perspective of public investors, drawing on an informal survey conducted by the BIS among a number of central banks, international organisations and asset managers. The second chapter applies a machine learning algorithm to identify patterns between ESG profiles and financial performance for companies in a large investment universe, introducing new ideas to link ESG behaviour and the economy. Finally, the third chapter analyses whether institutional investors engage with the companies which they invest in to discuss corporate externalities such as greenhouse emissions – and if so, why – by analysing shareholder meeting votes by two major global investors.

- Part 3 considers quantitative tools for portfolio construction. The first chapter proposes a robust optimisation method used to obtain *near-optimal* portfolios, aiming to support rather than replace the investment decision-making process. The second chapter illustrates a related toolkit to conduct portfolio construction and selection using two decision-support tools: near-optimal portfolio analysis, and a tool to analyse the sensitivity of the ex-ante optimal portfolio to changes in the forecasts of key risk factors. Chapter three concludes by introducing a new algorithm to solve portfolio optimisation problems with hard-to-optimise objective functions based on simulated annealing.

- Part 4 presents risk management approaches and methodologies. The first two chapters discuss model risk, with the first arguing that model risk is not a new problem faced solely by financial market participants, but rather one for which the lessons learned across other disciplines can help to mitigate and manage financial model risk. The second proposes a holistic framework to reduce model risks. The third and final chapter proposes a measure to gauge liquidity risk – a feature required by central bank portfolios but hard to assess in practice.

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