

The Evolution of Financial Services in the United States

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Abstract

This article surveys the literature on the historical growth and transformation of the U.S. financial sector. The sector expanded rapidly between 1980 until 2006, when its contribution to GDP rose from 4.8% to 7.6%. After the Global Financial Crisis, the size of the sector stabilized at approximately 7% of GDP. After reviewing this literature, we extend this research to cover recent developments, including the continued growth of high fee alternative asset management and the shift away from banks to lending by nonbank financial intermediaries. We interpret both the growth of the sector and the recent evolution as reflecting a continued transition to a more market-based financial system, with risk migrating away from banks and into markets.

Keywords: Financial sector, securities, credit intermediation

JEL Codes: N22, G1, G20

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1. Introduction

This survey reviews the recent literature documenting the growth of financial services in the United States and important changes in the structure of the industry. The starting point for this review is the observation made by Thomas Philippon in a series of papers that brought to light tremendous growth in U.S. financial services over the last 150 years. Following Philippon and Reshef (2013), but extending to the most recent decade, **Figure 1** shows a time series of the U.S. financial sector's contribution to GDP. With the exception of the inter-war years, the sector has expanded its national income share since at least the mid-19th century, and at an especially rapid pace in the post-war period.

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In the late 1800s, financial services comprised less than 3 percent of GDP. The finance share rose through the 1920s, climbing to as high as 5.7 percent before falling drastically during the Great Depression.² The size of the sector then grew more slowly than income until around 1950, at which point a turnaround began that led once again to a steady increase in size of the financial services sector relative to GDP. Between 1980 and 2006, the financial sector's value added share of GDP rose from 4.8 to 7.6 percent, driven in large part by an expansion of the securities subsector (**Figure 2**). While the Global Financial Crisis (GFC) reversed some of this growth, financial services rebounded strongly in the years that followed, peaking at 8.0 percent of GDP during the COVID-19 pandemic. By 2023, the finance share had fallen back to 7.3 percent of GDP as other sectors, more negatively affected by the pandemic, grew faster.^{3,4}

<< insert Figure 2 here >>

² There is no data available for financial sector output for the early 1800s. However, Sylla and Wright (2024) show that the largest companies by capitalization in 1812 were banks.

³ A significant challenge for researchers in this area is that industry definitions evolve over time, as well as methodologies for estimating industry output and value added. The U.S. Bureau of Economic Analysis (BEA) revised GDP by industry statistics in its 2014 Comprehensive Revision of Industry Accounts. See Kim et al. (2014) for more details. This resulted in a significant downward revision of value added for the finance and insurance sector. For example, in Greenwood and Scharfstein (2013), the value added share of GDP for the finance and insurance sector was found to have peaked at 8.3 percent in 2006. The BEA's current estimate for the same year is now 7.6 percent.

⁴ In May 2023, the BEA released newly updated GDP by industry estimates following the conclusion of its 2023 Comprehensive Update of the National Economic Accounts. As part of this revision, the financial sector's GDP share was revised down for much of the post-GFC period, including from a peak of 8.5 percent to 8.0 percent in 2020.

We start by discussing the drivers and implications of financial sector growth, beginning with Philippon’s work and our own research in Greenwood and Scharfstein (2013), which focused on the 1980-2006 period. Because much of this literature ends in the early 2010s, however, it misses important developments since the GFC. As such, we extend the empirical analysis to document how the sector has continued to evolve over the last 15 years. We show that, while the contribution of the sector to GDP has leveled off at approximately 7%, the past decade has been one of significant changes in the structure of the sector. Specifically, we find that, while hedge funds and private equity manage only a small fraction of assets, their fees are now the single largest component of measured output in the securities subsector. This comes as a result of investors increasing their allocation to higher-fee alternative assets like private equity, private debt, and hedge funds. Within the credit intermediation subsector, we document a shift of more risky activities away from traditional banks and into non-banking entities, commonly referred to as a “market-based finance”. One implication is that the historical divide between credit intermediation (done by banks) and securities and asset management (done by asset managers) has become increasingly blurred.

Our review doesn’t cover everything. We do not say much about insurance, which comprises approximately a third of US financial sector output, but which has remained more stable over time. We also mention only briefly the large literature exploring linkages between finance and economic growth, as our interest lies predominantly in the growth of finance and changes in the structure of financial services.

The remainder of this article is organized into three sections. Part 2 surveys the literature concerned with the growth of finance. Our task in Part 3 is to pivot away from discussing financial sector growth, which has leveled off after the crisis, and instead highlight two important developments in US financial services over the past decade. In Part 4, we conclude.

2. Review of Recent Literature

Measuring Financial Sector Growth

An industry’s contribution to GDP is typically measured as a share of income or value added. Industry i ’s income share in period t can be calculated as:

$$Industry\ Share_{i,t} = \frac{Value\ Added_{i,t}}{\sum_i(Value\ Added_{i,t})} = \frac{Gross\ Output_{i,t} - Intermediate\ Inputs_{i,t}}{\sum_i(Gross\ Output_{i,t} - Intermediate\ Inputs_{i,t})} \quad (1)$$

Value added is gross output net of intermediate consumption, or equivalently total profits plus compensation. Gross output for financial services includes fee revenue generated from the professional management of financial assets, interest and non-interest income earned by lending institutions, and premiums collected by insurance carriers.⁵ Intermediate input costs are predominantly related to the purchase of services from other financial intermediaries, as well as services related to regulatory compliance and information technology (IT). **Figure 1** shows the financial sector's value added share over time; an online appendix provides further time series on gross output that may be helpful for researchers in this area.

Philippon (2015, 2008, 2007) is the first to examine the factors that led to the rapid expansion of the U.S. financial sector during the postwar period.⁶ He posits that the growth of financial services during the 1977 to 2006 period cannot be explained entirely by total factor productivity growth among non-financial firms, globalization, increased trading, or the development of new financial products. Instead, he suggests that much of the growth of finance can ultimately be traced to higher corporate demand for credit intermediation. Philippon argues that this demand comes from a shift in the distribution of investment opportunities, away from firms with strong balance sheets, and towards low cash flow firms that are more dependent on external financing. Consistent with this argument, he documents a strong upward trend in the share of aggregate non-financial business investment accounted for by low-cash firms. Philippon then estimates a model using only non-financial sector investment data that closely matches the evolution of the financial sector over much of the study period. While this account is useful for explaining some of the growth of financial services, it is less successful in explaining the rapid growth observed between 2001 and 2006.

⁵ Unlike in manufacturing, where the value of gross output can be explicitly calculated, by multiplying units produced by price sold, some services provided in finance, for which no fee is explicitly charged, need to be implicitly priced.

⁶ Interested readers can find details of data assembly at http://pages.stern.nyu.edu/~tphilipp/papers/Finsize_DataAppendix.pdf

Cost of Intermediation

Given the growth in the financial sector's value added, a natural question is whether this growth reflects more services being produced or, alternatively, whether services are getting more expensive. Measuring productivity in the service-producing sectors is notoriously difficult, however. This is especially true in finance because of the wide range of functions performed and because many activities are indirectly measured and implicitly priced. For example, a traditional bank charges for many of its services by allowing for a spread between the rate at which it borrows and the rate at which it lends. Despite these challenges, Philippon (2015) attempts to quantify the efficiency in the financial services sector over time. He defines the "unit cost" of investment as the ratio of aggregate financial intermediary income to the quantity of intermediated assets. He presents evidence that this unit cost has remained roughly constant at around 2 percent since the 1880s.

Philippon's finding is especially remarkable given the increase in the aggregate value of real financial assets and fluctuations in finance as a share of GDP. It would be natural to think that this growth would bring with it more efficiencies, perhaps due to economies of scale. Stable unit investment costs are also difficult to reconcile with the commonly held view that financial deregulation and IT investments have made financial services more efficient over the past few decades. Philippon essentially suggests that the U.S. financial sector's income share has grown, not solely because the sector is intermediating a larger quantity of financial assets, but also because intermediating assets remains expensive. Bazot (2017) extends Philippon's work to a number of European countries and finds that the average unit costs of financial intermediation in Germany, France, and the United Kingdom have also fluctuated around 2 percent between 1950 and 2007.⁷

While intermediation remains expensive, more recent work by Philippon (2019) shows that the average unit cost of financial intermediation is beginning to decline somewhat in the United States. He attributes this

⁷ As Bazot (2017) and Philippon (2015) recognize, it is not equally costly to originate, underwrite and service each type of credit. To the extent that credit growth is associated with increased access for riskier households and firms, and there is greater cost of intermediating those credits, productivity may be underestimated if the measures are not sufficiently sensitive to the underlying costs of such intermediation.

change to increased competition and technological progress. Other work by Bazot (2023) points to deregulation as the force behind falling unit intermediation costs in Europe.

Examining the Components of Growth of Financial Services

Another approach to understanding the growth of financial services is to analyze, in detail, the activities performed by financial sector intermediaries. This exercise becomes feasible beginning in the 1980s, when one can reliably assemble data on the fees and income accruing to firms in financial services. Greenwood and Scharfstein (2013) take this approach, examining the growth of securities and credit intermediation between 1980 and 2007. They focus on two important drivers: first, the expansion of household credit (itself partially facilitated by securitization⁸), which increased from 70 to 99 percent of GDP between 1997 and 2007, and second, the growth in asset management, whose output grew from 0.99 to 2.43 percent of GDP over the same period.

A significant focus of Greenwood and Scharfstein (2013) is the growth of the asset management industry. They show that asset managers benefited from an increase in the amount of professionally managed financial assets, rather than by an increase in the percentage fees charged to manage those assets. The growth in managed assets was, in turn, driven by both net capital inflows as well as a substantial increase in valuations, evidenced by a near tripling of the S&P 500 market-to-book ratio over the study period. Specifically, suppose that asset management income I exhibits constant returns per unit of value (dollars) managed:

$$I = c \cdot V \tag{2}$$

where c is a constant and V denotes the market value of assets. Further, suppose that the ratio of valuations-to-GDP follows the Gordon Growth Formula.

⁸ The expansion of consumer credit over this period was largely enabled by both private label and GSE-backed securitization, which allowed banks to increase loan origination, particularly to consumers and homeowners, while shifting credit risk to holders and guarantors of these securities. This was accompanied by a significant enlargement of nonbanks' balance sheets (Adrian and Shin, 2010) and growth in nonbanks' share of total mortgage originations (Buchak et al., 2018).

$$\frac{V}{Y} = \frac{\text{Payout Ratio}}{(r-g)} \quad (3)$$

Then, it follows that the ratio of asset management income to GDP will be increase in future growth rates and decline in discount rates (or, equivalently, higher valuations):

$$\frac{I}{Y} = \frac{c \cdot \text{Payout Ratio}}{(r-g)} \quad (4)$$

Since $1/(r-g)$ is the market multiple on cash flows, Equation (4) is another way of expressing the idea that under constant returns to scale, the finance share of GDP is increasing in valuation ratios.

Equation (4) assumes constant returns to scale. One might find it surprising that asset management fees, when expressed as a percentage of assets, remained roughly flat over the 1980-2006 period, given the well-known growth in passive management such as ETFs and index funds. In an influential paper, French (2008) shows that equity mutual fund expense ratios fell precipitously between 1980 and 2006, from 219 to 100 basis points per dollar of assets. Greenwood and Scharfstein (2013) document a similar decline in bond mutual fund fees, which decreased from 204 to 75 basis points. At the same time, the *average* fee paid per dollar of professionally managed assets remained relatively constant, fluctuating around 1.3 percent between 1980 and 2007. The key to this puzzle is recognizing that the growth of passive investing was offset by the growth in higher-fee asset management by private equity and hedge funds. French (2008) documents this phenomenon for equities; Greenwood and Scharfstein (2013) extend his findings to show that it applies more broadly to all professionally managed assets.

There has been significant research discussing why asset management continues to be so expensive. The most common perspective, best articulated by Malkiel (2013), is that high fees combined with poor performance after fees amounts to a deadweight loss. He rejects the Grossman and Stiglitz (1980) notion that these high fee investors are associated with higher informational efficiency. Malkiel (2013) memorably concludes that “perhaps the greatest inefficiency in the stock market is in ‘the market’ for investment advice”.

Gennaioli et al. (2015) take a more optimistic view on the asset management industry, suggesting that, while the services it provides are expensive, the alternative to costly asset management is not cheaper asset

management but rather households storing their wealth under the mattress. In their framing, professional asset managers – known as “money doctors” – play a crucial role in providing investors the confidence needed to take financial risks. Gennaioli et al. (2014) study further implications of this idea in a Solow-style growth model. Their model predicts that, consistent with recent evidence, if an economy’s wealth-to-income ratio rises while the effective cost of investment services remains stable, then the relative size of the financial sector should grow. In our view, both the Malkiel (2013) and Gennaioli et al. (2014) perspectives have merit and speak to different aspects of the industry. A much larger share of investors today benefits from economies of scale through passively managed index funds. And while there are more high-fee dollars than ever, much of this is invested on behalf of sophisticated institutions such as pension funds, rather than retail investors (Begenau et al., 2024).

Greenwood and Scharfstein’s (2013) research reveals a significant increase in household credit as being another important driver of financial sector growth 1980-2007. This was mainly driven by mortgage debt, which grew from 48% of GDP in 1980 to 99% by 2007, with very rapid growth during the housing boom from 2000 to 2006. The authors observe that traditional banks held a relatively stable share of household credit – around 40% of GDP – throughout this period. The increase in household credit, therefore, was primarily financed through securitization. Instead of keeping mortgages and consumer loans on their balance sheets, banks increasingly packaged these loans into asset-backed securities. By 1995, over half of all single-family mortgages, along with a considerable portion of commercial mortgages and consumer credit, were securitized. This shift towards securitization contributed to the growth of financial sector income through various channels, including fees associated with loan origination, underwriting of asset backed securities, and the trading and management of fixed income products.

Researchers point to nonbank financial intermediaries as key facilitators of this credit expansion. This shift allowed credit to reach a wider set of households, but as the 2007 financial crisis demonstrated, it also introduced vulnerabilities into the financial system. Mian and Sufi (2009) show that credit expansion was driven by an increase in lending to low-quality borrowers and that the subsequent rise in mortgage defaults was closely linked to the expansion of credit supply. More broadly, Poszar et al. (2010) document how shadow banking

system allowed credit intermediation to occur outside of traditional banks, creating new risks and financial fragility. Brunnermeier (2009) and Acharya and Richardson (2009) provide diagnoses of the causes of the GFC, pointing to excessive leverage and risk taking, exacerbated by the complexities of the modern financial system.⁹

Implications of Financial Sector Growth

There is a longstanding debate about whether the development of the financial sector leads to economic development and growth, or whether the direction of causality runs the other way. The first empirical work on this question, by Goldsmith (1969), documented a positive correlation between financial development and economic activity in 35 countries. But he stopped short of claiming that finance causes growth. King and Levine (1993) assemble a larger dataset of countries from 1960 through 1989. They show that financial development at the start of the sample predicts economic growth for the next 10 to 30 years. In a seminal survey, Levine (2005) notes that, since this work, there has been abundant additional evidence showing that countries with better functioning banks and financial systems grow faster. Another important contribution by Rajan and Zingales (1998) finds that in a large panel of countries in the 1980s, industrial sectors that needed more external finance grew more quickly in countries with better financial systems.

Despite consensus that the financial sector is important for growth, over the past decade a number of authors have explored whether, in developed economies such as the United States, the growth has gotten out of hand. The main concerns are rent seeking, financial instability, and the allocation of talent. Zingales (2015), in his Presidential Address to the American Finance Association, asks whether financial services still benefit society. [Let's check this framing; seems extreme.]

Most of the literature on financial sector development and economic growth does not speak directly to the question of how large a country's financial sector *should* be. In the United States, for example, we observe no time-series relationship between the size of the financial sector as a share of GDP and real GDP growth (see

⁹ A few papers support the idea that new entrants into the mortgage industry provide better service, rather than simply being cheaper. "The Role of Technology in Mortgage Lending" by Fuster et al. (2019) finds that fintech lenders process mortgage applications approximately 20% faster than traditional lenders. "FinTech Lending" by Berg et al. (2021) suggests that the growth of fintech lending is primarily driven by increased convenience and faster service, rather than solely by lower costs.

Figure 3). That is, while the financial sector is important for economic growth, the sector does not necessarily need to comprise a large share of GDP. Related research suggests that the relationship between financial development and economic growth has weakened over time (Rousseau and Wachtel, 2011) and offers diminishing benefits at higher levels of economic development (Cecchetti and Kharroubi, 2019; Sahay et al., 2015) and credit depth (Arcand et al., 2015).

<< insert Figure 3 here >>

One widely discussed concern about a large financial sector is that it distorts the allocation of talent. Concerns around talented workers being disproportionately drawn into finance and consequently hampering productivity in other sectors is discussed as early as Tobin (1984). Murphy et al. (1991) suggest that the flow of skilled human capital into financial services is a hinderance to economic growth and may act as a potential drag on productivity growth. According to their model, as a result of offering higher returns, the financial sector entices an economy's ablest individuals to become rent-seekers, rather than innovative entrepreneurs. Bolton et al. (2016) focus on a different mechanism but reach the same conclusion. In their model, securities dealers acquire costly information to "skim the cream" from opaque financial markets, which leads to a concentration of high-quality assets and, in turn, allows for the extraction of excessive rents.

Over the past several years, many papers have presented empirical evidence that there is a finance wage premium and that this premium has distorted the allocation of talent. Drawing on French data, Célérier and Vallée (2019) show that the returns to talent have been higher for people entering finance than other industries. While Böhm et al. (2022) find no empirical evidence that the level of talent in the financial sector has risen in Sweden, recent work suggests that the U.S. financial sector has experienced significant educational upgrading between 1980 and 2019 as graduates from science, technology, engineering, and mathematical fields have gravitated towards finance at an accelerated rate (Marin and Vona, 2023). Goldin and Katz (2008) show that the share of Harvard University undergraduates entering finance has increased over time. Despite the findings in these studies, there is no concrete evidence that the brain drain towards financial services has hurt other sectors that also need talented people. One effort along these lines, by Kneer (2013), exploits variation in

financial liberalization to show that financial sector growth hurts growth in other sectors via a brain-drain effect. However, this evidence is indirect at best, especially because the timing and progress of financial liberalization is not random.

Another concern is that a large financial sector makes the economy more fragile. Mostly, this work has argued that financial liberalization, or high credit growth, has been a predictor of economic and financial crises (Kaminsky and Reinhart, 1999; Aliber et al., 2023; Greenwood et al., 2022; Mendoza and Terrones, 2008; Schularick and Taylor, 2012). Not only do countries with larger financial sectors experience crises more often, but recessions in these countries – when associated with financial crises – are characterized by deeper contractions and longer recoveries (Jordà et al., 2011). Cross-country empirical evidence provided by Beck et al. (2014) suggests that, in high-income countries, a larger financial sector stimulates growth at the cost of higher volatility in the short-run. In the long run, however, the growth of credit intermediation reduces volatility, while an expansion of the financial sector along other dimensions has no effect on real sector outcomes.¹⁰

3. The Evolution of the U.S. Financial Sector since 2006

In this section, we examine how the financial services sector has evolved in recent years. Much of the previously surveyed literature ends its analysis of U.S. financial sector growth around the GFC, a crisis that disrupted the financial services industry and economy and led to significant changes in financial regulation. Drawing on a variety of sources, including a series of recent research papers that study changes in commercial banking, as well as updated value added statistics, we describe two developments that reflect the continued shift towards a more market-based financial system. First, the growth of alternative investing (hedge funds, private equity) has continued to drive income in the securities and asset management subsector, with the distribution of fees becoming even more of a barbell – high fees for alternative investing and very low fees for traditional asset management. Second, there has been a notable shift in credit intermediation away from commercial banks. We argue that these two developments are likely connected. On the demand side, continued growth of pension

¹⁰ This line of work speaks only indirectly to the absolute size of the financial sector and its share of national income – for example, whether finance commands a certain share of GDP. For the most part, these papers are focused on financial sector and credit growth: a financial sector that grows too rapidly, or facilitates excessive credit growth, generates instability.

funds has fueled demand for high-fee alternative investments, including private credit funds, as well as securities. On the supply side, post-GFC financial regulation has supported the development of the non-bank lending sector.

Observation 1: Alternative asset management continues to drive growth in the securities subsector

The securities subsector includes activities related to the professional management of financial assets. In 2023, the subsector comprised 1.4 percent of GDP, representing a slight decline from 1.6 percent in 2006. Data from the Economic Census suggests that relative stability in the size of the subsector over the past decade was the result of growing revenues in portfolio management and investment advice mostly offsetting shrinking revenues from investment banking, securities dealing, and securities brokerage.

Figure 4 presents a decomposition of securities output into a number of revenue-generating activities, including: professional asset management, pension fund administration, and broker-dealer activities. This figure is assembled by forming estimates of the income earned by each of these activities, for example by multiplying hedge funds' total AUM by estimates of their average fees. Further details about the construction of this figure can be found in **Appendix A.1**.

<< insert Figure 4 here >>

The figure clearly shows that, while gross securities output as a share of GDP remained largely flat since the GFC – especially in contrast to the growth observed in the 1990s – the composition of the securities industry has changed significantly. Most notably, output from alternative asset management, which comprises hedge funds, private equity, and private debt, increased from a pre-GFC peak of 0.72 percent of GDP in 2006 to a high of 1.31 percent by 2021, before falling to 0.96 percent of GDP in 2023. Further calculations suggest that alternative asset management may have grown even more in value added terms because of slower growth in intermediate input costs.¹¹

¹¹ By evaluating financial statements for a sample of the largest publicly traded U.S. asset management firms with data from Compustat, we find expense-to-revenue ratios to be 0.58 and 0.79 for alternative and traditional asset management firms, respectively. This approach offers crude insight into how value added shares of GDP may differ for traditional and alternative asset management activities. Our sample comprises the largest publicly listed traditional and alternative asset managers.

The growth in measured asset management output was driven by the growth in fees. Total fees, measured in dollars, is the product of assets under management and management fees as a percentage of assets. **Table 1** shows that fees over time for alternative asset management and traditional asset management (which includes mutual funds, exchange traded funds (ETFs), closed end funds, money market mutual funds, and unit investment trusts.) Both types of asset management have seen considerable growth in AUM as a share of GDP, but unit fees have followed different trajectories. While unit fees in traditional asset management have been cut in half since the period around the GFC, unit fees in alternatives have remained more stable. So, while traditional asset management fees in aggregate as a share of GDP have declined somewhat, they have grown substantially in alternatives, from 0.64% of GDP in 2005-2009 to 1.24% of GDP in 2022 and 0.96% in 2023.

What drove the rise of alternative assets (“alternatives”) over the last 20 years? One part of the answer hinges on the observation that public pension funds and large corporate defined benefit pension funds have significantly increased their allocations to alternatives. Exposure to alternatives also increased significantly for other institutional investors, including endowments and education-related foundations as well as insurers (**Figure 5a**). The trend towards greater alternative asset allocation among institutions is highlighted by Begenu et al. (2024) as well as Ivashina and Lerner (2018), while the rise in alternatives among ultra-high-net-worth households is documented by Gabaix et al. (2023). The increased allocation to alternatives is the subject of particularly large academic interest and has been explored extensively in recent work. The leading explanations, summarized below, include greater risk-taking, reaching for yield in a low interest-rate environment, an attractive regulatory environment, and, potentially, over-optimism about the prospects of the asset class.

Risk-taking among defined benefit pension funds has previously been attributed to a regulatory framework that allows funds to value their liabilities by discounting future liabilities at the expected return of their assets rather than at the lower yield on high-quality corporate credit, the latter of which is a better reflection of the risk of the liabilities. (Bergstresser et. al., 2006; Andonov et al., 2017). Investing in higher-return alternative assets thus allows public pension funds to report higher expected returns, understate their liabilities, and ultimately report better funding status (and higher earnings in the case of corporate pension funds). The incentive to take on more risk may be especially salient given that U.S. public pension funds are found to be

increasingly underfunded (Giesecke and Rauh, 2023). Institutions may also have increased their allocation to alternative assets because they were led to hold over-optimistic beliefs about expected returns by some combination of consultants, peers, and past experiences (Begenau et al., 2024). Wealthy individuals may have been prompted to invest more in alternatives by unscrupulous advisors (Egan et al, 2024).

<< insert Figure 4 here >>

Low interest rates could have also played a role in spurring the outsized growth in the demand for alternative assets since the GFC. The tendency for insurance companies, in particular, to reach for higher yields by holding riskier assets – especially during periods of business cycle expansion – is documented in Becker and Ivashina (2015). A similar mechanism could have encouraged a number of other institutional investors to also increase their demand for non-traditional assets. For instance, the average allocation to alternatives for U.S. educational institution endowments grew from 25 to 60 percent between 2007 and 2023. Some of the largest college endowments, such as those belonging to Harvard and Yale, reported alternative asset allocations of 78 percent and 83 percent in 2023 and 2022, respectively.

<< insert Table 1 here >>

Observation 2: Credit intermediation has shifted away from traditional banks

Credit intermediation includes activities related to the provision of loans to households and businesses, which has historically been the largest subsector of financial services. Its value added share of GDP was mostly unchanged, rising from 3.11 to 3.20 percent between 2006 and 2023. Gross output as a share of GDP fell slightly over this period, from 5.10 percent to 4.85 percent. In short, as a contributor to financial sector, credit intermediation is about as important today as it was twenty years ago, at least from the perspective of the national income accounts.

While the measured credit intermediation share of GDP has been flat in the post-GFC period, this sector has undergone significant compositional changes. In particular, there has been significant growth in nonbank corporate and household credit. **Figure 5b** shows that corporate debt securities, as a share of all interest-bearing liabilities of the non-financial corporate sector, has risen significantly over time, with some acceleration in the

post-GFC period. Conversely, the bank share of corporate debt has trended downward over time and continued to fall in the post-GFC period. In 2006, bank debt comprised 28.1% of corporate debt obligations, while in 2023 it represented 20.1% of corporate debt. There has also been an increase in the share of corporate debt held by nonbank financial intermediaries. Indeed, a very large share of leveraged loans, which are typically originated by banks and are used to fund buyouts of large firms, are held in collateralized loan obligations (CLOs). These are tranching securitizations in which most of the risk is held by nonbank sponsors and the senior, lower-risk tranches are held by banks, insurance companies, pension funds, and other institutional investors. Like debt securities, these leveraged loans are broadly syndicated and traded in the market. Thus, the amount of corporate debt that is traded has increased even more than would be suggested by the growing share of debt securities in overall corporate debt liabilities. The growth of broadly syndicated leveraged loans has occurred alongside the growth of private credit, much of which is used to finance buyouts of mid-sized “middle market” firms. These loans are held in private credit funds (limited partnerships similar in structure to private equity funds) and business development companies (BDCs).

A related pattern can be seen in residential mortgages. Buchak et al. (2018) document that the share of residential mortgages held by nonbanks increased from about 40% in 2007 to 60% in 2015. Their share of mortgages has increased further since 2015, rising to 65% by 2023 (**Figure 6**). Growth in nonbank origination has been facilitated by the ability of originators to sell their loans into mortgage pools guaranteed by the government-sponsored enterprises, Fannie Mae and Freddie Mac (both under government conservatorship since the GFC), the Federal Housing Administration, and the Veteran’s Administration. By contrast, banks dominate the origination of jumbo mortgages – large mortgages that do not qualify for government guarantees. As a result, their share of mortgages held on balance sheet has remained stable since the GFC, even as the share held by the GSEs and FHA/VA has risen drastically.¹²

What explains the growth of nonbanks in credit intermediation since the GFC? Buchak et al. (2018) argue that a large part of the explanation is the increased regulatory burden faced by banks since the GFC. Increased

¹² Prior to the GFC, there was an active market for the securitization of jumbo mortgages and other non-conforming mortgages, typically subprime. That market collapsed during the GFC and never recovered.

capital requirements, supervisory enforcement actions, and lawsuits made it more costly for banks to originate mortgages. In a quantitative model, they attribute 60% of the growth of nonbank credit to these factors, 30% to digital technology advances that facilitated the origination of mortgages by technology-focused nonbanks (“fintechs”). Chernenko et al. (2022) argue the increased supervisory burden of making risky leveraged loans shifted more activity to the nonbank sector. They show that firms with negative EBITDA and debt/EBITDA greater than six are more likely to borrow from nonbanks. Chernenko et al. (2024) provide indirect evidence that the greater supervisory burden experienced by banks led to the growth of middle market lending by private credit funds and BDCs. The fact that banks participate in risky middle market by managing the assets of private credit funds, rather than exploiting the low-cost funding they can access through their commercial bank subsidiaries, suggests that bank supervision costs are significant. These authors also show that banks facilitated the growth of risky credit provision by lending to private credit funds and BDCs. They argue that loans to private credit funds and BDCs, which are relatively safe given their overcollateralized interest in a pool of middle market loans, require less capital than loans to middle market firms, enabling banks to exploit their funding advantage. Acharya et al. (2024) provide empirical evidence of the growing importance of loans from banks to nonbank financial intermediaries.

It is worth noting that nonbank lenders now tend to be less leveraged than banks, which was not the case prior to the GFC. What has evolved is an ecosystem in which banks are holding less risky assets, yet facilitating nonbank risk-taking by lending to nonbank financial intermediaries. The de-risking of bank portfolios can also be seen in the increased share of bank assets held in Treasuries and Agency MBS, as documented by Hanson et al. (2024) and Buchak et al. (2024). If the distinctive feature of banking is that banks can issue safe money-like claims, it is efficient for them to hold relatively safe assets to back those claims, as demonstrated theoretically and empirically by Diamond (2020). This is a very different perspective from the classic model in Diamond (1984), in which banks are best positioned to monitor borrowers and extend credit. The post-GFC growth of nonbank credit suggests that banks may actually have a *disadvantage* in originating and holding risky credit, despite the funding advantage they would seem to have.

Tying together Observation 1 and Observation 2

We have separately discussed two important trends in the financial sector since the GFC: the growth of alternative investments and the growth of nonbank credit intermediation. Yet there are arguably important connections between the two that reflect the broader move to a more market-based financial system. First, and most obviously, private credit is a type of alternative investment, and a large share of the holders of private credit funds are the pension funds that are holding other types of alternative investments. Second, as argued theoretically and empirically by Scharfstein (2018), countries with pension systems that are funded by investments rather than by taxes on a “pay-as-you-go” basis, tend to be less bank-oriented.¹³ Pension funds have less demand for bank deposits and more demand for long-term risky assets. The growth of securities markets and non-bank credit comes alongside the growth of pension funds. And as banks have increased the allocation of their balance sheets to safer assets, pension funds and other investors like insurance companies have stepped in to hold risky credit assets. Thus, both a reduction in the demand for risky credit from banks and an increase in the demand for risky credit can help explain the growth of alternatives, securities, and nonbank credit.

4. Summing Up

This article reviews the body of research on the historical growth and transformation of the U.S. financial sector. From 1980 to 2006, the sector expanded rapidly, with its GDP share increasing from 4.8% to 7.6%. In the aftermath of the Global Financial Crisis, the sector’s GDP share stabilized around 7%. Yet, as we show, the sector has continued to evolve, especially credit intermediation, which has continued to move away from traditional banks.

The initial shift away from traditional banks and to a market-oriented system during the pre-GFC years turned out to be highly unstable. It is an open question whether the continued evolution towards a market-based financial system will come with the same instability. Preliminary evidence suggests that the new market-

¹³ Ordonez and Piguillem (2021) present a quantitative model showing that as a country ages and there are more retirement savings, there is more demand for securities and less demand for bank deposits.

based system may be safer than commonly supposed: less leveraged than traditional banks and less leveraged than shadow bank pre-GFC. But will it last?

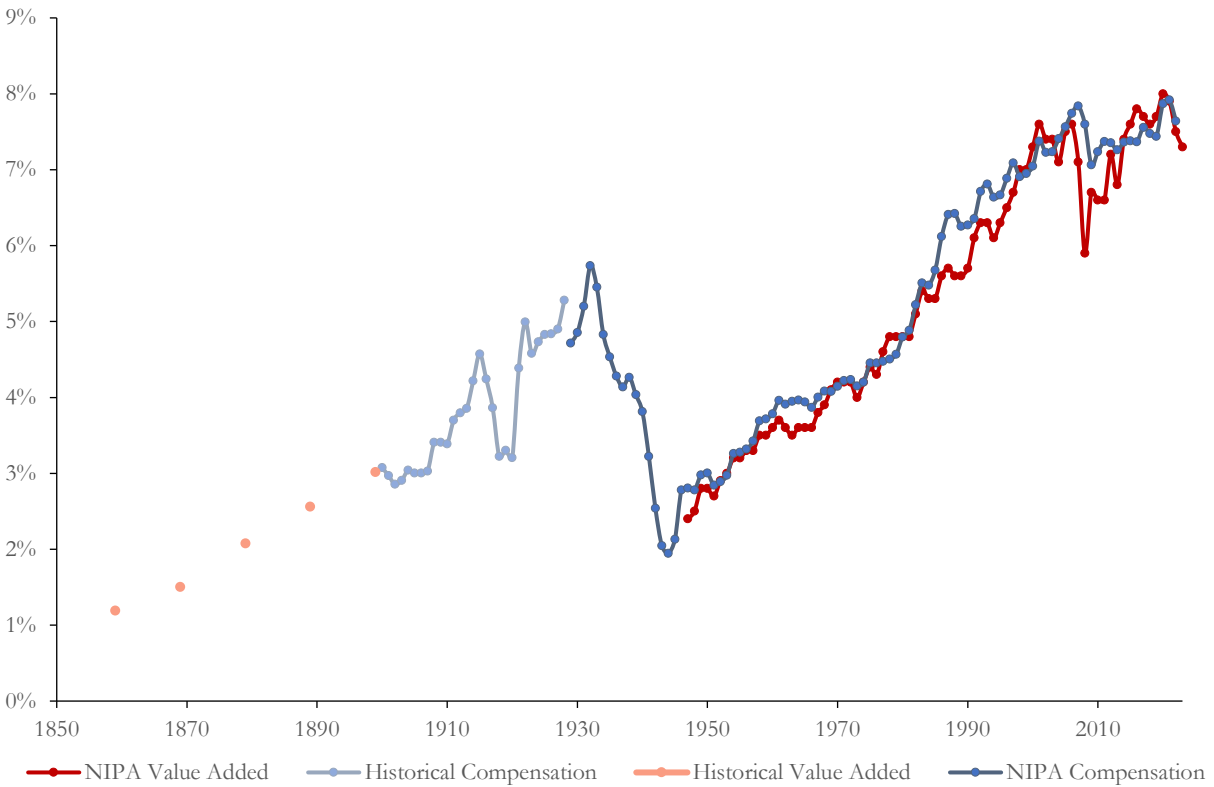
Another question raised by our review has to do with the size of the financial sector overall. When the first research was performed on the size of finance in the early 2000s, the sector had been steadily taking an ever-increasing share of national output. But as we have shown, the sector has stabilized in recent years. It is an open question whether the intermediation services that finance provides can, over the long-run, be performed at lower cost.

5. Figures and Tables

Figure 1

Income Share for the U.S. Financial Sector, 1850-2023

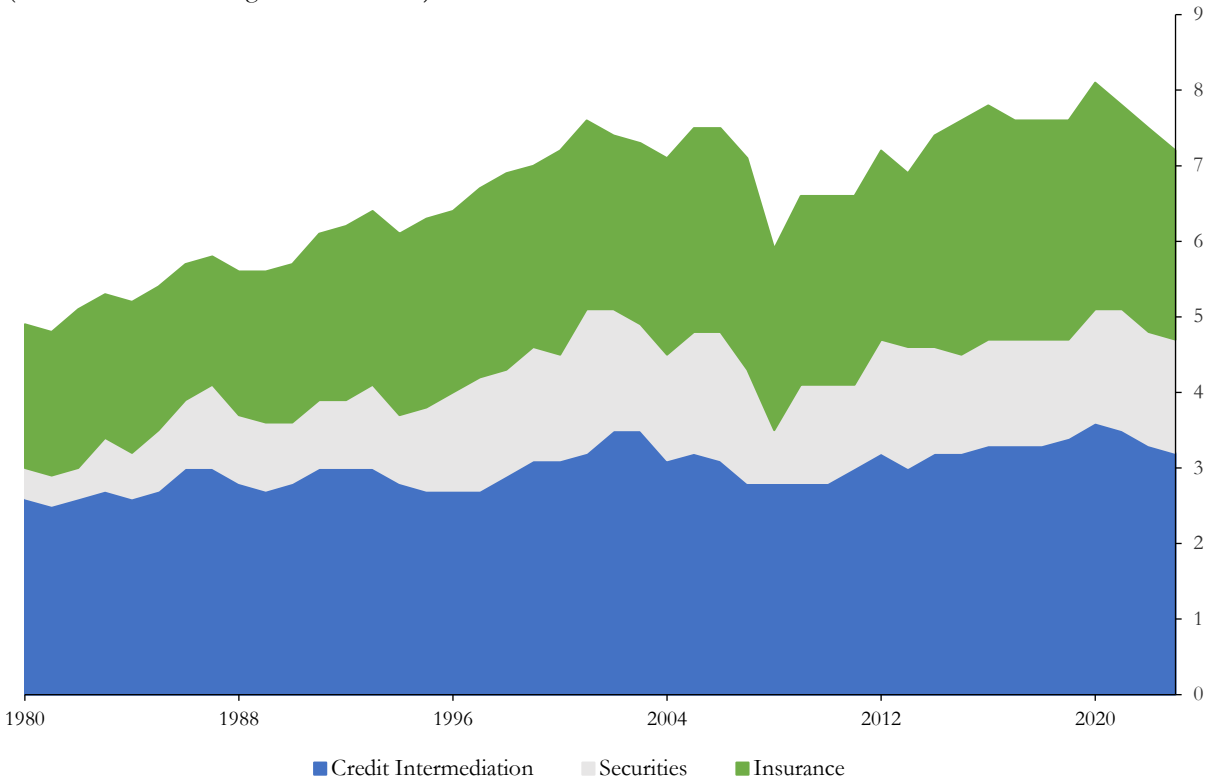
(Value Added Percentage Share of GDP, Compensation Percentage Share of Total Compensation)



Source: BEA, Carter et al. (2006), drawing on estimates first compiled by Thomas Philippon.

Note: NIPA Value added and Historical Value Added are value added shares of GDP for the finance and insurance sector (1947-2023) and the finance, insurance, and real estate sector (1859, 1869, 1879, 1889, 1899), respectively. NIPA Compensation and Historical Compensation are calculated as the share of total compensation for the finance and insurance sector (1929-2022) and the finance, insurance, and real estate sector (1900-1928), respectively.

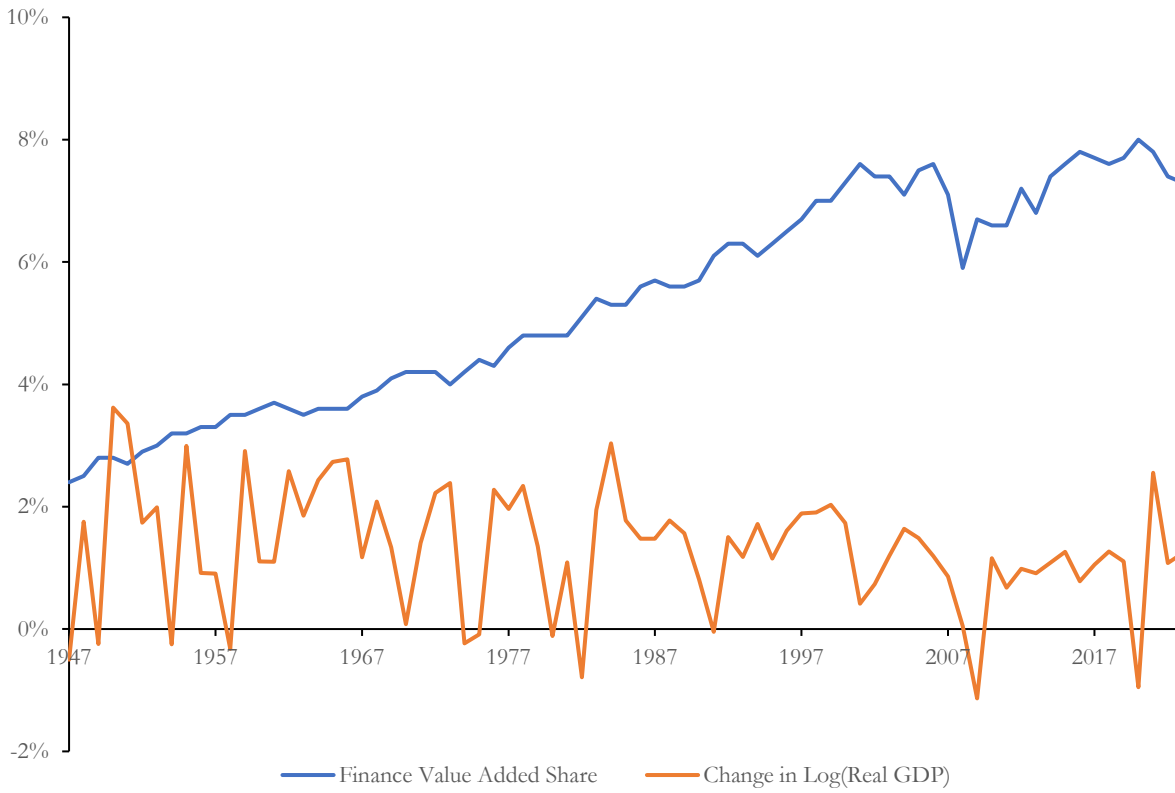
Figure 2
The Growth of Financial Service Subsectors, 1980-2023
 (Value Added Percentage Share of GDP)



Source: BEA

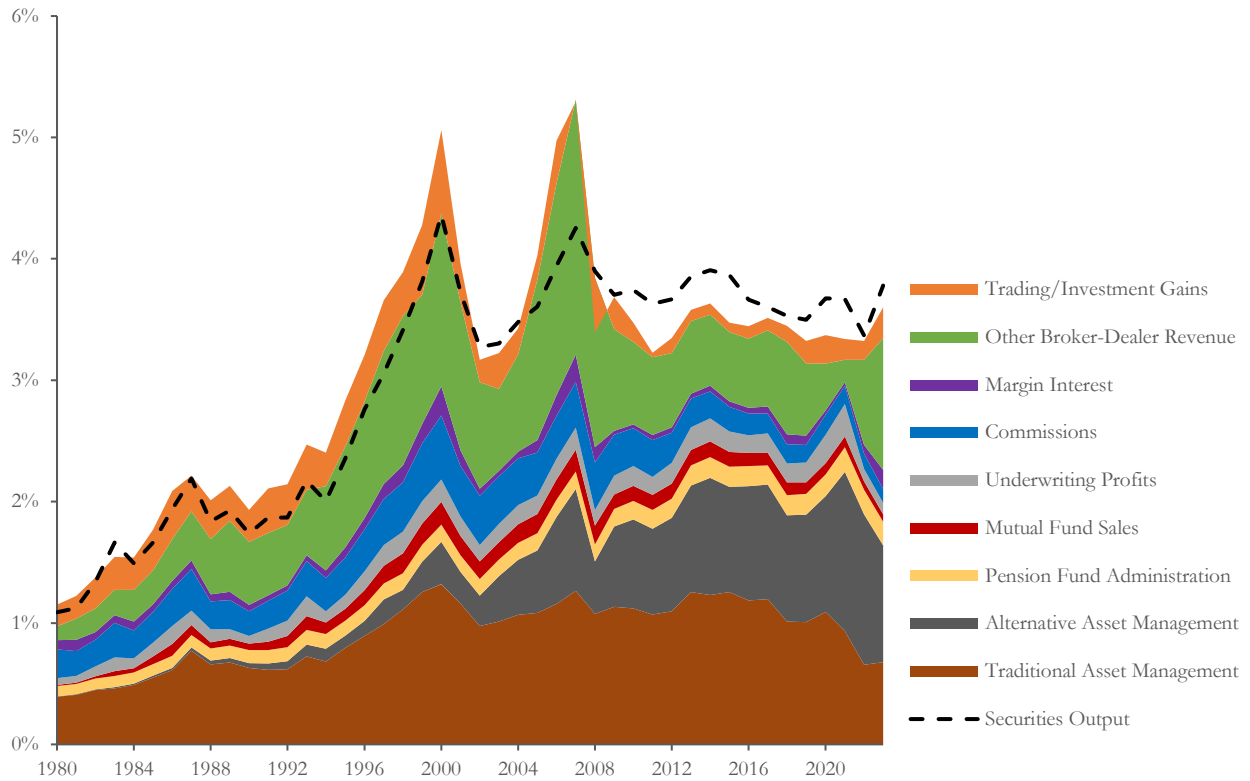
Note: Securities includes two subsectors: (i) securities, commodity contracts, and investments as well as (ii) funds, trusts, and other financial vehicles.

Figure 3
U.S. Finance Share and Real GDP Growth, 1947-2023



Source: BEA

Figure 4
Composition of the Securities Subsector, 1980-2023
 (Revenues from Different Activities, Percent of GDP)



Source: Authors' calculations, ICI, SIFMA, BEA, FRED, Prequin, Hedge Fund Research, French (2008), Ben-David et al. (2020)

Note: Traditional asset management revenue is calculated as the fee revenue derived from equity, bond, hybrid, and money market mutual funds, exchange traded funds, unit investment trusts, and closed-end funds. Alternative asset management revenue is calculated as the fee revenue collected from U.S.-domiciled hedge funds and funds of funds, as well as private market activities including private equity and private debt. Other broker-dealer revenue includes revenues from research, commodities trading, as well as other revenue, net of asset management fees. Pension fund administration reflects the revenue earned for the administration of private and public defined benefit and defined contribution pension assets, respectively. See **Appendix A.1** for details.

Figure 5a
Institutional Allocation to Alternative Assets, 2001-2023
 (Share of Assets Allocated to Alternatives, 2007 = 100)

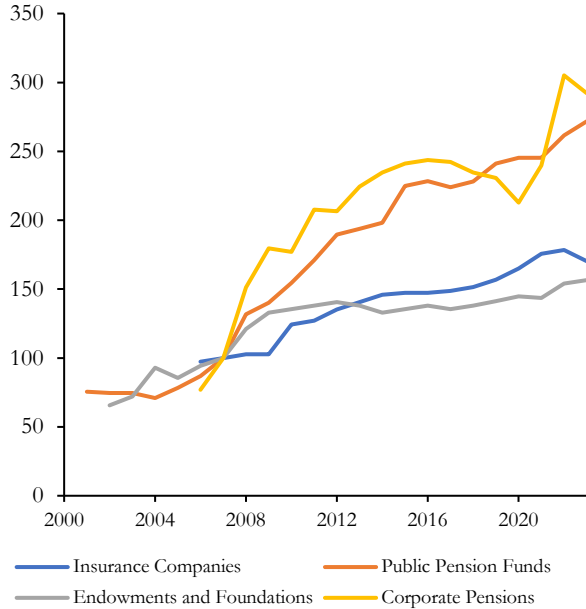
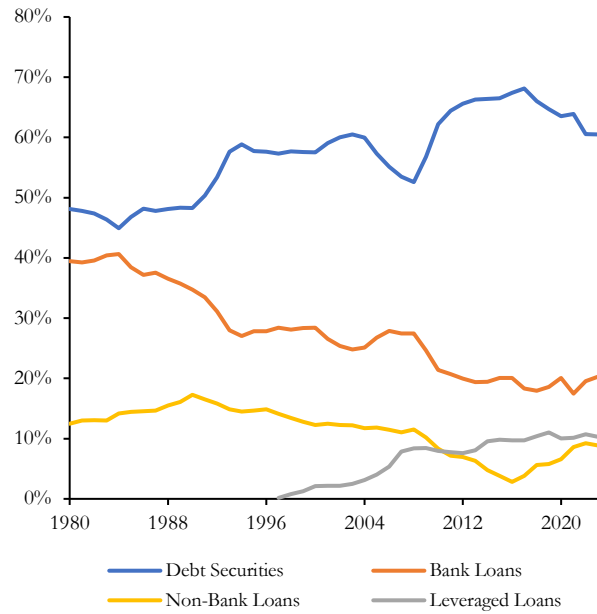


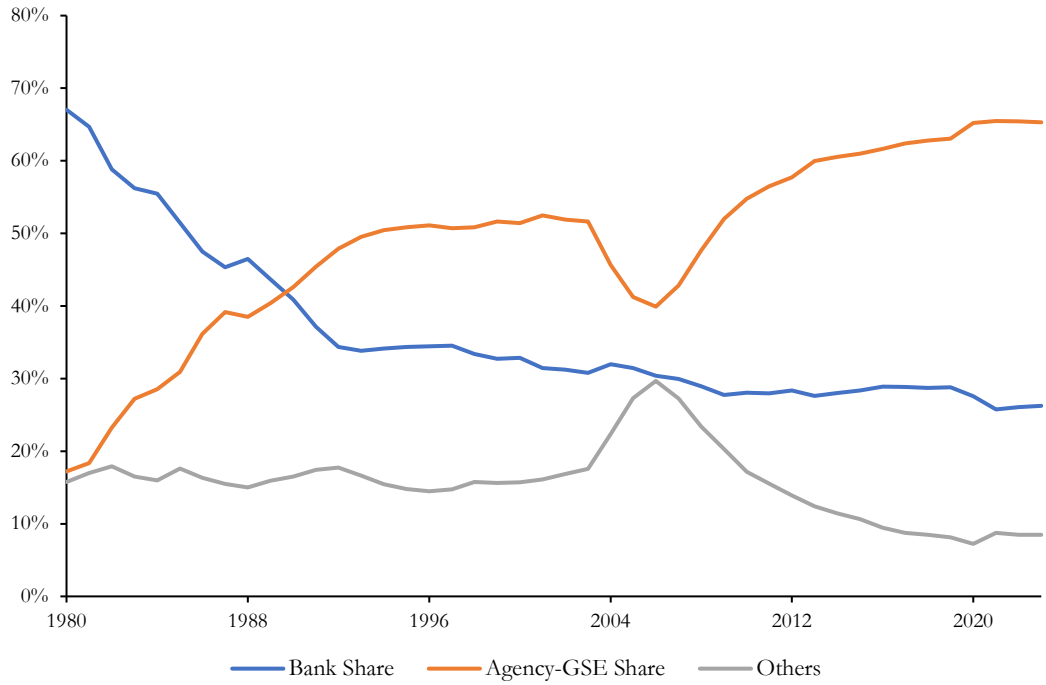
Figure 5b
Sources of Non-Financial Corporate Borrowing, 1980-2023
 (Share of Non-Financial Corporate Borrowing)



Source: Prequin, Center for Retirement Research at Boston College, National Association of Insurance Commissioners (NAIC), NACUBO-TIAA Study of Endowments (2018-2023), NACUBO-Commonfund Study of Endowments (2009-2017), NACUBO Endowment Study (2002-2008), Milliman Corporate Pension Funding Study; US Financial Accounts L.103, Pitchbook's Leveraged Commentary and Data (LCD)

Note: In Figure 5a, for public pension funds, alternative assets represent the average allocation to private equity, private debt, hedge funds, and real estate. For corporate pension funds, alternative assets represent allocation to alternatives for the 100 largest U.S. corporate defined benefit pensions. For insurance companies, alternative assets include all assets classified under Schedule BA of the U.S. statutory filings, which largely includes non-traditional assets. For endowments and foundations, alternative assets include venture capital, private equity, marketable alternatives, private debt, marketable real assets, and other real assets. Values are indexed to 100 in 2007, the first year in which all series have a non-missing value. In Figure 5b, bank loans include loans from depository institutions and mortgages. Nonbank loans are defined as other loans and advances, net of leveraged loans. Values sum to 100 percent in every year.

Figure 6
Holder of Residential Mortgages by Lender Type, 1980-2023
 (Share of Total 1-4 Family Residential Mortgages)



Source: U.S. Financial Accounts

Table 1: Change in Assets Under Management and Fees

Period	Traditional Asset Management			Alternative Asset Management		
	AUM (\$ Billions)	AUM/GDP (%)	Fees (%)	AUM (\$ Billions)	AUM/GDP (%)	Fees (%)
1980-1984	304.84	8.92%	0.74%	11.74	0.34%	2.12%
1985-1989	859.08	17.42%	0.81%	84.36	1.71%	2.18%
1990-1994	1,848.11	28.18%	0.83%	169.08	2.58%	2.78%
1995-1999	4,876.63	56.73%	0.86%	452.36	5.26%	3.22%
2000-2004	7,517.19	67.80%	0.78%	999.41	9.01%	3.78%
2005-2009	11,230.27	79.56%	0.69%	2,249.76	15.94%	4.00%
2010-2014	15,224.16	93.52%	0.59%	3,144.14	19.31%	4.19%
2015-2019	21,449.58	108.45%	0.47%	4,565.75	23.09%	3.94%
2020-2021	31,738.78	129.52%	0.35%	7,623.27	31.11%	3.61%

Source: ICI, SIFMA, BEA, FRED, Preqin, Hedge Fund Research, Ben-David et al. (2020); French (2008)

Note: Asset management AUM represent assets invested in equity, bond, hybrid, and money market mutual funds, exchange traded funds, unit investment trusts, and closed-end funds. Alternative asset management AUM represents assets invested by hedge funds as well as private market activities including private equity and private debt. AUM/GDP is the ratio of mean aggregate AUM to mean nominal GDP. Fees are asset-weighted.

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6. Appendix

A.1 Details on Construction of Figure 4

Securities output is defined as gross output from Securities, Commodity Contracts, and Other Financial Investments and Related Activities as well as Funds, Trusts, and Other Financial Vehicles. Aggregate subsector output data is collected from the BEA.

Traditional asset management includes equity, bond, and hybrid mutual funds, money market funds, exchange traded funds, closed-end funds, and unit investment trusts. Data on assets under management and unit investment costs for all of these asset classes is collected from editions of the annual Investment Company Institute’s (ICI) Fact Book and occasionally supplemented with data from Malhotra and McLeod (2000). We estimate traditional asset management revenue, Y_t^T , by multiplying assets under management for each traditional asset class c in year t , $AUM_{c,t}$, by the average unit fee charged to manage those funds, $FEE_{c,t}$.

$$Y_t^T = \sum_c FEE_{c,t} AUM_{c,t}^T$$

Alternative asset management includes assets managed by hedge funds, private equity, and private debt funds. Data on assets under management for U.S. hedge funds is gathered from Hedge Fund Research’s Market Microstructure Report for the period 1990-2011. We calculate total AUM as the sum of assets managed by U.S.-domiciled hedge funds and funds of hedge funds. For the period 2012-2023, we use financial assets for U.S. hedge funds from FRED. Hedge fund fees are gathered from French (2008) for the period 1996-2007 and calculated using data from Ben-David et al. (2020) for the period 2008-2016. Judgmental interpolation is performed to impute missing data. AUM data for private equity and private debt is collected from Preqin for the period 2000-2023. This includes both committed and uncommitted assets – also referred to as “dry powder” – for funds located in the U.S. For the period 1980-1999, we gather AUM data for private equity and venture capital funds from Kaplan and Rauh (2010). We use fund-level microdata from Preqin to calculate average management and incentive fees charged by private capital managers, by year, between 2000 and 2023. Prior to 2000, we assume that management and carried interest fees are equal to 2 percent and 20 percent, respectively. We calculate alternative asset management revenue, Y_t^A , as follows. We take the sum-product of (i) management fees and AUM and (ii) incentive fees and distributions. To this, we add asset management output generated by hedge funds, calculated as the product of hedge funds’ average “all-in” fee and AUM.

$$Y_t^A = (FEE_{pc,t}^m AUM_{pc,t} + FEE_{pc,t}^i \text{Gross Distributions}_{pc,t}) + (FEE_{hf,t} AUM_{hf,t})$$

Data on commissions, trading/investment gains, underwriting profits, margin interest, mutual fund sales, and other broker-dealer revenue for the period 1980-2018, disclosed in FOCUS (Form X-17A-5IIB) reports, is gathered from SIFMA. Asset management fees, made available at a quarterly frequency, are aggregated and netted out of other broker-dealer revenue to avoid double-counting. For most years before 2000, asset management fee data is only available for NYSE-registered broker-dealers. When this is the case, asset management fee revenue for NYSE-registered broker-dealers is scaled in accordance with the share of all broker-dealers registered on the NYSE. For the period 2020-2023, unconsolidated income statement data, gathered from the Intercontinental Exchange (ICE), includes only public-facing NYSE member firms. Again, these figures are scaled by the relative importance of NYSE firms, relative to all broker-dealers.

Pension fund administration represents fee revenue earned for the administration of U.S. pension funds. Data on AUM is collected from FRED. Fund administration costs are calculated using public pension administration costs using data from the U.S. Census Bureau’s Annual Survey of Public Pensions for the period 1993-2021. The balance of funds, trusts, and other financial vehicles – that is not attributable to pension fund administration – is added to traditional asset management.