



Research

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FIDELITY INSTITUTIONAL INSIGHTS

Unsustainable Global Debt

Roadmap for Strategic Asset Allocation



FIDELITY CANADA INSTITUTIONAL™

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Key Takeaways

- A confluence of political, economic, and social forces has both fostered and enabled the use of debt as a panacea for economic ills. Global levels of debt to gross domestic product (debt/GDP) are already unprecedented, are poised to rise significantly during the next decade, and are ultimately unsustainable.
- Prudent long-term investment governance must explicitly consider the impact of rising debt on capital market prices, as well as possible “endgame” scenarios.
- As policymakers engage in even greater monetary and fiscal policy experimentation, winners and losers become heavily linked to policy choices.
- Past episodes of high sovereign debt often resulted in greater inflation. Bolder policies, amid circumstances that have changed significantly over the past decade, are likely to generate a higher probability of inflationary outcomes.
- Reflationary policies could take the form of wealth redistribution, industrial policies accompanied by massive fiscal investment, and/or attempts to raise inflation expectations. These choices and the magnitude of the response to them will have profound implications for asset prices and the nature of future market dislocations.
- Investment committees are facing uncomfortable choices in designing long-term strategic allocations. In this report, we offer five specific considerations for achieving the highest degree of diversification while retaining exposure to potential beneficiaries of government policies.

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Real assets diversify amid higher stock-bond correlations

Five key investment conclusions

Greater inflation exposure

Higher active risk budget

Pre-funded allocation to distressed opportunities

Wealth redistribution beneficiaries

Equity beta diversification through less crowded exposures

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We believe more interventionist policy responses were already on the upswing well before the COVID-19 virus catastrophe due to economic, social, and political upheaval. The aggressive fiscal and monetary response to the crisis underscores this policy dynamic. It's becoming more the norm than the exception.
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The inexorable trend of rising debt/GDP ratios is becoming the single biggest risk factor in investment portfolios. This has important implications for plan governance and strategic asset allocation.

This report examines the investment implications of historically high and inevitably rising global debt. Since the dawn of flexible exchange rates, the combination of deteriorating demographic trends, subpar growth, and other factors has compelled governments to run substantial deficits and corporations to increase their financial leverage. At the same time, globalization, technological advances, and income disparity have all contributed to a pervasive disinflationary trend.

Central banks, in response, have kept debt financing costs on a downward trajectory, delaying the moment of reckoning. As a consequence, total global debt rose from 138% of GDP in 1980 to 243% in 2018, with sovereign debt more than doubling during that period.

Some of these structural trends are likely to persist and even accelerate. We believe more interventionist policy responses were already on the upswing well before the COVID-19 virus catastrophe due to economic, social, and political upheaval. The aggressive fiscal and monetary response to the crisis underscores this policy dynamic. It's becoming more the norm than the exception.

Yet, the investment implications of this fundamental regime shift are far from clear. History is mixed: escalation and monetization of debt caused Japanese hyperinflation during the 1940s, but similar policies resulted in disinflation during the past few decades. Whatever its sequelae, the unprecedented level and growth in debt will likely have profound implications for future investments and returns. It's not a stretch to think that government policies are now becoming the single biggest risk factor for investment portfolios. This has important implications for plan governance, most particularly as a driver of strategic design. It also bespeaks a need for a clear articulation of scenarios and milestones where a pivot from current asset allocation models may be prudent.

Strategic allocation accounts for 85%–90+% of the investment outcome and has robust analytical foundations, but it is often influenced by prior beliefs and commercial considerations. The current environment requires us to reexamine those beliefs.

There's little debate that strategic design determines 85%–90+% of investment outcomes. The balance is driven by shorter horizon, active allocation decisions at the security and asset class levels. Beyond that consensus, there's plenty of competing ideas. A plethora of methodologies exists for estimating future return distributions. There's a number of ways, too, to construct portfolios aimed at desired investment outcomes or utilities.

EXHIBIT 1: There are a variety of assumptions, techniques, and objectives of strategic asset allocation.

Common Approaches and Goals of Strategic Asset Allocation



1 Assumption of Market Efficiency

	HIGH					LOW
Key Assumptions	Total investable portfolio captures all info	LT History is a complete guide to future	Recent history reflects persisting trends	Estimated risk is a good predictor of return	State-dependent history repeats	Capital return drivers are knowable, forecastable
Description	Markets are efficient; size captures risk and return information	Simple average of all available history guides risk/return/correlation	Adoptive models add new info; easy to include new assets (e.g., PE)	Similar Sharpe among uncorrelated assets Risk predicts returns	Relevant risk and return are captured in different market states	Explicitly based on initial market conditions and "forecastable" LT trends
Downside	Delivers subpar returns during prolonged regime switch (e.g., Japan)	Incomplete data on new assets; history rarely repeats	Overexposed to LT price momentum; may raise turnover	Levels and changes in volatility can drive big change in exp returns	Forecast is highly dependent on assumption of future state distribution	Complex, dependent on skill and choice of right variables

2 Strategic Portfolio Construction

Traditional mean variance	Robust controls	Cap- (i.e., market) or equally weighted	Risk parity/risk-weighted	Max diversification, min variance	Black-Litterman
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3 Universe of Most Common Objectives

Highest risk-adj. return (e.g., Sharpe)	Upside/downside Capture or target vol.	Highest distributed Income	Inflation protection, real return goal	Diversifier—low equity, bond beta	LDI or ALM objective
<ul style="list-style-type: none"> Typically most efficient portfolio Generic utility function 	<ul style="list-style-type: none"> Unusually high risk aversion Products with uncertain or procyclical withdrawals 	<ul style="list-style-type: none"> Maximizes income subject to drawdown or volatility constraints Often incorporates regulatory constraints 	<ul style="list-style-type: none"> Seeks to deliver premium to inflation growth Can be structured with return of multiples of inflation growth 	<ul style="list-style-type: none"> Low correlation to primary betas and/or overall portfolio 	<ul style="list-style-type: none"> Design to match, or be aware, of future liability

Source: Fidelity Investments as of 5/31/20.

.....
There are also significant behavioral aspects to strategic allocation. The safe choice is to remain anchored to history, the market portfolio, and peers.
.....

It's safe to say that no one has found a foolproof way of predicting the future. However, our chances of being directionally correct improve greatly if we can identify those trends most likely to have strong linkages to asset pricing. We believe escalation of global debt is one such trend.

Exhibit 1 highlights some of the most common approaches to inferring future return distributions. Also illustrated are the analytical portfolio construction techniques designed to deliver the most frequently sought outcomes. Covering these in detail is well beyond the scope of this paper or the patience of most readers. It's worthwhile, however, to spend some time on the methods used to estimate future returns. This is where we can most directly implement our views from our debt research.

As we move from left to right on the top row of Exhibit 1, the importance of informational inputs increases as implementations require numerous assumptions. Leftmost, the market portfolio is directly observable. The implicit assumption is that it is the most efficient portfolio, which incorporates all of the current information and risk preferences. While this is analytically complicated, one can use this information to infer relative return distributions using certain utility and risk assumptions. Likewise, relying on a long-term, unconditional history of returns, the assumption second from the left is straightforward and made even easier by publication of the Dimson-Marsh-Staunton (DMS) and Global Financial Data (GFD) databases.

Unfortunately, the advent of new assets and strategies means creating imperfect proxies in order to apply them to the broadest possible universe. There are also significant behavioral aspects to strategic allocation. The safe choice is to remain anchored to history, the market portfolio, and peers. Occasionally, a "maverick" allocator deviates from the pack. If proven successful, that allocation becomes more widely utilized, even if "analytical" evidence is scarce. Examples include the use of alternative investments by the "Yale/Cambridge" model, the factor-based allocation approach detailed in research commissioned by Norges Bank, as well as emerging market assets and global tactical asset allocations, among others. In these cases, the recent performance of asset classes carries more weight than long-term history.

Other approaches have gained notoriety as a result of differentiated performance in periods of significant distress as other products failed. Recall, as an example, the performance of risk parity in 2008. While successful in the past the implicit assessment of future returns is dependent on proper risk estimation, which requires a fair bit of judgment.

To simplify the foregoing problem, investors may use state-dependent return distributions, determining a relatively small number of distinct periods of time, or states, that best capture the correlation and returns of different assets or strategies. Here, expectations of a future return distribution comes down to a judgment about the distribution of future states. While elegant and parsimonious, this approach suffers from the same shortcomings as other approaches, namely a paucity of state observations and difficult-to-incorporate new assets.

Finally, one can create an explicit forecast of return distribution by teeing off “knowable” long-term trends, e.g., demographics, productivity, and macro-economic relationships. This approach has the highest intuitive appeal as well as high transparency, but requires a number of critical assumptions, which can have a substantial impact on a final forecast.

The reason for describing all of these approaches is to highlight that reasonable, prudent people can disagree and create materially different portfolios in order to seek the same outcomes. What’s more important is how the governance process affects the evolution of a strategic allocation in response to new information. With history serving as an increasingly imperfect guide, how does a plan design evolve as we observe unprecedented escalation in the levels of debt?

There are very few certainties in investing – particularly in this unprecedented time – but one we feel strongly will persist is escalation in the levels of debt. As an institution, you have the opportunity to help evolve your plan design now to be well positioned to win in this future state.

No matter your analytic or philosophic approach to asset allocation and plan governance, this report will help you address these critical questions:

What is the roadmap and framework for assessing whether government policies result in actual deflation? What if the nature of future inflation is not adequately captured by commodities or the Consumer Price Index (CPI)?

.....

As government policy becomes more difficult to analyze and link to asset prices, what is your process for pivoting in response to consequential changes or to geopolitical events? Internal vs external managers? Actual assets vs overlay sleeves?

.....

Will you be able to capitalize on dislocations i.e., rising real rates, dollar shortages and/or refinancing risk, if central bank corrective actions threaten liquidity? In other words, will you be able to respond to periodic, short-lived interruptions to banks’ broadly accommodative monetary policies?

.....

How will your portfolio react to novel wealth redistribution policies designed to narrow the income gap? What impact would potential changes in consumer credit, commodity consumption, and housing have on your portfolio?

.....

Can your portfolio thrive when asset class correlations, i.e., equities vs bonds, become increasingly positive even as alternative investments’ risk premia hover near zero?



1

Current Regime: Why Debt Is Rising

Total global debt ratio rose

75%

from 1980 to 2018

Rising debt is a widespread phenomenon

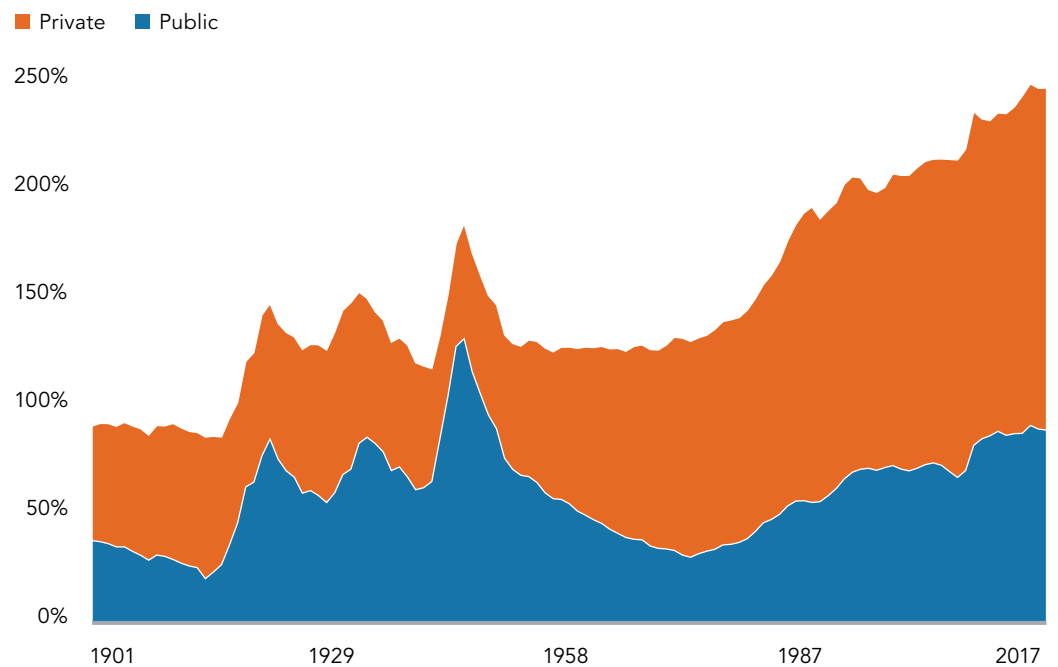
Unprecedented debt levels among the world’s largest economies are fast becoming the most substantial risk in the investing world today. This risk has actually been brewing for decades.

The dynamics of rising debt accelerated in the 1980s, and the dynamic is widespread across the globe in both the public and private sectors. The total global debt ratio rose 75% from 1980 to 2018, with sovereign debt more than doubling during that period.

Closer to home, large increases in U.S. public debt have historically occurred either due to wars or large economic contractions. In recent years, though, debt has risen even during a peacetime expansion. The U.S. debt/GDP ratio now exceeds 100%, a level not seen since World War II.

EXHIBIT 2: Global debt levels surged in recent decades to new record highs.

Global Public and Private Debt as a Share of World GDP

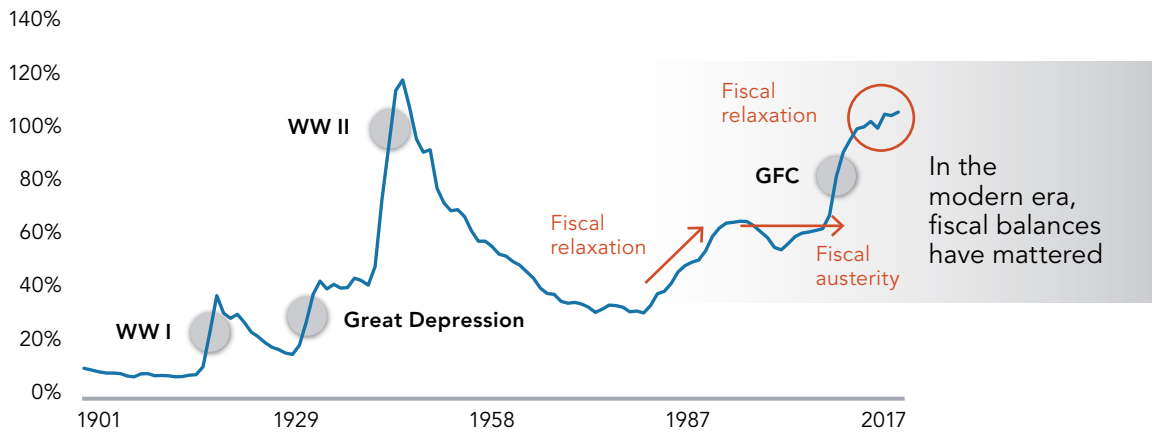


Source: “Macrofinancial History and the New Business Cycle Facts” by Òscar Jordà, Moritz Schularick, and Alan M. Taylor (2017). Jordà-Schularick-Taylor Macrohistory Database, World Bank, International Monetary Fund, Bank for International Settlements, Fidelity Investments (AART), as of 12/31/18.

Globally, private-sector debt retrenched momentarily after 2008, led by U.S. deleveraging in the immediate aftermath of the global financial crisis (GFC). However, over the past decade, China embarked on a massive expansion of private credit as U.S. corporate debt resumed its upward trend to reach new all-time highs. The dollar value of the debt of U.S. nonfinancial corporations has risen above the total value of its sales revenues.

EXHIBIT 3: U.S. government debt kept rising in recent years during a peacetime expansion.

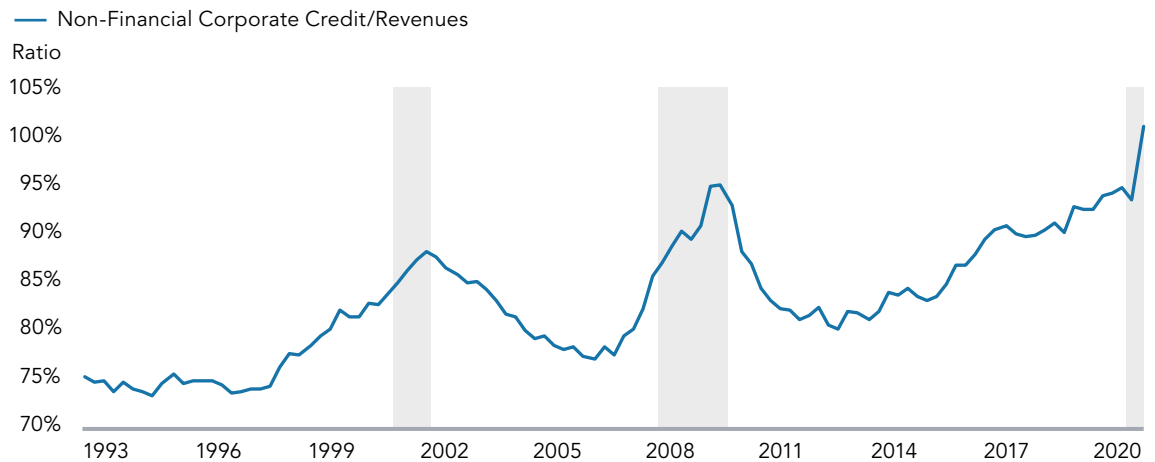
U.S. Sovereign Debt as a Share of GDP



Source: Jordà-Schularick-Taylor Macroeconomy Database, World Bank, International Monetary Fund, Fidelity Investments (AART), as of 12/31/18.

EXHIBIT 4: U.S. corporate debt reached all-time highs.

Non-financial Corporate Credit as a Percentage of Revenues



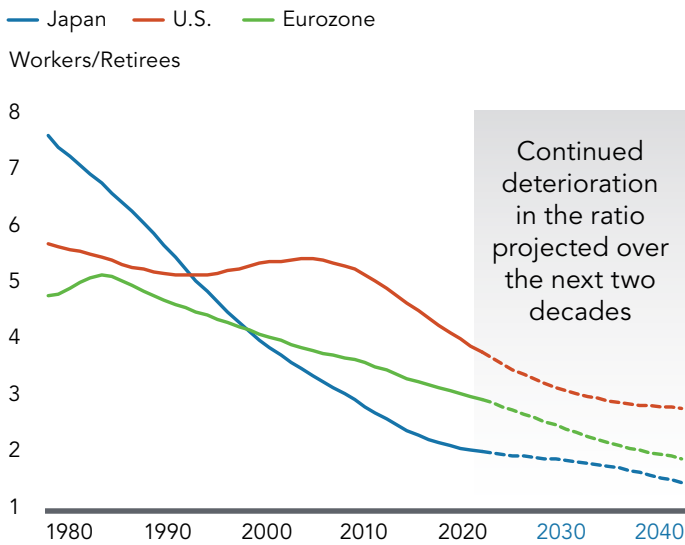
Shaded bars represent U.S. recessions as defined by NBER. Source: Federal Reserve Board, NBER, Haver Analytics, Fidelity Investments (AART), as of 3/30/20.

Causes and catalysts: Aging populations and fiscal pressures, enabled by easy monetary policies

Aging populations create greater fiscal pressures for social welfare spending for pensions and health care. Demographic trends for many advanced economies peaked in the 1980s and have experienced significant deterioration over the past decade. By deterioration we mean an erosion in the ratio of workers to retirees. There are now fewer working-age (15–64 years) citizens relative to the rising population of retiree-age (65 years and above) citizens, as demonstrated by the falling demographic support ratio in the exhibit below. Most dramatically, Japan’s ratio fell from above 7 to around only 2 today. With more retiree pension and health care benefits to pay and fewer workers to support the system with tax contributions, fiscal balances have deteriorated across most of the industrialized world.

EXHIBIT 5: Due to aging populations, the demographic support ratio turned less favorable for many large developed economies.

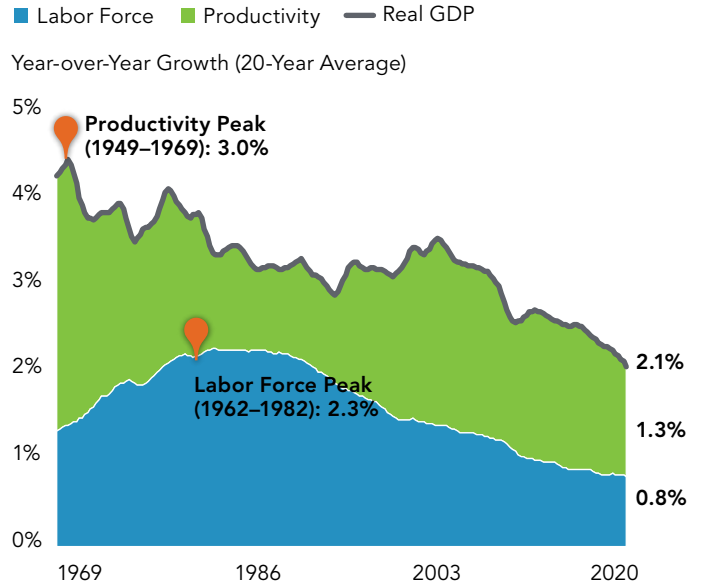
The Number of Working-Age People Relative to the Number of Retirement-Age People



The demographic support ratio is calculated as the number of workers (15–64 years old)/the number of retirees (65 and older). Source: United Nations, Haver Analytics, Fidelity Investments (AART), as of 10/31/19.

EXHIBIT 6: Slowing labor force population growth has been a direct cause of slower GDP growth.

Components of GDP Growth



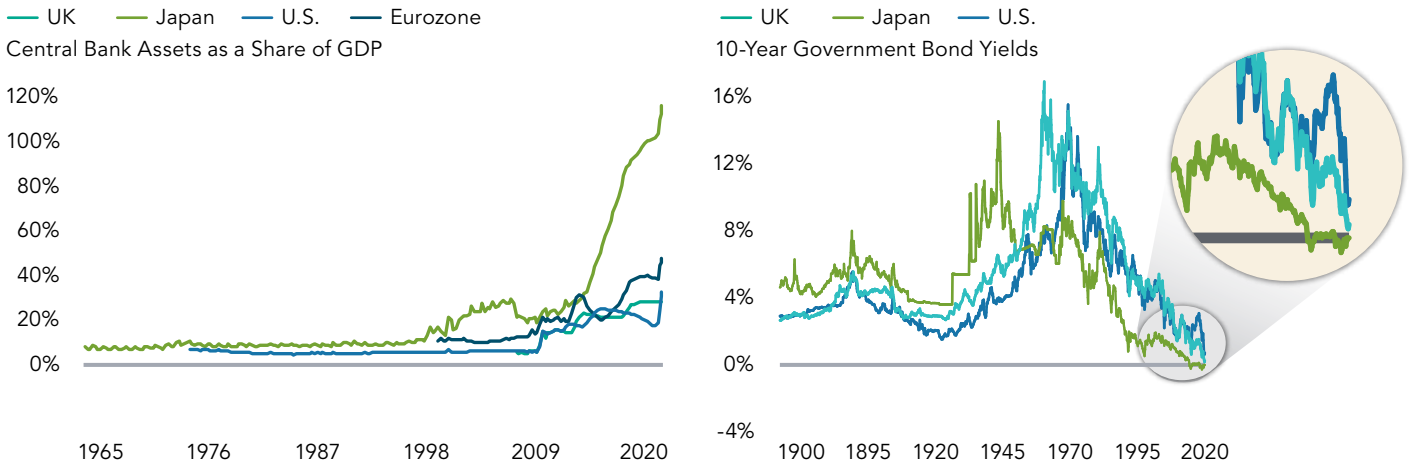
Source: Bureau of Economic Analysis, Bureau of Labor Statistics, Haver Analytics, Fidelity Investments (AART), as of 3/31/20.

Poorer demographics have also weighed on GDP growth, causing a headwind preventing national income from keeping up with the rising levels of debt. Slower population growth was a direct cause of slower GDP growth for many advanced economies over recent decades. An increase in the labor force population contributed 2.3 percentage points to the U.S. economic growth rate during the 1960s and 1970s, but added only 0.8 percentage points during the past 20 years.

Monetary policymakers have accommodated the rising debt by continuing to lower interest rates and by purchasing government bonds via quantitative easing (QE). The result has been a slide in long-term government bond yields to historical lows around the world while the balance sheets of major central banks expanded to record-high levels. These developments facilitated the continued accumulation of debt by keeping debt service costs low.

EXHIBIT 7: Quantitative easing by central banks has swelled their balance sheets and pushed bond yields to record lows.

Central Bank Assets as a Share of GDP and 10-year Government Bond Yields



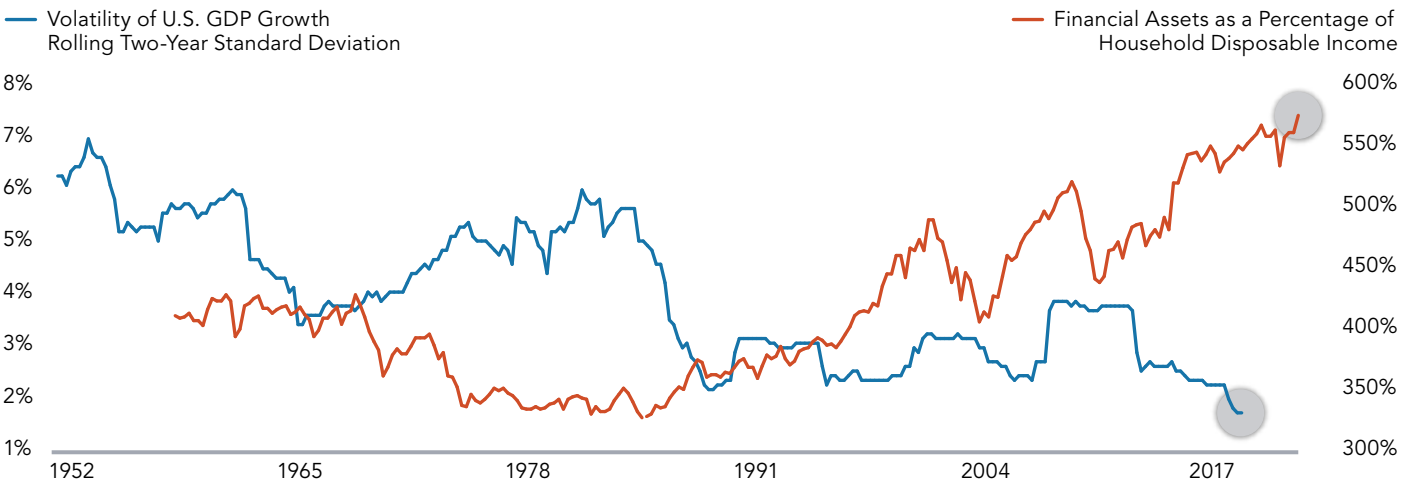
Source: LEFT: Haver Analytics, BoE, BoJ, ECB, Federal Reserve, OECD as of 3/31/20. RIGHT: Global Financial Data, Fidelity Investments (AART) as of 6/10/20.

The 2020 recession is only the fourth since the early 1980s, after nine recessions during the prior 35 years.

Unfortunately, these actions haven't spurred faster growth. They have helped to reduce the volatility of GDP and boost the prices of financial assets. The average standard deviation in the U.S. GDP growth rate over the past 35 years is less than half the level of the decades that preceded it. The 2020 recession is only the fourth since the early 1980s, after nine recessions during the prior 35 years. Meanwhile, the value of financial assets relative to household disposable incomes hit record highs.

EXHIBIT 8: Extraordinary monetary policies have helped to reduce economic volatility and boost financial asset prices.

Volatility of U.S. GDP Growth and Financial Assets as a Percentage of Household Disposable Income



Source: Federal Reserve Board, Bureau of Economic Analysis, Haver Analytics, Fidelity Investments, as of 12/31/19.

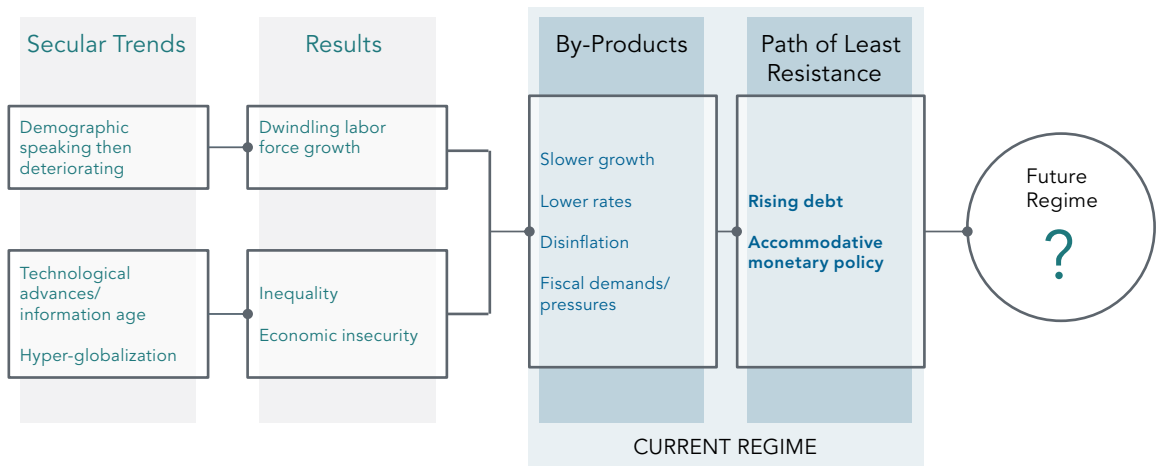
The path of least resistance remains monetary accommodation and rising debt

In a broader sense, the path we find ourselves on now is the product of a changing global landscape. Secular trends such as peaking demographics, the rapid technological innovation of our Information Age, and hyper-globalization began in the 1980s, gaining steam over time to eventually produce a 21st-century backdrop of slower economic growth, disinflation, lower interest rates, rising inequality, greater economic insecurity, and mounting fiscal pressures. We discuss the details of this dramatic confluence of political and socioeconomic crosscurrents in our paper “Rising Policy and Political Risk: Implications for Asset Allocation,”¹ including how domestic populism, de-globalization pressures, and geopolitical instability are helping sow the seeds for a secular regime change.

The convergence of these long-term trends spurred two key phenomena – rising debt levels and increasingly accommodative monetary policies. Both of these trends became turbocharged after the 2008 global financial crisis. The path of least resistance is that they continue for the foreseeable future.

EXHIBIT 9: Shifting long-term trends generated the combination of rising debt and more accommodative monetary policies.

Economic and Political Origins of Rising Debt





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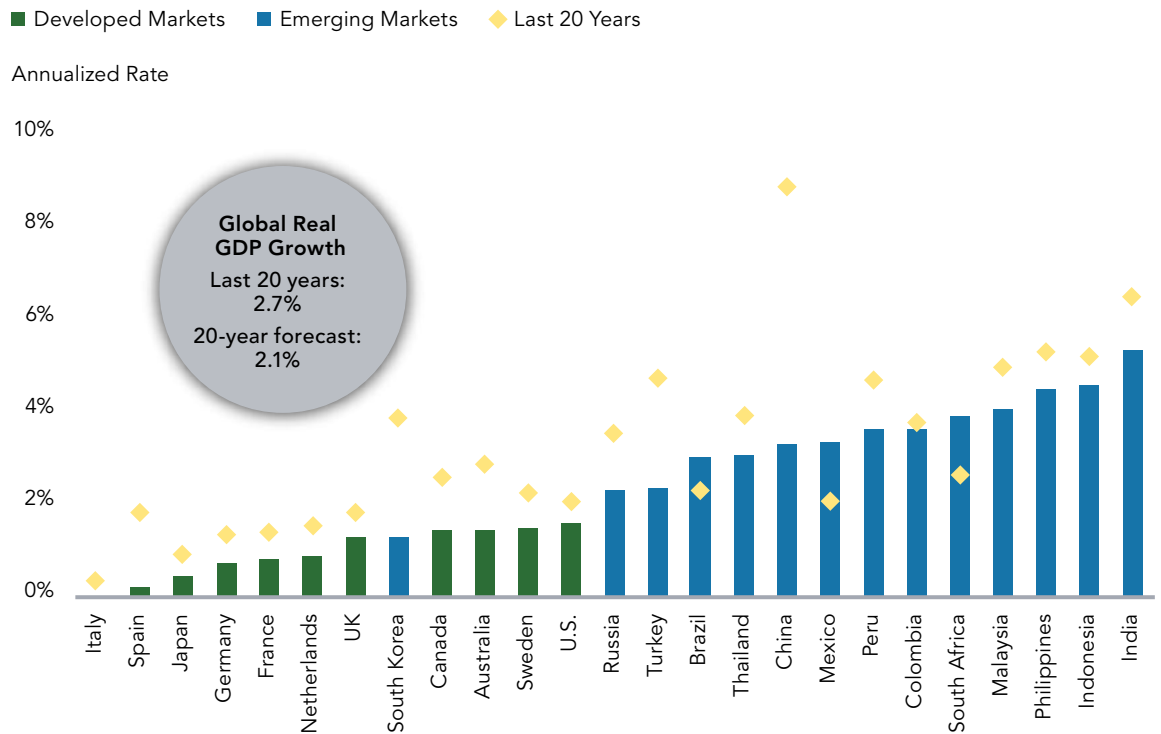
Unsustainable: Why Debt Will Continue to Rise

We forecast slower growth on a long-term basis

As part of our secular research effort, we have published our long-term economic growth forecasts annually since 2013 (see the latest “Secular Outlook for Global Growth: The Next 20 Years”²). Each year, these forecasts have pointed to dwindling future growth prospects across almost all major economies relative to recent decades. We expect worsening demographics, peaking globalization trends, the diminishing benefits derived from higher debt, the unintended consequences of easy monetary policy, and unfunded entitlement promises will all contribute to sluggish growth.

EXHIBIT 10: We expect long-term economic growth rates to continue to decelerate.

Real GDP Growth: Next 20-Year Forecasts vs. Past 20-Year Rates



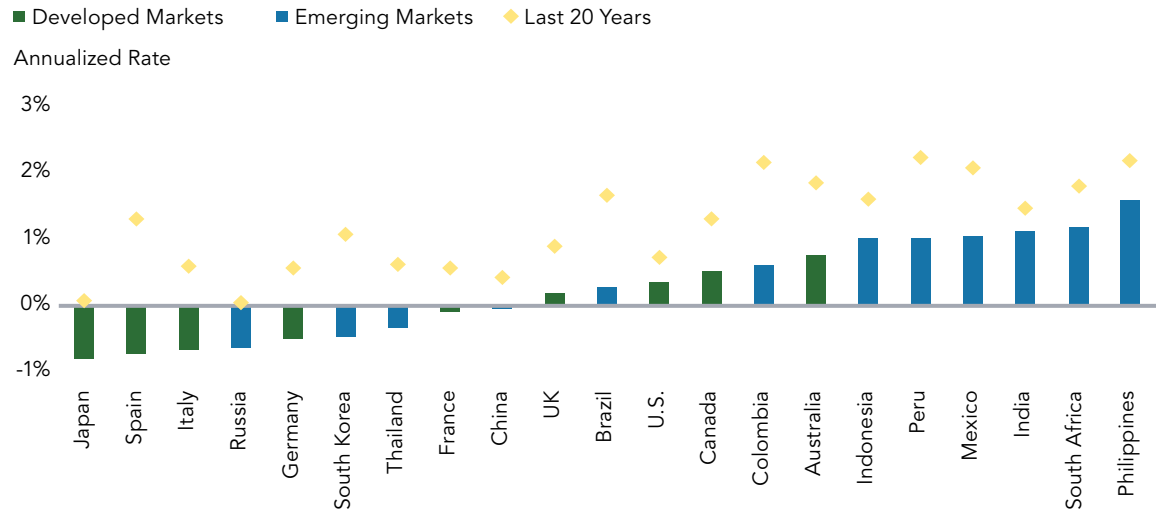
Past performance is no guarantee of future results.

GDP: Gross Domestic Product. Source: OECD, Fidelity Investments (AART), as of 5/31/20.

The continued deterioration in demographics is the major headwind for future growth. Growth in a country’s labor force has the most direct effect on GDP and we project labor force growth to be much lower over the next 20 years than in the past.

EXHIBIT 11: Most economies will experience slower growth in their working-age populations.

Labor Force Growth: Next 20-Year Forecasts vs. Past 20-Year Rates



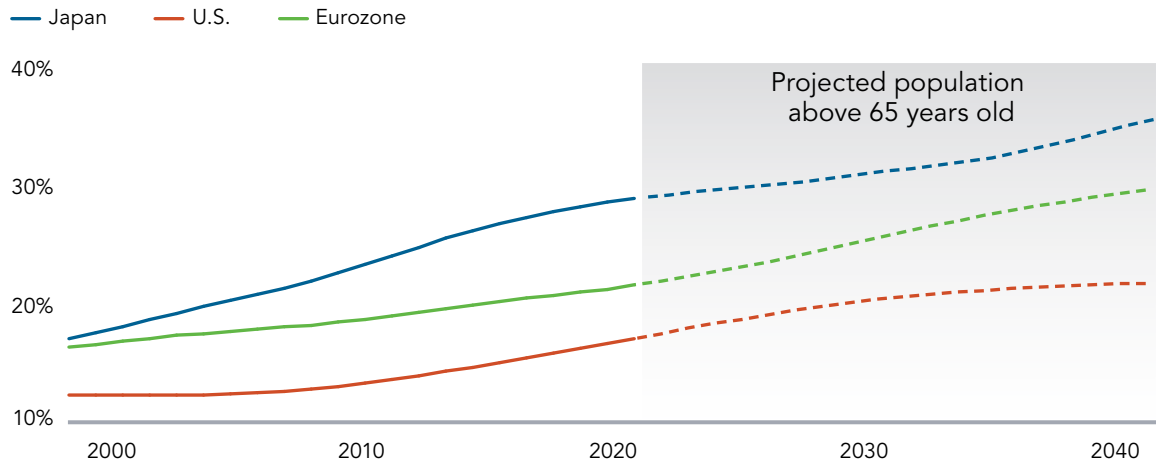
Past performance is no guarantee of future results.

Source: World Bank, OECD, Country Statistical Organizations, Haver Analytics, Fidelity Investment (AART), as of 5/31/20.

The growth in the most elderly population segments will continue to rise in most advanced economies. Most notably, the 65-and-older segment already makes up 28% of Japan’s population. Continued growth in pension and health care expenditures for retirees seems likely.

EXHIBIT 12: The population of retiree-age citizens will continue to rise in most advanced economies.

Share of Population Above 65 Years Old

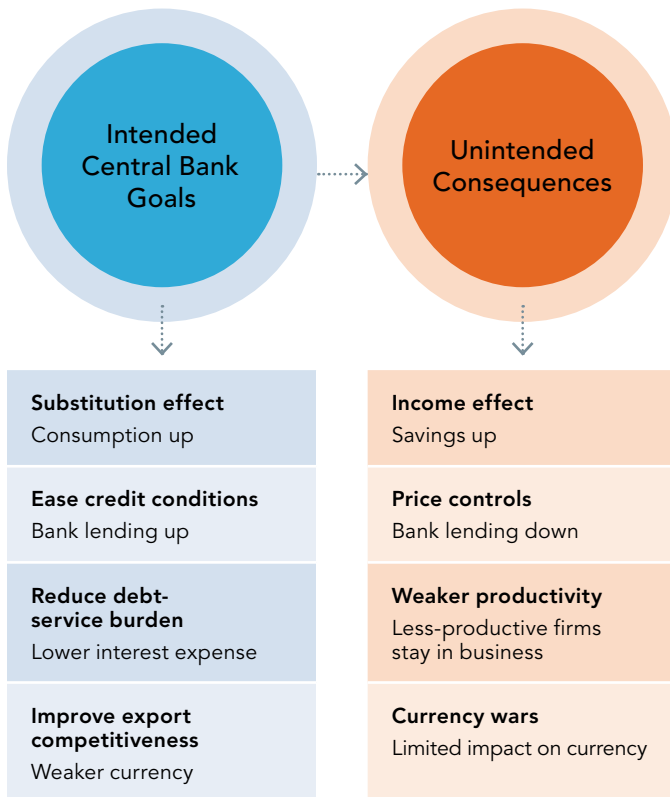


Source: United Nations, Haver Analytics, Fidelity Investments (AART), as of 10/31/19.

This situation is not improved by ever-more accommodative monetary policies that have negative side effects and may actually reinforce slower growth trends. For example, low interest rates aimed at spurring borrowing and consumption have instead driven up savings rates. This is partly explained by the aging demographic profile of advanced economies where older households reduce their consumption as they find it more difficult to generate income from their fixed income assets. For a fuller investigation see our paper “Unintended Consequences of Extraordinary Monetary Policies.”³

EXHIBIT 13: Extraordinary monetary policies produced many negative side effects.

Unintended Consequences of Extraordinary Monetary Policies

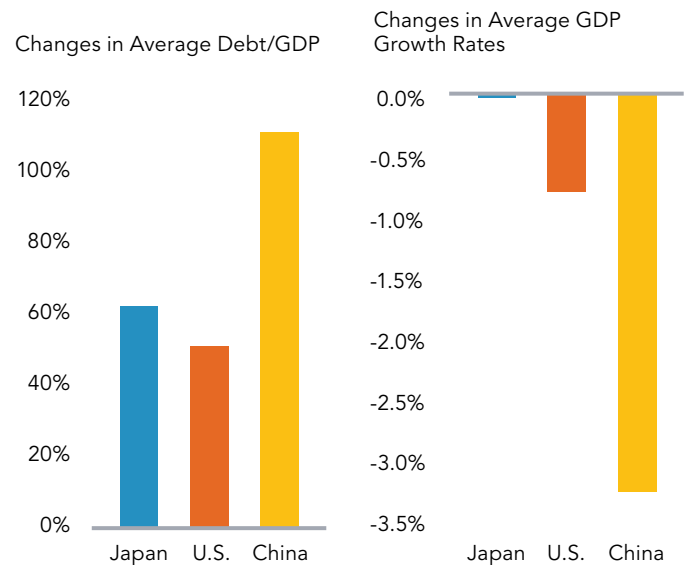


Source: Fidelity Investments (AART), as of 3/31/20.

Moreover, the growth payback for additional debt is diminishing. As accumulated debt hits record-high levels, the marginal boost to GDP growth may actually be negative. Total economy-wide debt is substantially higher in many of the world’s largest economies compared to the decade before the GFC, but average GDP growth rates have been slower in recent years. For instance, China’s debt/GDP ratio is more than 100 percentage points higher than pre-GFC years, but its average annual GDP growth rate declined by more than three percentage points.

EXHIBIT 14: Increases in debt levels have coincided with slower rates of economic growth.

1997–2007 vs. 2014–2019



Source: Jordà-Schularick-Taylor Macrohistory Database, World Bank, International Monetary Fund, Fidelity Investments (AART), as of 12/31/19.

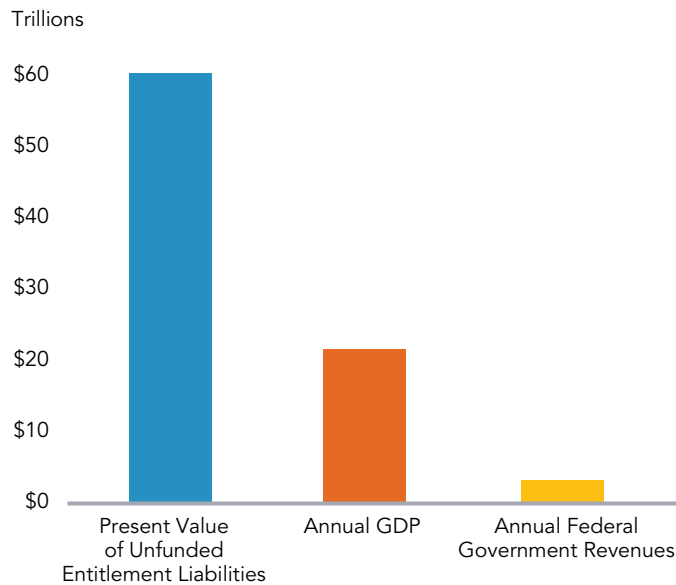
We forecast increased fiscal pressures

Worsening demographics, exacerbated by uneven economic gains, are likely to increase political support for spending on social welfare programs. Most countries have not fully budgeted for the costs associated with larger and growing retiree-age populations. Unfunded liabilities for U.S. federal entitlement programs, for example, are roughly three times annual economic output and are likely to add to the country's debt burden.

Japan serves as the foremost modern example of how deteriorating demographics make fiscal austerity extremely difficult. Of high-debt countries since 1900, Japan experienced the largest continued increase in debt after hitting a 100% debt/GDP threshold.

EXHIBIT 15: Unfunded liabilities for U.S. entitlement programs dwarf the ability to pay for them.

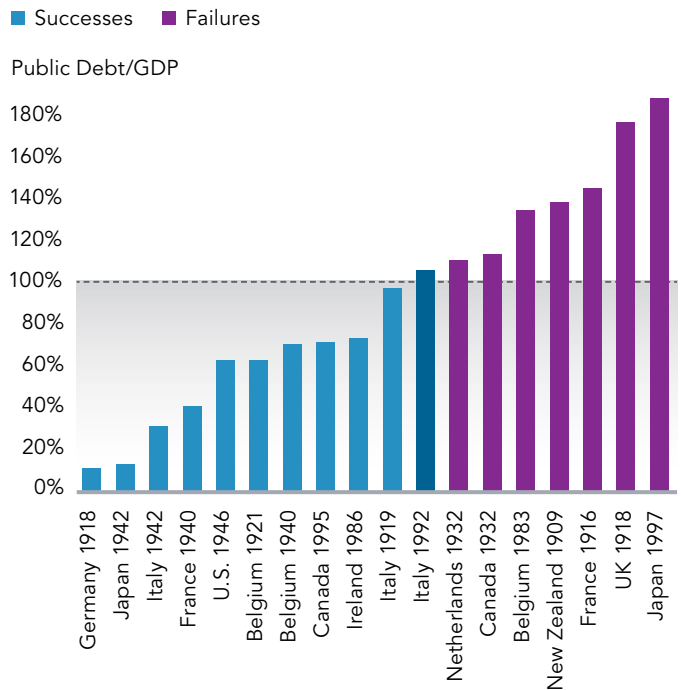
Medicare and Social Security Obligations in Perspective



Congressional Budget Office, Bureau of Economic Analysis, 2019 Annual Report of the Board of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds, Fidelity Investments (AART), as of 12/31/19. GDP: Gross Domestic Product. Source: OECD, Fidelity Investments (AART), as of 5/31/20.

EXHIBIT 16: Since 1900, high-debt countries experienced both successes and failures in lowering their debt levels.

Sovereign Debt Levels 10 Years After Hitting the High-Debt 100% of GDP Threshold



Dates represent beginning of high-debt episode. Source: IMF working paper "A Modern History of Fiscal Prudence and Profligacy," by Paolo Mauro, Rafael Romeu, Ariel Binder, and Asad Zaman (2013), Fidelity Investments (AART) as of 3/31/20.

Japan hit this debt threshold in 1997 and has periodically moved to raise taxes in an effort to improve its fiscal position. More notable, however, is the overall trend: Japan is the only high-debt country during the past century that never attempted to run fiscal surpluses even in the face of persistent downtrends in growth and inflation. This suggests that demographic decline presents a formidable obstacle for modern-day, high-debt countries to utilize fiscal austerity to achieve debt consolidation.

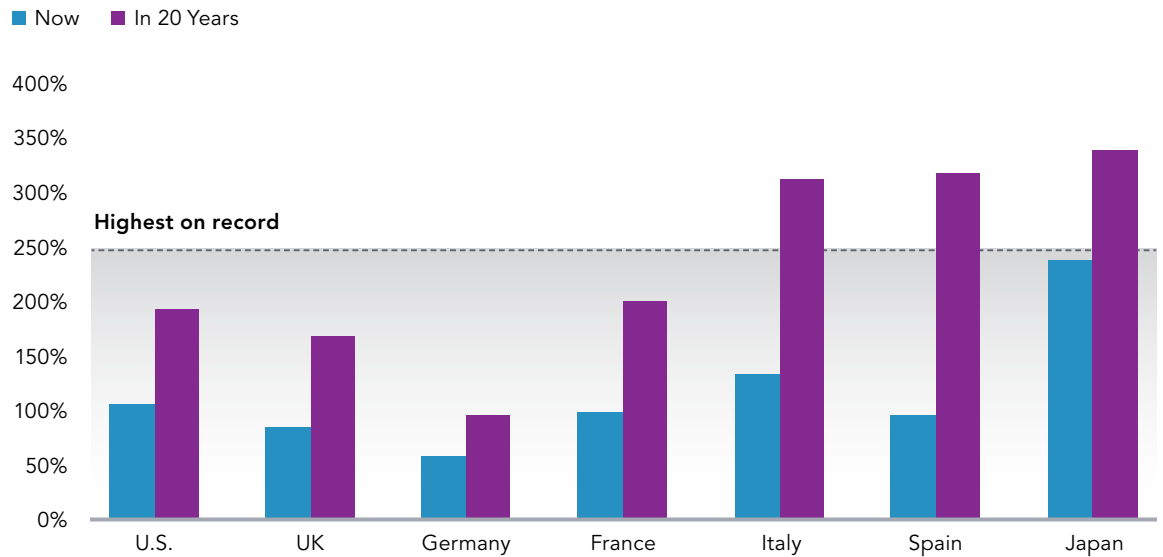
We forecast rising sovereign debt/GDP ratios

We estimate sovereign debt/GDP ratios of most advanced economies will climb steadily, and these ratios could expand even more dramatically in the wake of the COVID-19 pandemic.

Many leading economies, including the U.S., are either at or approaching the traditionally high-debt threshold of 100% debt/GDP. Using our long-term GDP forecasts – in addition to estimates of the impact of aging demographics on government budgets and financial repression that suppresses interest rates – we believe sovereign debt levels will rise markedly in the coming years. Under this scenario, several countries would surpass the highest levels of debt on record.

EXHIBIT 17: We expect already high sovereign debt levels to rise significantly over the coming years.

Public Debt/GDP Actual vs. Forecasts



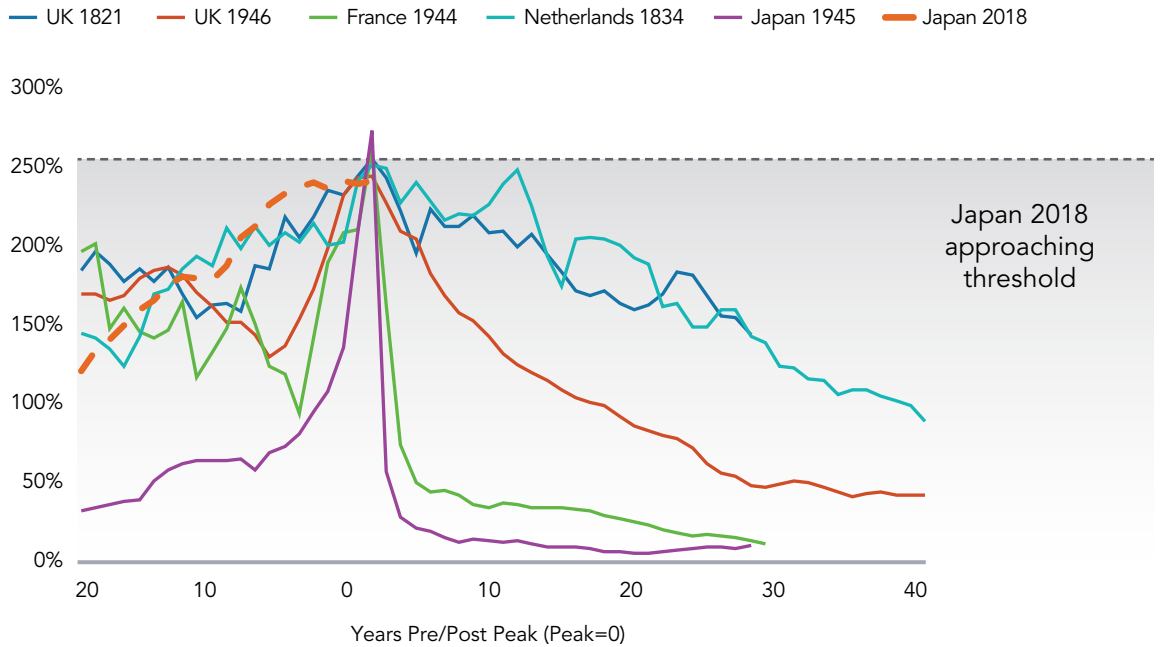
Source: International Monetary Fund, United Nations, Fidelity Investments (AART), as of 5/31/20.

We believe the rise in debt is ultimately unsustainable

Historically, no country has achieved a perpetual escalation in the debt/GDP ratio. The highest levels of debt ever achieved all topped out around 250% of GDP, including the UK and the Netherlands in the 19th century, and the UK, France, and Japan after World War II.

EXHIBIT 18: Historically, no government has been able to sustain debt above 250% of GDP.

Sovereign Debt/GDP for the Most Indebted Countries on Record



Source: IMF working paper “A Modern History of Fiscal Prudence and Profligacy,” by Paolo Mauro, Rafael Romeu, Ariel Binder, and Asad Zaman (2013), Fidelity Investments (AART) as of 3/31/20.

There may not be a “magic number” that serves as a mathematical threshold above which debt levels immediately prove unsustainable, but there is likely a psychological threshold that eventually proves insurmountable.

We believe the Fiscal Theory of the Price Level (FTPL) provides a useful framework for understanding this psychological threshold.⁴ The FTPL provides an explicit link between nominal government debt and the overall price level. It posits that fiat money is valued because the government has said it will accept it for tax payments. The value of fiat money (the inverse of the price level) is thus determined by the current stock of nominal government debt and investors’ expectations about the government’s future policy choices. In short, creditors buy government debt because they believe the government will eventually run primary budget surpluses sufficient to honor its obligations.

In theory, the ultimate ceiling for debt accumulation is when investors’ expectations shift to a belief that, at the currency price level, the government is unlikely to generate the primary surpluses necessary to repay its debt. In a market with foreign investors, it’s more generally the trust in the government’s ability to sustain the value of its currency. In practice, very few of us spend time modeling the prospects for future government budget surpluses. However, the psychological threshold is meaningful – if it becomes obvious that inflation and currency depreciation are the only way out, creditors will be increasingly unwilling to finance higher debt levels at low interest rates.



3

Policy Outlook: Greater Policy Experimentation Ahead

Mechanics of debt: Policymakers can choose any combination of levers within their control

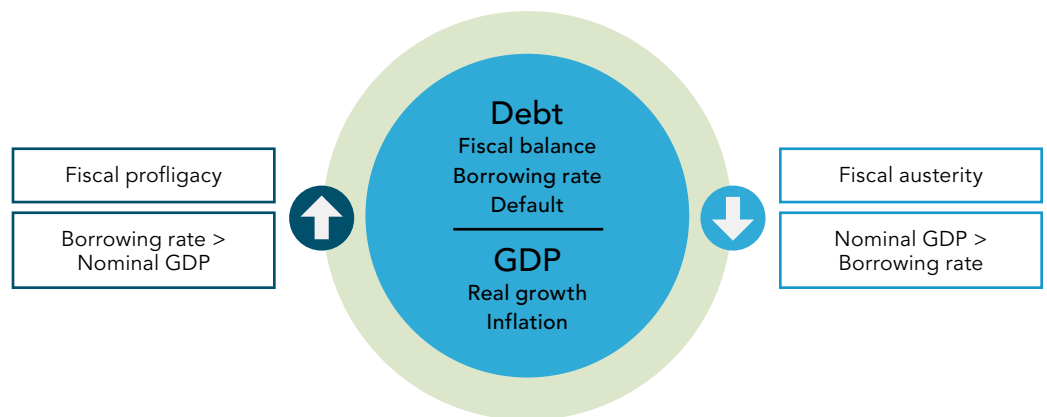
Conceptually, the limit of borrowing is defined by the amount of accumulated capital. We simply can't borrow something that does not exist. More often, however, the borrowing limit is defined by our ability to service the debt. That's a function of the outstanding debt and the interest rate on borrowing. The fact that mounting debts can – sometimes suddenly – drive up interest rates tends to further complicate matters. These considerations likely weigh on policymakers' minds and affect their behavior.

.....
 The borrowing limit is defined by our ability to service the debt.

In a nutshell, the dynamics of the debt-to-GDP ratio are driven by just a few factors. The amount of debt – the numerator – can be reduced through default, but otherwise changes according to the primary fiscal balances, namely spending and taxes, and the borrowing rate. Nominal GDP – the denominator – is a function of real growth rates and inflation as illustrated in the diagram below. In short, debt expansions are caused by fiscal profligacy and/or the borrowing rate in excess of nominal growth. Debt reductions are brought about by fiscal austerity and/or nominal growth in excess of the borrowing rate. So, to deal with the debt problem, policymakers can choose any combination of the levers within their control, depending on the situation.

EXHIBIT 19: To address high debt/GDP levels, policymakers can choose any combination of levers within their control.

Mechanics of debt



Source: Fidelity Investments (AART), as of 3/31/20.

Key lessons from history: Policy is likely to drift toward more inflationary options

When presented with a limited ability to implement fiscal austerity or to boost real growth, policymakers will target higher nominal GDP and likely drift toward more inflationary policy options.

Since 1900, we have reasonable data on 18 episodes where countries hit a debt/GDP level of 100%. Shown in Exhibit 16, these high-debt episodes generally resulted from financing world wars or extreme economic downturns such as the Great Depression. After hitting the 100% threshold, nine countries in 10 episodes succeeded in reducing their debt/GDP ratios in the ensuing decade, seven failed and experienced rising debt/GDP ratios, and one finished with roughly the same debt/GDP level. These episodes may give us clues about the policy choices and effectiveness of how highly indebted countries manage their situations.

Financial repression is the term for artificially, through non-market forces, suppressing the rate of government borrowing in order to make debt service more

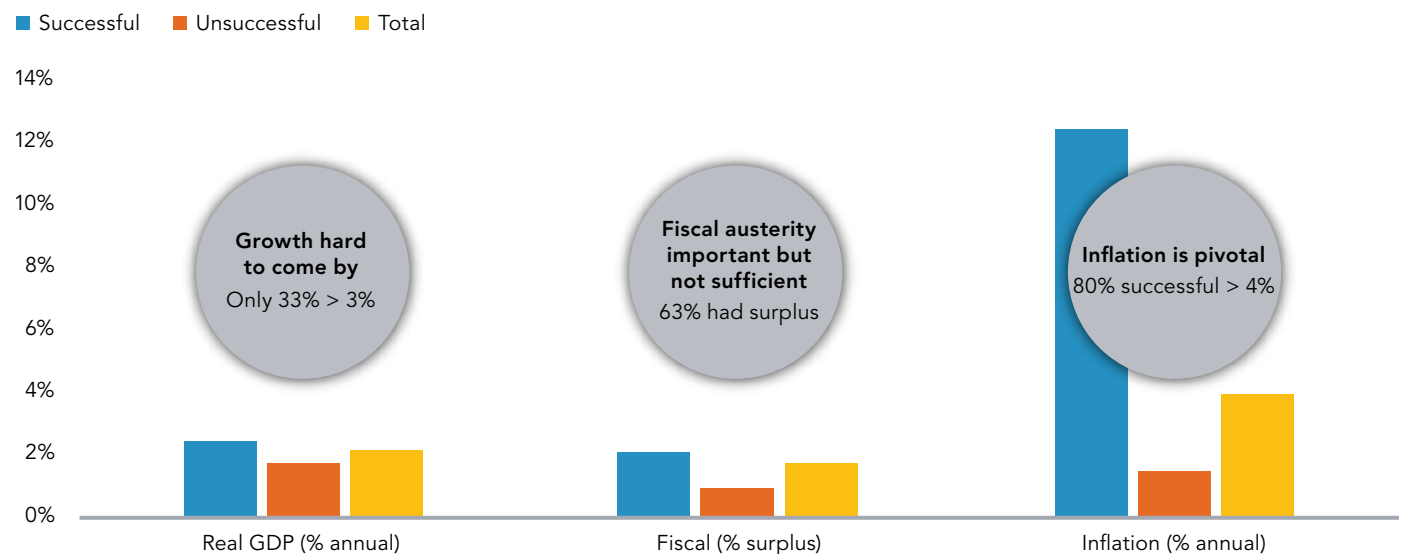
achievable. As an example, the Federal Reserve pegged the interest rate of long-term Treasuries at 2% for several years following World War II, despite rising inflation rates. While many countries may wish to financially repress borrowing, their success largely depends on the other tools at their disposal.

In the history of high-debt cases, financial repression appears widespread but not a sufficient condition to successfully arrest the rise in debt. The ability of policymakers to service their debt ultimately depended on the tools of fiscal policy, real growth, and inflation. History provides us with several lessons about managing high debt in the decade after hitting the high-debt level:

- **Slow real GDP growth was the norm:** Whether high debt was the cause or the effect, the evidence shows that few countries were able to rely on high growth as an important part of the solution to their debt problem. In the decade after hitting the high-debt threshold, real GDP averaged around 2% for both successful and failure cases. Only one-third achieved growth rates above 3%.

EXHIBIT 20: High-debt countries struggled with slow growth and often used inflation to reduce debt levels.

Median Values During the Decade After Hitting High Debt Levels



Source: IMF working paper "A Modern History of Fiscal Prudence and Profligacy," by Paolo Mauro, Rafael Romeu, Ariel Binder, and Asad Zaman (2013), DMS, Fidelity Investments (AART), as of 3/31/20.

EXHIBIT 21: Successful debt consolidation typically required multiple tools and/or inflation.

Tools Employed by High-Debt Countries

● Debt declined (success) ● Debt rose (failed) ● Debt unchanged

2 TOOLS			1 TOOL			NO TOOLS
● U.S. 1946	● New Zealand 1909		● Italy 1992			
● Japan 1942	● Ireland 1986		● Belgium 1983	● Italy 1919		
● Belgium 1940	● Canada 1995	● Germany 1918	● UK 1918	● Italy 1942		
			● Netherlands 1932	● France 1940	● Canada 1932	● Japan 1997
Inflation + Fiscal	Fiscal + Growth	Inflation + Growth	Fiscal	Inflation	Growth	None

Source: IMF working paper "A Modern History of Fiscal Prudence and Profligacy," by Paolo Mauro, Rafael Romeu, Ariel Binder, and Asad Zaman (2013), DMS, Fidelity Investments (AART) as of 3/31/20.

- Fiscal austerity was not a key swing factor:** The majority of all episodes – 63% – engaged in fiscal austerity, as defined by the achievement of primary fiscal surpluses over the ensuing decade. Fiscal balance was an important component in some of the successful debt consolidation episodes, but it appears to be an insufficient factor given that two-thirds of the failed episodes registered fiscal surpluses.
- Higher inflation was the pivotal factor:** Higher inflation was the most differentiating characteristic between successful debt consolidations and unsuccessful ones. Postwar hyperinflation drove debt reductions in Germany after World War I and in Japan and Italy following World War II. Median inflation of the successful group climbed above 12%, with four-fifths of the successful episodes averaging an inflation rate above 4%. In contrast, median inflation for the unsuccessful group was less than 2%, with only one episode of inflation registering more than 4%.
- Successful debt consolidation often involved multiple tools:** During three of the successful episodes when debt rose, high inflation proved to be sufficient. However, the other six successful cases involved two tools, half of them combining high

inflation with fiscal austerity. In sharp contrast, almost all the unsuccessful cases utilized only one tool, with fiscal austerity the single choice in the majority of cases where debt continued to rise. These results suggest the difficulty in relying on a single factor, particularly fiscal policy, to staunch the expansion of debt at high levels.

Implications for our current outlook

There have been five high-debt episodes since the 1980s. Two of them – Canada in 1995 and Ireland in 1986 – resulted in a reduction in their debt/GDP ratios because of fiscal austerity and high growth. Two others – Belgium in 1983 and Italy in 1992 – relied on fiscal surpluses but continued to face high borrowing costs and failed to generate enough nominal GDP to reduce debt levels.

The final example is Japan in 1997, which not only was unable to achieve higher inflation or growth but also generated fiscal deficits. Put simply, Japan essentially was unable to utilize any of the three tools of fiscal consolidation and remained unwilling or unable to attempt fiscal austerity even in the face of persistent downtrends in growth and inflation. Japan may be

an apt example of many advanced economies today where deteriorating demographics and slower growth make fiscal austerity increasingly difficult. This may lead to a policy decision where attempts to reduce debt levels are placed on the back-burner.

With fiscal austerity effectively off the table, the objective for many countries may be to simply attempt to boost nominal GDP above the government’s rate of borrowing so that debt servicing can continue at ever higher levels of debt. Monetary policymakers thus will keep rates low to financially repress borrowing rates. Monetary and fiscal policymakers will increasingly coordinate their efforts in an attempt to raise nominal GDP.

Past accommodative policies failed to reach their growth, inflation, and distribution goals

In the aftermath of the 2008 financial crisis, accommodative monetary and fiscal policies initially counteracted the financial shock and helped alleviate the damage to the economy. Over the past decade, however, rising debt and extraordinary monetary policies have:

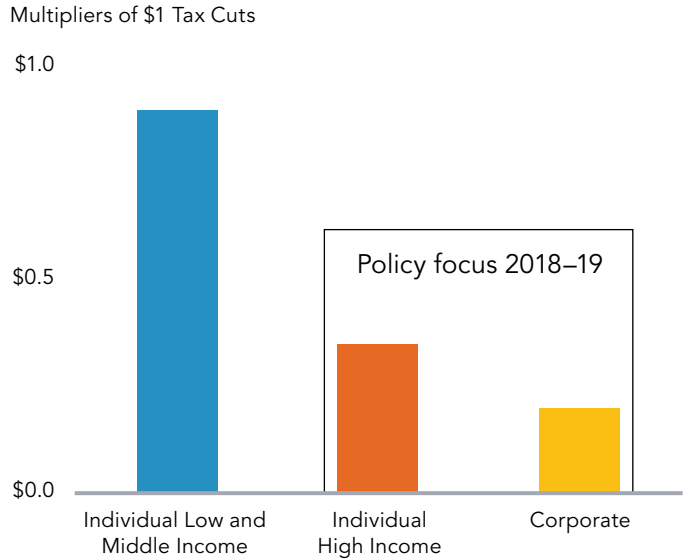
- Failed to increase inflation or GDP growth rates due to the diminishing effect of incremental debt, periodic fiscal austerity, fiscal deficits marked by low-multiplier activities, and the unintended consequences of extraordinary monetary policies.
- Exacerbated negative distribution effects, namely boosting asset prices for the wealthy and big businesses at the expense of lower- and middle-income tiers together with small businesses.

There are a variety of reasons why accommodative policies failed to achieve their objectives.

- On the monetary side, extraordinary policies did not induce banks to lend more or consumers to spend more. The unintended policy consequences included higher household savings rates, impaired bank profitability, and the increase in zombie companies.⁵
- Fiscal and monetary policies were not always in sync. After the U.S. economy emerged from recession in the second half of 2009, the Fed kept interest rates near

EXHIBIT 22: In recent years, fiscal policy often focused on low-multiplier activities.

Impact of \$1 of Tax Cuts on Economic Activity (Fiscal Multiplier)



Source: Congressional Budget Office, Fidelity Investments (AART) as of 12/31/19.

zero and implemented several rounds of quantitative easing over the next several years. However, fiscal policy turned tighter after the initial recession stimulus, with the budget deficit dropping from 10% in 2009 to only 2.4% in 2015. When fiscal policy eased significantly during 2017–18, it occurred during a backdrop of monetary tightening.

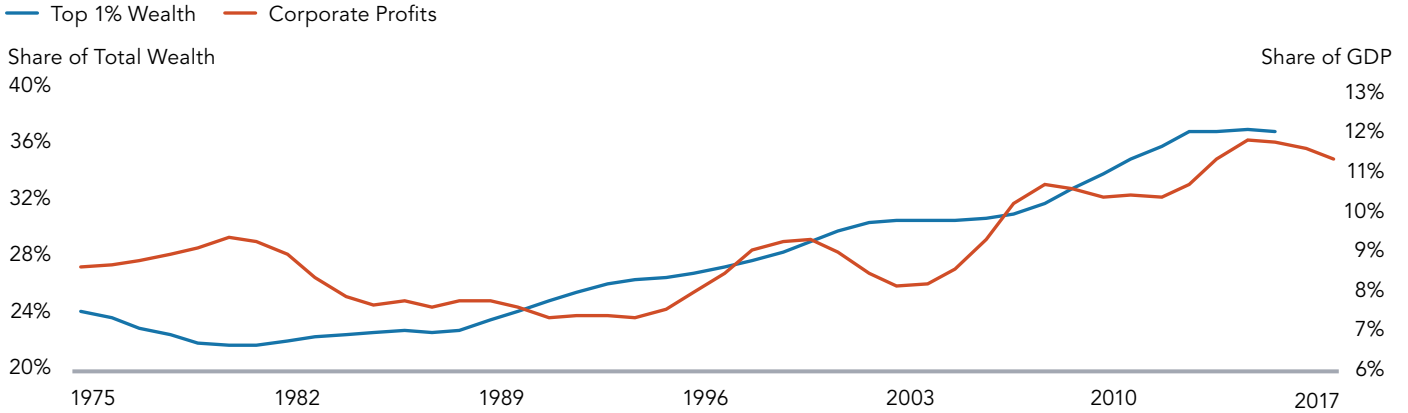
- The relaxation of fiscal policy and higher deficits in recent years was in large part devoted to low-multiplier activities. Tax cuts tend to be less stimulative for growth than direct spending, particularly if they are directed at corporations and wealthy households that already have high savings rates.

Political support for a policy shift has grown

From a political standpoint, existing policies are broadly considered a contributor to the greater concentration of income and wealth in the hands of big businesses and wealthier individuals. For instance, one popular critique alleges government stimulus and bank re-capitalizations bailed out Wall Street financial institutions at the

EXHIBIT 23: Political support for wealth redistribution policies has grown as inequality has risen.

Wealthy Individuals and Corporations Take a Greater Share of Wealth and GDP



Data represented as 5-year moving averages. Source: Bureau of Economic Analysis, World Inequality Database, Fidelity Investments (AART) as of 12/31/18.

expense of homeowners. Another is that government policies fostered globalization leading to job losses for middle-class manufacturing workers but increasing benefits for executives and wealthy owners of financial assets.⁶

In this environment, academic and political support is rising for greater fiscal policy activism and coordination with monetary policy. Specifically, there is rising chatter about using fiscal policy more proactively to make up for monetary policy limitations. Just a few years ago academic advocates for more active fiscal policy, such

as economist and former Treasury Secretary Larry Summers, were outside the mainstream dominated by economists preaching the importance of debt consolidation. Today, many mainstream proposals call for more structured monetary-fiscal policy coordination, and they are ultimately about putting money directly in the hands of spenders, rather than of buyers of financial assets. The extreme version is Modern Monetary Theory (MMT) that explicitly calls for monetary financing of fiscal deficits. This shift in academia provides a supportive underpinning for greater experimentation by policymakers.

EXHIBIT 24: Mainstream economic views have shifted to supporting greater fiscal accommodation.

Academic Opinions of the Role of Fiscal Policy: A Few Years Ago vs. Today

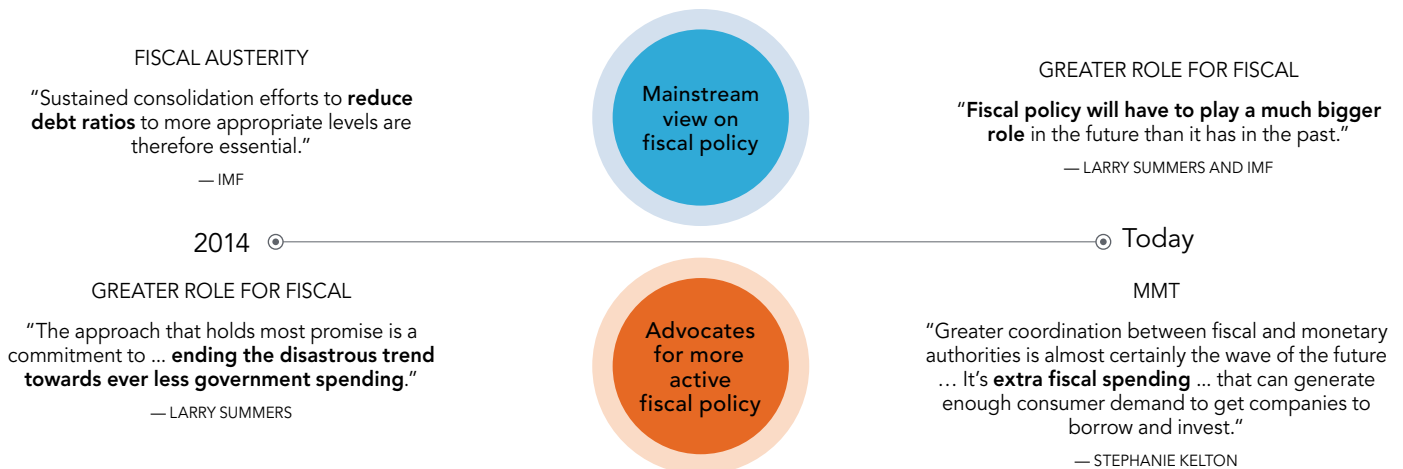
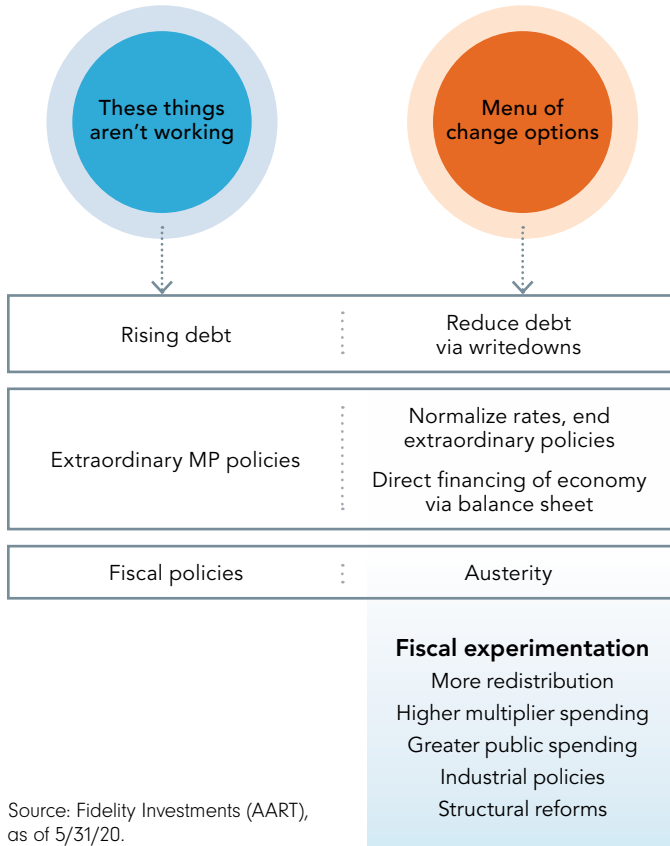


EXHIBIT 25: Greater fiscal experimentation appears the most likely of new policy options.

Current Policies and Options for Possible Changes



Source: Fidelity Investments (AART), as of 5/31/20.

Policymakers will try even harder to hit their goals

Once we get past the COVID-19 recession, policies will likely still be inadequate. We may be facing a disappointing economic recovery, a tremendous pile of debt, and the same sense that monetary and fiscal policies are accommodative but not effective in reaching growth, inflation, and distribution targets.

At a high level, the table to the left lists some of the options for policy change.

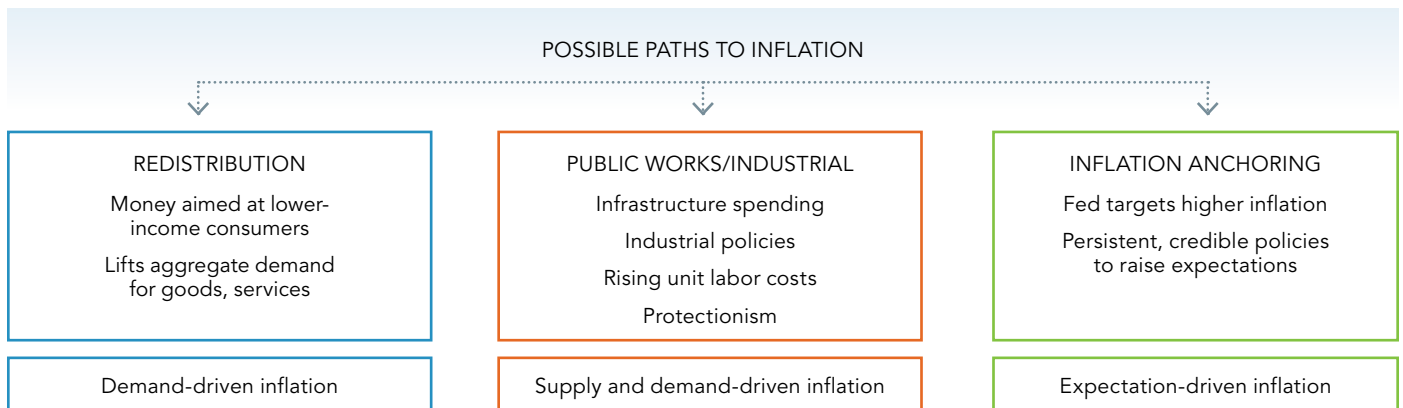
- A reversal of the current policy direction, e.g., fiscal austerity and a normalization of monetary policies, appears to be a long shot.
- Debt writedowns and direct Fed financing of the economy are possibilities.
- The odds of more dramatic changes to fiscal policy, enabled by existing or beefed-up extraordinary monetary policies, appear high.

Examples of fiscal-monetary experimentation

Nominal GDP and inflation expectations could be boosted through policies centered on redistribution, spending and industrial policies as well as inflation anchoring.

EXHIBIT 26: Greater fiscal-monetary experimentation may be more inflationary.

Descriptions of Redistribution, Industrial, and Inflation-Anchoring Policies



Source: Fidelity Investments (AART), as of 5/31/20.

Redistribution policies

Key characteristics:

- Money aimed at lower- and middle-income households
- Boosts in aggregate demand via high-multiplier stimulus
- Potential demand-driven inflation

If fiscal policy is increasingly aimed at lower- and middle-income households that have lagged behind the gains of wealthier households, it will attempt to boost demand among the segment of the population with the highest propensity to consume. In other words, fiscal policies would have a higher multiplier effect and a greater likelihood of boosting nominal GDP growth.

Example: Provide a \$2,000 debit card to every person in the U.S. and reload it with \$1,000 monthly, financed by minting \$1 trillion in coins. This was originally proposed by U.S. Rep. Tlaib as a coronavirus response, but proponents of basic universal income policy advocate for indefinite support. Financing this benefit via money printing makes it an example of the MMT school of thought.

Public works and industrial policies

Key characteristics:

- Increased, reasonably high-multiplier spending not offset by higher taxes
- Could be combined with protectionist measures with a “made in America” rationale
- Could remake the economy with a specific goal of improving infrastructure in a particular sector, e.g., green/environmental, 5G/broadband/technology, health care
- Could include mandated minimum wages and pay increases for beneficiaries
- Potential supply-and-demand-driven inflation

If fiscal policy is increasingly aimed at building infrastructure and stimulating domestic production, it will potentially combine high-multiplier spending with a flavor of protectionism. Put another way, industrial policies combined with government spending would have the potential of both boosting demand and creating supply-driven inflation where global manufacturing supply chains were replaced with higher-cost domestic ones.

Example: A multitrillion-dollar and multiyear plan to rebuild U.S. health care supply chains and strategic stockpiles for everything from pharmaceutical chemicals to ventilators. Raise tariffs on health care imports, subsidize domestic manufacturers, and mandate minimum worker compensation packages with built-in wage increases for companies receiving funds. This would boost domestic demand and restrict the supply of lower-cost foreign imports.

Inflation anchoring

Key characteristics:

- Persistent, credible public effort to raise inflation expectations
- Cornerstone would be Fed policy change to a higher inflation target
- Potentially reinforced through government policies that target or mandate pay increases for households or workers benefiting from government assistance
- Expectation-driven inflation

The essence of this shift would be a continuing public effort to raise inflation expectations. The effort would presumably begin with the central bank with the Fed targeting a higher level of inflation over time. It could then be reinforced via fiscal or other government policies that mandate inflation adjustments for the workers of any businesses receiving loans or assistance from the Fed or federal government.

Example: The Fed appears to be edging closer to adopting Average Inflation Targeting. In order to make up for past misses in inflation on the downside, the Fed will explicitly target bringing inflation above target for a time and could also raise its inflation target to 2.5% (or higher). The Fed might require – or Congress could mandate that it requires – any businesses or entities that have participated in its financing facilities to provide their employees inflation-adjusted wage gains on a recurring basis.

Bolder policies and different circumstances would be more inflationary than in the recent past

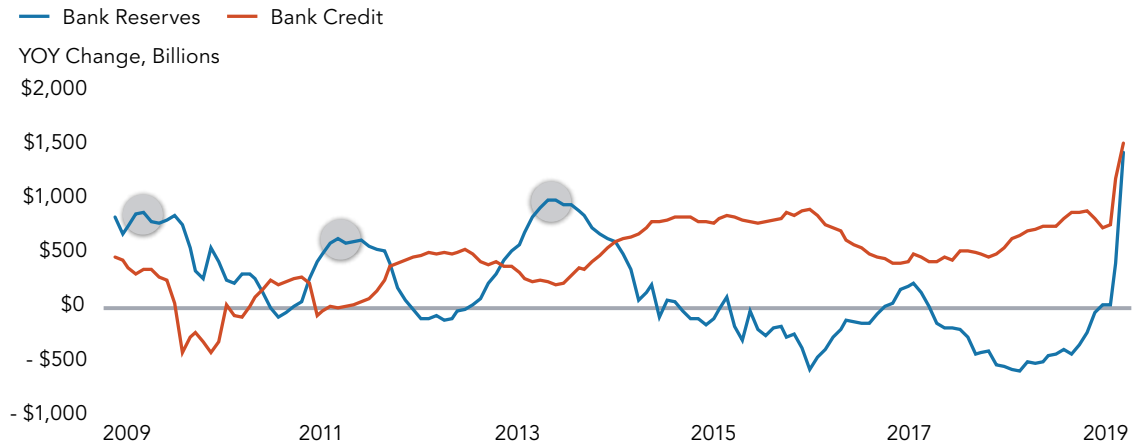
To date, the Fed's extraordinary actions generally fit into three buckets: financial repression, purchasing government-issued debt and other securities through quantitative easing, and lending to non-government borrowers through special-purpose facilities. These actions have tended to expand the Fed balance sheet, boost asset prices, and incentivize public and private debt issuance.

One thing these actions didn't do was create higher inflation. In addition to the factors discussed previously about the unintended consequences of extraordinary monetary policies, the broken monetary transmission with the banking system was a key factor in blunting the inflationary impact of the Fed's accommodative policies.

Over the past decade, the Fed's balance sheet expansion mostly ended up in extra cash reserves for banks. Banks generally parked the money in their reserve accounts with the Fed instead of lending it out to the broader economy. During the Fed's various QE programs – launched in early 2009, late 2010, and again in early 2013 – large increases in bank reserves coincided with decelerations in bank lending (see exhibit). Since 2008, the growth in bank reserves has exhibited a negative -0.61 correlation with bank credit. The Fed effectively pushed cash onto the balance sheets of banks through its QE programs, but banks failed to translate that into greater lending into the economy, higher economic growth, or higher inflationary pressures.

EXHIBIT 27: The Fed’s QE programs between 2009 and 2014 boosted bank cash reserves but not lending.

Bank Reserves vs. Bank Credit



Source: Federal Reserve Board, Haver Analytics, Fidelity Investments (AART), as of 3/31/20.

In the years after the GFC, bank lending was likely restrained by expectations for slow growth as well as regulatory mandates to hold higher-quality, more-liquid assets. For roughly a decade, nominal GDP growth remained range bound around 4%. At no point did fiscal policy ever generate an expectation that nominal growth was poised for a sustained acceleration. In the future, the relaxation of regulatory constraints and a shift toward more growth-oriented fiscal policies may change this dynamic.

In this policy environment, banks may be more willing to lend because they will find more beneficiaries of government policies among households and businesses. In an aggregate sense, higher nominal growth expectations would incentivize banks to lend, instead of hoard, cash. This may be coupled with the relaxation of regulatory constraints to free banks to lend more and retain smaller liquidity buffers. In addition, new post-COVID-19 Fed facilities that bypass the traditional banking system and lend directly to corporate, municipal, and “Main Street” borrowers may allow even greater transmission of Fed easing policies into the real economy.

This dynamic would partially repair the broken monetary transmission mechanism and allow a rising Fed balance sheet to translate into greater money growth in the real economy. How much of this increase in nominal growth expectations results in faster real GDP growth – versus an increase in inflation – will depend upon the exact mix of policies, how the fiscal expenditures are financed, and inflation expectations.

Fed policy and the source of fiscal financing will also be important determinants of the inflationary impact of these policies. The consequences of potential Fed policies are detailed below.

The current extraordinary monetary policies, including Fed balance sheet expansion that raises bank reserves, have not been inflationary for the reasons listed above. They will likely not be inflationary during a recession or when there is still large spare capacity in the economy. However, in conjunction with greater fiscal experimentation during a period of economic

expansion, the combination is likely to become more inflationary against a backdrop of higher nominal growth expectations. New secular trends such as de-globalization may also contribute to a more inflationary backdrop than in the recent past.



If the Fed directly finances these policies – either by lending directly to non-government spenders or by printing money and giving it to the government – these policies are likely to be even more inflationary. These direct financing options are effectively forms of implementing MMT where no distinction is made between the Fed and the federal government’s balance sheets. The inflationary impact of forgiving debt would depend on the details. Write-downs of government loans (such as student loans) would be inflationary, but forgiveness of other types of debts would depend on whether or how creditors were compensated.

For policymakers, generating just enough inflation in this way is hard and the risk of accidentally creating too much inflation is considerable. Expectations-driven inflation may create a further upside risk to inflation once the disinflationary trend is broken. A big risk is unanchoring inflation expectations, which could become a major hurdle for reducing inflation down the road. In addition, there’s a risk of destabilizing currency markets if major central banks fail to achieve sufficient coordination in their interventions.

In short, if the trend toward greater fiscal and monetary experimentation continues in this direction, rising inflation and inflationary expectations are likely. The real question is to what degree. The easy answer is it will be higher than what is priced into today’s financial markets.

EXHIBIT 28: Monetary accommodation for bolder fiscal policies could become inflationary, especially if the Fed moves to more direct financing methods.

Monetary Policy Actions and Their Impact on Debt and Inflation

	POLICY ACTION	IMPACT ON FEDERAL GOVERNMENT DEBT	FINANCING IMPACT ON BOLDER FISCAL POLICIES
	Financial repression – low rates	Enables an increase	Somewhat inflationary
	Quantitative easing – buying government guaranteed securities	Enables an increase	More inflationary
	Fed lends to non-government borrowers (special purpose facilities)	Small increase for risk capital	More inflationary
	Fed prints money and gives to government to spend	No change (direct financing)	Very inflationary
	Helicopter money – Fed prints money and gives directly to non-government spenders	No change (direct financing)	Very inflationary
	Debt jubilee – forgiveness of debt	Depends	

Source: Fidelity Investments (AART), as of 5/31/20.



4

Investment Implications for Strategic Allocation

Lessons from history: High-debt cases/wealth redistribution periods suggest the need for an above-average diversification of revenue sources

We don't know with certainty the future path of growth, inflation, policy or debt levels for the world's high-debt countries. Still, the historical case studies we presented provide lessons about how assets performed in the decade following the move into high-debt territory ($\geq 100\%$ of GDP):

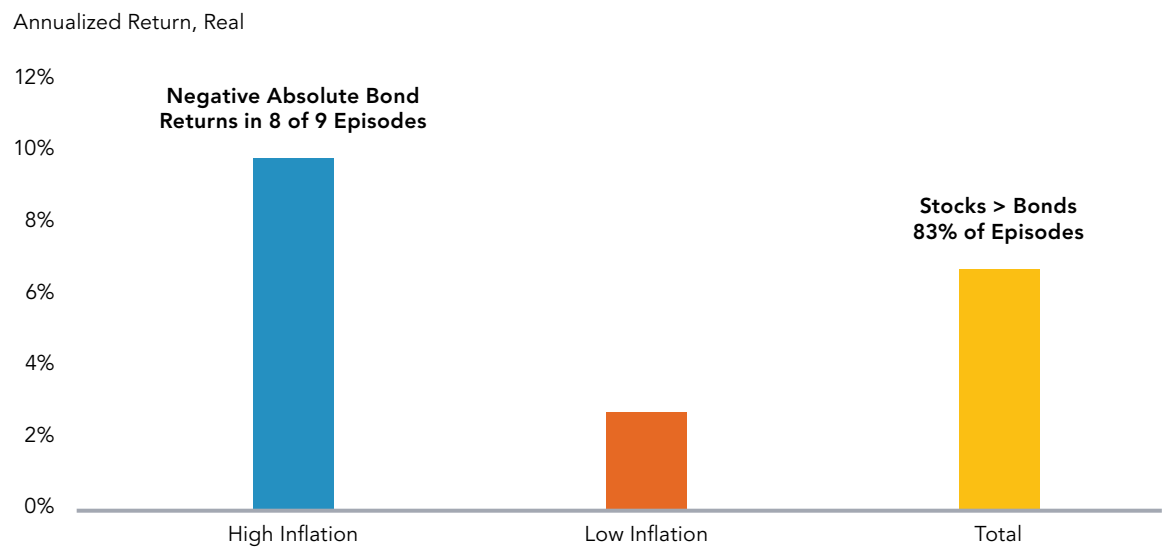
- Stocks outpaced bonds
- Global stocks beat domestic issues
- Real assets performed well
- Stock-bond correlations heightened, making diversification harder

Stocks typically outpaced bonds

For an investor making an asset allocation decision within a high-debt country, equities were a far better choice than bonds, outperforming in 15 of 18 cases. Overall, equity markets outpaced domestic bonds by an average of 6.6% per year in inflation-adjusted dollar terms. Countries registered an even larger outperformance if they experienced inflation above 4% (9.7%) and successful debt consolidation (7.9%). The poor performance of bonds was a major contributor to these patterns, with bond markets suffering absolute negative returns in eight of the nine high-inflation episodes.

EXHIBIT 29: Stocks tended to outpace bonds in high-debt countries.

Stock Returns Minus Bond Returns in the Decade After Hitting High Debt Levels



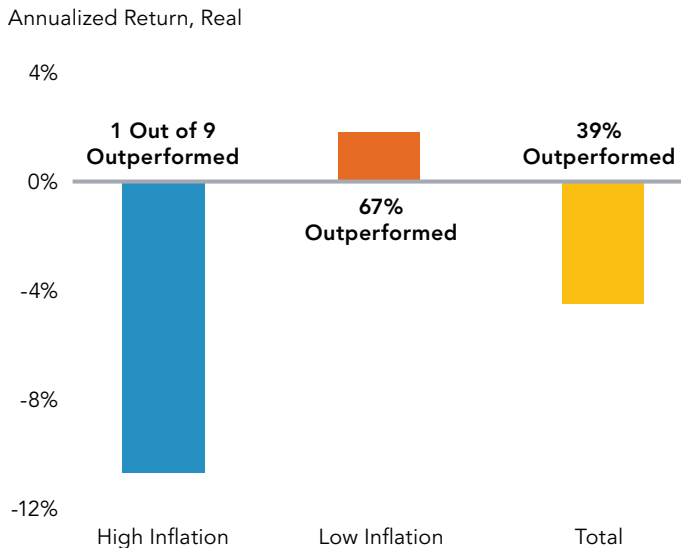
Source: IMF working paper "A Modern History of Fiscal Prudence and Profligacy," by Paolo Mauro, Rafael Romeu, Ariel Binder, and Asad Zaman (2013), DMS, GFD, Fidelity Investments (AART), as of 3/31/20.

Domestic stock returns typically underperformed global equities

The equity markets of high-debt countries tended to underperform global stock returns by an inflation-adjusted average of 4.5% per year. In the high-inflation episodes, global stocks outperformed highly indebted country stock markets by an average of 10.8% per year, implying that high inflation typically led to significant currency depreciation that detracted from performance from a dollar-based perspective.

EXHIBIT 30: Domestic stocks tended to underperform global equities in high-debt countries, in part due to high inflation.

Domestic Stock Returns Minus Global Stock Returns in the Decade After Hitting High Debt Levels



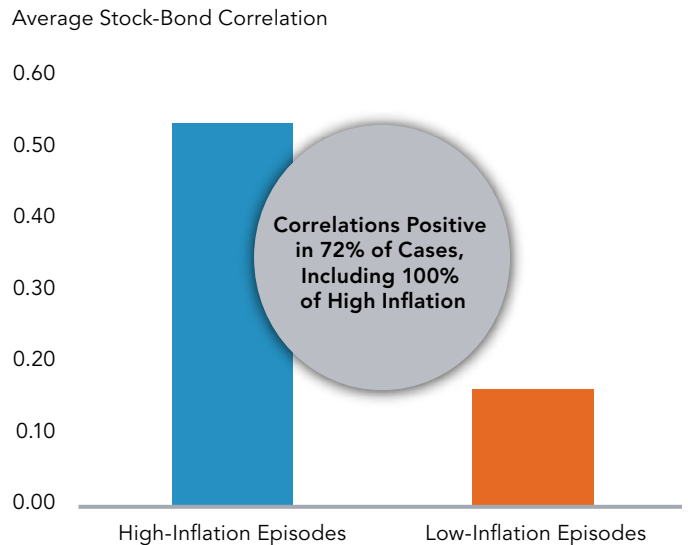
Source: IMF working paper "A Modern History of Fiscal Prudence and Profligacy," by Paolo Mauro, Rafael Romeu, Ariel Binder, and Asad Zaman (2013), DMS, GFD, Fidelity Investments (AART), as of 3/31/20.

Stock-bond correlations were typically positive, especially during higher-inflation episodes

In 13 out of the 18 high-debt episodes, domestic stock market performance was positively correlated with bond performance, with an average .34 coefficient. For high-inflation episodes, the stock-bond correlation averaged .53 while averaging only .16 during low-inflation stints. In dollar terms, stock-bond correlations were generally higher and positive in all 18 high-debt episodes.

EXHIBIT 31: Correlations of stock and bond returns were higher in high-debt countries with higher inflation.

Stock-Bond Return Correlations in the Decade After Hitting High Debt Levels



Based on local currency returns. Source: IMF working paper "A Modern History of Fiscal Prudence and Profligacy," by Paolo Mauro, Rafael Romeu, Ariel Binder, and Asad Zaman (2013), DMS, GFD, Fidelity Investments (AART), as of 3/31/20.

From the foregoing, we draw the following conclusions about high-debt-country asset markets:

- Both financial repression and inflation had a negative impact on bond returns, implying a challenging outlook for bond performance.
- On the other hand, inflation was a headwind for stock returns compared to global markets, due, in part, to currency depreciation. This implies that successful debt reduction via higher inflation may not make a country’s equities attractive on a relative basis compared to other countries.
- U.S. stocks (1947) were the only high-inflation exception that outperformed global stocks, perhaps due to the dollar’s emergence as the global reserve currency. This implies that status as a global reserve currency may help cushion a country from extreme currency depreciation, if that reserve status can be maintained. Today, many of the world’s most widely used currencies belong to countries with high debt.
- Higher inflation coincided with higher stock-bond correlations, implying that traditional stock-bond diversification may not be sufficient.

Historical case studies of prior periods of wealth redistribution confirmed many of the same conclusions as the high-debt episodes. In the three decades that followed World War II, many large advanced economies experienced a rise in the income and wealth share of their middle class relative to their upper tier. Reasons for this wealth redistribution included higher taxation rates on top levels of income and inheritance, the increased power of labor unions during the post-war industrial expansion, and relatively broad-based economic expansions during the post-war recovery. During this time inflation tended to be higher and more volatile compared to both the deflationary Great Depression that preceded it and the disinflationary era of independent central banks that followed.

Using robust controls with an objective of maximizing risk-adjusted returns, we evaluated the portfolio

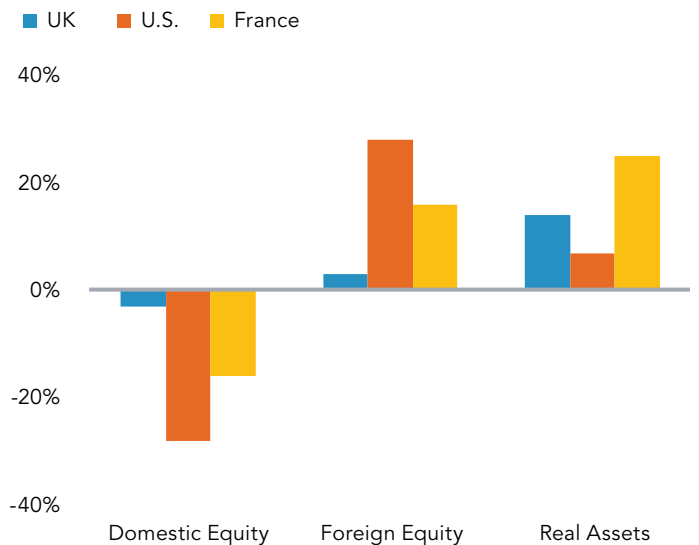
recommendations for three countries (U.S., UK, and France) from this period of wealth distribution relative to the entire history since 1900. From an asset allocation standpoint:

- Real assets perform well; this allocation should be sourced from fixed income.
- On the equity side, allocations to foreign stocks should be increased relative to domestic stocks.⁷

While history serves as a partial guide at best, these historical episodes of high-debt countries and the application of wealth redistribution policies underscore a broad need for strategic asset allocation strategies that source greater diversification of return sources than normal.

EXHIBIT 32: A portfolio with bigger exposures to foreign equities and real assets would have fared better during periods of wealth redistribution.

Difference in the Recommended Portfolio Allocation: Wealth Redistribution Period (1947–79) vs. Long-Term History (1900–2017)



Source: GFD, Fidelity Investments (AART), as of 3/31/20.

Five key investment conclusions

We feel there are five key implications of rising debt that should be critically evaluated as part of the strategic allocation and plan governance of institutional portfolios.

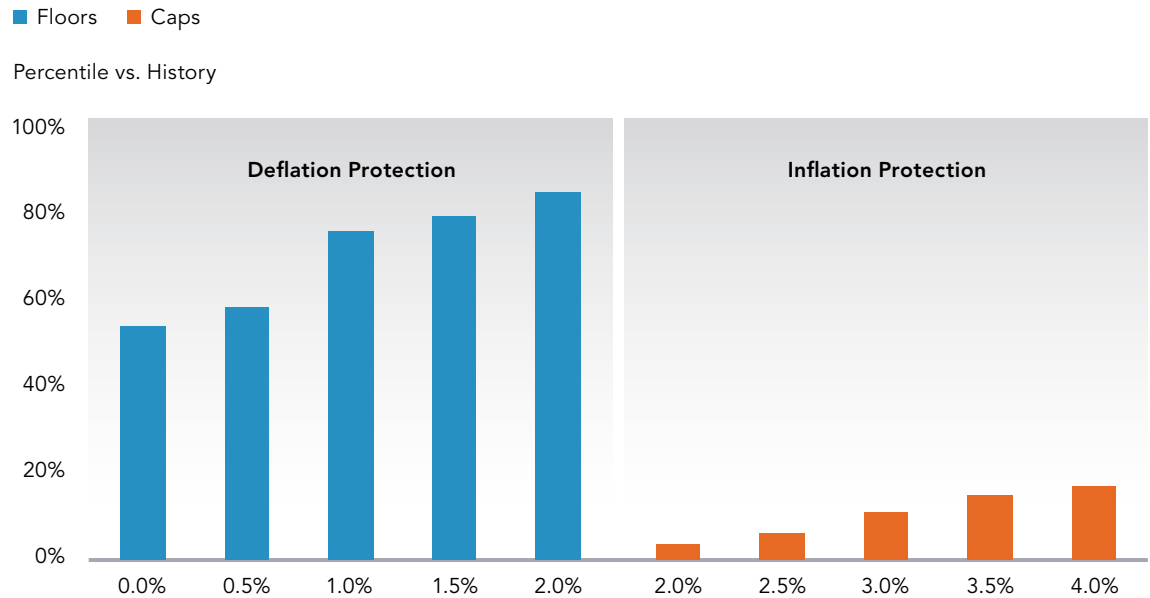
1. Raise multi-asset and multi-thematic exposure to inflation

A shift to higher inflation would be the biggest potential surprise to the asset markets. After nearly four decades of disinflation, market expectations have priced in low inflation indefinitely. Inflation protection is relatively inexpensive, and nothing would surprise the markets more than a sustained increase in inflation expectations.

If we look at the prices for options on future inflation, we can calculate the premiums that investors pay to hedge against inflation falling or rising beyond a given threshold over a five-year horizon. The premiums are at historically high levels for deflation, but the cost of buying protection against inflationary outcomes is extremely low.

EXHIBIT 33: The cost of buying protection against inflationary outcomes is extremely low.

Option Premiums for 5-Year U.S. Inflation and Deflation Protection

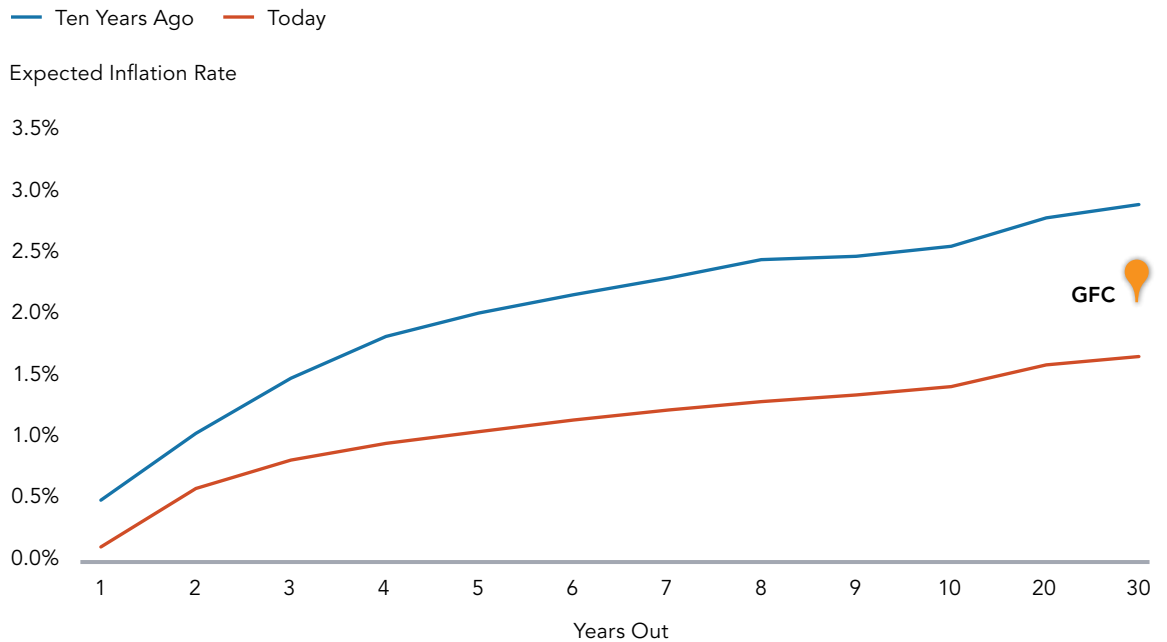


Source: Bloomberg, Fidelity Investments (AART), as of 6/12/20.

The markets also appear complacent about any prospect for inflation to rise far off into the future. Today, the expected inflation curve over various time horizons, e.g., implied inflation from swap prices, is much flatter relative to historical norms. Typically, investors would demand a higher uncertainty premium for longer time horizons given the greater uncertainty around inflation outcomes decades from now. Today, 30-year inflation expectations are 50 basis points lower than during December 2008, which was the height of the deflation scare during the GFC when near-term inflation expectations turned negative.

EXHIBIT 34: Inflation expectations appear complacent about the prospects for higher inflation far into the future.

Expected Inflation Rates Implied from Inflation Swap Prices: Current vs. History

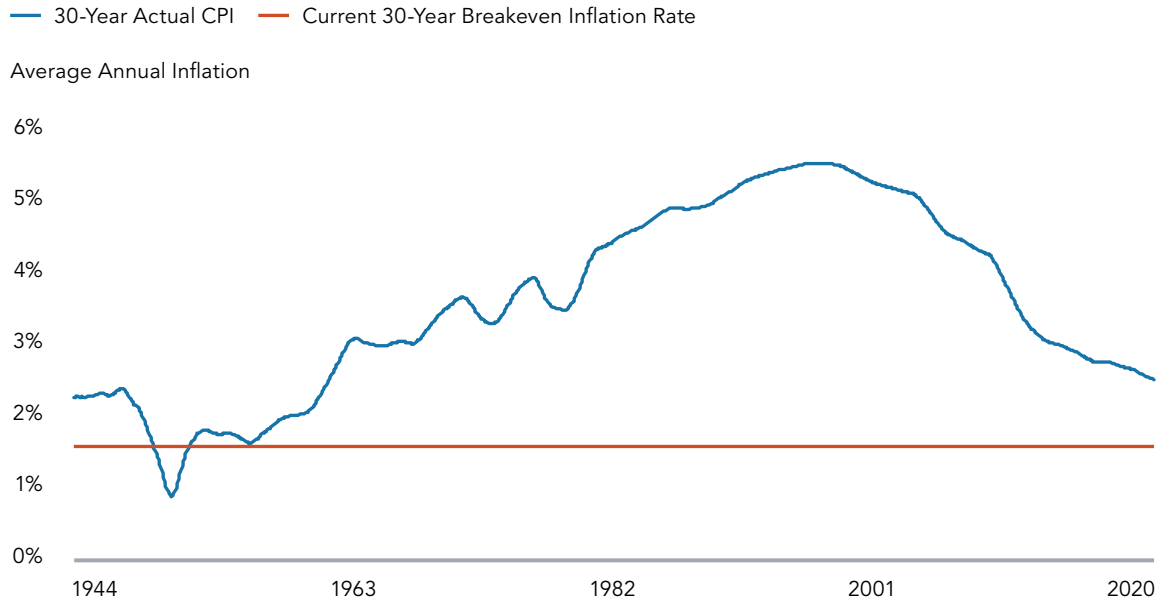


Source: Bloomberg, Fidelity Investments (AART), as of 5/31/20.

According to the implied inflation in the TIPS markets, investors expect inflation over the next 30 years to be roughly a full percentage point lower than the low actual inflation observed over the past 30 years. At about 1.5%, this 30-year expectation is well below historical inflation rates in the U.S., except during the period of the Great Depression.

EXHIBIT 35: Long-term inflation expectations are well below historical experience, except during the Great Depression.

30-year Inflation Rates: Historical vs. Expected



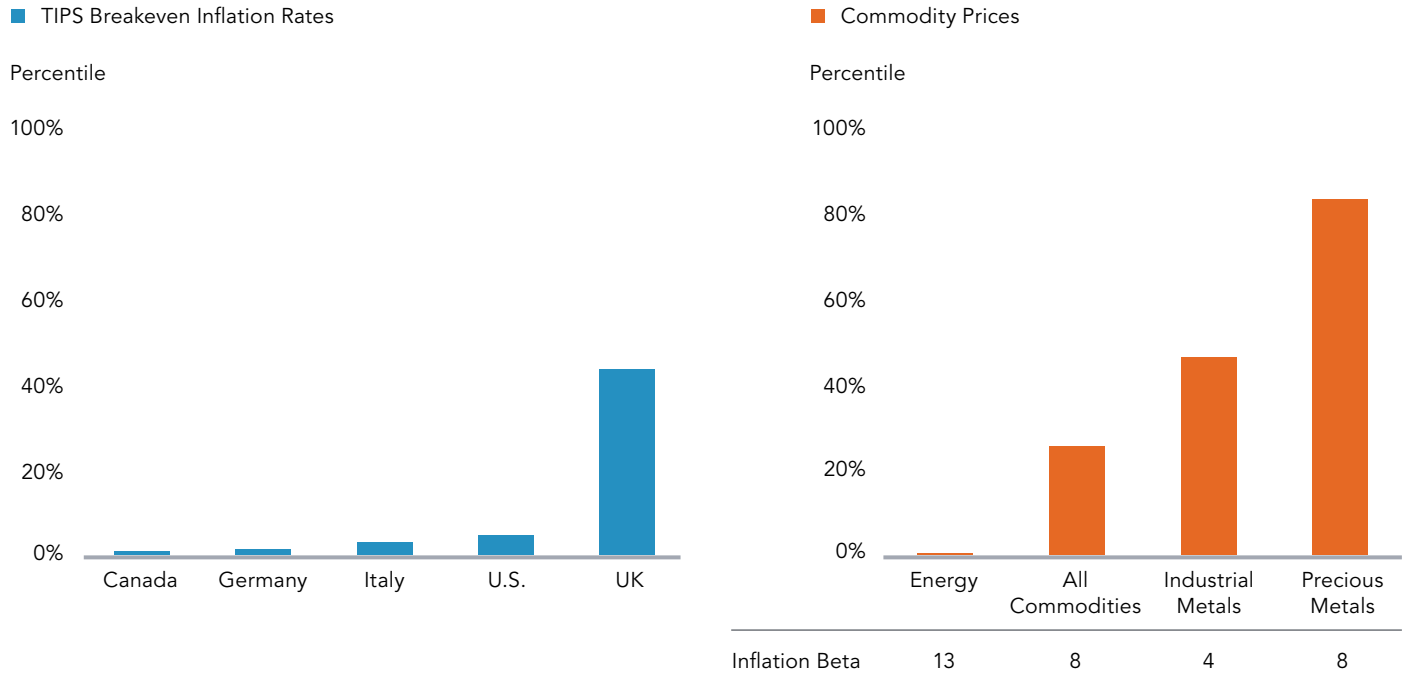
Source: Bureau of Labor Statistics, Fidelity Investments (AART), as of 4/30/20.

Inflation-resistant assets trade at the low end of their historical range, suggesting inflation protection is relatively inexpensive across various assets. For example, TIPS’ breakeven inflation rates – the difference between TIPS’ real yields and nominal Treasury yields – for most countries are in the bottom 5% of their historical observations. Commodity prices are generally in the bottom quartile of observations as well, with energy prices particularly inexpensive.

The structure of future inflationary trends will be important in how different asset prices will react. TIPS provide inflation protection through a direct adjustment based on the movement in broad consumer price indexes, but their absolute returns will depend on a variety of other factors. Commodity prices have traditionally had high sensitivity – calculated as betas – to surprise changes in inflation, but it is possible to have higher inflation without widespread increases in commodity prices. The exact nature of future inflationary pressures is uncertain and could affect different sectors of the economy to varying degrees. Allocating to a variety of investing themes across assets that may have pricing power will be essential.

EXHIBIT 36: Most inflation-resistant assets trade at the low end of their historical range.

TIPS Long-Term Breakeven Inflation Rates (BEI) and Commodity Prices Relative to History



LEFT: All bonds are 10 years, except for 20 years for Canada, relative to their history since inception. Source: Bloomberg, Fidelity Investments (AART), as of 5/31/20. RIGHT: Commodities are components of the Barclay’s Commodity Index relative to its history since inception. Source: Bloomberg, Fidelity Investments (AART), as of 5/31/20.

2. Increase the risk budget for active asset allocation

A higher active allocation budget may be required to take advantage of opportunistic openings during periods of high volatility and shifts in investment regimes. These changes often occur in fits and starts, so it is not difficult to imagine broad swings in investor sentiment between inflationary and deflationary outcomes. Shifts can also come in response to changes in government and central bank policies. A higher active allocation budget will allow for more nimbleness in response to higher volatility and the potential emergence of greater relative value opportunities.

In addition to allocating a higher portion of the strategic risk budget to more active decisions, rigorous process discipline will become increasingly important. Government policy is only partly driven by economic

considerations, thus becoming very difficult to analyze and link to asset prices. In order to pivot in a timely manner to consequential changes in government policies or geopolitical events, advance decisions about implementation will be critical to success. Theoretically, these strategies are best implemented using an overlay sleeve designed to be aware of the underlying portfolio. In this manner, aggregate exposures can be achieved without accumulating common risks or diluting positions via offsetting exposures of underlying managers. However, modest exposure to explicitly unconstrained strategies can work to exploit regime changes and has the added benefit of being explicit about the amount of risk being allocated.

3. Prefund an allocation to “distressed” opportunities

We expect monetary policy to remain broadly accommodative, but central banks may at times seek to normalize or restrain their activities if they perceive excesses. With capital markets highly dependent on liquidity provided by central banks, any credible threat or evidence of a withdrawal could wreak havoc through some combination of rising real rates, dollar shortages and/or refinancing risk. This will show up across a range of credit and repo markets, emerging market currencies and credits, sovereign debt, commodities, and any areas with high beta to rising liquidity.

Generally, investors get paid handsomely for providing liquidity during these periods. Unfortunately, very few investors have governance structures that permit taking such risks, nor do they have access to information that permits expedient decision-making. This is a different playbook from one we observed during the past 40 years. Prefunding a pool of capital to take advantage of such dislocations may prove beneficial. It’s important

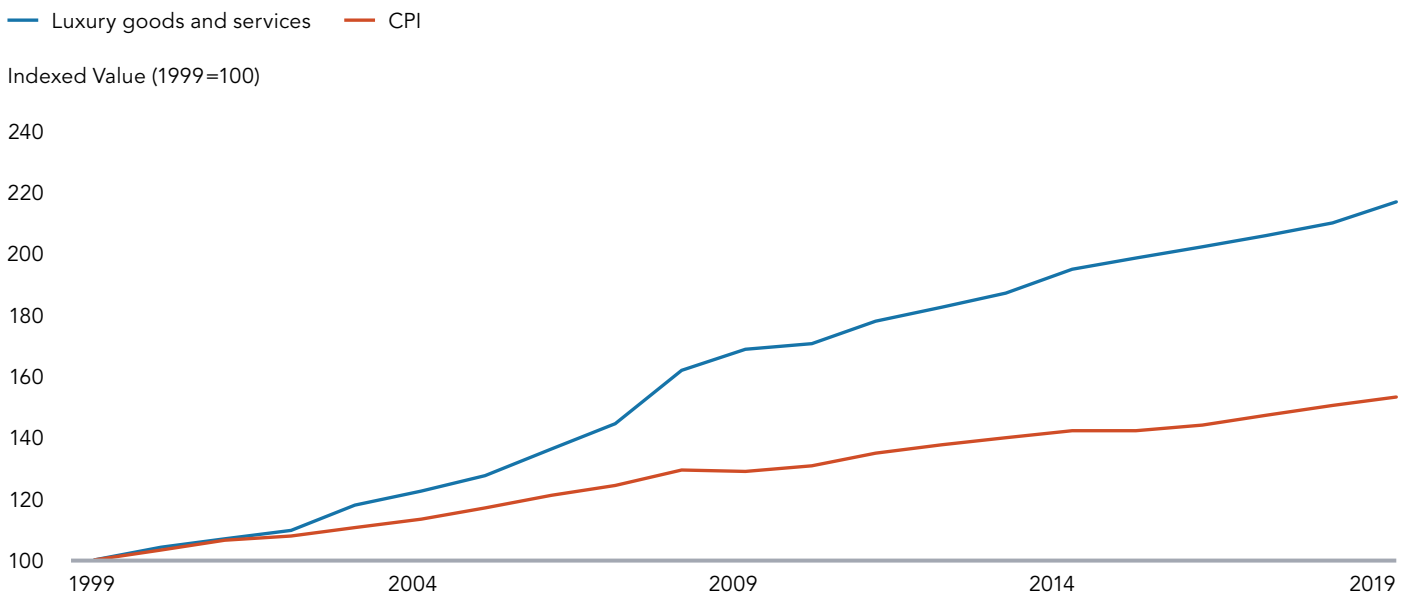
to distinguish these forecasted opportunities from what we have observed during the past couple of decades when the provision of liquidity by central banks was the road to salvation. Then, investors could just jump on for a ride. We’re looking for periodic and perhaps short-lived interruptions in that investor sentiment that will provide an opposite opportunity set.

4. Position to benefit from policies aimed at wealth redistribution

Interesting investments may be accessed by recognizing a potential shift from the “aspirational” consumer of the past 20 years to demand defined by a different mix of factors. In particular, we could see a shift in growth from goods/services/brands that were consumed by high income consumer cohorts to those having the highest elasticity for lower-earning consumers. That presents significant implications for growth in consumer credit, commodity consumption and housing.

EXHIBIT 37: The rise in the prices of luxury goods and services far outpaced broad-based consumer inflation.

Price Inflation: Luxury Items vs. the CPI (1999–2019)



Luxury inflation defined by The Forbes Cost of Living Extremely Well Index. Sources: Forbes, Bureau of Labor Statistics, Haver Analytics, Fidelity Investments (AART), as of 12/31/19.

A policy focus on wealth redistribution would benefit certain consumer industries, assets, and businesses aimed at lower-to middle-income households. If wealth redistribution is a future policy objective, businesses that provide goods and services aimed at lower- and middle-income households may be beneficiaries.

Over the past two decades, the concentration of income and wealth gains led to higher demand and price inflation for luxury goods and services. The Forbes Cost of Living Well Index measures price inflation of luxury goods such as opera tickets, yachts, cigars, and caviar, as well as services, including private school tuition, facelifts, and stays in luxury hotel suites. Over the past 20 years, luxury inflation rose more than twice as much as the broad-based Consumer Price Index, outpacing inflation by about 2% per year. This dynamic suggests that businesses and industries that catered to the wealthiest households enjoyed the greatest pricing power.

With wealth redistribution a likely policy objective, we expect stimulus will be directed at improving the lot of lower- and middle-income households. According to data from the BLS Consumer Expenditures Survey, households with incomes below \$100,000 comprise 70% of all consumers. For this group, the income elasticity of demand, i.e., how much spending increases relative to the gain in income, is very high for categories such as fees and admissions for concerts, sporting events, and other recreational activities and child care.

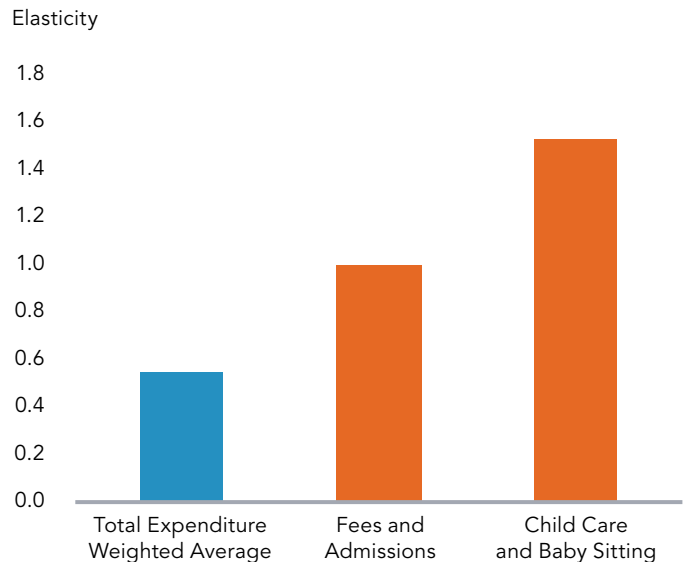
The largest tier of U.S. households – some 40% – earns less than \$50,000 annually. If this cohort were to enjoy an increase in income and join the next-highest income tier – that is, \$50,000 to \$75,000 – elasticities for many

categories might change. Several categories may experience large increases, namely:

- Medical services – includes dental and eye care, in addition to other doctor visits and lab fees
- Pets and hobbies – toys, games, playground equipment, hobbies, pet supplies, food, and services
- Personal care – includes hair care, hygiene, cosmetics, and other personal care products and services
- Education – schools, books, supplies, and equipment for all levels
- Motorcycles – new and used
- Tobacco use moves in the opposite direction, declining as incomes rise

EXHIBIT 38: Fee-based recreational activities and child care may benefit from a boost to low-income households.

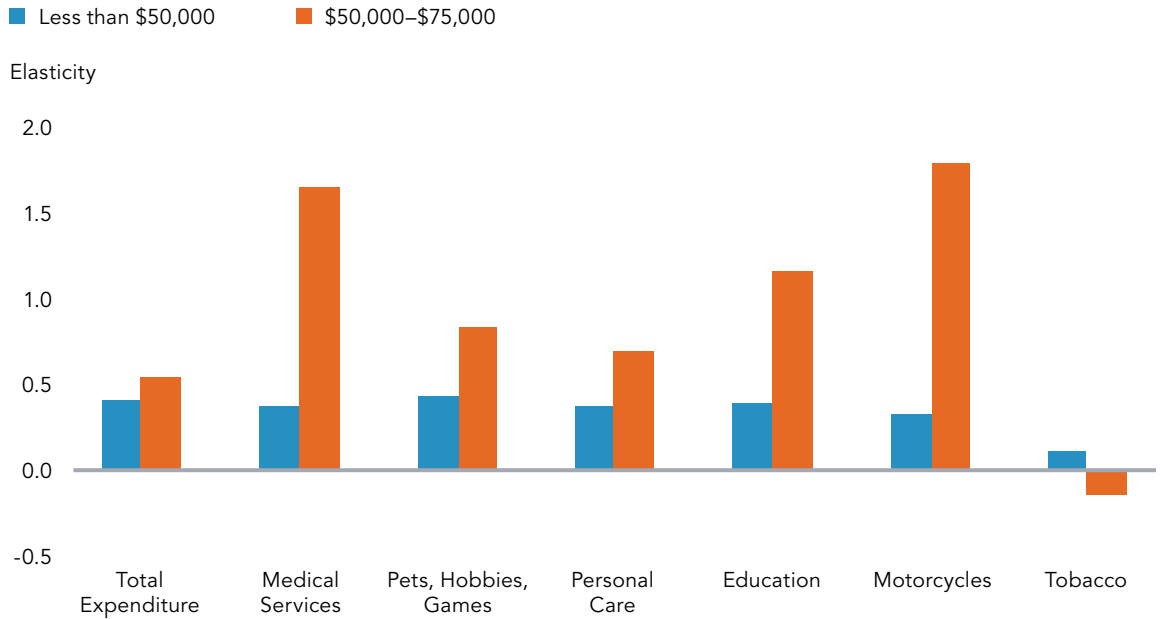
Income Elasticities of Demand for Low- and Middle-Income Households (Below \$100,000) for Consumer Expenditure Categories



Source: Bureau of Labor Statistics' 2017 Consumer Expenditure Survey, Fidelity Investments (AART), as of 5/31/20.

EXHIBIT 39: Several consumer categories may benefit if low-income households rise to the middle-income tier.

Income Elasticities of Demand by Household Income and Consumer Expenditure Category



Source: Bureau of Labor Statistics' 2017 Consumer Expenditure Survey, Fidelity Investments (AART), as of 5/31/20.

5. Aggressively seek equity beta diversification through less-crowded exposures

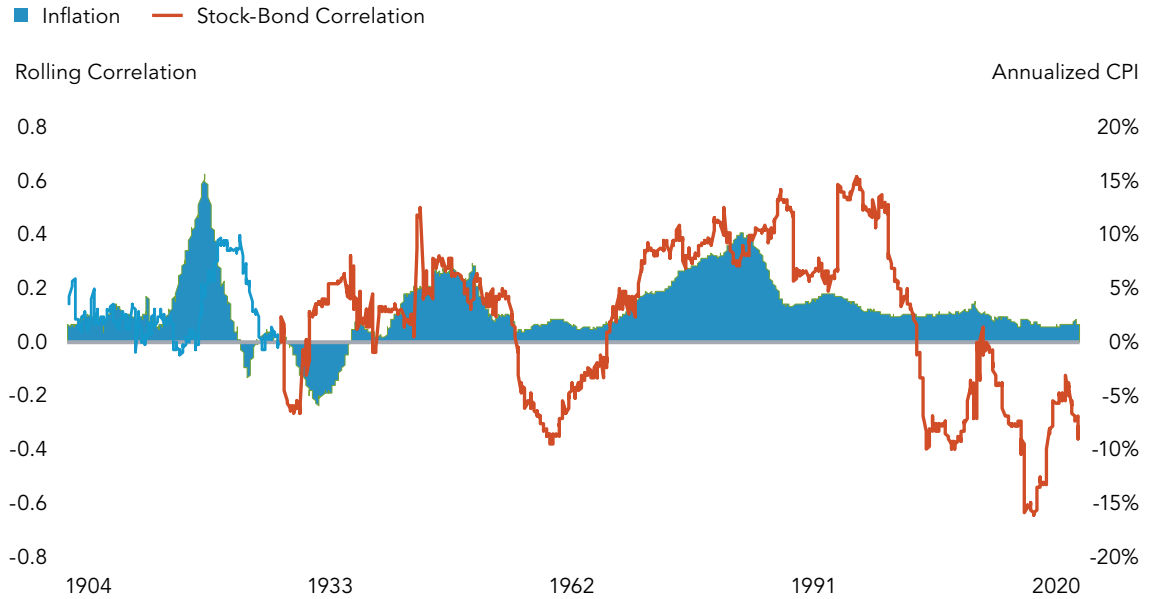
During the past 15 years, high-quality bonds proved to be a remarkably powerful diversifier for equities by delivering strong returns and negative correlations. Meanwhile, U.S. stocks and growth-style equities registered a decade-long outperformance relative to the rest of the world and value stocks. A change in the investment regime could create a very different backdrop.

Bonds may not be sufficient diversifiers at their current low-yield levels, particularly if more inflation develops. Historically, higher inflation has coincided with higher stock-bond correlations.

There is no silver bullet, but we believe that seeking alternative sources of diversification outside of the most popular trades will provide greater resilience to strategic asset allocations.

EXHIBIT 40: The correlation of stock and bond returns has tended to be higher during periods of higher inflation.

5-year Rolling Inflation Rates vs. 5-year Rolling Stock-Bond Correlations



Source: DMS, GFD, Bureau of Labor Statistics, Haver Analytics, Fidelity Investments (AART), as of 5/31/20.

Value stocks

Historically, value stocks have tended to outperform growth stocks during periods of higher inflation. The late 1940s and the 1970s stand as noteworthy examples. Additionally, value stocks tend to excel during periods when valuation spreads are historically favorable, such as the early 2000s.

In the recent disinflationary environment, value stocks have underperformed, lagging growth stocks at an average annual rate of 8%. This resulted in a historically favorable valuation discrepancy. No matter how valuations are measured, e.g., price to earnings, price to cash flow, or price to book, value stocks trade at a bigger discount relative to growth stocks than at any point since the early 2000s.

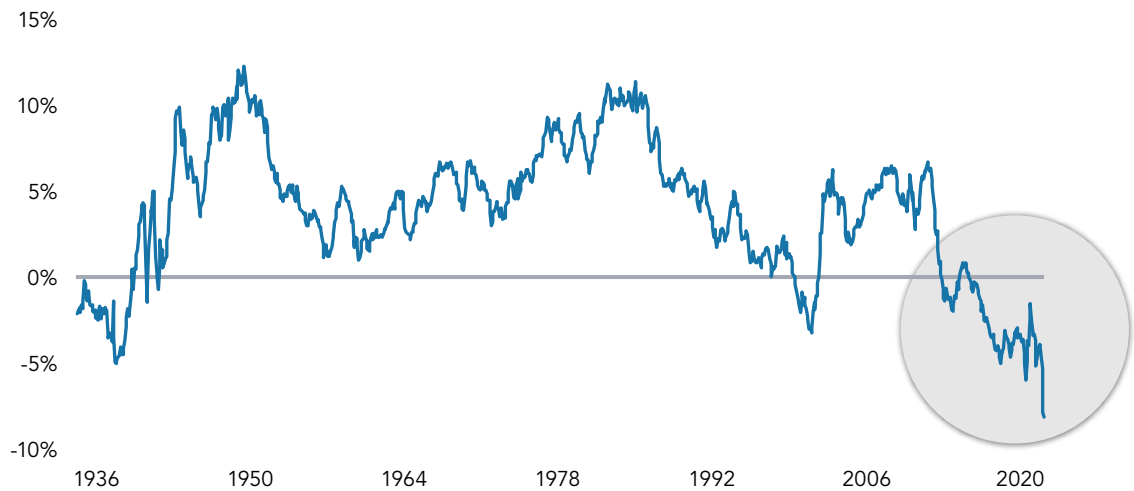
Conceptually, value stocks might benefit from a regime change that becomes more inflationary or results in more broad-based nominal growth across household income tiers. From a valuation standpoint, interest rates tend to rise during periods of high inflation, which leads to a higher discount rate for future cash flows. Growth companies tend to enjoy longer-duration cash flows with a larger proportion far off into the future, which makes their discounted cash flows less valuable in a higher discount-rate environment.

From a macro standpoint, higher nominal growth tends to provide a broader boost to businesses than a low-inflation environment where fast-growing opportunities are scarcer. Businesses with generally slower growth prospects, narrower profit margins, and higher operating and financial leverage tend to benefit more on a relative basis when nominal growth improves.

EXHIBIT 41: Value stocks have significantly underperformed growth stocks over the past decade.

Annualized Equity Returns: Value Minus Growth

10-Year Rolling, Annualized



Source: Fama and French, Fidelity Investments (AART), as of 3/31/20.

Non- U.S. assets

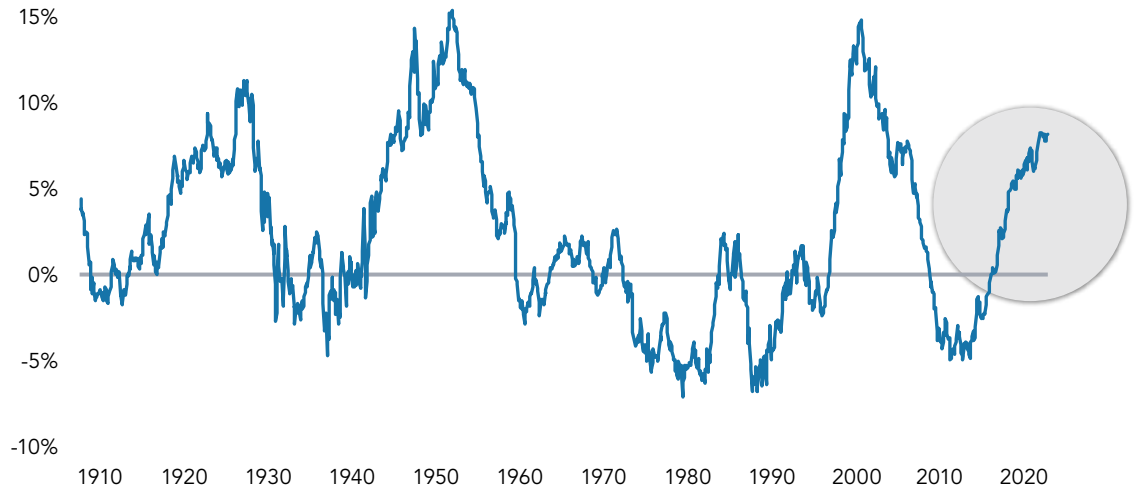
Foreign equities underperformed U.S. stocks by an average 8% per annum over the past decade, driven by a strengthening dollar. As a consequence, valuations of non-U.S. equities and currencies appear historically inexpensive in dollar terms.

Exposure to global assets may provide greater diversification against potential secular regime changes. Greater U.S. fiscal-monetary policy experimentation could put pressure on the dollar, making foreign currency exposures more attractive. Secular deglobalization pressures will likely create a variety of relative winners and losers across the world. The benefits of diversifying globally may rise as different countries and regions become less correlated.

EXHIBIT 42: Non-U.S. stocks have significantly underperformed U.S. equities over the past decade.

Annualized Equity Returns: U.S. Minus Non-U.S.

10-Year Rolling, Annualized



Sources: DMS global investment returns, MSCI, Dow Jones, Fidelity Investments (AART), as of 5/31/20.

Diversifying by time horizon

Time-horizon diversification may also prove to be a robust strategy in the coming years. This includes the incorporation of a variety of alternative, low-beta return sources that seek to exploit pricing anomalies at different holding periods.

We can classify different strategies according to their investment time horizons, measured or conceptualized by their turnover (average holding period), intrinsic payoff structure (time to resolve mispricing), or latency in realized returns (persistence of the exploitable anomaly). Here, we used the autocorrelation of the strategy returns as a measure of their investment horizons. There are a number of reasons why higher autocorrelations may be associated with longer time horizons. A principal basis may be the reflection of investors’ pendants for holding less-liquid instruments, which in turn leads to lower portfolio turnover, longer holding periods, and, as a result, a longer time horizon. In addition, strategies that trade in securities prone to slow mean reversion are likely to exhibit higher autocorrelations despite their higher turnover and thus may also be considered focused on longer time horizons.

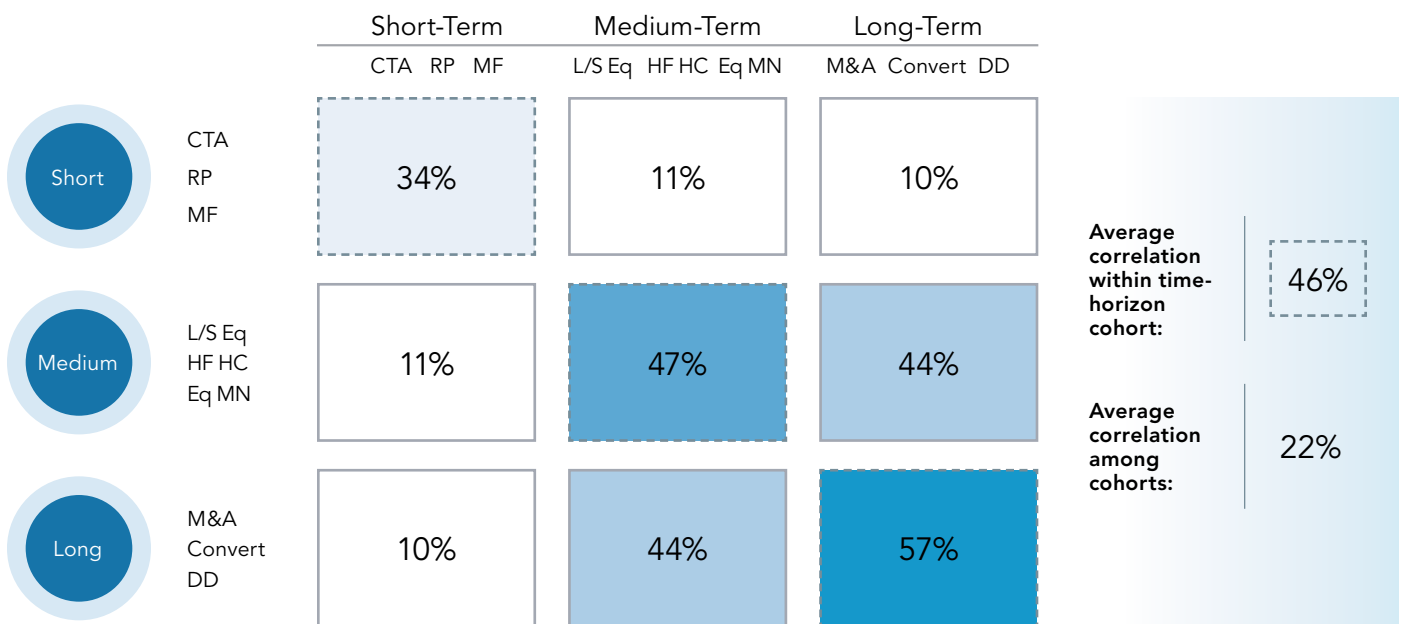
For this illustration, we selected nine strategies and grouped them into three time horizon cohorts: short-term (managed futures, CTA, and risk parity), medium-term (equity market-neutral, long-short equity, and hedge-fund high conviction) and long-term (merger-event arbitrage, convertibles arbitrage, and distressed debt).

Evaluating their historical returns, the correlations within time horizon cohorts tended to be higher than those among cohorts. For example, the average correlation of long-term strategies with each other was .57, but the average correlation between the long-term cohort and the short-term cohort was only .10.

For all strategies, the average correlation across all cohorts was .22, less than half the .46 correlation within cohorts. The implication? A strategic allocation should seek greater diversification by investing across strategies having different investment horizons.

EXHIBIT 43: Return correlations of strategies in the same time-horizon categories are much higher than across all horizons.

Average Return Correlations of Strategies Within and Among Time-Horizon Categories



CTA: Commodity Trading Advisor, RP: Risk parity, MF: Managed futures, L/S Eq: Long-short equity, HF HC: Hedge fund high conviction, Eq MN: Equity market neutral, M&A: Merger and event arbitrage, Convert: Convertibles arbitrage, DD: Distressed debt. Source: Bloomberg, Fidelity Investments, as of 5/31/20.

Final thoughts

- Time horizon is the key determinant of investment style: Today, market prices reflect complacency about disinflation, with longer-term exposure to inflation significantly undervalued.
- The investment setting is always defined by our collective desire to avoid the last mistake: The reduction of systemic risk among banks and receding deflationary pressures was replaced by the increased systemic risks of central banks and rising inflationary risks.
- The epicenter of the next crisis is always the sector that took on the most debt during expansion: Sovereign debt creates unique challenges, including the risk to mainstream currencies and conventional valuation frameworks.
- Implementation mistakes are much more frequent than a lack of insight: To be successful, institutions need a highly targeted strategy to address the opportunities and risks from high and rising debt.

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Endnotes

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U.S.: 936428.1.0 CAN: 520128-v2023914 FCI 1513360 09/23