

SPECIAL REPORT

BUBBLE OR NOTHING

How the Long-Term Swelling of Household and Business Sector Balance Sheets Has Increasingly Forced Lenders, Investors, and Borrowers to Sacrifice Prudence, Financial Rewards, or Both

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Contents

Executive Summary	<i>iii</i>
A Note to Readers: A Paper with Two Purposes	<i>iv</i>
Acknowledgments	<i>iv</i>
Part I: Making the Case: Swelling Private Balance Sheets Compelled a Secular Increase in Risk Taking	
1. Introduction	<i>2</i>
2. How Disproportionate Balance Sheet Growth Forced a Tough Choice: Riskier Behavior or Lower Returns	<i>6</i>
3. Evolution of the Big Balance Sheet Economy	<i>20</i>
Part II: Implications of the Big Balance Sheet Economy and Increased Risk Taking	
4. How Swelling Balance Sheets Drove Attitude Changes	<i>34</i>
5. Big Balance Sheet Economy May Be in a Topping Process but Continues to Compel Risk Taking	<i>36</i>
6. No Nice Solution to the Big Balance Sheet Economy Dilemma	<i>42</i>
7. Conclusion	<i>52</i>
Appendixes	
1. Bubble or Nothing: Links to Hyman P. Minsky	<i>56</i>
2. The Difficulty of Achieving Secular Swelling of Balance Sheet Ratios in the Absence of Rising Capital Gains Rates	<i>57</i>
3. Balance Sheet Ratio Definitions and Methods	<i>58</i>
4. Focusing on Net Worth Rather Than Assets and Liabilities Can Be Misleading	<i>59</i>
5. Don't Blame Increased Financial Intermediation for Big Balance Sheets or Excessively Easy Fed Policy for Recent Bubbles	<i>61</i>
6. Why "Growing Out of" the Big Balance Sheet Condition Is Exceedingly Difficult	<i>62</i>

Charts / Boxes

Charts	Page	Charts (cont.)	Page
1. Secular Rise in Private Nonfinancial Debt-to-GDP Ratio	3	35. Rising Equity Valuations in Big Balance Sheet Economy Era	29
2. Secular Rise in Assets-to-GDP Ratio	3	36. Farmland Bubble Burst in Early 1980s	29
3. Risk-Free Returns Fell Dramatically but Targets Did Not	4	37. Rising Nonfinancial Business Assets Relative to Gross Value Added	30
4. Private Sector Borrowing Grew Relative to GDP	7	38. Rising Miscellaneous Assets as Share of Corporate Assets	30
5. Borrowing Increasingly Exceeded Net Investment	8	39. Capacity Utilization in Secular Decline	31
6. Excess Borrowing Coincided with Asset Appreciation	8	40. Manufacturing Capacity Utilization in Secular Decline	31
7. Descending Cyclical Peaks in Interest Rates	9	41. Manufacturing Production Slowdown	32
8. Cyclical Troughs in Rates Descend to Zero	9	42. Postwar Rise in Office Vacancy Rate	32
9. Secular Decline in Bank Net Interest Margin	10	43. Large Asset Price Gains and Puny Net Investment in Latest Expansion	36
10. Decline in Income Relative to Assets	12	44. Private Nonfinancial Corporate Debt Ratio near 2009 High	37
11. Decline in Rate of Current Income on Assets	12	45. Record High Leverage Excluding Largest Firms	37
12. Falling Returns on Commercial Properties	13	46. Low Interest Rates Cannot Account for Secular Valuation Rise	38
13. Falling Profits Relative to Equity	13	47. Global Private Nonfinancial Debt Ratios (1)	39
14. Annual Swings in Asset Values Grew Relative to Income	13	48. Global Private Nonfinancial Debt Ratios (2)	39
15. Real Equity Price Swings Increased	15	49. Chinese Debt Ratio Soars above U.S. Peak	40
16. Real Home Price Swings Increased	15	50. Debt Growth Correlated with GDP Growth	46
17. Real CRE Price Swings Increased	15	51. Debt Growth, Domestic Private Profit Sources Closely Correlated	47
18. Rising Corporate Capital Gains Relative to Profits	15	52. Real Rates Have Had to Stay Lower Longer to Support Recovery	49
19. S&P 500 Cyclical Earnings Swings Grew Relative to GDP	16	53. Capital Gains Boosted Assets-to-GDP Ratio	57
20. Holding Gains Increasingly Rose Relative to Income	16	54. Household Assets Much Larger Than Liabilities	60
21. Capital Gains Grew Relative to Current Income	17	55. Household Debt and Net Worth Correlated	60
22. Household Assets Have Grown Relative to Income	19	56. Household Assets Near Record Relative to GDP	63
23. Financial Sector Debt: Extreme Rise and Fall	21	57. Assets Usually Outpace GDP	64
24. Record Low Stock Valuation in 1949	22		
25. Households Had Cash but Little Debt Immediately after WWII	22		
26. Rising Interest Rates from '66 to '82 Depressed Asset Prices	23		
27. Household Debt Ratio '45 to '70	24		
28. Nonfinancial Business Debt Ratio '45 to '70	24		
29. Wealth Effect Key Influence on Personal Saving	25		
30. Increasingly Large Cyclical Swings in Assets Relative to Income	26		
31. Descending Troughs in 10-Year Treasury Yield	26		
32. Household Debt Ratio Peaked in 2007	27		
33. Nonfinancial Business Debt Ratio Nearing 2009 High	27		
34. Real Price Changes Increasingly Responsible for Changes in Value of Real Estate	28		
		Boxes	Page
		1.1 What's a Bubble?	3
		1.2 Excessive Risk or Just Mispriced?	4
		2.1 Credit Increasingly Associated with Purchases of Existing Assets	8
		2.2 Greater Risk and Deteriorating Returns for Banks Encouraged Proliferation of Securitization	11
		2.3 Converting Capital Gains into Operating Income	14
		3.1 Illustration of Wealth Effect Mechanics	25
		3.2 A Faster-Growing Economy Needs More Idle Capacity	32
		6.1 The Profits Identity	44

Executive Summary

The U.S. business cycles that ended in the last three recessions involved progressively greater and more troubling risk-taking behavior. Each ended with worse financial fallout and a longer period of recession and weak recovery. Much has been written about the bubbles leading up to the commercial real estate deflation in the late 1980s and early 1990s, the crash of the tech stocks and the ensuing bear market of 2000-2002, and the deflation of home real estate and the debacle in mortgage-backed derivatives in 2006 through 2011. Yet analyses of the bubbles' causes invariably omit a critical point.

The evolution of the economy's aggregate financial structure has, over decades, altered the playing field for financial decision makers throughout the economy, increasingly skewing their available options toward higher risks, lower returns, or both.

This paper presents two facts that help explain economic and financial performance in recent decades and offers insights into the current business cycle, the 2020s, and beyond.

1. Private sector balance sheets grew faster than income over many decades; thus, aggregate debt grew faster than aggregate income, and aggregate assets grew faster than aggregate income.
2. This disproportionate balance sheet expansion changed financial parameters in the economy, mathematically making financial activity increasingly hazardous and compelling riskier behavior.

The first of these statements is an empirical observation, easily documented. The second is the result of direct logical deduction. Together, they have several consequences:

- From the mid-1980s on—the era of the *Big Balance Sheet Economy*—financial decision makers have had to choose between progressively lower returns and higher risk.
- Too much private sector debt relative to income has adverse consequences, of course, but so does an excessive total value of private sector assets relative to income. An extreme value of aggregate assets relative to income means meager yields and operating returns on assets, distorted financial decisions, and an economy vulnerable to asset price deflation.
- Each successive business cycle in the *Big Balance Sheet Economy* era has started with proportionately larger balance sheets and has involved more reckless balance sheet expansion leading to even bigger balance sheets and a worse financial crisis.

- Each successive crisis, with more bloated balance sheets to stabilize, was more difficult to resolve and therefore required the government to engineer dramatic new lows in interest rates, heavy fiscal stimulus, and other measures to stabilize economic conditions. The measures eventually overcame recession and chronic weakness, but in doing so they necessarily caused further expansion of balance sheets relative to income.
- During the 2000s, either the housing bubble or some other set of highly speculative, excessively risky, and destabilizing activities was virtually inevitable.
- Increasingly unsound risk taking has been occurring again in the 2010s.
- The present cycle is almost certain to end badly. Although there are signs that balance sheet ratios are undergoing an extended, secular topping process, they remain extreme and will produce serious financial instability during the next recession.
- There is no nice, neat solution to the *Big Balance Sheet Economy* dilemma, no blueprint for a politically acceptable resolution. The task of preserving prosperity while shrinking assets-to-income and debt-to-income ratios is, if not outright paradoxical, at least plagued by conflicting forces.
- Government policy cannot prevent serious consequences when the *Big Balance Sheet Economy* corrects, but it can moderate them and help households, businesses, and the financial system cope with them. However, these tasks would be difficult, politically tricky, and prone to cause some backtracking on balance sheet correction even if policymakers fully understood the economic problem.
- Although the outlook is fraught with uncertainties, individuals and organizations can benefit by taking steps to prepare for, endure, and in some cases capitalize on some of the developments ahead.

The U.S. economy continues to face a bubble-or-nothing outlook. Participants in the economy and markets will keep increasing their financial risk until the expansion breaks down, and the bigger the balance sheets are relative to income, the more severe the breakdown is likely to be.

A Note to Readers / Acknowledgments

A Paper with Two Purposes

First, and foremost, this work is a white paper highlighting and explaining a set of financial circumstances with profound implications for the economic outlook and for public policy. It is offered as a contribution to public discussion, but it is neither a political argument nor a call for any particular government actions. Indeed, I am not sure what the best policy options will be to cope with the challenges revealed by this analysis because the underlying problems, while not difficult to identify, are long-term, evolving, and linked to complex economic interactions. Any relevant policies would almost surely have unintended consequences. Yet, while prescribing an ideal “solution” to the problem is probably impossible, recognition of the underlying issues could be invaluable to selecting reasonably appropriate policy responses and to avoiding actions that make the long-term problems worse.

Second, this paper also has broad implications for individual concerns, since the subject bears on the economic outlook in a manner that affects almost all private households and organizations. It presents conclusions about the long-term tendencies for business conditions, financial and fixed asset markets, and household finances. It highlights aspects of macroeconomic and financial risk not included in prevailing views among investors and financial professionals. It is my hope that readers will be able to broaden their understanding and adopt sounder strategies for the long-term financial health and security of their organizations and households.

This paper concerns profound but little understood threats to economic and financial stability in the United States. There are similar issues in the rest of the world, but the focus here is domestic. The exposition is built on a set of macroeconomic and macrofinancial observations, along with analysis of their implications, that my colleagues and I at The Jerome Levy Forecasting Center LLC have been studying for decades in our efforts to understand and forecast economic conditions and financial markets.

The main thesis (part I) rests on clear empirical evidence and direct mathematical deduction that would not be particularly controversial, I believe, were it not that the real-world phenomena and issues involved do not exist in conventional macroeconomic models. The sections of the paper that deal with the implications of the main thesis (part II) involve more complex and open-ended issues, leaving more room for debate.

Neither criticizing nor defending capitalism is on the agenda here, just objectively identifying and explaining critical secular phenomena occurring within our economic system. I consider myself a capitalist, but not a capitalist who believes that a pure market economy with minimal government intervention will keep itself in perpetual prosperity (allowing for some exogenous noise and cyclicity). Nor do I think, on the other end of the spectrum, that there is a formula for more aggressive government policy that can achieve such nearly ideal performance. Based on my experience over more than 45 years of studying and forecasting the economy, it seems to me that the lives and behaviors of human beings and their societies are just too complicated and too messy—and human ability to obtain and optimally process information too limited—for the economy to maintain machine-like textbook functioning. Furthermore, the future is unpredictable in too many ways to be summed up as a set of determinable probability distributions.

Yet, while capitalism in the real world has its flaws and surely can develop a tendency toward increasing instability, it is still better than any other system ever conceived for generating rising living standards, innovation, and personal freedom. One might say about capitalism what a statement famously cited by Winston Churchill asserted about democracy—that it is the worst system, except for all the others.

Thus, I hope this paper is taken as it is intended, as an attempt to offer some constructive facts and insights for the good of public understanding, better economic policy discussions, and a more realistic basis for executive, investor, and household decision making.

Acknowledgments

Many of the ideas in this paper reflect extensive discussion with my present and past colleagues at The Jerome Levy Forecasting Center LLC. At the top of this list are my business partners, Srinivas Thiruvadhanthai, director of research, and Robert King, senior economist. I am grateful for comments and suggestions from Steve Fazzari, academic advisor to our firm, and past and present colleagues Kevin Feltes, Douglas Williams, John Nahra, and Fei Wang. I also owe thanks to Neil Winter, Judi Butler, Claire Levy, and Sebastian Pflumm for their comments and suggestions.

Three major influences on the perspective and ideas in this paper were Jerome Levy (1882-1967), Hyman P. Minsky (1919-1996), and S Jay Levy (1922-2012).

My thanks go as well to our long-time editor Judith Kahn and even longer-time graphic designer Ed O'Dell.

I am solely responsible for any errors or misjudgments in this paper.

Part I:
Making the Case:
Swelling Private Balance Sheets
Compelled a Secular Increase
in Risk Taking

1. Introduction

The 2007-2009 recession featured a spectacular stampede out of risky assets and a virtual halt in many high-risk financial practices, but economic conditions eventually bottomed, and the dust raised by the financial crisis slowly settled. During the ensuing economic expansion, extremely cautious financial attitudes gradually gave way to less vigilant mindsets, and staunchly conservative behavior morphed into progressively riskier practices. There was little euphoria along the way, yet Americans flowed with the tide toward ever riskier financial behavior.

In 2019, millions of individuals and organizations have financial risk that they can ill-afford to carry. Many have gradually deluded themselves into thinking their risk is reasonable, and others have made financial decisions with little idea of the true magnitude of their risk.

Excessive risk is not just scattered in pockets around the economy, but is clearly present on a pervasive, macroeconomic scale. Starting with the real estate bubbles and leveraged buyout mania of the 1980s, risky behavior has been increasing, and the prevalence of excessive risk has changed the condition and functioning of the entire economy, compelling even more flagrant risk taking. In the pages to come, we will see that disturbingly excessive risk is evident throughout much of the U.S. economy in such quantifiable forms as rising degrees of indebtedness, declining debt quality, inadequate risk spreads, higher asset valuations, and ever greater investor dependence on rising asset prices as a source of income. We will also see why rising risk was an inevitable consequence of the economy's evolution, especially its financial structure. And why, in order for the private economy to generate any strength on its own, it has a seemingly inescapable tendency to blow asset bubbles (see box 1.1, page 3).

For the purposes of this discussion, we will consider risk associated with a transaction to be excessive when *the investor, lender, or borrower is likely to incur a loss that will seriously compromise and possibly destroy his, her, their, or its financial well-being*. In short, it is a risk that the risk taker can ill-afford to

take. That loss may arise in the short term, or it may not occur for several years.

The economy itself has excessive risk (i.e., excessive macroeconomic risk) *when the aggregation of all the risk taking by individual households, firms, and financial institutions renders the stability of both the financial system and the economic expansion dependent on unsustainably rapid increases in some categories of asset prices, some categories of debt, or (usually) both.*

(Note that this concept of excessive risk differs from the conventional notion of mispriced risk—see box 1.2, page 4.)

The present U.S. secular trend toward increasing riskiness in investing, lending, and borrowing developed gradually over three-quarters of a century. At the end of World War II, extremely conservative, depression-era attitudes about financial prudence still dominated Americans' thinking. Gradually, with the passage of time, years of great prosperity, and the absence of financial crises, these attitudes relaxed. By the 1970s, it is reasonable to say that financial attitudes were no longer especially conservative.

Beginning in the mid-1980s and until 2007, risk taking accelerated. The only breaks in the trend were temporary consequences of recessions and financial crises. Even after the 2007-2009 debacle, during which risk taking experienced its greatest undoing in over seven decades, risky behavior has been on the rise yet again.

Why?

Why are people willing to accept so much risk even after the painful and highly visible market debacles of recent business

cycles in such areas as savings and loans, commercial real estate, corporate equities, mortgage-backed securities, and housing?

The main reason is simple: *People see no other way to obtain financial returns that are anywhere near their goals and, in the case of many institutional investors, anywhere near their explicit targets.* Individuals cannot find financially sound ways to achieve economic goals such as home ownership, rainy day liquidity, satisfactory living standards, retirement security, and starting or expanding businesses. Nor can professional decision makers find ways to meet their job requirements within traditional risk parameters, whether achieving profits and growth targets at financial institutions, realizing appreciation targets for pension funds, or operating not-for-profit organizations with endowment fund income.

Thus, the initial, underlying reason for increasingly risky behavior is not primarily sociological, "animal spirits" as some argue, but *economic*. Sociology and psychology certainly come into play as people grapple with these new challenges, but the challenges themselves are results of the evolution of the economy's financial structure.

There is a simple, tangible reason why the economy has become progressively less able to provide investment opportunities with attractive returns at reasonable levels of risk:

Private sector balance sheets grew faster than incomes from the end of World War II until the last recession and especially from the mid-1980s through 2008. Moreover, after contracting during the 2007-2009 recession and financial crisis, balance sheets have resumed their disproportionate growth.

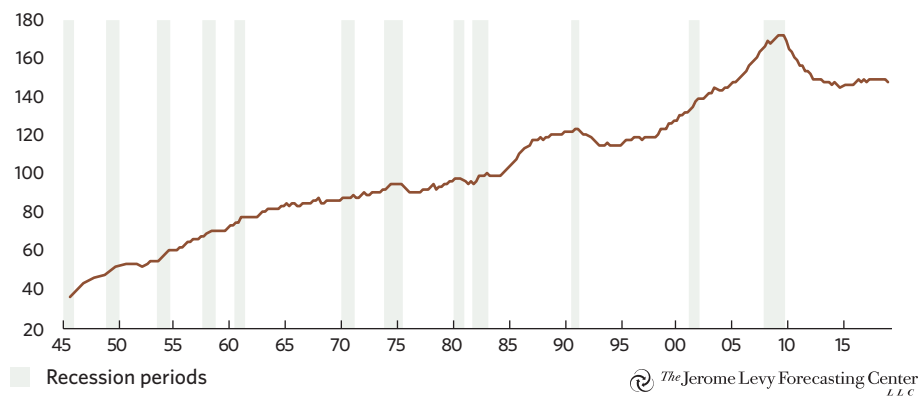
Chart 1 shows a broad measure of private sector indebtedness—the combined debt of the household sector¹ and the nonfinancial business sector—in proportion to the size of the economy’s income (GDP).² This

ratio rose more than four-fold from 1945 to its peak in 2009. Chart 2 shows that the total value of household assets also rose relative to income throughout the economy, albeit more irregularly.³

Secular Rise in Private Nonfinancial Debt-to-GDP Ratio

Chart 1

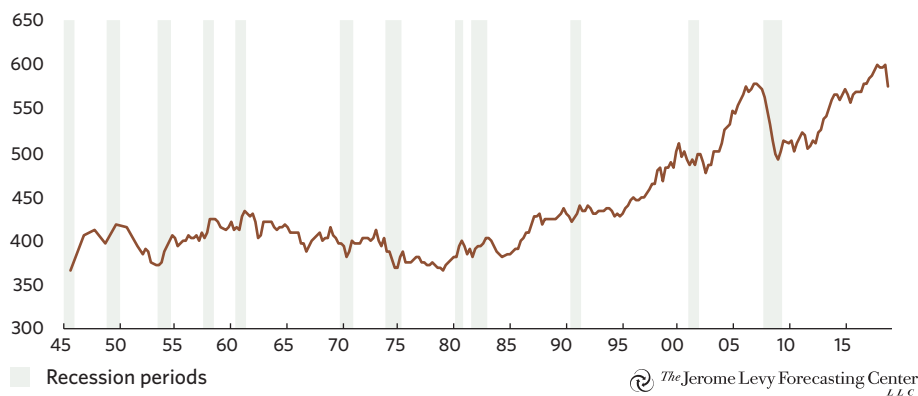
BEA, Federal Reserve: U.S. Private Nonfinancial Sector Debt Outstanding as % of GDP
annual data 1945 to 1951, seasonally adjusted quarterly data Q1 1952 to Q4 2018



Secular Rise in Assets-to-GDP Ratio

Chart 2

BEA, Federal Reserve: U.S. Household Sector Assets as % of GDP
annual data 1945 to 1951, quarterly data Q1 1952 to Q4 2018



Box 1.1 What’s a Bubble?

A bubble is commonly defined as a market condition in which assets trade at prices that decisively exceed the assets’ intrinsic value, either because of implausible views about the future or excessive trust in unsustainable trends.

One might add three notes. First, “intrinsic value” means a reasonable assessment of the net present value of the services or income the asset will generate. Second, bubbles involve widescale buying on “the greater fool theory,” the belief that, regardless of the fundamentals of valuation, someone (a greater fool) will be willing to pay more for the asset tomorrow. Third, asset bubbles generally involve the growing use of debt financing as investors’ speculative mania leads to increasingly leveraged purchases; the eventual unwinding of this leverage accelerates the bubble’s deflation by undermining demand, hindering refinancing, and forcing liquidations.

¹ Throughout this paper, the household sector includes nonprofit institutions serving households, which is consistent with Bureau of Economic Analysis (BEA) and Federal Reserve convention.

² Since an economy’s output equals its income, and gross domestic product equals gross domestic income, we are using GDP for the denominator of this broad debt measure. One could also use national income, gross value added (GVA) for the household sector plus GVA for the nonfinancial business sector, or perhaps other measures. By convention, balance sheet ratios are shown in percentage terms.

³ As explained later (page 21), the total value of household assets represents the broadest measure of privately held assets in the U.S. economy, encompassing business assets through household holdings of business equity.

Box 1.2 Excessive Risk or Just Mispriced?

Sometimes I am asked if by excessive risk I mean that the pricing of risk is faulty. The price of risk is whatever a market determines it to be, based on facts, misconceptions, analysis (good or bad), biases, and emotions. The notion of “correct” risk-pricing is based on an unrealistic paradigm in which the market will set a price that accurately reflects the probability distribution of the potential outcomes. This view is not plausible because market participants often know neither all potential future outcomes related to a decision nor the probabilities of the various outcomes they can identify. They cannot anticipate all possible technological breakthroughs, consumer attitude changes, geopolitical events, natural disasters, speculative fervors, financial shocks, environmental challenges, or shifts in macroeconomic performance, and they cannot imagine all the possible outcomes of their financial decisions.

When many individuals and organizations throughout the economy take on excessive risk, they not only put themselves in financially dangerous positions but also contribute to a rise in macroeconomic risk. This macroeconomic risk is especially hard for individuals to recognize, and most people are unable to anticipate its consequences, let alone quantify them. For example, during the 2000s housing bubble, even among those who understood that reckless subprime and exotic mortgage lending would eventually lead to widespread defaults and a downturn in the housing market, few understood that the housing market would experience a decline unprecedented in the post-World-War-II era. Even fewer knew how severely that collapse would impact corporate profits (S&P 500 profits in the aggregate were negative for the first time in history) and employment, or that the entire financial system would begin to break down, requiring government rescue.

As the economy’s financial structure changed, so did the financial choices decision makers faced throughout the economy. Specifically, as assets-to-income and debt-to-income ratios rose, the parameters in financial decisions shifted, forcing people and institutions either to take greater risks or to suffer growing disappointments and unfavorable consequences—such as a hedge fund losing investors or a portfolio manager losing his or her job.

For example, consider the dilemma faced by pension and endowment fund managers, who have a fiduciary responsibility to be conservative. In 1992, the median assumed rate of return, based on historical performance, was 8% annually, roughly equivalent to the yield on a 30-year Treasury bond. Attaining investment targets did not require much risk taking. However, by 2012, bond yields had fallen to 3%, while target rates of return for these managers had barely budged (chart 3). In this environment, is it at all surprising that pension managers increased their allocations to high-yield domestic and emerging-market bonds and “alternative” investments?

Private balance sheet growth relative to income and its skewing of financial decision parameters turn out to be powerful findings. These concepts imply that the economy has become increasingly inclined to develop reckless financial practices over the course of economic expansions. They further imply that those practices—and the asset bubbles and leveraging with which these practices are associated—have become integral to those expansions. Bubble or nothing.

Some of the macroeconomic implications of big private sector balance sheets are so simple that even the few people who do notice typically give them little thought. Yet, put these simple, direct implications together, add a few other, less obvious implications, and they become building blocks for more profound and surprising conclusions for financial markets, business conditions, and economic policy.

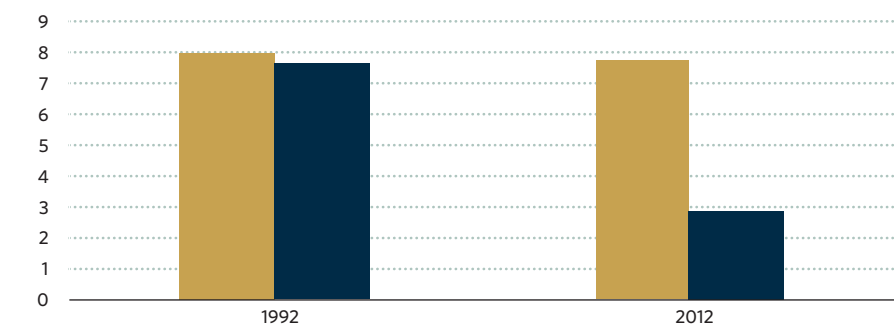
This paper is divided into two parts. Part I, which includes this introduction (section 1) and sections 2 and 3, makes the case that the swelling of private sector balance sheets relative to income did in

Risk-Free Returns Fell Dramatically but Targets Did Not

Chart 3

Pew Charitable Trusts: Public Pension Plan Median Assumed Rate of Return
U.S. Treasury: 30-Year Treasury Bond Yield

% per annum



■ Median assumed rate of return

■ Average annual yield on 30-year Treasury bond

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fact compel a secular increase in excessive risk taking during the past three-and-a-half decades. Section 2 will show that many of the links between rising balance-sheet-to-income ratios and the deterioration in financial choices facing decision makers are explicit mathematical relationships. Section 3 will show that disproportionate balance sheet expansion since World War II has been pervasive. These two major points are provable beyond a reasonable doubt. Merely recognizing these circumstances provides new insight into the episodes in recent decades of aggressive risk taking and financial system breakdowns.

Part II explores the implications of the ever more extreme Big Balance Sheet Economy and its influence on financial behavior. Some clear conclusions emerge, but there are also uncertainties and countless possibilities that complicate some of the discussion. For example, one can identify severe obstacles to reversing the rise in balance sheet ratios without serious negative consequences, and one can argue that such benign balance sheet reduction is improbable, but one cannot prove that it is impossible because one cannot account for all possible circumstances, including presently unimagined government policies.

In part II, section 4 examines how changing financial parameters may have influenced our financial culture and standards, leading to new attitudes and practices. Section 5

As the economy's financial structure changed, so did the financial choices decision makers faced.

considers where the economy is headed, noting that balance sheets and risk have been cyclically increasing again—this time with more threatening Big Balance Sheet Economies in the rest of the world⁴—but there are signs that U.S. private balance-sheet-to-income ratios may be in a long topping process. Section 6 explores the potential resolution of the Big Balance Sheet Economy problem, unveiling the above mentioned severe challenges in returning to a more financially sustainable, healthy state without a long and traumatic adjustment process. Section 7, the conclusion, lays out some of the paper's key results and issues of consequence for decision makers in public policy, business, banking, investment management, and households.

For readers who want more technical arguments and support, several topics have been placed in side boxes and appendixes. All data in this paper are through the fourth quarter of 2018 as of June 2019.

Before beginning the analysis, it is worth noting that the ideas and analysis that follow are in many ways an extension of the work of Hyman P. Minsky, who

is one of the three people who were fundamental influences on this paper. Key ideas stem from his seminal paper "The Financial-Instability Hypothesis,"⁵ his 1986 book *Stabilizing an Unstable Economy* (Yale University Press), and my conversations with him in the 1980s and 1990s. Appendix 1 provides some discussion of Minsky's contributions.

Minsky's work, with many layers of original thought and financial complexity, has as its foundation the macroeconomic framework built upon the *aggregate profits identity*, which was first derived between 1908 and 1914 by my grandfather, Jerome Levy, who was another fundamental influence on this paper. (This framework is called the Profits Perspective in modern times; see *Where Profits Come From* by D. Levy, M. Farnham, and S. Rajan, available at www.levyforecast.com.) Minsky came across this framework in the writings of Michal Kalecki, who in the 1930s derived the aggregate profits identity independently and introduced it to the economics discipline.

The third influence was my father, S Jay Levy, who spent seven decades developing and practicing ways to apply the Profits Perspective to business cycle analysis and macroeconomic forecasting and with whom I worked for 35 years.

⁴ Although the focus of this paper is on the U.S. economy, swelling private sector balance sheets relative to incomes and the consequent increase in the riskiness of financial behavior are global phenomena. In this business cycle, much of the most reckless risk taking by both U.S. and foreign investors and financial institutions is international but with direct implications for the domestic economy.

⁵ Minsky, Hyman P., Ph.D., "The Financial-Instability Hypothesis: Capitalist Processes and the Behavior of the Economy" (1982), available at http://digitalcommons.bard.edu/hm_archive/282.

2. How Disproportionate Balance Sheet Growth Forced a Tough Choice: Riskier Behavior or Lower Returns

The disproportionate expansion of private sector balance sheets profoundly altered the parameters of the choices decision makers faced, compelling them *either* to accept lower returns and other poorer outcomes than they had come to expect or to take actions that increased their financial risk. For some, this may have been a Hobson's choice, a choice that was really no choice at all, since they may have deemed the sacrifices associated with avoiding bigger risks to be unacceptable. Even if no individual's behavior was forced, it is fair to say that in a large population in which individuals make varying choices along a continuum, something that alters the relative attractiveness of the choices does change the collective outcome—it does force a change in collective behavior. Accordingly, increasing balance-sheet-to-income ratios unequivocally caused increased risk taking.

Below is a list of nine points, each of which describes a way in which rising private sector balance-sheet-to-income ratios skewed the financial choices facing the participants in the economy, forcing them either to embrace riskier financial behavior or to accept poorer outcomes. Most of the points are simple mathematical facts, and they alone are sufficient to make our case—that balance sheets growing faster than incomes created intense pressure for increasingly risky financial behavior. A few of the other points require some assumptions about behavior, but (1) in some cases, the fact that balance sheets were expanding means that the assumed behavior was occurring, and (2) I expect the rest are for the most part not particularly controversial.

Each of these nine points stems from one or more of three simple ratio changes: a rising debt-to-income ratio, a rising assets-to-income ratio, and a rising net-worth-to-income ratio. Each represents a unique way in which these ratios directly or indirectly affected the financial choices facing participants in markets and the economy, and collectively the nine points constitute a broad set of forces. One of the most significant of the nine points, which is that rising balance sheet ratios forced a

secular decline in interest rates (point 3), plays a direct role in many of the other points further down the list. Thus, the analysis to follow will repeatedly cite the rising ratios and falling interest rates, but for each point the particular risk-increasing consequences will be different.

1. Banks and other lenders faced a pool of more leveraged and therefore higher-risk potential borrowers from one business cycle to the next.

Over the course of the post-WWII period, the debt of the universe of potential household borrowers continually rose relative to personal income, and the debt of business borrowers rose relative to revenue. For the first postwar generation, this rising indebtedness had little impact on the creditworthiness of would-be borrowers because most of them still had little preexisting debt. As the secular, disproportionate rise in debt persisted (see chart 1, page 3), however, debt eventually became more burdensome. In effect, lenders were lending to borrowers who in each successive business cycle had on average higher debt-to-income ratios, making the loans riskier. Thus, as the decades passed, the pool of potential borrowers became considerably riskier, at least until after the 2007-2009 recession.

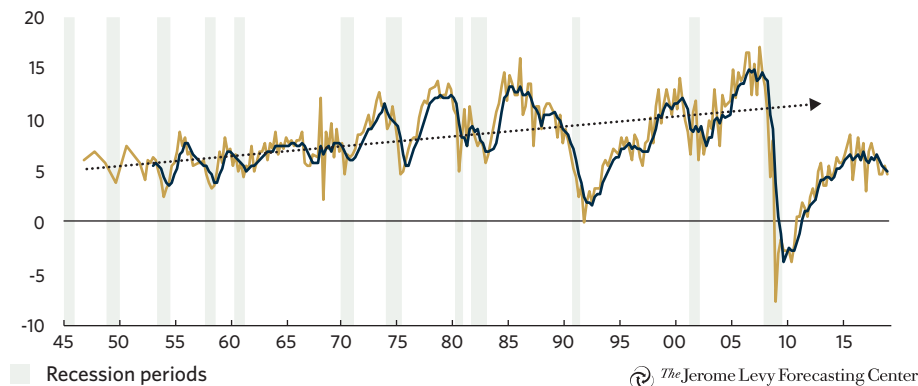
2. Banks and other lenders had either to make loans that were on average bigger relative to borrowers' incomes (and therefore riskier) or to dig deeper into the pool of borrowers and accept higher-risk customers. The alternative was a major secular slowdown in loan growth.

As private sector debt outstanding grew larger relative to GDP over many decades without a marked, lasting slowdown in its growth rate, net new lending (the flow of new credit) *also* had to grow larger relative to GDP. It's a matter of simple math. To illustrate, if initially debt equals one third of GDP and grows 12% over the course of a year, *debt growth* is equal to 4% of GDP (with GDP measured at an annual rate as of the beginning of that year). If over many years debt maintains a steady, 12% annual growth rate and sufficiently outpaces nominal GDP growth so that eventually it becomes equal to two thirds of GDP, then annual debt growth will be equal to 8% of the year's starting GDP. Thus, since U.S. private sector debt growth did generally outpace GDP by a sizable margin for many decades, greatly increasing the debt ratio, and since debt growth, while volatile, did not undergo a secular slowdown until 2009, the ratio of net new lending to GDP had to rise. Chart 4 shows the rising scale of net new lending for households and businesses from one business cycle to the next.

Private Sector Borrowing Grew Relative to GDP

Chart 4

BEA, Federal Reserve: Private Nonfinancial Sector Borrowing as % of GDP
annual data 1946 to 1951, seasonally adjusted quarterly data Q1 1952 to Q4 2018, dark line is 4-qtr. moving avg.



Rising new lending relative to GDP reflected banks and other lenders collectively making more new loans relative to the incomes of households and businesses. Thus, individual lenders were typically lending to a broader, overall less qualified segment of the pool of potential borrowers, lending more on average to each borrower, or both.

Lenders either had to reduce standards and lend greater volumes and to more heavily indebted customers or allow their lending businesses to shrink. Had they restricted their loan business to those borrowers meeting the criteria applied in previous business cycles and stuck to their historical rules governing loan size, their volume would have been seriously limited, and they would have chronically failed to maintain loan growth rates. Maintaining standards as private sector debt-to-income ratios rose would have meant a shrinking target market. In

addition, because intense competition for those high-quality loans created downward pressure on interest spreads (which is a form of lowering standards, since spreads include coverage for loan losses), any lenders that maintained historical spreads would have been at a distinct competitive disadvantage.

Yet, bank shareholders expected managements to expand their loan portfolios and their transaction volume at a brisk pace from year to year. After all, during the years of lean balance sheets and strict lending standards during the first 25 years after World War II, the financial sector had expanded rapidly in order to accommodate the strong, postwar credit appetites of households and businesses. In subsequent years, bank valuations would have suffered had bank revenue and earnings growth slowed dramatically.⁶

Not surprisingly, many bank managements remained aggressive in seeking further brisk growth, lowering standards slowly over the long run. Their institutions took a greater share of the market over the years, while those that dragged their feet in lowering standards lost market share and faded in significance.

Note that points 1 and 2 dovetail; point 1 implies a decline in the creditworthiness of the population of potential borrowers, whereas point 2 implies that lenders had to lend *more* in proportion to the income of that population of borrowers in a given year. Overall, lending activity necessarily become riskier.

Another implication of net new lending rising relative to GDP over the years was the tendency for more of the new lending to finance *purchases of existing assets* (transactions that merely shifted assets from one balance sheet to another with no associated nonfinancial economic activity⁷). This is in contrast to the financing of either the *creation of new real assets* or the *production of goods and services for consumption*—transactions that are tied to real, nonfinancial economic activity. The creation of new real assets adds real tangible wealth to balance sheets, whereas purchases of preexisting assets increase only nominal wealth by revaluing the assets (see box 2.1, page 8).

⁶ There is also a macroeconomic reason why debt growth could not become slower and slower with each cycle as constant lending standards would have required: a private economy requires substantial credit growth to finance the “profit sources,” the specific transactions in the economy that are the ultimate source of aggregate profits (as we will discuss in section 6). Continued, solid credit growth was necessary to finance the decades of expansion, and that could not have happened without falling lending standards.

⁷ Excluding the services of brokers and attorneys.

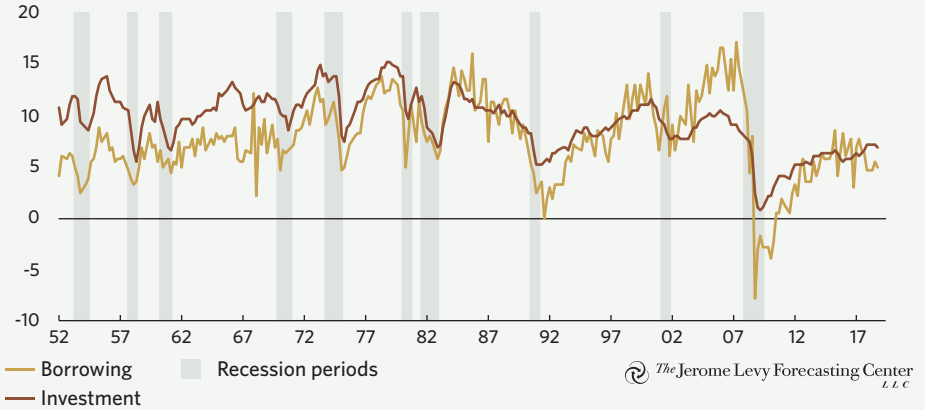
Box 2.1
Credit Increasingly Associated
with Purchases of Existing Assets

Progressively, from cycle to cycle, more of the nonfinancial private sector credit created was above and beyond what was needed to finance the construction, production, and purchases of new buildings, capital goods, intellectual property, additions to inventories, and consumer durables. That meant there was more credit to finance speculative investment in existing assets. Charts 5 and 6 suggest that lenders did indeed finance more asset speculation in later business cycles than in the earlier ones. Chart 5 shows that net private borrowing by households and nonfinancial business was less than or equal to their net investment until the early 1980s, but thereafter borrowing grew increasingly faster than investment until 2009. Chart 6 shows that the periods when borrowing exceeded investment spending coincided with rapid appreciation of asset prices.

Borrowing Increasingly Exceeded Net Investment

Chart 5

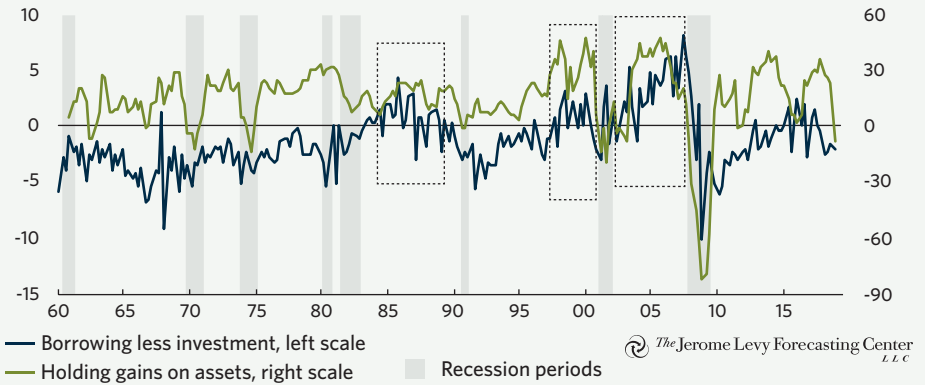
BEA, Federal Reserve: Net Private Investment, Private Nonfinancial Sector Borrowing as % of GDP seasonally adjusted, annual rate, last data point Q4 2018



Excess Borrowing Coincided with Asset Appreciation

Chart 6

BEA, Federal Reserve: Private Nonfin. Sector Borrowing less Net Private Investment as % of GDP Nominal Holding Gains on Household Assets as % of GDP, 4-quarter annualized average borrowing, investment, and GDP seasonally adjusted, annual rate, last data point Q4 2018



3. The secular swelling of private balance-sheet-to-income ratios eventually caused a secular decline in interest rates, which forced lenders and fixed-income securities buyers to accept lower yields or purchase riskier assets.

This point requires a four-step explanation.

First step: A long-term uptrend in the debt-to-income ratio meant a falling ceiling on interest rates.

Consider a debtor (an individual or organization) with a given amount of debt and a given income; there is a limit to how high interest rates can rise before this debtor can no longer adequately meet existing debt service requirements, let alone safely take on new debt. Similarly, for the entire private economy at any time in the postwar era, there was a limit to how high interest rates could have risen before the emergence of widespread problems servicing debt would lead to systemic financial instability.

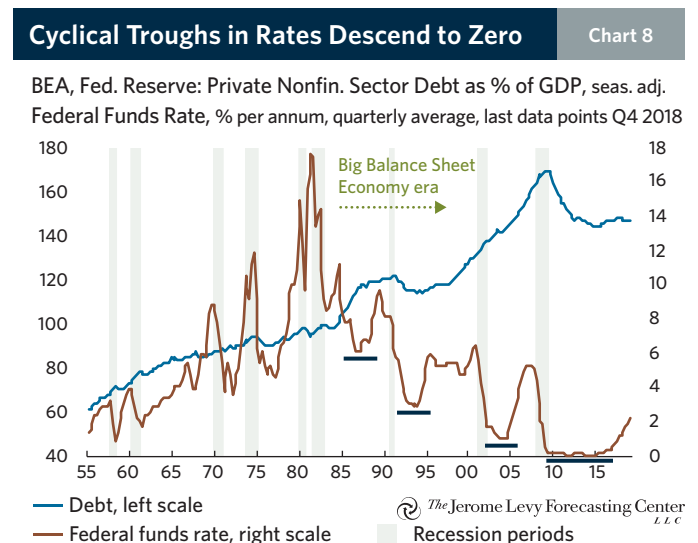
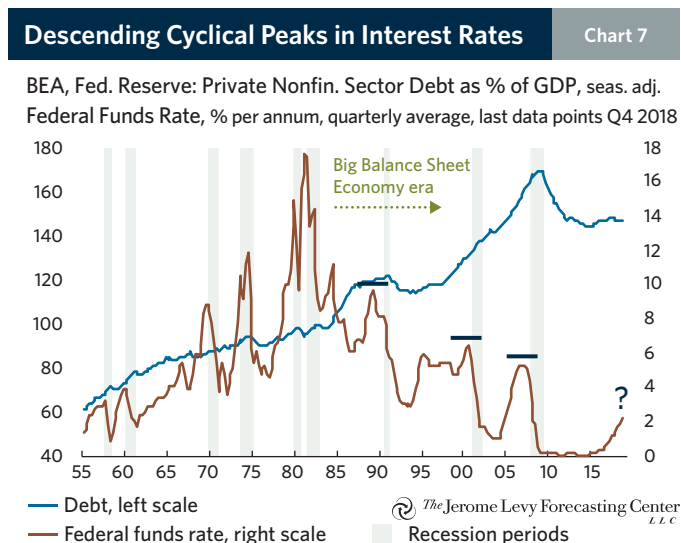
Early in the postwar era, the limit on how high interest rates could rise before causing serious financial instability was too

high to be relevant—interest rates would have sparked a recession by depressing demand for homes, commercial real estate development, business capital spending, and credit-financed consumer spending before causing serious, widespread debt performance problems and banking crises. However, the greater the private sector's debt became relative to its income, the lower the interest rate ceiling at which serious financial problems would begin—problems that would force the Fed to stop hiking interest rates and begin cutting them.⁸

The Big Balance Sheet Economy era in the United States (mid-1980s to present) refers to a period in which private sector balance sheets became disproportionately large enough to have an unusually potent influence on consumer and business behavior and on the business cycle, significantly altering the behavior of the economy. Thus, as debt ratios grew rapidly in this era, the cyclical peaks of the federal funds rate were progressively lower (chart 7), as financial crises emerged at lower interest rates in each cycle from the 1980s onward.

Second step: A rising debt ratio meant not only a falling ceiling for interest rates, but also a falling trend of cyclical interest rate bottoms as each successive recession and financial crisis required lower rates to enable the economy to regain financial stability. Consider a debtor unable to service debt adequately; the more debt the debtor has relative to income, the further interest rates have to drop to enable the debtor to meet debt-service requirements again. For the entire private sector, the greater the debt-to-income ratio, the lower the interest rates required to end a financial crisis (chart 8).

Thus, the secular uptrend of the private sector's debt-to-income ratio eventually confined interest rate fluctuations to a descending range until interest rates fell to near zero.



⁸This discussion concerns nominal interest rates, not real interest rates, because the focus is on whether cash flow can meet debt-service requirements.

Third step: The rising value of assets relative to income also pushed interest rates downward over the long run. The bigger asset values became relative to income (i.e., the higher the valuations) the lower interest rates needed to be to support those valuations, and the lower the level of the interest rate ceiling above which interest rates would undermine those valuations.

So, when the Fed went about raising interest rates in the late 1980s, it played a key role in bursting the commercial real estate bubble and then the coastal home real estate bubbles. Rising rates in 1999 and 2000 helped burst the tech stock market bubble, and rising rates in the mid-2000s were critical to the bursting of the housing and mortgage-backed asset bubble. Each of these episodes of bubble deflation was key in driving the economy into recession, with financial crisis, recession, or both forcing the Fed to reverse the direction of interest rate policy. And each successive bubble burst at a lower interest rate. Furthermore, as we will discuss later, episodes of asset deflation became more damaging to economic conditions as the value of assets became larger in proportion to the economy. With relatively more wealth being deflated, there was more stress on the financial system, more drag on economic activity, and a need for more profound declines in interest rates to stabilize the economy.

Thus, the swelling of both assets and debt relative to income made rising interest rates destabilizing at progressively lower ceilings and made progressively lower interest rates necessary to end crises and spark recoveries.

The secular decline in interest rates finally hit its limit when short-term interest rates fell to near zero at the end of 2008—and this time, they could not fall far enough for financial conditions to stabilize. Financial stabilization would end up requiring added help from dramatic Federal Reserve and congressional lender-of-last resort measures, years of massive fiscal stimulus supporting profits and economic recovery, and multiple episodes of unconventional monetary policy aimed at lowering the yield curve over its entire length. (At the time, negative interest rates were not on the table; the limitations of negative rates are discussed later.)

In the years following 2008, Treasury yields virtually vanished along the first two years of the curve. Even at the long end of the curve, yields were modest, with the 10-year yield dropping below 1.50% and the 30-year approaching 2.00% in 2016. Furthermore, global economic weakness and financial fragility, largely reflecting excessive balance sheet problems in other

countries, drove other major central banks to reduce interest rates to near zero and to take actions to depress bond yields.

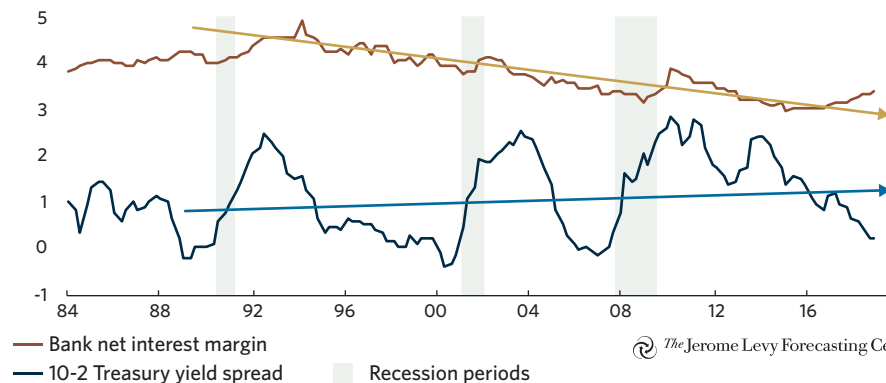
Fourth step: The secular decline in interest rates since the 1980s forced lenders, including fixed-income investors, to accept either lower yields or more risk. Often, they accepted some of each. Traditionally conservative investors found it increasingly difficult and at times impossible to find investments offering even moderately attractive yields without troubling degrees of risk (recall chart 3, page 4). Many investors felt that their need for yield outweighed traditional safety concerns and bought fixed-income assets that were uncharacteristically risky for them.

The issue for banks and many nonbank lending institutions was typically interest rate spreads rather than yields. The increased competition for quality loans (points 1 and 2) squeezed banks' margins on lending. Banks' net interest margins (chart 9) exhibited a secular decline from

Secular Decline in Bank Net Interest Margin

Chart 9

Federal Financial Institutions Examination Council: U.S. Bank Net Interest Margin
Federal Reserve: 10-Year Treasury Yield less 2-Year Yield, quarterly average
% per annum, last data point Q4 2018



The Jerome Levy Forecasting Center LLC

Traditionally conservative investors found it increasingly difficult and at times impossible to find investments offering even moderately attractive yields without troubling degrees of risk.

the 1990s to the present despite the absence of a secular flattening of the yield curve (a flattening yield curve squeezes margins since banks' deposits and other liabilities have on average much shorter duration than their loans). Notice that in chart 9, the Treasury yield spread actually trended slightly upward over that time period (albeit erratically), which would tend to widen the net interest margin, yet the margin was on a secular decline, from well over 4% to as low as 3%. The reduction in earnings associated with the falling net interest margin pressured banks to seek more income elsewhere, such as doing more trading on their own accounts, packaging and selling multiyear loans for immediate profit (see box 2.2), and otherwise obtaining profits by taking on more risk.

For investors in fixed-income and floating-rate debt instruments, when the downtrend in interest rates hit the zero boundary and risk-free became yield-free, all yield became risky. And with no yield on risk-free instruments, yields on low-risk (investment-grade) debt were bid down to paltry levels. The pressures on lenders and bond investors to take greater risks became even more acute.

Box 2.2

Greater Risk and Deteriorating Returns for Banks Encouraged Proliferation of Securitization

Rising balance-sheet-to-income ratios intensified competition in making loans and reduced rates of return on lending, which created powerful incentives for financial innovations such as new applications of loan securitization. These financial innovations in turn led to greater balance sheet growth and increased risk throughout the economy.

Securitization initially became common in the 1980s largely because it moved loans off banks' balance sheets and freed up capital for further lending. However, as interest rates declined and competition made banks' earnings growth goals more difficult to achieve, another incentive for securitization became increasingly compelling. When selling a portfolio of loans, a lender could effectively book instantly the entire net present value of the profits it expected over the lifetime of the loans—as compared to holding the loans and waiting for them to generate profits a bit at a time over the years. There are certainly reasons why selling loans may enhance market efficiency and be attractive aside from the desire to frontload profits, but frontloading earnings became an increasingly common motive.

Moreover, at the time of the loan sales, banks would have a strong incentive to err on the side of excessive optimism when calculating likely future loan losses and the associated costs to the banks of any loan performance guarantees (the risk they retained). By underestimating this future cost and thereby booking unrealistically high profits immediately, they improved operating income. When the losses exceeded expectations a few years later, the banks could take a one-time charge for losses on the portions of loan risk they retained—a charge that did not affect operating earnings, just “as-reported” earnings—at a time when markets placed more emphasis on the former.

At the same time, securitization allowed banks to remove some risk from their own balance sheets. However, the aggregate amount of risk in the system increased. Despite record amounts of risky loans being made, bank regulators saw little risk on bank balance sheets and thus little reason to constrain bank lending practices. Meanwhile, large amounts of risk, and in extreme cases “toxic” loans, were dumped by the banks and nonbank lenders into the hands of investors who were less able to assess that risk.

Thus, the practice of pooling and selling loans increased risk because it provided bank managements with short-term rewards along with greater, more uncertain volumes of losses down the road, increasing banks' financial vulnerability and making their stream of profits from lending more cyclically volatile. And by enabling banks to make excessively risky loans and pass on the risk (often to buyers who underestimated the risk they were taking), it led to more lending than otherwise would have been approved and thus increased macroeconomic risk.

4. The flip side of the secular increase in the assets-to-income ratio was a secular decline in operating rates of return.

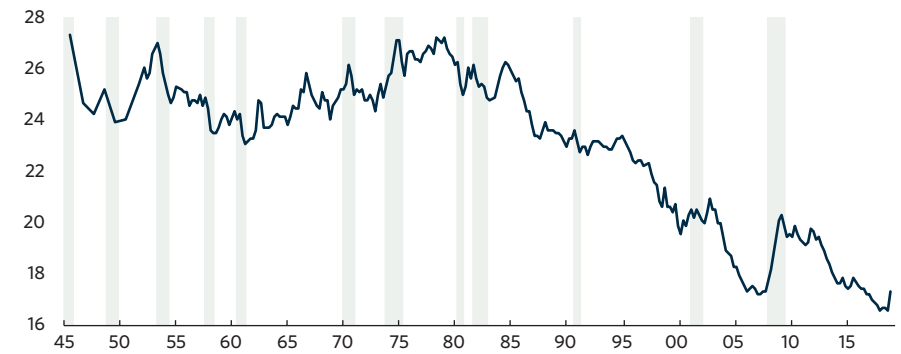
The total value of assets rose relative to income (GDP) throughout the economy (see chart 2, page 3), helped by the boost to valuations from the secular decline in interest rates during the Big Balance Sheet Economy era. Flipping this ratio on its head, the total income generated by the economy fell relative to assets (chart 10). Furthermore, current income—the sum of corporate profits, noncorporate business income, rent, and interest—also fell relative to assets (chart 11). Part of the shrinkage of current income relative to assets was caused by falling interest rates, of course, but that was not the entire story. Rates of operating returns on noninterest-bearing assets also declined, as the falling interest rates helped to increase valuations.

Thus, the capital appreciation that was so gratifying to investors also had an unfavorable consequence. Investors not only faced falling interest rates on debt instruments and cash deposits (point 3), but also generally falling

Decline in Income Relative to Assets

Chart 10

BEA, Federal Reserve: GDP as % of Household Sector Assets
annual data 1945 to 1951, quarterly data Q1 1952 to Q4 2018



Recession periods

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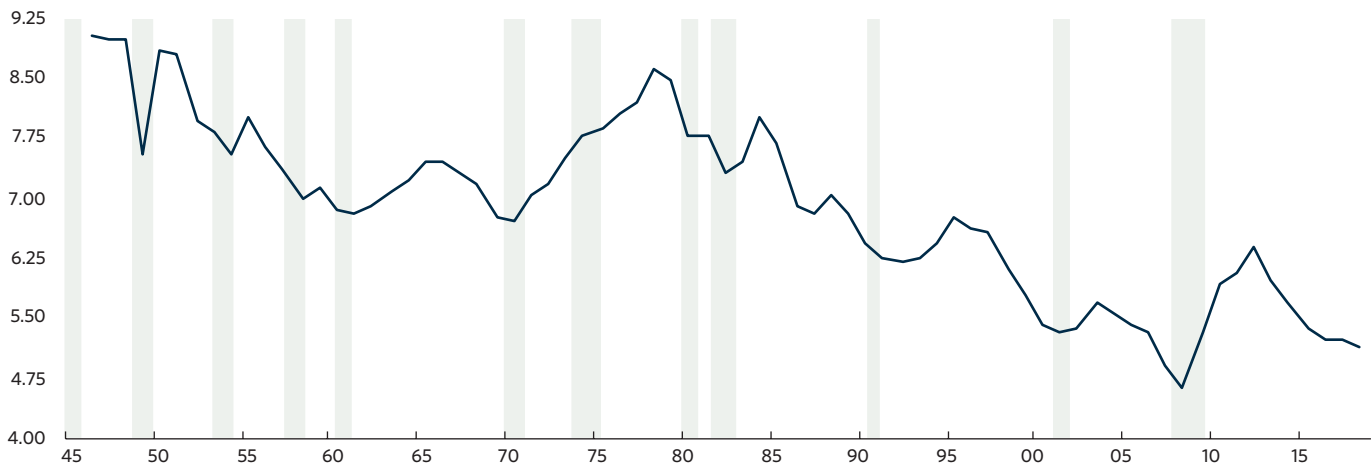
rates of operating returns on investments aside from interest-earning assets, including net rental income on commercial property and profits on corporate equity (charts 12 and 13). Given that investors' total return targets have been—and largely remain—based on historical performance, *the secularly declining operating return rates were increasingly inadequate for meeting*

investors' needs in each successive business cycle. Investors responded by either (a) investing larger shares of their portfolios in pursuit of capital appreciation (as opposed to operating returns or dividends) or (b) investing in assets with highly variable performance but higher average expected operating returns. Either way meant taking more risk.

Decline in Rate of Current Income on Assets

Chart 11

BEA, Federal Reserve: Corporate Profits, Rent, Interest, and Proprietors' Income as % of Household Assets
household assets as of end of previous year, annual data, last data point 2018



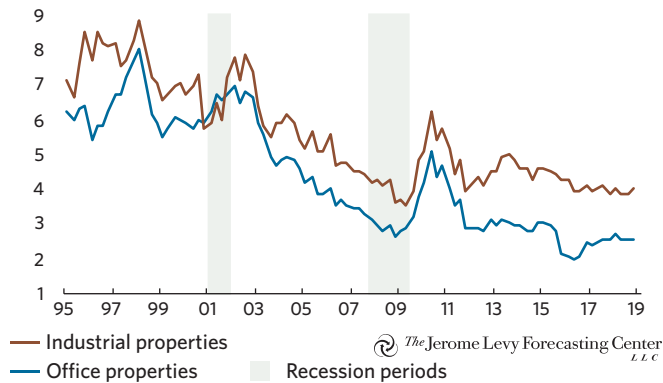
Recession periods

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Falling Returns on Commercial Properties

Chart 12

National Council of Real Estate Investment Fiduciaries:
Implied Rental Yield on Commercial Properties
yoy % change in total return less change in price, last data point Q4 2018



5. Rapidly swelling private sector balance sheets relative to income meant increasing capital gains relative to income. Consequentially, these gains had an ever-greater influence on the performance of the economy, thus adding to cyclical macroeconomic risk and rendering investment returns riskier.

Consider the first part of this point, that the swelling of balance sheets led to larger capital gains relative to income. As total assets grew larger relative to total income, a given percentage change in the average price of these assets translated into larger capital gains (losses) relative to income. There are only two theoretical ways in which capital gains (losses) could

Falling Profits Relative to Equity

Chart 13

BEA, Federal Reserve, Haver Analytics: 4-Quarter Avg. of NIPA Before-Tax Corp. Profits as % of Market Value of Domestic Corporations
seasonally adjusted, annual rate, last data point Q4 2018



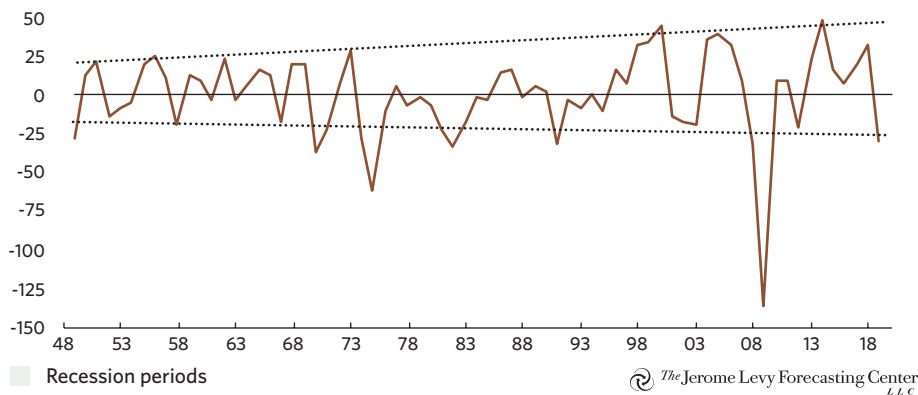
have remained constant or shrunk relative to income given the marked swelling of the assets-to-income ratio from World War II to recent years. First, the percentage changes in asset prices could have become significantly smaller over the years, but they certainly did not—in fact, they grew. Second, the share of total assets comprising those assets subject to price changes—stocks, real estate, etc.—could have shrunk markedly as a proportion of total assets and not become larger relative to income (in other words, all of the growth in the assets-to-income ratio would have had to reflect growth in the volume of cash and other assets not subject to price changes). Needless to say, this phenomenon did not occur, either.

Chart 14 documents that the inflation-adjusted annual capital gains and losses of the household sector relative to income trended larger over the years. The general widening of annual asset price swings is apparent, although other influences occasionally increased the size of asset moves, such as the surges in interest rates during the late 1960s, 1970s, and early 1980s, which at times acutely reduced asset prices, and the subsequent partial backtracking of rates between these spikes, which helped bring about sharp asset price gains.

Annual Swings in Asset Values Grew Relative to Income

Chart 14

BEA, BLS, Federal Reserve: Inflation-Adjusted Holding Gains on Household Assets
as % of Disposable Personal Income, annual data, last data point 2018



Of particular interest here are the magnitudes of the swings in asset values not merely from year to year, as in chart 14, but *over the course of the business cycle*—the roles bull asset markets played in economic expansions and the roles bear markets played in economic contractions. Whereas fluctuations in asset prices during an economic expansion can add to wealth one year and subtract from it the next, when gains accumulate year after year—or wealth falls year after year during a prolonged recession and subsequent malaise—the cumulative price swings can become large influences on the business cycle.

Charts 15, 16, and 17 illustrate more pronounced cyclical percentage changes in real asset prices during recent decades in three major domestic asset markets—corporate equities, residential real estate, and commercial real estate. All three are shown on logarithmic scales to make the size of moves comparable over the years. Clearly, the cyclical swings in equity prices became much larger as the decades passed (chart 15); although the recent bull markets tended to be smoother (less year-to-year volatility) than earlier ones, they were also much bigger, and so were the bear markets that followed them. Residential and commercial real estate prices also became more cyclically volatile (charts 16 and 17).

Although the swelling of private sector assets relative to income since 1945 has clearly involved increasingly large cyclical swings in asset prices, one may reasonably ask whether total assets could have achieved such pronounced long-term growth relative to income if capital gains had *not* trended larger relative to income over time. The answer is that while such

a scenario may be theoretically possible, as a practical matter it would be hard to achieve because one would need vast, implausible increases in various economic flows and activities. In addition, asset price swings would have to shrink in percentage terms, given the swelling size of the asset base relative to income. Constructing even a theoretical scenario with these properties turns out to be extremely difficult, as shown in appendix 2.

Thus, the statement, “Swelling balance sheet ratios relative to income meant increasing capital gains relative to income,” involves more complicated issues, and is therefore not as readily proved, as, say, “Swelling debt-to-income ratios made borrowers worse credit risks.” Nevertheless, any exception would require special and highly convoluted circumstances.

The second part of point 5 is that the proportionately larger cyclical capital gains and losses as the decades passed represented ever larger influences on the performance of the economy. This increased influence occurred in multiple ways, with the following two being the most important.

First, bigger real capital gains (realized or not) relative to income meant correspondingly bigger wealth effects—the tendency to spend more out of income (save less) because of increased wealth. The largest wealth effect occurs in the household sector. Bigger household wealth effects have meant more downward force on personal saving during bull markets and, therefore, bigger boosts to total business profits.⁹ Similarly, bigger capital losses have meant bigger *negative* wealth effects—greater downward influences on profits.

Box 2.3 Converting Capital Gains into Operating Income

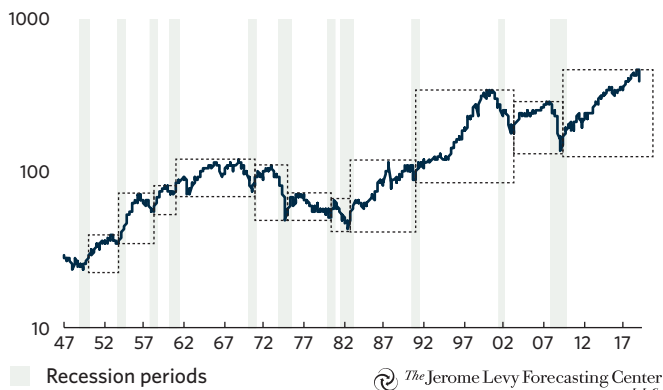
Sometimes firms have been able to convert capital gains into operating income through accounting gymnastics. Some have successfully gamed the accounting rules while others have taken excessive liberties, which, when detected, have been rejected by regulators. A notable example of the latter was the case of IBM in 1999, when the company included a \$4 billion gain on the sale of its Global Network business as an offset to selling, general, and administrative expenses, thus using onetime capital gains to enhance operating earnings. The SEC eventually overruled the treatment in 2002, but during the intervening three years, a lot of water had flowed under the bridge. IBM's gains were so large and the case so egregious that it garnered tremendous attention, but probably many other less notable instances of capital gains padding operating earnings flew under the radar. (For more examples, see *Two Decades of Overstated Corporate Earnings*, 2001, by D. Levy, S. Thiruvadanthai, and W. Cadette, available at www.levyforecast.com.)

⁹ Falling nonbusiness saving means greater business saving in an economy as a whole, all else equal. This is discussed further in section 6. For a more thorough explanation, see *Where Profits Come From*, by D. Levy, M. Farnham, and S. Rajan, available at www.levyforecast.com.

Real Equity Price Swings Increased

Chart 15

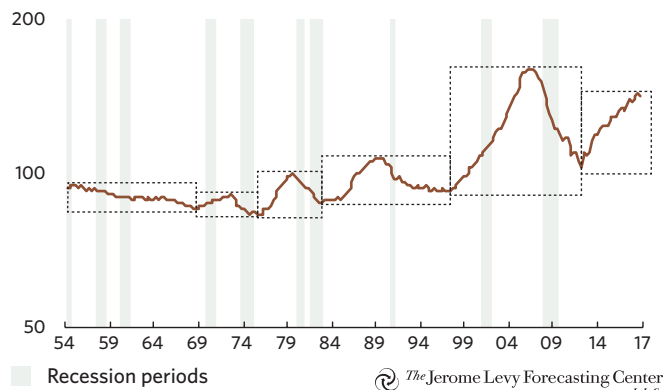
Standard & Poor's: S&P 500 Composite Price Deflated by CPI
year-end 1990 = 100, end-of-month level, log scale, last data point Dec. 2018



Real Home Price Swings Increased

Chart 16

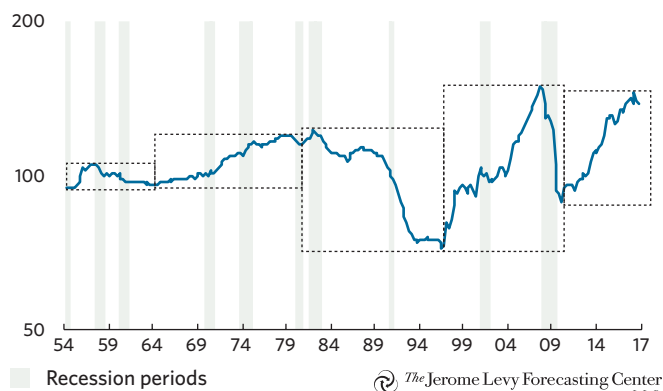
BLS, Robert Shiller: Nominal U.S. House Prices Deflated by CPI
year-end 1990 = 100, log scale, last data point Q4 2018



Real CRE Price Swings Increased

Chart 17

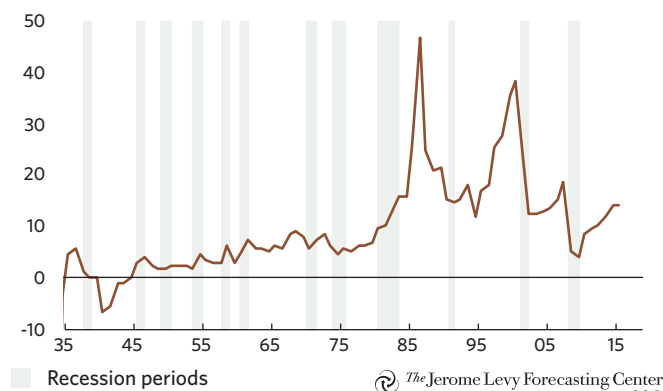
BLS, Federal Reserve: Commercial Real Estate Prices Deflated by CPI
year-end 1990 = 100, log scale, last data point Q4 2018



Rising Corp. Capital Gains Relative to Profits

Chart 18

BEA: IRS Net Corp. Capital Gains as % of NIPA Before-Tax Profits
annual data, last data point 2015 (note NIPA profits exclude capital gains)



Second, increasing swings in asset prices affected the performance of the economy through their direct influence on business. Capital gains realized by firms, while varying greatly from year to year, tended to become proportionately larger relative to business profits over the decades (chart 18). Most capital gains are recorded directly as business profits and thus affect business decisions on

hiring and investment. However, capital gains generally do not count as operating profits (with some exceptions, including many gains secured by real estate developers or gains by financial firms while trading on their own accounts). Nonetheless, some nonfinancial firms with gains on sales of major assets, such as buildings, divisions, and patents, have sometimes found ways to portray them as

operating profits, either by taking advantage of or stretching accounting rules (see box 2.3, page 14). (It should be noted that profits in the NIPA exclude capital gains and losses, and thus are used mainly as a scaling factor in chart 18.)

Gains in firms' own stock prices influence them in a way that also affects the economy. Stock price appreciation raises the ratio of corporate equity value to book value (or replacement value), also known as Tobin's Q, which historically has encouraged more investment, further boosting aggregate profits.¹⁰

¹⁰ Investment—which is the creation of new assets, and thus new wealth—is a critical “source of profits,” contributing during the period it occurs to the increase in business wealth, i.e., profits. This is discussed further in section 6; for a more thorough explanation, see *Where Profits Come From*, by D. Levy, M. Farnham, and S. Rajan, available at www.levyforecast.com.

Over the long run, the swelling of the household wealth effect and the growth in direct contributions to profits of realized business capital gains were both influences for bigger cyclical swings in profits. Chart 19 shows that profit swings, scaled to GDP,¹¹ became larger over the postwar decades, and proportionately larger capital gains were one reason why. Scaled to GDP, larger capital gains during bull markets (typically during economic expansions) and larger capital losses during bear markets (often associated with recessions) tended to make the trough-to-peak and peak-to-trough profit swings larger, which meant stronger economic expansions and more severe economic contractions. *Therefore, the secular expansion of capital gains and losses tended to increase cyclical macroeconomic risk.*

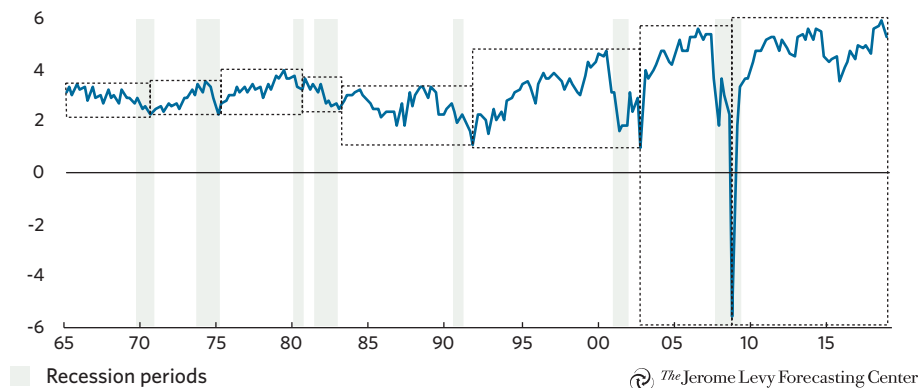
Moreover, bigger cyclical swings in profits, and therefore in business activity, contributed to more dramatic cyclical swings in financial markets and in other asset markets—the cyclicity of profits and the cyclicity of asset prices were mutually reinforcing. The progressively more extreme economic cycles implied increased market risk. This greater market risk related not only to corporate equities but also to credit instruments, real estate, and other assets. Bigger swings in profits meant more extreme swings in loan performance and liquidity, which in the Big Balance Sheet Economy era often meant bubbles culminating in systemic crises.

Not only did swings in asset values become larger from year to year and cyclically, but also gains grew relative to incomes *over decades*. Chart 20 shows the 10-year average of nominal holding gains scaled to disposable personal income; the long moving average smooths out much of

S&P 500 Cyclical Earnings Swings Grew Relative to GDP

Chart 19

BEA, Standard & Poor's: S&P 500 Total Reported After-Tax Earnings as % of seas. adj. GDP annual rate, last data point Q4 2018



Holding Gains Increasingly Rose Relative to Income

Chart 20

BEA, BLS, Fed. Reserve: Nominal Holding Gains on HH Assets as % of Disposable Personal Income annual data, 10-year moving average, last data point 2018



the cyclical variation, revealing a secular uptrend through 2007 (until the sharp balance sheet contraction associated with the last recession and financial crisis). This long trend had implications for risk taking that will be addressed in points 6 and 9.

In summary, as capital gains grew larger relative to incomes both cyclically and

over the long term, capital gains came to have an ever-greater influence on the performance of the economy, accelerating expansions and worsening recessions. Thus, by increasing macroeconomic risk, swelling balance sheets and the increasing capital gains involved made investment returns riskier.

¹¹ The point of scaling to GDP here is simply to present a reasonably flat long-term profits trend to highlight differences in the magnitudes of cyclical swings. An alternative would have been to present the raw profits on a log scale, but then the negative reading in 2008 could not be shown. The ratio to GDP serves as a convenient rough scaling device to make the dramatic differences in cyclical swings apparent, and there is no attempt here to draw implications from the secular changes or lack thereof in the ratio over the long run.

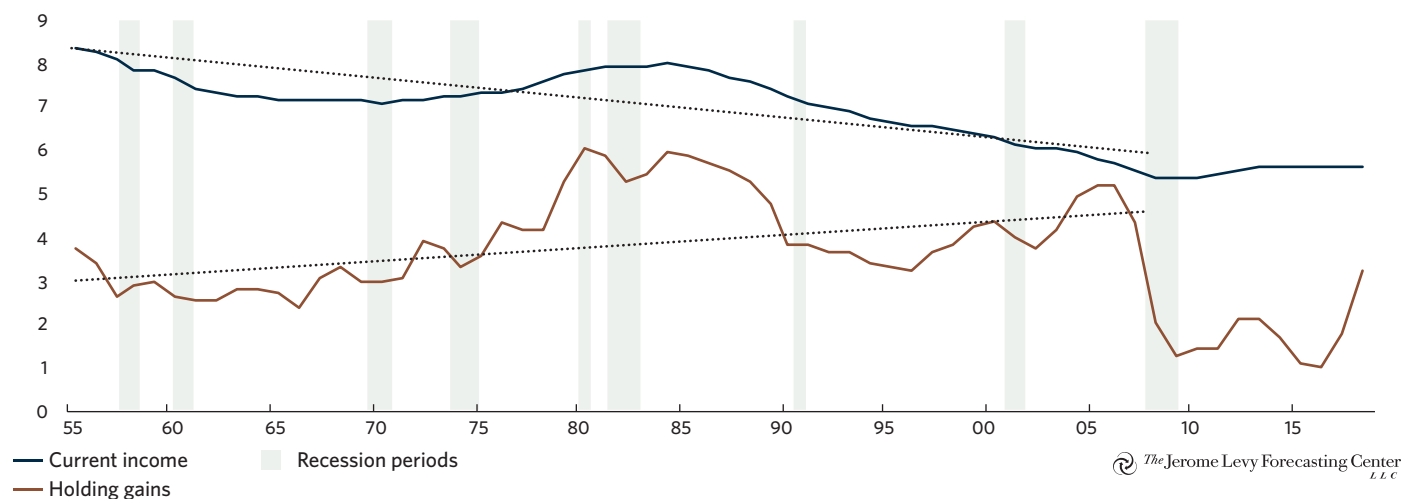
Capital Gains Grew Relative to Current Income

Chart 21

BEA, Federal Reserve: Corporate Profits, Rent, Interest, and Proprietors' Income as % of Household Assets;

Nominal Holding Gains as % of Household Assets

10-year average, household assets as of end of previous year, annual data, last data point 2018



6. The secular swelling of balance sheet ratios made investors' returns more dependent on capital gains and less on operating returns and interest.

This point stems from three other consequences of swelling balance sheet ratios, two of which are already established. They are (1) interest rates had a long secular decline (point 3), (2) operating rates of return also trended downward (point 4), and (3) capital gains in proportion to total assets expanded (yet to be demonstrated).

In point 5, the ratio of capital gains to income was relevant because our interest was in the size of wealth effects—economic impacts that reflect the size of wealth

gains relative to income. Now, however, the concern is rates of return on assets, and the relative importance of different components of total returns on assets.

Chart 21 shows the rate of capital gains on assets—total household capital gains relative to household assets—and its long-term, upward trend until 2007. As above, a 10-year average is helpful for smoothing out cyclical noise to highlight long-term behavior. This chart contrasts the rising capital gains rate with the downward trend in the rate of current income (combining interest and operating income) over the decades.

Although the ratio of capital gains to assets did rise from early in the postwar

era until the last recession, was this an inescapable aspect of swelling private balance sheet ratios? Probably. This point may not be possible to prove, but it is exceedingly difficult to come up with a realistic way private balance sheets could have swollen relative to incomes as they did without rates of capital gains becoming larger, as shown in appendix 2.

Given that household assets were earning *lower* rates of interest, producing *lower* rates of operating profits, and generating *higher* rates of capital gains, clearly investors became more and more dependent on capital gains both absolutely and relative to interest and operating returns.

7. Total returns became more cyclically volatile.

This follows directly from the fact that capital gains accounted for a rising share of total returns (point 6) and that capital gains are inherently more cyclically volatile than other types of investment returns, including interest income, dividends, rents, and others. Furthermore, as noted under point 5, cyclical swings in asset prices trended larger, implying larger cyclical swings in capital gains.

Keep in mind that increasing cyclical volatility in total returns does not necessarily mean more short-term (daily, weekly, monthly, or even annual) volatility or more frequent recessions. It means that the swings in rates of returns from their peak near the top of the business cycle to their trough near the bottom and from their trough to their next peak tended to grow larger from one business cycle to the next. One factor that may come into play here is that business cycles have tended to be longer during the Big Balance Sheet Economy era, although the reasons why are manifold and complex and may in large part reflect developments that have nothing to do with balance sheets.

8. Many corporate executives experienced increasing pressure to put short-term earnings ahead of long-term strategy and financial stability, which often meant moving away from financial caution toward financial recklessness.

The effects of the Big Balance Sheet Economy on the investment environment changed the character of holders of corporate equities. As even relatively

conservative, income-oriented investors came to depend increasingly on capital gains to hit annual return targets, investor demands on management shifted. An increasingly large contingent of investors focused more heavily on annual if not quarterly returns than on long-term growth and earnings.

An enormous amount has been written about changes in investor attitudes and objectives increasing pressures on managements to shift priority to short-term performance and earnings consistency at the expense of long-term strategic goals. The pressures on managements to emphasize short-term performance may have sometimes encouraged financially risky moves counter to long-term shareholder interest, such as increasing leverage to finance share buybacks, heavily leveraged buyouts, and dangerously rapid business expansion programs. Alternatively, pressures to prop up short-term profits may have encouraged sub-optimally low spending on marketing, customer service, training, or other outlays with future benefits. Box 2.2 on page 11 and box 2.3 on page 14 provided two additional examples of management behaviors not necessarily in the best interest of long-term investors.

Granted, one cannot properly say it is *a fact* that the increased dependence of investors on capital gains caused riskier financial behavior by corporate managements in the same way that one can say it is a fact that, for example, rising private sector debt relative to GDP *necessarily* made aggregate private lending more risky (point 1). Nevertheless, it is difficult to believe that the heightened investor focus on short-term capital gains did not lead managements to make some decisions that were riskier in the long run.

Another change in the investment environment that promoted risky management behavior was asset pricing itself. An extreme example of risky behavior triggered by high prices is the behavior of some of the start-up Internet vending companies in the late 1990s. Their equity prices had been bid so high, creating enormous market caps, that developing their operations at a manageable pace that allowed them to learn and refine their business models as they grew was not an option. They were priced for meteoric growth, so unless they invested in rapid expansion, their prices could be in jeopardy. Moreover, their high valuations meant that cash for breakneck expansion was readily available, either through equity sales or credit.

9. A multidecade trend of strong gains in asset prices encouraged investors to harbor unrealistic perceptions of "normal," long-term performance and to increase exposure to risky asset markets.

"Past performance does not necessarily indicate future results," prospectuses routinely warn, yet human beings are wired to think that it does. Strong trends in prices of major asset classes during the last several decades contributed to private sector asset values growing faster than income, and many people have naturally projected these trends. Granted, most of these asset classes experienced some severe and prolonged price declines at various times along the way, especially in the early and late 2000s, yet prices overall rose fast enough for total asset values to outpace incomes. This behavior over many decades reinforced investor expectations of continuing, rapid long-term asset value appreciation.

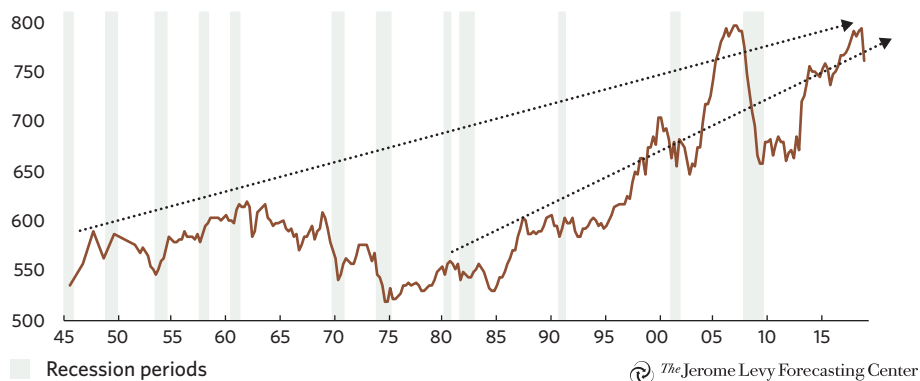
It is a matter of logic that debt cannot grow faster than income without limit because debt must be serviced out of income. Similarly, the total value of assets cannot grow faster than income without limit because asset values must ultimately be justified by the income (financial returns or productive services) that they produce. Chart 22 highlights that the ratio of household assets to GDP rose markedly over the past three-quarters of a century. The ratio soared sufficiently during the Big Balance Sheet Economy era to make up for the mid-1960s-to-mid-1970s dip, which largely reflected accelerating inflation and rising interest rates.

The collective risk taking of investors and lenders, acting on their expectations of high returns, has been a self-fulfilling prophecy during each business cycle of the Big Balance Sheet Economy era—that is, until a cyclical rise in interest rates and other financial strains burst each bubble. For investors, pursuing their traditional return targets not only has meant having to assume more risk in each successive business cycle; it also has meant maintaining the fantasy that the past 35- or 50- or 75-year overall investment performance is attainable indefinitely. However, the long-term decline in interest rates, which has been vital to supporting secular asset price appreciation, has bottomed. Interest rates can help no more in the future than to fall back to the zero range (unless one believes that the economy can operate reasonably well with significantly negative interest rates throughout consumer and business markets, which is a dubious prospect¹²).

Household Assets Have Grown Relative to Income

Chart 22

BEA, Federal Reserve: Household Sector Assets as % of Disposable Personal Income
annual data 1945 to 1951, quarterly data Q1 1952 to Q4 2018



The nine points above, each a way in which the secular expansion of balance sheet ratios compelled increasingly risky financial behavior, leave no room for doubt. The continuing growth of private sector balance sheet ratios over at least the past three-and-a-half decades made it virtually inevitable that the economy would carry increasing financial risk from one business cycle to the next.

For lenders and investors facing lower operating returns and lower yields but determined to meet high historical return expectations, their available options all involved greater risk taking than in previous cycles. Many of their behavioral changes are familiar to the broad financial community, including the following.

- Increasing leverage, ranging from using more margin debt to increasing speculation in derivatives
- Explicitly relying on capital gains for an increasing portion of returns
- Relaxing financial standards (when investing, lending, or borrowing)
- Pulling profits from the future through sales of multiyear loans
- Investing more internationally, with increasing exposure to currency risk, less transparent markets, and other potential hazards
- Developing a bias toward understating risk in the face of uncertainty
- Initiating new, black-box investments, which boast lucrative track records but also shroud the inner workings, fatal flaws, and sometimes fraud from investors

Thus, the mathematics of swelling U.S. private sector balance sheets relative to incomes forced decision makers collectively to take ever greater risks. As balance sheet ratios rose, increasing risk taking and economic expansion went hand-in-hand. Bubble or nothing. And these pressures persist.

¹² Monetary policymakers in some countries have experimented with modest negative interest rates, but generally these have been on bank reserves deposited at the central banks and have represented an effort to push banks to lend more aggressively, not to pay retail depositors negative rates. Paying consumers or businesses negative rates on their bank deposits—i.e., charging them to keep money in the bank—is neither politically appealing nor a sure way to increase people’s confidence. Although yields on certain government bonds have been (and currently are) negative, these represent demand for scarce, safe assets, not a willingness on anyone’s part to make private long-term loans at negative rates.

3. Evolution of the Big Balance Sheet Economy

The evidence that private sector balance sheets expanded considerably faster than income during the years since World War II is cut-and-dried. It is also broad, showing disproportionate balance sheet growth not only in the private sector as a whole but also across many subsectors, industries, and markets. The changes in many balance-sheet-to-income ratios have been sizable. From the end of World War II until a few years ago, both assets and liabilities rose considerably relative to income, albeit not always smoothly or continuously.

This section presents data documenting private sector balance sheet expansion relative to income since World War II. It also offers some historical context that helps explain how some events unfolded. Although it may touch fleetingly on potential reasons why balance sheets expanded as they did, it does not seek to provide a theoretical argument explaining why this phenomenon came about, which is a topic for another paper.

The task of documenting the disproportionate private balance sheet growth necessarily involves accounting definitions and technicalities. For the purposes of this paper we can touch on them briefly because any reasonable choice of definitions and rules yields the same basic story: private balance sheets growing faster than—and therefore becoming larger relative to—income.

Any reasonable choice of definitions and rules yields the same basic story: private balance sheets growing faster than—and therefore becoming larger relative to—income.

Here is a summary of our definitions and measurement methods. (Additional details and explanation are in appendix 3.)

1. The phrase “private balance sheets growing faster than income” refers to two separate phenomena: total private assets growing faster than income and total private liabilities growing faster than income.
2. For households, 98% of liabilities are debt. We will ignore the other 2% and substitute total debt for total liabilities in our discussions and data presentations. (This is common practice in household financial analysis.)
3. For businesses, a large part of liabilities is not debt. Nevertheless, we will focus on business debt, not business liabilities, for a variety of reasons, including convention. The story doesn’t change—in fact, business liabilities grew even faster than business debt.
4. Debt, as defined in the financial accounts of the United States (FAUS, formerly called the flow of funds, published by the Federal Reserve), includes debt securities and loans.
5. Our concepts of asset and debt ratios are simple and consistent with everyday usage. If our subject were a *single*

household, we would take the ratio of the total value of the household’s assets (real estate, financial assets, motor vehicles, art, etc.) to after-tax income, and we would take the ratio of total debt (mortgage debt, credit card balances, margin debt, etc.) to after-tax income. For the *entire household sector*, we use the comparable aggregated data from the U.S. government.

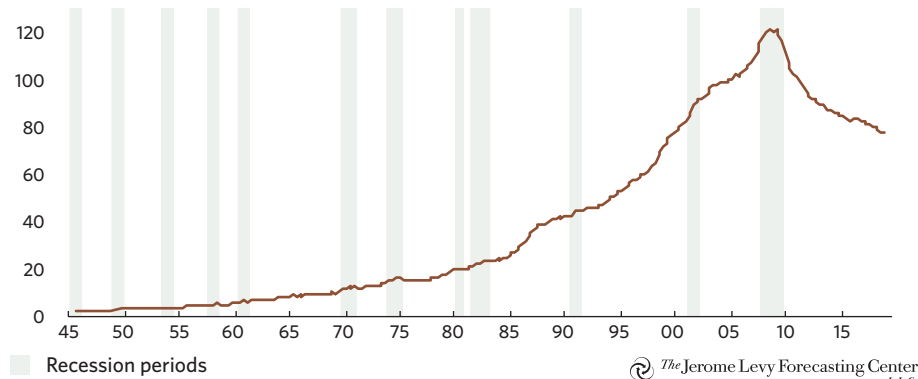
6. Income can be defined in a number of reasonable ways. Essentially, we are looking at financial flow concepts—personal income, GDP, business revenue (or a proxy, business value added), cash flow, profits, and so forth. The appropriate terms depend on the sector or subsector of the economy and the purpose of the measure.¹³
7. We are looking at the debt of only the nonfinancial private sector and omitting the debt of the financial sector for several reasons. This omission is certainly not because financial sector debt fails to fit the pattern of debt outpacing income. On the contrary, the financial sector’s debt expansion was the most spectacular of any sector during the postwar era, rising from 2% of GDP in 1945 to a peak of 122% in 2009 (chart 23).

¹³We generally use business value added (contribution to GDP) as a proxy for revenue in the denominator for business asset and debt ratios rather than profits or proprietors’ income because profits have so much cyclical variation. Business or corporate value added gives an idea of the scale of the overall financial footprint of the sector and, in the long run, a more consistent measure of how large a balance sheet can be supported. Obviously, assets relative to profits—and the reciprocal, return on assets—still have great importance and this paper discusses them considerably.

Financial Sector Debt: Extreme Rise and Fall

Chart 23

BEA, Federal Reserve: Private Financial Sector Debt Outstanding as % of GDP
annual data 1945 to 1951, seasonally adjusted quarterly data Q1 1952 to Q4 2018



Balance Sheet History

Chart 1 on page 3 offered a preview of the history of rising U.S. leverage. It shows the broadest view of the nonfinancial private economy's debt relative to income. This ratio rose throughout the postwar era until 2009.

The six-and-a-half-decade debt-to-income ratio expansion through 2009 was not isolated in one part of the economy. Debt ratios expanded for households and nonfinancial businesses.

Turning from debt to assets, the broadest appropriate measure is the ratio of household assets to GDP. Because the household sector *owns* the private business sector,¹⁴ household assets encompass the total value of private sector assets. Put another way, business sector assets need not be added to

household assets because their value is already counted in household holdings of equity in corporate and noncorporate businesses; adding business assets to household assets would be double-counting. It is certainly valid to analyze the scale of business assets when focusing on the business sector alone but not when tabulating the assets of the entire private sector. (This situation is not parallel to the debt case. Whereas business assets are already counted in household assets through owners' equity, business debt is most certainly not reflected as debt on the household balance sheet.)

Chart 2 on page 3 shows that the ratio of household assets to GDP, like the debt ratio, has undergone a secular rise since World War II, albeit one that is more volatile and less consistent.

One may ask why we are focusing on assets and liabilities separately rather than on net worth. After all, isn't net worth the ultimate balance sheet concern for any household or organization? Certainly, net worth is critically important—we will note its sometimes profound influence on profits and the economy through wealth effects. Yet it is asset values that drive dynamic changes in net worth and therefore largely determine changes in wealth.

Moreover, net worth can be a misleading report card on household sector financial stability—the greatest peaks in the ratio of household net worth to disposable income have turned out to be the pinnacles of asset bubbles. The third-highest peak was at the zenith of the tech stock bubble in 2000. The second highest was at the peak of the housing bubble in 2006. As of now, the highest peak of all was in the third quarter of 2018. Without studying total assets and asset valuations and, separately, total debt and debt soundness, it is difficult to evaluate the stability of net worth. (For a discussion of the often misleading nature of net worth and the importance of the stability of net worth, see appendix 4.)

¹⁴ Excluding international claims and relatively modest government claims.

A Bit of Historical Context

The long, secular trend of balance sheets expanding faster than incomes began innocently enough. Rapidly growing balance sheets were a welcome and healthy development in the quarter of a century following World War II.

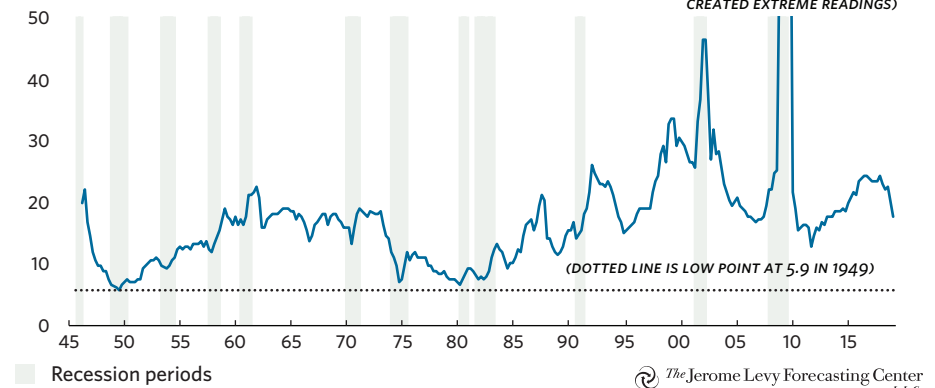
Private balance-sheet-to-income ratios were freakishly low on August 15, 1945 when World War II came to an end. Business plant and equipment and the stock of homes had dwindled during a 15-year dearth of private capital spending and construction during the depression and then the war. Meanwhile, asset prices, which had collapsed during the 1929-1933 crash, still reflected weak valuations (after a euphoric spike in stock prices right after the war), and valuations remained weak into the late 1940s. In fact, the S&P 500's price-to-earnings ratio of 5.9 reached in June of 1949 would turn out to be the low point for the next 70 years (chart 24).

Private debt was also unusually low for a time after the war. Most debt that had not ended in default in the 1930s had been paid down or paid off, especially during the war when federal government demand had super-heated private sector income while constricting private sector spending. Wartime rationing and other spending restrictions virtually forced households to save and firms to accumulate cash (or pay large dividends) and forgo capital spending that was not necessary for the war effort. Nylon was appropriated for the manufacture of parachutes instead of stockings, and truck factories built military vehicles instead of civilian pickups and delivery trucks. Thus, in 1945 the one thing households and businesses had on their balance sheets in great abundance was cash (chart 25).

Record Low Stock Valuation in 1949

Chart 24

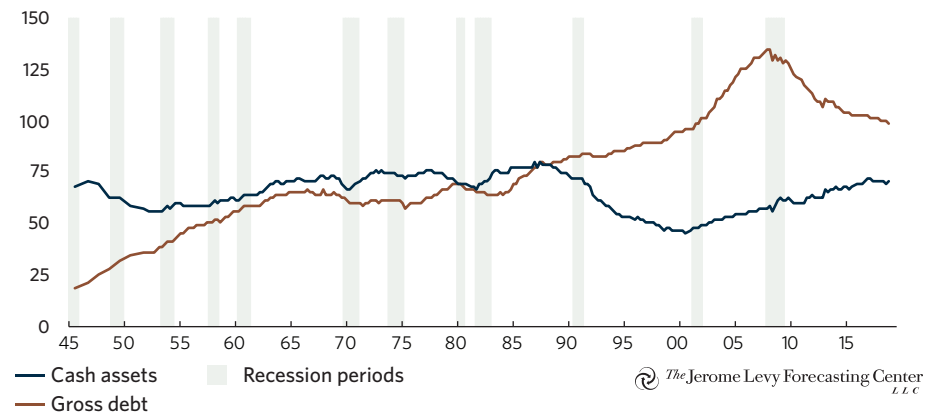
S&P 500 Composite Price-to-Earnings Ratio Based on 4-Quarter Trailing As-Reported Earnings end-of-period, last data point Q4 2018



Households Had Cash but Little Debt Immediately after WWII

Chart 25

BEA, Federal Reserve: Household Sector Debt and Cash Assets as % of Disposable Personal Income annual data 1945 to 1951, seasonally adjusted quarterly data Q1 1952 to Q4 2018



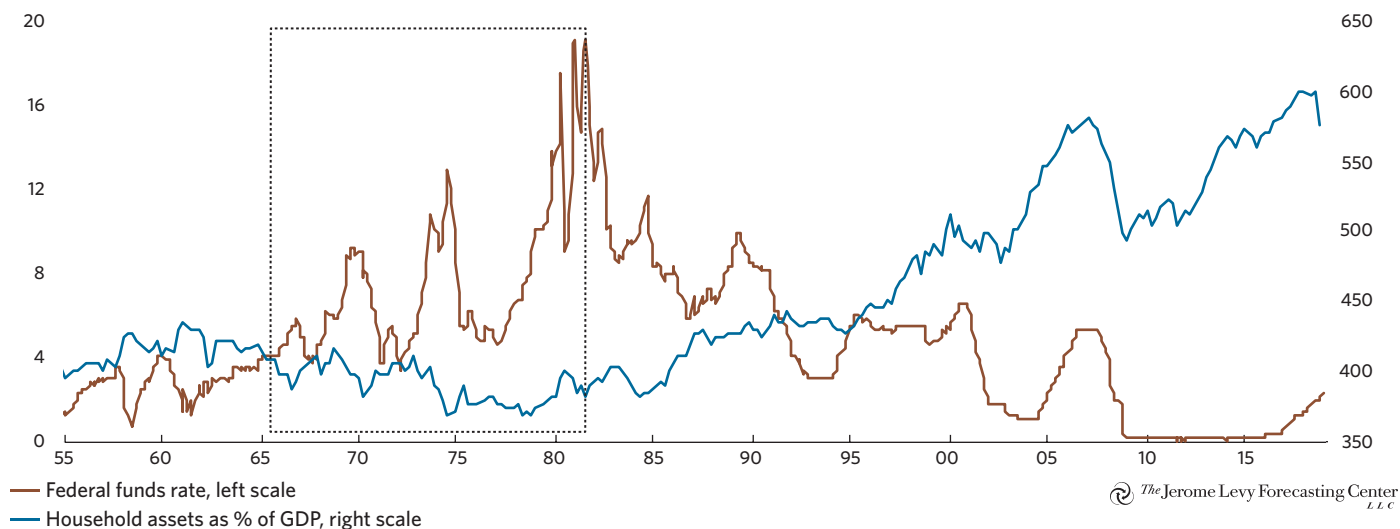
With the war over, Washington lifted spending restrictions, and enormous pent-up demand burst forth from both households and businesses. Households spent cash saved during the war, but they also took on debt to buy houses, cars, and major appliances. As the economy kept booming, fixed investment—the creation of new fixed assets, which, of course, appear on balance sheets—remained robust as shortages of capacity, greater-than-expected sales, and positive earnings

surprises kept firms eager to upgrade and add to their plant and equipment. Early in the postwar period, the preexisting capital stock was woefully old, worn out, obsolete, and overall unable to meet surging demand. The new capital investment—often representing a full generation's advance in technology—made huge differences in productivity, capacity, and Americans' standard of living. Thus, while demand boomed, so did supply as businesses invested aggressively.

Rising Interest Rates from '66 to '82 Depressed Asset Prices

Chart 26

BEA, Federal Reserve: Effective Federal Funds Rate, % per annum; Households Assets as % of GDP
last data points December 2018 (interest rate); Q4 2018 (assets)



Meanwhile, investors kept bidding up the prices of both tangible and financial assets as the persistence of prosperity (occasional recessions notwithstanding) and strong returns increased confidence and future earnings expectations.

Through these activities, firms and households expanded their balance sheets in three important ways during the first several postwar decades. First, they bought new fixed assets—capital goods, business structures, and houses—

By the end of the 1980s, the assets-to-GDP ratio was at a new high despite still-elevated interest rates, and by the end of the 1990s, it was much higher.

sufficiently rapidly to increase their overall holdings of these assets faster than their incomes were growing. Second, they bought preexisting assets, most notably real estate and corporate equities, and in the process bid up the prices of these assets at a pace well above general goods and services inflation and even above the overall nominal growth rate for the economy. Third, they rapidly took on debt to help finance these asset purchases.

After the ratio of household assets to GDP rose from the end of the war through 1961, it plateaued briefly and then declined as a new influence dominated its behavior from the latter 1960s to the early 1980s: a profound secular rise in interest rates in response to the pickup in inflation (chart 26). Subsequently, as interest rates declined, the assets-to-GDP ratio recovered, revealing that the long-term

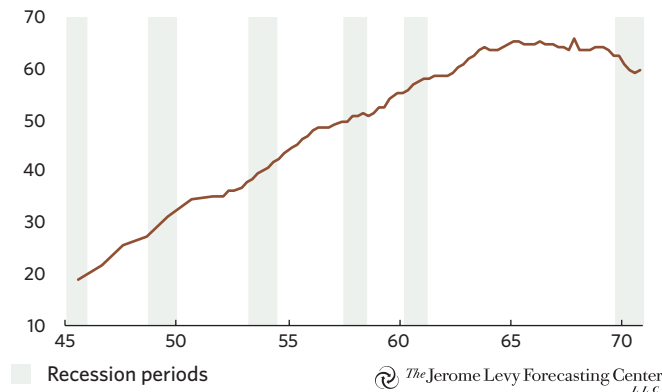
uptrend had only been temporarily suppressed by the effects of the rising rates. By the end of the 1980s, the assets-to-GDP ratio was at a new high despite still-elevated interest rates, and by the end of the 1990s, it was much higher despite interest rates still well above those of the early 1960s.

The historical context suggests that debt growth during the early postwar decades was sound despite its rapidity. The private sector's lack of initial debt, low business overhead, vast pent-up demand, involuntarily accumulated savings (providing down payments), and suddenly available credit fueled a brisk but seemingly responsible expansion of debt. Private sector debt grew so quickly from extremely low levels that it outpaced even the period's fast-growing income.

Household Debt Ratio '45 to '70

Chart 27

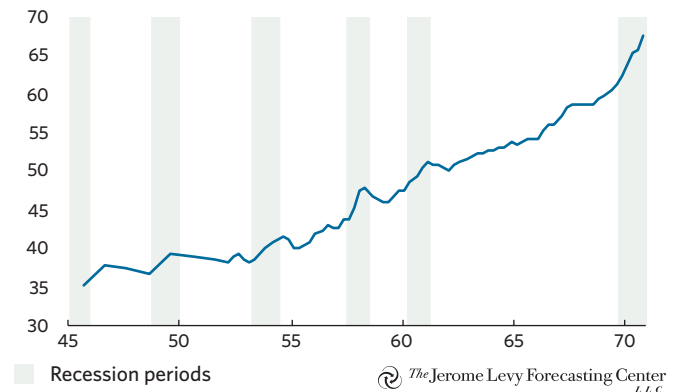
BEA, Fed. Reserve: HH Sector Debt as % of Disp. Personal Income
annual data 1945 to 1951, seasonally adjusted quarterly data Q1 1952 to Q4 1970



Nonfinancial Business Debt Ratio '45 to '70

Chart 28

BEA, Fed. Reserve: Nonfin. Business Debt as % of Gross Value Added
annual data 1945 to 1951, seasonally adjusted quarterly data Q1 1952 to Q4 1970



This expansion of the right side of balance sheets, and debt in particular, is plain to see in both primary subsectors of the nonfinancial private sector, namely, households and nonfinancial business (charts 27 and 28). *These changes during the 25 years after the war may be thought of as a healthy normalization of the financial structure of the economy.*

It is impossible to say at exactly what point in postwar history private sector balance sheets ceased to be abnormally small relative to incomes, but whenever it was, rapid balance sheet expansion did not stop then. Although increases in inflation and interest rates in the latter 1960s and the 1970s temporarily restrained or reduced debt-to-income and assets-to-income ratios, these ratios tended to rise rapidly during the 1980s and beyond, occasional cyclical setbacks notwithstanding.

Dawn of the Big Balance Sheet Economy

By the mid-1980s, balance sheet ratios were rising rapidly. *As balance sheets grew larger in proportion to incomes, they increasingly changed the economy's behavior.* Their effects on the economy grew stronger and eventually profoundly altered the business cycle.

One of these effects is the enhanced scale and therefore importance of the household *wealth effect*, defined earlier as the tendency for a household to spend more out of its income because of wealth gains (see box 3.1, page 25). Chart 29 shows evidence of the household wealth effect in the relationship between the household net-worth-to-income ratio and the personal saving rate. The wealth effect

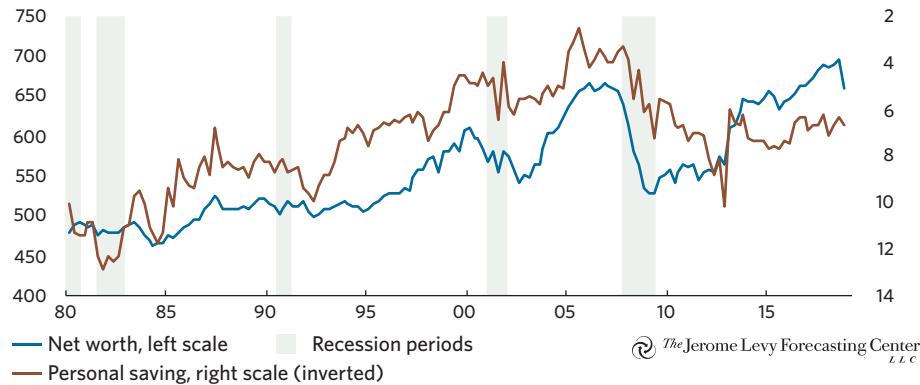
is not the only influence on the propensity to save (credit growth is another major one¹⁵), but its influence appears to be reflected to a significant degree in the saving rate. When the net-worth-to-income ratio rises, the saving rate tends to fall (shown as a rise on chart 29, since the saving rate is shown on an inverted scale). Individual households might finance the extra spending induced by wealth gains in a number of ways. They may simply spend more of their current income; they may spend down preexisting cash balances; they may sell assets representing a small portion of their wealth gains; or they may borrow against wealth gains by increasing margin debt against corporate equities, by taking out home equity loans, or merely by using consumer credit.

¹⁵ Credit growth and rising wealth are both cyclical and tend to push the saving rate in the same direction. A major exception is the past five years, when continued household deleveraging pushed saving up, canceling much of the downward influence on saving of rising wealth.

Wealth Effect Key Influence on Personal Saving

Chart 29

BEA, Federal Reserve: Personal Saving as % of Disposable Personal Income, seasonally adjusted; Household Net Worth as % of Disposable Personal Income
last data point Q4 2018



Household wealth, i.e., net worth, is total household assets minus total household liabilities. A positive wealth effect is most dramatic during the inflation of an asset price bubble (defined in box 1.1 on page 3), which typically comes in the form of a stock market or housing boom (or both). A negative wealth effect—a decline in net worth that induces households to spend less in proportion to their income—occurs during the deflation of an asset bubble.

It is notable that both positive and negative wealth effects tended to be larger as balance sheet ratios grew (as discussed in section 2, point 5). From the 1980s on, total household net worth became progressively and rapidly larger relative to income, with a few sharp reversals along the way. As a result, a 1% change in wealth in, say, 2005, had a bigger impact on personal consumption, personal saving, and the economy overall than a 1% change in wealth in, say, 1982, when that 1% of wealth was much smaller relative to personal income and to GDP.¹⁶

Box 3.1 Illustration of Wealth Effect Mechanics

Suppose households have \$10 trillion in total after-tax income—wages, salaries, proprietors' income, interest, dividends, and other income. Further, suppose they have \$15 trillion in financial and real property wealth (assets net of liabilities). Under these circumstances, they are comfortable spending, let's say, \$9.4 trillion a year and saving 6% of their income (a typical U.S. saving rate during the past 20 years).

Now suppose that the value of their wealth doubles, to \$30 trillion, and their after-tax income remains \$10 trillion. Note that capital gains do not count as income in the national accounts, and we are ignoring capital gains taxes for simplicity. Many households would feel comfortable spending more because they would feel less need to save for the future. Based on statistical analyses of the empirical record, they might spend around 3% of the added wealth each year, an additional \$450 billion against that same \$10 trillion in income. That would raise total consumption from \$9.4 trillion to \$9.85 trillion, and the saving rate would drop from 6% to 1.5%.

¹⁶ Wealth effects occur in parts of the economy besides the household sector. Changes in wealth influence such spending as business investment, not-for-profit organizations' spending, and state and local government spending, and these effects, too, became proportionally more influential as assets grew larger relative to income. During years of large capital gains and therefore of increased state income tax revenues, budget surpluses encouraged more state and local spending without the need for higher tax rates. Corporate defined benefit pension funds became overfunded and required smaller annual contributions. College alumni and other benefactors with wealth gains were likely to make more generous contributions to endowment funds; these increased contributions as well as strong appreciation of the funds' existing portfolio of assets made colleges more likely to renovate facilities or start new construction.

As we have seen, market swings themselves became larger over the course of the postwar era, which further augmented wealth effects during the post-1980 business cycles. The increasing height of the boxes in chart 30 shows how the swings in households' total assets scaled to disposable personal income became larger as the decades passed. Note that this is not a statement about short-term volatility in financial markets, but about the size of cyclical moves in asset prices.

Thus, during the Big Balance Sheet Economy era, asset prices became a much greater economic influence because of both the growth in total asset values relative to total income and the increasingly large cyclical swings in asset markets.

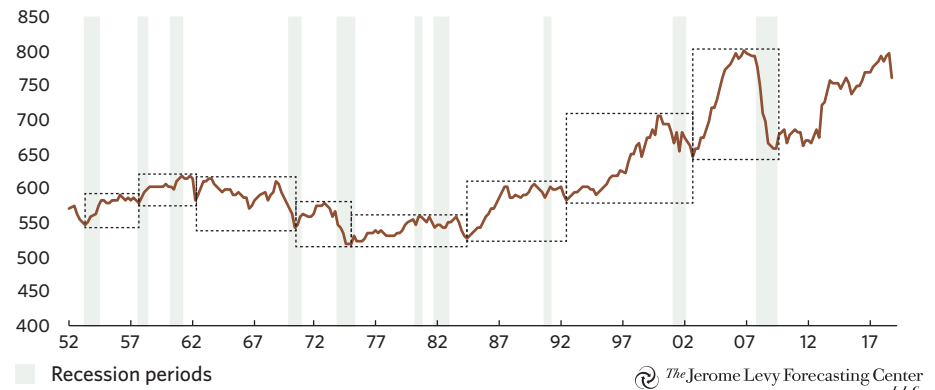
Another major balance sheet effect is the *refinancing effect*, the tendency for debtors, when interest rates fall, to take out new, lower-interest-rate loans to pay off their existing loans, thereby reducing their monthly cash outlays for debt service and boosting their ability to spend on consumption or investment. From the early 1980s on, each major low in long-term interest rates was a multiyear—and in most cases multidecade—low and, therefore, created a major refinancing opportunity (chart 31).

Cash-out refinancing, which was rampant during the 2000s housing boom, can be thought of as a combination of the wealth and refinancing effects. Homeowners whose real estate had appreciated in value could refinance loans at lower interest rates and increase the size of their debts to obtain large volumes of cash without their debt-service costs rising. Even when they could not lower their mortgage interest rates, they could still refinance and take out cash to spend on top of

Increasingly Large Cyclical Swings in Assets Relative to Income

Chart 30

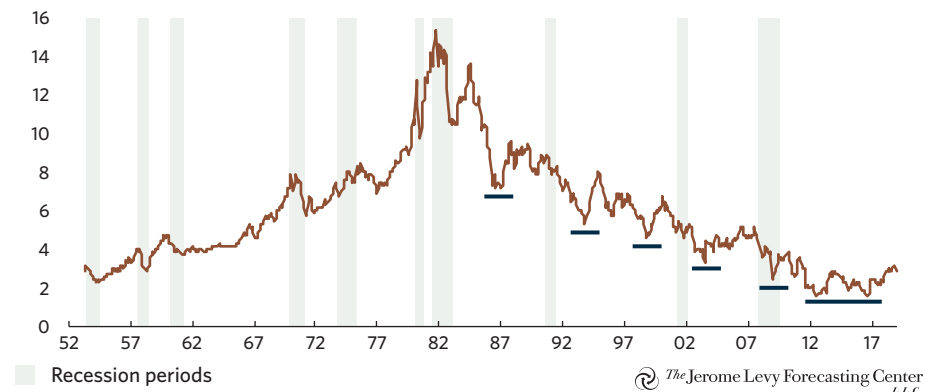
BEA, Federal Reserve: Household Sector Assets as % of Disposable Personal Income
last data point Q4 2018



Descending Troughs in 10-Year Treasury Yield

Chart 31

Federal Reserve: 10-Year Treasury Yield
% per annum, monthly average, last data point December 2018



what they spent out of their incomes. Moreover, during the boom, interest-only and negative amortization loans allowed home buyers or refiners to free up cash without suffering a higher monthly mortgage bill for several years.

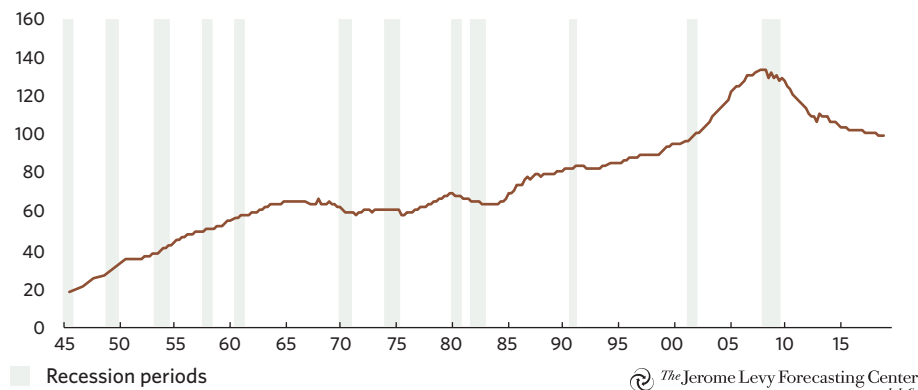
Because of the emergence of big wealth effects and accelerated lending, the mid-1980s were arguably the dawn of the Big Balance Sheet Economy era, defined earlier as a period in which private sector balance sheets became disproportionately

large enough to have an unusually potent influence on consumer and business behavior and on the business cycle. Balance sheet effects became more prominent in each subsequent business cycle, starting with the 1980s expansion and continuing through the current one. Unfortunately, the increased influence has applied to the downside as well as the upside, and financial crises have tended to be larger factors in each subsequent recession from the 1990-1991 slump onward.

Household Debt Ratio Peaked in 2007

Chart 32

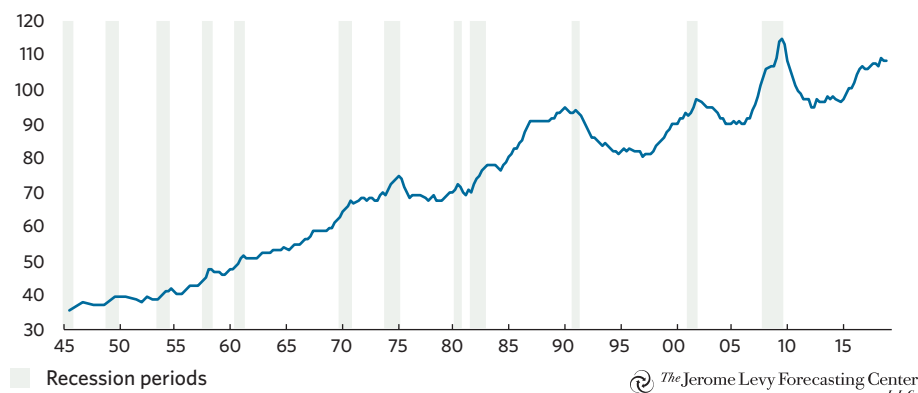
BEA, Federal Reserve: Household Sector Debt as % of Disposable Personal Income
annual data 1945 to 1951, seasonally adjusted quarterly data Q1 1952 to Q4 2018



Nonfinancial Business Debt Ratio Nearing 2009 High

Chart 33

BEA, Federal Reserve: Nonfinancial Business Debt as % of Gross Value Added
annual data 1945 to 1951, seasonally adjusted quarterly data Q1 1952 to Q4 2018



Two questions often arise regarding the development of the Big Balance Sheet Economy and its riskier financial behavior. One is whether balance sheet expansion is largely a reflection of increased financial intermediation and therefore not really about rising leverage. This one is quickly dismissed; as we have seen, there were huge debt increases relative to incomes in the *nonfinancial* private sector, which excludes the intermediation within the financial sector.

The second question is whether the Fed has repeatedly erred by keeping interest rates too low too long (and in the 2010s used quantitative easing to excess), thus promoting reckless borrowing and asset bubbles. The answer is that the Fed's options were largely defined by the national political imperative of getting the private economy to recover, and satisfactory recovery without reestablishing brisk private balance sheet expansion was unattainable (short of a WWII-type total

dependence on massive government deficit spending, which was much bigger in proportion to the economy than even the huge deficits of this past recovery). More discussion of these two questions is in appendix 5.

The balance sheet ratios we looked at earlier rose especially steeply from the mid-1980s into the late 2000s. The debt-to-income ratios for the nonfinancial private sector and its major components—the household and nonfinancial business sectors—all rose rapidly, reaching peaks that were several-fold larger than they had been at the end of World War II (charts 32 and 33). The household sector assets-to-income ratio also rose rapidly, although its changes were more volatile and uneven than the rise in the debt ratio, reflecting the greater fluctuations in asset prices than in debt values. The rapid increases in asset values during economic expansions and the sometimes severe reversals during or near recessions have characterized the Big Balance Sheet Economy era. During these years, the nine consequences of excessive balance sheet expansion for risk taking in section 2 became increasingly important.

The rapid increases in asset values during economic expansions and the sometimes severe reversals during or near recessions have characterized the Big Balance Sheet Economy era.

Big Balance Sheet Economy Characterized by Bubbles

A key reason why the aggregate value of private sector assets has grown faster than total income over the decades is increasing asset valuations. Although net additions to the stock of real fixed assets (creating more structures, equipment, and intellectual capital than are lost to capital consumption) contributed to the increase in total assets, these contributions are insufficient to account for the secular increase in the total value of assets relative to income.

The assets-to-income ratio has risen primarily because asset prices have grown considerably faster than the economy's goods-and-services inflation. (The behavior of asset prices and their role in balance sheet expansion is discussed further in appendix 2.)

Residential real estate serves as an excellent example of increasing valuations of nonfinancial assets. From 1952 to 1967,

despite some price fluctuations, net investment in housing (new construction, the dark blue area on chart 34) accounted for more than half of the total rise in the value of household real estate assets (the black line on chart 34). After that, price changes became dominant, and new construction accounted for only a small fraction of the changes in household real estate assets. In the 1970s and early 1980s, these price changes were a combination of general price inflation (the lighter blue area on chart 34) and changes in home real estate prices relative to those of other goods and services (a.k.a. changes in real housing prices, the gold area on chart 34). From the mid-1980s on, changes in real housing prices have been the greatest factor in determining whether and how much the total value of household residential real estate assets grew or fell.

Households also hold substantial financial assets; in fact, household financial assets

are greater than nonfinancial assets. Some categories of financial assets, most notably corporate equities, rose considerably faster than total nominal income over the past seven decades. As chart 35 shows, valuations of corporate equities have tended to be considerably higher in the Big Balance Sheet Economy era than during the previous four decades. All-in-all, asset price increases have played a critical role in the ongoing rise in assets-to-income ratios.

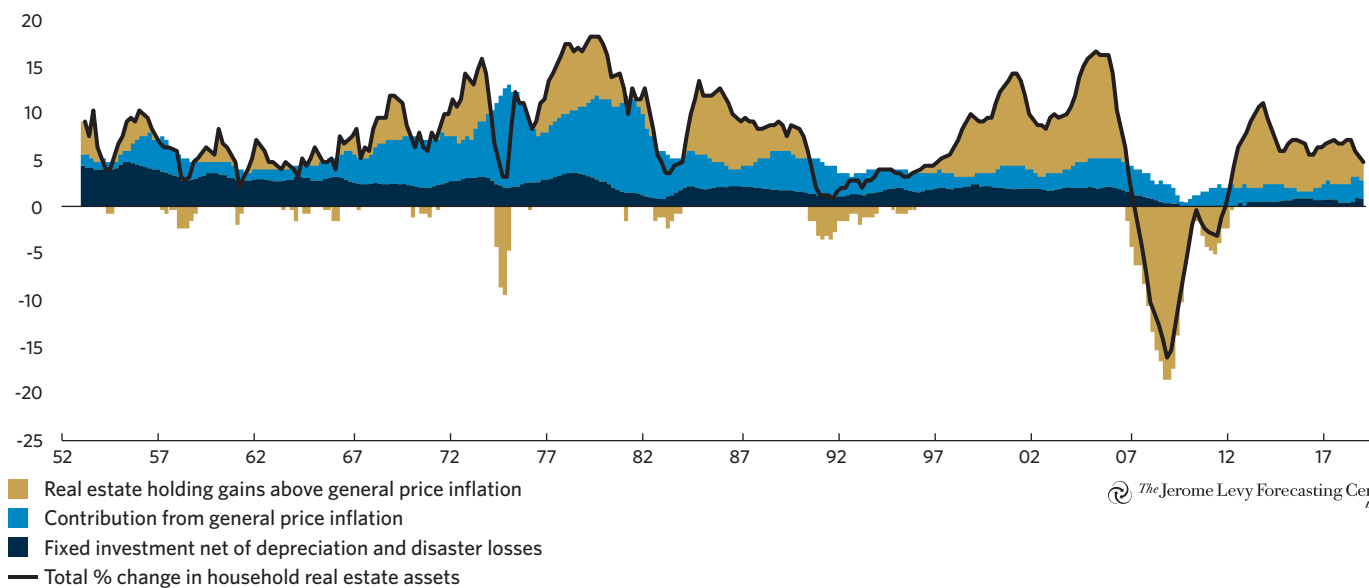
While notable speculative asset market bubbles began to emerge in the United States in the latter 1970s as inflation sparked speculation in real assets, bubbles in both financial and nonfinancial assets became a major influence in the mid-1980s, and they have appeared in each subsequent business cycle, tending to become larger over time. Eventually, each of these bubbles burst; the story for the present business cycle is not yet finished.

Real Price Changes Increasingly Responsible for Changes in Value of Real Estate

Chart 34

BEA, Federal Reserve: Household Real Estate Assets

year-over-year % change and contribution from components, last data point Q4 2018



The Jerome Levy Forecasting Center
LLC

The 1980s began with two crises that stemmed from inflation-related asset price booms in the 1970s. One was a speculative boom in farmland (chart 36). In many places this boom brought mortgage financing costs per acre above the gross value of the crop yield per acre—that is, mortgage interest payments exceeded farmers’ revenue *before* deductions for their operating expenses. The extremely high interest rates of the early 1980s halted and then reversed the upward trend in agricultural land prices, leading to soaring defaults and then a crisis in the Farm Credit System, eventually requiring a federal government bailout. The other speculative boom was the savings and loan (S&L) spree of reckless lending, which ended in a debacle of defaults and institutional failures. The S&L crisis had its origins in the 1970s in a poisonous mix of inflation, rising interest rates, and the deregulation of bank and thrift deposit rates. The situation became a crisis in the 1980s and lingered into the 1990s.

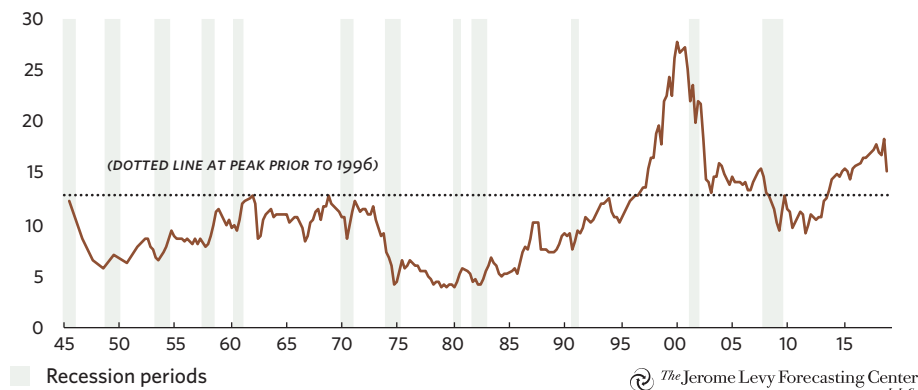
The 1980s also brought the largest commercial real estate bubble since the 1920s and bicoastal housing bubbles. Moreover, a boom in leveraged buyouts left many companies dangerously overindebted and illiquid by the end of the decade.

The 1990s, of course, brought the dot-com mania and stock market bubble, which began to deflate in 2000. The 1990s also brought an emerging-market foreign investment bubble, which led to a series of currency crises in the Mexican peso (1994-1995), most Southeast Asian currencies (1997-1998), the Russian ruble (1998), and the Brazilian real (1998-1999). This decade also brought problems with the use of extremely leveraged investment strategies by financial firms, the most notorious of which was Long-Term Capital Management, which failed spectacularly in 1998 amid the Russian crisis.

Rising Equity Valuations in Big Balance Sheet Economy Era

Chart 35

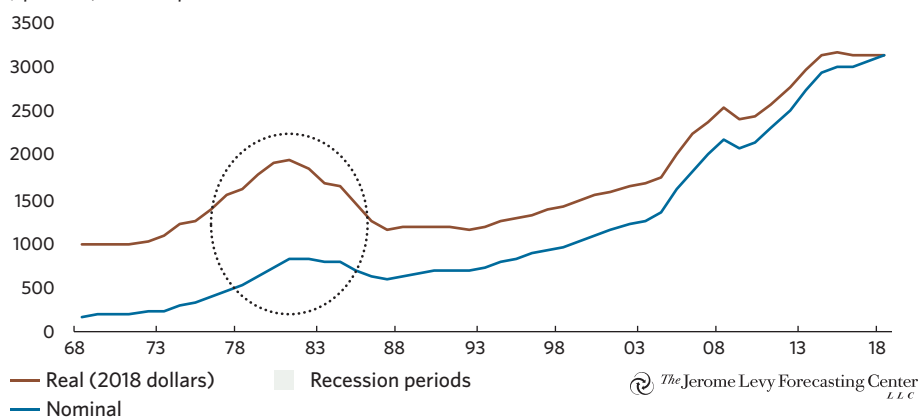
BEA, Federal Reserve, Haver Analytics: Ratio of Market Value of Dom. Corp. Equities to 4-Qtr. Trailing NIPA After-Tax Corp. Profits, annual data 1945 to 1951, quarterly data Q1 1952 to Q4 2018



Farmland Bubble Burst in Early 1980s

Chart 36

U.S. Department of Agriculture: Average U.S. Farm Real Estate Value \$ per acre, last data point 2018



The 2000s, the most recent complete business cycle, brought the most spectacular bubble and most destructive crash in modern U.S. history. More than a housing bubble, it featured pooling of dubious mortgage loans, securitizing them in varying risk tranches, and then selling them as safe investments (with the help of rating agencies, which often stamped AAA grades on unsafe securities). To be sure, there is nothing wrong with securitization per se, which can be an efficient arrangement for both investors and those needing capital, but in this case,

with the pressures of the Big Balance Sheet Economy leading to increasing abuses in the mortgage market, the complexity of the arrangements helped mask undesirable behavior by some of the participants. The fallout led to would-have-been failures at many large banks and other financial firms that were, except in the case of Lehman Brothers, rescued by the government and government-encouraged private takeovers. Had none of these institutions been rescued, their failures would have started an avalanche that would have taken down the entire banking system.

The swelling of assets relative to income is evident not only at the aggregate nonfinancial private sector level but also within the nonfinancial business sector, which experienced assets growing faster than its gross value added (chart 37).

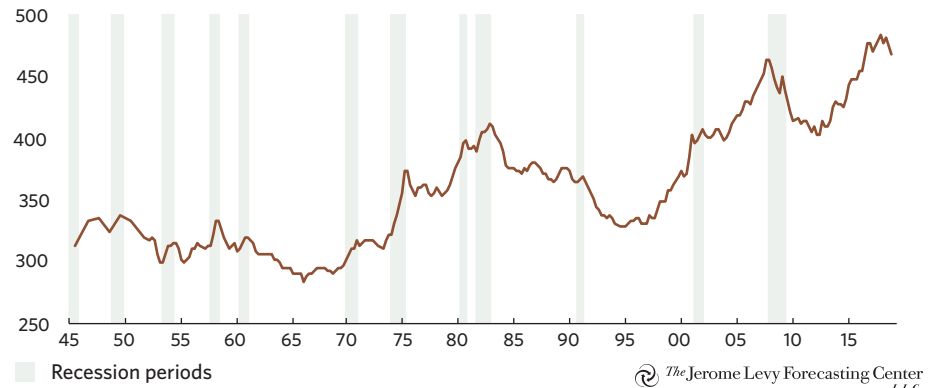
Rising asset prices not only lifted corporate equity holdings in the household sector's portfolio; they also got into the total assets on the corporate sector's own balance sheet, largely in the form of goodwill as firms acquired others at prices above book value. Rising goodwill is reflected in the miscellaneous assets' surging share of total corporate assets (chart 38).¹⁷

In noting the effects of the booms and busts of the Big Balance Sheet Economy era on aggregate balance sheets, keep in mind that the mission of this paper is not to give a comprehensive explanation of each of these events, which have been the subject of much public debate and theorizing. Rather, the goal here is (1) to document that balance sheets did indeed outrun incomes and (2) to show that these changes compelled increasingly risky financial behavior, which was reflected in these bubbles. What is important here is that these two fundamental points hold no matter what else may be true regarding the causes of the extreme financial market behavior of the past several decades.

Rising Nonfin. Business Assets Relative to Gross Value Added

Chart 37

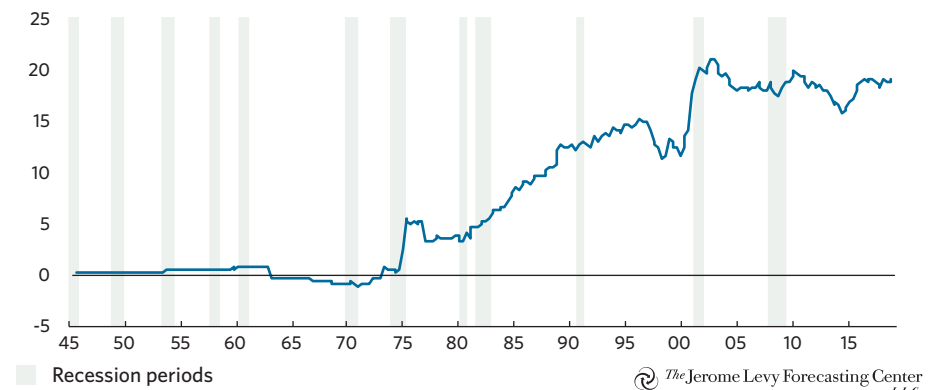
BEA, Federal Reserve: Nonfinancial Business Assets as % of Gross Value Added
last data point Q4 2018



Rising Miscellaneous Assets as Share of Corporate Assets

Chart 38

Federal Reserve: Nonfinancial Corporate Business: Miscellaneous Assets as % of Total Assets
last data point Q4 2018



¹⁷ A key reason for the disproportionate rise in business assets is in miscellaneous assets, which in the FAUS include goodwill, the accounting term for intangible assets that come into being when one company purchases another for more than its book value. When equity prices are rising, this appreciation increasingly shows up as goodwill after corporate acquisitions. Chart 38 shows that miscellaneous assets rose over the postwar period from a negligible share of total assets to about a fifth, with the rise coming mostly during years of high inflation, high volumes of mergers and acquisitions, and/or soaring stock markets. Miscellaneous assets have grown notably in both the corporate and noncorporate subsectors of the nonfinancial business sector.

Real Balance Sheet Expansion

Our examination of balance sheets relative to incomes is necessarily a financial exercise, and we have seen that changes in asset prices have often dwarfed changes in real assets. Still, one might ask what has happened to real tangible assets over the years. Were they underbuilt or overbuilt? One way to evaluate the inadequacy or excessiveness of tangible assets is to look at industrial capacity utilization and various other business usage rates, such as occupancy rates for commercial buildings. A chronically low capacity utilization measure can be evidence of past overinvestment in fixed capital. Indeed, the utilization rates of many categories of tangible assets have declined over the last several decades and have been clearly depressed during the 2000s.

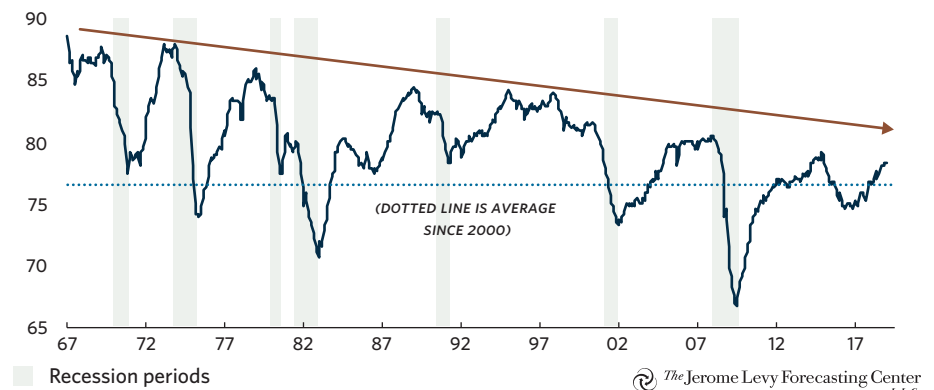
The broadest single utilization measure for the U.S. economy is the Federal Reserve's series on industrial capacity utilization (chart 39), which combines the manufacturing, mining, and utilities sectors. Granted, there is no shortage of measurement and data issues that crop up in such a long-lived data series, especially since measuring different kinds of capacity at any point in time can be difficult. These issues include (1) unrecorded increases in capacity at existing sites because of productivity-enhancing improvements; (2) obsolete capacity still included; (3) difficulty measuring real output because of problems quantifying improvements in quality, such as increasing capabilities in smart phones, cars, or medical devices; and (4) determining the capacity represented by facilities that can be used to produce a multitude of different products.

Capacity Utilization in Secular Decline

Chart 39

Federal Reserve: Total Industry Capacity Utilization

% of capacity, seasonally adjusted, last data point December 2018



Manufacturing Capacity Utilization in Secular Decline

Chart 40

Federal Reserve: Manufacturing Capacity Utilization

% of capacity, seasonally adjusted, last data point December 2018



Despite these caveats, capacity utilization has undergone such a striking secular decline that its general direction is hard to dispute, and that direction suggests secular overinvestment. The decline is also visible in the biggest major component of the industrial index, manufacturing, which has a longer history. Since the late 1960s, the peaks in manufacturing capacity utilization have moved progressively lower

(chart 40). Peaks are significant in this series because if a firm does not use a certain percentage of its capacity at its peak utilization rate, it never uses it.

The argument that manufacturing capacity has become increasingly excessive over time is stronger when considering what has happened to the growth of manufacturing production. Production growth has slowed markedly in recent years, as seen in the

20-year average annualized growth rate (chart 41), and a slow-growing economy needs less idle capacity than a fast-growing one. Slower growth leads to lower growth expectations, which means smaller additions to capacity and less room to “grow into” at any point in time (see box 3.2). Thus, if all firms had anticipated their capacity needs well, capacity utilization would have tended to rise. The fact that capacity utilization has stayed low in recent years suggests widespread and recurring shortfalls of

production relative to firms’ expectations and implies that the secular overexpansion of capacity has been worse than the capacity utilization chart alone would indicate.

Some other indicators of capacity utilization, such as office vacancy rates, also suggest a secular rise in unused capacity (chart 42). This lingering, seemingly excessive idle capacity may well be another manifestation of the Big Balance Sheet Economy. Physical overbuilding is certainly not inconsistent with disproportionate balance sheet growth.

Manufacturing Production Slowdown

Chart 41

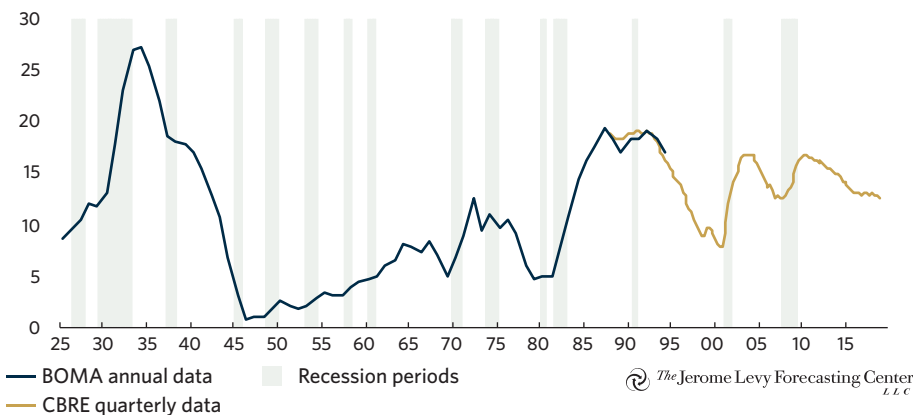
Federal Reserve: Manufacturing Industrial Production
20-year annualized % change, last data point December 2018



Postwar Rise in Office Vacancy Rate

Chart 42

Building Owners and Managers Association (BOMA), CBRE: National Office Vacancy Rate
%, BOMA annual data 1925 to 1994, CBRE quarterly data Q1 1988 to Q4 2018



Box 3.2

A Faster-Growing Economy Needs More Idle Capacity

To illustrate that a fast-growth economy needs more idle capacity than a slow-growth economy, consider this example with two firms. One firm is growing 15% a year and expecting to maintain that pace, and the other is growing and expecting to grow only 5% a year. Suppose each anticipates reaching 100% utilization of their existing capacity exactly one year from now, and each can build a new plant that will be ready just in time. Suppose further that each one wants the new plant to accommodate its needs for the following four years. Then, in a year, when each completes its plant, the fast-growing firm will have added 75% (15% growth compounded over four years) to its capacity and will at that moment have a capacity utilization rate of a mere 57% ($100 \div 175$). The slow-growing firm will have added just 22% to its capacity and will have a capacity utilization rate of 82% ($100 \div 122$). If both forecast sales correctly and neither builds any more capacity, the fast-growing firm’s capacity utilization rate will catch up with the slow-growing firm’s only at the end of the four years after the opening of the new plants, when both firms hit 100% utilization of their expanded capacity. Over those four years, the fast-growing firm will average a much lower capacity utilization rate.

Obviously, our two-firm example is a simplification. The fast-growing firm might instead build one plant now and another in two years. Still, the basic principle is valid: Fast-growing firms will need to anticipate more growth and will therefore require more capacity to grow into at any given time. Thus, slow-growing firms will, in the long run, ideally have higher capacity utilization rates than fast-growing firms. It therefore follows that when the economy’s real growth slows down for an extended period, the economy’s overall desired capacity utilization rate will trend higher.

It is also true that even during a period of sluggish activity and widespread excess capacity, there are always hot new areas of booming expansion (for example, shale oil mining in 2014). Still, for most of the past 20 years, keeping idle capacity to a minimum has been a major concern for American businesses.

Part II: Implications of the Big Balance Sheet Economy and Increased Risk Taking

4. How Swelling Balance Sheets Drove Attitude Changes

The preceding analysis has shown that there is more than “animal spirits” behind the tendency toward riskier financial behavior since World War II and especially over the past 35 years. Quantifiable, macroeconomic changes in the investment and credit environments definitively changed the riskiness of financial activity. Low-risk investment returns became much smaller as the decades rolled by, yet investment targets based on historical returns barely budged, leaving investors and lenders with increasingly unpleasant choices among combinations of expected returns and perceived risk.

Changing Attitudes Played a Role in Riskier Behavior, but Balance Sheets Forced the Issue

Even as people took on more risk, they often moved into new asset classes or cited new investment circumstances that enabled them to think they were carrying much less risk than they really were. They led themselves to believe—or allowed misguided or unscrupulous salespeople to make them believe—that they were successfully circumventing the risk-return dilemma. Meanwhile, managements at banks and many other financial firms faced ever greater challenges to the sound expansion of their businesses, giving rise to financial innovations that often increased profits, at least in the short term, but also heightened risk, both for individual financial institutions and for the financial system as a whole. Within financial institutions, loan standards and investment practices relaxed, and attitudes about financial soundness became increasingly liberal.

These changes did not arise spontaneously in a vacuum. They were driven by the evolution of the Big Balance Sheet Economy, even if there may have been other influences as well. Swelling balance sheet ratios forced financial behavioral changes, but to make those changes palatable, people had to amend their standards and attitudes.

Evolving Attitudes

At the end of World War II, financial attitudes and standards were exceedingly conservative, and it would take many years to greatly change them. Despite the euphoria that followed victory, the national consciousness retained an undercurrent of financial worry. Americans remembered the Great Depression all too well, with its collapsing stock and real estate markets, deflation, widespread defaults, foreclosures, bank failures, ruined businesses, severe unemployment, and other financial trauma. Many worried about a postwar surge in unemployment, since many of the jobs at home had been tied to the war effort and 10 million military personnel would need jobs. On the other hand, there was also a new optimism, the result of winning the war, which contained the seeds of new, less rigid attitudes toward debt.

Initially in peacetime, many Americans were inclined to avoid debt, speculation in securities or real estate, and any other form of financial risk. Although debt grew rapidly from a small base for the next 25 years, a lingering financial conservatism, which was extreme by today's standards, gripped many households and business managements. For example, even in the 1950s, some people thought ill of buying a house using any mortgage financing. As one fellow put it in an anecdote relayed to me by my father, “If you don't have the cash to buy a house, you can't afford it.”

Underlying economic fears persisted even after the first 10 years following the war brought booming real GDP growth averaging 3.6% annually, a rise of about 150% in the Dow Jones Industrials, and an unemployment rate as low as 2.5%. Fears were sustained in part by the 1948-1949 and 1953-1954 recessions. Nevertheless, as a secular prosperity persisted through the 1950s and into the 1960s, and Americans saw recessions unfailingly give way to booming recoveries and bull markets, their fears of a new depression faded.

So, from the war's end through the 1960s, increasing numbers of households and firms slowly became comfortable borrowing judiciously, and lenders gradually relaxed their standards. The G.I. bill helped jumpstart the process of debt expansion by guaranteeing mortgage debt on home purchases by veterans. As time passed, any backtracking in the secular easing of financial standards during recessions quickly gave way to further financial liberalization and more relaxed lending during the ensuing expansions.

Nevertheless, it took perhaps three decades of declining fears for these standards to attain a degree of easiness that we can reasonably call “relaxed” in the full perspective of history—a tribute to how tight standards had been in 1945.

Balance sheet ratios rising from extremely low levels in these first postwar decades probably did not create much pressure on financial decision makers to change behaviors. *But as balance sheets continued expanding, pressure to ease standards and engage in riskier behaviors intensified, becoming increasingly influential with each business cycle. Not only did financial decisions become less conservative; increasingly frequently, they became free-wheeling or even reckless.*

In one business cycle after another, people fell into activities that previously their common sense or ethical principles would have ruled out.

From the mid-1980s to the present—the Big Balance Sheet Economy years—the secular deterioration in the soundness of financial behavior accelerated. In one business cycle after another, people fell into activities that previously their common sense or ethical principles would have ruled out—buying see-through office buildings or farmland at prices that left no chance of earning a positive operating return for years; betting that dot-com stocks would rise rapidly and indefinitely, despite a lack of evidence of financial viability; putting outrageous lies on mortgage applications; giving out mass quantities of AAA ratings on high-risk derivatives; and, more recently, assuring investors that cryptocurrencies were a safe way to store value.

Why did people seemingly learn so little from the collapse of the 1980s commercial real estate bubble, the 1990s tech stock bubble, the 2000s housing bubble, and other financial debacles? By all appearances, it took considerable macrofinancial pressure to induce people who had been hurt by a previous bubble's deflation to speculate aggressively in a new bubble.

It is now clear that swelling balance sheet ratios effectively pressured financial decision makers to take on more risk, since a great many would have made large

sacrifices in terms of their living standards, profitability, jobs, incomes, and fiduciary objectives had they refused to increase risk taking. For example, during the early 1990s, the rate on a 1-year CD, which had averaged over 8% during the 1980s, fell to 3%. Retired investors who could not live on such meager returns had to shift from bank CDs and money market funds to higher-risk assets such as corporate equities. Another illustration of balance sheets forcing risk taking appeared on chart 3 (page 4), which showed the widening gap between pension fund managers' targets and the risk-free long-term interest rate. In 1992, the median target rate of return was 8% annually, roughly equivalent to the yield on a 30-year Treasury bond, but by 2012, the bond yield had fallen to 3% while the return target was still about 8%. Predictably, pension managers gradually invested in more and more risky assets.

One might make the argument that riskier attitudes would have developed and more reckless behaviors would have occurred regardless of whether Big Balance Sheet Economy pressures arose. *However, one cannot realistically argue that if attitudes had not changed, risk taking could have remained the same—standards and behaviors could have remained conservative—through years of swelling balance sheet ratios.* Some trends that are unrelated to the economy's financial structure may have played roles in behavioral shifts, but swelling balance sheet ratios meant that those shifts virtually had to occur anyway.

To close the discussion of evolving attitudes, consider this analogy. If we observe a man running off a railroad bridge as a train approaches, we may not be able to prove that he noticed the train and decided to run for his life. Conceivably,

he might just have felt like running for exercise, oblivious of the train, or maybe he was leaving the bridge just to go get lunch. Yet there is no doubt that the train was coming, it is unlikely that he didn't hear its approach, and there is no question he would have been killed had he not run. It is reasonable to conclude that the approaching train *compelled* him to run, even if we cannot rule out possible roles played by other influences.

Similarly, one may sensibly conclude that swelling balance sheets *compelled* more risk taking. Rising balance sheet ratios were a speeding train that promised a death sentence in the form of subpar returns. If people and organizations had rigidly stuck to their established financial practices, the careers or financial well-being of many household, business, and financial sector decision makers would have been damaged or destroyed. Thus, psychology, sociology, culture, regulation, demographics, technology, and other influences may all have played significant roles in shifting attitudes about financial behavior, but the driving force, at least in the era of the Big Balance Sheet Economy, was the set of macrofinancial changes caused by rising balance-sheet-to-income ratios.

Moreover, as people responded to the new financial pressures, *they caused still more balance sheet expansion as they increasingly speculated on asset prices and made or took out risky loans. Thus, risky decisions in each business cycle contributed to balance sheet growth, which increased the pressures for excessive risk taking in the next business cycle—and the process is still in effect.*

5. Big Balance Sheet Economy May Be in a Topping Process but Continues to Compel Risk Taking

Even after the near collapse of the financial system during the last recession, the effects of the Big Balance Sheet Economy on risk taking made it almost inevitable that the economic and financial recovery of the 2010s would revive the trend toward increasingly risky financial decisions. Granted, in some important ways, the growth of balance sheets relative to incomes appears to be in a topping process. Nevertheless, balance sheets are still huge, and risk taking, after being depressed by the 2007-2009 debacle and lingering problems thereafter, has surged back again, especially in corporate finance and asset markets. The U.S. economy has excessive macroeconomic risk and limited interest-rate-cutting ability by historical standards, and it is heavily exposed to a vulnerable world economy. The economies of the rest of the world have, collectively, record balance sheet ratios, in many cases struggling expansions, and little room to cut interest rates.

Much of the newly assumed risk in this expansion has been typical of the Big Balance Sheet Economy in that it is not productive risk, the sort of risk that is inherent to the operation of a healthy capitalist economy and leads to the creation of better housing, higher productivity, greater business capacity, and technologically advanced products. Rather, it is the kind of risk associated with investing in assets with lofty valuations and making loans at excessively low rates to parties with dubious ability to repay. This

pattern is evident in the juxtaposition of net fixed investment, which has been small in this recovery, against asset price gains that have been considerable over the course of the expansion (chart 43). The longer the economy and asset prices keep growing, the more confident investors become, the more private balance sheets expand, and the more fragile the economy's financial structure becomes.

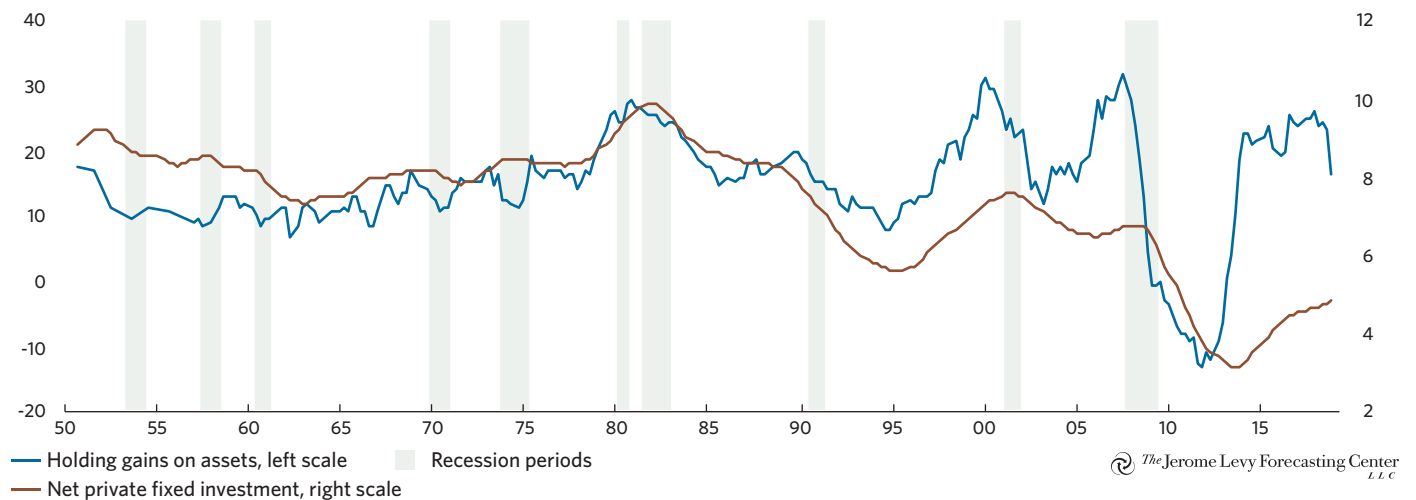
The swelling of the asset side of private balance sheets during the 2010s expansion

has been notable. Asset prices across a wide range of categories have risen, in many cases remarkably, especially in the wake of the jolting lessons of the previous business cycle. The pressures of the Big Balance Sheet Economy have once again compelled investors to bid prices to ear-popping heights. In the first quarter of 2017, the ratio of household assets to GDP reached a new high, surpassing the previous peak in 2007 (see chart 2, page 3), and it continued to rise through the third quarter of last year.

Large Asset Price Gains and Puny Net Investment in Latest Expansion

Chart 43

BEA, Federal Reserve: Net Private Fixed Investment as % of GDP
Nominal Holding Gains on Household Assets as % of GDP
5-year moving average, last data point Q4 2018



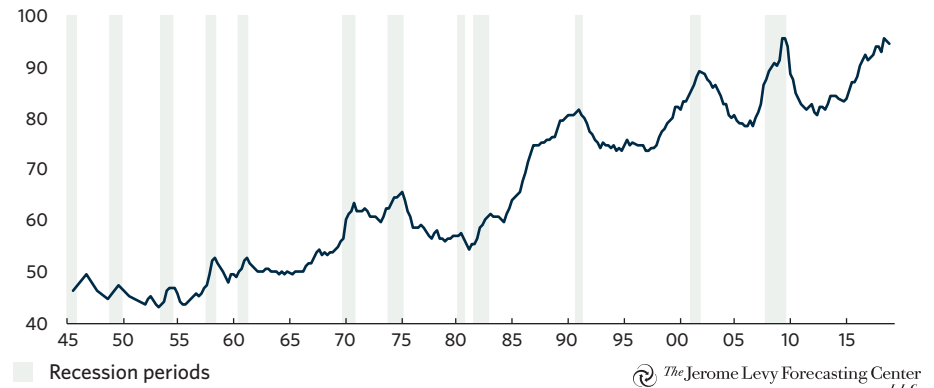
Meanwhile, some categories of debt have declined relative to income, but others have risen. The household sector debt-to-income ratio gave up its housing bubble excesses in the wake of the last recession and has continued to trend lower. However, the nonfinancial corporate sector's debt-to-gross-value-added ratio is near a new all-time high (chart 44). Moreover, if one excludes the largest 5% of listed corporations, the corporate leverage picture is more extreme and worrisome (chart 45). One indication of the risk associated with this increased corporate leverage is the profound rise in the proportion of companies with ratings just above junk levels in the past 10 years.

Yet, there is reason to think that, overall, balance sheets relative to incomes may well be in a *topping* process. The debt-to-GDP ratio for the entire private nonfinancial sector may have peaked for this era in 2009 at 171%; it fell to 145% in 2014 and has since changed little. True, household assets rose to a new peak relative to GDP in 2017, but at least the ratio is not dramatically higher than at the last cyclical peak (the ratio rose from 580% in 2007 to 600% in 2017). Perhaps the transition from the long-term rise in balance sheet ratios to a period of ratcheting down is underway. One should hope so because the alternative is that the economy will become even more financially overextended—that is, balance sheets will be even more disproportionately large than they are now—and the economy will face an even worse set of adjustments.

Private Nonfinancial Corporate Debt Ratio near 2009 High

Chart 44

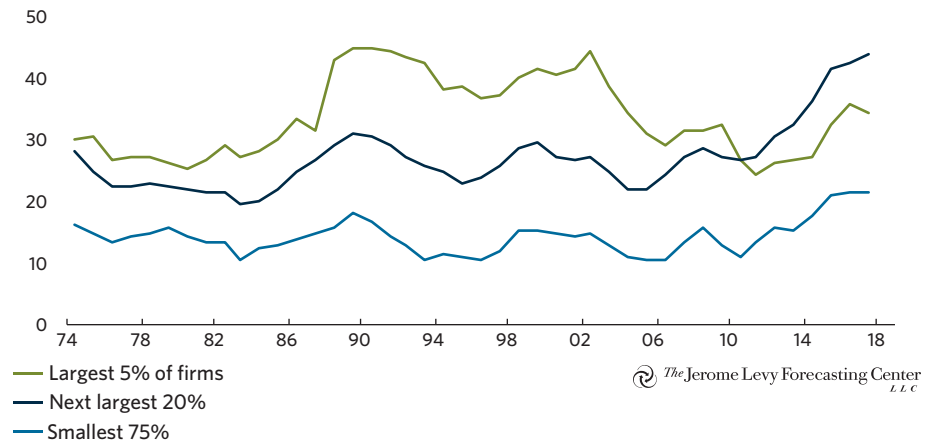
BEA, Federal Reserve: Private Nonfinancial Corporate Sector Debt as % of Gross Value Added
annual data 1945 to 1951, seasonally adjusted quarterly data Q1 1952 to Q4 2018



Record High Leverage Excluding Largest Firms

Chart 45

Compustat, JLFC: Debt less Liquid Assets as % of Sales
publicly traded nonfinancial firms by asset size, annual data, last data point 2017 estimated



Even if balance sheet ratios are going through a long-term, uneven topping process, assets have risen in price and become riskier during the 2010s economic expansion. From their low points, prices of commercial real estate, residential properties, equities, corporate bonds, and other assets have all risen markedly relative to their earnings. Moreover, even if the economy has already experienced the highest ratios of debt and assets to income, both remain historically high, and the adjustments will not be easy.

Evidence of the expanding risk taking during this cycle is visible in the still highly compressed spreads of U.S. high-yield corporate bonds. It is visible in high equity valuations and in many real estate markets, including those markets that are especially accessible and attractive to international investors. It is visible in real

A Big Balance Sheet Economy, wherever and whenever it exists, compels progressively more risk taking.

home prices overall, which are far above previous records except for the peak years of the 2000s bubble.

Investors are well aware that because interest rates and rates of return are low, their returns are unusually dependent on capital gains. Most are not aware, however, that it will be impossible for yields and operating return rates to recover much and sustain higher levels until the economy first experiences broad asset price deflation. After all, asset prices are extremely high in large part because of low interest rates, but interest rates alone do not explain the

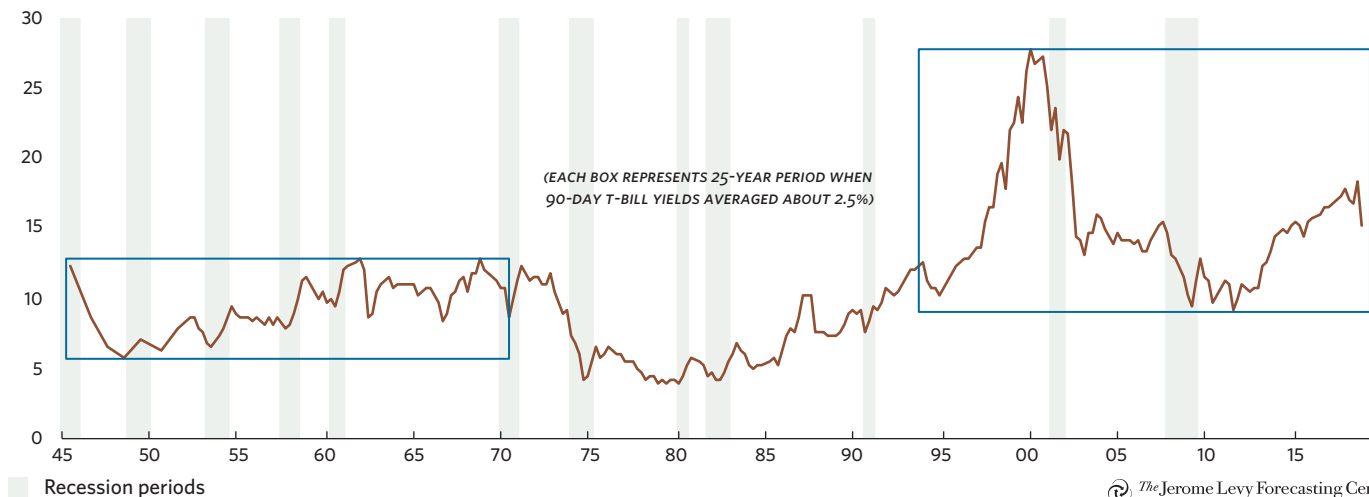
lofty valuations of the Big Balance Sheet Economy era. Note that during both the 25 years from the end of World War II to 1970 and the 25 years from 1994 to the present, the yield on a 90-day Treasury bill averaged about the same, roughly 2.5%. Yet look at the difference in valuations for those two periods on chart 46. Unfortunately, *relying more on capital gains in hopes that they will hold up total returns until operating rates of return and yields recover is an almost paradoxical strategy; capital gains may gratify for a time, but, as we will shortly see, the situation is almost sure to end badly.*

Because of the economy's oversized private sector balance sheets and resultant high financial risk, today's investors in stocks, high-yield bonds, real estate, and various other assets appear destined to eventually see their fortunes turn for the worse. But when? Perhaps

Low Interest Rates Cannot Account for Secular Valuation Rise

Chart 46

BEA, Federal Reserve, Haver Analytics: Ratio of Market Value of Domestic Corporations to 4-Qtr. Trailing NIPA After-Tax Corporate Profits annual data 1945 to 1951, quarterly data Q1 1952 to Q4 2018



soon. Their situations may not be as dramatic as those of the 1990s stock investors and 2000s housing speculators, but they are similar. U.S. macrofinancial risk appears more extreme and imminent when considering the domestic economy and financial markets in the context of the global economy and its financial excesses.

Global Big Balance Sheet Economy

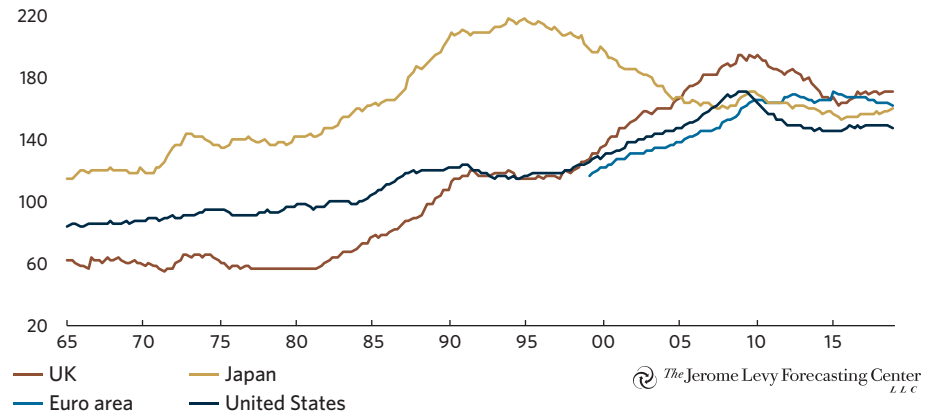
This paper has to this point focused on private sector balance sheets and risk taking *in the United States*. However, the principles discussed here are universal: a Big Balance Sheet Economy, wherever and whenever it exists, compels progressively more risk taking no matter the culture, system of government, laws, geography, or demographics.

In 2019, the rest of the world in aggregate is a Big Balance Sheet Economy, even if not every individual country is. The UK and the euro area show patterns of debt growth and retrenchment similar to those in the United States over the past two decades (chart 47). Japan's lost decades of the 1990s and 2000s were a manifestation of their long correction of balance sheet excesses from the 1980s. The Bank of Japan and, later, the Fed and central banks in Europe were all forced by balance sheet problems to push interest rates to the floor. Outside of the United States, Europe, and Japan, debt ratios are generally higher today than they were in 2007—and in the case of several major economies, well above the U.S. peak (chart 48)—making the rest-of-the-world

Global Private Nonfinancial Debt Ratios (1)

Chart 47

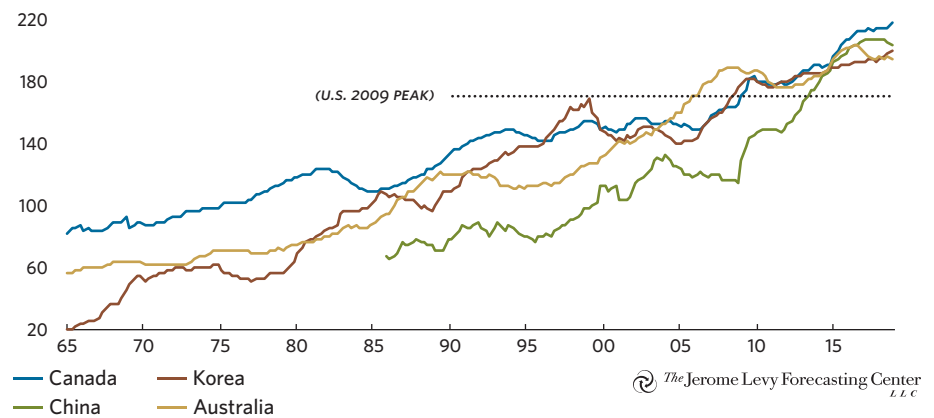
BEA, Federal Reserve, Bank for Int. Settlements (BIS): Private Nonfin. Sector Debt as % of GDP adjusted for breaks, last data point Q4 2018



Global Private Nonfinancial Debt Ratios (2)

Chart 48

BIS: Private Nonfinancial Sector Debt as % of GDP adjusted for breaks, last data point Q4 2018



economy in salient ways more vulnerable than it was on the eve of the last recession, when the United States was the epicenter of the crisis. Overall, the rest of the world now appears more dangerously out of financial balance than does the United States, which, of course, is still very much a Big Balance Sheet Economy.

During the past decade in major developed-market economies, easy fiscal and monetary policies aimed at encouraging expansion and maintaining financial stability domestically have been a boon to asset values in much of the world. These policies also revived debt growth in many countries, and they have enabled some of the world's most financially vulnerable economies to receive vital support from global investors looking for higher returns and willing to rationalize

increased risk taking. During recent years, as attractive yields have been difficult to find in the United States or the other major developed-market economies, and as developed-market asset valuations have become ever richer, capital has increasingly flowed from the developed economies into the emerging-market economies.

China presently stands out for having one of the world's highest debt ratios and for the breakneck speed with which that ratio has risen in recent years, which makes the three-decade surge in the U.S. debt ratio ending in 2009 look tame (chart 49). Whatever China's long-term prospects, which may be bright, the nation has enormous, stability-threatening top-heaviness in some aspects of its balance sheets. China faces severe problems as a Big Balance Sheet Economy

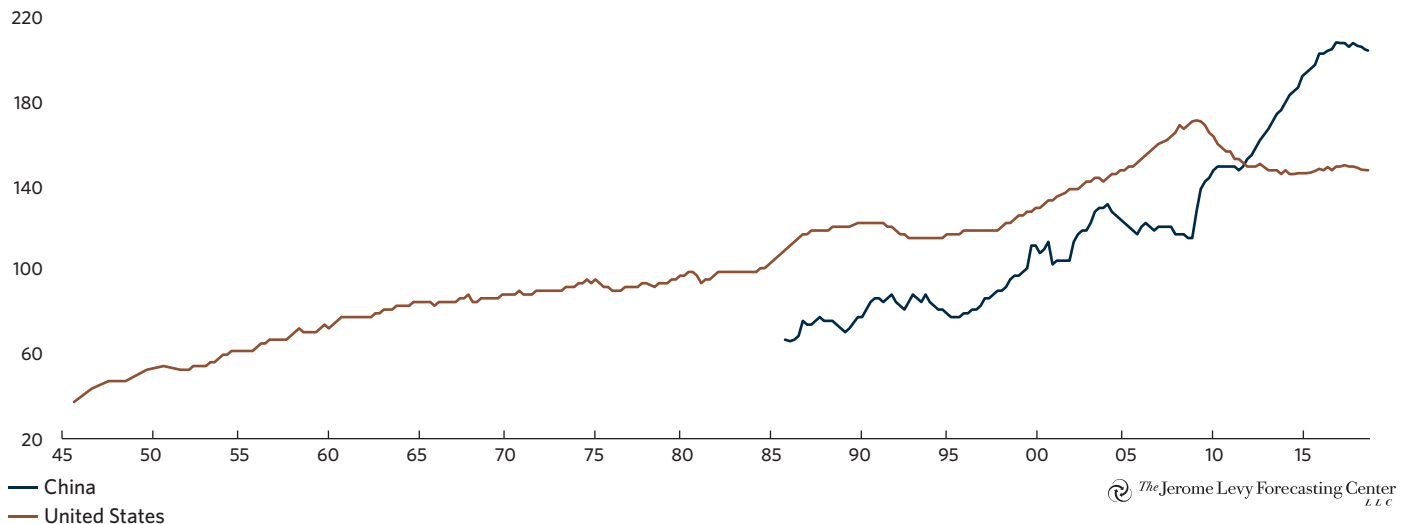
with the almost inevitable prospect of some major, extended era of asset deflation and financial retrenchment. Its extreme debt levels, rampant industrial overcapacity, speculative real estate markets, and plethora of questionable financial arrangements raise the prospect of not only a Chinese financial crisis and recession but also a global crisis and recession. Serious bear markets in Chinese stocks and real estate or a downturn in the Chinese economy would threaten global stability given the state of the rest of the world's finances and China's huge role in international trade.

So far, Beijing has been able to put off recessions and crises but at the cost of enlarging balance sheets and so raising the risks. Over the last year or so, it has been shifting nonperforming loans from banks

Chinese Debt Ratio Soars above U.S. Peak

Chart 49

BEA, Federal Reserve, BIS: Private Nonfinancial Sector Debt as % of GDP
adjusted for breaks, last data point Q4 2018



The Jerome Levy Forecasting Center
L.L.C.

The breaking down of the global Big Balance Sheet Economy expansion need not depend on any of the already existing exogenous threats to stability.

to “bad banks,” which will eventually write them off with the government undoubtedly absorbing the losses. It is also using debt-to-equity swaps to lessen the debt burdens of state-owned enterprises. These measures temporarily arrested the rise in the combined business and household debt ratio in recent quarters, but stagnant debt ratios are incompatible with the abundant new lending that will be needed to continue to power profit generation and economic expansion.

It is not our purpose here to attempt to forecast when or how the financially top-heavy global economy will suffer asset deflation, diminishing liquidity, and major market declines, but certainly aspects of the present expansion are unsustainable. Moreover, the global economy entered 2019 in a precarious state with waning momentum, increasing financial strains, financial market turbulence, and multiple political logjams or crises. The rising U.S. interest rates and volatile global markets seen in 2018 may have been the beginning of the end of the global expansion, or it may yet have another leg. Nevertheless, as balance sheets swell, so do the risks, and the probability of continued expansion erodes.

The breaking down of the global Big Balance Sheet Economy expansion need not depend on any of the already existing exogenous threats to stability—escalating protectionist policies, breakdowns in traditional international relationships, Brexit and other European political turmoil, or worsening military conflicts in various parts of the world. Such threats, if they materialized, could end the expansion and spark balance sheet contraction, but even in their absence, the present cycle of balance sheet expansion will eventually break down on its own.

It is likely (but not certain) in my opinion, based on research at The Jerome Levy Forecasting Center LLC, that the next episode of U.S. recession, financial crisis, and balance sheet contraction will indeed begin internationally. When the U.S. economy does next turn down, global deterioration seems almost sure to be part of the vicious cycle of decline, which in the United States will involve bear markets in stocks, real estate, high-yield corporate bonds, and other vulnerable parts of the financial landscape. In other words, the end of the current expansion will bring something like the 2008-2009 recession and financial crisis, only this time it will be more of a global phenomenon with its epicenter likely in the emerging-market sector. It may not be as bad for the United States as in 2008-2009; it is likely to be worse for most of the rest of the world.

6. No Nice Solution to the Big Balance Sheet Economy Dilemma

If only the Big Balance Sheet Economy in the United States would gracefully morph into a more financially balanced economy, one that is not dependent on bubbles and dubious credit extension to drive it! Restoring much lower balance-sheet-to-income ratios would largely remove the risk of systemic financial crises and would create a stable platform for healthy business growth and development that could provide low- and moderate-risk investment returns adequate for meeting investors' long-term objectives.

Unfortunately, a benign transition from oversized aggregate balance sheets to lean ones is next to impossible. Even in theory, it can be done only through highly contorted circumstances. One difficulty, of course, is that shrinking balance sheets involve the loss of a lot of wealth over a number of years (or at best stagnant real wealth if real income could grow quite rapidly over many years). Neither profound wealth declines nor enduring wealth stagnation is consistent with financial stability—or with political tranquility, for that matter, since a poor wealth trend is an unfailing guarantee of serious constituent dissatisfaction. Yet households' wealth losses are hardly the worst of it. An even bigger problem is that a private economy with shrinking balance sheets cannot generate the profits needed to support itself, while an expanding economy creates enormous pressures for households, businesses, and investors to expand balance sheets.

A common misconception is that the private sector can improve its finances by reducing debt, thus increasing net worth. This process works for individual households or firms but unfortunately not for the entire private sector. The reason is that expanding debt plays a critical role in financing the creation of new wealth—new assets or rising values of preexisting assets. Reducing debt does not increase net worth when assets are shrinking as well.

Before exploring this matter further, keep in mind that we are searching for a possible solution to a problem few people know exists. Even among those observers who see the need for economy-wide debt-ratio reduction or for more easily justifiable asset values (and higher returns), most have limited if any recognition of the historical role big balance sheets have played in inducing financial risk taking. Furthermore, most are unaware of the essential role balance sheet expansion plays in generating aggregate profits

and thus in the normal operation of an economy. For the most part, neither the public nor policymakers have any idea that oversized private balance sheets are the economy's fundamental underlying problem or that balance sheet effects on risk taking are integral to the bubbles and busts of recent decades. Accordingly, the prospects of government actively pursuing policies that will shrink balance sheet ratios without serious economic consequences seem poor—even if such a solution exists.

In the case of the 2000s housing bubble, many people believe that the assignment of blame—the identification of the groups of people and organizations who took reckless actions—is equivalent to explaining the housing boom and bust: bad behavior abused the system and led to the market collapse and financial crisis. Therefore, popular prescriptions for maintaining financial stability are simply steps intended to prevent such reckless behaviors in the future. Suffice it to say, shrinking private balance sheet ratios is not on the national economic policy agenda.

Unfortunately, a benign transition from oversized aggregate balance sheets to lean ones is next to impossible.

Nevertheless, let's suppose that policymakers understand the Big Balance Sheet Economy problem and want to reduce private balance sheet ratios. They face a dilemma: the still unsafe financial condition of the economy—its disproportionately large private balance sheets—is continually forcing riskier behaviors, yet to prevent these behaviors would be effectively to halt the economic expansion and unleash serious financial consequences. If federal government policymakers, including those at the Federal Reserve, want the economy to keep expanding and financial conditions to remain stable in the short term, they cannot sharply rein in private balance sheet expansion. Yet if they do not curtail balance sheet expansion, and balance sheet growth keeps outpacing income gains, the long-term problem will become worse.

The central problem with correcting the Big Balance Sheet Economy by reducing balance sheet ratios—by curtailing debt growth and asset inflation relative to income growth—is simply this:

Private balance sheet expansion is essential to the processes by which a private economy generates profits.

And without profits, of course, the economy cannot function. Moreover, to generate sufficient profits to drive a solid expansion, the private economy requires *brisk* balance sheet growth.

The only potential way to shrink private balance sheets while avoiding economic and financial collapse would require the forced subjugation of the private economy to the federal government to a degree seen in the United States only during World War II, when government deficits powered the economy and private firms and households were largely prevented from borrowing and investing. Short of a similarly contorted (and, unless the country is fighting an all-out war for its survival, severely problematic) set of arrangements, seeking to reduce aggregate private balance-sheet-to-income ratios by reversing balance sheet growth, merely halting it, or even just slowing it to a crawl in hopes that income growth will greatly exceed it is pursuing a paradoxical outcome.

The dependence of business profits on private balance sheet expansion warrants an explanation because it is both fundamental to how a market economy operates and outside the boundaries of prevailing macroeconomic thought. It is a basic observation that requires a financial view of the macroeconomy known as the Profits Perspective.

Start with the *profit sources*, the quantities that together equal total corporate profits in the *profits identity* (or *profits equation*, see box 6.1), a close algebraic cousin of the more widely known saving-investment identity.¹⁸

Box 6.1 The Profits Identity

$$\begin{aligned} \text{Corporate profits after tax} &= + \text{Net private fixed investment} \\ &+ \text{Inventory investment} \\ &- \text{Personal saving} \\ &- \text{Foreign saving (or + current account balance)} \\ &- \text{Government saving (or + government deficit)} \\ &+ \text{Dividends} \end{aligned}$$

The terms on the right side of the equals sign are called profit sources. The domestic private profit sources—the profit sources excluding government saving and foreign saving—are all associated with private sector balance sheet expansion.

Here is a quick way to think about the profits equation. Profits after tax are the wealth accumulated by the corporate sector during a given period (plus the wealth corporations earn but distribute to other sectors in the form of dividends). The profits identity shows that profits are equal to the wealth created in the economy, which is investment, less the wealth obtained by the other sectors, which is their saving. Wealth produced by the economy is accumulated by business if it is not accumulated by the other sectors—i.e., if those other sectors spend rather than save new wealth that comes into their possession, it will flow to business.

Now, consider each of the domestic private profit sources; note that they cannot occur without balance sheet expansion.

- Private investment is by far the most important domestic private profit source. Investment is the creation of new assets. It consists of *fixed investment* in equipment, business structures, intellectual property, and housing, as well as *inventory investment*. This broad profit source and its components cannot occur—and therefore cannot contribute to aggregate profits—without balance sheet expansion. The new assets must appear on somebody's balance sheet, expanding total nonfinancial assets. Moreover, investment is often paid for using debt or other financial instruments, which are both new assets on some balance sheets and new liabilities on others.

- Personal (household sector) saving is a *negative* profit source, as long as households save some portion of their income (as they always have since the early 1930s). In other words, it will reduce, not generate profits. However, if, under extreme circumstances, households were to dissave in the aggregate, the net outflow would be a source of profits. Since declines in personal saving tend to be accompanied by additional borrowing, negative personal saving would likely only occur with a great deal of debt issuance, which would expand balance sheets.
- Even dividends (which merely redistribute wealth among sector balance sheets) may be partly or fully financed with credit, again expanding balance sheets. When firms pay dividends to households, the aggregated private sector has no change in total assets, as cash leaving corporate balance sheets arrives on household balance sheets. However, payments to shareholders use cash flow and usually require firms to raise more external funds than they would have otherwise, creating equity or debt instruments, which expands balance sheets. (Dividends increase profits because they are not an expense when paid out, but they do become business revenue when the recipients, mostly households, spend dividend income.)

¹⁸ For a more thorough explanation, see *Where Profits Come From*, by D. Levy, M. Farnham, and S. Rajan, available at www.levyforecast.com.

Thus, reducing private balance sheets in dollar terms or even holding their size constant would require these domestic private profit sources to make essentially no contribution to aggregate profits. That means that profits would be either zero or entirely the result of some combination of a current account surplus (negative foreign saving) and a government deficit (negative government saving).

Zero profits is obviously antithetical to economic expansion and financial stability. The only time in modern history when the U.S. economy has experienced zero profits was in the depths of the Great Depression amid double-digit deflation, 25% unemployment, rampant bank failures, epidemic foreclosures, and nominal GDP falling as fast as 23% annually.¹⁹ Balance sheets would shrink in such an environment, but at severe costs to society and financial stability.

In theory, current account surpluses and government deficits can by themselves generate adequate profits for the economy to maintain economic expansion, but in practice, serious difficulties arise. Moreover, as we will see shortly, even if these two profit sources were to succeed by themselves in maintaining economic expansion, the expansion itself would tend to thwart balance sheet reduction.

In 2019, to maintain the present level of corporate profits, roughly \$2 trillion or about 10% of GDP, with no contribution from domestic private profit sources would require a vast current account surplus, an enormous government deficit, or some of each.

Clearly, running a \$2 trillion current account surplus is not feasible anytime in the foreseeable future. The U.S. economy has only run a current account surplus greater than 2% of GDP (let alone 10%) in two of the past 90 years, 1946 and 1947, when the productive capacity of the rest of the world had been destroyed by years of war. There are some examples of other major countries running larger surpluses, but few have been sustained for long and most have required exceptional circumstances. Japan, during its booming export years, had a one-year high of not quite 5% of GDP. China reached just under 10% in 2007, at the peak of its export boom (as a rapidly developing economy with a policy-pegged currency and capital controls) before its exports-to-GDP ratio began to plummet. The most China averaged over any 10-year period was 5% of GDP. Germany almost hit 9% in 2015, and its best 10-year average was 7% through 2017, thanks to a currency that was chronically undervalued for Germany even as it was overvalued for many other euro area countries.

If the United States were to depend on a current account surplus for even half of its profits—\$1 trillion or 5% of GDP—it would be an extraordinary achievement.²⁰ Moreover, if the economy were to even get close to such a surplus, the process would almost surely self-destruct by undermining the global expansion and therefore U.S. exports. If the current account balance of the United States, the world's largest net importer, were to swing from a half-trillion-dollar deficit to a trillion-dollar surplus, it would suck \$1.5 trillion in profits from the rest of

the global economy, devastating business conditions around the world. (One country's current account surplus is of course a current account deficit for its trading partners.) In fact, if the United States were merely to wipe out its current account deficit, achieving a balance of zero, the corresponding loss of rest-of-the-world profits would cause a global recession in the absence of extremely strong growth in domestic profit sources in other economies around the world.

Running a huge government deficit, on the other hand, is hardly a remote possibility. The United States does have historical examples of running large government deficits, although never as large for as long a time as would be required, at least not during peacetime. Government deficits are often a key support for profits during recessions and their aftermaths, and in some of those periods of weak profits, government deficits have accounted for more than the entirety of profits generated by the U.S. economy. The U.S. federal government's balance sheet capacity is indeed large, thanks to a history of responsible debt repayment and control over the currency in which debt is issued. Still, politics and other considerations do tend to eventually push back against persistently large government deficits. Then again, sometimes they do not, as when the 2017 tax act widened the federal deficit, which is now back in the neighborhood of \$1 trillion.

¹⁹ The firms in the Standard & Poor's 500 did register negative profits for a single quarter during the tumultuous fourth period of 2008, but not the entire corporate sector, as measured by the national income and product accounts.

²⁰ This analysis is skipping a few details. For example, the big current account surplus would mean a large accumulation on balance sheets of cash from abroad or financial claims against other countries, but if these are used to pay down debt, not to buy or build new assets, balance sheets could shrink.

So, it is conceivable that a continual, massive federal deficit, perhaps with some help from a narrowing current account deficit, could generate enough corporate profits to keep the economy expanding. But this only brings up the next problem.

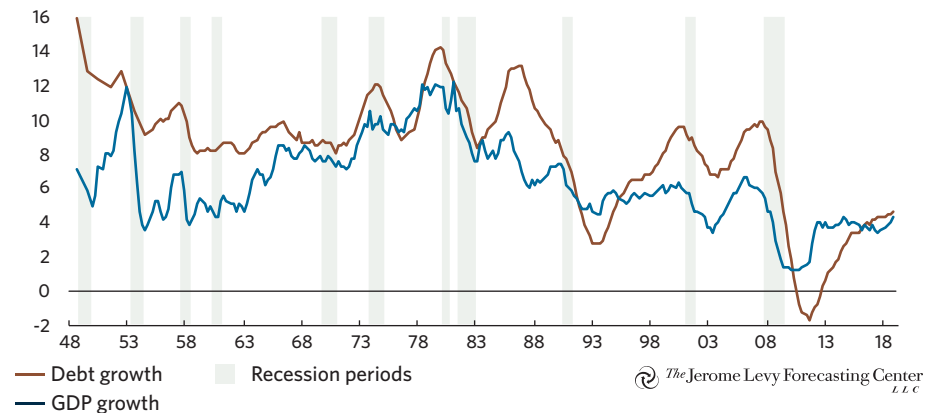
If the country maintains economic stability, the private sector will react to the at least reasonably prosperous conditions in ways that increase net investment and expand balance sheets! Businesses will want to respond to the solid business conditions by investing in expansion and in keeping their operations competitive. Households, earning steady incomes, will want to invest in home real estate and buy major consumer durables. Investors generally will want to invest in the expanding economy through purchases of equities, bonds, commercial properties, and other financial and real assets. Thus, the business and household sectors will increase their net stock of real assets while bidding up asset prices. Furthermore, many firms and households will want to use credit for their transactions. If balance sheets are to shrink, all of these activities have to be severely constrained.

One might consider using high interest rates to discourage private investment, but rates would have to be extremely high to stymie most or all net investment, and it would cause a serious problem. When balance sheets are as bloated as in recent years, sharply rising interest rates would quickly cause a financial crisis by pumping up debt service costs and torpedoing asset valuations.

Debt Growth Correlated with GDP Growth

Chart 50

BEA: Nominal Gross Domestic Product; Federal Reserve: Private Nonfinancial Sector Debt Growth
12-quarter annualized % changes, last data point Q4 2018



A corollary of this point is that the United States cannot simply “inflate our way out of our debt troubles” by relying on inflation to pump up income while debt remains fixed. Significantly rising inflation would lead rapidly to financial crisis through higher interest rates. Inflation would almost surely either compel the Federal Reserve to raise rates, causing financial calamity, or drive up bond yields, which would also cause financial breakdowns—in high-yield corporate bonds, housing markets, and so forth.

So, the country would have to run a vast trade surplus and/or a vast federal deficit *and* find a way to prevent (1) private credit growth, (2) private investment, and (3) broadly rising asset prices, all in a growing economy. Even *attempting* to impose policies to squelch these three activities would be deeply disturbing to Americans and would appear contrary to the notions of competitive markets and freedom of opportunity—even under the completely unrealistic assumption that everyone understood the reasons for the policies.

Of course, to reduce balance-sheet-to-income ratios, in theory, balance sheets do not need to contract outright and could even grow, as long as they expand more slowly than incomes. *However, it turns out to be extremely difficult to maintain income growth, let alone brisk income growth, with slower balance sheet growth in a market economy.* Appendix 6 demonstrates the difficulty in trying to construct such a scenario. The historical record is devoid of any lasting examples of slow balance sheet growth during rapid income growth.

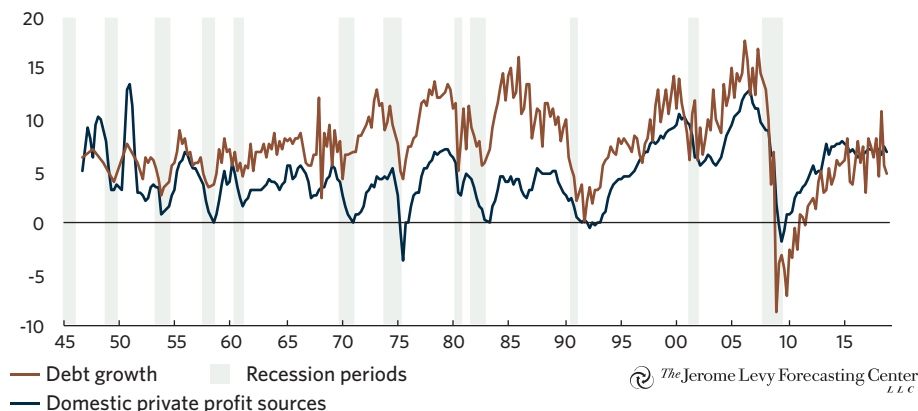
Debt growth correlates well with GDP growth (chart 50). Note that debt growth generally has been faster than GDP growth, except when profits and growth have been supported by huge government deficits, as in the early 1990s and early 2010s, or when high inflation amplified GDP but not preexisting debt, as in the late 1970s.

The incompatibility of slow debt growth and fast income growth should not be surprising after noting above that the domestic private profit sources, and especially the most important, net investment, are heavily

Debt Growth, Domestic Private Profit Sources Closely Correlated

Chart 51

BEA, Fed. Reserve: Priv. Nonfin. Sector Debt Growth & Domestic Priv. Profit Sources as % of GDP seasonally adjusted, annual rate, last data point Q4 2018



dependent on credit. In fact, debt growth correlates even more closely with the domestic private profit sources (chart 51). Moreover, *other* borrowing must occur to create a supportive environment for fixed investment. For example, for healthy net investment in residential or commercial construction, real estate markets must be characterized by at least gradually rising prices. For every house, office building, or mall built, many existing properties must be sold above the cost to the original owners, which means that buyers are typically taking out bigger loans than sellers are paying off, and private sector debt is increasing.

Part of the problem in halting private balance sheet expansion—a process closely associated with risk taking—is that risk taking is a normal, essential aspect of how a market economy works. Although this paper focuses on excessive risk taking, risk taking itself is a healthy and necessary part of running a business, investing, and making decisions on household spending, education, moving to new locations, changing jobs, and so forth. Expanding

the economy's riskiness is inescapably linked to gratification for many participants, including entrepreneurs, investors, lenders, and borrowers. Unfortunately, in a Big Balance Sheet Economy, the expansion of the economy's overall riskiness, which is already too high, is dangerous.

Rising risk has an appealing side, providing capital gains, stronger earnings, readily available credit, and, consequently, solid loan performance for a while. The attractiveness of these phenomena hinders any government efforts to rein in risk taking, even when the targets of regulation are flagrantly unhealthy financial activities, such as the reckless lending practices of the recent housing bubble. Consider, for example, that it took the Federal Reserve and four other financial regulatory authorities until October of 2006—more than two years after unsound mortgage lending practices became rampant—to send a mild letter to banks and other lenders notifying them of what should have been a no-brainer regulatory position. The five regulatory authorities' message after more than a year of study,

deliberation, and soliciting feedback from the industry was simply that banks should not make loans to borrowers who could only afford low initial teaser payments and could not afford to service their loan after the introductory period.²¹

It is tempting to think, as many people did after the bursting of the housing bubble and associated financial crisis, that there would be no excessive risk problems if only governments here and around the world would simply ban overly risky behavior and enforce the rules, thus reducing both U.S. and global financial danger while maintaining economic expansion and financial stability. Unfortunately, in reality there is no practical, benign way to reduce the private sector's already excessive risk and overbuilt balance sheets.

The preceding discussion makes clear why the unique situation of World War II was necessary to simultaneously expand the economy and rapidly finish the balance sheet cleanup begun by the Great Depression. That situation included grave household and business fears, great uncertainty, government quotas, outright bans on some kinds of spending, a powerful social force for the population to comply with the government's programs, massive government deficit spending equal to a quarter of GDP, and hyperdrive income growth.

In summary, without balance sheet expansion, it is exceedingly difficult to achieve the profits necessary for the economy to function. Moreover, once those profits are achieved, it is also exceedingly difficult to stop households and businesses from responding by borrowing and investing, thus reaccelerating balance sheet expansion and defeating the entire purpose. Bubble or nothing.

²¹ *Interagency Guidance on Nontraditional Mortgage Product Risks*, September 29, 2006. <https://www.federalreserve.gov/boarddocs/srletters/2006/SR0615a2.pdf>

What Will Happen, and What Can Government Do?

The eventual balance sheet correction in the United States will almost surely involve some difficult years with serious financial turbulence, systemic credit problems, and generally unsatisfying economic conditions. To cure the economy of its oversized, inherently unstable private balance sheets will unavoidably require periods of deleveraging, which can be unpleasant, and wealth contraction, which is always unpleasant. Still, the unpleasant economic consequences of balance sheet contraction could be mitigated at times by major government interventions, depending on the situation and the needs of the country as these adjustments play out.

As the U.S. government demonstrated in 2008 and throughout the crisis, it has the financial strength and established institutions necessary to stabilize the domestic economy and financial system under extreme circumstances. Barring foolish government blunders—such as allowing a collapse of the banking system would have been in 2008—the United States will avoid another Great Depression and will in all probability get through the weakness associated with balance sheet adjustments in less time than Japan's two-plus lost decades.

Granted, there is no realistic set of federal policies to painlessly solve the Big Balance Sheet Economy dilemma. Indeed, the preceding pages of analysis do not yield even a crude blueprint for the best policies for this era, given all the variables, uncertainties, and policy paradoxes. Nevertheless, the Big Balance Sheet Economy and bubble-or-nothing analyses in this paper do offer important conclusions for economic policy.

They include the following four priorities for policymakers.

- 1. Congress should increase deficit spending (a source of profits) to stabilize the economy when it is contracting or seriously depressed, ideally while addressing long-term public investment needs.** The public sector can create public assets while it is running up public debt, whether the investment is in infrastructure, national security, environmental protection, or other areas deemed critical to the national interest.
- 2. The central bank, Treasury, major financial regulators, and the federal government generally should stand ready to prevent a systemic banking system failure when crises erupt.**
- 3. Authorities should promote an orderly and timely cleanup of balance sheets when problems with debt, collateral, and bank solvency give rise to systemic crises.** This is the opposite of what the Japanese authorities did from 1990 through 1997, when they allowed banks to continue carrying nonperforming

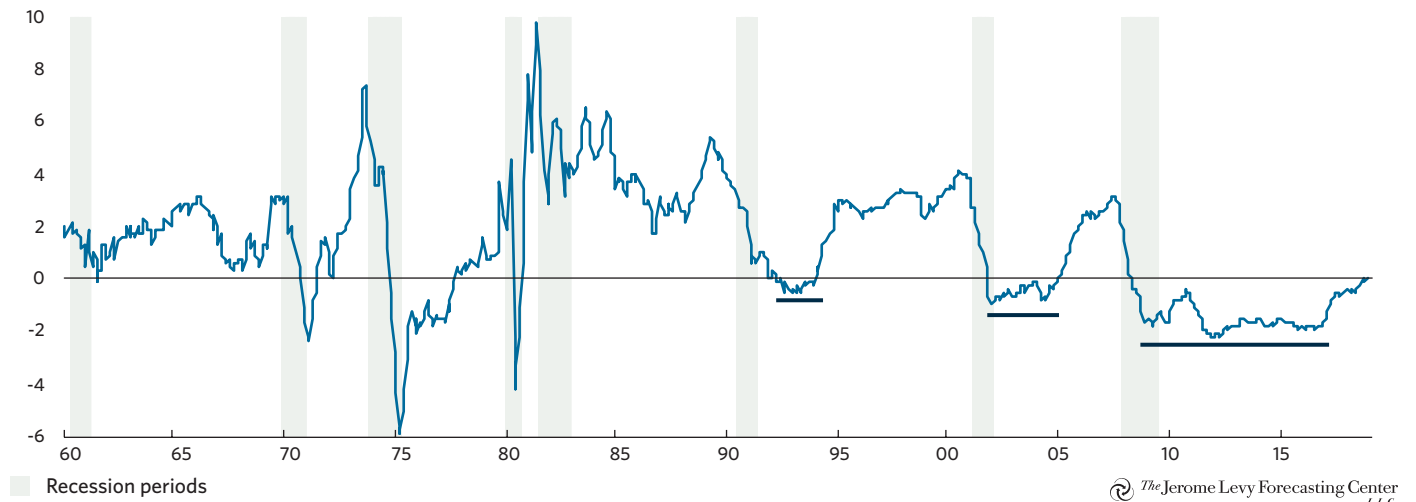
loans with deflated collateral at their full original values. A more successful model was the Resolution Trust Corporation in the United States, which, once it was finally created, cleaned up the savings and loan mess. Another was the collection of Federal Reserve, congressional, Treasury, and other federal policy actions that contained the post-housing-bubble financial crisis while managing its casualties and maintaining order during a massive write-down of home mortgage debt. (Home mortgage debt, which peaked in early 2008, declined by \$1.2 trillion or nearly 12% over the next seven years mostly due to write-downs, and the mortgage-debt-to-income ratio fell from 100% to 70%.)

- 4. In applying both monetary and fiscal policy, government should try to avoid promoting major re-expansions of private balance sheets.** This is by far the trickiest priority to address, because successfully ending recessions, reducing unemployment, and containing financial instability tend to spark rebounds in asset markets. Still, government could lean more on fiscal policy (especially public investment) to generate profits directly and thus stabilize the economy while leaving asset markets to correct rather than employing extreme monetary policies that work by promoting soaring asset markets and thus boosting profits through positive wealth effects. And government could avoid policies that provide extraordinary support to asset prices, such as tax cuts or new unfunded spending programs intended to create booming conditions when the economy is already cyclically strong.

Real Rates Have Had to Stay Lower Longer to Support Recovery

Chart 52

BLS, Federal Reserve: Effective Federal Funds Rate less Year-Over-Year % Change in Core CPI
% per annum, last data point December 2018



It is not clear at present which specific policies will most effectively address these priorities and when they should be implemented. In fact, the optimal policy programs will probably never be entirely clear, even after the fact. *Nevertheless, these priorities can help avoid severe policy blunders.*

***The U.S. government
has the financial strength
and established institutions
necessary to stabilize
the domestic economy
and financial system under
extreme circumstances.***

Although the United States could weather reasonably well what is likely to be a number of challenging years of shrinking balance sheet ratios, one should not underestimate the financial stresses that lie ahead. One reminder of the risks is the record of real interest rates in recent recessions. In each successive business cycle of the Big Balance Sheet Economy era, real interest rates have had to fall to a lower level and stay there longer to support recovery from recession and financial crisis (chart 52). In the next recession, given a near-zero floor on the nominal federal funds rate²² and the potential for deflation, real rates may have a floor well above zero and far above the *minus 1.4%* average of the past decade. Such a situation would increase reliance on government fiscal policy to combat deflation and support profits and expansion.

Overall, the outlook for the United States, while deeply troubling, is not apocalyptic. However, the dangers are greater for many emerging-market economies with currencies that can become unmoored and depend heavily on the confidence of foreign investors. Flight from their currencies puts pressure on their central banks to raise interest rates and on their governments to limit deficit spending, actions that reduce liquidity and aggravate domestic economic weakness. These economies are likely to face rougher adjustments than the United States. To make matters worse, since many of these countries do not have long histories of political stability, economic deprivation can lead to social unrest and political upheaval.

²² It is possible that the Fed would push the federal funds rate slightly below zero, as central banks in some countries have done with policy rates, but it could not do much more without seriously disrupting economic and financial activity. A slightly negative federal funds rate would still mean a positive real interest rate in the event of significant deflation.

The phrase, “full faith and credit of the United States Government” is arguably the strongest financial guarantee in the world. “Full faith and credit” of the government of Peru—or Egypt, the Philippines, Afghanistan, Ukraine, or Greece—hardly carries the same weight. Moreover, if emerging-market and other financially vulnerable countries require help, it will not come easily from the major economies of the world. The financially strong nations, including the United States, Japan, the members of the euro area collectively, the United Kingdom, and a few others, seem likely to be more reluctant than in past cycles to come to the rescue of troubled foreign neighbors. Populist-isolationist politics are running strong in developed-market economies, most of which are struggling with their own Big Balance Sheet Economies. The International Monetary Fund is much too small to contain a potential epidemic of troubled economies in the now enormous emerging-market sector.

As already noted, the cause of the next downturn in the United States—and the next episode of U.S. private sector balance sheet contraction—may well be overseas recessions and financial crises that in large part reflect excessive balance sheets relative to incomes. Although the U.S. economy has historically been called the locomotive of the global economy, leading the world into and out of recessions because of its sheer size, strength, and vast net imports, in the next global retrenchment the rest of the world is likely to pull down the U.S. economy.

Bubbles May Endure for Surprisingly Long, but Not Forever

There is a popular saying, “Markets can remain irrational for longer than you can remain solvent.”²³ The forces for increased risk taking discussed in this paper are reasons for market prices to run not only beyond rational valuations—that is, valuations based on the incomes assets generate and the prospects for growth in

those incomes—but also, sometimes, *far* beyond and for years. Until real financial trouble emerges, credit in the United States will remain readily available and keep expanding, and bull markets will likely persist in at least some major asset categories.

During the last three business cycles, the major bubbles driving the economy have not been hard to identify, and their critical roles in the economy have been easy to spot, especially with the aid of the Profits Perspective. Nonetheless, these bubbles expanded further than seemed possible to most analysts who recognized them long before they burst. The inertia of risk taking outweighed prudence in the marketplace, while ingenuity and innovation found ways to keep the bubbles inflating.

For example, housing sales showed signs of weakening in mid-2004 as mortgage rates moved erratically higher, but rapid growth in interest-only, negative-amortization, subprime, and no-documentation (“liar”) loans, often offered with extraordinary recklessness, kept home sales buoyant through 2005. Even after sales turned down, when history argued that mortgage

²³ This statement is widely attributed to John Maynard Keynes, but it appears that it was actually first uttered by A. Gary Shilling in a Forbes interview in February 1993.

During the last three business cycles, the major bubbles driving the economy expanded further than seemed possible to most analysts who recognized them long before they burst.

lending standards should have tightened, standards kept easing for over a year. The reason: the mortgage derivative machine on Wall Street kept selling high-rated but actually toxic products to a hungry institutional market. This kept the mortgage market reckless and consumer spending boosted by cash-out refinancings even as collateral values were falling.

The Nasdaq bubble of the 1990s also defied predictions. Alan Greenspan, Federal Reserve chairman, made his famous speech about “irrational exuberance” in December 1996 amid soaring valuations in the technology sector.²⁴ Yet, the market kept rising for more than three years. At the end of 1999, in spite of rising interest rates,

the Nasdaq rose from 3000 to 4000 in just two months—and then soared above 5000 in the first quarter of 2000 before peaking in March. Many Internet firms were selling at fantastic valuations despite having no actual business—or at best a fledgling one that was generating little or no revenue—as speculators argued that “clicks” were all that mattered and money would somehow come later.

Thus, *the excessive risk on a macroeconomic scale in today's economy does not necessarily mean near-term losses and failures.* In this expansion, despite many highly vulnerable global markets, we must be careful not to jump the gun in predicting the breakdown of financial stability and economic expansion. Yes, the next crisis and recession could develop rapidly and soon. Alternatively, just as financial decision makers found ways to extend the lives of the 1990s tech bubble and the 2000s housing bubble, so too might they extend bubbles in the present business cycle. Bubble or nothing.

What seems almost certain is that both the world and U.S. economies face long, difficult financial adjustments before lean balance sheets and economic rejuvenation become possible again.

²⁴ Remarks by Chairman Alan Greenspan at the annual dinner and Francis Boyer Lecture of the American Enterprise Institute for Public Policy Research, Washington, D.C., December 5, 1996. <https://www.federalreserve.gov/boarddocs/speeches/1996/19961205.htm>

7. Conclusion

To reasonably well-informed people who watch the economy, either professionally or as part of their business or investment activities, it may seem that the U.S. economy should be able to chug along over the next generation, following for the most part a healthy, financially stable path. While people know that recessions, credit cycles, and asset market corrections will occur, they commonly expect that the economy will go on more or less as usual. They tend to believe that the main macroeconomic threats are grievous government policy errors or extreme exogenous shocks. They may believe that absent either of these developments the economy has a good shot at enjoying a normalization of interest rates (i.e., a restoration of higher but sustainable yields) in the next few years and generally prospering for a long time to come.

Unfortunately, this favorable scenario is all but impossible—no matter what the government does or how lucky we are in avoiding exogenous shocks—because of two facts and their implications.

1. Private sector balance sheets swelled relative to private sector income over many decades, and balance-sheet-to-income ratios remain extremely high even after the reversals of some balance sheet trends during the last recession and afterward.
2. This disproportionate balance sheet expansion changed financial parameters in the economy, making economic activity intrinsically riskier and compelling increasingly risky financial behavior, thus leading to correspondingly more extreme performance swings in the financial system and the economy.

These two facts imply that the private economy will either move to a more extreme financial position or turn down. The Big Balance Sheet Economy cannot power itself for long without the continued swelling of private balance sheets relative to income, making it more extreme and distorted. Yet the game must eventually come to an end. There is, at some point, a limit to how disproportionately large U.S. private balance sheets can become, and balance sheet ratios may already be in an extended topping process.

Below are more specific implications of this paper for America's economic history, present situation, and outlook. They stem from (1) unambiguous empirical evidence of swelling balance sheets, (2) the mathematical consequences of swelling balance sheets for risk, (3) the direct linkages between balance sheet expansion and the sources of business sector profits, and (4) examinations of historical behavior, practical constraints, and how both narrow the range of possible developments in the Big Balance Sheet Economy.

Since the mid-1980s, the U.S. economy has been swept up in a series of increasingly balance-sheet-dominated cycles, each cycle involving to some degree reckless borrowing and asset speculation leading to financial crisis, deflationary pressures, and prolonged economic weakness. Each troubled episode has compelled government to engineer dramatic new lows in interest rates, aggressive fiscal stimulus, and other stabilization measures. Each time, these influences have established at least a sluggish economic recovery but also planted the seeds of the next round of rapid balance sheet expansion. In the Big Balance Sheet Economy, ending a recession and crisis has meant halting or at least moderating balance sheet contraction, and establishing a new economic expansion has required brisk balance sheet expansion. Thus, each cycle has led to new balance sheet excesses with inflating asset bubbles playing major roles in generating profits.

The 2000s housing bubble, or something like it, was bound to happen. Had there not been the mania in the housing market, the mortgage-backed asset boom, and all the risky and sometimes reckless, foolish, or dishonest behavior that accompanied them, then some other set of highly speculative, excessively risky, and destabilizing behaviors would have been virtually inevitable. Thanks to the tyrannical mathematics of the Big Balance Sheet Economy, people could not meet their financial goals, obligations, and expectations through financially sound behavior, and the option of settling for much less was too painful for many. They therefore rationalized behavior that gave birth to a bubble, and the inflating bubble drew in more participants and encouraged even more reckless behavior. The same can be said of the 1990s tech bubble and other major bubbles from the 1980s onward.

Although changing attitudes and standards facilitated riskier behavior during the tech stock, housing, and other bubbles, it was the pressure of swelling balance sheets that compelled that behavior.

The attitude changes were part of the mechanism of adjustment as people tried to cope with an increasingly unfavorably skewed set of potential financial outcomes.

A critical tool for rescuing the economy from the financial turmoil and recessions of recent decades will not be available any longer.

The Fed's actions in cutting interest rates to major new lows have been critical both for stabilizing economic and financial conditions

and for launching the next cyclical episode of expanding private balance sheet ratios. Now, however, rates have run out of room to fall. Nominal interest rates cannot break the last cycle's low near zero—at least, not without entering the problematic realm of negative interest rates. Although some countries have already applied modest negative rates on central bank deposits, limited movements below zero have less stimulative effect on the economy than cutting positive rates, if they have a net stimulative effect at all, and rates markedly below zero do not appear workable. Moreover, if inflation falls to new lows in this cycle, or even gives way to modest deflation, real interest rates will bottom out at a higher level than during the last recession and crisis, providing less relief.

Increasingly unsound risk taking has been occurring again in the 2010s. The last financial debacle taught painful lessons to policymakers, regulators, financial sector leaders, business managements, and households, and one might think them chastened and made prudent by the experience. Nonetheless, powerful forces have once again pushed them toward riskier behavior.

Today's excesses may be less visible than those of the 2000s, but they are greater than they appear because they are linked to the unsound and highly vulnerable finances of the rest of the world. Indeed, there is a *global* Big Balance Sheet Economy, and the challenges faced by the United States have parallels in much of the developed-market world. Moreover, the emerging-market sector, now roughly half the global economy, has its own excessive balance sheet problems with much less ability to weather instability.

The present cycle is almost certain to end badly, although just when and initiated by what triggers remain to be seen. Extreme balance sheet ratios and risky financial behavior often last for an unexpectedly long

time, perpetuated by surprisingly innovative if at times pathological behavior. However, once balance sheets begin to contract, financial conditions can unravel rapidly.

Big balance sheets mean that normalization of interest rates is not in the cards anytime soon. As long as balance-sheet-to-income ratios remain at all close to current, excessive levels, interest rates cannot rise much without undermining financial stability, driving rates back down. Yields and operating rates of return will remain well below investment targets until either those targets fall dramatically or balance sheet ratios shrink dramatically, and that will take time.

There is no nice solution to the Big Balance Sheet Economy dilemma, no plan for a politically acceptable resolution. The task of preserving prosperity while shrinking assets-to-income and debt-to-income ratios is fraught with inherent contradictions and countervailing feedback effects. This is not to say that there is absolutely no possible way to maintain strong profits and to shrink private balance sheets at the same time. During World War II, unique circumstances created a red-hot economy with some balance sheet ratios shrinking and others constrained. In 2019, however, it is hard to see a realistic and desirable way to achieve a similar feat of prosperity during balance sheet contraction and thus to benignly deflate the Big Balance Sheet Economy. After all, balance sheet shrinkage means declining wealth, which is neither a popular nor stability-enhancing phenomenon.

The economy's financial excesses are more difficult to repair than an individual's balance sheet. By thinking micro instead of macro, people incorrectly assume that the economy could eliminate financial excesses and heal itself if only participants would behave financially conservatively

for a while, just like the leaders of a single firm or household might. This thinking is a fallacy of composition: although an individual entity often can reduce the riskiness of its own financial position, the entire private sector cannot without grave, macroeconomic consequences or massive, countervailing government policy efforts.

The Big Balance Sheet Economy in the United States may well be slowly transitioning from increasing financial extremes to a secular correction. Private nonfinancial sector debt peaked relative to GDP in 2009, and household assets relative to GDP in 2018 were only moderately higher than in the last business cycle. If the debt and asset ratios characteristic of the Big Balance Sheet Economy are indeed in a topping process, the good news is that the financial excesses and severe risk in the economy will not keep getting worse; the bad news is that unpleasant adjustments will ensue.

One of the reasons why mainstream economics failed to foresee the last financial crisis and fails to acknowledge the risks ahead is that the assumptions underlying its models leave no room for the critical macroeconomic and macrofinancial realities discussed in this paper to exist. Mainstream thought has largely focused on the degree to which the economy is on or near an optimal long-term growth path as prevailing theory suggests it ought to be. Moreover, whereas empirical mainstream work has incorporated financial variables into macroeconomic analysis, critical aspects of the economy's dynamics are still widely neglected. There is a dearth of attention paid to aggregate balance sheet ratios and their influence on financial risk taking, the relationship between balance sheet expansion and profits generation, and the destabilizing effects of balance sheet contraction.

Although the long process of resolving America's present-day Big Balance Sheet Economy is in many ways unpredictable, the near inevitability and disruptiveness of a major secular adjustment argue for generally conservative financial strategies.

Household financial planning and business management will likely benefit from recognition of the unusual threats to asset markets, economic conditions, and credit availability in the years ahead. Investment strategies should place greater emphasis than usual on protecting capital, assuring liquidity, and avoiding exposure to risky counterparties. These priorities are not intended as a recipe for maximizing year-to-year outcomes; instead, they represent an appropriate long-term stance for a period of balance sheet contraction.

Although there is neither a realistic set of federal policies to painlessly solve the Big Balance Sheet Economy dilemma nor even a blueprint of what the optimal policies should be, the situation implies several important priorities for policymakers:

1. providing deficit spending to stabilize the economy when it is contracting or depressed (ideally while addressing long-term public investment needs)
2. standing ready to prevent a systemic banking system failure
3. supporting orderly balance sheet cleanup when problems arise
4. avoiding policies that promote major re-expansion of private balance sheets

It is not clear at present which specific policies will most effectively address these priorities and when they should be implemented, but at least these priorities can help avoid severe policy blunders.

* * *

It would be gratifying if the Big Balance Sheet Economy was a simple, easy-to-understand problem that implied a clearly defined set of policy actions that Washington and the nation could get behind. In fact, the analysis in the preceding pages does have profound implications for policy, but unfortunately the problem posed by the Big Balance Sheet Economy is multilayered, dynamic, and difficult for a broad audience to understand. Worse still, it is paradoxical—the country will face a bubble-or-nothing outlook until balance sheets can no longer expand, and then it will almost surely go through adjustments that will frequently be unpleasant and disheartening. Furthermore, when policymakers inevitably respond to the unpleasant symptoms, as well they should, they may end up excessively reflating balance sheets. Such backtracking on balance sheet correction will prolong the correction and its negative consequences. Barring truly extraordinary events, there is no realistic path to long-term economic health and stability that is not both difficult and prolonged.

Still, government can respond to emergencies, reduce the economic fallout of balance sheet correction, and avoid disastrous blunders. But will it? Here, history is somewhat encouraging. The U.S. government, including the Federal Reserve, has in the recent past demonstrated its understanding of the need to rescue the banking system and the broader financial sector from systemic crises. It also has a long history of responding to recessions and severe economic weakness with interest rate cuts and fiscal policy. Finally, Washington has some track record supporting orderly balance sheet cleanups, although not always swiftly. The danger that government will fail in some of these critical areas is tied to either the potential ascension of a radical ideology that rejects these responses or the possibility of grossly incompetent leadership. If the country can steer clear of both hazards, the government will likely continue to more or less “do the right thing” during emergencies. The biggest question may be whether it will be able to avoid reflating asset prices and promoting excessive borrowing.

It would be satisfying to be able to pull from this paper cut-and-dried strategies for private sector decision makers, but again, the climax and denouement of the Big Balance Sheet Economy era are likely to be both daunting and mercurial. Uncertain government policy just adds to the reasons for financial institutions, investors, business managements, and households to prepare for a volatile, rough ride in the years to come. This situation argues for a long-term strategy of financial defensiveness and flexibility.

The U.S. economy continues to face a bubble-or-nothing outlook. Either participants in the economy and markets will continue increasing their financial risk or the expansion will soften and break down. In 2019, there appears to be diminishing potential to keep blowing bubbles. The Big Balance Sheet Economy is flirting with its limits, and the global financial backdrop has become extremely fragile.

Appendixes

Appendix 1

Bubble or Nothing: Links to Hyman P. Minsky

Students of Hyman Minsky will notice that certain dynamics discussed in this paper flesh out aspects of his theories—that is, they are some of the mechanisms behind changes he predicted. Indeed, while this paper analyzes relationships that Minsky did not explicitly write about, I suspect that he had many of them in mind. Even if the events of recent decades included dynamics that were not specified in his writings, they are consistent with his broad theory about how economies systematically take on more financial risk until their financial fragility eventually leads to a breakdown and crisis.

Minsky tended to express big ideas with Zen-like simplicity, leaving it to others to think them through and come to understand them. I know economists who, after days, months, or years of mulling over one of his gems of wisdom, had epiphanies and then rushed off to tell Hy about their breakthroughs, only to have him matter-of-factly reply, “Yes, of course.”

One part of Minsky’s view is usually underappreciated, forgotten, or not noticed in the first place: *Balance sheet expansion is connected to the economy’s creation of aggregate corporate profits*. Therefore, it is also connected to the performance of the nonfinancial business sector of the economy and to the business cycle.

This connection is visible in the financial view of the economy Minsky employed, an approach that in recent years has been called the Profits Perspective because it centers on the aggregate profits identity (see box 6.1 on page 44). Many economists who have studied Minsky have had difficulty viewing the economy in this manner because it conflicts in fundamental ways with their mainstream economic world view, whether that be the neoclassical paradigm (the dominant establishment model during much of Minsky’s career), variations of it, or more contemporary, rational expectations bottom-up stochastic models.

Perhaps the most famous Minskian conclusion is that financial and economic stability leads to instability. This process actually occurs on multiple levels. The best-known of these is that good times lead to expectations of more good times and thus to falling perceptions of risk, which in turn lead to riskier behavior. However, Minsky also described other ways that stability leads to instability, including how changes in the institutional structure and financial structure would make the economy inherently riskier. As this paper shows, balance sheet expansion can change financial parameters affecting financial decisions and make the economy riskier even before considering any changes in attitudes and expectations. Stability accompanies prosperity, and when together they lead to rising asset valuations and increasing leverage—to bigger balance sheets—they compel riskier financial behavior.

It is easy to ingest a large serving of Minsky’s analysis while still leaving out some of the most critical elements. His views of the economy were multilayered and complex, with influential roles played by psychology, sociology, information channels, policy, uncertainty (an unknown future, not to be confused with risk, which means unknown outcomes from a known or presumed probability distribution), financial structure, regulation, degrees of financial stability, and more. Minsky saw the economy as a complex and dynamic living organism that is to a significant degree unpredictable. This organism has growth spurts and lulls, can become sick and recover, continually evolves, and in fact changes fundamentally in response to its own experience and behavior. By contrast, most economists from World War II at least until a generation ago modeled the economy as a kind of machine (and most people over age 35 or 40 who studied economics were taught more or less the same model). Some of these economists portrayed a machine that will run well under normal conditions but poorly if bad government policy interferes. Others have put more emphasis on various kinds of frictions and “imperfections” that can muck up the works, including flawed or asymmetric information, moral hazard, externalities, and excessive market power. Still, the nature of this poorly running machine does not include the evolving financial structure, the changing financial choices available in the economy, and the sliding norms of acceptable behavior discussed in this paper. Nor does it include the systemic, inexorable long-term movement toward greater financial vulnerability that characterizes Minsky’s view of the economy.

More recently, the dominant thrust within macroeconomics has been to view the economy as a set of stochastic processes, where participants in the economy cannot know outcomes in advance but do know their probability distributions. In these models, the economy’s behavior (assuming no major, counterproductive government interventions or exogenous shocks) is bound by sets of probability distributions, which may be intricate and complex but are in some sense grounded in statistical tendencies. Such models cannot portray a Minskian economy, one that incorporates evolutionary structural changes that lead to chaotic results. The system itself changes in response to its own condition and behavior, like a computer that does not merely repeat itself but in fact over time *reprograms* itself. As shown above, swelling balance sheet ratios cause changes, including the alteration of actual and perceived probability distributions for investment returns, which in turn lead to changes in behaviors that further alter potential outcomes. The system becomes capable of outcomes that do not occur in standard models, such as bubbles, crashes, and systemic financial crises that were not nearly as likely under earlier conditions.

Appendix 2

The Difficulty of Achieving Secular Swelling of Balance Sheet Ratios in the Absence of Rising Capital Gains Rates

The following statement summarizes the assertions from the discussion of points 5 and 6 in section 2 that this appendix will investigate.

It may not be possible to prove definitively that secular increases in capital gains—relative to income and to assets—are inevitable aspects of any major secular increase in balance-sheet-to-income ratios. Nevertheless, as a practical matter, constructing a scenario with balance sheet expansion like that experienced in the United States in past decades without disproportionate growth in capital gains is extremely difficult.

Here is a brief examination of why.

To begin with, observe that if capital gains grow larger relative to assets in the long run, then they will also grow larger relative to income, based on one of the premises for this exercise, that income grows more slowly than total assets. Therefore, this discussion only needs to focus on the expansion of capital gains relative to assets.

Specifically, the question is whether we can construct a scenario meeting both of the following conditions:

1. The household-assets-to-GDP ratio grows as fast as it did during the Big Balance Sheet Economy era.
2. Inflation-adjusted capital gains *do not* become larger relative to assets over the long run.

Note that there are three ways in which the value of the household sector's asset holdings can increase: (1) price appreciation, (2) the accumulation of additional assets through saving, and (3) the acquisition of additional assets financed by borrowing.

The two conditions above require that we cut the asset price appreciation well below what actually happened in the United States over the past several decades and make up the difference with some combination of increased personal saving and increased debt-financed asset purchases. The problem is that doing so requires an unprecedented and implausible rise in personal saving, a rise in the household debt ratio vastly greater than that of the ill-fated debt boom during the Big Balance Sheet Economy years, or some of each.

The first step is measuring the increase in the size of holding gains that actually occurred. Let's divide the last 58 years into two periods, with the first being 1960 to 1990 and the second 1990 to 2018. Since there is tremendous variability in gains, taking two long periods of about three decades gives us two large-sample averages that minimize the importance of idiosyncratic influences.

As we look at these data—the inflation-adjusted holding gains rate on total household assets—keep in mind that this measure is distinctly different from a common capital gains rate on a piece of real estate or a securities portfolio. There are two reasons for this difference. First, the base against which the gains are scaled is *total* assets, which includes trillions of dollars in bank deposits and other assets that are not subject to price changes or, therefore, holding gains. Thus, the rates of gains on assets that *do* generate gains—such as homes, commercial property, and corporate equities—are diluted in the overall asset holding gains rate. Second, because inflation devalues all assets, it creates real losses on all assets that cannot appreciate, like cash, and on any asset for which the price cannot keep up with inflation. In the first period, this effect was big enough to push the inflation-adjusted holding gains rate on total household assets below zero.

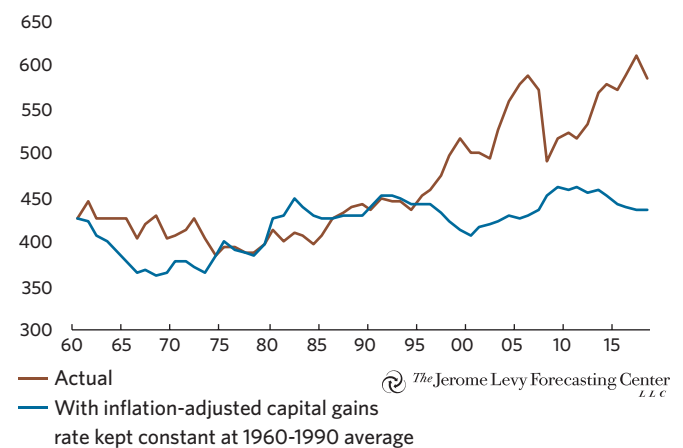
The inflation-adjusted rate of holding gains on total household assets averaged -0.89% annually from 1960 to 1990. This average rose to 0.67% for the period from 1990 to 2018. The average annual real capital gains rate was therefore 1.56 percentage points higher in the latter period. To put that seemingly small change into perspective, 1.56% of total assets equaled nearly \$2 trillion in 2018.

The 1.56-point increase in average return also fully accounted for the rise in the assets-to-GDP ratio since 1990 (chart 53). Therefore, for the purposes of our present exercise, an enormous amount of extra personal saving and leveraged asset purchases would have been needed to replace the asset growth lost as a result of keeping the adjusted rate of holding gains where it was from 1960 to 1990 during the following 28 years.

Capital Gains Boosted Assets-to-GDP Ratio

Chart 53

BEA, Federal Reserve: Household Sector Assets as % of GDP
annual data, last data point 2018



To achieve the same growth in household assets by increasing the personal saving rate would have required a saving rate averaging 16.6% instead of the actual 6.3% for the latter period. Considering that in no single year of recorded history dating back to 1929 has the saving rate been anywhere near that mark (except during World War II), achieving such a saving rise appears fanciful.

On the other hand, making up for that 1.56-point increase in average return through leveraged asset purchases alone would mean that household debt would have needed to rise at roughly triple its average pace relative to GDP from 1990 to 2018. Such growth would dwarf the actual debt bubble that peaked in 2008.²⁵

Either the saving rate or debt expansion required to make up for that lost 1.56% is preposterous. Indeed, even attaining our asset growth goal with a combination of some extra saving and some additional leveraged asset buying would involve farfetched saving and borrowing behavior. Thus, the scenario we seek to create appears completely unrealistic.

As if these issues did not already make it exceedingly difficult to construct our target scenario, here is another challenge. Making up the asset growth rate with vastly higher personal saving would crush business profits unless other profit sources offset the rise, since rising personal saving cuts into business saving (see profits equation in box 6.1 on page 44). Achieving such an offset would require some combination of massively more net private investment, vastly more government deficit spending, and a huge improvement in the nation's current account balance.

But again, the question is how. Net private investment weakened substantially from the 1960-1990 period to the 1990-2018 period because of severe overcapacity; how could there have been a much bigger investment boom for 28 years? Or, for that matter, a vastly bigger government deficit? Or instead of a current account deficit, a vast surplus? Even if we assume "a little of each," it would actually have to be a large amount of each, given the enormous scale of the total offset needed.

This discussion is by no means an exhaustive examination of all the issues. Nevertheless, it strongly suggests that over recent decades, unusual if not extreme events over long periods of time would have been necessary to attain a comparable secular rise in household assets relative to GDP without expanding capital gains.

Appendix 3 Balance Sheet Ratio Definitions and Methods

Here are the key definitions and measurement methods used in this paper (an expanded version of the summary on page 20).

1. The phrase "private balance sheets growing faster than income" refers to two separate phenomena: total private assets growing faster than income and total private liabilities growing faster than income.
2. For households, 98% of liabilities are debt. We will ignore the other 2% and substitute total debt for total liabilities in our discussions and data presentations. (This is common practice in household financial analysis.) The exception will be when we discuss net worth, which will be defined as total assets minus total liabilities.
3. For businesses, a large part of liabilities is not debt. Nevertheless, we will focus on business debt, not business liabilities, for several reasons.
 - a. The story doesn't change—in fact, business liabilities grew even faster than business debt.
 - b. Some of the non-debt liabilities arguably *should* be left out of our analysis because they are of a very different nature and influence, such as foreign equity positions in U.S. businesses.²⁶ (Note that loans from the rest of the world and foreign holdings of U.S. debt securities *are included* in debt.)
 - c. Focusing on debt enables us to speak in the same terms as much of the research and public discussion about aggregate financial burdens for the business sector, its subsectors, or the whole economy.

²⁵ Ironically, it takes much more debt expansion to create real assets than to raise the price of existing assets. If debt were to finance \$500 billion worth of new home construction, the value of assets would go up by \$500 billion. However, if that same debt were to finance \$500 billion worth of purchases of existing houses at, say, 5% above their previous prices, the market value of all houses, most of which would not have undergone ownership changes, would go up by over a trillion dollars in value.

²⁶ Liabilities in the Federal Reserve data include, among other things, foreign direct investment in the United States, which is mostly foreign equity in domestic corporations. This item would be part of owners' equity on a single firm's balance sheet, not debt. Since the analysis in this paper involves the financial obligations of firms and households, it follows that foreign direct investment—part of equity—should not be included. Equity, whether foreign or domestic, is certainly not debt. Obligations to shareholders do not strain cash flow the way debt service does. Dividend payments may be highly desirable, but they are not mandatory. Moreover, even when dividends are paid, they do not reduce profits the way interest payments on debt do. Incidentally, foreign direct investment has not been a trivial item; it rose from 2% of nonfinancial corporate liabilities in 1945 to nearly 20% in 2017. Another non-debt liability category on the nonfinancial corporate sector's balance sheet is "miscellaneous liabilities." This category is mostly an error term. Still, it has had a big influence on total liabilities, rising from less than 1% to more than 20% of total liabilities during the same 1945-to-2017 time span.

4. Debt, as defined in the financial accounts of the United States (FAUS, formerly called the flow of funds, published by the Federal Reserve), includes debt securities and loans.
 5. Our concepts of asset and debt ratios are simple and consistent with everyday usage. If our subject were a *single household*, we would take the ratio of the total value of the household's assets (real estate, financial assets, motor vehicles, art, etc.) to after-tax income, and we would take the ratio of total debt (mortgage debt, credit card balances, margin debt, etc.) to after-tax income. For the *entire household sector*, we use the comparable aggregated data, including balance sheet data from the FAUS and personal income data from the national income and product accounts (NIPA).
 6. Income can be defined in a number of reasonable ways. Essentially, we are looking at financial flow concepts—personal income, GDP, business revenue (or a proxy, business value added), cash flow, profits, and so forth. The appropriate terms depend on the sector or subsector of the economy and the purpose of the measure.²⁷
 7. We are looking at the debt of only the nonfinancial private sector and omitting the debt of the financial sector for several reasons. The structural and functional evolution of the financial sector is complex, involving changes in the size, concentration, products, regulation, and nature of banks and other lending institutions. Neither interpreting rising financial sector leverage nor identifying all relevant structural effects is a trivial task. For example, there has been a great increase over the past three-quarters of a century in financial intermediation, and while debt owed by one part of the financial sector to another is excluded from the FAUS financial sector debt, the added complexity may create measurement issues. These and other evolutionary issues not only complicate interpreting rising financial sector leverage, but also suggest problems in combining it with nonfinancial private sector debt growth. Our deliberate exclusion of the financial sector debt from this analysis is certainly not because financial sector debt fails to fit the pattern of debt outpacing income. On the contrary, the financial sector's debt expansion was the most spectacular of any sector during the postwar era, rising from 2% of GDP in 1945 to a peak of 122% in 2009 (see chart 23, page 21).
 8. This paper focuses on the expansion of *private sector* balance sheets and its effects. My colleagues at The Jerome Levy Forecasting Center LLC and I have long argued that the capacity of the United States government to carry debt is much greater than many fear.²⁸ The United States is one of a handful of countries with great financial independence, which reflects such characteristics as the ability to finance its public debt in its own currency and a vast global market for its securities. The federal debt is important and plays a critical role in the story, but our focus is on how private balance sheet ratios affected private sector financial behavior.
- Nonfederal government debt does add financial risk to the economy as some cities, states, and other nonfederal entities become financially unstable. These entities can suffer financial crises relating to excessive borrowing, underfunded pension funds, cyclical revenue shocks, and other factors. Complicating the issue of nonfederal government stability in times of crisis are questions about whether, under what circumstances, and to what degree states will lend to localities in dire straits and the federal government will make emergency loans to states or major cities. Even though this sector can be important, its inclusion is not necessary for the major theses of this paper.

Appendix 4 Focusing on Net Worth Rather Than Assets and Liabilities Can Be Misleading

This paper emphasizes assets and liabilities separately rather than net worth, but isn't net worth the ultimate balance sheet concern for any household or organization? The answer is yes, but concern about net worth inherently means concern about the stability of net worth, and therein lies a critical need to examine assets and debt separately. Moreover, household net worth is not the only important financial health issue.

Indeed, net worth can be a misleading report card on the household sector's financial stability. There are three major problems with focusing on net worth alone.

1. *Asset prices can fall.* Major asset markets can fall steeply for long enough to seriously reduce household net worth. In 2000-2002, the Nasdaq lost over 75% of its value in 30 months. In 2007-2009, home prices fell 27% in just 24 months, with

²⁷ We generally use business value added (contribution to GDP) as a proxy for revenue in the denominator for business asset and debt ratios rather than profits or proprietors' income because profits have so much cyclical variation. Business or corporate value added gives an idea of the scale of the overall financial footprint of the sector and, in the long run, a more consistent measure of how large a balance sheet can be supported. Obviously, assets relative to profits—and the reciprocal, return on assets—still have great importance and this paper discusses them considerably.

²⁸ See *Uncle Sam Won't Go Broke*, 2010, by D. Levy and S. Thiruvadhanthai, available at www.levyforecast.com.

HH Assets Much Larger Than Liabilities

Chart 54

Federal Reserve: Ratio of Household Assets to Household Liabilities
last data point Q4 2018



more severe declines in many metropolitan areas, and kept falling for two more years. Debt, by contrast, does not shrink in value unless it is negotiated down or written off, and debt reduction (a) is a much slower process than rapid asset price deflation, barring catastrophe; (b) comes with heavy costs to debtors, creditors, and sometimes the financial system; and (c) occurs on a smaller scale.

The scale issue is significant. Total assets are much larger than total liabilities; thus, changes in the total value of assets are closely reflected in changes in net worth. Since 1960, household assets have always been at least about five times and as much as ten times the size of household liabilities (chart 54; note that prior to 1960, the ratio was much higher, but back then debt was still extremely low as a result of the depression and war). Thus, a 5% decline in total household debt would have less of an impact on net worth than a 1% decline in total assets.

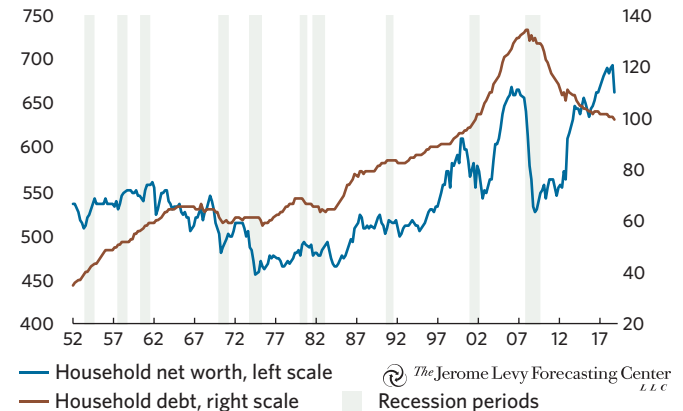
Historically, aggregate levels of net worth, assets, and debt are all correlated. Household net worth usually rises when debt rises because total assets usually rise when debt rises (chart 55). Even when leverage is increasing phenomenally—indeed, *especially when leverage is increasing phenomenally*—net worth can surge.

The soaring asset prices that cause great booms in net worth can occur during a *macrobubble*—a speculative bubble large enough to profoundly alter the behavior of the entire economy. The 2000s housing bubble certainly was a macrobubble, but the farmland bubble in the late 1970s and early 1980s was not. In the case of a macrobubble, the bubble's deflation not only

Household Debt and Net Worth Correlated

Chart 55

BEA, Federal Reserve: Household Sector Debt and Net Worth
as % of Disposable Personal Income, last data point Q4 2018



damages the asset holders and their creditors, but also brings about a general economic recession, which only intensifies cash flow problems, defaults, liquidation pressures, and, potentially, systemic financial instability.

2. *Net worth is a false indicator of financial health because of the differences in the distributions of assets and debt among households.* When the household sector's aggregate net worth is rising faster than income, the gains in assets tend to be obtained by the minority of households that holds most of the economy's wealth. At the same time, a great many more households have large and rising debt without offsetting asset appreciation. This situation certainly applies to the United States in the twenty-first century.
3. *The net worth of most households is dominated by the equity in their homes.* Yes, a home is an asset with a market value, and it generates a stream of services. But real estate is highly illiquid (unless home equity loans are cheap and readily available), and selling a home to access that wealth can be disruptive, costly, and sometimes impractical, especially in times of financial stress.

Thus, a rapid rise in net worth relative to income does not necessarily make the economy more resistant to balance sheet problems, and it can make the economy more vulnerable.

Even considering net worth, its stability, and the distribution of assets and wealth does not tell us everything there is to know about how big balance sheets affect people's economic welfare. There are undoubtedly other consequences of balance sheet expansion not addressed in this paper. For example, swelling balance sheet ratios, especially when associated with

asset price inflation, may contribute to the skewing of the wealth distribution, since those owning stocks, real estate, and other property subject to price appreciation benefit more than those with little besides modest cash reserves or net debt. Moreover, the distribution of income may be affected; income stemming from the management of assets and balance sheet transactions tends to rise relative to income stemming from the production and distribution of goods and services. Big Balance Sheet Economy issues deserve more consideration in serious discussions about income and wealth distribution.

Appendix 5

Don't Blame Increased Financial Intermediation for Big Balance Sheets or Excessively Easy Fed Policy for Recent Bubbles

Big Balance Sheets and Financial Intermediation

Financial intermediation creates additional assets and liabilities; if instead of A lending to B, A lends to C and then C lends to B, there is no change in net worth for anyone, but there are more assets and more liabilities. Accordingly, some people have suggested that the disproportionate growth in balance sheets largely reflects the increase in the sophistication of financial intermediation and is therefore benign. Yet intermediation is not the reason for the expansion of balance sheets relative to income discussed in this paper nor is it always benign.

The primary focus of this paper has been on the balance sheets of the *nonfinancial* private sector. Leaving financial institutions out of balance sheet ratios eliminates almost all intermediation. So, intermediation in no way explains away the issue of swelling private balance sheets.

Adding layer upon layer of intermediation can cause its own problems during a financial crisis. To illustrate, suppose A owes B \$100 and A defaults. Then both A and B are affected; A is insolvent and probably unable to access more credit, and B has taken a loss. Now, suppose A owes B \$100, and B owes C \$100, and C owes D \$100; if A defaults, it affects B, which may affect C or even D. Moreover, the larger the assets and liabilities are relative to the income and net worth of the institutions in our lending chain, the more likely it is that a default will cause a domino effect.

Also, the more layers of intermediation, the weaker the information flow between the ultimate borrower and the ultimate lender. This point goes back to one of the major lessons of Hyman P. Minsky: the further removed a lender is from the ultimate borrower, the less well the lender can evaluate the risk. Think of European banks buying AAA-rated securities backed by pools of U.S. subprime mortgages.

To Achieve a Politically Satisfactory Recovery, Fed Had to Allow Rapid Balance Sheet Inflation

Many have criticized the Fed's extended monetary easing in the 1990s for contributing to the tech stock market bubble and its perpetuation of low interest rates for propelling the housing bubble. They have also disparaged the Fed's unprecedented degree of accommodative monetary policy for encouraging financial excesses during the current expansion through such mechanisms as its 2011 forward commitment to years of a near-zero federal funds rate, its quantitative easing, and other unconventional actions. Yet, the reality is that there was no politically acceptable alternative.

The political imperative of getting the economy to recover could not be met—barring complete reliance on vast and expanding federal deficit spending—without reestablishing brisk private balance sheet expansion (which is necessary for the private sector to generate business profits). It was the Big Balance Sheet Economy that rendered the private sector unable to recover from recessions without extensive and enduring Fed help. The recessions of the era, including 1990-1991, 2001, and 2007-2009, were each connected to bubble deflation, either a macrobubble (a speculative asset bubble large enough to profoundly alter the behavior of the entire economy) or several lesser but influential asset bubbles. In the aftermath of these burst bubbles, businesses were burdened with excessive overhead, overcapacity, weak sales growth, huge leverage, a distrust of both economic stability and long-term business conditions, and, in the latter two cycles, stock prices well below the previous peak for numerous years. Firm managements thus had good reason not to respond to low interest rates with strong investment spending or hiring, and they remained reticent.

Thus, until the economy recovered substantially from recession, net private fixed investment would inevitably be weak, and consumers would remain unwilling to begin spending significantly larger portions of their incomes (reducing personal saving, which increases profits). What the economy needed to remedy this situation, in addition to government fiscal support, were policies that would pump up asset prices.

Only after easy Fed policy had helped achieve rising asset values and resurging wealth could the economy achieve the strength desired not just by Fed officials but by the White House, Congress, businesses, and households. In the Big Balance Sheet Economy, avoiding asset bubbles would have meant long periods of economic lethargy and lingering financial problems (in the absence of even greater fiscal stimulus). To illustrate the point, consider that after the last recession ended in June 2009,

real house prices took until 2012 to find a bottom even with the support of three years of a near-zero federal funds rate and quantitative easing. With less monetary easing, the housing decline likely would have persisted, doing further economic damage and hindering the recovery.

Thus, it would have been exceedingly difficult to establish solid private sector recoveries without both the heavy deficit spending that did occur *and* monetary policy highly supportive of asset prices and cheap credit. When or how the Fed should have begun to unwind quantitative easing and other easy money strategies in the latest cycle can be debated, but getting the economy to recover at even the historically slow pace of this recovery could not have happened with much higher long- and short-term interest rates.

Appendix 6 Why “Growing Out of” the Big Balance Sheet Condition Is Exceedingly Difficult

Before attempting to construct a scenario in which the economy grows briskly and balance sheet ratios slowly fall, recall that “inflating our way out” of the Big Balance Sheet Economy condition appears unworkable. A sizable acceleration of inflation would cause yields to spike, which would—given present, extreme balance sheets—trigger a financial crisis and recession. The crisis in turn would bring deflationary pressures before inflation could devalue balance sheets meaningfully relative to incomes (see page 46). Therefore, “inflating away debt” is ruled out, and we will assume stable inflation.

Let’s assume that nominal GDP will consistently grow 5% annually, with 3% real growth and 2% inflation—a highly optimistic scenario. Furthermore, let’s say that private sector nonfinancial debt is going to expand only 2% annually. The reason for this strict requirement is that the three-percentage-point spread between GDP and debt growth is necessary to make significant progress in lowering the debt-to-GDP ratio: with growth rates of 5% for GDP and 2% for debt, the ratio of private nonfinancial debt to GDP would fall from the current 147% to 117% in eight years (assuming these rates could persist for eight years). That’s a lot of progress in debt-ratio reduction, but it still leaves the country with a debt ratio right where it was in 1995—still a Big Balance Sheet Economy level. To get back to a ratio of 100, as in 1984, roughly the beginning of the Big Balance Sheet Economy era, would take about 13 years—an extremely long time to maintain these nearly ideal growth

rates. With a less strict limit, say, allowing debt to grow 3%, getting the debt ratio down to 100 would require not 13 but 20 of these magical years. So let’s stick with the 2%.

So how doable is 2%? When has debt grown only 2% or less annually?

- From the end of World War II through 1990, the answer is never, and the lowest growth rate was 5.5% in 1990. It finally broke slightly below 2% in 1991, a year of a deflating commercial real estate bubble, the Gulf War, recession, and the start of a recovery boosted by massive government deficit spending—a recovery so weak that unemployment continued to rise through the first half of 1992.
- In 1992, a year of further federal-deficit-powered recovery so weak that the Fed continued to cut interest rates through the year, private nonfinancial debt growth was 2.5%.
- From 1993 to 2007, it was nowhere near 2%, ranging between just under 5% and just over 10%.
- In 2008, debt rose only 1.8%, followed in 2009 through 2013 by -2.7%, -1.5%, 0.5%, 2.1%, and 2.5%, respectively. This 6-year period was hardly a time of 5% nominal and 3% real GDP growth, but on average only 2.6% and 0.9%, respectively.
- Since 2013, debt growth has hovered in a range of roughly 4% to 5%.

There is something notable, aside from poor economic conditions, about every year in which debt growth was 2% or less. In each, the sum of the private profit sources (all the profit sources excluding the government deficit) was negative! In other words:

In the United States since WWII, debt growth of 2% or less has never been associated with an economy in which the private sector could even contribute to powering itself!

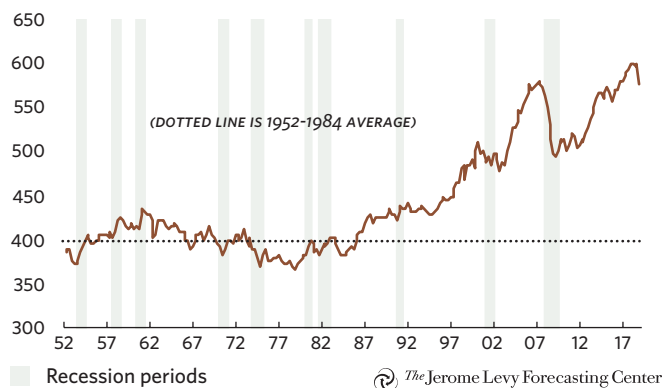
Yet to achieve 5% nominal GDP growth and 3% real growth, the economy needs strong profits, and strong profits, if not more or less entirely created by government deficits, require strong private debt growth—much stronger than 2%. The notion of 2% debt growth and 3% real GDP growth coexisting over a 13-year period appears completely detached from reality.

What about writing off a great deal of debt? Indeed, it is likely that write-offs will play a role in the ultimate resolution of the situation, as they did during the contraction of home mortgage debt between 2008 and 2015. However, that episode demonstrated that write-offs on a scale big enough to move

HH Assets Near Record Relative to GDP

Chart 56

BEA, Federal Reserve: Household Sector Assets as % of GDP
last data point Q4 2018



debt ratios down sharply mean devastating losses and probably a financial crisis. While government can moderate the situation by absorbing some of the shock, doing so tends to raise issues of fairness and moral hazard. Any major reductions in debt through write-offs are likely to come during dire circumstances for the economy and financial system, barring a nationalization of the banking system or some other drastic change. One exception, which is under discussion in the country today, might be federal government forgiveness of student loans. Here again, even if there were consensus for such a policy, Congress would run into fairness and moral hazard problems. Moreover, student loans are only 5% of total nonfinancial private sector debt.

As if the task of coming up with a scenario for reducing the debt-to-income ratio without economic pain and financial instability were not challenging enough, shrinking the assets-to-income ratio under benign conditions would present its own dilemmas. In the third quarter of 2018, household assets were equal to over six times GDP (somewhat lower by year-end), compared to an average of less than four times GDP from the start of the quarterly data series in 1952 through 1984, with a high for those years of well under four and a half (chart 56).

Consider the difficulties in getting the assets ratio just back down to four and a half—a mark to which it did not rise until the late 1990s, well into the Big Balance Sheet Economy era—let alone down to the pre-1985 average. Given our constraints—the economy must remain reasonably prosperous and financially stable—reducing the ratio by 25%, from 600% to 450%, would require one of the following scenarios.

Scenario 1: A 33% increase in income with no change in the value of assets. Even with a 5% annual rate of nominal GDP growth, that would take six years. Consider some of the challenges in constructing such a scenario.

- How could a flat total assets value be achieved? With no change in *real* assets and stagnant prices, with falling prices and some increase in real assets, or with moderately shrinking real assets and modestly rising asset prices? Each of these involves problems.
- How could there be the net investment necessary to generate profits and drive 5% nominal growth with no rise in total assets? Since net investment is an addition of new fixed assets to businesses' balance sheets and new homes to households', the value of preexisting assets would have to decline enough to counterbalance this addition. Perhaps stock prices could fall even as business book values were boosted by the increases in fixed assets and profits. Or house prices could fall even as the housing stock grew. But even if these incongruous combinations were achieved, could they persist for six years? Moreover, any way you slice it, falling assets relative to income means a negative wealth effect on households, tending to increase personal saving at the expense of corporate profits and adding to the difficulty of achieving a strong economy with brisk growth.
- If asset prices were not to rise, what would prevent them from falling, since many asset values include some premium for expected appreciation? Expectations would likely fall after investors saw year after year of stagnation.
- Why wouldn't asset prices and investment both rise, and rise fairly briskly, if the economy were solid? Recall that we ruled out major increases in interest rates (which could constrain asset prices and deter investment) because they would make the debt of many firms and households unmanageable.
- Over their working lifetimes, people try to expand their assets relative to their income (or their pension funds are supposed to do it for them). With population growth and even 2% inflation, total assets need to be rising significantly. So what happens to household confidence and spending as their investment performance falls increasingly short of their goals?
- If total assets are not increasing, then any gains in assets enjoyed by some households must be offset by losses suffered by other households. What happens to the confidence, spending, and even solvency of the losing households? How do they respond when their home equity turns negative or their retirement assets deflate?

Scenario 2: Some growth in the total value of assets but less than the 5% GDP growth rate. The asset growth could involve a mix of modest real growth and price increases. The closer asset growth comes to 5%, the longer it will take GDP to grow 33% relative to assets, i.e., to shrink the assets-to-income ratio to 450%. For example, if we assume 3% asset growth, the transition would take 15 years, a long time for the economy to grow briskly while assets grow at a snail's pace. Historically, assets have always grown about as fast as GDP over 15-year periods or, more often than not, significantly faster (chart 57).

Moreover, since the depression, assets have never in any 15-year period grown anywhere near as slowly as 3%. Finally, even if we ignore the history, the issues listed under scenario 1 largely still apply, even if less acutely. For example, at 3% growth, household assets would still not be growing fast enough to meet retirement goals. Even if 3% is less disappointing than zero growth, the disappointment would have to be endured for much longer in order to reduce the assets-to-GDP ratio by 25%.

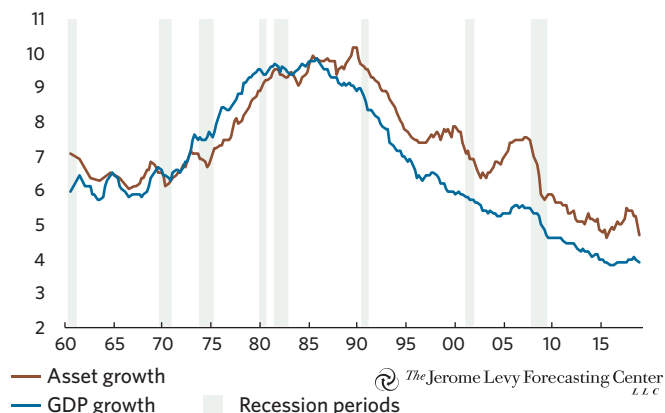
In summary, there appears to be no way to have an even roughly normal, satisfactory operation of the U.S. economy with prolonged, gentle declines in the assets-to-GDP ratio. A major shrinkage of household assets, even if only relative to income, cannot be benign, whether it is severe and brief or more gradual and long-lasting. Keeping the assets-to-GDP ratio trending down gently in a briskly expanding economy appears virtually impossible without introducing some kind of extreme circumstances that somehow drastically alter the functioning of our economy.

Given the problems in shrinking both assets-to-income and debt-to-income ratios without serious financial instability, economic trauma, and dislocations, it seems virtually inevitable that the process will be neither smooth nor mild.

Assets Usually Outpace GDP

Chart 57

BEA: Nominal Gross Dom. Product; Fed. Reserve: Household Assets
60-quarter annualized % change, last data point Q4 2018





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