Introduction to the *Research Handbook of Financial Markets*

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Financial markets have been important for millennia and have been a favorite subject of water cooler talk as well as a focus of research. Investors and regulators have also always tried to understand these markets and their relationship with each other better. Indeed, well-functioning financial markets are essential to a strong economy—a point made clear in the Global Financial Crisis of 2008–2009, when a breakdown in financial intermediation triggered an adverse feedback loop with the macroeconomy. In the period since, amid the European debt crisis and then the Covid shock, these markets have become even more important for investors, policymakers, and researchers alike.

These are markets with myriad rules and conventions, where neither the mechanics of transactions nor the factors shaping prices are straightforward, often leading to instability and proneness to repeated crises that can trigger recessions. Indeed, excessive credit growth leading to financial instability is the cause of many severe economic downturns—a point highlighted by Hyman Minsky that has received more attention since his death. The view that finance was a "veil", meaning that the financial cycle had no causal effect on the business cycle, used to be prevalent, but that is no longer the mainstream understanding. Now finance and macroeconomics are thought to be closely related. Only a joint analysis of finance and macroeconomics allows for studying financial crises that have been part of the economic landscape for centuries, as well as their welfare effects.

This volume takes the perspective that finance is an integral part of macroeconomics. It brings together the foremost experts on various facets of financial markets to provide analyses of the market mechanics, key players, and asset prices. Each chapter explains the history and current state of the market it focuses on. In many cases, the history goes back a very long way indeed. These analytical chapters frame the market in question from a research perspective, discussing what we know about the market, what we learn from price formation, and what the open questions are. Although many of the chapters contain insights into asset pricing, this is not the sole focus. Market structure is also considered at some length.

The chapters collected in this volume are resources for market participants, regulators, and researchers alike. For the uninitiated, they provide a deep first look into each market; for the expert, they suggest new ways of seeing these markets. All the chapters place special emphasis on recent developments such as high-frequency trading and regulatory changes since the Global Financial Crisis. Collectively, they afford a holistic understanding of financial markets themselves and the state of research into these fascinating mechanisms for human interaction.

Financial markets are partly regulated by central banks and monetary policy forms an important input into price formation in any financial market. And central banking has taken a new turn after the turmoil of the past 15 years, with unconventional policies adopted by central banks leading to balance sheet sizes that were unthinkable before the Global Financial Crisis and the ensuing monetary expansion. These balance sheet actions have now become so commonplace that they are scarcely "unconventional" anymore. It is impossible to understand financial markets without understanding the behavior of central banks driving them.

Part I of the volume is therefore dedicated to providing a deep understanding of major central banks and their policies. Chapter 1, by Kristopher Dawsey, William B. English, and Brian Sack, discusses the balance sheet of the Federal Reserve and argues that the Fed can and should manage its balance sheet in a way to provide macroeconomic and financial stability. Chapter 2, by Oreste Tristani, considers the balance sheet of the Eurosystem. The euro area has the distinct feature that there is no central fiscal authority: there is a monetary union, but not a fiscal union. This chapter evaluates the implications of this for the European Central Bank balance sheet. Chapter 3, by Kosuke Aoki, discusses the balance sheet of the Bank of Japan, which has some unique features, notably that it holds exchange rate funds and real estate investment trusts. Chapter 4, by Brian Madigan and William Nelson, studies the long history of central bank lending, how the nature of central bank lending has evolved over time, and the more recent lending policies that led central banks to have historically large balance sheets. This chapter includes a discussion of the potential drawbacks of the recent trend to larger central bank balance sheets. Chapter 5, by Saleem Bahaj and Ricardo Reis, discusses the liquidity lines between central banks that first emerged in the Global Financial Crisis and have become an important backstop to the international financial system.

While financial markets as a whole are based on the intermediation of savings and credit, an imperfect classification of institutions and markets into somewhat more specific categories is possible. The non-central banking content of the volume is divided into four more parts comprising intermediaries, money markets, capital markets, and derivatives markets.

Part II, on intermediaries, sheds light on four major types of institutions. Chapter 6, by the editors and Egon Zakrajšek, discusses the special role of banks. Banks are a potentially unstable form of financial intermediation, and yet they are ubiquitous—this chapter expounds on the reasons. The chapter on banks also discusses stablecoins and a future with central bank digital currencies, as well as providing an understanding of what banks are and how they function. Non-bank intermediation—an ever-larger share of financial intermediation—is discussed in Chapter 7, by Sirio Aramonte, Andreas Schrimpf, and Hyun Song Shin. This chapter emphasizes how systemic risks can be propagated by nonbank financial institutions. Chapter 8, by Gillian Burgess, Wayne Passmore, and Shane M. Sherlund, covers government agencies, Fannie Mae and Freddie Mac, which are important players in the US housing market. These used to be privately owned companies but have now fallen into US Treasury conservatorship. This part of the book is rounded up by Chapter 9 on money market funds, by Antoine Bouveret, Antoine Martin, and Patrick E. McCabe. Money market funds function similarly to banks and are similarly vulnerable to runs, but they are regulated quite differently and do not have deposit insurance. This chapter considers money market funds in both the US and elsewhere and emphasizes how frequent runs and crises in money market funds are.

Part III of the volume is about money markets (not including money market funds, which we think of as intermediaries rather than money markets themselves). The three largest money markets are the interbank market, the repo market, and the foreign exchange market. The repo and interbank markets are both markets in short-term debt. In Chapter 10, Eric T. Swanson studies the US domestic market for uncollateralized interbank loans, known as the federal funds market. Supply of liquidity by the Federal Reserve into this market and the resulting price formation (the effective federal funds rate) have changed significantly after the Global Financial Crisis and so the pre- and post-crisis states of the federal funds market are discussed separately. In Chapter 11, Benjamin Munyan discusses the US repo market, showing how it is a key component of the plumbing of the financial system. Chapter 12, by Alain Chaboud, Dagfinn Rime, and Vladyslav Sushko, considers recent developments in the foreign exchange market. The foreign exchange market is relatively unregulated, compared to most bond and equity markets. Banks used to dominate the provision of liquidity in the foreign exchange market, but this role has recently been taken on by high-frequency trading firms.

Part IV of the volume is on capital markets, where issuers sell securities to investors. The most important capital markets are the Treasury, municipal bond, mortgage-backed security, equity, and sovereign debt markets, which are covered in this part. These markets, with the exception of equities, are considered fixed income because the securities promise a fixed payment to the holder. Treasury securities that are issued by the US government are widely considered to be effectively free of default risk. This market is reviewed in Chapter 13 by J. Benson Durham and Roberto Perli. The chapter on Treasury markets considers both the primary market (Treasury auctions) and the secondary market and discusses the important but little-known when-issued market. This is a forward market where the right to a Treasury security can be traded *after* the auction announcement, but *before* the security has actually been issued. The chapter also considers the decomposition of Treasury yields into expectations of future short rates and term premia. Chapter 14, by Daniel Bergstresser, discusses the municipal bond market, where US state and local governments are able to borrow with somewhat distinct regulatory and tax treatments. This market features an enormous number of different issuers and the securities can be quite illiquid. Nonetheless, municipal bonds have a key role in financing infrastructure spending in the US. Chapter 15, by Andreas Fuster, David Lucca, and James Vickery, deals with US mortgage-backed securities, which are claims to the cash flow on bundles of mortgages. This is a market that is relatively recent—going back to 1968—but it is now a very large market. The chapter emphasizes agency mortgage-backed securities that were created by government agencies and carry their insurance against default risk. Mortgage-backed securities greatly expanded the investor base for mortgages. Chapter 16, by Caroline Fohlin, discusses equity markets including both history and recent developments such as the rise of algorithmic trading. This chapter also includes a discussion of equity pricing including newer topics such as machine learning. Although the equity market is smaller than the bond market in terms of market capitalization, it is uniquely central to both academic finance and the popular perception of financial markets. Chapter 17, by Leonardo Martinez, Francisco Roch, Francisco Roldán, and Jeromin Zettelmeyer, moves beyond the US Treasury market to consider international sovereign debt markets. It explores why sovereign debt is seen as risky in some countries and not others and discusses policy options to reduce sovereign debt risk.

Part V of the book comprises chapters on the key derivatives markets. In Chapter 18, Bin Wei and Vivian Z. Yue describe interest rate swaps. The chapter considers types of interest rate swaps and how they are priced. Recently there has been the anomaly of "negative swap spreads" where fixed swap rates are lower than corresponding maturity Treasury yields, and the chapter devotes some space to discussing possible reasons for this anomaly. Chapter 19, by Antulio N. Bomfim, considers credit default swaps. These derivatives are useful to investors for hedging and can be used to reverse-engineer investor beliefs about the likelihood of default. But they were also a major contributor to the Global Financial Crisis and were famously referred to by Warren Buffet as "financial weapons of mass destruction". Chapter 20, by Angelo Ranaldo, discusses foreign exchange and cross-currency swaps. Foreign exchange swaps are the most traded instrument in the foreign exchange market and this chapter examines the institutional framework and recent trends in this important financial market. This relates back to Chapter 5, which considered a foreign exchange swap facility but one that is put in place by central banks. Chapter 21, by Stefania D'Amico and Thomas B. King, deals with the surprisingly difficult problem of hedging inflation risk. The optimal hedge is argued to depend on the price index and horizon being considered by the investor. The chapter also makes the important point that whereas in the wake of the Great Inflation of the 1970s, investors were willing to pay a risk premium to hedge against inflation risk, deflation risk became a bigger concern after the Global Financial Crisis. Finally, Chapter 22, by the editors, considers the long history, market structure, pricing, and usage of futures and options and illustrates how they can be used as a rich source of information on investors' beliefs.

This volume can be read almost like a textbook on financial markets, from cover to cover. The chapters are ordered to facilitate such a reading. But each chapter is a standalone treatise on the market it studies and as such this is a reference book for practitioners and researchers alike. The chapters carefully map out the state of the market and research into that market, explicitly highlighting the open questions. The editors hope that readers of this volume will be motivated to seek answers to those.

Online appendices for chapters 7 and 13 are available on the companion website at: https://www.e-elgar.com/textbooks/gurkaynak.