

# SFI Public Discussion Note

## Rising Inflation— A Roadmap for Investors



May 2022

# 1. Introduction



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Inflation is forcefully back on the agenda of policymakers and investors after decades in which it was buried in economic history books. In this Public Discussion Note, we provide an overview of the current inflationary environment, focusing on issues relevant to investors and to the financial industry.

First, we describe how inflation is defined and measured by different authorities. We explore the economic policy debate around the bout of inflation sparked by the COVID pandemic, then discuss how the central banks are choosing to deal with inflation.

Next, we turn to the implications for investors. Drawing lessons from the past, we illustrate the performance of different asset classes in an inflationary environment. We pay special attention to fixed income portfolios, and issue a warning against relying too heavily on this class of assets. With rising inflation, some equity styles, such as value and low volatility, and, especially, a focus on commodities, are expected to perform well.

We conclude by reflecting on the new challenges facing wealth and asset managers in their relationship with clientele, and discuss the importance of directing clients toward reasonable and achievable real returns. At the same time, clients need to be made aware of the novel risks they will be exposed to in the current inflationary environment.

With its Public Discussion Note series the Swiss Finance Institute (SFI) is actively promoting a well-founded discussion of topics relevant to the financial industry, politics, and academia. Furthermore, SFI disseminates its findings through research, publications, Master Classes, and conferences.

## 2. Measuring Inflation

This section draws from Baz, J., et al. (2021)

*When you cannot measure it, when you cannot express it in numbers, your knowledge is of a meager and unsatisfactory kind. (Lord Kelvin, 1883).*

While Lord Kelvin was referring to electricity, this quote is also relevant when talking about inflation. It is essential to be clear about how inflation is defined and how policymakers measure it.

At a very general level, inflation measures the increase in the price of a basket of goods and services; this is called the price index. The price index is a weighted average of relevant items of consumption. Based on which weights are used to calculate this average, we can have different types of price indexes.

To illustrate, we will use a very simple example of an economy in which two types of goods are available, apples and oranges, whose prices change between year zero and year one as shown in Exhibit 1.

**Exhibit 1: Apples, Oranges, and Inflation**

In year zero		
Item	Price (per pound)	Quantity (pounds)
Apples	3	100
Oranges	4	120
In year one		
Item	Price (per pound)	Quantity (pounds)
Apples	2.6	120
Oranges	4.5	112

Source: Baz, J., et al. (2021).

Depending on the choice of the weights to use in the price index, we have two primary ways of computing inflation in this simple economy. The *Laspeyres Price Index* uses the base year (i.e., year zero) quantities as weights. As we see in Exhibit 2, the resulting inflation rate is 2.6%. From a theoretical perspective, the Laspeyres index is a *Cost of Good Index (COGI)*; that is, it measures the change in the purchasing power of money, while keeping the basket of goods constant or, if that is not possible, then by keeping the quality of the goods constant. There is a serious debate in the literature, however, on how to keep "quality" constant. While diving into these intricacies is beyond the scope of this Note, let us just mention, for example, that we cannot simply compare the prices of the first iPhone, launched in 2007, to that of the iPhone 13, launched in 2021, as the latter is a significantly better performing product (e.g., its RAM is at least 32 times larger). One stratagem used to adjust for quality improvements is called hedonic pricing.<sup>1</sup>

The second way of computing inflation in our simple economy is to use the final (i.e., year one) quantities as weights, as in the *Paasche Price Index*. In this case, the inflation rate in our example is 1.0%. The Paasche index is a *Cost of Living Index (COLI)*; it measures the change in the minimum expenditure needed to purchase a basket of goods that preserves a certain standard of living. As a COLI, the Paasche Index accounts for substitutions. That is, it reflects the fact that, in practice, when prices go up consumers will change their habits and will substitute lower-priced goods for their usual purchases. As a result, the rate of inflation measured by the Paasche index is typically lower than that resulting from the Laspeyres index.

1) In brief, when using hedonic pricing, we decompose the total price change into: a pure price change, plus a quality change based on the value of new features. Then, we estimate the value of the new features by comparing products with/without those features. The constant-quality inflation rate compares prices after the value of the new features has been subtracted.

The *Fisher Index* acknowledges that the truth often lies in the middle. Using this index, we take the geometric average of the Laspeyres and Paasche indexes to obtain an inflation rate of 1.8%. In practice, the Fisher index is preferred as a COLI; it reduces the measurement error in the reference basket, the contents of which are typically not well known at the time the index is computed.

Because of the effect of U.S. economic policies on global financial markets, in this Note we focus primarily on how policymakers in the U.S. deal with inflation. But to understand the choices they make it is useful to know that the European Central Bank's measure of inflation is based on the Harmonized Index of Consumer Prices (HICP), which is a Laspeyres index. A great limitation of the HICP (which is subject to review) is that its reference basket does not include Owner-Occupied Housing (OOH).

**Exhibit 2: Inflation Measuring Indexes**

Index	Formula	Result
Laspeyres (L)	$\frac{(2.6 * 100) + (4.5 * 120)}{(3 * 100) + (4 * 120)}$	1.026
Paasche (P)	$\frac{(2.6 * 120) + (4.5 * 112)}{(3 * 120) + (4 * 112)}$	1.010
Fisher	$\sqrt{L * P}$	1.018

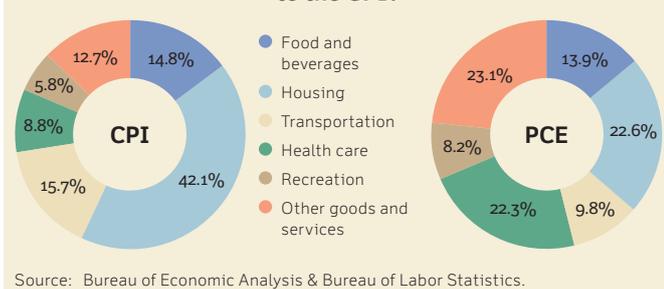
Source: Baz, J., et al. (2021).

Different policymaking authorities use different indexes to assess inflation. In the United States, for example, the Consumer Price Index (CPI) is a Laspeyres index; this gauge of inflation is used by the U.S. Government for Social Security. The Personal Consumption Expenditures index (PCE), however, is a Fisher index; the PCE is the gauge of inflation preferred by the U.S. Federal Reserve (the Fed). The PCE also measures expenditures by institutions on behalf of households. Thus, health care weighs 22% in PCE vs. 9% in CPI, as a result of employer-provided health insurance (see Exhibit 3).

The Swiss National Bank measures inflation using a CPI index, which is also a Laspeyres index. Interestingly, health insurance premiums, which are an important source of perceived inflation in Switzerland, are not included in the construction of the Swiss CPI. The rationale for this choice is that health insurance premiums could increase as a result of increased usage, rather than due to rises in the cost of the underlying goods and services. The Swiss CPI includes, instead, estimates of healthcare goods and services, such as the cost of medicines and hospital stays.

To conclude this section, we should mention that the most volatile sectors, i.e., food and energy, are typically stripped away from the CPI when policymakers gauge inflation. This allows them to obtain a more stable and persistent measure of inflationary trends, called "core inflation." In the U.S., food and energy, with weights of 14% and 7% respectively, are relatively small components of the CPI price index, but they cause most of its volatility.

**Exhibit 3: How Does the PCE Weigh Items Compared to the CPI?**



### 3. COVID-Era Inflation and the Policy Debate

In 2021, inflation in the U.S. surged to levels not seen since 1982. The PCE averaged 5.8% over the 12 months ending in December 2021. U.S. core inflation (excluding food and energy) averaged 4.9% in 2021 (see Exhibit 4).

**Exhibit 4: PCE Inflation Percent Change From Year Ago**



Source: Federal Reserve Economic Data.

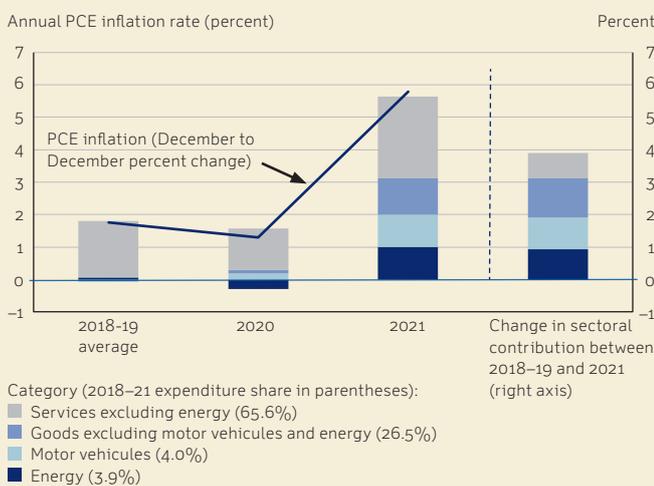
The surge in 2021 was rather generalized across the main sectors of the price index, as detailed in Reifschneider and Wilcox (2022). As Exhibit 5 shows, in the bar on the far right, energy and motor vehicles each accounted for about a quarter of the 4% change from inflation's average level in the pre-COVID year 2018–2019 (measured on a December-to-December basis). While the rise in energy prices relative to their depressed level during the COVID recession is not surprising, the large contribution of motor vehicles, which account for only 4% of consumer spending, is unprecedented. Vehicles have been in particularly short supply in recent months, reflecting the shortage of semiconductors; this shortage resulted from supply chain problems that plagued other traded goods as well. Strong demand for durable goods during the peak of the pandemic affected inflation by compounding these supply chain problems. Faster increases in the price of



non-energy services—a sector representing almost two-thirds of consumer spending—added 0.8% to the 2021 surge in inflation. More than half of this contribution is due to a rebound from 2020, when prices in this sector were kept low by the discounting of airfares and lodging rates, among others.

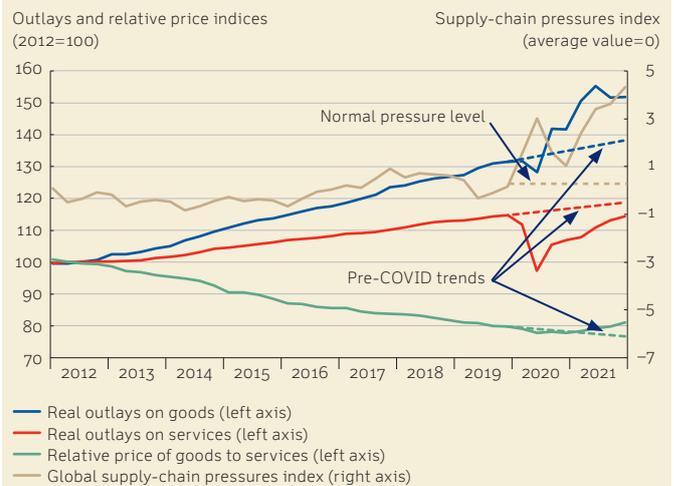
We can gain additional insight into what's driving the recent surge in inflation by looking at the changing patterns in consumer spending. Exhibit 6 shows that consumer spending on goods picked up significantly during the pandemic (the blue line). In contrast, expenditures on services initially dropped below their pre-COVID trend and remain weak (the red line), reflecting a continued reluctance to travel, eat out, and engage in other forms of activity that involve proximity to other people. Even without supply chain bottlenecks, these changes in consumers' spending patterns would have put upward pressure on the prices of goods. Supply chain pressures (the light brown line) have compounded the pressure of rising demand. The net result is that the relative price of goods departed from its downward trend in 2021 and rose significantly (the blue line).

**Exhibit 5: Contribution of Various Expenditure Categories to PCE Inflation**



Source: Reifschneider, D., & Wilcox, D. (2022).

**Exhibit 6: Real Consumer Spending, Relative Prices, and Supply-Chain Pressures**



Source: Reifschneider, D., & Wilcox, D. (2022).

### 3.1 The Case for Optimism

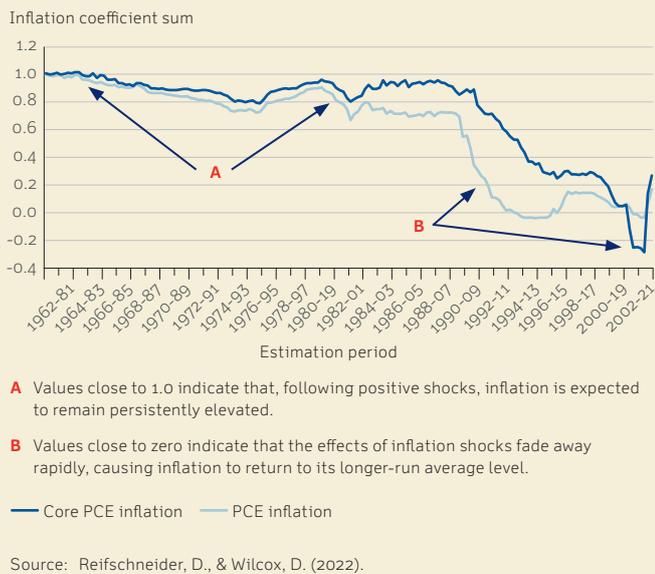
In its Summary of Economic Projections of December 2021, the Federal Open Market Committee (FOMC), the policy-setting body within the Fed, has expressed optimism about the status of inflation in the future. The general argument is that the supply of goods will catch up with demand, as supply chain pressures ease up and production is expanded.

Moreover, although the war in Ukraine has brought higher energy and food prices, boosting inflation in 2022, these effects will vanish once prices level out. Another sector that will put pressure on inflation in 2022 is housing. Rents for new tenants have skyrocketed in the U.S., rising about 14% year-on-year in January 2022; they will probably add about a one-half percentage point to CPI inflation and one-third of a point to PCE inflation.

The case for optimism comes from an analysis of the persistence of inflation in recent times, according to Reifschneider and Wilcox (2022). Exhibit 7 shows estimates of the link between

current inflation and past inflation over twenty-year periods. In the 1960–1980 period, the parameter was around 1, meaning that past inflation would translate to a similar level of inflation in the next quarter. In the last two decades, the persistence of inflation has been around zero, although it increased somewhat in 2021.

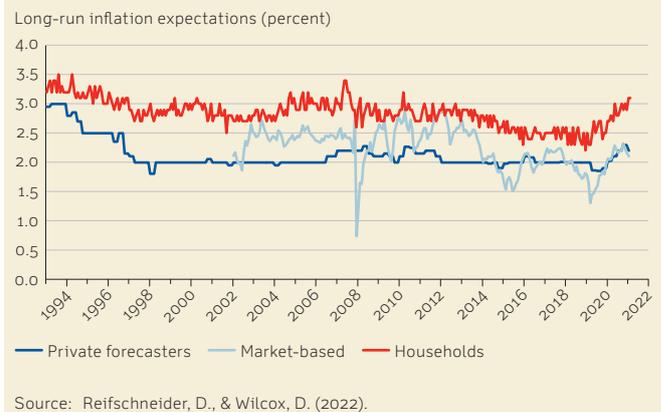
**Exhibit 7: Rolling Estimates of the Persistence of Inflation Shocks**



Since the early eighties, the mean reversion in inflation—the process of returning to the initial steady state—has been stronger. The reason for this is the anchoring of inflation expectations; private forecasters, households, and the markets in general expect any rise in inflation to be temporary. This stability of expectations, which started in 1979 with the Volcker period, is a testimony to the success of a monetary policy that creates a credible commitment to keeping inflation under control. The stability of long-term inflation expectations in recent decades is evident in Exhibit 8. Although some measures of long-term expectations have risen in 2021, their levels are still below those of 2008, a period that was followed by low realized inflation.

The optimists, including the Fed, thus believe that the current state of inflation is transitory and will, to a large extent, take care of itself. According to this view, monetary policy should avoid chasing today's elevated inflation and, instead, focus on where inflation will be in the next five years. The policy stance should be neutral over the medium term, and does not need to lead to a marked economic slowdown or hard landing. At the same time, monetary authorities should not let their expectations become unanchored, but must preserve the credibility they have gained since the Volcker period.

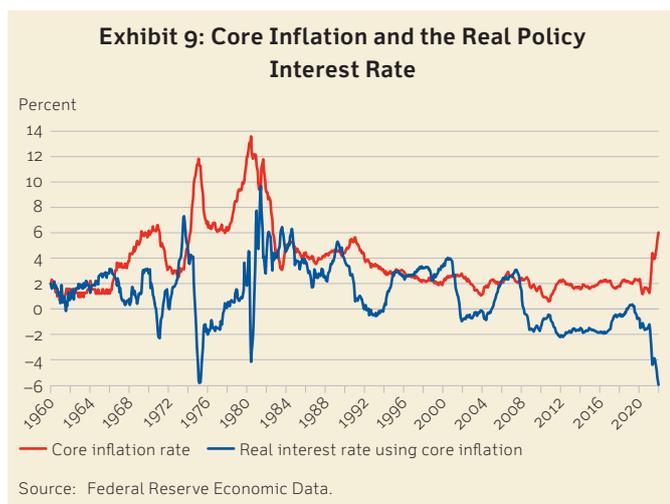
**Exhibit 8: Private Forecaster's, Market-Based, and Households' Expectations for Long-Run Inflation**



### 3.2 The Case for a Not-So-Optimistic Outlook

Some prominent commentators, including Blanchard (2022) and Summers (2022), hold a more pessimistic view of the future outlook for inflation and the economy. According to this argument, the Fed has let the U.S. economy overheat over the past years and, to bring inflation under control, will need to engineer a hard landing through significantly higher interest rates and balance sheet reductions. Before these policies have a positive effect, the economy will face stagflation, i.e., high inflation, high unemployment, and low economic growth, as it did in the 1970s.

Focusing on the gap between inflation and the real interest rate (see Exhibit 9), Blanchard (2022) argues that the last time the Fed was so much behind the curve on inflation was in 1975. This observation establishes a worrisome similarity between the current economic outlook and that of the 1970s. In that episode it took eight years, from 1975 to 1983, to bring inflation below 4%, requiring the Fed Fund rates to be raised by 13% and unemployment to rise by 6%.



The pessimists disagree with the idea that inflation expectations will remain anchored. Blanchard (2022), for example, notes that it is unrealistic to believe that wage setters will not try to make up for their workers' lost purchasing power. This catch-up in wages will increase the persistence of inflation above the levels of the last two decades. Consequently, inflation expectations are likely to spiral out of control.

In essence, the pessimists argue that the last decades are not a good indicator of future behavior, in terms of inflation expectations. The current environment is different: Inflation has become much more salient due to its sheer magnitude. It is more likely that workers today, facing a significant loss of purchasing

power, will demand to be compensated with higher nominal wages. The tightness of the labor market makes their requests more likely to be granted.

Gordon (1970) found that the coefficient measuring the persistence of inflation was about 0.6 in 1970, suggesting that inflation was mean-reverting (also see Exhibit 7). After seven years of rising inflation, he had to revise his estimate up to 1 (Gordon, 1977), implying that expectations had become unanchored. According to Blanchard (2022), with today's wider and faster diffusion of information, expectations will become unanchored more easily now than in the 1970s.

Summers (2022) is even more drastic in his outlook. In August 2020, the Fed established a new rule of monetary policy, whereby it will target average inflation over an unspecified horizon, rather than aiming for its previous target of 2%. This choice implies that the central bank will allow inflation to run above 2%, if in some prior period it was below that level. According to Summers, this decision was a mistake, because it let expectations become detached from the 2% target. As a result, inflation expectations are now unanchored.

For Summers, the remedy to today's rampant inflation is to bring real interest rates about 2% to 3% above the inflation rate, and to explicitly abandon average inflation targeting. This policy would reestablish the credibility of the monetary authority vis-à-vis market participants. With core PCE inflation currently at 5.4%, this prescription implies nominal interest rates above 7%. This level is well above the forecasts of the FOMC members, which average around 2.75% for Fed Funds rates in 2023 and 2024 (Exhibit 10, green line). The market seems to agree that the Fed will have to tighten interest rates substantially more, by about 100 bps, in 2022 and 2023 than it is currently planning to do, as shown by the path of Fed Funds futures (Exhibit 10, blue line).

According to Domash and Summers (2022), with the current unemployment rate at 4.2% and wage inflation at 6%, the only way for the Fed to bring inflation under control is to tighten its policy stance considerably. This course, however, will lead to stagflation—with inflation and unemployment both averaging above 5% over the next few years—and ultimately to a major recession. Their computations (Exhibit 11) show that, given the current labor market conditions, the probability of a recession in the next eight quarters is 100%.

The crucial question is: What kind of inflation expectations does the market have? A growing body of literature addresses this question (see, e.g., D'Acunto, Malmendier, and Weber (2022)). It appears that households, which are among the most relevant decision-makers in the economy, behave differently from professional forecasters. Their expectations tend to be biased upwards (see, e.g.,

Exhibit 8). Moreover, households are affected by the salience of the price signals they receive in their daily lives, e.g., they tend to pay disproportionate attention to the price of groceries and gasoline. Some authors (see, e.g., Candia, Coibion, and Gorodnichenko (2020)) find that households form expectations based on a model of the economy that differs wildly from the model used by the Fed. In particular, households tend to associate inflationary periods with bad realizations of output, such as unemployment. This behavior differs from the Phillips curve, the framework typically assumed by the Fed, in which inflation and unemployment are negatively related.<sup>2</sup> In sum, these market participants' inflation expectations appear to be far from the assumptions used to justify the Fed's current policies.

2) See the Online Appendix—<https://www.sfi.ch/resources/public/dtc/media/pdn-inflation-online-appendix-en.pdf>—for further details.



From the market standpoint, an additional reason to worry is the transition from Quantitative Easing to Quantitative Tightening, announced in the FOMC minutes of March 2022. In December 2021, the Fed stopped buying USD 125bn per month of bonds; starting in May 2022, it is preparing to shrink the balance sheet by USD 95bn per month. Overall, the market will have to digest more than USD 200bn in securities per month, which will certainly put upward pressure on interest rates, as we will discuss in the next section of this Note, and making a recession more likely.

Recessions trigger periods of declining performance in the equity market. While tightening interest rate cycles are not necessarily bad for stocks, this optimistic scenario is overshadowed by the consideration that the current tightening cycle, combined with extreme geopolitical uncertainty, is likely to lead to a recession in the view of Summers (2022) and other commentators (e.g., Dudley (2022)). Recessions are bad for stocks in general. Thus, investors seeking shelter from inflation will have to look elsewhere. The next section of this Note explores these issues in more detail.

**Exhibit 11: Historical Probability of a Recession Conditional on Different Levels of Wage Inflation and Unemployment, 1955-2019**

	Average quarterly wage inflation above	Average quarterly unemployment rate below	Probability of recession over the next four quarters	Probability of recession over the next eight quarters	Number of quarters	When did the U.S. economy most recently cross the threshold?
Wage inflation only	3%	#NA	28%	51%	110	Q3 2021
	4%	#NA	33%	55%	67	Q3 2021
	5%	#NA	37%	66%	41	Q3 2021
Unemployment rate only	#NA	6%	24%	46%	115	Q2 2021
	#NA	5%	30%	55%	64	Q4 2021
	#NA	4%	40%	68%	25	Q1 2022
Wage inflation & unemployment rate	3%	6%	35%	63%	80	Q3 2021
	3%	5%	37%	63%	51	Q4 2021
	3%	4%	44%	65%	23	Q1 2022
	4%	6%	43%	70%	44	Q3 2021
	4%	5%	41%	62%	29	Q4 2021
	4%	4%	33%	60%	15	Q1 2022
	5%	6%	52%	91%	23	Q3 2021
	5%	5%	64%	100%	11	Q4 2021
	5%	4%	50%	100%	8	Q1 2022

Source: Domash, A., & Summers, L. (2022).

**Exhibit 10: Implied Fed Funds Target Rate**



Source: Bloomberg.

## 4. Investing in an Inflationary Environment

Rather than being transitory and taking care of itself, as the Fed and like-minded optimists expect, inflation may instead remain at higher levels than those we have experienced for the past three decades. Markets have not priced persistent long-term inflation for all this time, leaving investors vulnerable. Wealth and asset managers will need to consider the impacts of various inflation and economic growth scenarios on risks and returns when managing their clients' portfolios. This calls for a robust investment approach, one which quantifies the sensitivities of various asset classes and investment styles.

### 4.1 Which Macroeconomic Variables Matter?

To assess which macroeconomic variables matter most in today's inflationary environment, we follow the approach defined by Ilmanen, Maloney, and Ross (2014).

The macroeconomic factors under scrutiny here are **growth** (measured by the Chicago Fed national activity index and unexpected U.S. industrial production), **inflation** (measured by year-over-year inflation and unexpected U.S. consumer price index), **real yields** (measured by 10-year and short-term rates, minus forecasted estimates), and **volatility** (based on the S&P 500 Index and 10-year Treasury returns). We also consider three asset classes: **global equities** (as proxied by the MSCI World index in USD), **global bonds** (GDP-weighted across Australian, Canadian, German, Japanese, U.K., and U.S. 10-year government bonds, effectively currency-hedged), and **commodities** (equal USD-weighted index of 24 commodities). Finally, we consider four factors that characterize investment style: **value**, **momentum**, **carry**, and **low volatility**.

Exhibit 12 shows the risk-return tradeoffs (expressed as Sharpe ratios) for various macroeconomic environments from 1972 to 2018 for these three asset classes and four style factors.

Based on empirical data, **equities** have higher risk-adjusted returns when there is rising growth,

increasing real yields, and low volatility. **Bonds** have solid risk-adjusted returns when there is low inflation, decreasing real yields, and low volatility. **Commodities** deliver the highest Sharpe ratios when there is high inflation and rising growth, but low volatility.

Looking at investment styles, investors and academics agree that relatively cheap stocks (**value**), quality stocks or stocks that have performed well recently (**momentum**), higher-yielding assets (**carry**), and safer assets (**low volatility**) tend to outperform the market. While theories to explain this observation cover a broad spectrum of opinions, from behavioral bias to fundamental reasons, factor-based portfolios have shown higher risk-adjusted returns than traditional multi-asset portfolios. In Exhibit 12, **value**, **momentum**, **carry**, and **low volatility** show a relatively stable pattern of risk-adjusted returns across all macroeconomic environments and all asset classes, suggesting that they are less sensitive to macroeconomic cycles.

**Exhibit 12: Sharpe Ratios Across Asset Classes, Factors, and Economics Cycles, 1972-2018**

	Growth Up & Inflation Up	Growth Up & Inflation Down	Growth Down & Inflation Up	Growth Down & Inflation Down
Equities	0.5	1.2	-0.2	0.8
Bonds	-0.1	0.7	0.0	1.2
Commodities	0.8	-0.1	0.5	-0.2
Value	0.6	0.8	0.5	1.1
Momentum	1.3	1.1	0.9	0.9
Carry	0.8	0.6	0.9	0.9
Low Volatility	1.2	1.2	0.4	1.2
	Real Yield Up	Real Yield Down	Volatility Up	Volatility Down
Equities	0.5	0.1	-0.1	1.1
Bonds	-0.1	1.1	0.8	0.6
Commodities	0.4	0.2	0.2	0.6
Value	0.6	0.7	0.6	0.8
Momentum	1.1	1.0	0.8	1.4
Carry	0.7	0.9	0.8	0.8
Low Volatility	1.0	1.0	0.8	1.4

Source: Bloomberg & authors' calculations.

In short, combining top-down macroeconomic views with bottom-up factor selection enhances the long-term expected returns of an investor's portfolio, as this approach more effectively diversifies the portfolio across a broad range of economic factors.

#### **4.2 Fixed Income Investing in Inflationary Times**

The global fixed income landscape, proxied by the Bloomberg Global Aggregate Index, contains investment-grade rated debt, including a variety of bonds issued by governments, government-related entities, and corporations, as well as asset-backed securities. Other parts of the fixed income market fall outside of the Global Aggregate Index, including inflation-linked bonds, securitized bonds, tax-exempt municipal bonds, floating-rate debt, high yield debt, bank loans, and emerging market debt. These assets have historically represented an important diversifier to equity risk.

With inflation high and continuing to rise, however, fixed income portfolios are at significant risk: Basic fixed income pricing models suggest that the present real value of a fixed income stream is lowered by inflation and by higher interest rates.

In today's inflationary environment, investors should prefer short-term bonds (i.e., those with short durations), as long-term bonds will face a difficult period ahead as global interest rates rise. In addition, when credit spreads are tight, investment grade, high yield, and emerging markets do not offer compelling risk-adjusted expected returns. Since the beginning of 2022, bond markets have corrected noticeably across the full spectrum of securities and currencies.

Fixed income strategies nonetheless offer some pockets of opportunity for investors, particularly in floating-rate securities such as tradable bank loans, private credit, and securitized credit tranches. All of these should benefit from rising interest rates.

The recent considerable increase in fixed income premiums also offers investment opportunities, mainly in the high yield segments of the bond market.

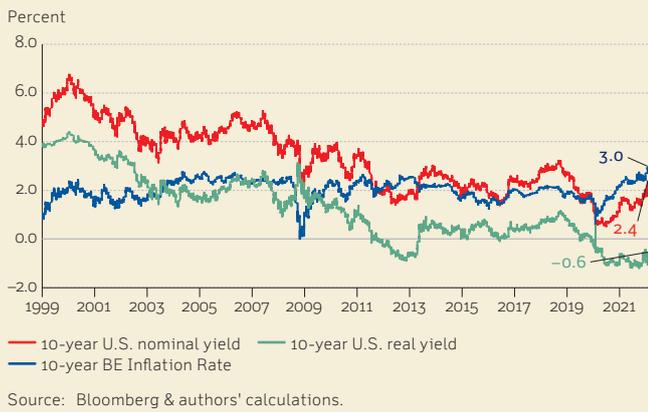
##### **4.2.1 Are Treasury Inflation-Protected Securities a Good Inflation Hedge?**

In theory, Treasury inflation-protected securities (TIPS) are the best way to protect a portfolio from rising inflation. However, real interest rates on TIPS have been negative since 2020 and current buyers of 10-year TIPS will earn -0.6% in real annual yield as of March 24, 2022. Exhibits 13 and 14 help explain why TIPS do not effectively protect portfolios in the current inflationary environment. The two topics of concern are, first, the mechanics of *real yields* and, second, the *breakeven inflation rate*.

Real yields are currently negative due to the Fed's massive purchase of TIPS, which started in March 2020 (by November 2021, the Fed's share in the TIPS market was about 22%), and to investors' growing demand for TIPS. This combination resulted in a significant increase in the size of TIPS mutual funds and exchange-traded funds (ETFs). As the supply of TIPS, net of Fed purchases, effectively decreased since 2020, the supply-demand imbalance in the market pushed the interest rates into negative territory. The Fed started tapering off its asset purchase program in November 2021, and will start reducing its balance sheet in 2022 (under its so-called Quantitative Tightening policies); this is likely to lead to an increase in real rates.

The breakeven (BE) inflation rate, defined as the difference in the yields of 10-year nominal bonds and 10-year TIPS, is 3% (as of March 24, 2022); this rate is above its historical levels, but still well below the current high levels of U.S. inflation. In theory, the breakeven inflation rate can deviate from expected inflation for two reasons: a non-zero inflation risk premium and/or a non-zero TIPS liquidity premium.

**Exhibit 13: Breakeven Inflation Rates, Nominal and Real Yields, as of March, 2022**



D'Amico, Kim, and Wei (2018) break down the breakeven inflation rate as follows:

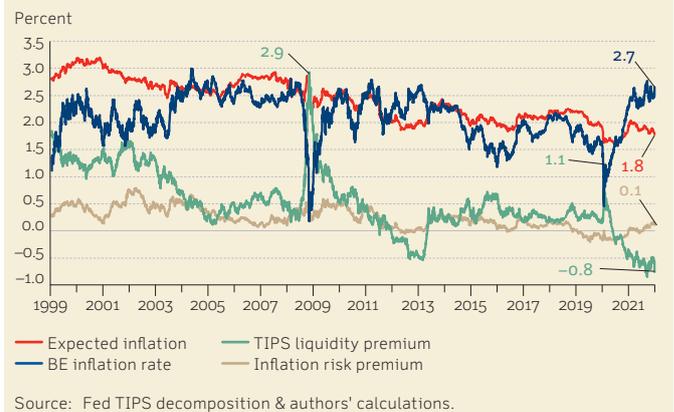
Breakeven inflation rate = expected inflation + inflation risk premium – TIPS liquidity premium

The *inflation risk premium* is the extra compensation that bond investors demand for bearing inflation risks. According to Campbell, Sunderam, and Viceira (2017), the inflation risk premium was positive and sizeable in the 1970s and 1980s, when U.S. investors were worried about stagflation.

The *TIPS liquidity premium* reflects the supply-demand imbalance caused by the Fed's massive purchase of TIPS in March 2020.

D'Amico, Kim, and Wei (2018) estimate the inflation risk premium and the TIPS liquidity premium in Exhibit 14. The average inflation risk premium, which has been 0.2% over the last 20 years, was 0.1% at the end of February 2022. The TIPS liquidity premium was high when the TIPS were launched; it decreased, then surged up to nearly 3% during the 2008 financial crisis and again up to 1.1% in March 2020, as investors rushed into nominal TIPS.

**Exhibit 14: Breakeven Inflation Rate Decomposition, as of February, 2022**



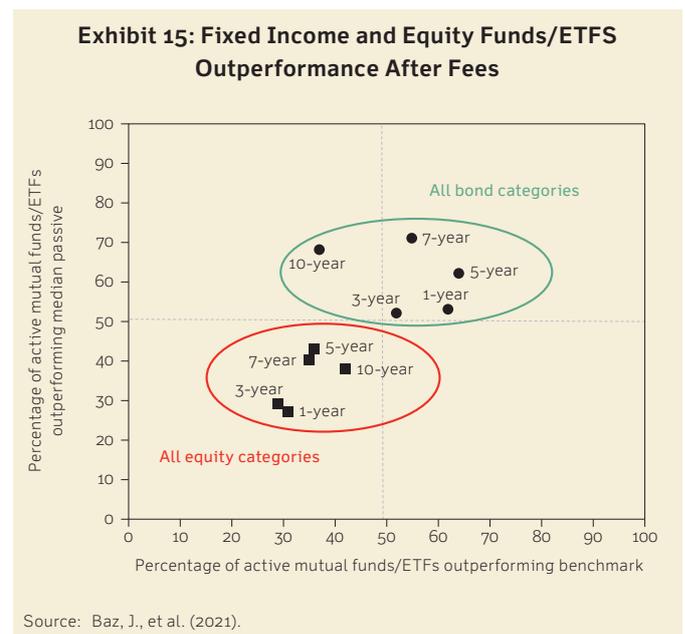
Based on this analysis, TIPS are currently a very expensive inflation hedge. Moreover, real yields are likely to move higher, as the Fed reduces its balance sheet in 2022 in line with its Quantitative Tightening monetary policy. This will eventually result in negative performance for TIPS.

### 4.2.2 Fixed Income Active Management Pays Off

Investing in traditional fixed income premiums no longer appears to be a viable strategy for generating attractive returns, as both bond yields and credit spreads are rising. In the current inflationary environment, investors seeking exposure to the bond markets may instead want to pursue fixed income strategies that actively manage the bonds' duration, sectors, credit, and yield curve positioning.

Such active investment decisions are made independently of an index. Strategies can vary greatly and may substantially deviate from a traditional fixed income mandate. Active fixed income managers typically deliver excess returns by taking risks across multiple dimensions: security selection within the bonds included in a benchmark, asset allocation decisions (for instance, rotation between credit and duration or duration timing), and out-of-benchmark exposure (for instance, adding credit, high yield, emerging markets, securitized bonds, and foreign exchange exposure).

Baz et al. (2017) argue that the better performance of active fixed-income managers is also explained by structural differences between the equity and bond markets, including "the large proportion of noneconomic bond investors [i.e., central banks, banks, and insurers], the benchmark rebalancing frequency and turnover, [and] structural tilts in fixed income space." Their key conclusion is shown in Exhibit 15, where the percentage of active bond funds and ETFs outperforming their benchmarks, as well as those outperforming their median passive peers over different horizons, all exceed 50%. In contrast, the percentages for equity managers and ETFs are below 50%.

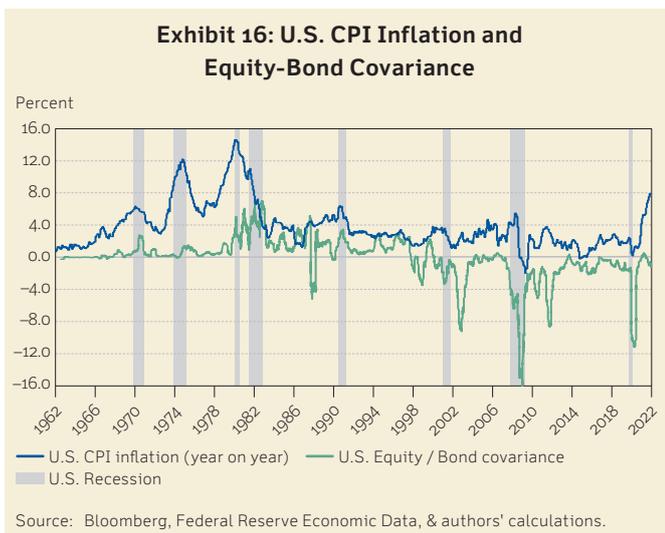


In today's inflationary environment, active management strategies may significantly increase the benefits of using fixed income assets for portfolio diversification.

### 4.3 Time-Varying Equity-Bond Correlations: The Role of Inflation

The traditional 60/40 balanced portfolio consists of 60% equity and 40% bonds. The hedging effect of bonds in such multi-asset portfolios relies upon the assumption that the correlation between stocks and bonds will be negative. In an environment of high and rising inflation, however, bond yields will rise (bond prices will drop), and equity prices are likely to decrease, due to the higher discount rates applied to future dividends. Equity will also suffer as the probability of a recession will rise because of tighter monetary policy. These effects are illustrated

in Exhibit 16, which plots inflation (in terms of U.S. CPI) and the covariance between 10-year treasury bonds and the S&P 500 over 60 years. The equity-bond correlation was positive until the 1990s, which were characterized by high and rising inflation, and only turned negative about 20 years ago, in an era of lower and more stable inflation.

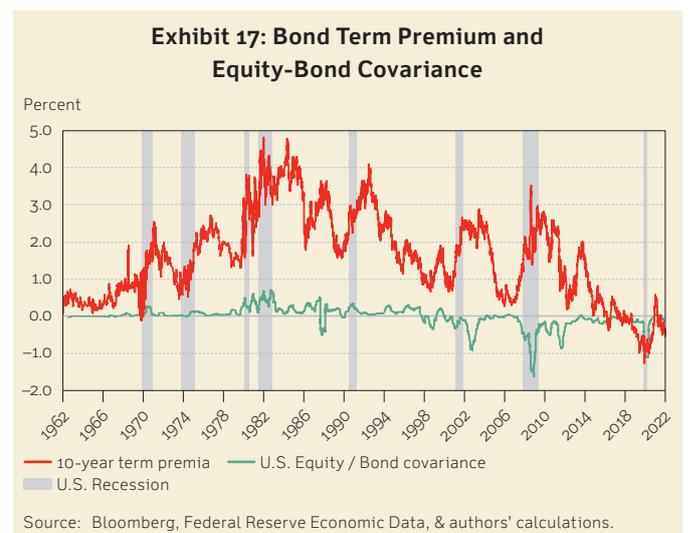


In the near future, with high inflation and a higher inflation outlook, the equity-bond correlation may increase and eventually may lead to higher uncertainty in the outcome of long-term portfolios. The diversification benefits of the standard multi-asset portfolio will fade.

Campbell, Sunderam, and Viceira (2017) use the equity-bond correlation to study the correlation between real and nominal assets, and between real activity and inflation. Their work sheds light on the dynamics of the bond term premium and on the Treasuries' safe-haven qualities over time.

The bond term premium is the unobservable extra return that investors demand to compensate them for the risk associated with a long-term bond. The Fed publishes a model estimating the term premium for bonds with various maturities. If the equity-bond correlation varies with inflation, a future rise in inflation expectations could have an additional negative effect on nominal bond yields via the term premium. Such an effect could also arise due to the lost safe-haven value of the Treasuries. Exhibit 17 plots the equity-bond covariance, which reached its most negative levels during the financial crises (1987, 1998, 2002, and 2008); during those crises, as noted by Ilmanen (2011), Treasuries served as a vital safe haven.

In short, investors should be made aware of the impact of current and expected high levels of inflation on bonds' expected returns, and of the declining hedging properties of bonds in multi-asset portfolios, as the equity-bond correlation is expected to rise once again.



## 5. Investing in Switzerland: "The Country That Inflation Forgot"

The past year has reminded us how quickly inflation can rise. Until recently, investors faced historically low bond yields, high equity market valuations, and a dynamic environment largely sensitive to changes in central banks' interest rates and balance sheet reductions. Now, investors' mindsets must adapt to a new reality.

Despite its reputation as "the country that inflation forgot," Switzerland is no exception to the recent global inflation dynamics. In February 2022, its CPI inflation over 12 months reached the 2.2% level, one of the highest levels registered in Switzerland since the mid-1990s, after the short-lived inflationary episode of 2008. The Swiss National Bank even acknowledged a higher expected level of inflation; at its meeting in March 2022, it raised its inflation forecasts for 2022 by 1.1% to 2.1%, relative to December 2021.

Swiss investors are starting to react to this new inflationary regime. The January 2022 issue of the Credit Suisse Financial Market Survey Switzerland, see Fischer (2022), shows that a narrow majority of the survey's participants have taken steps to prepare their portfolios for a rising inflation environment and for monetary policy normalization. These investors are rotating their equity exposure toward value and financial stocks and are reallocating toward floating rates notes and TIPS.

Opportunities for Swiss investors focusing on the local market are rather limited, when we consider that the entire CHF yield curve lay in negative territory until the end of 2021 and, since the beginning of 2022, has only risen above zero for sovereign bonds with a maturity of three years and above. Despite this shift, bonds denominated in CHF are likely to generate negative returns for the year, due to the increase in interest rates.

Cash holdings in CHF will suffer from negative rates charged on the current accounts and from the current level of inflation. The situation is likely to further deteriorate with a potential increase in inflation during the second half of the year. This overall situation is a negative consequence of the unconventional monetary policies of the central banks, including the Swiss National Bank. In the Online Appendix—Box 2—we show that the optimal portfolio for a conservative investor with a short-term investment horizon should consist mainly of cash; however, negative interest rates have pushed these investors toward more risky asset classes.<sup>3</sup> Likewise, investors should tactically reduce holdings of long-maturity bonds, including government bonds and other fixed income asset classes with long durations.

TIPS are also a poor inflation hedge, as we argued above. Another reason Swiss investors should not rely on them is that these bonds are indexed to U.S. inflation, which is measured quite differently from Swiss inflation and can develop along different paths.

Swiss investors with a very long-term horizon should focus on equities favoring a factor investing approach. As noted above, value, momentum, carry, and low volatility investment styles show a relatively stable pattern of risk-adjusted returns across all macroeconomic environments, suggesting that they are less sensitive to phases of the economic cycle. Value and low volatility stocks are specifically expected to outperform the market in the current inflationary environment.

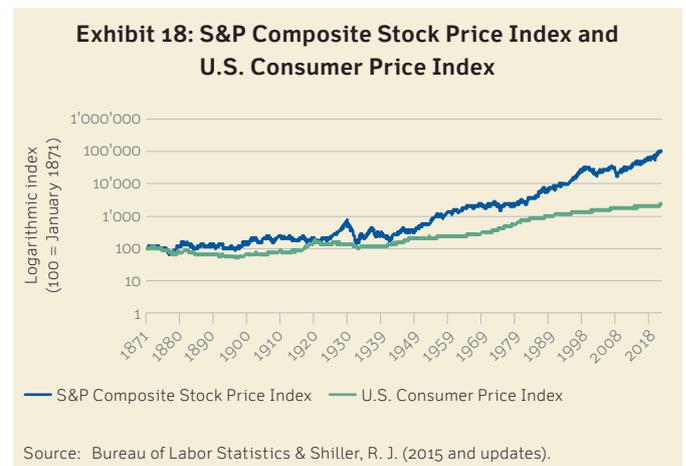
3) See the Online Appendix—<https://www.sfi.ch/resources/public/dtc/media/pdn-inflation-online-appendix-en.pdf>—for further details.

Investments in commodities are also recommended, as experience shows that they offer an effective natural hedge against inflation. Yet commodities have experienced an incredible appreciation in the past months, with the Bloomberg commodity index doubling since its March 2020 low point. It is unlikely that growth in this sector will continue at this pace.

Finally, real estate investments have historically performed well in inflationary environments. However, house prices are high and standard valuation metrics have lost any real basis since the COVID pandemic. Prime real estate in central locations, traditionally an excellent hedge from a portfolio perspective, is no longer affordable (see Mandalà 2021).

Investors currently seeking refuge from inflation unfortunately have few places to hide. Commodities and some equity strategies are the best alternatives from a historical perspective (see Neville et al. 2021). Ultimately, we can only recommend that investors take a long-term perspective, whenever

possible. As pointed out by Ang (2014), equity beats inflation by far in the long run (see Exhibit 18). Therefore, long-horizon equity investors ought not to worry about inflation.<sup>4</sup>



4) See the Online Appendix—<https://www.sfi.ch/resources/public/dtc/media/pdn-inflation-online-appendix-en.pdf>—for a more systematic discussion of this point.



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This publication was printed on sustainable "Refutura" paper, which is certified with the "Blue Angel" label.

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