Inflation

A Clear and Present Danger?

BERNSTEIN PRIVATE WEALTH MANAGEMENT
INVESTMENT STRATEGY GROUP

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Executive Summary

Often a contentious topic, inflation has the potential to wreak havoc on investors' finances. Not only can it impair purchasing power, it can also lead to poor returns for a range of assets while devastating portfolios, especially those earmarked for spending.

Predicting inflation, let alone guarding against it, poses a real challenge. Economic models offer some insights, but none of them provides the complete picture and allows us to confidently forecast the path of inflation more than a few quarters in advance.

Faced with that uncertainty, investors need to consider a wide range of possible economic paths and understand what might drive us toward one versus another. While rare, events that impact the economy and markets as severely as inflation may warrant proactive protection. Yet, precisely because they're rare, there's a relatively high probability that investors will look back at the decision with some dissonance. Ultimately, investors shouldn't allow the potential for future regret to guide them—they should focus on the quality of the decision and make the best possible choice with the information at hand.

Some investors need inflation protection more than others. Your individual situation determines your need and is primarily driven by three factors: how much human capital you can convert into financial capital through earned income over the remainder of your career, your combination of risk tolerance and asset allocation, and your spending patterns. Unique circumstances like whether you own real estate or have mortgages or other debt can also shape your inflation sensitivity.

While the current bout of price increases appears temporary—with supply constraints likely to ease in the coming quarters and demand likely to shift back to services from goods—our focus as long-term investors is less on the next few months and more on the next few decades. Over that horizon, inflation could run many different courses—from runaway inflation to disinflation or even deflation. The odds of having unusually high inflation are greater than they've been in many years. Yet it's quite possible for inflation to materialize in line with the Federal Reserve's 2% target or even to undershoot that goal, as Japan has witnessed over the past several decades.

Should we face a serious or extended bout of inflation, traditional asset classes like stocks and bonds are likely to offer abnormally poor returns. Inflation-sensitive investors can improve their financial results by adding other assets to their portfolios, yet those assets introduce trade-offs. In most cases, we think those trade-offs are worth it. Some of the assets may increase overall volatility, some may underperform significantly in disinflationary periods, and some may underperform in weak economic environments. As a result, investors can utilize a blend of protective assets such as stocks with pricing power, inflation-protected bonds, inflation swaps, floating rate debt, as well as real assets like commodity futures, real estate, infrastructure, and commodity-linked stocks to create the most robust and resilient portfolios.

Inflation has long been a boogeyman for investors, lurking in the shadows, haunting their dreams of the financial future. Following the Global Financial Crisis, many feared that the government stimulus and unconventional monetary policy that saved the economy had only postponed the damage and that runaway inflation was all but inevitable. Yet the dreaded inflation never arrived, in the US or elsewhere. Were those who positioned for it wrong, early, or just unlucky?

As we emerge from yet another economic crisis, which required even greater fiscal stimulus and monetary support, inflationary fears have returned with a vengeance. This time, with an unusually sharp drop in economic activity being met with an unusually sharp recovery, the US is experiencing a notable rise in prices. Monetary policy remains loose. Government debts have reached their highest levels since World War II. On top of all that, Congress is considering further government expenditures, with large infrastructure plans having passed and the largest plans for social spending in decades under debate in Washington, DC.

Accordingly, today serves as a timely opportunity to think through what inflation we might see in the coming years, who is at risk from it, and how investors can position for it. Regular readers of our research will recall that we've tackled this topic before, particularly after the Global Financial Crisis. Our views in this paper are generally consistent with those of the past, yet here we focus more on why inflation is so challenging for investors, how investors can assess their sensitivity to it, and how various assets behave in different types of inflationary episodes.

What Is Inflation and Why Does It Matter?

This may seem obvious, yet the word "inflation" has been used to encompass a variety of economic events. So let's start by being very clear on what we mean by inflation—it is a **sustained** increase in the **general** price level.

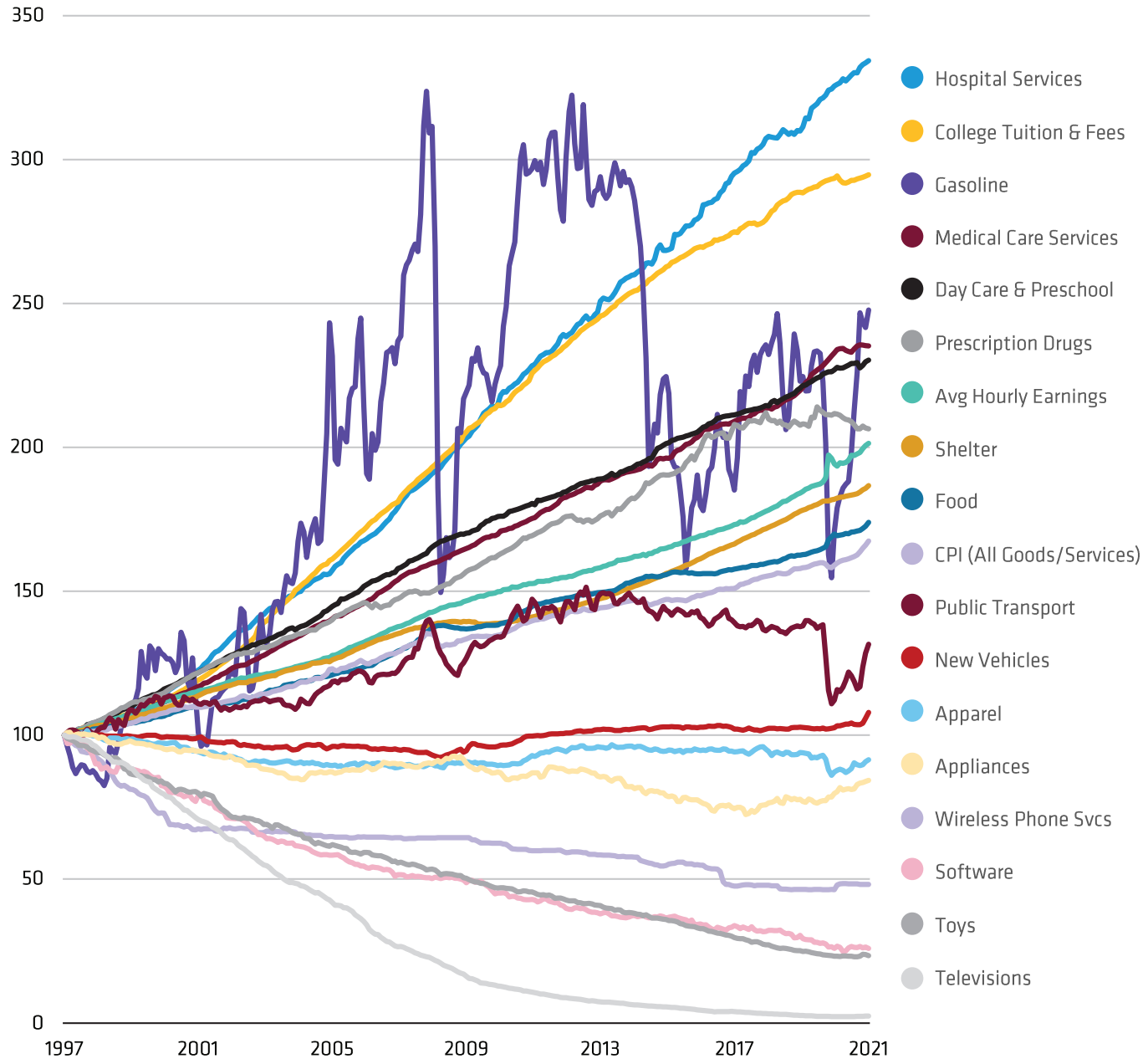
It is not, as some would contend, an increase in the supply of money (money printing). It is not "asset inflation" as the prices of stocks, bonds, and other financial assets mechanically rise due to low interest rates.[1] It is not an increase in the cost of raw materials, although that can lead to or be seen at the same time as our kind of inflation. The words "general" and "sustained" are particularly important. Inflation is the change in price of a broad basket of goods and services, not the price of a handful that happen to be going up or down at any given point in time. And it must be sustained—there's a large difference between prices rising 3% this year and prices rising 3% in each of the next five years.

1 That said, "asset inflation" from central bank policy can lead to economic problems, just not the one we're considering here. By creating artificially high asset prices, bubbles in financial assets can occur and a misallocation of real resources can take place. This can actually be deflationary or disinflationary in the interim, as it can lead to an oversupply of capacity. When those imbalances unwind, they can lead to drawdowns in asset prices and downturns in the economy.

While that is the inflation we focus on, everyone's inflation experience will be unique. You might feel inflation differently if you own your home as opposed to renting it. It may differ if you have significant spending in an area where prices are rising more quickly like education or healthcare (**Display 1**). That's one reason why, despite our discussion of inflation as a general concept, investors should also consider the type of inflation that they personally face. Will they be paying for their children's or grandchildren's college tuition? Do they have a health history that could lead to more sensitivity to health-care inflation, and so on.

DISPLAY 1: PRICES CHANGE AT DIFFERENT PACES THROUGHOUT THE ECONOMY

Price Index by Expenditure Category



All prices indexed to 100 in December 1997. Data from CPI Companion Tables. Seasonally adjusted values used when available, otherwise, values are not seasonally adjusted.

Source: Bureau of Labor Statistics, Haver Analytics, and Bernstein analysis

Feeling the Effects of Inflation

Inflation generally affects investors through two channels. First, realized inflation reduces their purchasing power, making the goods and services they'll buy in the future more expensive. Second, changing inflation expectations impact their investment portfolios. In a serious inflationary episode, these two forces can have severe repercussions.

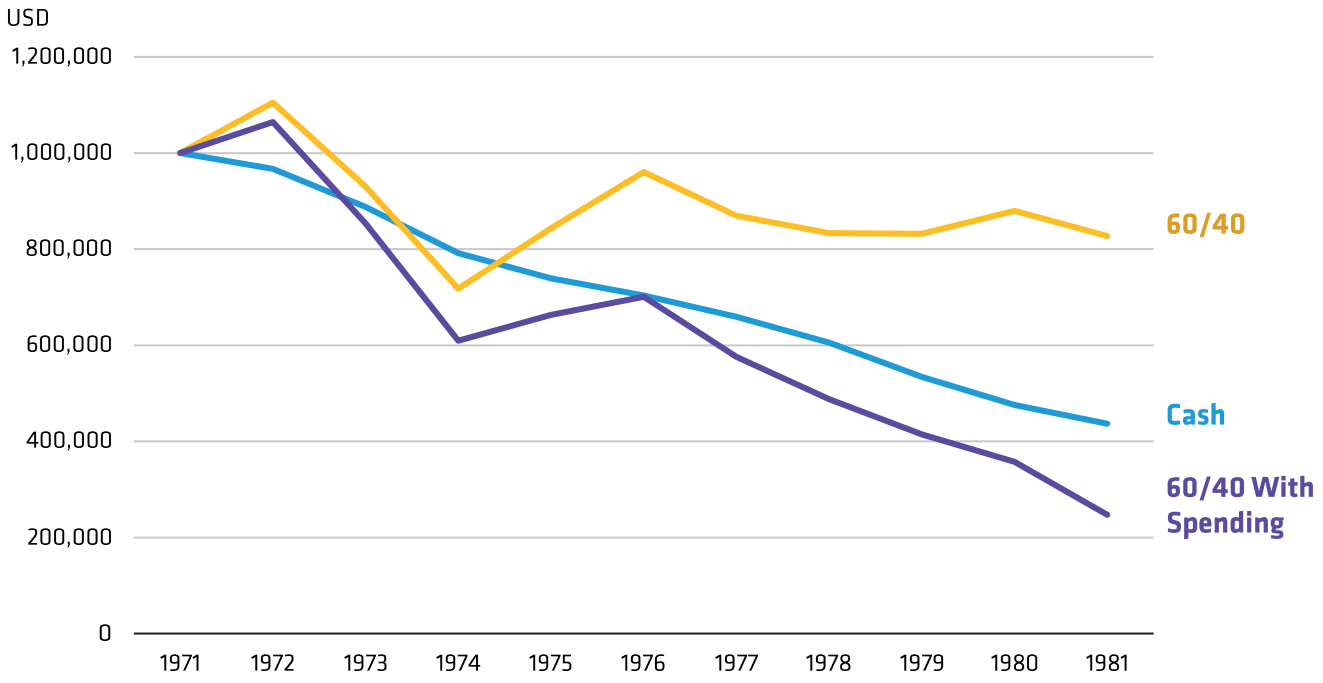
Consider the experience of an investor in the inflationary 1970s (**Display 2**). If you had $1 million in cash sitting in a safe from the end of 1971 through the end of 1981, you would have lost more than half of your purchasing power. If you had that $1 million in a 60/40 portfolio of stocks and bonds, you would have enjoyed more protection, but would still have lost almost 20% of your portfolio's real (after-inflation) value. If you were retired and spending 4% of your portfolio's initial value, with that spending rising with inflation, you would have been left with only 25% of your purchasing power at the end of that decade.[2]

This type of high or runaway inflation is precisely the situation investors seek to guard against. As you can see, failing to do so can lead to disastrous consequences.

At the same time, inflation in more normal periods is less concerning. Another way to think about experiencing inflation is the cost of maintaining your lifestyle over time. For instance, some may lament that dinner at a fancy restaurant or a high-end vacation costs more today than in the past. And on the face of it, that's true—they consume more dollars than they used to. But incomes have also risen in that same period, meaning in many cases, those things cost the same or less, relative to incomes back then. That's the benefit of economic progress over time.

DISPLAY 2: WHY DOES INFLATION MATTER? IT CAN DESTROY WEALTH

This Is the Situation We Need to Avoid



Historical analysis does not guarantee future results. Headline CPI inflation used as the deflator. Robert Shiller's historical S&P 500 returns used for equities and 10-year Treasuries used for bonds. Spending set as 4% of initial portfolio, adjusted for inflation.
Source: Bureau of Labor Statistics, Robert Shiller, and Bernstein analysis

2 This analysis uses Robert Shiller's long-term total return history for the S&P 500 and deflates nominal returns using the US Consumer Price Index. Results may differ using other indices for stocks and inflation.

For example, look no further than a Ford F-150, the best-selling vehicle in the US for decades. In 1990, the MSRP for a mid-range F-150 was $12,700. Thirty years later, consumers pay $50,300 for its modern equivalent—a 4.7% annualized increase. Yet at the same time, personal incomes in the US grew by 4.8% per year. In other words, the modern F-150 costs slightly less as a percentage of household income. Plus, today's F-150 is a much better vehicle—with more horsepower, a roomier and more comfortable interior,[3] full electronics, better safety profile and mileage, and a longer lifespan. While it's difficult to capture that quality differential in dollar terms, it's real. Improvements in technology and productivity allow Ford to produce a better truck today for around the same share of household income.

But even without factoring in that boost in quality—which economists call "hedonic adjustment"—it's clear that, despite the rising dollar price, the cost of the F-150 has actually been steady or falling relative to incomes. The same could be said of many other goods and services. This underscores the importance of factoring in potential income growth when assessing your personal inflation sensitivity.

The Challenges of Forecasting Inflation

Most economic and market variables are notoriously hard to predict, and inflation remains one of the toughest, for three reasons:

- The economy is a complex system marked by measurement errors and randomness.
- The psychology of inflation expectations plays a critical yet poorly understood role.
- When it comes to inflation, "all models are right some of the time, but none are right all the time."[4]

Sizing Up Complex Systems

Imagine that we knew exactly how the economy worked, that it operated like a physical system with known rules. Surely then we could predict inflation and all the other key macroeconomic variables, right?

In reality, we still probably couldn't.

That's because the economy is a complex system, filled with challenging characteristics to model.[5] Complex systems exist all around us (and inside us), yet lack a firm definition. Karoline Weisner, a professor of mathematics who has researched complexity, **suggests** "it boils down to something that consists of many elements that are interacting in a disordered way out of which is generated a robust order. There is nothing that controls centrally how things are supposed to behave." A flock of birds, the interaction of cells in our bodies, even the global economy—all are examples of complex systems in action.

One critical property of these systems is emergence—the economy as a whole has traits that aren't apparent when you zoom in and examine the behavior of individuals and firms. As a simple example, take a room filling with people who form a visible pattern in the end, despite everyone being free to sit where they want and having no overall result in mind.

Another property is non-linearity, which gives rise to tipping points, which are notoriously difficult for economists to model. Non-linearity means small changes in inputs can lead to large and varying changes in outputs, often through cascades. For instance, in a credit crisis, everything appears to be going smoothly until a few firms find themselves in trouble. This can spark a domino effect as other firms deteriorate, then ripple out to the rest of the economy in the form of job losses and falling consumption.

Finally, there's a concept called "sensitive dependence on initial conditions." Also known as the "butterfly effect," this idea suggests that a butterfly flapping its wings in Brazil could lead to a tornado in Texas. Even in the simplest of complex systems, tiny changes in starting values appear not to matter for some time.[6] Yet beyond a certain point the differences magnify unevenly, and the results begin to look random. In fact, they're not—if you zoom out and look at the pattern they trace over time, you'd see that regardless of the starting point or seeming randomness, they form the same shape.

In practice, this means that even if we knew exactly how the economy worked, even the tiniest change today or minuscule measurement error could have a dramatic future impact. This is the same problem meteorologists face—even with significant improvements in forecasting in the past several decades, today's small measurement errors can produce giant miscalculations in the future. But at least temperatures are clearly verifiable. Macroeconomic variables like growth and inflation require a considerable number of estimates.

Furthermore, economics isn't physics (despite economists' most fervent wishes). Economics involves the study of people, behavior, and beliefs. When it comes to inflation, people's expectations are one of the most powerful variables, but we don't clearly understand how those expectations are formed. Even when we speak to former governors of the US Federal Reserve Board about inflation, they quickly point to the opaque nature of inflation expectations as a key source of uncertainty.

3 It's actually a higher-end F-150 model despite still being in the middle of the price range—high-end models have moved up so much that mid-range models are now relatively higher-trim than they were. Thus, the comparison is actually between a 1990 Supercab Styleside (extended cab) lacking four-wheel drive and a 2020 Lariat SuperCrew (crew cab) with four-wheel drive.

4 This also alludes to the classic saying that "all models are wrong, but some are useful."

5 This is not a comprehensive list of characteristics of complex systems. Likewise, there have been other attempts to define them, including Nate Silver's definition that they are "dynamic non-linear systems."

6 The simple system here is the Lorenz system of three differential equations that describes the properties of a fluid being warmed from below and cooled from above. While the results look increasingly random further into the future, regardless of the starting point, they form a shape similar to those pictured **here**.

Competing Approaches to Modeling Inflation

So where does that leave us? How do experts model inflation? As our economic research team puts it, all the inflation models are right some of the time, but none are right all the time. Different practitioners emphasize different models of inflation and their preferred model typically corresponds with their training and/or their worldview.

For instance, one of the most conventional approaches to inflation compares aggregate supply and aggregate demand. This carries a straightforward logic—since prices are set by the intersection of supply and demand, if aggregate demand is too high and growing too fast, inflation ensues. The challenge lies in estimating the level of aggregate supply and aggregate demand and determining their sensitivity to other variables.

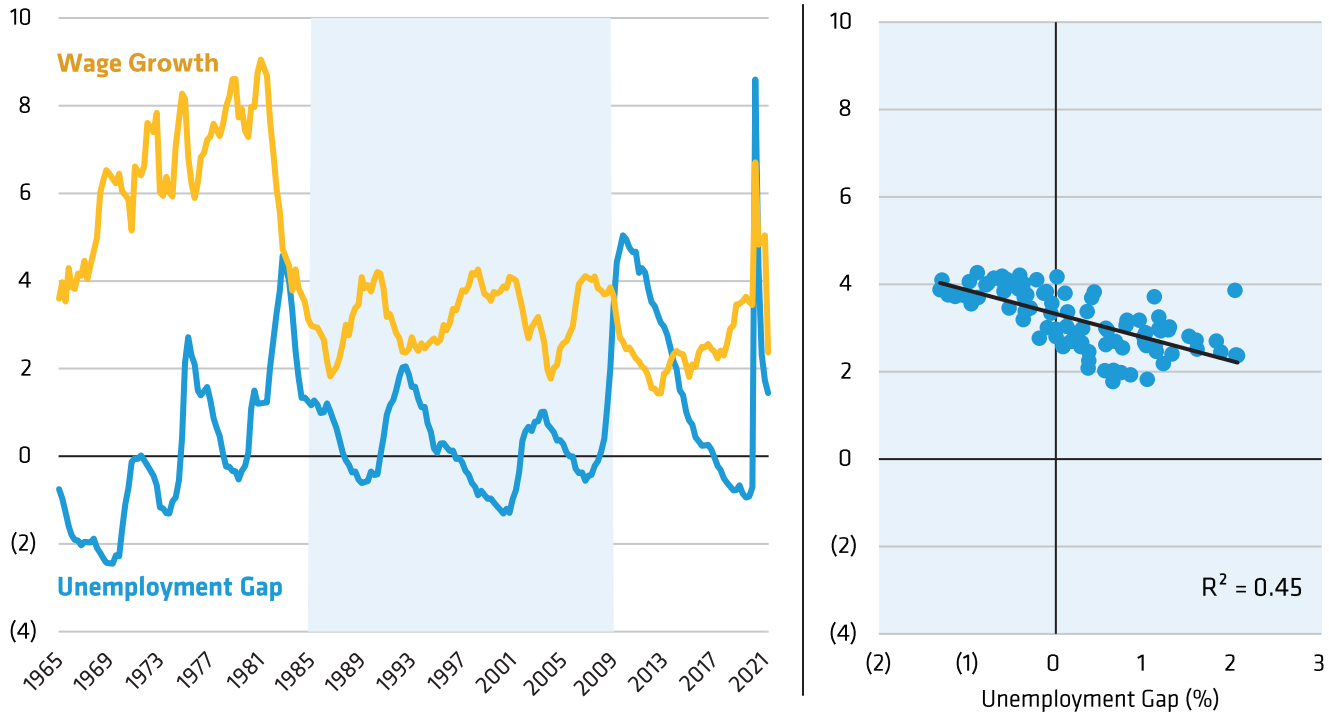
That analysis is typically combined with a concept called the Phillips Curve (**Display 3**), which connects inflation to employment levels relative to "full employment." In theory, as employment reaches or exceeds full capacity, workers begin bargaining more aggressively for wage increases that in turn lead to price increases and broad inflation. However, that connection has been tenuous at times—in the 1970s, stagflation occurred while the labor market and economy were both weak. And in the 2010s, employment continued to exceed what economists considered full employment without leading to an inflationary outbreak.

The theory's failure in the 1970s led to the resurgence of an older approach in a new guise—the quantity theory of money in the form of monetary targeting. Popularized by Milton Friedman, this framework is embodied by the expression that "inflation is always and everywhere a monetary phenomenon." Friedman and his research partner Anna Schwartz analyzed historical data, then adapted an economic truism into a paradigm for thinking about inflation. That relationship, called the equation of exchange, states that MV=PQ. The money supply (M) multiplied by the velocity of money (V, how quickly each dollar moves through the economy) equals the price level (P) multiplied by the quantity (Q) of goods and services (where PQ represents nominal GDP).

This works by construction—we literally define and measure the velocity of money as nominal GDP divided by the money supply. It's a plug.

DISPLAY 3: MANY ECONOMIC MODELS RELY ON THE PHILLIPS CURVE

The Relationship Between the Unemployment Gap and Wage Growth (Percent)



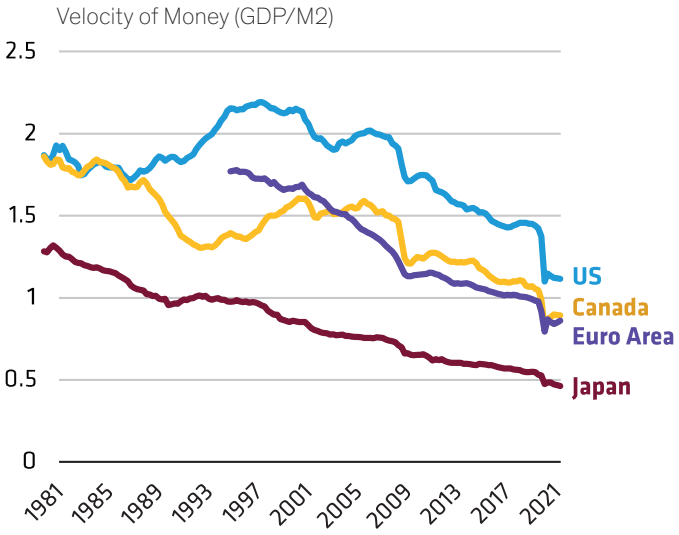
For illustrative purposes only. Unemployment gap represented by U-3 unemployment rate minus NAIRU. Wage growth measured as change in average hourly earnings.
Source: Congressional Budget Office, Bureau of Labor Statistics, Haver Analytics, and Bernstein analysis

By assuming that the velocity of money remains constant over time (or even increases due to technological improvements), any increase in the money supply beyond the rate of growth of real GDP must necessarily lead to rising prices. Hence economists in this "monetarist" camp tend to be quite conservative when it comes to monetary policy. Yet this, too, has run into issues in practice. Notably, the velocity of money in the US and around the world has declined in recent decades and the money multiplier—the amount of widely available money relative to the amount of money that central banks control—has also fallen (**Display 4**).

This leads to another inflation framework—the converse of aggregate supply and demand. Instead of thinking about the price of goods and services keeping their supply and demand in balance, consider the price of money balancing the supply and demand for it. As George Selgin wrote, "the sad truth is that central banks are perfectly capable of creating too much money on some occasions, and too little on others, and that it isn't unusual at all for them to sway intemperately from one off-kilter stance to the other, with scarcely a pause in between."[7]

This approach creates two major challenges for policymakers. First, it's hard to measure the extent of monetary tightness or looseness at the moment, let alone its sensitivity to changes. And second, money is endogenous. That sounds esoteric, but it boils down to a simple principle—central banks, contrary to popular belief, don't control the money supply, only a key part of it. Most of the money supply is created by bank lending (**Display 5**). Such lending is influenced by other economic variables like economic growth and the level of investment—hence the term "endogenous."[8] This economic mechanism is a key reason why the velocity of money and the money multiplier have fallen in recent decades, making central banks' mandate that much tougher.

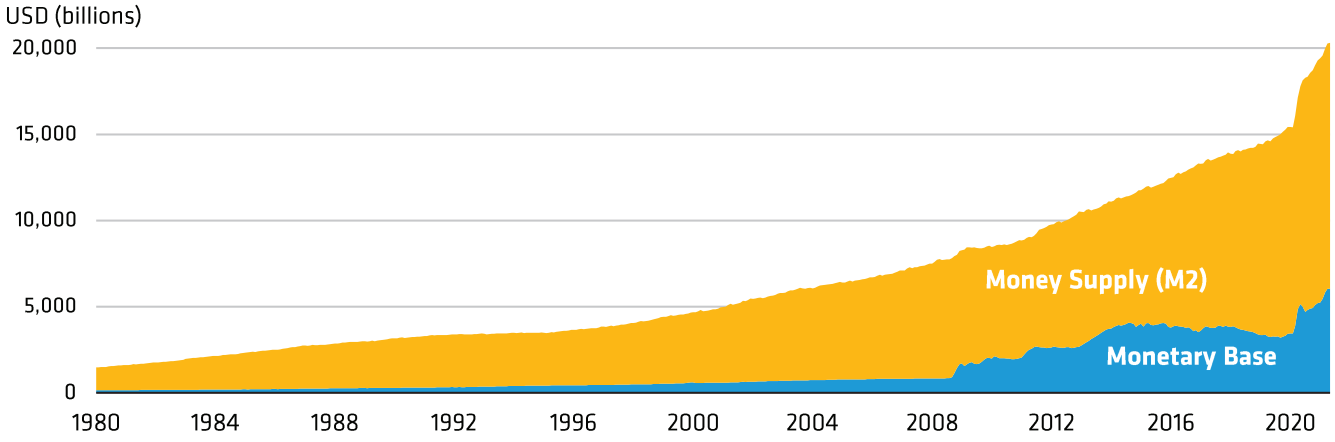
DISPLAY 4: THE VELOCITY OF MONEY HAS FALLEN FOR DECADES



As of February 7, 2022. **For illustrative purposes only.**
Source: Federal Reserve Board, Haver Analytics, and Bernstein analysis

DISPLAY 5: MOST OF THE MONEY SUPPLY ISN'T CONTROLLED BY THE FED

It's Created Primarily by Bank Lending



For illustrative purposes only.
Source: Federal Reserve Board, Haver Analytics, and Bernstein analysis

7 Selgin, George. Cato Institute https://www.cato.org/blog/monetary-policy-primer-part-8-money-latest-great-muddle.

8 The endogeneity of the money supply stands in stark contrast to how it's described in the most popular undergraduate economics textbook of the past several decades. After discussing many of the key workings of major economic models, Greg Mankiw includes an appendix with a "Big, Comprehensive Model." Even this categorizes the money supply as set outside the system ("exogenous"). "There are many exogenous variables that influence these endogenous variables. They include the money supply." (Macroeconomics by N. Gregory Mankiw, 6th ed., pg. 401). It's little wonder then that most people with some education in economics believe that to be true.

Another approach to anticipating inflation is to monitor expectations surrounding it and the extent to which they're anchored to a low level by the credibility of the central bank. Conventional models don't ignore expectations outright—in fact, they're another component of the Phillips Curve. But their importance has perhaps been underestimated historically, and their formation remains somewhat inscrutable. Nonetheless, they matter a lot. Recent research has shown that central bank credibility increased substantially following former Federal Reserve chairman Paul Volcker's tenure and that the massive drop in inflation during his term was driven mostly by falling expectations rather than labor market activity.

The final approach to the inflation puzzle moves away from the standard business cycle and instead focuses on structural drivers such as demographics, international trade, wars, and politics. Indeed, when we look at significant, long-lasting inflationary episodes in history, they've tended to follow some form of a shift in the monetary or fiscal regime, in some instances sparked by politics and in many cases fueled by wars. Currently, our economists are focused on whether such a regime shift may be underway in the US and other developed countries. While increased debt levels are not inflationary in their own right, they could create conditions that would bring about such a secular shift (**Display 6**).

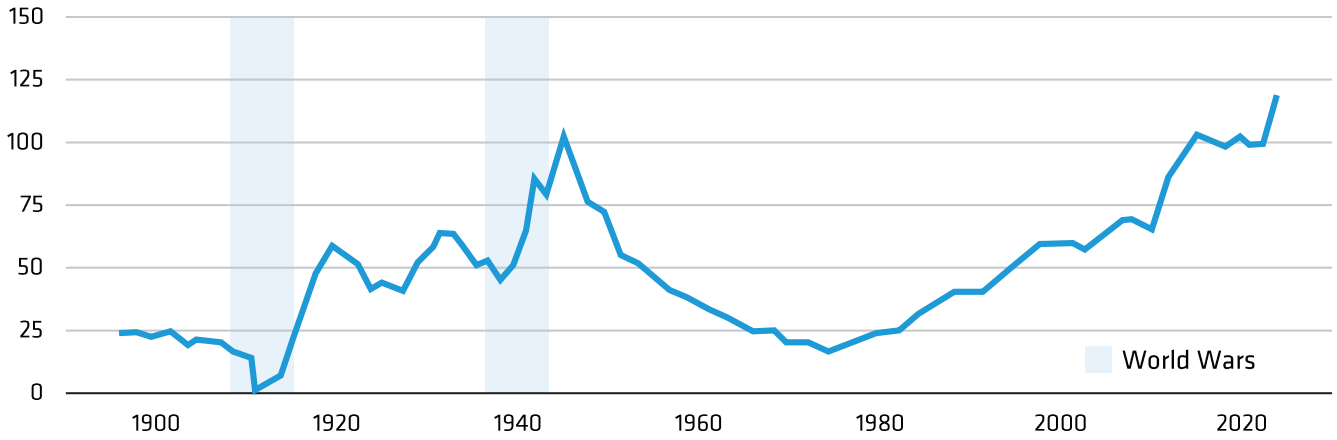
A Word About Hyperinflation

When people invoke the horrors of inflation, it's common to hear references to the hyperinflation in Weimar Germany after WWI or Zimbabwe in the 2000s. That's a remote risk for an economy like the United States. For hyperinflation to take hold, a country's economic situation and currency valuation must become untenable. Destabilization usually begins when the country unsustainably tethers its currency to a foreign one or gold (due to a pegged exchange rate, large foreign-denominated debt, or a gold standard). From there, a significant supply shock serves as a catalyst, reducing the economy's productive capacity. At that point, fiscal and monetary policy mistakes can easily spiral out of control, with the government attempting to spend its way out of the situation but only deepening the crisis.

Take the Weimar hyperinflation—after WWI, the Germans were forced to make enormous reparation payments in gold but had limited gold reserves. On top of that, their productive capacity was destroyed during the war. Yes, they tried to inflate their way out of that predicament, but the die of their economic crisis had already been cast.[9]

DISPLAY 6: DEVELOPED-WORLD GOVERNMENT BORROWING HAS REACHED UNPRECEDENTED LEVELS

G7 Gross Government Debt as a Percentage of GDP Exceeds Wartime Peak*



As of December 31, 2020. **Historical analyses do not guarantee future results.**
*G7 is the US, Japan, Germany, France, Italy, the UK, and Canada.
Source: Haver Analytics, International Monetary Fund (IMF), and Jordà-Schularick-Taylor Macrohistory Database analysis

9 Across the border in Austria, the government was left saddled with a large portion of the debt of the former Austro-Hungarian empire, along with its large administrative state, and yet the productive capacity had fallen so far that the nation struggled to feed its population. In Zimbabwe, land reforms destroyed almost half of food output capacity, along with a significant portion of the supply for other goods and services. Even in Venezuela, which entered hyperinflation in 2017, the IMF **wrote** that "this exponential increase in prices has been accompanied by a massive contraction of economic activity, although this fall had begun before the hyperinflation process initiated." That IMF paper indicates that modern hyperinflations share common characteristics including the "inability to maintain a certain exchange rate regime," "high fiscal deficits, in some cases financed with external debt at the beginning and seignorage [profiting from currency issuance] afterwards," and capital controls. Countries at risk also have lower economic freedom scores, higher reliance on natural resources, and weakening social environments.

Why You Need to Be an Inflation Fox and Avoid "Resulting"

In 1953, Isaiah Berlin expanded on an idea from an ancient fable, that "a fox knows many things, but a hedgehog knows one big thing." Using that metaphor, he classified history's great thinkers and writers into two groups: hedgehogs, who view the world through one Big Idea, and foxes, who patch together a web of ideas and experiences to navigate the world.

In 2005, Philip Tetlock took that concept even further in his analysis of expert forecasts. He found that two different groups emerged in the data—good forecasters and bad forecasters. The bad forecasters organized their thoughts around Big Ideas while the good forecasters drew upon a range of experiences and tools. Accordingly, he called the bad forecasters hedgehogs and the good ones foxes.

As he writes in his book, Superforecasting: "Foxes don't fare so well in the media. They're less confident, less likely to say something is 'certain' or 'impossible,' and are likelier to settle on shades of 'maybe.' And their stories are complex, full of 'howevers' and 'on the other hands,' because they look at problems one way, then another, and another. This aggregation of many perspectives is bad TV. But it's good forecasting. Indeed, it's essential."

It's not just essential for forecasting. It's also essential for investing. We have to manage both risk and uncertainty.[10] The future can take many paths and it's our job not just to consider which ones are most likely but also the impact and probability of the others. That's why we factor in different viewpoints and different models and why we, as investors, don't position portfolios solely around our base case.

Yet while we have to recognize the possibility and position for the chance of all these different outcomes, the future we experience will be only one path of the many we have to consider in advance.

When it comes to rare but extreme events like inflation, this can lead to discomfort. People have a natural tendency to overvalue the outcome of a decision and undervalue the quality of the process and decision itself. Poker players have a name for this: "resulting." Imagine you're playing poker and you know that you have a high probability of winning given the cards in your hand and the cards on the table. Maybe it's 90% likely that you'll win and you play accordingly. But then your opponent turns over their cards and wins—it's that 1-in-10 event that you knew was possible but not likely. Does that mean you misplayed your hand? Absolutely not. And yet even for professional poker players, it can be hard to shake the feeling that you did.[11]

Now consider what that can look like for something like inflation protection. It's effectively an insurance policy against the awful market outcomes that inflation can create. But like an insurance policy, it has a cost. And because it's the less likely outcome—the probability is closer to 1-in-10 than it is to the 9-in-10 chance we used in the poker example—that means that nine times out of ten, you might look back and think that you wasted your money on that insurance premium because it didn't pay off. But if the event you're insuring against has as extreme a financial impact on you as inflation can and the insurance policy you're using is designed to pay off in those conditions, the decision to have that protection was still right even if it didn't pay off. Investors, like poker players, may feel the urge to "result" and it may create discomfort or stress, but it won't change the quality of the decision.

10 The most straightforward distinction between risk and uncertainty is that in cases of risk, you know the potential outcomes and their probabilities, while in cases of uncertainty, you don't or can't know the range of outcomes and their probabilities.

11 Professional poker player Annie Duke's book, *Thinking in Bets*, features more discussion on the importance of process versus outcomes and the perils of "resulting." As it happens, she also refers to Professor Tetlock's research.

Do You Need Inflation Protection?

Key Drivers of Inflation Sensitivity

Given the level of uncertainty as well as the costs and benefits of inflation protection, how can you tell if your portfolio requires inflation protection? (**Display 7**)

Your inflation sensitivity comes down to three primary factors:

- The financial value of your human capital
- Risk tolerance and asset allocation
- Spending patterns

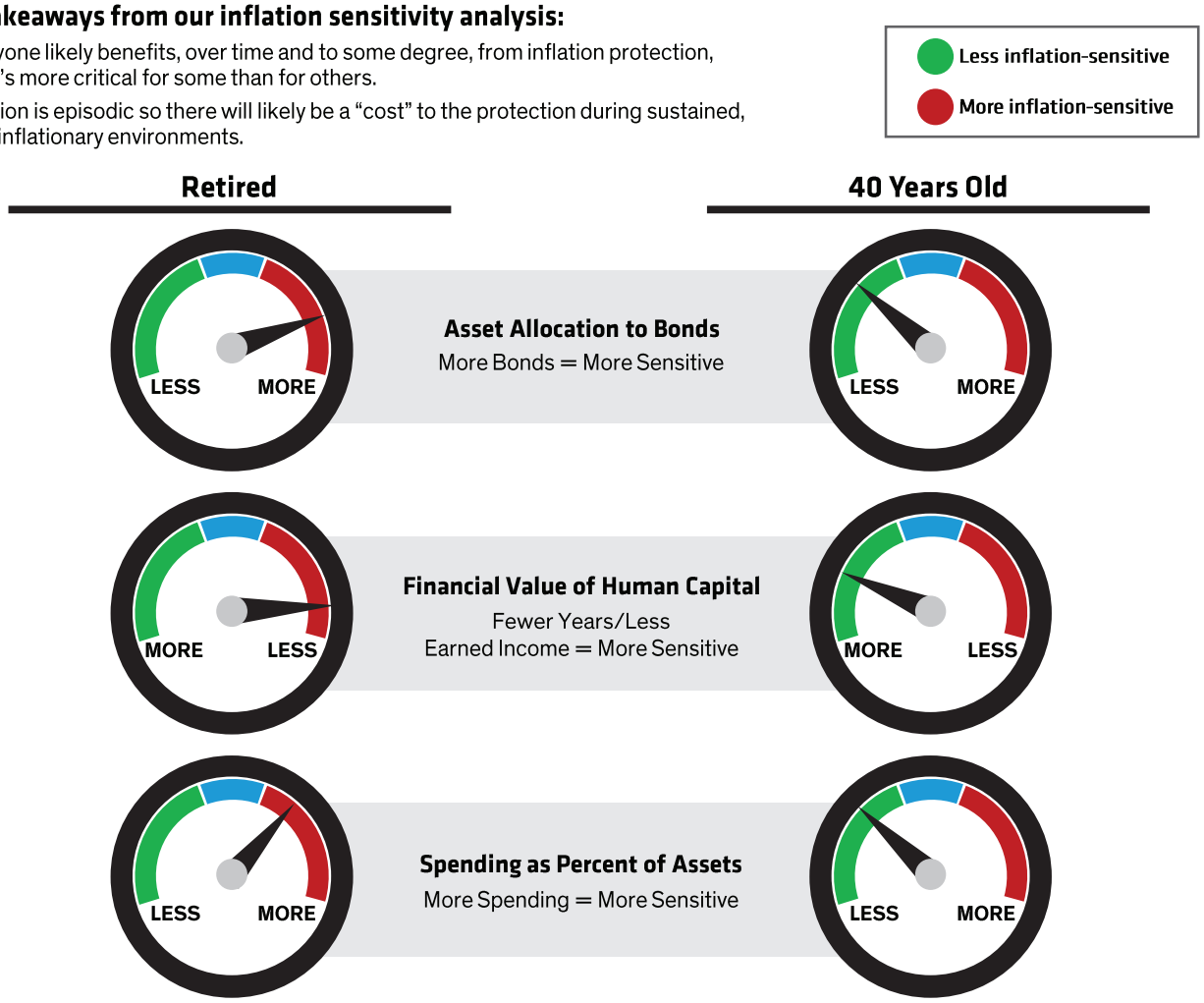
Let's review each in turn.

The financial value of your human capital is determined by the magnitude and trajectory of your earnings, and the number of years you plan to continue working. Consider that your salary and other compensation are likely to adjust upward with inflation. Or in certain cases, your income trajectory may exceed or fall short of the general rate of inflation as you climb the ranks or according to the supply and demand for talent in your field. As a result, the more years and earning potential you have until you retire, the more you can convert your human capital into financial capital to keep pace with or beat inflation.

DISPLAY 7: INFLATION SENSITIVITY IS CRITICAL TO THE ASSET ALLOCATION DECISION

Key takeaways from our inflation sensitivity analysis:

- Everyone likely benefits, over time and to some degree, from inflation protection, but it's more critical for some than for others.
- Inflation is episodic so there will likely be a "cost" to the protection during sustained, non-inflationary environments.



Hypothetical client profiles presented. Clients' risk tolerances and bond allocations may vary. Based on capital markets conditions as of June 30, 2021.
Historical analysis is not necessarily indicative of future results. There is no guarantee that any estimates or forecasts will be realized.
Source: Bernstein analysis

Your risk tolerance and the amount of portfolio volatility you can tolerate play a critical role in determining your portfolio's balance between stocks, bonds, and other assets. Bonds offer a fixed return, which limits their ability to protect your purchasing power in inflationary periods. For that reason, if you have a low risk tolerance and commensurately higher bond exposure, you will have a greater sensitivity to inflation.

Spending represents another key driver. The more you spend, the higher your chance of depleting your capital during hostile investment markets. Because inflation can be a common culprit in unsatisfactory investment returns, avoiding them can prevent you from running out of money during your lifetime (or at least extend the runway based on your spending pattern).

Other factors may also affect your inflation sensitivity. For instance, owning rental properties or other real estate aside from your primary residence may reduce your sensitivity. Likewise, while we focus primarily on your assets, liabilities also matter. A mortgage or student loans could work to your benefit in an inflationary environment, provided they're set at a fixed, long-term rate. The inflationary exposure of your other expenses matters, too. As previously noted, while we focus on prices broadly, the goods and services you purchase play a role. Health care and education costs are of special note, as they've historically outpaced broader inflation and may continue to do so in the future.

Guidelines for Gauging Sensitivity

Your exact sensitivity depends on a host of factors, but here are some guiding principles.

If you are retired:

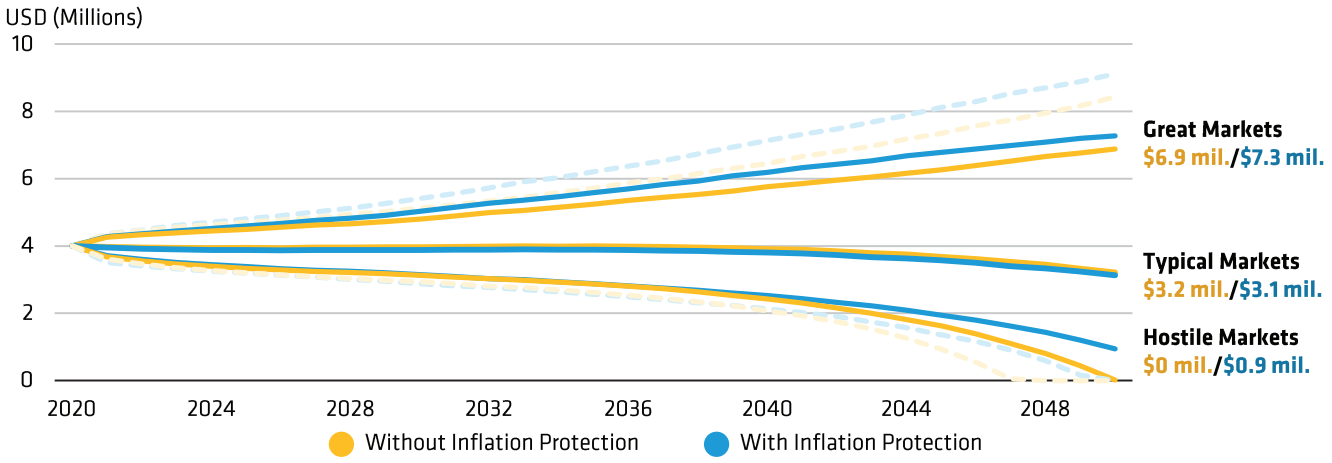
- **For bond-heavy investors, regardless of spending patterns**, inflation protection can mean the difference between depleting capital or not (**Display 8**).
- **For equity-heavy investors with high spending**, inflation protection can help reduce the risk of depleting capital, especially in hostile markets. Some may view this as lower-hanging fruit than spending cuts.
- **For equity-heavy investors with low spending**, inflation protection is less critical, though still modestly helpful over time.
- **For investors with a short time horizon**, inflation protection may also be less critical.

If you still have a substantial amount of earned income ahead of you:

- **For bond-heavy investors with high spending**, inflation protection can substantially boost the probability of sustaining your spending and may improve outcomes (not just in hostile markets but also in typical or great market environments).
- **For equity-heavy investors with high spending**, inflation protection may be less critical but could still have a meaningful impact on sustaining expenses in the event of hostile markets.
- **For bond-heavy investors with low spending**, inflation protection can improve the probability of sustaining expenses while also mitigating volatility.
- **For equity-heavy investors with low spending**, inflation protection is less critical.

DISPLAY 8: INFLATION PROTECTION CAN BE VALUABLE FOR INFLATION-SENSITIVE CLIENTS

Comparative Return Patterns for Protected and Unprotected Portfolios



As of June 30, 2021. **Current analysis does not guarantee future results**. For illustrative purposes only. Hypothetical example based on 65-year-old client with 70% bonds, 30% equities, $4 mil. starting value, $120K spending in real terms. Inflation protection replaces 28 percentage points of nominal bonds with real bonds. Results will vary based on investor's circumstances and inflation sensitivity.
Source: Bernstein analysis

Bernstein's Inflation Outlook

Given the challenges of predicting inflation, it's most effective to prepare for a range of outcomes—not just in terms of inflation, but for patterns of economic growth, interest rates, and other variables.

Yet to prepare, we must weigh what the future may hold.

From an inflation standpoint, we consider two different components—the cyclical environment over the next year or so and the secular environment over the next decade or more.

> Given the challenges of predicting inflation, it's most effective to prepare for a range of outcomes.

The Cyclical Horizon

As the vaccine rollout ramped up in early 2021, we expected a pickup in inflation. We reasoned that prices in some areas of the economy were likely to rebound after falling substantially due to a lack of demand. For instance, airline prices fell by around 17% in 2020 while over 100,000 US restaurants shuttered. With demand springing back, we expected prices in those and other areas of the economy to rebound. What's more, beyond renewed demand, the US actually experienced a small decline in prices in the second quarter of 2020, setting the stage for a one-time upward boost in the year-over-year inflation figures in 2021.

Yet, inflation came in hotter than anticipated and we updated our views as the facts changed—most notably the extended period of above-trend goods demand, the duration of supply chain and shipping disruptions, and the rapid rebound in the labor market. We still believe that inflation will fall from its currently elevated levels, as the pandemic-related disruptions fade in the coming quarters and step-changes in some prices fall out of the year-over-year calculations or, in some cases, even reverse.

As we discuss **here**, many of the major causes of this recent bout of inflation are likely to improve over the coming quarters. Most notably, motor vehicle prices contributed an astonishing amount to inflation in 2021, as computer chip shortages stemming from the pandemic prevented manufacturers from finishing production on millions of vehicles and led to a surge in used car prices. We believe that chip shortage is easing, based on work by our semiconductor research teams and comments and actions of chipmakers and automakers. That should eliminate the bottleneck on supply. On the demand side, the consumption of goods is still 10% above its long-term trend; as the pandemic fades and services demand picks back up, that should also alleviate price pressures. Easing inflation doesn't mean prices fall, just that they stop rising as quickly.

We continue to have our eyes on housing, which accounts for around one-third of household consumption, as inflation figures lag house prices. We also have our eyes on the hot labor market and inflationary pressures from it. But so far, the market's inflation expectations have been quite subdued. After rising from unrealistically low levels in 2020 back to more reasonable levels, longer-term inflation expectations have settled down and appear in line with the Fed's guidance. We would be concerned if those inflation expectations began to break out, but for now, the Fed's actions and language to date have been enough to keep them in check.

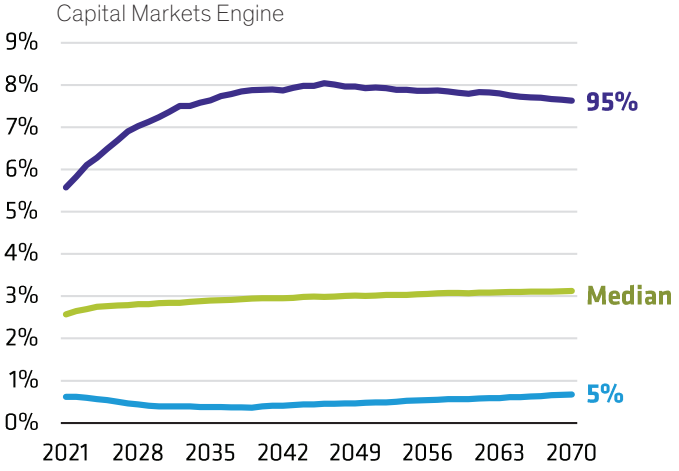
The Long-Term, Secular Outlook

While we continue to expect the current bout of price increases to ease over time, we also have our eyes on the potential for inflation in the long run and the risks it would pose for our clients. We recognize that some of the models (such as the Phillips Curve), which are designed for a cyclical horizon, may be less suited for the secular horizon. Aspects like political pressures and the policy regime may be more relevant, yet harder to predict.

Rather than focusing on the most likely scenario, we consider the range of possible outcomes, what would make them occur, and the likelihood of each (**Display 9**).

DISPLAY 9: PROTECTION CAN BE VALUABLE EVEN WITH A NON-INFLATIONARY BASE CASE

US Compound Annual Inflation Rate in Bernstein's Capital Markets Engine



As of June 30, 2021. **Current analysis and forecasts do not guarantee future results.**
Source: Bernstein analysis

Disinflation/Deflation (<1%)

Starting at the low end, a disinflationary or even deflationary environment could emerge over the coming decade or more. Let's call that an extended period during which inflation is below 1%. While not likely, it is possible. What could make it a reality?

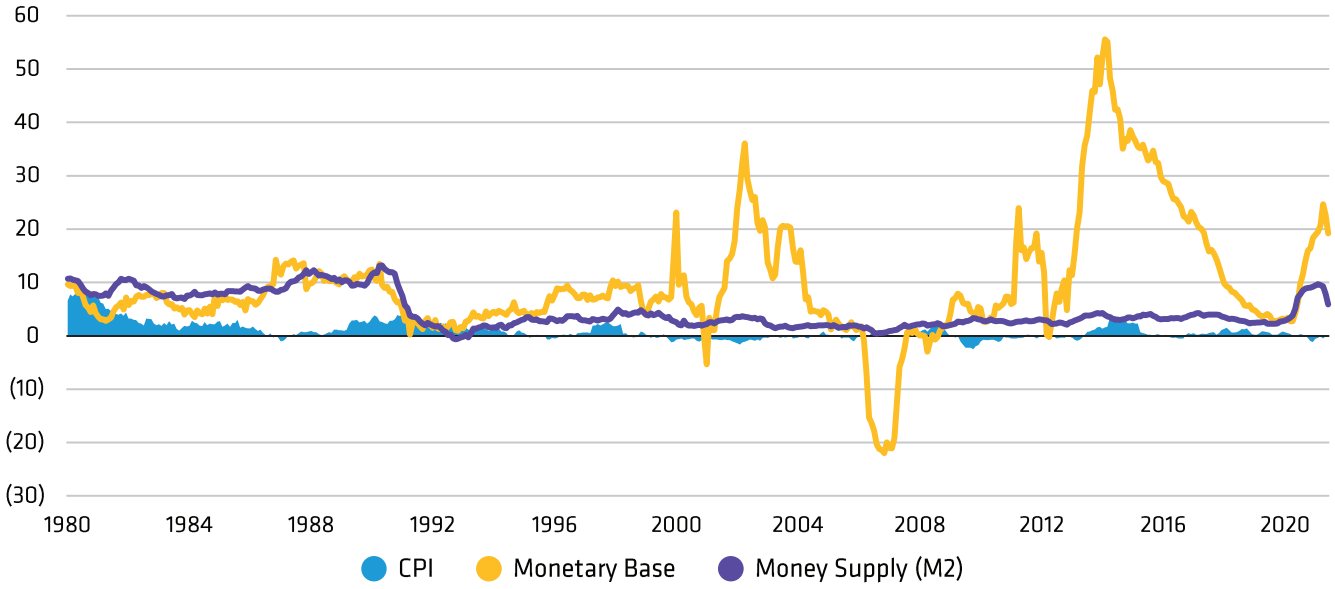
Essentially, for prices to rise that slowly or even fall for an extended period in the United States—which boasts a fiat currency and a positive inflation target—the economy would have to suffer what economists call a liquidity trap (or its functional equivalent).[12] This is also known as "Japanification," as prices in that country have, remarkably and contrary to many forecasts, barely risen over the past 30 years (**Display 10**).[13]

A liquidity trap could arise for several reasons. The Federal Reserve could act too conservatively, setting interest rates too high (and the money supply too low) for an extended period of time. Alternatively, technology—which exerts a strong deflationary force by increasing productivity and allowing consumers to enjoy a rising standard of living from the same resources—could be a driver.

Or technology and the Federal Reserve could work in tandem. It's hard to accurately measure productivity and inflation given the speed and scope of technological change in recent decades.[14] Take Google's products—from e-mail and YouTube to cloud computing and Google Maps. All these applications have substantially lowered the costs of many activities, allowing us to do more with less. And because many of its offerings are free—or the revenues come from businesses paying Google for advertisements—the value of the products is hard to capture in official statistics. If these types of technologies result in the overestimation of inflation, then policymakers using those figures may take measures that are actually too conservative. Such decisions could limit the level of and acceleration in inflation, while also serving as a headwind to economic growth and employment.

DISPLAY 10: JAPAN SHOWS THE GAP BETWEEN THE MONEY SUPPLY AND INFLATION

Year-over-Year Change in Prices and Money Supply



For illustrative purposes only.
Source: Japan MIC, Bank of Japan, Haver Analytics, and Bernstein analysis

12 We emphasize this is for the US under its current system with a fiat currency, a flexible exchange rate, and internationally integrated capital markets. If the US were on a gold standard, an extended period of low or zero inflation would be much more likely and has regularly been seen in those regimes historically, although it would come with other economic and geopolitical issues.

13 Eagle-eyed readers may have noticed one potential driver which we've left out of our discussion on inflation—aging populations. The reason for this is that there's still plenty of controversy over whether they're inflationary or deflationary. The experience of Japan over the past several decades has had other drivers, but aging is commonly thought to have been one of them. At the same time, basic economic theory would suggest that as people age and retire, they contribute to aggregate demand while not contributing to aggregate supply. We'd note there's one other important element, which is that older people's consumption is skewed much more toward certain sectors, such as health and long-term care—as we look at supply constraints and pricing pressures in the future, that's one area we'll have our eyes on.

14 A detailed description of the challenges measuring inflation due to technology and the impact that those challenges could have on the CPI or PCE can be found in this **working paper** by Leonard Nakamura, an emeritus economist at the Federal Reserve Bank of Philadelphia.

Remember, the Federal Reserve doesn't fully control the money supply—so inflation could also be weak if bank lending remains low. This occurred in the wake of the Global Financial Crisis, as the velocity of money and the money multiplier both declined. Bank lending slowed for several reasons: the sluggish recovery, reduced demand from companies due to better inventory management and from consumers due to the shock of the crisis, and an increasing supply of credit from outside the banking system.

Coming out of the pandemic, business demand for loans has been similarly low, as many companies have emerged with either too much debt or awash in cash. Debt-heavy enterprises needed it to survive and now must pay it down. Those flush with cash tapped capital markets to prepare for a downturn that didn't hit as hard as feared or received Paycheck Protection Program loans. In addition, many companies are turning to the bond markets and private credit markets for funding instead of traditional banks.

Consumers could be a key driver of credit growth in the coming years since many lightened debt loads during the pandemic due to stimulus payments or reduced consumption. If they decide to return to higher debt levels, that could boost the growth in the money supply. Yet while the CEOs of major banks appear optimistic about their lending prospects in a few quarters' or years' time, there's no guarantee loan growth will be strong over the coming decades.[15]

> For the US to experience disinflation/deflation, it would have to suffer from a liquidity trap, similar to that of Japan in the past 30 years.

Target Inflation (1%–3%)

With the Federal Reserve's intentions clear and long-term inflation expectations seemingly well anchored near the Fed's 2% target, inflation around that level is fairly likely. And while the Fed aims to get as close as possible, giving them margin for error would result in inflation in the 1%–3% range.

It's easy to imagine—it's baked into guidance from the Federal Reserve, projections from the Congressional Budget Office, countless expert forecasts, the market's expectations of longer-term inflation, and the median path in Bernstein's Capital Markets Engine. However, the Fed didn't court inflation in the 1970s and faced too much of it. Meanwhile, the Bank of Japan has yearned for inflation for the past several decades, to no avail.

> Monetary policy is aimed squarely at target inflation near 2%. In addition, the market's expectations are well anchored at around the same level.

This scenario—essentially a Goldilocks environment where fiscal and monetary policy is "just right"—relies on the Fed's credibility with the markets anchoring expectations near their 2% target level and buffering shocks. Furthermore, the Fed's actions have to match those expectations. After a decade of monetary policy that was slightly too restrictive, they've committed to shift to a stance that's more accommodative of inflationary pressures. If their words speak louder than their actions, they might fall slightly short. If their new policy proves the folly of fighting the last war, they may see inflation rise higher than they want. That's a risk they seem willing to take, as they have decades of experience heading off inflation by raising interest rates and have seen Japan's longstanding struggle to stoke inflation.

The fiscal side is also important. Part of aggregate demand and inflationary pressures comes directly from government spending, so running too high of a deficit could increase the risk of inflation. At the same time, running a budget surplus or too low of a deficit could increase the risk of a disinflationary or deflationary environment. The political landscape could change in the coming years and decades, but we don't currently see signs of a bipartisan consensus or even a stable majority favoring large, non-emergency government deficits. Notably, infrastructure spending itself can be deflationary, by unlocking supply constraints and other bottlenecks to economic growth—that's part of why it tends to be easier to get bipartisan support for infrastructure projects than other government spending.[16] Infrastructure spending today can reduce the inflationary pressures in years to come.

15 One obstacle to loan growth could include the falling marginal revenue product of debt over time—with lower benefits from incremental additions of debt, that can reduce demand for credit.

16 The other part of why infrastructure is more suited to bipartisan agreement is that it creates projects to spend government money in senators' and representatives' home states and districts.

"Highflation" (3%–5%)

Should the Fed's new monetary stance prove too loose and/or Congress' spending prove too stimulative, there's a risk of more elevated inflation, though not what we'd consider an inflationary breakout. This would be inflation of around 3%–5%, well above the Fed's target and damaging to a degree, but not the 1970s redux.

How could a situation like this unfold? Three key elements stand out—the politics of the national debt, the stalling or reversal of globalization, and climate change. These trends are detailed by our global economics team in a **recent white paper**, suggesting we could be on the precipice of a new, more inflationary policy regime.

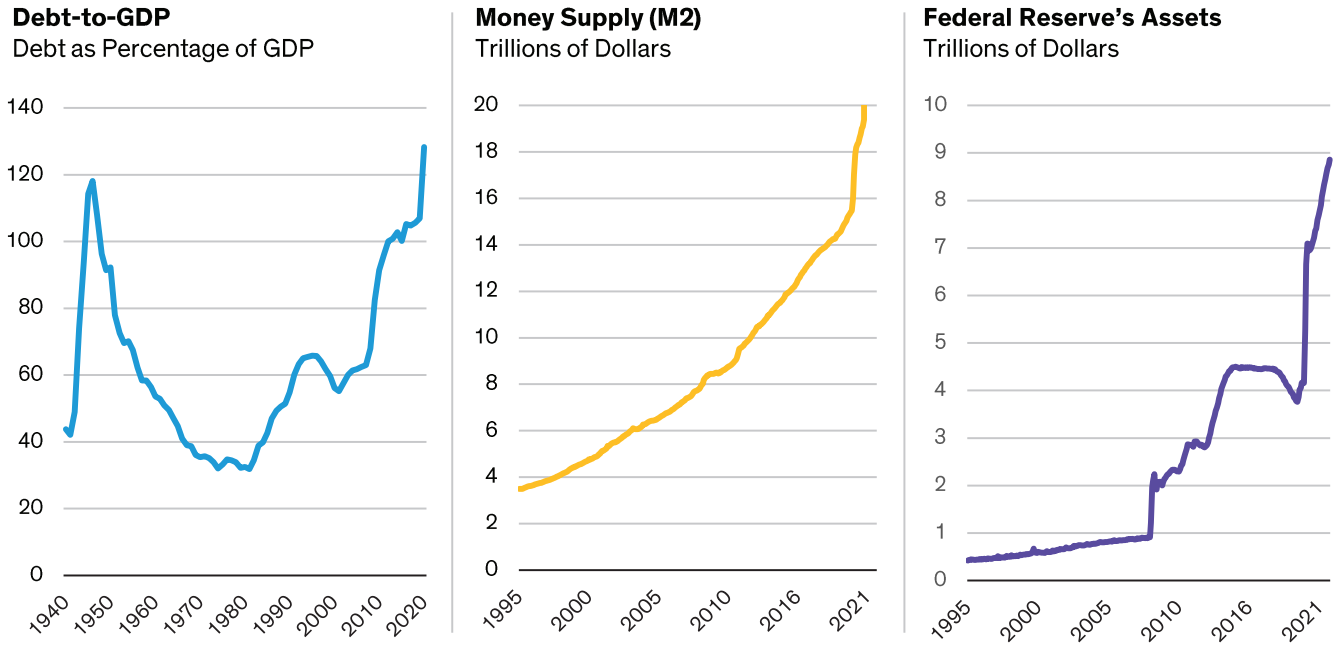
First, after a rapid and substantial increase in the national debt of the US and other developed countries due to the pandemic, policymakers could feel the need to reduce that debt to "more manageable" levels (**Display 11**). We've seen this in the past, typically after wars.

Yet, the options to bring down the debt are limited.[17] Ideally, you grow your way out, but given demographic and technological trends, that might not be possible. You could implement austerity measures. But that's not politically popular and many would argue that doing so right now could hamper growth unnecessarily, increase unemployment, and contribute to the ongoing shortfall in inflation versus the Fed's target. Another option is to keep the deficit moderate but sufficiently stimulate inflation via monetary policy to keep real interest rates low or negative. This would cause the real value of the debt to fall over time. This path—dubbed financial repression—seems the most politically palatable for those who see the debt level as a risk worth mitigating. But it would also require the Fed's actions to no longer be independent of fiscal policy.[18]

The second major trend which could lead to a high inflation scenario (which we're calling "highflation") is a pause in, or reversal of, the benefits of globalization. Populist movements in many developed countries could amplify this. After several decades of deflationary benefits from shifting manufacturing to China, there are now two issues at play—a reaction against offshoring and international trade, and the fact that for some products, automation and a reduced wage differential no longer make offshoring to China as attractive. That said, there could still be a shift to other lower-cost countries, as we've seen in recent years.

DISPLAY 11: IS INFLATION LURKING?

Debt Levels, The Money Supply, and the Fed's Balance Sheet Have People Worried



As of Q3 2021. **For illustrative purposes only.**
Source: Japan MIC, Bank of Japan, Haver Analytics, and Bernstein analysis

17 One other option, which we haven't discussed as it barely registers on the field of political debate, would be a debt jubilee.

18 Some unity between fiscal and monetary policy has been seen in the coronavirus crisis, but the Fed has indicated they plan to return to more normal independence post-pandemic. At the same time, they've also emphasized the role that fiscal policy has to play with the impact of monetary policy being more limited. Should serious concerns about central bank independence emerge, that could lead to inflation expectations becoming unanchored.

The third major trend is climate change, which can impact inflation in two ways. First, producing the same goods and services with less emissions-intensive processes may cost more. Alternatively, putting a dollar cost on emissions through carbon prices, taxes, offsets, and markets could raise the production costs using existing methods. Second, as the climate changes, it could damage supply. For instance, farms may run short of water or climates may be too hot for certain crops, production facilities near shorelines may flood part of the time or become completely unusable, and we may have to invest large sums of money simply recreating the productive capacity we already have.

A combination of these factors, along with monetary or fiscal policy that proves too hot under the circumstances, could result in an extended period of highflation. Or, since the 2% inflation target is a policy choice, the Fed could simply determine that a 3% target is more beneficial for the economy and that could put us in this range. Finally, it's worth keeping in mind that unpredictable supply shocks could also lead to persistent, elevated inflation, although they'd likely need to be exacerbated by other factors or policy mistakes.

Runaway Inflation (>5%)

What would it take to see an extended period of inflation of 5% or higher? Effectively, this could start with the same root causes as highflation—intensified by significant policy mistakes (along the lines of those of the 1970s)—prompting a sharp shift in inflation expectations.

> Highflation combined with policy errors could lead to runaway inflation.

Pinpointing factors that could stoke inflation expectations is tricky. In the 1970s, severe supply shocks that started in the oil markets rippled out and intersected with years of poor fiscal and monetary policy. A regulatory environment that prevented higher interest rates from being passed to households also contributed, as did the strength of unions and the implementation of cost-of-living adjustments. When President Nixon took the country fully off the gold standard, the last remaining anchor of inflation expectations evaporated.

With no gold standard today, it's hard to predict a catalyst that could have the equivalent psychological impact. On the other hand, younger generations have gone so long without seeing inflation that it's hard to know how robust those expectations are—how much inflation would it take for those expectations to turn fragile? Nobody knows.

> An extremely low probability, hyperinflation in the US would likely require the greatest supply shock in history to overcome our system's resilience.

Hyperinflation (>50% *per month*)

In the spirit of covering the entire range of scenarios, we must include hyperinflation. Recall that the ingredients for hyperinflation include a tether to gold or to a foreign currency which becomes untenable when combined with a sharp deterioration in productive capacity relative to demand. This often leads governments to run excessive deficits and steeply increase the money supply.

The United States left the gold standard decades ago and doesn't appear to be returning to it (or a bitcoin standard, for those so inclined) anytime soon. Likewise, our exchange rate floats freely against other currencies and our debts are denominated in our own currency. That provides policymakers with much more flexibility in avoiding hyperinflation or a currency crisis. And while not impossible, it would probably take the greatest supply shock in history to spur hyperinflation under the current US system. That could change—if history holds any lesson, it's to expect the unexpected—but the probability of hyperinflation in the US remains extremely low.

How Should You Position Your Portfolio?

First and foremost, your decision on how to protect your portfolio should be based on your personal inflation sensitivity. Your unique circumstances should give you an idea of how critical inflation protection is for you.

Keep in mind that your portfolio has to perform well across a range of possible inflationary regimes. Inflation roughly in line with the Fed's targets is a fairly likely scenario, but your mix of assets should also be able to hold up in a disinflationary environment or a highflationary environment (performing well in runaway or hyperinflation scenarios is an even greater challenge).

To achieve this, weigh how different assets might perform in different macroeconomic environments. As we look at assets offering potential inflation protection, three considerations guide us:

1) What's their expected return in inflationary environments?
2) How reliable is that return?
3) How much will they cost investors in non-inflationary environments?

Because asset prices change along with investors' expectations for the future, we don't recommend looking at outright inflation levels in the economy. Instead, our analysis uses a unique dataset of investors' long-term inflation expectations dating to the early 1970s—before the advent of TIPS (Treasury Inflation-Protected Securities) and the simple calculation of breakeven expectations. This is especially important since the relationship between realized inflation and inflation expectations has evolved over time, with the Fed's credibility anchoring expectations at low levels. In addition, with the exception of our discussion of Treasury bills, we use returns in excess of the risk-free rate. Not doing this can bias the results due to artificially inflated returns during the 1970s and 1980s when interest rates were much higher.

Let's work through each asset class, beginning with bonds and increasing in risk exposure, inflation protection, and complexity.

Bonds

Treasury and municipal bonds attract investors with their yields and defensive attributes. Their fixed return performs well in periods of disinflation and deflation. However, in exchange for those qualities, they have low overall expected returns and suffer the worst during inflationary episodes.

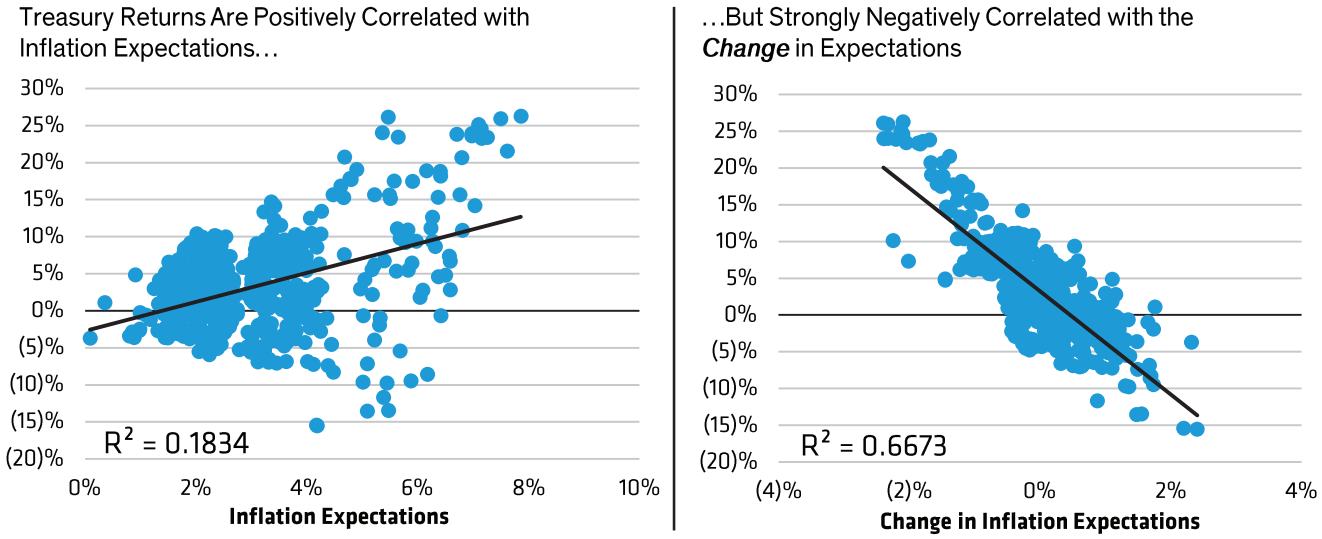
Relative to other assets, they perform best when inflation expectations are falling sharply. Somewhat counterintuitively, that's often when inflation expectations are already starting at high levels—that's what allows them to fall so sharply (**Display 12**).

Adding more credit to the mix via investment grade or high-yield non-government bonds can enhance overall returns, creating a higher starting point before inflation begins eating away at it. However, credit also introduces additional volatility to the portfolio.

In considering the contributions of bonds to a portfolio across different inflation scenarios, duration plays a critical role. Duration means a bond's sensitivity to interest rates—as rates rise, bond prices fall. Several variables affect that sensitivity, including the coupon and the starting level of interest rates, but the most critical is the maturity of the bond. All else equal, the longer the term of the bond, the higher its duration and the worse it will perform as interest rates rise.

DISPLAY 12: CHANGES IN INFLATION EXPECTATIONS CAN MATTER MORE THAN LEVELS

Treasury 12-Month Excess Returns



Source: Bloomberg and Bernstein analysis

Since higher inflation expectations usually lead to higher interest rates, longer-term bonds are most sensitive to inflation. Accordingly, shifting to lower duration bonds can help mitigate inflation risk in a portfolio. Yet doing so can affect investors' ability to find yield and to diversify the risk from their equity exposure. At the extreme are Treasury bills, which have short maturities and can thus be reinvested at higher rates if inflation expectations rise. Unfortunately, given their short term and high quality, they typically offer the paltriest yields of all.

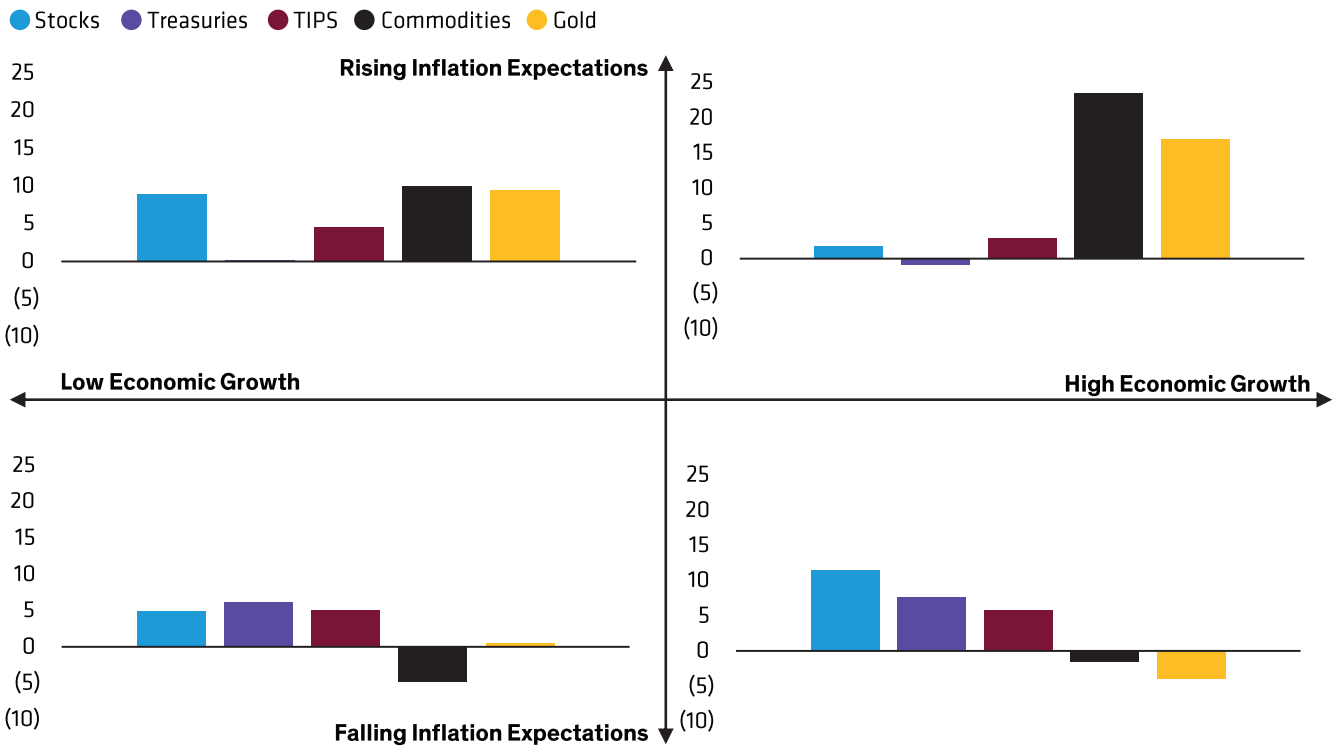
The relationship between inflation and interest rates creates one final wrinkle. In most economic cycles, rising inflation expectations translate into higher interest rates and thus lower bond prices. A unique situation could arise if the Federal Reserve decides to pin interest rates at a low level as the economy rebounds and even potentially buys longer dated securities to control the slope of the yield curve, as they did during World War II. Those actions and the post-war boom led to inflation in the late 1940s, yet with yields controlled by the Fed, bond prices didn't suffer as they normally would have and investors were incentivized to buy longer-dated bonds relative to bills.

Protecting Bonds from Inflation

Given how poorly traditional bonds perform during inflationary environments, what can investors add to their portfolios to enhance their fixed-income returns in these situations? They can implement inflation protection for their bonds in one of two ways, depending on the tax sensitivity of their account or investment vehicle.

DISPLAY 13: DIFFERENT ASSET CLASSES OUTPERFORM IN DIFFERENT MACRO REGIMES

Why We Recommend a Blended Approach to Protect Against Inflation



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Source: Robert Shiller, Bloomberg, Federal Reserve Board, and Bernstein analysis

For tax-advantaged accounts and vehicles, complementing a portfolio of Treasury or other bonds with inflation-linked bonds (such as TIPS in the US) or breakevens (owning an inflation-protected bond while shorting a nominal bond against it) can be an effective way to defend against inflation.

For tax-sensitive accounts and vehicles, the negative tax consequences of TIPS can offset their inflation protection. TIPS offset inflation by increasing the principal amount of the bond based on the inflation rate each year. Not only are the interest payments taxable as ordinary income, but so are the annual increases in principal—and they're payable as they occur even though the inflation-adjusted principal will only be paid back to the investor at maturity. As a result, for tax-sensitive investors, pairing investments in municipal bonds with inflation swaps or municipal inflation protected securities (MIPS) can improve results.

Using the same regime-focused framework which we'll use for equities and other assets, you can clearly see just how much inflation protection helps fixed-income portfolios (**Display 13**, previous page). While Treasury performance is bifurcated depending on the change in inflation expectations, TIPS performance is much more consistent throughout. They improve performance relative to Treasuries in inflationary environments but underperform slightly in disinflationary environments. Treasuries and TIPS both perform worst when the economy is running hot and best when economic growth is strong but inflation expectations are falling. The consolation for the relative underperformance of TIPS in disinflationary environments is that those tend to be when TIPS performance is strongest on an absolute basis. Like any good insurance policy, they dampen the risk of facing a bad environment.

Aside from the slight performance give-up in disinflationary environments, adding inflation-linked bonds to a portfolio can also come at a cost. That's because they're overwhelmingly offered by governments and may potentially be sourced from fixed-income portfolios which are invested in higher-yielding, non-government investments.

Stocks

Like bonds, inflation can negatively impact stocks through its effect on interest rates. Yet unlike bonds, inflation's positive impact on companies' cash flows can offset this to varying degrees, depending on the severity of the inflation and the nature of the company.

Much has been made of the sensitivity of stocks to inflation, which is called their "inflation beta." The conventional wisdom holds that stocks can be an effective inflation hedge—technically real assets, they should be able to adjust based on what's happening in the real economy, looking through inflation. Yet numerous studies, including ones by our colleagues, show that stocks have negative betas to inflation. Based on our analysis, stocks' inflation sensitivities appear to change from positive to negative depending on the starting level of inflation and the specific method used in the analysis.

We believe a more informative approach is to analyze the performance of stocks and other asset classes based on different macroeconomic regimes—when economic growth is relatively high or low and when inflation expectations are rising or falling (Display 13, previous page).

Looked at in this way, stocks have performed best when economic growth and inflation expectations were pulling in opposite directions—when either economic growth was low and yet inflation expectations were rising or when economic growth was high and yet inflation expectations were falling. In contrast, they performed worst in "cold" economic environments with weak economic growth and falling inflation expectations and in "hot" economic environments with strong economic growth and rising inflation expectations.

From a fundamental perspective, what can set different companies apart in inflationary environments? As prices rise, so do companies' revenues. Depending on a company's cost structure and its industry dynamics, it may be possible for those higher revenues to translate into higher profits, margins, and returns on capital.

Competitively advantaged companies may enjoy true pricing power, allowing them to raise prices by more than their input costs rise. Or alternatively, they may be the lowest cost producers and earn higher margins when their competitors are forced to raise prices. These companies stand poised to weather inflationary storms the best.

Other firms without durable competitive advantages may still raise prices, and if they have high fixed costs, their profit margins may even rise. Yet two factors will erode those benefits. First, competition will eat away at their margins. Second, for companies with high fixed costs driven by large asset bases, the rising maintenance and replacement costs of those assets won't show up in their income statements right away, but they will over time. Nonetheless, in the meantime, their stocks may be able to temporarily outperform others.

Companies with relatively large and long-dated debt can also benefit from inflation. This is the corporate equivalent of having a 30-year mortgage set at a low rate in a rising interest rate environment. Because the debt payments are fixed, as revenues and operating profits rise, so will profits, margins, and returns on equity. Yet this isn't as durable as pricing power. That long-term debt will fall relative to the revenues and cash flow of the business as it grows. Also, over time, more debt will need to be added to maintain the same leverage ratios, likely at higher interest rates.

Inflation may have different effects on stocks based on factors like value and growth. Future cash flows for value stocks tend to be more front-loaded, while the bulk of growth stocks' cash flows lie further

in the future. That means that growth stocks implicitly have a higher duration, much like longer-term bonds. However, looking at their performance in past inflationary periods, the difference has not been significant. Based on the theoretical reasons for value to outperform in inflationary periods, we'd still expect it to have a slight edge if inflation becomes an issue in the future, but we also have to consider the weak historical evidence of such a relationship.

Investors should also consider how international stocks are likely to perform in inflationary periods. Historically, global stocks have offered some protection. As prices rose in one country, the value of cash flows and stocks in other countries could benefit portfolios. A limitation for modern US investors is that the global macroeconomic backdrop, especially in developed countries, is now aligned with the US. If there's a significant inflationary outbreak in the US, it would quite likely be matched by inflation in other countries which have similar demographic trends and monetary policies.

Real Estate

The conventional wisdom often views real estate as another valuable inflation hedge. While partially true, it's slightly more complicated.

Generally, clients who own their own homes should not depend on that as an inflation hedge. Housing prices can be too idiosyncratic—Pasadena, California, will differ from Pasadena, Maryland, and Austin, Texas, will differ from Austin, Minnesota.

Plus, not all real estate is created equal.

The length of leases and turnover rate of properties are key dividing lines. The shorter the leases and higher the turnover, the more potential for repricing. At the extreme, a hotel is a powerful inflation hedge—the rates can change nightly depending on the economic backdrop. Shorter-term apartment rentals can also be repriced to adjust for inflation. Apartment buildings with annual turnover of 50% can reset prices to new tenants roughly every two years (and if tenants are on one-year leases, they can raise prices in the middle as well). In contrast, properties with long-dated leases and limits on the escalation of rents are less helpful for investors keen to stave off inflation.

Whether land is raw or developed becomes another dividing line. Raw land may reprice more like a commodity, while developed land may reprice based on the dueling impacts of higher cash flows and interest rates.

Furthermore, different types of properties have different levels of pricing power—residential properties may differ from office properties, retail properties, warehouses, and data centers. Two areas of particular note are agriculture and timberland, which may generate higher cash flows in inflationary environments as their crops or trees fetch higher prices. However, in many cases, the cure for high prices is high prices, as they incentivize new supply. So, while cash flows may rise in an inflationary environment—pleasing yield-focused investors—it may be difficult to capitalize by selling the asset as fewer buyers may be willing to pay up for peak income.

Finally, real estate businesses, like other enterprises, offer both equity and debt return streams. The equity claims own the assets and benefit from any upside. Meanwhile, the debt return streams are safer. As a result, real estate equity returns correlate with equities more broadly—in fact, it's probably more useful to think of them as an equity sector as opposed to a separate asset class. In this way, they're like stocks with pricing power or large fixed costs. Since financing is a large part of the real estate business, if properties are supported by long-dated fixed-rate debt, real estate equity can particularly benefit during inflationary times.

Real estate debt can be compelling, too—at a fixed rate, it can compete with other investment grade or high-yield corporate debt. More importantly, when set at a floating rate, it can compete with real bonds. However, if interest rates and inflation diverge, these investments serve as more effective hedges against rising rates than against inflation.

Commodity Futures

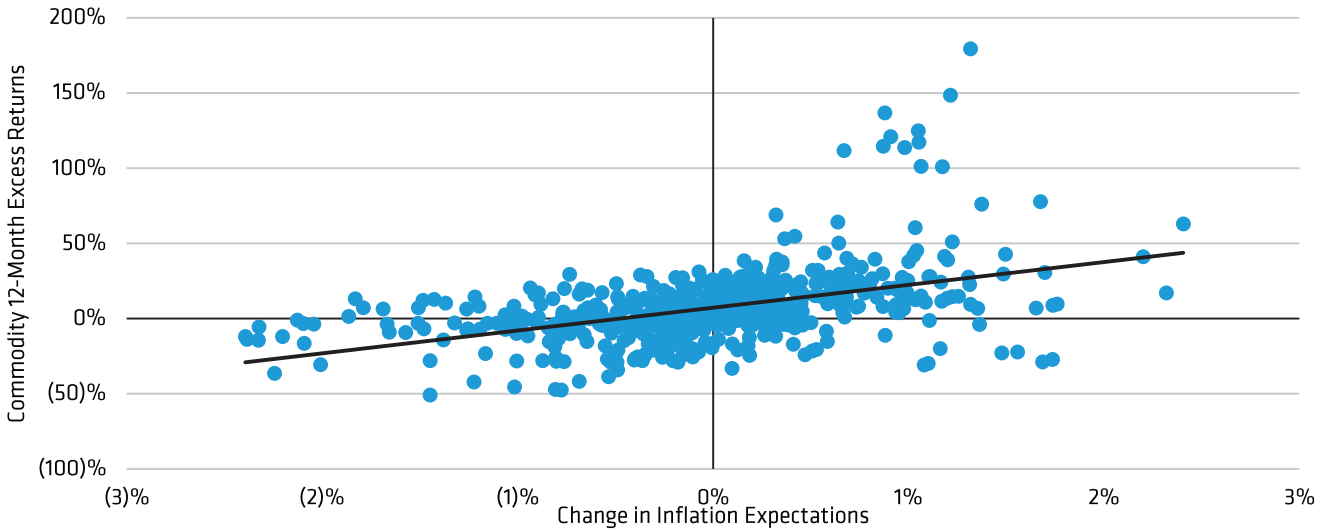
While commodity futures can enhance portfolio returns and diversification in general, they can potentially prove themselves the most useful during inflationary periods.

Commodity returns aren't strongly correlated to the level of inflation expectations—they don't necessarily do better when those expectations are high or low. However, perhaps unsurprisingly, their average performance has been highest in periods of sharply rising inflation expectations, regardless of whether those have been combined with fast or slow economic growth. Not only that, but the returns in those periods are among the highest of all assets in all periods (Display 13, page 21).

That reward comes with two key risks. The first can also be seen in Display 13 (page 21). In disinflationary environments, commodities' average historical returns have been negative. Second, inflation protection may not come through when it's needed most. When inflation expectations have risen substantially over the course of a year, commodity performance has sometimes been well over 50% for that same period. But it's also been flat or negative (**Display 14**). This is where the idea of inflation protection as insurance faces a critical test—what good is an insurance policy if it doesn't pay off when you file your claim? Commodity futures can pay off exceptionally well or not at all, creating another risk that needs to be managed in a portfolio.

DISPLAY 14: COMMODITY FUTURES CAN HEDGE RISING INFLATION EXPECTATIONS

But They Can Also Be Unreliable When Needed Most



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Source: Bernstein analysis

Gold deserves special attention, given its unique history as the longtime backbone of the monetary system and the conventional view of gold as an inflation hedge. Yet gold suffers from the same reliability issue as other commodities. In periods of sharply rising inflation expectations, it can be up 100% or down 40%. For instance, in the mid-1980s or the late 1990s, as inflation expectations rallied strongly, gold was flat or even down. Historically, gold has shined as a disaster hedge even more than as an inflation hedge. In times of crisis, people have historically flocked to gold, making it a potent tail risk hedge, but not an ideal inflation hedge.

A few other commodity-related considerations are worth bearing in mind as well.

> Gold suffers from the same reliability issue as other commodities. In periods of sharply rising inflation expectations, it can be up 100% or down 40%.

Commodities are best suited as a hedge against global inflation, as opposed to local inflation. Since their prices tend to be determined by global supply and demand, if your country faces inflation while the rest of the world does not, they could be of limited help. This is the opposite of the benefit of global stocks or global currencies, which can add ballast to a portfolio during an outbreak of localized inflation.

Demand for certain commodities can also structurally evaporate, leading certain assets to underperform until they effectively disappear. That happened to demand for lard once vegetable oils became more widespread and, while we expect oil and gas demand and prices to remain at roughly normal levels for the next decade or so, there's a risk that they too could decline over the long run. This is especially notable for oil as it's historically played a critical role in the economy and oil supply shocks escalated the inflationary episodes of the 1970s.

Foreign Currencies

Because the returns on cash are so low relative to other assets, most investors hold enough cash to cover emergencies or prepare for economic downturns, but not to make it a sizable holding in their portfolios. For investors concerned about the safety of their cash in inflationary environments, incorporating some foreign currencies into their cash holdings may be helpful. This introduces the risks of those foreign economies into the portfolio but can add value if those currencies are selected carefully.

Along the lines of foreign stocks, these holdings are designed to help during a period of local inflation rather than global inflation. Since the preferred holdings may be the currencies of other developed countries facing similar demographic, political, or monetary situations, those currencies may suffer at the same time as the dollar. That said, certain foreign currencies characterized by particularly tight monetary policies could still offer investors protection in the event of global inflation.

Private Investments

Investors looking to enhance returns or improve diversification and who have the ability and desire to invest in private markets frequently find additional opportunity there. Some see the illiquidity of these markets as a disadvantage as it reduces optionality and increases risk; others consider it an advantage since it eliminates the optical volatility of marking position values to the daily market prices of publicly traded stocks and bonds.

Private equity plays a key role here, providing access to non public companies undergoing transformations, including expansions, acquisitions of competitors, or management upgrades. As with public equities, business quality and pricing power can be powerful inflation hedges, since competitively advantaged companies can increase cash flows even as costs broadly rise. In addition, many of these companies carry substantial amounts of debt—much of it at a fixed rate—offering even more upside in an inflationary environment.

Venture capital and growth equity serve as the private investment world's more extreme version of growth stocks. Like growth stocks, their cash flows are further in the future, which may increase their sensitivity to interest rates and inflation. Yet, as with growth stocks, we wouldn't fully count on that in practice.

Private credit offers a particularly interesting opportunity for investors concerned about inflation. Much of the private credit universe revolves around floating rate loans, meaning their payments and value can rise along with interest rates. To the extent that rates rise in tandem with inflation expectations, this can make them a useful inflation hedge in a portfolio. However, bear in mind that inflation and interest rates are not one and the same. Should they diverge—particularly if we experience an inflationary episode while the Fed keeps rates low—private credit's hedging power would diminish.

Finally, hedge funds can offer value to all investors and especially to inflation-sensitive ones. As inflationary environments unfold, global macro hedge funds, which identify large-scale economic trends, should be well positioned to capitalize. Plus, hedge funds (and other private investments more broadly) frequently operate in less efficient markets, allowing them to generate risk-adjusted returns exceeding their benchmark, which is called "alpha."

Investors might ask, "Isn't that the point?" Generally, yes. But alpha, combined with responsible leverage, can be extremely valuable for investors in a low-return environment, especially in the face of potential inflation. That additional value can potentially enhance returns by one to two percentage points per year, which translates to a roughly 20%–30% improvement in a world of low interest rates and risk premiums. Put differently, that approaches the annualized rate of losses in a 60/40 portfolio during the inflationary 1970s (Display 2, page 7). Any alpha that fills that gap can help protect purchasing power, even during the worst of markets.

Other Assets and Strategies to Consider

While most of our focus has been on somewhat conventional asset classes, there are others worth mentioning.[19]

A market for intellectual property rights and royalties has been developed in recent decades and it could offer both inflation protection and, if appropriately selected and valued, attractive risk-adjusted returns. In addition, many investors concerned about inflation have considered bitcoin or other cryptocurrencies. Yet we consider those assets to be more similar to venture capital and it remains to be seen if bitcoin will mature from the risk-on asset it's been to date into a risk-off asset like gold. Finally, while oil and gas have been critical elements of the economy for decades, with the twin trends of electrification and decarbonization, that role could increasingly be played by power prices or emissions allowances.

Bringing It All Together

Given their different sensitivities to economic regimes, a combination of all the asset classes above is likely to offer the most robust investment performance over the long run.

An approach balancing the magnitude and reliability of the payoff in certain economic scenarios along with the performance sacrificed in other economic scenarios will lead to a blend of these different assets. That's the most prudent stance given the uncertainty of predicting inflation and assets' performance in different regimes.

Just as your individual circumstances determine how inflation sensitive you are, your risk tolerance leads to a final critical decision that you need to consider in advance. Should an inflationary outbreak occur, it's likely that the correlations between stocks and bonds will shift from their current low or negative levels back into positive territory. For investors, this means your diversification benefits won't come through as they "normally" have and your portfolio may be especially volatile. Accordingly, you should be sure in advance that you're not taking on too much risk.

High expected returns in the markets are currently hard to come by and you may feel pressured to take on additional risk to meet your goals. But if you end up taking too much risk and become a forced seller along the way, your financial objectives will be that much harder to achieve. A solidly planned strategic asset allocation based on your personal risk tolerance can help avoid that situation.

19 In addition to other asset classes, dynamic strategies like trend following could potentially add value during inflationary episodes. In those periods, these can push investors into buying commodities that have been rising and selling short bonds that have been falling. They come with their own risks, but a potential benefit is that, unlike other asset classes, which perform well based on either upside or downside macroeconomic surprises, these strategies can benefit from surprises in either direction. Recent research literature has highlighted the potential benefits of trend strategies during inflationary periods.

How to Think About Inflation and Incorporate It into Portfolios

Investors should be wary of inflation, as it can impair their purchasing power and decimate their investments, especially if they're spending from their portfolios.

Inflation is incredibly hard to predict—our models can capture some elements of it, but none seem to capture the whole picture.

The future can take many different paths and investors can perform better by considering all of them and what could lead to them. For rare but consequential events like inflation, preparing for them even if they don't come to pass can still be the right decision. It just might not feel like it.

The decision to incorporate inflation protection is a customized one driven primarily by three factors: the financial value of your human capital, your risk tolerance and asset allocation, and your spending patterns. Other factors such as your personal sensitivity to prices in different areas of the economy, whether you own real estate, and any mortgages or other debt you have can also play a role.

Over the near term, the indications are that the current wave of price pressures should ease over the course of 2022, roughly in line with the Federal Reserve's latest views. But our concern, not only in this paper but also in establishing strategic asset allocations for portfolios, is for inflation over the next decade or longer.

Over that long-term horizon, there's no guaranteed path for inflation. There are risks both to the upside and downside. And, importantly, the chances of an elevated inflationary path emerging in the US over the next several decades appear higher today than at any point in recent history.

Inflation could fall short of the Fed's 2% target as it has in Japan for several decades or it could exceed that target. Much of the risk between those two outcomes will revolve around political decisions in the US and around the world. Finally, while expectations have been well anchored for decades, we can't rule out the chance they could break sharply higher. Again, though, that is a tail risk to protect against rather than a central case to build a portfolio around.

If inflation does break out, stock and bond returns are likely to be relatively poor. As a result, investors who are more sensitive to inflation should incorporate some form of protection in their portfolios. Yet that protection comes with trade-offs—some in the form of volatility, some in the form of performance during disinflationary periods, and some in the form of performance in weaker economic environments. By adding a balanced package of stocks with pricing power, inflation-protected bonds or inflation swaps, real assets like commodity futures, commodity-linked stocks, real estate and infrastructure, as well as private investments or other non traditional assets, investors can substantially improve their performance in what would otherwise be hostile markets and create more robust and resilient portfolios overall.

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