
CHAPTER 1.1

FINANCE TODAY

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I. INTRODUCTION

The financial sector is undeniably essential to everyday life, yet few really understand what it is, how it works, or why regulating it matters. The financial sector can help people do all kinds of things. You use financial intermediaries to store your money in a digital wallet on your phone or at a bank, to receive income, to shop at a store or online, and to pay friends or your rent or other bills. You use financial intermediaries to borrow money to purchase everyday items like clothes, to make bigger purchases, such as an appliance, a car, or a house, or to cover the cost of tuition. You rely on the financial sector to save for emergencies, or long term, for a down payment on a home and retirement. You use financial intermediaries to insure against unforeseen future events like a car accident, health problems, or an untimely death. Almost everything you do in your economic life involves a financial intermediary, either directly or indirectly. Businesses also

need the financial sector—credit, equity, insurance, savings, and payment systems, among other things, to open their doors, to grow, and to create jobs.

It is more important than ever to have the understanding necessary to participate in the ongoing debate about the role of the financial sector in our lives. The Pandemic caused by COVID-19 and the Financial Crisis of 12 years ago, both illustrate how connected our economy, and hence our daily lives, are to the stability and smooth operations of the financial sector. This is also a lesson that our grandparents and great-grandparents learned in the Depression and the New Deal. Participating in that debate means understanding how the financial sector is regulated and how different policy choices can mitigate or heighten the risks inherent in the system. This understanding includes an examination of both the architecture of regulation—the complex structure of regulatory bodies—as well as the content of the regulations themselves. It is also necessary to understand the relationship between the financial sector and what is referred to as the real economy, the part that produces goods and non-financial services.

The Financial Crisis crushed the real economy and cost countless people their jobs, homes, and businesses, focusing attention on the myriad effects of risks and problems in the financial sector. The aftermath saw slow growth in the global economy. While the Financial Crisis caused widespread damage to the economy, the Pandemic upended almost all aspects of our day-to-day lives. Going into the Pandemic, the financial sector was better capitalized and better regulated than in 2008, and the Federal Reserve and Congress quickly intervened on a massive scale to mute the financial and economic consequences. The full extent of the health, economic, and social consequences resulting from the Pandemic are likely to be unknown for some time. See Michael S. Barr, Howell E. Jackson & Margaret E. Tahyar, *The Financial Response to the COVID-19 Pandemic* (forthcoming 2021). We will cover the financial regulatory measures dealing with the Financial Crisis and the Pandemic in Chapters throughout the book.

Since the Financial Crisis, there have been fundamental changes to the ways in which the financial sector is regulated and supervised, driven by the passage in the United States of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (Dodd-Frank Act), by changes in financial regulation in other major countries, and by globally coordinated reforms. The Dodd-Frank Act and other reforms have built upon the existing regulatory architecture, not replaced it, so it is necessary to understand the history of financial regulation. The Dodd-Frank Act's key reforms include an expansion of the regulatory perimeter beyond traditionally regulated entities, giving the regulators the capacity to oversee other types of financial firms that are considered systemically important. The Dodd-Frank Act also introduced new tools to deal with the failure of systemically important financial firms, and stronger oversight of financial conglomerates. Certain reforms focused on specific areas of the financial system, such as the regulation of derivatives and shadow banking markets, stronger underwriting standards for mortgages, securitization reforms, stronger investor protections, and stronger consumer protections under the Consumer Financial Protection Bureau (CFPB) established by the Dodd-Frank Act. Internationally, regulators harmonized standards on capital, derivatives, and the cross-border resolution of failed firms, among other matters. Together, these reforms speak to many, but not all, of the regulatory weaknesses that contributed to the Financial Crisis.

The regulatory paradigm shift unleashed by the Dodd-Frank Act and the regulations which followed it are now firmly embedded in the legal framework. Nonetheless, sharp public policy debates continue, some of which relate back to older debates. The financial sector and the Trump Administration argued that the post-Financial Crisis reforms went too far and contributed to slower growth and more volatile markets. As a result, during the Trump Administration, there were efforts, some bipartisan, to recalibrate and tailor the Dodd-Frank reforms, but Trump campaign statements that his Administration would “do a number on Dodd-Frank” and House Republican efforts to undo the Dodd-Frank paradigm shift failed to materialize. Nonetheless, many commentators point out that Trump Administration changes may have gone too far in the other direction, and there still is unfinished business, especially in the regulation of mortgages and their secondary markets, in wholesale funding markets, in the architecture of the regulatory framework, in accountability, in the market infrastructure that provides support to the financial sector, and in many other areas.

In the meantime, technological and market changes require us to ask whether older regulatory policy choices that might have been sensible when made are now misaligned with their purpose in light of new risks and opportunities. Finance continues to evolve at a rapid pace, and new problems in the financial system have continued to become apparent in recent years. The Pandemic was not on financial regulators’ radar screens when it hit. The digital transformation of society, accelerated by the Pandemic, and known as financial technology (fintech), is rapidly changing opportunities and risks in the financial sector, and we discuss fintech issues throughout the book. Climate change is increasingly being understood as a financial risk as well. The Biden Administration will face many challenges in financial regulation, some of them new and some of them familiar. You will explore these and other debates in this book.

The financial system is not risk free today, nor has it ever been. Some risks can be mitigated by regulatory, supervisory, and enforcement systems, and some are inherent in finance. Some see regulation as a losing race against financial and technological innovation. Others see financial regulation as creating barriers to entry and innovation and protecting the status quo of existing players. There is a bit of truth in each point of view. The financial regulation and architecture we have today is the result of principled and differing views about the appropriate nature of regulation, as well as turf battles among congressional committees and regulatory agencies, politics, lobbying and inter-sectoral wars in the private sector, and happenstance, personality, technology, and the long shadow of history. As William Faulkner once wrote, “The past is never dead. It’s not even past.” WILLIAM FAULKNER, *REQUIEM FOR A NUN* 73 (Harper Collins 2013) (1951).

The regulation of the financial sector has, for many hundreds of years, been at the center of the cross cutting interests of money, private enterprise, and sovereign power. From European kings’ grants of bank monopolies to finance their wars, to struggles in the early American republic between federal and state power over banks and insurance, to the regulatory paradigm shifts of the New Deal and the Financial Crisis, financial regulation has always been the focus of passionate public debate. Many of the most vocal voices have been stakeholders who benefited from the status quo as well as those who looked to profit from its overthrow. There is no reason why today’s debates over financial regulation should be any less

ardently contested than battles of centuries past. Indeed, to a considerable degree, yesterday's debates are still with us. It took decades before the history of the Great Depression was fully understood, and so too will it likely be for the Financial Crisis and the appropriate regulatory responses to it.

The financial sector also matters for issues of fairness and racial justice. Government policy, private financial sector practices, and many other factors have contributed to racial discrimination in access to financial services throughout U.S. history. While there has been a massive change in law and practice over the decades, both racial discrimination and its effects on access to financial services persist today. Financial policy and financial sector practices have important roles to play in overcoming that discrimination, such as combating discriminatory and predatory practices, and developing products that better serve households. *See, e.g.,* MICHAEL S. BARR, *NO SLACK: THE FINANCIAL LIVES OF LOW-INCOME AMERICANS* (Brookings Press 2012); MEHRSA BARADARAN, *THE COLOR OF MONEY: BLACK BANKS AND THE RACIAL WEALTH GAP* (Belknap Press 2017). Despite the importance of who is in the room when decisions are made, Professor Christopher Brummer has pointed out that only 10 of 327 top financial regulators, appointed by the President and confirmed by the Senate since the New Deal, have been Black. Chris Brummer, *What do the Data Reveal about (the Absence of Black) Financial Regulators?* (Brookings Inst., Working Paper, 2020). We deal with issues of fairness, racial justice and the continuing impact of the history of racial discrimination on access to financial services in many places in the textbook. We discuss the history of redlining and other forms of discrimination in Chapter 1.2, the justifications for regulatory intervention in Chapter 1.3, the link between the legalization of marijuana and racial justice in Chapter 2.1, discrimination in auto insurance rates in Chapter 3.2, the CFPB's oversight of lending discrimination in Chapter 5.1, discrimination in mortgage lending in Chapter 5.2, auto lending practices in Chapter 5.3, the Community Reinvestment Act in Chapter 5.4, the unbanked and underbanked in Chapter 7.1, the dearth of minorities in high level supervisory posts in Chapter 8.2, and issues of affordable housing finance in Chapters 12.1 and 12.2.

This book will help you figure out what the financial sector is and how it is regulated. We aim to provide you with the context—the situational awareness—you need to understand the financial field, and to be an outstanding lawyer, policy-maker, or participant in it. In Part I, we provide you with the necessary background to contextualize the rest of the book. It will help you to understand finance, the building blocks of regulation, and the history of the financial sector in the United States. In Part II, we look at prudential regulation, which deals with safety and soundness issues, focusing on commercial banks with insured deposits, as well as other types of insured depository institutions: the thrift, the industrial loan company (ILC), and the credit union, as well as some of the innovative charter types being explored by fintech companies. In Part III, we explore the regulation of insurance. In Part IV, we look at securities and capital markets and the structure of investment banks, more properly called broker-dealers. In Part V, we analyze consumer protection. In Part VI, we delve into the regulation of large, complex financial conglomerates. In Part VII, we explore the world of payments systems, including fintech developments such as Apple Pay, Venmo, and Bitcoin, and a new cryptocurrency proposed by Facebook called Diem (originally introduced

as Libra). In Part VIII, we analyze the role of supervision and enforcement, as well as a firm's internal compliance and corporate governance. In Part IX, we explain the Federal Reserve's lender of last resort function, resolution of failed banks and nonbank financial institutions, emergency interventions in the financial sector, and the problem of "too big to fail." In Part X, we examine mutual funds and other pooled investment vehicles. In Part XI, we look at the derivatives and rates markets. In Part XII, we explore shadow banking, including securitization, the government-sponsored enterprises (GSEs), such as the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac), money market mutual funds (MMFs), and wholesale funding markets, including repurchase (repo) markets so crucial to shadow banking.

Many of the terms and concepts in this book, even in this introductory Chapter, may be entirely new to you. We do not assume you have any background with the material. The book has a glossary, which follows Chapter 12.4, that you may wish to tab, and we invite you to look at the online materials as well. They can be accessed at <https://h20.law.harvard.edu/playlists/27055>. In addition, the U.S. Department of the Treasury (Treasury) and each regulatory agency maintain websites containing a plethora of information that you may find useful, from press releases to notice and comment rulemaking and reports, which contain helpful background information. *See, e.g.*, FIN. STABILITY OVERSIGHT COUNCIL (FSOC), ANNUAL REPORT 2020 (containing a useful glossary of frequently used terminology, at page 193 *et seq.*).

The terminology used to discuss the financial sector is often muddled by common misuse. Take the word bank, for example. Every day, the media refers to many types of different institutions, such as the infamous Lehman Brothers, a now defunct broker-dealer, as a bank, when in fact Lehman Brothers was not regulated as a bank at all. You may see the word bank used in relation to a fintech company, even when it is not one. In this book, we will generally use the word bank to mean an entity that accepts insured deposits—like those you would see on your local Main Street, and where you might make a deposit, which constitutes one source of funding for banks. We do not use the word bank to refer to firms operating solely in wholesale funding markets, where sources of funding other than deposits are available, nor to nonbank affiliates within a financial conglomerate. Within excerpts and sometimes due to context, it may be given a broader meaning. Our most common extension of the word bank will be to merge it together with other insured depository institutions such as thrifts, ILCs, and credit unions. These classifications are discussed in depth in Chapter 2.1.

In this Chapter, we first explore the functions of finance, and we take a look at the theory of financial intermediation. We then examine the key participants and markets in the U.S. financial system, and we discuss key types of financial intermediaries. As you will see, a diverse array of financial intermediaries, not just banks, perform distinct, but oftentimes overlapping, functions in today's financial sector. Our discussion here generally follows the order of the book, giving you a preview of many of the types of firms and markets you will encounter.

II. THE FUNCTIONS OF FINANCE

A. THE ROLE OF THE FINANCIAL SYSTEM

Consider this description of finance and the role that it plays in society:

At its broadest level, finance is the science of goal architecture—of the structuring of the economic arrangements necessary to achieve a set of goals and of the stewardship of the assets needed for that achievement. The goals may be those of households, small businesses, corporations, civic institutions, governments, and of society itself. Once an objective has been specified—such as payment for a college education, a couple’s comfortable retirement, the opening of a new restaurant, the addition of a new wing on a hospital, the creation of a social security system, or a trip to the moon—the parties involved need the right financial tools, and often expert guidance, to help achieve the goal. In this sense, finance is analogous to engineering.

ROBERT J. SHILLER, FINANCE AND THE GOOD SOCIETY 6–7 (2012).

Professors Robert Merton and Zvi Bodie identify six basic functions that the financial system serves. See Robert C. Merton & Zvi Bodie, *A Conceptual Framework for Analyzing the Financial Environment*, in THE GLOBAL FINANCIAL SYSTEM: A FUNCTIONAL PERSPECTIVE 3.5 (Dwight B. Crane et al. eds., 1995). They are:

- ***Clearing and Settling Payments.*** The financial system enables payments to be exchanged for goods and services. Checking accounts, debit cards, and credit cards are examples of services that fulfill a clearing and settling function, allowing individuals to pay a retailer for goods with a credit card, for example, by providing a mechanism through which money is transferred from buyer to seller. Apps such as Venmo and Zelle use the existing payment system, and distributed ledger technology such as Ripple and Diem provide new payment technologies.
- ***Pooling Resources and Subdividing Shares.*** The financial system allows individual investors to aggregate their wealth into larger pools of capital and make that wealth available for firms to use to run their business. When a firm seeks a large loan, it would likely be difficult to procure the funds from a single lender. The financial system enables resources from various investors to be pooled. The financial system facilitates diversification of investments by allowing a firm to obtain a loan from the pooled resources of multiple investors. Likewise, an individual investor may want to make an investment but has insufficient capital to fund the entire project. Through financial intermediaries, the investor can diversify by investing in a variety of projects.
- ***Transferring Economic Resources.*** The financial system can enable economic resources to be transferred through time. Individuals can smooth their consumption by borrowing now against better times in the future, for example, through student loans, while others can save now for future times, for example, through retirement savings. Furthermore, firms can raise the capital they need from investments across geographies and

industries and from individual investors and firms, enabling capital to be put to its most efficient use.

- ***Managing Risk.*** The financial system allows individuals and businesses to pool and share risk. For example, mutual funds might control risk by requiring investments to be diversified. A financial intermediary might bear a risk on behalf of an investor, as in the case of an insurance company that sells protection against loss of life or assets. In addition to bearing risk, financial intermediaries may be in a better position than consumers to evaluate the riskiness of an investment.
- ***Generating and Providing Information.*** Information can help facilitate informed decision-making for businesses looking to exchange financial assets or investors considering making an investment. Businesses and individuals alike might consider information, such as interest rates, when deciding whether to make an investment or obtain a loan. Parts of the financial system allow information to be disseminated more efficiently by sharing and reusing information. Think, for example, about your own credit score, and how a bank or online lender will use it to assess your application for credit cards or loans. Such information flows can reduce costs. To take another example, information reduces an investor's costs to observe the activities of the borrower to ensure that funds are being used properly, called monitoring costs. In the digital era, there are increasing debates about who owns customer data, and whether and how it should be shared with third parties.
- ***Dealing with Incentive Problems.*** Incentive problems arise when one party to a transaction has access to information that the other party does not have, such as information that would affect the price of a security. Incentive problems may also arise when two parties have a principal-agent relationship, which can give rise to conflicting profit motives. In such a scenario, problems can arise such as information asymmetries, when one party knows information unknown to the other party; adverse selection, when a party chooses, for example, to become insured because they know they are a higher risk; and moral hazard, when a party engages in riskier behavior, for example, because the party knows it is insured and will not bear the full costs of the riskier action. The financial system can mitigate some of these incentive problems, such as by reducing monitoring costs and increasing transparency.

Keep these functions in mind as we explore how the various types of financial intermediaries carry them out. Think about how the regulatory landscape shapes the ways in which different types of financial intermediaries fulfill these functions.

B. FINANCIAL INTERMEDIATION

Financial intermediation may be thought of as falling into two ideal types, direct finance and indirect finance. Direct finance means an investor or creditor providing funding to a company or person and being exposed directly to gains or losses from the direct relationship. Even direct finance usually involves a financial intermediary, such as a broker, to facilitate the saver's investment. HAROLD L. COLE, FINANCE AND FINANCIAL INTERMEDIATION: A MODERN TREATMENT OF

MONEY, CREDIT, AND BANKING 3–4 (1st ed. 2019). Financial intermediaries use their expertise and size, which can create efficiencies through scale economies, in screening and monitoring, and better access to information to match providers of financial capital with users. New forms of direct finance, such as crowdfunding and market-place lending, use internet-based platforms to generate investment from both individual investors and financial firms. By contrast, with indirect finance, intermediaries stand between providers and users of capital. Consider the example of a bank into which savers make demand deposits that can be withdrawn for cash at any time, while the bank transforms these deposits into longer-term loans to borrowers.

Both direct and indirect finance involve asset transformation—*i.e.*, the pooling of resources from many smaller investors to create a new, larger asset, such as a loan—and maturity transformation—*i.e.*, the conversion of liquid short-term assets (deposits) into illiquid long-term assets (loans). Financial intermediaries engage in asset and maturity transformation so that both suppliers of capital (savers) and users of capital (borrowers) can have access to the financial instrument that best meets their needs. A liquid asset is cash or an asset that may readily be converted into cash without losing value. Liquid assets provide the firm or households with ready access to cash when it is needed. It is not desirable, however, for firms and households to hold only liquid assets. Longer-term assets might provide higher returns and stability over time. Financial intermediaries can transform assets across a number of different attributes: from liquid to illiquid forms, from short- to long-term maturity, from less to more risky forms (or the reverse). Asset transformation can help allocate capital to its highest and best uses. For instance, consumers can smooth their consumption over time by depositing it in a bank for future use and withdrawing it when needed. The consumer's deposit is essentially a loan to the bank; the bank will pay the consumer interest on the deposit, while the bank in turn transforms the deposit into a loan to a business. By bundling the funds received from multiple depositors, the bank can create bigger loans. Asset transformation thus involves pooling resources, subdividing shares, and transferring economic resources.

Financial intermediaries help savers manage risks by diversifying their assets. For example, a depositor can lend funds to a bank, and the bank can pool those funds with those of other depositors to invest in a broad range of assets. Financial intermediaries provide a range of insurance functions. For example, banks help provide insurance against shocks, such as a spike in expenses, by providing liquidity—immediate access to one's savings. ILONKA RUHLE, WHY BANKS? 201 (Manfred Nitsch et al. eds., 1997). Insurance companies, for instance, serve an explicit role in bearing risks against uncertainties in a consumer's future, such as death, disability, or property loss. Like other financial intermediaries, insurance companies pay out obligations from a portfolio of assets, thus bearing the risks from changes in the asset values of those portfolios, rather than the consumer bearing such risk. Richard W. Kopke & Richard E. Randall, Fed. Rsrv. Bank of Boston, *Insurance Companies as Financial Intermediaries: Risk and Return*, 35 Conference Series 19 (1991).

Many theories focus on the role of banks as lenders. Professor Douglas Diamond focuses on how banks enable resources to be pooled. If a large loan is needed, a borrower might need to obtain that loan from a variety of sources. As the

number of lenders to a single borrower grows, however, each individual has less incentive to monitor the borrower because his share of the total loan is reduced. Individual lenders may either duplicate monitoring costs or free ride off the monitoring of other lenders—both of which would be inefficient outcomes. In such a situation with many lenders, banks step in because the task of monitoring the borrower can be more efficiently delegated to the bank. See Douglas Diamond, *Financial Intermediation and Delegated Monitoring*, 51 REV. ECON. STUD. 393 (1984). The bank is incentivized to diversify its portfolio because that reduces the probability that it will fail to pay its own lenders (*i.e.*, depositors) in the case of default of the borrowers. *Id.* at 402. Professors John Boyd and Edward Prescott posit that financial intermediaries help overcome asymmetrical information, which occurs when one agent (the borrower) has private information that the other does not have. Financial intermediaries invest in evaluating projects to reduce such asymmetries. John H. Boyd & Edward C. Prescott, *Financial-Intermediary Coalitions*, 38 J. ECON. THEORY 211 (1986).

For Diamond and Professor Philip Dybvig, maturity transformation is a key reason why banks exist. Maturity transformation enables banks to offer short-term liquidity (a deposit) to savers while providing a long-term loan to borrowers. Maturity transformation fails when all depositors demand a withdrawal of their deposits at the same time, creating what is colloquially known as a run on the bank, a concept that we will return to in Chapter 2.4. Douglas Diamond & Philip Dybvig, *Bank Runs, Deposit Insurance, and Liquidity*, 91 J. POL. ECON. 401 (1983).

Professors Gary Gorton and George Pennacchi focus on the creation of the bank's liabilities. Their key insight is the need for bank debt to be information insensitive—*i.e.*, have value that is not dependent on information known only to informed investors—so that uninformed agents can invest in the debt, creating liquidity. Gary Gorton & George Pennacchi, *Financial Intermediaries and Liquidity Creation*, 45 J. FIN. 49 (1990). Demand deposits are an example of how liquidity is created. Demand deposits are thought of as information insensitive because private information generally does not need to be known about the value of the asset; they are thought of as safe and riskless. Information insensitivity makes demand deposits liquid, because they can be traded without fear that the other party has secret information about the value of the debt. *Id.* at 60–62. Bank runs have had devastating economic costs at many points in U.S. history, and protecting against such runs has been a principal aim of regulatory policy. Issuance of instruments similar to demand deposits, for example, repos issued by broker-dealers, played a key role in the Financial Crisis, as we will see at several points in this book. *But see* Charles Calomiris & Charles Kahn, *The Role of Demandable Debt in Structuring Optimal Banking Arrangements*, 81 AM. ECON. REV. 497 (1991) (arguing that demandable debt helps to discipline banks).

Asset and maturity transformation create risks for financial intermediaries. Policy-makers have developed different tools to try to contain these risks. For example, banks are required to fund themselves with at least a certain level of capital—equity that can act as a cushion in case of losses on its assets. Banks are also required not to lend out all their funds, but rather to hold some cash or liquid assets in the form of reserves that can be used to pay off creditors quickly. Bank deposits are insured so that depositors do not have an incentive to run on the bank in the event of concern about the bank's health. As you read about banks,

insurance companies, securities firms, and other parts of the financial system, ask yourself which of these kind of tools, or other regulatory techniques, are applied or should be applied in different contexts. To what extent are functionally similar institutions, products, or services regulated similarly?

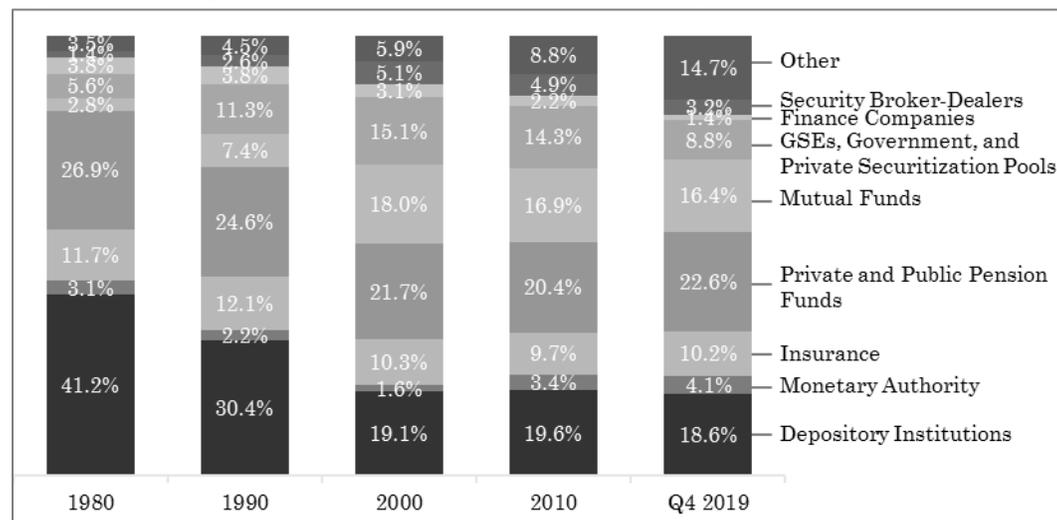
III. FINANCIAL SERVICES IN THE UNITED STATES

A. OVERVIEW

The U.S. financial system is large, varied, complex, and interconnected. As of the fourth quarter of 2019, U.S. gross domestic product was about \$21.73 trillion. According to the U.S. Commerce Department's Bureau of Economic Analysis, financial services currently represent 7.6% of U.S. gross domestic product, or more than \$1.39 trillion. *See Industry Facts: Finance and Insurance*, BUREAU OF ECON. ANALYSIS. The sector employs over six million people. *See Industries at a Glance: Finance and Insurance*, BUREAU OF LABOR STATISTICS. The U.S. financial sector intermediated more than \$89 trillion in assets in 2019. *See* BD. OF GOVERNORS OF THE FED. RSRV. SYS., FINANCIAL ACCOUNTS OF THE UNITED STATES: FOURTH QUARTER 2019 (2020).

The part of the financial system that you are probably most familiar with is the insured depository sector. The sector, which includes banks, thrifts, and credit unions, however, has shrunk from more than 40% of the financial system in 1980 to less than 20% in 2019, while other sectors, such as mutual funds, have grown. Figure 1.1-1 shows the market share of different segments of U.S. financial services that we will discuss shortly.

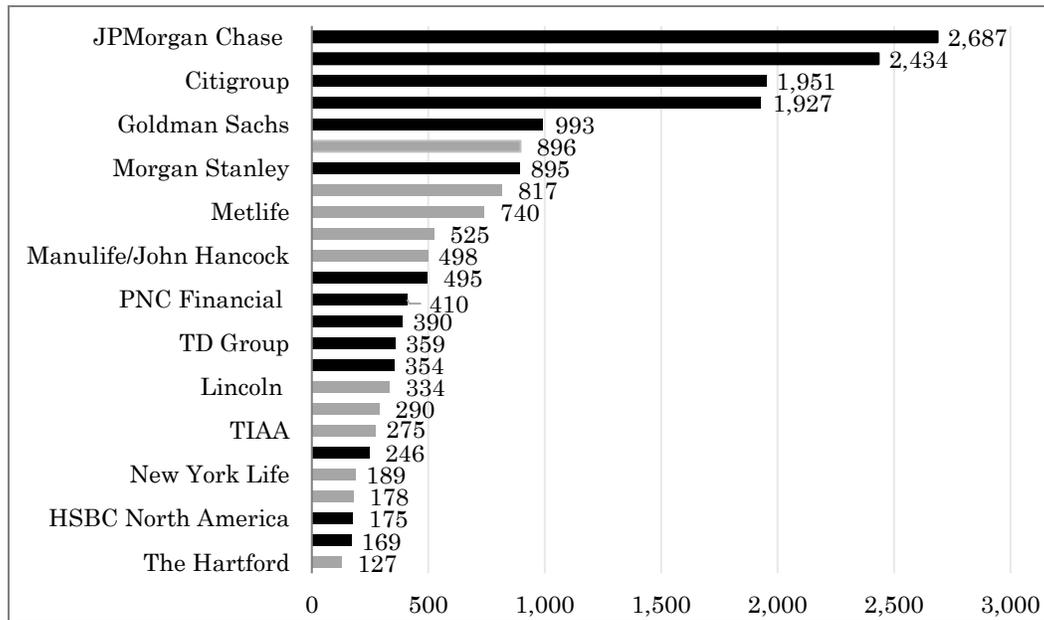
Figure 1.1-1 Proportion of Total Financial Assets Held by Financial Intermediaries



Source: Bd. of Governors of the Fed. Rsrv. Sys., *Financial Accounts of the United States* (2019).

To give you a sense of the largest participants in the banking, securities, and insurance markets, Figure 1.1-2 shows the biggest U.S. financial conglomerates and insurance companies by asset size.

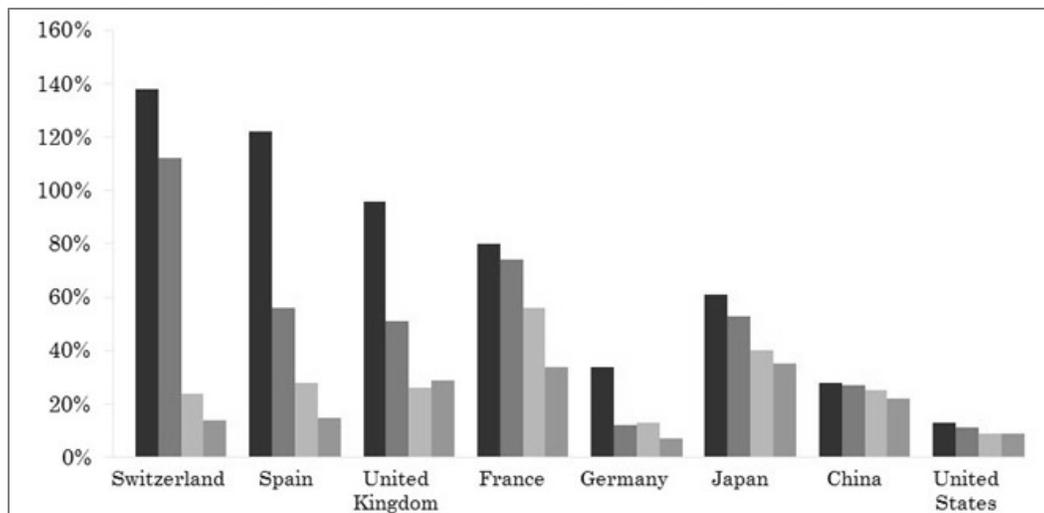
Figure 1.1-2 Largest U.S. Financial Conglomerates and Insurers (as of Q4 2019) (\$ billions)



Sources: Each entity's 2019 10-K report, available at each entity's website.

Even though the U.S. financial system is large and the United States has a number of large financial companies, the U.S. economy is also large. Figure 1.1-3 compares the relative size of several developed countries' economies and their banking sectors. Although there are many ways of making this comparison, one standard way is to measure the asset size of a country's top four banking organizations relative to its gross domestic product.

Figure 1.1-3 Assets as a Percentage of Home Country Gross Domestic Product for Four Largest Banking Organizations in Country (as of Q4 2019)



Sources: 2019 Annual Reports of UBS Group AG, Credit Suisse Group AG, Zurcher Kantonalbank, Julius Baer Group Ltd. (Switzerland); Banco Santander, S.A., Banco Bilbao Vizcaya Argentaria, S.A., CaixaBank, S.A., Bankia S.A. (Spain); HSBC Holdings plc, Barclays PLC, Royal Bank of Scotland Group, Lloyds Banking Group plc (UK); BNP Paribas, S.A., Credit Agricole, S.A., Société Générale, Groupe BPCE

(France); Deutsche Bank AG, Commerzbank AG, KfW Group, UniCredit Bank AG (Germany); Mitsubishi UFJ Financial Group, Inc., Japan Post Group, Mizuho Financial Group, Inc., Sumitomo Mitsui Financial Group, Inc. (Japan); Industrial and Commercial Bank of China Limited, China Construction Bank Corporation, Agricultural Bank of China Limited, Bank of China Limited (China); J.P. Morgan Chase & Co., Bank of America Corporation, Citigroup Inc., Wells Fargo & Co. (United States); Fed. Rsrv. Bank of St. Louis, Econ. Rsch., Current Price Gross Domestic Product; World Bank, World Development Indicators.

You may also be familiar with capital markets—*i.e.*, the markets for the issuance of debt and equity that companies use to finance their operations. The United States has the largest and most liquid capital markets in the world. Companies issued \$2.1 trillion in new debt and equity in the United States in 2019 alone. By the end of 2019, U.S. equity markets totaled more than \$37 trillion, and U.S. corporate debt markets reached over \$10.1 trillion outstanding. *See Credit Trends: Global Corporate Debt Market: State of Play in 2020*, S&P GLOB. RATINGS (2020); *see also* SEC. INDUS. AND FIN. MKTS. ASS'N, 2020 CAPITAL MARKETS FACT BOOK (2020) (corporate debt). Capital markets also involve large issuances of government debt, as well as asset-backed securities, a type of security linked to a pool of assets, such as mortgages. Asset-backed securities provide an income stream to investors, and can be used to fund a wide range of underlying loans, such as mortgages, auto loans, and credit cards.

In this section, we ground our future discussions by providing you with an overview of some of the different types of key institutions and markets that make up our financial system. These institutions include banks, insurance companies, and securities firms, as well as complex financial conglomerates that own such businesses, asset managers and the funds they manage, including pensions and mutual funds, and GSEs, such as Fannie Mae and Freddie Mac. We also look at a range of financial markets, from consumer finance to derivatives, securitization, and wholesale funding. Throughout the book, we point out how fintech innovations are changing classic business models. Our goal is to provide you with a heightened awareness of the financial system working all around you.

A recurring theme throughout this book is the interplay between function, form, and regulation. Financial products, services, and institutions bump up against, cross, and help change legal and jurisdictional lines. Products with a similar function but a different legal form may be regulated quite differently. Banking, securities, and insurance firms' products and services can often serve similar purposes, but are governed by differing legal principles, regulatory bodies, congressional committee oversight, and other factors. Similarly, there are often fine lines between the type of products that might be considered financial in nature and those offered by, say, a technology or communications company regulated by quite different rules. The difficulty of line-drawing in the financial sector leads to opportunities for regulatory arbitrage—or efforts to get around regulation by re-characterizing a financial product or service—as well as gaps, weaknesses, or redundancies in financial regulation. The Financial Stability Oversight Council (FSOC), a coordinating body of financial regulators created by the Dodd-Frank Act, is designed to reduce opportunities for arbitrage, but its authorities are constrained in a variety of ways.

The history of the financial sector is replete with examples of how market forces and technological change have eroded boundaries between different types of financial institutions, as you will see in Chapter 1.2. As statutes that were put in

place during an earlier era and that reflect earlier stakeholder battles were pushed into obsolescence by market forces and technological change, financial intermediaries have looked for ways to avoid regulation or to change the rules through regulation, legislation, or the courts. Those who benefited from the current system fought back with the same tools. Think, by analogy, to Uber. Stakeholder battles and regulatory arbitrage, which can sometimes serve innovation and sometimes lead to enhanced systemic risk and abuse, are as old as the financial sector itself. Consider the potential costs and benefits as you read the following sections examining different parts of the financial system.

B. INSURED DEPOSITORY INSTITUTIONS

In Part II, we explore prudential regulation, with a particular focus on insured depository institutions, a term which includes any entity that accepts deposits covered by deposit insurance. The term is often shortened to the acronym IDI. The most widely recognized type of IDI is a bank, often referred to as a chartered commercial bank. Thrifts, ILCs, and credit unions are also IDIs. While a handful of U.S. banks are extremely large, the United States also has a thriving regional banking sector and a diverse array of community banks and credit unions around the country. There are more than 5,000 banks and thrifts in the United States, and more than 5,000 credit unions. *Institution Directory*, FDIC (Mar. 31, 2020); see NAT'L CREDIT UNION ADMIN., *INDUSTRY AT A GLANCE* (Mar. 31, 2020).

Retail banks and other depositories offer customers a range of products, such as checking accounts and residential mortgages. A bank in its simplest form functions in the following way: Customers deposit money into their checking accounts at the bank. Since the establishment of deposit insurance in the wake of the Great Depression, retail deposits are insured (up to a cap) by premiums paid by insured banks and thrifts to a government agency—the Federal Deposit Insurance Corporation (FDIC). These customer deposits function as short-term loans to the bank. The bank maintains a percentage of the deposits it receives as cash on hand to pay customers who want to withdraw funds from their checking accounts; this fraction is referred to as reserves. The bank then uses the remainder of the deposited money (and other borrowings, retained earnings, and equity raised) to fund the long-term loans it offers, such as 30-year residential mortgages. The duration disparity between short-term funding from deposits and other sources and long-term lending is referred to as maturity mismatch. The system where only a fraction of deposits are kept in cash at the bank is referred to as the fractional reserve system. The problems arising from fractional reserves and maturity mismatch motivate many of the regulations governing IDIs.

Banks also serve businesses, as well as other banks and financial institutions. Banks offer business loans, and they serve as custodians for financial assets. They clear transactions between other financial institutions, and they perform myriad other critical payments and transaction processing functions that smooth the flow of finance. Banks have traditionally been distinguished from other types of financial institutions by their role in the payments system and the transmission of monetary policy. That is, through a system of debits and credits to deposit accounts, banks facilitate payments. Banks help transmit monetary policy because interest rates in the broader economy are influenced by the rates banks charge each other to borrow excess reserves, a rate influenced by Federal Reserve

monetary policies. Banks have always been subject to competition from nonbank firms in providing loans and are increasingly subject to competition in providing deposit-like services; more recently, other types of firms are playing increasingly important roles in both payments services and in monetary policy transmission.

As you will see in Chapter 2.1, banks and other depositories are defined by their charters. Some fintechs are exploring different types of bank charters. A charter accords an institution with particular privileges and responsibilities. For example, IDIs can raise funds by offering deposit accounts with federal insurance and are regulated for safety and soundness by their bank supervisors.

Another way to define banks is based on the services they provide—that is, the transformation of liquid liabilities (demand deposits) into illiquid assets (loans). One shortcoming of such a services-based definition can be seen from the entry of other types of financial intermediaries into traditional bank functions, eroding many of the distinctions between commercial banks and other types of financial institutions. Many nonbanks perform functions that are similar to those performed by banks. Investments in MMFs, for instance, have characteristics similar to demand deposits, including liquidity and the opportunity to earn a return on an investment. On the lending and investment side, a variety of nonbank financial institutions, such as commercial lending companies, broker-dealers, and insurance companies, as well as market-place and other fintech providers, enable companies to borrow and raise capital. As you will see, functionally similar activities are often regulated differently depending on what type of institution offers the service.

C. INSURANCE COMPANIES

In Part III, we explore insurance regulation. There are over 5,900 insurance companies in the United States. *See* NAT'L ASS'N OF INS. COMM'RS, 2018 INSURANCE DEPARTMENT RESOURCES REPORT, VOL. 1, 35 (2019). While there are many different types of insurance, two of the largest categories are property/casualty and life insurance. Although these two types of insurance address different risks, all insurance companies specialize in spreading risk as contingent liability intermediaries. To understand this concept, consider for a moment the economic function of insurance: spreading the risk of an adverse event across a group of individuals or firms. In exchange for payments from insurance policyholders, typically known as premiums, insurance companies commit themselves to make contingent payments back to those policyholders in the event that some specified adverse event happens in the future, such as when an automobile is damaged, a house burns down, or a person dies. An insurance company's commitments are probabilistic. Not all policyholders will suffer the event against which they purchase insurance; indeed, the entire business model of insurance companies typically requires that the vast majority of policyholders do not make claims on their policy in any particular time period. With the help of actuaries, the amount of an insurance company's commitments can be predicted, often with considerable accuracy, but the obligations are not fixed in the same way that a bank deposit with a fixed rate of interest is fixed. Insurance companies typically invest policy premiums in a portfolio of assets. The distinguishing characteristic of an insurance company's balance sheet is the presence of future policy claims as the firm's principal liabilities.

Insurance is primarily regulated by the states, although, you will see, the federal role is large or even dominant in specialized sectors, such as health and pensions. The federal role increased significantly after passage of the Dodd-Frank Act and ongoing developments in international capital reforms, especially with respect to large, internationally active insurance firms.

In many functional ways, insurance companies and banks are similar. Both provide financial intermediation; banks take deposits and turn them into loans, whereas insurance companies take premiums and use that money to invest or provide loans. Both hold fractional reserves; banks hold a fraction of deposits in cash to meet withdrawals and similarly insurance companies only hold a percentage of their assets in liquid form to satisfy claim requests while attempting to match longer-term liabilities with longer-term assets. Both mitigate risk; banks take liquid deposits and turn them into diversified gains for the consumer, and insurance companies take premiums and turn them into future assurances. Both require the trust of customers and therefore are highly regulated with the goal of ensuring that such trust is warranted.

Like banks, insurance firms and their affiliates can also be engaged in complicated and sometimes risky transactions. During the Financial Crisis, for example, the insurance conglomerate AIG faced failure when it was required to post additional collateral on the credit default swaps (CDSs) it sold through its financial subsidiary AIG Financial Products. Before the Financial Crisis, the sale of over-the-counter (OTC) derivatives such as CDSs was almost completely unregulated, and AIG had not been required to hold capital to mitigate against losses in the event of massive defaults. The federal government ended up providing AIG with over \$182 billion in financial support by the end of the Financial Crisis. FIN. CRISIS INQUIRY COMM'N, FINANCIAL CRISIS INQUIRY REPORT 350 (2011). In part in response to AIG's near failure and an understandably strong reaction to the federal support of AIG, the architects of the Dodd-Frank Act wanted to provide a mechanism to bring large, complex financial firms under the ambit of Federal Reserve supervision, even if the firm was not organized as a bank or its holding company. Under § 113 of the Dodd-Frank Act, the FSOC is empowered to designate nonbank financial companies for Federal Reserve supervision. 12 U.S.C. § 5323. The FSOC designated AIG and two other insurance conglomerates, Prudential and MetLife, for Federal Reserve supervision, along with the financial conglomerate GE Capital, which broke itself up and was de-designated in 2016.

The approach to designation changed during the Trump Administration. In 2017, FSOC de-designated AIG after major changes to its business model, removing it from federal supervision. MetLife fought its designation in federal court and won at the district court level; the government appealed, but in 2018, the FSOC and MetLife filed a joint motion to dismiss the appeal voluntarily, thereby ending the fight to have the insurance conglomerate designated. Joint Motion to Dismiss, *MetLife, Inc. v. FSOC*, No. 16-5086 (D.C. Cir. Jan. 18, 2018). Prudential was de-designated in 2018, leaving no remaining nonbank SIFIs under the purview of FSOC. FSOC, NOTICE AND EXPLANATION OF THE BASIS FOR THE FINANCIAL STABILITY OVERSIGHT COUNCIL'S RESCISSION OF ITS DETERMINATION REGARDING PRUDENTIAL FINANCIAL, INC. (Prudential) (Oct. 16, 2018). FSOC has altered its designation process to de-emphasize firm-level oversight in favor of

activities regulation. It is possible that the Biden Administration will revisit this pivot or may also become more intense in activities regulation.

Other insurance conglomerates owning a thrift depository have come under Federal Reserve supervision because of the Dodd-Frank Act's changes to holding company regulation. The Dodd-Frank Act also created the Federal Insurance Office (FIO) to provide the federal government with greater information on the insurance sector, and to negotiate international agreements regarding insurance, as has since been done with the European Union. International capital reforms are moving towards a more coordinated international system of capital rules for insurance, as they had previously done for banking.

D. SECURITIES FIRMS

In Part IV, we explore securities markets, which are markets in investments such as stocks or bonds. Broker-dealers, often called investment banks, play important roles in those markets. Investment banks are financial intermediaries that seek to connect those looking for funding with those looking to invest. They provide a variety of services that include, but are not limited to, underwriting, brokering, and dealing securities. Investment banks do not take deposits—at least not in the form of insured deposits—but as you will see, they can fund themselves by borrowing in wholesale markets with other financial instruments that are functionally similar to deposits.

Underwriting refers to the process by which investment banks facilitate a corporation's sale of its securities. Brokering is when an investment bank buys and sells securities as an agent on behalf of a customer, and dealing is when an investment bank buys and sells securities using its own funds.

Investment banks are not regulated as banks, but instead are regulated by the Securities and Exchange Commission (SEC) as broker-dealers. During the Financial Crisis, many of the oldest household names in investment banking disappeared or were incorporated into bank holding companies (BHCs), corporations that own one or more banks and financial affiliates in one group. Lehman Brothers went into bankruptcy, Merrill Lynch was acquired by Bank of America, and Bear Stearns was acquired by J.P. Morgan Chase. Morgan Stanley and Goldman Sachs converted into BHCs during the Financial Crisis with the result that they were able to convey a sense of safety, as they were brought under the supervision of the Federal Reserve. Moreover, the Federal Reserve provided their broker-dealer subsidiaries access to the Federal Reserve System's liquidity—the short-term funding that a central bank supplies to banks as a lender of last resort. Post-Financial Crisis, there are few stand-alone investment banks left, and those that do remain are more specialized in advising. Today, the largest broker-dealers are part of BHCs, such as J.P. Morgan Chase, Citigroup, and Bank of America. As is the case with insurance companies, were there a broker-dealer that the FSOC found to be systemically important, the FSOC could designate the firm for Federal Reserve supervision.

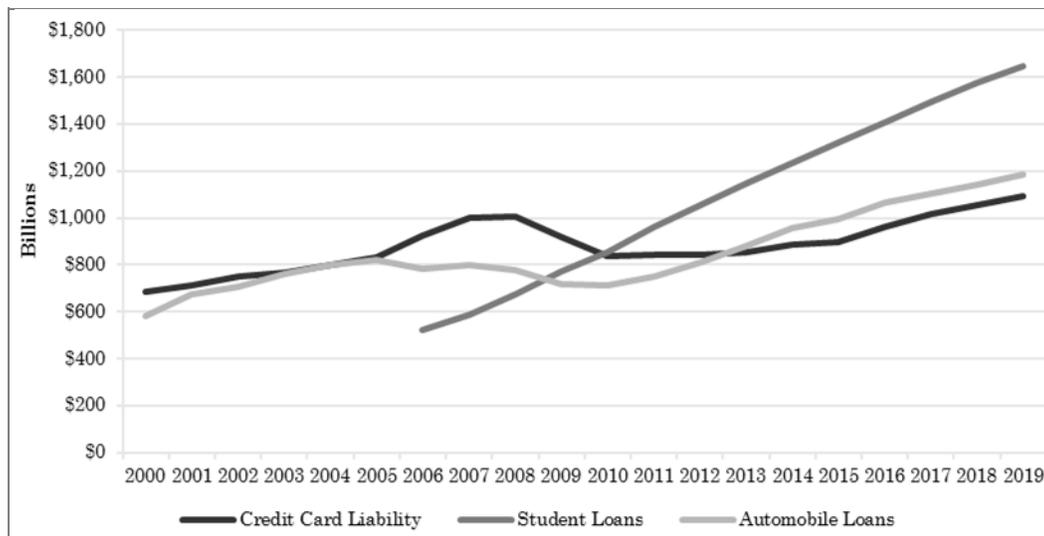
In addition to examining the structural and prudential issues affecting securities markets, Part IV explores the duties of care owed by brokers, dealers, and investment advisors to their clients under the Securities Act of 1933 (1933 Act), the Securities Exchange Act of 1934 (1934 Act), and the Investment Advisers

Act of 1940 (1940 Act). As of June 2019, there were approximately 3,700 broker-dealers registered with the SEC, holding a total of \$4.5 trillion in assets. The sector is concentrated, with about 57% of broker-dealer assets held by the top ten firms. FSOC, 2020 ANNUAL REPORT 97 (2020). There are about 13,000 registered investment advisers, with \$83.7 trillion in assets under management, on behalf of more than 43 million retail and institutional clients. The top 1% of firms manage nearly 60% of assets under management. INV. ADVISER ASS'N, 2019 EVOLUTION REVOLUTION 8, 14 (2019).

E. CONSUMER FINANCE

The financial sector is also critical for households, and in Part V, we examine consumer finance. Consumer financial services and products include credit cards, auto loans, student loans, mortgages, money transfers, and other products and services that individuals use every day. As you can see from Figure 1.1-4, student debt has been growing rapidly for the last decade and now eclipses credit card debt and auto loans in total amounts outstanding.

Figure 1.1-4 Consumer Credit



Source: Bd. of Governors of the Fed. Rsrv. Sys., *Financial Accounts of the United States* (2019).

Before the Dodd-Frank Act, federal financial consumer protection regulation was fragmented among many different agencies, which complicated rule writing, supervision, and enforcement. This fragmentation also allowed banks to choose the least restrictive consumer protection rules available and nonbank financial institutions to avoid federal supervision altogether. Federal agencies, concerned mostly with the safety and soundness of the institutions within their purview, did not focus on protecting consumers and, in some cases, preempted state consumer protection laws without adequately replacing these important safeguards. Michael S. Barr, *The Financial Crisis and the Path of Reform*, 29 YALE J. ON REG. 91, 106 (2012).

The Dodd-Frank Act replaced much of this fragmented federal system with a single, dedicated regulatory agency, the CFPB. Armed with expanded authority to prohibit unfair, deceptive, and abusive practices, and with a congressional mission

to “ensure that...consumer protection laws and regulations are comprehensive, fair, and vigorously enforced,” H.R. REP. NO. 111-517, at 874 (2010), the CFPB has taken a number of steps to reform consumer and mortgage markets. The consolidation of supervision, enforcement, and rulemaking authorities in the CFPB is designed to improve feedback in the rulemaking process, as well as general regulatory quality. The CFPB is charged with balancing consumer protection, financial access, and innovation, and with collaborating more closely with state attorneys general. The CFPB has incorporated insights on consumer decision-making derived from behavioral economics. Supporters of the CFPB take the view that this new generation of consumer protection regulation may not only promote competition among banks and nonbank institutions on the basis of price and quality, but also may empower consumers to make their own choices and find the most suitable financial products, even when providers have incentives to hide true costs. Barr, *The Financial Crisis and the Path of Reform*, at 107. Critics have charged that the CFPB lacks sufficient accountability, has excessive discretionary power, regulates by *ad hoc* enforcement rather than by rulemaking, and has exceeded its mandate. The Trump Administration’s appointees to the CFPB curbed the intensity of its regulatory, supervisory, and enforcement practices. It is expected that the Biden Administration will emphasize a more active CFPB. We explore consumer protection and the CFPB further in Part V.

F. FINANCIAL CONGLOMERATES

Part VI explores financial conglomerates, beginning with a focus on BHCs—corporations that own one or more banks and other financial affiliates in one group. The BHC is typically Delaware-chartered and publicly listed. The vast majority of banks are owned by a BHC. The breadth of financial activities in which those BHCs that qualify as financial holding companies can engage, as expanded through Federal Reserve regulatory changes over many years, and further expanded through the Gramm-Leach-Bliley Act (GLBA) in 1999, provides the group with latitude to engage in a wide range of activities under the holding company umbrella. The Dodd-Frank Act curtailed some of these authorities through § 619 (the Volcker Rule), which prohibits proprietary trading and restricts internal hedge funds and other covered funds. The Dodd-Frank Act also moved supervision of savings and loan holding companies from the now-defunct Office of Thrift Supervision (OTS) to the Federal Reserve.

As of the first quarter of 2020, BHCs in the United States with greater than \$10 billion in assets collectively held assets of about \$22 trillion. *Large Holding Companies*, FED. FIN. INSTS. EXAMINATION COUNCIL: NAT’L INFO. CTR. During the Financial Crisis, crisis-driven mergers increased concentration at the top among the largest BHCs and the remaining two large stand-alone investment banks, Goldman Sachs and Morgan Stanley, became BHCs themselves. The four largest BHCs—J.P. Morgan Chase, Bank of America, Citigroup, and Wells Fargo—accounted for roughly 45% of assets held by BHCs with more than \$10 billion in assets as of the first quarter of 2020. *Id.*

In addition to bolstering regulation of BHCs and limiting their activities through the Volcker Rule, the Dodd-Frank Act authorized FSOC to designate nonbank financial firms for systemic-risk supervision by the Federal Reserve. We discuss these authorities in Chapter 6.3. As discussed above, no such firms are

designated as of the end of 2020. Expanding the scope of regulation to cover additional entities is one way the regulatory perimeter can widen. Problems of the regulatory perimeter (explored in Chapter 1.4) are pervasive in financial regulation, and the designation authority is an innovative, and controversial, approach to addressing the boundary between the regulation of banking and shadow banking. Since large financial conglomerates operate transnationally, Part VI ends with a Chapter that explores the regulation of foreign banks that enter the United States—an important part of the U.S. market—and the regulation of U.S. banking organizations that enter foreign markets.

G. PAYMENT SYSTEMS

Part VII explores payment systems. A payment system is a set of instruments, procedures, and rules for the transfer of value among system participants. In plainer terms, payments systems permit you to pay for goods or services. Ultimately, when you make a payment at a store, for example, the payment is translated through a series of transactions into a set of debits and credits at banks in accounts they hold at their regional Federal Reserve Banks. Payments are the essential plumbing of the financial system. Technology, rules, and, most importantly, trust undergird the payment system. Despite the importance of payment systems, until the 2010s, little attention had been paid in the U.S. to how they work and how to make them work better.

Chapter 7.1 examines the U.S. payment systems and explores the different legal frameworks—state, federal, and self-regulatory—applicable to each one. It starts with a focus on retail (or consumer-facing) payment methods, including cash, checking, credit cards, and debit cards. As you will discover, the consumer protection rules for various kinds of payments products vary dramatically from one another, even among the pieces of plastic you carry around in your wallet. We examine the ways in which the payments system affects low- and moderate-income households, including the unbanked and underbanked. The Chapter includes an examination of retail interbank funds transfers, *i.e.*, the transfers of value between banks, and concludes with a discussion of Venmo, Apple Pay, Zelle, and other mobile apps that are designed to enhance the consumer experience. While easier to use than many older technologies such as credit and debit cards, these products, as you will learn, still ride the old rails of the existing payment system.

Chapter 7.2 explores critical issues in payment systems, beginning with rapidly developing alternative fintech protocols designed to create new rails for payments, including those based on blockchain and distributed ledger technology. We examine private sector cryptocurrencies, such as Bitcoin, Ethereum, Ripple, and the proposed Diem, as well as central bank digital currencies. Fintech could make payments faster and cheaper, but incumbent providers are fighting back, and regulators are worried about everything from money laundering and terrorist financing to privacy and cybersecurity, not to mention investor protection issues, as many have come to view Bitcoin and other cryptocurrencies as potential investments. The Chapter also examines approaches for controlling risks involved in payments and settlements between banks, including cross-border payments. The Chapter looks at controversies around interchange fee regulation, the fees charged on debit or credit card transactions, including antitrust litigation, as well as the Durbin Amendment (included in the Dodd-Frank Act), which caps

interchange fees, and ongoing fights between merchants and the banking sector. The Chapter also examines anti-money laundering rules. Throughout, we raise questions about the future of payment systems.

H. ASSET MANAGERS

In Part X (skipping over, for purposes of this introductory Chapter, our discussion of supervision in Part VIII and the resolution of failed firms and the lender of last resort in Part IX), the book explores mutual funds, hedge funds, and other private funds. The U.S. asset management sector comprises over \$40 trillion in financial assets under management as of 2019 and plays a central role in capital formation and credit intermediation. BlackRock is the largest U.S. asset manager, with nearly \$6 trillion in global assets under management as of 2019. BLACKROCK, WORLDWIDE LEADER IN ASSET AND RISK MANAGEMENT 1 (Feb. 2019). Unlike banks, asset managers do not hold these assets on their balance sheets; rather, they act as agents for their clients. OFF. OF FIN. RSCH. (OFR), 2014 ANNUAL REPORT 72 (2014). Asset managers include independent asset management companies, such as BlackRock, asset managers that are part of BHCs, pension fund asset managers, and asset managers that are part of insurance companies.

There are four primary types of funds that these firms manage: mutual funds and MMFs, hedge funds and private equity funds, collective investment funds, and privately managed separate accounts, through which asset managers invest the assets of institutional investors, insurance companies, sovereign wealth funds, and wealthy individuals.

The largest segment of the asset management business consists of publicly registered investment companies, colloquially known as mutual funds. As of 2019, U.S. investment companies hold over \$26 trillion in assets on behalf of more than 100 million U.S. retail investors. INV. CO. INST., 2020 INVESTMENT COMPANY FACT BOOK 28 (2020). In the United States, there are four main types of public funds: open-end mutual funds, closed-end funds, exchange-traded funds (ETFs), and unit investment trusts. Open-end mutual funds are the most common form of public fund. As of 2019, mutual funds had roughly \$21.3 trillion in assets. ETFs are the next largest type, with \$4.4 trillion in assets. *Id.* at 31. The sector is highly concentrated. The top five mutual fund complexes manage 53% of U.S. mutual fund assets and the top 25 mutual fund complexes manage 80% of U.S. mutual fund assets. *Id.* at 46. A 2013 OFR report found that ten firms have more than \$1 trillion in assets under management, nine of which have U.S.-based managers. OFR, ASSET MANAGEMENT AND FINANCIAL STABILITY 3 (2013).

Mutual funds referred to as open-end funds allow investors to buy shares in the fund and redeem (or sell) them back to the fund. Through the sale of shares, mutual funds raise capital to invest in the market. Investors then share in the returns from the mutual fund's investment portfolio. Shareholders are endowed with voting rights and, in principle, have the authority to elect directors and approve material changes to the fund's contract with its investment adviser.

A mutual fund is formed when a sponsor organizes the necessary capital and investors to launch the fund. This sponsor often also serves as the fund's investment advisor and charges the fund a management fee for its services. A mutual fund must register with the SEC as an investment company under the

1940 Act. Mutual funds offer investors diversification, liquidity, and the benefit of the investment adviser's expertise. We defer our discussion of MMFs, a special type of mutual fund that seeks to provide a financial substitute for demand deposits, to Part XII.

Unlike mutual funds that are registered with and highly regulated by the SEC, hedge funds were, until recently, largely unregulated. In fact, they were largely defined by their exemption from the 1940 Act registration.

As described by the President's Working Group on Financial Markets,

The term "hedge fund" is commonly used to describe a variety of different types of investment vehicles that share some common characteristics.... [T]he term encompasses any pooled investment vehicle that is privately organized, administered by professional investment managers, and not widely available to the public. The primary investors in hedge funds are wealthy individuals and institutional investors

THE PRESIDENT'S WORKING GRP. ON FIN. MKTS., HEDGE FUNDS, LEVERAGE, AND THE LESSONS OF LONG-TERM CAPITAL MANAGEMENT 1 (1999).

The Dodd-Frank Act requires hedge fund advisers to register with and to report data on their activities to the SEC, but imposes little direct substantive regulation on them. *See generally* 15 U.S.C. § 80b. Since the Financial Crisis, the hedge fund sector has continued to rebound, and, as of the first quarter of 2020, net assets of large hedge funds have grown to an estimated \$2.9 trillion—with gross asset levels, including the leverage effects of borrowing, at \$6.3 trillion. FSOC, 2020 ANNUAL REPORT 107 (2020). Hedge fund leverage and impact on short-term wholesale funding markets remain significant concerns, as they were in the Long-Term Capital Management crisis 20 years ago.

A private equity firm acquires portfolio companies it perceives as undervalued or ripe for improvement. After increasing the value of a company, the private equity firm looks to sell it at a profit. As with hedge funds, private equity firms were structured to avoid regulation under the Investment Advisers Act and registration under the 1940 Act. Now, under the Dodd-Frank Act, advisers to private equity firms also must register with the SEC, but do not face broker-dealer regulation. Private equity has approximately \$3.3 trillion in assets under management (net asset value) as of the fourth quarter of 2019. FSOC, 2020 ANNUAL REPORT 111 (2020). The SEC has taken a variety of steps since passage of the JOBS Act of 2012 to facilitate capital raising for small companies and to give individual investors access to private markets. A key policy question is whether any efficiency gains from these reforms outweigh the risks they may pose to investors.

Pension funds, another type of pooled vehicle, held \$25.9 trillion in assets as of the second quarter of 2020. FSOC, 2020 ANNUAL REPORT 112 (2020). There are two main categories of pension plans: defined contribution plans, under which an employer and employee make contributions to a fund but the employer does not promise any particular retirement benefit, and defined benefit plans, under which employers promise a certain level of benefit payment upon retirement. Defined contribution plans have grown faster than defined benefit plans for many years.

At the end of 2019, defined contribution plans held an estimated \$8.9 trillion in assets, while public defined benefit plans totaled \$6.7 trillion, and private defined benefit plans totaled \$3.4 trillion. INV. CO. INST., 2020 INVESTMENT COMPANY FACT BOOK 164–65, 169 (2020). In many cases, employer-promised pension benefits represent a significant portion of a firm’s long-term liabilities. Accordingly, federal law mandates that firms maintain a separate pension trust. Some defined benefit plans, however, lack sufficient funding to meet their promised benefits. The total unfunded liabilities of defined benefit plans were \$5.7 trillion at the end of 2019. *Id.* at 164. Underfunding is most pronounced in state and local government pension plans, as exemplified by the public debate over government obligations in the city of Detroit’s bankruptcy case, which concluded in 2014. Puerto Rico incurred a massive debt burden, including significant unfunded pension liabilities, leading Congress to create a mechanism for restructuring in 2016. *See* U.S. GOV’T ACCOUNTABILITY OFFICE, PUERTO RICO: FACTORS CONTRIBUTING TO THE DEBT CRISIS AND POTENTIAL FEDERAL ACTIONS TO ADDRESS THEM (2018).

I. DERIVATIVES

Derivatives, explored in Part XI, are financial products whose value is derived from other assets. There are many different types of derivatives that we will explore in greater depth later in the book. Derivatives include forwards, futures, options, and swaps. A futures contract is an agreement, traded on an exchange, to buy or sell something at a future date for a predetermined price. For example, a farmer might buy the right to sell his grain for a certain price in six months in order to lock in that price. A forward contract is the same agreement, individually negotiated. An option contract is an agreement that one party has the right to either sell or buy something in the future, but without the obligation to do so. Swaps permit parties to exchange one flow of payments for another, such as trading a fixed rate for a floating rate, or U.S. dollars for Japanese yen.

Derivatives may be traded either through central exchanges, such as the Chicago Mercantile Exchange, or OTC, that is, bilaterally through derivatives dealers. In the years before the Financial Crisis, the market in OTC derivatives reached a notional amount of nearly \$700 trillion. While derivatives are used by individual companies to reduce risk, in some respects, parts of the derivatives market increased systemic risk in the lead-up to the Financial Crisis. Credit derivatives, which were designed to diffuse risk, instead concentrated it among large banks, investment banks, and other institutions, such as AIG. Derivatives increased firms’ counterparty credit exposures and aggravated the effect of any particular firm’s failure on the financial system as a whole. Synthetic securitization (with embedded derivatives) magnified failures in the real securitization market. *See* Michael S. Barr, *The Financial Crisis and the Path of Reform*, 29 YALE J. ON REG. 91, 103–04 (2012).

In the wake of the Financial Crisis, derivatives regulation has been fundamentally changed. The Dodd-Frank Act attempts to reduce risk concentration and market opacity by promoting central clearing and exchange trading of derivatives, and by strengthening supervision of market participants. Central clearing is encouraged by a combination of requirements and incentives. Standardized derivatives must be centrally cleared and traded either on

designated exchanges or through swap execution facilities. All other derivatives are subjected to reporting, and higher capital and margin requirements, which will encourage greater standardization and use of central clearing. Although regulations implemented by the Commodity Futures Trading Commission (CFTC), SEC, and banking regulators have been largely successful in increasing transparency and competition, some argue that these reforms impose significant costs on market participants and are unduly complex. *See* J. CHRISTOPHER GIANCARLO, PRO-REFORM RECONSIDERATION OF THE CFTC SWAPS TRADING RULES: RETURN TO DODD-FRANK (2015); *see also* Steven L. Schwarcz, *Regulating Derivatives: A Fundamental Rethinking*, 70 DUKE L.J. (2020). The Dodd-Frank Act also provides for prudential regulation of and capital requirements on dealers and other major participants in derivatives markets. Derivative clearing organizations, which assume counterparty risk for centrally cleared trades, are regulated for capital, margin, conflicts, ownership, and other matters. *See* Michael S. Barr, *The Financial Crisis and the Path of Reform*, 29 YALE J. ON REG. 91, 104 (2012). There remains a question as to the extent to which reforms like central clearing have adequately reduced systemic risk, which we discuss further in Chapter 11.2.

Since the Financial Crisis, there has also been significant progress internationally. Key reforms include increasing swap data reporting across G-20 countries, harmonizing regulation of clearinghouses in the United States and Europe, and strengthening international enforcement against manipulation in the foreign exchange market. The impending completion of Brexit, however, may spell trouble for both U.S. and global markets. Regulations undertaken by the EU as a response to the UK's withdrawal may make it much harder and more expensive for market participants to do business abroad. We discuss each of these issues further in Chapters 11.2 and 11.3.

J. SHADOW BANKING

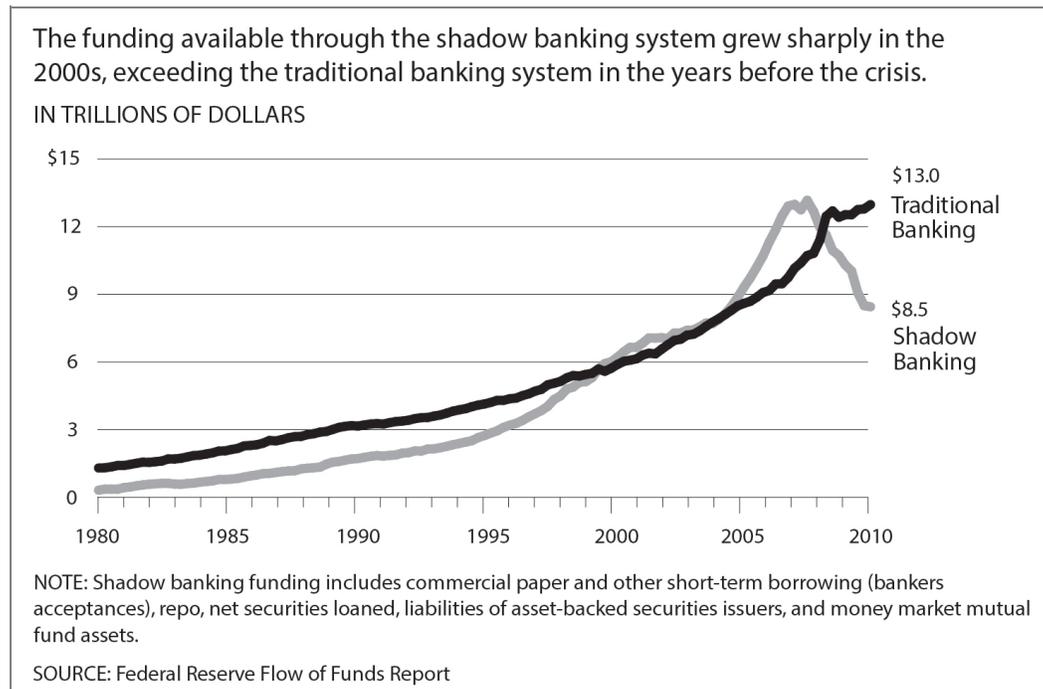
Shadow banking has different meanings, and may be used to refer to both entities and activities. According to a highly respected Federal Reserve staff report, shadow banking is “a web of specialized financial institutions that channel funding from savers to investors through a range of securitization and secured funding techniques.” TOBIAS ADRIAN & ADAM B. ASHCRAFT, FED. RESRV. BANK OF N.Y., STAFF REP. NO. 580, SHADOW BANKING: A REVIEW OF THE LITERATURE 2 (2012). Some use the term market-based financing to refer to these activities.

Shadow banking includes asset and maturity transformation by entities that are not regulated as banks. Many shadow banking activities rely on short-term liabilities to fund illiquid, long-term assets, which means that shadow banking activities are prone to the same kind of runs that used to bedevil banks before deposit insurance. The Financial Crisis and Pandemic have made it abundantly clear that maturity mismatch outside of commercial banks is particularly problematic because, unlike traditional banks, nonbank financial intermediaries do not have the same government supervision, nor the backstop of central bank liquidity or deposit insurance that traditional banks have. Shadow banking in theory instead relies on private sector liquidity, but in crises, the government has intervened to support these markets. Poorly regulated shadow banking activities

may undermine the stability of the financial system, contribute to moral hazard, and expose taxpayers, households, businesses, and banks to additional risk.

Shadow banking can be thought of as activities involving short-term funding subject to runs, but that do not, unlike bank deposits, benefit from deposit insurance. Some institutions that engage in shadow banking activities are traditional banks and BHCs, investment banks, and insurance companies, all of which are highly, if differently, regulated. Some, like hedge funds, offshore funds, and private equity funds, however, are lightly regulated. While the precise definition is still subject to much debate, we think that, at a minimum, shadow banking includes any short-term wholesale borrowing activity, such as repos (widely used as a funding mechanism by investment banks), MMFs, securitization liabilities, short-term wholesale funding, and commercial paper. Figure 1.1-5, created by the Financial Crisis Inquiry Commission (FCIC), largely follows this definition. You will see variants, however, as we proceed through the book.

Figure 1.1-5 Traditional and Shadow Banking Systems



Source: FCIC, *Financial Crisis Inquiry Report 32* (2011).

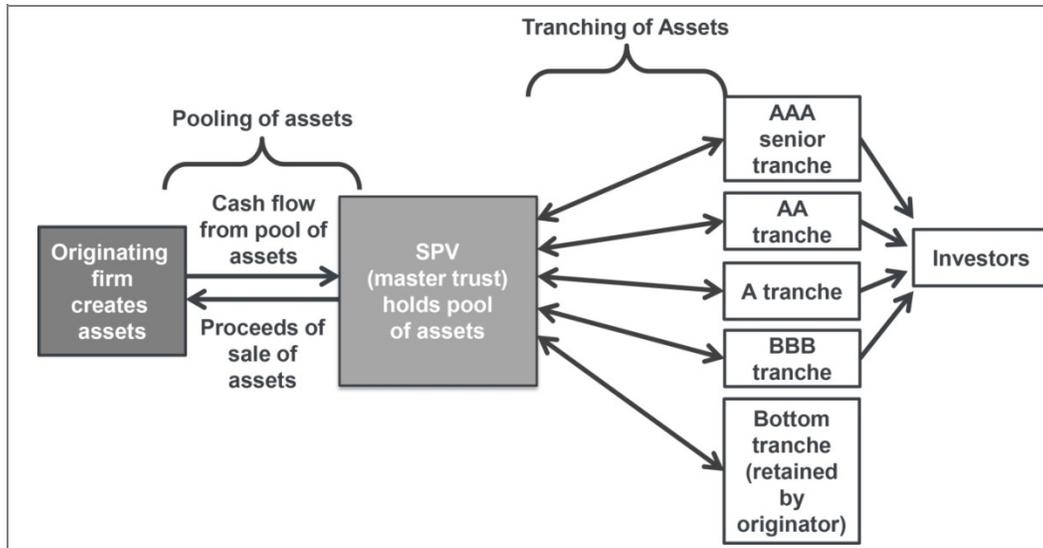
As Figure 1.1-5 shows, the shadow-banking sector grew substantially since the 1980s and surpassed the size of the banking sector in the years leading up to the Financial Crisis. We explore a few key aspects of this market in this section.

1. Securitization

Securitization is the process of creating a security from a group of assets. Figure 1.1-6 provides a visual representation of securitization. The originator makes the loan to the borrower, and then sells the loan to a securitization sponsor, which puts the loan into a special purpose vehicle (SPV). The SPV divides interests

into different risk levels, or tranches. Investors can then purchase interests in the tranches depending on their risk tolerance.

Figure 1.1-6 The Securitization Process



Source: Gary Gorton & Andrew Metrick, *Regulating the Shadow Banking System*, *BROOKINGS PAPERS ON ECON. ACTIVITY* 261, 276–77 (Fall 2010).

Many financial intermediaries engage in securitization. For nonbanks, it is a means to offer bank-like loans without the burden of bank regulation. The originate-to-distribute model is also widely used by banks and BHCs. Under this model, loans are originated with the intention that they will be moved into a securitization vehicle and sold to investors. Securitization is not a new phenomenon, but the 2000s saw a marked increase in the securitization of household debt and mortgages, in part because of the ability of securitization sponsors to borrow cheaply in the wholesale funding markets.

Since the Financial Crisis, securitization has become popularly associated with toxic mortgages and misleading credit ratings. Although assuredly an important part of the picture, the following excerpt from the FCIC report also explains many of the benefits of securitization:

Private securitizations, or structured finance securities, had two key benefits to investors: *pooling* and *tranching*. If many loans were pooled into one security, a few defaults would have minimal impact. Structured finance securities could also be sliced up and sold in portions—known as tranches—which let buyers customize their payments. Risk-averse investors would buy tranches that paid off first in the event of default, but had lower yields. Return-oriented investors bought riskier tranches with higher yields. Bankers often compared it to a waterfall; holders of the senior tranches—at the top of the waterfall—were paid before the major junior tranches. And if payment came in below expectations, those at the bottom would be the first to be left high and dry.

Securitization was designed to benefit lenders, investment bankers, and investors. Lenders earned fees for originating and selling loans. Investment banks earned fees for issuing mortgage-backed securities. These securities fetched a higher price than if the underlying loans were sold individually, because the securities were customized to the investors' needs, were more diversified, and could be easily traded. Purchasers of the safer tranches got a higher rate of return than ultra-safe Treasury notes without much extra risk—at least in theory.

FIN. CRISIS INQUIRY COMM'N, THE FINANCIAL CRISIS INQUIRY REPORT 43 (2011).

In the wake of the Financial Crisis, regulations under the Dodd-Frank Act and changes in accounting standards have increased the capital requirements for securitization and required that sponsors keep a residual portion of the risk from the securitization to have skin in the game, although regulations exempt broad categories of mortgages from this rule.

2. Fannie Mae and Freddie Mac

Many of you have probably heard of Fannie Mae and Freddie Mac. These two GSEs are privately owned and managed but have some peculiar privileges. The following excerpt from the FCIC Report provides a brief introduction to Fannie Mae's and Freddie Mac's role before the crisis:

Fannie [Mae] and Freddie [Mac] had dual missions, both public and private: support the mortgage market and maximize returns for shareholders. They did not originate mortgages; they purchased them—from banks, thrifts and mortgage companies—and either held them in their portfolios or securitized and guaranteed them. Congress granted both enterprises special privileges, such as exemptions from state and local taxes and a \$2.25 billion line of credit each from the Treasury.... Fannie [Mae] and Freddie [Mac] could borrow at rates almost as low as the Treasury paid. Federal laws allowed banks, thrifts, and investment funds to invest in GSE securities with relatively favorable capital requirements and without limits....Such privileges led investors and creditors to believe that the government implicitly guaranteed the GSEs' mortgage-backed securities and debt and that GSE securities were therefore almost as safe as Treasury bills.

Id. at 39.

The risks posed by the GSEs had been of concern to many commentators and government officials going back to the late 1990s. In the period just before the Financial Crisis, private-label issuers of non-traditional and subprime mortgages markedly increased their securitization of such mortgages, and the GSE share of the market dropped precipitously. *See* LAURIE GOODMAN, URBAN INST., A REALISTIC ASSESSMENT OF HOUSING FINANCE REFORM (2015). At the same time, while the GSEs primarily guaranteed and invested in traditional mortgages, the GSEs also began to purchase a significant amount of non-traditional mortgages and to invest in the senior tranches of private-label mortgage-backed securities (MBSs). When the private-label market began to collapse, the GSE market share increased. These steps increased the significant risks to which the GSEs were

already exposed. When house prices declined, defaults increased, and job losses mounted, losses spread from non-traditional and subprime mortgages to traditional mortgages that had generally been considered safe.

With the collapse of the housing markets, in the fall of 2008, Fannie Mae and Freddie Mac were placed in conservatorship, where they remain. In the aftermath of the Financial Crisis, the two GSEs, along with the Federal Housing Administration (FHA), became responsible for funding nearly the entire mortgage market. Taxpayers, through the Treasury, provided over \$190 billion in support to the two GSEs in the form of preferred stock to avoid widespread housing market dislocation and broader financial contagion, and the Treasury still backstops any GSE potential losses up to \$445.5 billion. As of the third quarter of 2019, the GSEs have paid the Treasury dividends of about \$301 billion on that taxpayer investment. FED. HOUS. FIN. AGENCY, TREASURY AND FEDERAL RESERVE PURCHASE PROGRAMS FOR GSE AND MORTGAGE-RELATED SECURITIES, tbl.2 (2019). As discussed in Chapter 12.2, it was not politically or practically possible to deal with the GSEs' future at the time of the Dodd-Frank Act, nor have they been dealt with since, and the debate over these GSEs and the private mortgage market remains.

3. Money Market Mutual Funds

MMFs, discussed in Chapter 12.3, were formed and grew in the 1970s in response to then-existing restrictions on the ability of banks to offer competitive interest rates on demand deposits. These regulatory price controls on bank deposits were a problem in the inflationary 1970s. Today, MMFs are important competitors to banks, with over \$5 trillion in assets. Functionally, MMFs offer retail consumers many of the same conveniences as demand deposits: the shares are redeemable on short notice, consumers can write checks on their accounts, and MMFs promise retail consumers that the shares will maintain a fixed net asset value of \$1 per share. Institutional investors also invest in MMFs.

The share of assets held in MMFs grew in the lead-up to the Financial Crisis to \$3.8 trillion. The growth of MMFs is directly correlated to the growth of markets involving particular types of investments—repo and commercial paper transactions. MMFs needed safe, high-quality investments to pay the high interest rates investors came to expect, and the commercial paper and repo markets met these requirements. MMFs were able to earn higher returns than on bank deposits, and financial institutions and other businesses were able to fund themselves cheaply. During the Financial Crisis, however, there was a run on MMFs following the demise of Lehman Brothers, and the MMF run contributed to significant turmoil in repo and commercial paper markets. The run was stemmed only by a government guarantee of the entire MMF sector in 2008.

In 2010, the SEC adopted MMF reforms designed to reduce risks, including rules on liquidity, credit quality, and maturity. Many saw these reforms as inadequate, and at the public urging of the FSOC and international standard-setting bodies, the SEC put in place further reforms in 2014. Under the 2014 reforms, prime MMFs—those that primarily invest in corporate debt—are divided into two types: institutional (serving corporate clients) and retail (serving households). Institutional prime funds are required to float based on current market value, rather than promising a stable exchange of shares. Retail prime

funds continue to have stable values. Both institutional and retail prime funds can be required to impose liquidation fees and redemption gates to attempt to stem runs. Government funds (those investing in government and agency securities and repo backed by these securities) are exempt from these changes.

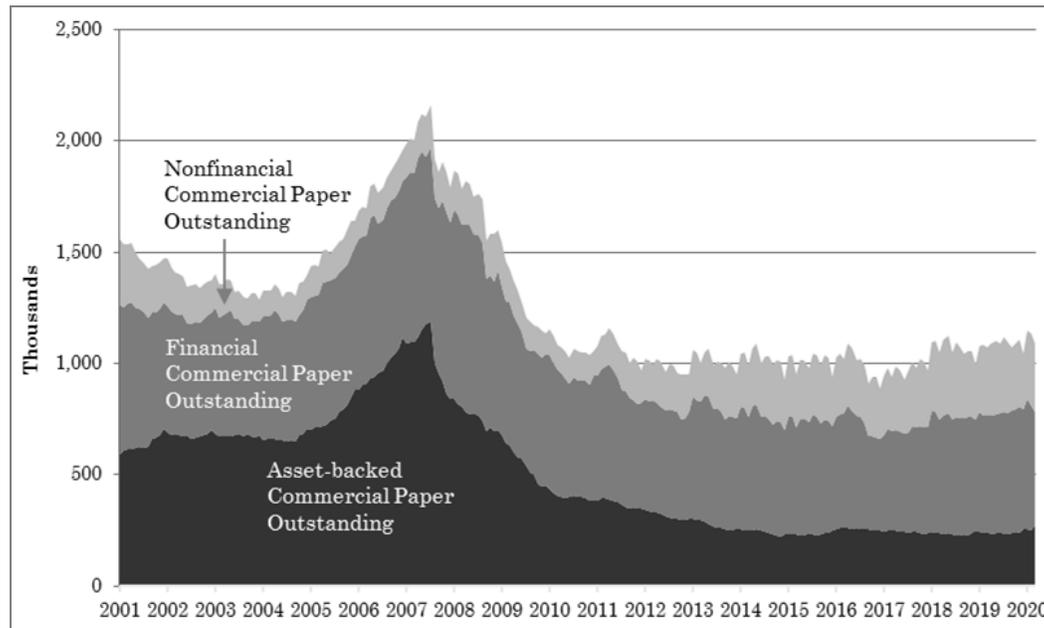
With these changes, the MMF market saw significant declines in institutional prime funds and significant growth in government funds, which now make up three-quarters of the market. In March 2020, amidst the Pandemic, prime MMFs experienced sharp outflows and the Treasury and the Federal Reserve again stepped in to backstop the MMF sector as part of efforts to calm market turmoil. After the backstop measures were put into place, inflows into the MMF sector surged. *See* U.S. MONEY MARKET FUND MONITOR, OFR. In May 2020, the share of assets in the MMF sector increased to more than \$5 trillion, exceeding the previous peak in the MMF sector in 2008. *See* U.S. MONEY MARKET FUND MONITOR, OFR. It is likely, given this significant intervention again, that calls for further reform will continue.

4. Wholesale Funding

We examine wholesale funding in Chapter 12.4, the final Chapter of the book. In particular, we look at how financial intermediaries have funded themselves through commercial paper, repo and securities lending, prime brokerage balances, and derivatives. The system of wholesale funding was in many ways a key accelerant to the Financial Crisis, and regulators both in the United States and globally are still struggling to develop a coherent framework to reduce systemic risks in this system.

Commercial paper is unsecured short-term corporate debt issued by both financial institutions and commercial corporations to finance their operations. Commercial paper is also used by SPVs set up by investment banks and banks to fund pools of particular loans and securities, referred to as asset-backed commercial paper (ABCP).

Wholesale funding from commercial paper grew rapidly alongside the growth of MMFs. The commercial paper market provided a means for MMFs to invest with relative safety and stable returns. Commercial paper helped depository institutions augment their funding sources beyond deposits and permitted investment banks to fund themselves in the absence of deposit taking. As of September 2020, there was \$957 billion in outstanding commercial paper. FSOC, 2020 ANNUAL REPORT 35 (2020). Figure 1.1-7 shows the amount of commercial paper outstanding from 2001 to 2019. As you can see, between 2007 and 2008, the amount of commercial paper peaked at over \$2 trillion.

Figure 1.1-7 Commercial Paper

Source: *COMMERCIAL PAPER RATES AND OUTSTANDING SUMMARY, BD. OF GOVERNORS OF THE FED. RSRV. SYS. (Sept. 8, 2020).*

ABCP issuance, which was over half of total commercial paper issuance in 2007, plummeted in and after the Financial Crisis and has remained at low levels.

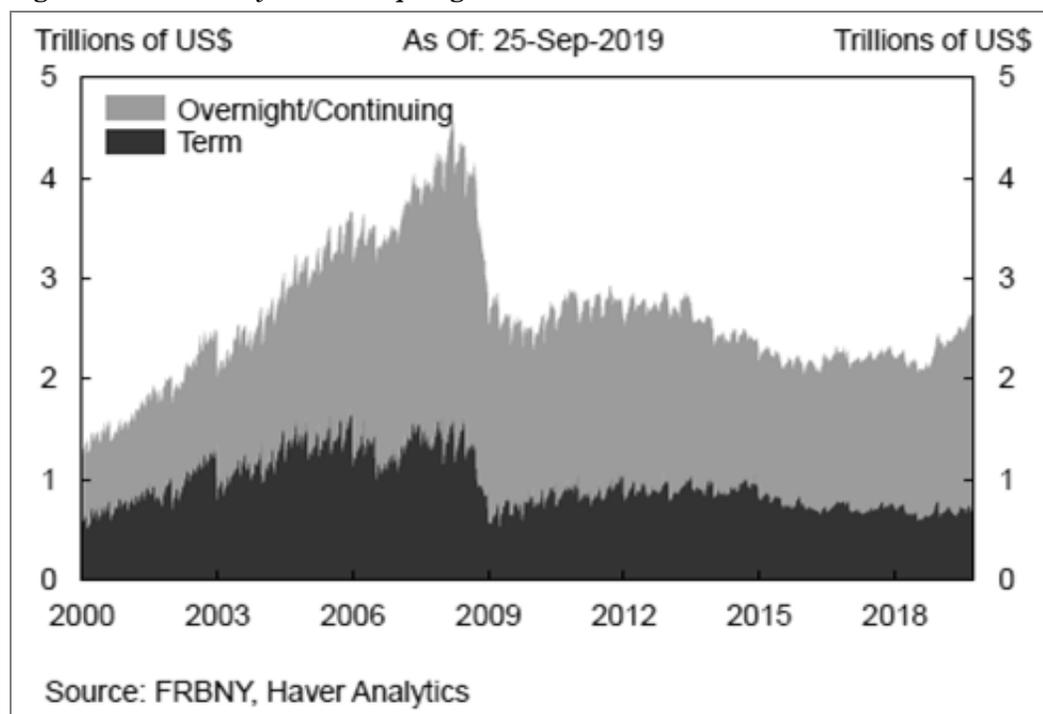
A repo agreement, like commercial paper, functions as a short-term loan. A repo is structured as a temporary sale of collateral with an agreement to purchase it back at a higher price at a later date, usually the next day. The higher repurchase price functions like interest. The repo market is a way for those with excess cash to earn a return with what they view as safe assets and those with borrowing needs to obtain funding at relatively low cost. If the borrower fails to repurchase the collateral, the counterparty can sell it, and the collateral is typically highly liquid. In addition to bilateral repo arrangements, Bank of New York Mellon offers tri-party repo services, under which the bank clears repo transactions for the borrower and lender. The clearing bank insulates the repo parties from settlement risks posed by each other, but exposes the parties to risk from the clearing bank itself. In the process, the clearing bank is exposed to risks from the clearing transactions and from the intraday credit the clearing bank provides to the repo counterparties.

Repos are highly liquid, secured, and receive preferential treatment in bankruptcy; repo transactions are thus valued as functional substitutes for bank deposits. Professors Gary Gorton and Andrew Metrick explain how repo agreements provided investors with bank-like services. Gary Gorton & Andrew Metrick, *Regulating the Shadow Banking System*, BROOKINGS PAPERS ON ECON. ACTIVITY 261, 276–77 (Fall 2010). Despite these advantages, repos present real risks. Repo counterparties commonly repeat, or roll over, a repo transaction, but they can refuse to roll over the transactions, such as in a crisis, cutting off liquidity for banks or broker-dealers when they need it most. Repo collateral can become

difficult to sell in a crisis, leading to fire sales. A devastating run on repos ensued in the Financial Crisis, much like the bank runs in the Great Depression.

As seen in Figure 1.1-8, which reflects only primary dealer repo agreements, the value of the repo market peaked during the Financial Crisis and then plummeted. This trend is attributable in part to a decreasing reliance on short-term funding and institutions adapting their strategies in order to reduce the impact of capital requirements. The total repo market stood at \$4.1 trillion in 2020. FSOC, 2020 ANNUAL REPORT 38 (2020).

Figure 1.1-8 Primary Dealer Repo Agreements



Source: FSOC, 2019 ANNUAL REPORT 54 (2019).

K. CHALLENGES AHEAD

1. Fintech and Innovation

The financial sector is not static but evolves over time. While innovation creates opportunities, it can also generate new risks. The potential for fintech to create new opportunities and beneficial market disruptions has been heralded by some as an “Uber moment,” *see, e.g.,* Chatham House & Anthony Jenkins, *Approaching the Uber Moment in Financial Services: How Technology Will Radically Disrupt the Sector*, YOUTUBE (Nov. 25, 2015), but others decry what they see as regulatory loopholes. With the growth of fintech, will new risks emerge, and will market participants and regulators be able to keep up?

Innovation can occur in the regulatory gaps between different supervisory agencies, or can lead to friction among regulators, which often compete for regulatory turf, their version of market share. For example, the Office of the Comptroller of the Currency (OCC), one of the banking regulators, announced its

intention to consider granting national charters to non-depository fintech companies. OCC, *EXPLORING SPECIAL PURPOSE NATIONAL BANK CHARTERS FOR FINTECH COMPANIES* (2016). The OCC soon faced legal challenges to its assertion of authority from state regulators. In *Vullo v. Office of Comptroller of Currency*, 378 F. Supp. 3d 271 (S.D.N.Y. 2019), a district court ruled in favor of the state regulators and the case is on appeal. Despite the district court's ruling, the OCC in summer 2020 announced that it would accept applications for national bank charters from non-depository payment companies. The OCC has expanded the types of bank charters it will consider, including an application for a digital-only bank (Varo) and an application for a bank with uninsured time deposits (Figure). We discuss these topics further in Chapter 2.1.

While innovation is central for growth, the complexity and interconnectedness of the financial system mean that systemic risk may spread like a contagious disease. Indeed, finance has been compared to a complex, adaptive, biological system; academics argue that the system has reached a threshold of complexity where regulators cannot keep pace as it evolves. Simon A. Levin & Andrew W. Lo, *Opinion: A New Approach to Financial Regulation*, 112 PROC. NAT'L ACAD. SCI. U.S. 12,543 (2015). Regulators may focus on one area and increase regulatory requirements, only to cause activities to shift in another direction, creating different risks. People sometimes refer to this shifting risk from regulatory pressure as "squeezing a balloon." Professors Levin and Lo argue that regulations should be adaptable in order to counter the evolving nature of risks in the financial sector, such as using adaptable leverage restrictions that vary in relation to firm-specific or aggregate risk levels. *Id.* In this way, lessons from ecology could perhaps both help to describe the financial system and to suggest possible improvements to protect it from systemic risks. In 2020, a contagious disease itself became a source of systemic risk, severely damaging the global economy and putting to the test whether post-Financial Crisis reforms were sufficient. See Howell E. Jackson & Steven L. Schwarcz, *Protecting Financial Stability: Lessons from the Coronavirus Pandemic*, HARV. BUS. L. REV. (forthcoming 2021) (on file with SSRN).

2. Climate Change

In the Biden Administration, climate change is expected to be a major policy priority. There is a strong push to increase the financial regulatory oversight of climate risks. See, e.g., Gregg Gelzinas & Graham Steele, *Climate Change Threatens the Stability of the Financial System*, CENTER FOR AMERICAN PROGRESS (Nov. 21, 2019). As a result, we expect that a focus on climate change risks in the financial sector will move from the periphery to the center of the agenda for the financial regulatory agencies. Some argue that there will no longer be "green avoidance" by the Federal Reserve or other financial regulators. Peter Conti-Brown & David Wishnick, *Technocratic Pragmatism and Bureaucratic Expertise*, YALE L. J. (forthcoming 2021). We deal with climate change risk and the financial sector in multiple places in the textbook. In Chapter 2.3, we discuss issues related to the bank extensions of credit and how considerations of climate change may influence portfolio shaping and credit concentrations. In Chapter 2.7, we discuss proposals to add climate change risk to the annual stress tests applied to banking organizations and to vary the capital charges, or risk weights, by the climate impact. In Chapter 6.3, we discuss how climate change might contribute to

systemic risk. In Chapter 8.2, we discuss how climate change may affect supervisors' views of risk and risk governance. In Chapter 9.1, we discuss the intersection of climate change and monetary policy. In Chapter 10.1, we discuss the pressure that asset managers are placing on companies and the SEC's focus on disclosure of climate change risks. In Chapter 11.1, we discuss how derivatives might help to mitigate climate change risks. As the many different areas of financial regulation touched by climate change and its risks illustrates, the role of the financial sector and financial regulators in mitigating or exacerbating the risks of climate change is likely to remain a hotly debated topic in the years to come.

This Chapter has provided you with an overview of the institutions and markets we will explore throughout this book. In the next Chapter, we ground your understanding of the financial sector by exploring its historical evolution, from the First Bank of the United States to the Pandemic.