



## Considerations on Rising Inflation

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## Introduction

What if one day you got that thing you've been wishing for but always seemed just over the horizon? Would the reality live up to your fantasies? Central bankers have been wishing for higher inflation. They've done much more than wishing though. They've lowered rates, pegged rates, pegged to negative rates, bought millions then billions then trillions in high quality assets, bought lower quality assets, made loans, really done almost anything they could think of. And what they've gotten from all the effort is, well, not much.

But what if that were to change? What could possibly cause inflation? Maybe, despite all the hand wringing, there's nothing wrong with the Phillips Curve? The Phillips Curve very consistently hooks up at unemployment rates below 4%, which we're just getting to now. Wages could easily accelerate meaningfully. Then, while we're just achieving full employment, what if we could layer on a large fiscal stimulus? And what if we could also make that fiscal stimulus debt financed? The only thing that could possibly make the setup for inflation better might be a weakening currency fueled not just by too easy monetary policy, but protectionist and nationalistic policies, and a perpetual current account deficit. We could be sitting on a tinder box.

As too often happens, sometimes you get what you want only to realize it's not at all what you expected. The irony is that everything central banks have done to get higher inflation has all but ensured that any inflation we get will leave everyone very disappointed. Central bank policies have helped push us to market implied levels of inflation complacency not seen since the late 1960s, right before the last big inflation. Realized volatility in Treasuries last year collapsed to the lowest level in over 50 years. Term premium, the return that investors demand to tie up money for longer periods of time is negative, something also last seen in the late 1960s and early 1970s. Negative yields ensure negative returns to term on safe assets, leaving investors nowhere to hide. Distorted risk-free rates don't just matter to bond investors, as central banks well understand. The risk-free discount rate is embedded in most theoretical and practical models of financial valuation. But what if something were to happen to abruptly change bond valuations? Something like inflation? Ultimately, from these valuations, it doesn't matter much where the inflation comes from because it wouldn't take much.

Let's suppose for a minute that inflation rises only modestly from the current 2% to 4%, as was common as recently as the mid-2000s. And let's assume that term premium stops being negative either because bond vigilantes reawaken or because central banks must adjust policy significantly? We could go back towards 6% yields on Treasuries, which were common in the not too distant past, but from here it would generate a negative price return of -25%. A reversion to more median profit margins combined with a rising risk-free rate and P/Es adjusted for higher inflation would place fair value for equities as much as 50% lower on more pessimistic models. Inflation is a big risk to the markets, one that doesn't get enough attention, and those risks are building.

I've spent nearly 20 years as an investor focused on inflation. As a result, I see the financial markets through a very specific lens. From that perspective, I think inflation is presently the biggest single risk to the financial markets. In this white paper I plan to explain in detail why I think this and conclude with what I believe a market participant can and should do as a result.

## Valuation

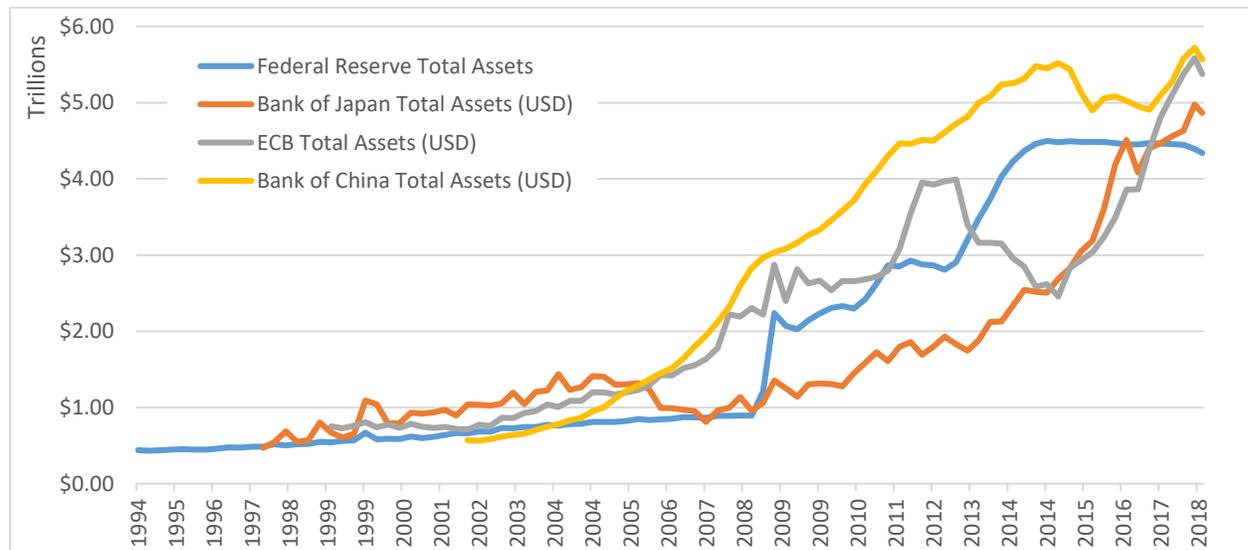
*“Market analysis has now become central bank analysis. All the old methods of analyzing markets have given way to deciphering what the Fed or ECB will do next.”*  
– Richard Russell in one of his last Dow Theory Letters, October 2015

The reason many market participants are concerned about inflation has less to do with an economic outlook for inflation and more to do with how the market is pricing inflation risk. Sometimes market pricing gets so extreme that only the narrowest of possible fundamental outcomes will allow the investment to be profitable. This is what has happened with the inflation risk embedded in different financial assets.

## Financial Repression

Before speaking specifically about how inflation risk is priced, I’m going to touch briefly on a technical factor that I think is at the core of many of these valuations: central bank led financial repression. Central banks have significantly distorted market-based pricing and risk signals in very specific ways. By buying bonds they’ve priced duration risk at an artificially low level. The biggest threat to a large duration position is inflation. Because government bond yields are included in almost all theoretical and practical market pricing models, artificially depressed bond yields have impacted all major financial markets. By artificially depressing the discount rate central banks have shifted future returns to the present and created the illusion of strength when all that has changed is the discount rate. At the time of writing this, combined central bank balance sheets of the US, EU, Japan, and China stands at just under \$20 Trillion.

Figure 1: Major Central Bank Total Asset Holdings

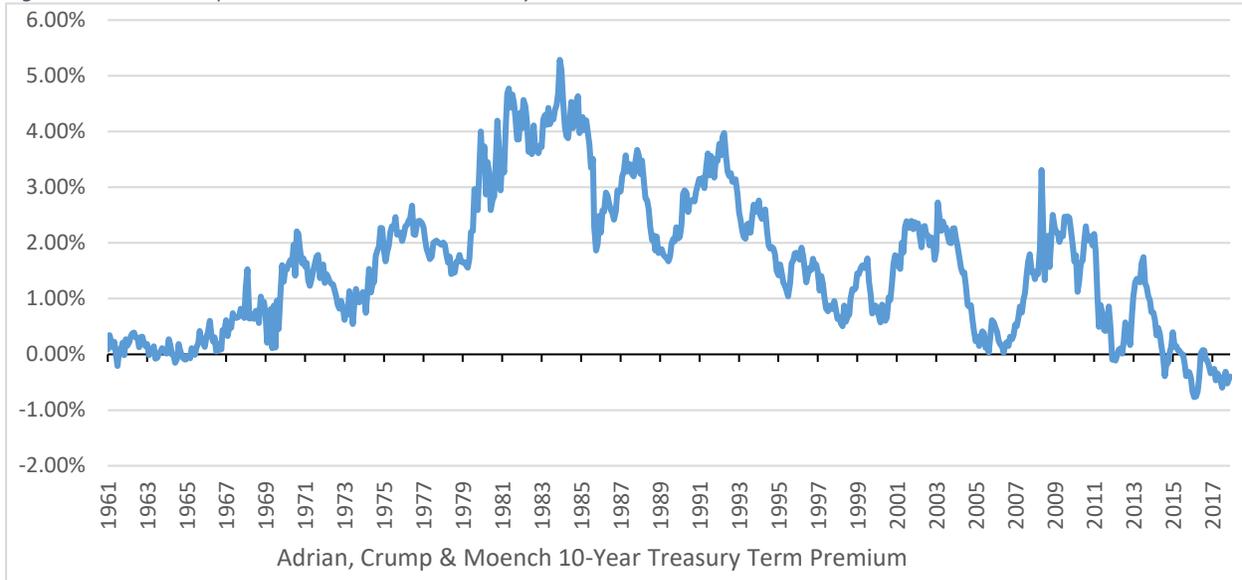


## Term Premium

Term premium is one of the most direct ways of seeing the impact of central banks artificially depressing duration risk. Term premium is the additional yield investors demand to lock up their money for longer periods. There are two primary risks to holding longer maturity debt as opposed to shorter maturity debt: increasing government deficits and inflation. Historically, investors have demanded an additional

1%-2% to lock up their money for 10-years. Since Operation Twist, excluding a spike following the 2013 taper tantrum, term premium has been negative. This means investors are paying, not being paid, to lock up their money for longer periods of time. There are three possible reasons to explain this. First, investors are more concerned about deflation going forward and, even at very low yields on a fundamental and historical basis, they are still cheap based on this deflationary fear. Alternatively, despite expectations for rising government deficits and consequently rising bond issuance, market participants are worried about bond scarcity. Or this is the result of central bank buying, expressly designed to depress term premium.

Figure 2: Adrian Crump & Moench 10 Year US Treasury Term Premium



A central banker might argue that depressing term premium is a desirable goal and one that they can reasonably achieve.<sup>1</sup> A central bank, through their bond purchases, can effectively eliminate one of the two risks investors need to be compensated for with term premium: supply risk. Through their purchases, a central bank can keep the size of a bond market relatively constant even in a time of increasing budget deficits. For this reason, many people believe that term premium, although it likely won't stay negative, will not return to historical averages. The problem is that controlling supply risk by monetizing budget deficits increases inflation risk. From a central banker's perspective this is a reasonable trade off because the entire reason for QE is their view that deflation risk is greater than inflation risk and therefore this action is necessary to keep inflation closer to target. As a market participant, however, the increase in inflation risk from this action is non-linear for future returns and very risky.

The risk for the bond owner comes in the event there is an inflation surprise. Not only would you get the first order effect of the bond market increasing yields but central banks, most of whom have either explicit or implicit requirements to respond to moves in inflation, will be forced to back away from their bond purchases. So, at the same moment that inflation is causing increasing volatility, the primary source of depressed bond volatility over the last 5+ years will flip from depressing volatility to further increasing volatility. The other thing that is different today than 10-years ago is the dramatic increase in

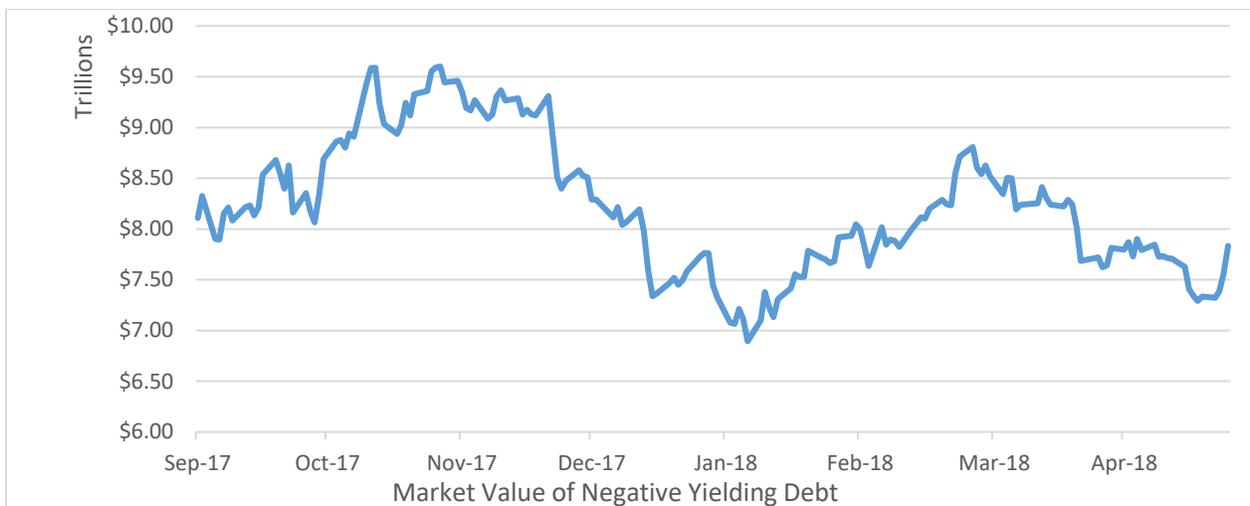
<sup>1</sup> <https://www.ecb.europa.eu/press/key/date/2017/html/ecb.sp170516.en.html>

assets managed to volatility targets, funds which will also compound the mechanical selling pressure (but more on the technical implications later).

## Bond Yields

As little as a decade ago negative long-term nominal yields would have been thought to violate the basic tenants of finance because it would have seemed irrational to buy a financial asset with the expectation of losing money. Yet today there are \$7.8 Trillion in bonds with negative yields. By intent, the impact of negative yields isn't limited just to government bonds. The policy is intended to distort the entire way risk is priced throughout the financial system. The risk-free rate is the basis of both the practical and theoretical valuation of most financial assets. For example, debt to corporations is priced on a spread to a government bond yield so the all-in interest rate for loans is made at a lower rate than would happen otherwise.

Figure 3: Market Value of Bonds with Negative Yields (\$USD)



Some will argue that bond yields should be especially low because of demographics. An aging population has a higher propensity to save. Declining populations in the developed world should mean lower trend growth and therefore lower interest rates. This may be true, but this doesn't justify negative interest rates. In fact, the premise for negative rates conflicts with the idea that interest rates should be low. Negative interest rates are fundamentally different from low interest rates. Owning a negative yielding bond is to guarantee to have less money in the future than you have today. At its most basic level that's a bad investment.

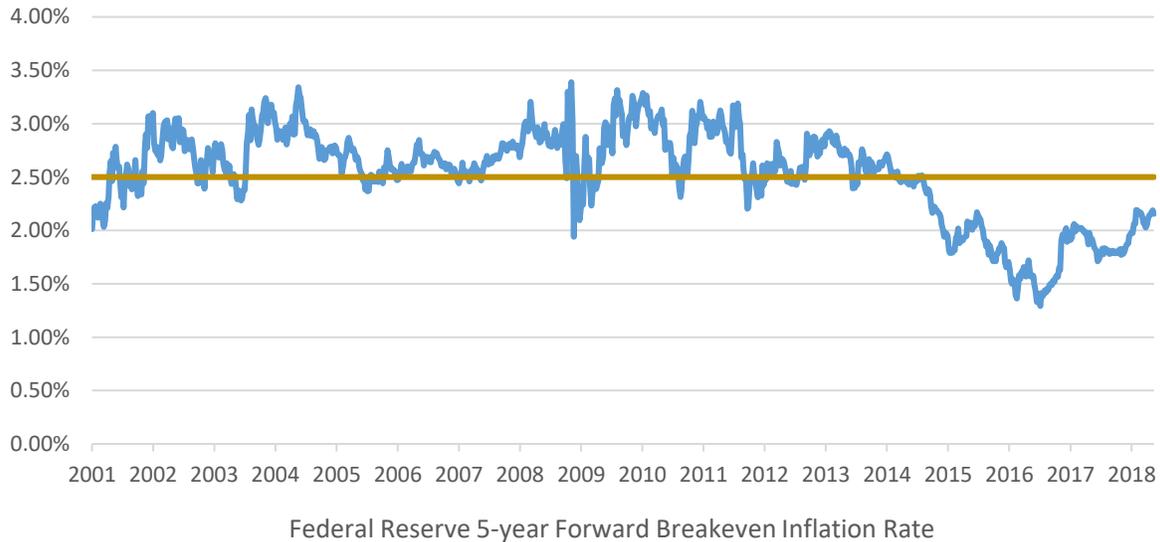
## Breakeven Inflation

Breakeven Inflation is the expected inflation rate implied by inflation-linked bond pricing. There are many different breakeven inflation rates. I'm going to talk about the Federal Reserve's calculation of long-term inflation expectations embedded in the TIPS market, their 5yr-5yr forward breakeven rate calculation.<sup>2</sup> In Figure 4 I drew a line at 2.50%, which corresponds roughly to the Federal Reserve's 2%

<sup>2</sup> Detail on the calculation is here: <https://www.federalreserve.gov/pubs/feds/2008/200805/200805abs.html>

target on Core PCE<sup>3</sup> but for CPI inflation, which has a different calculation. The inflation markets are currently pricing that the Federal Reserve will be unable to achieve its inflation target over the next decade. While this valuation isn't as extreme as other inflation related risks, the persistent pricing of below target inflation indicates that the long-term bias of inflation risk is still priced to deflation risk and not inflation risk.

Figure 4: Federal Reserve 5yr 5yr Forward Breakeven Inflation Rate



## Fundamentals

*“People seem to forget that complex systems often have multiple loci of stability. It may be very hard to return to previous.” – Steve Luby to Larry Summers about secular stagnation*

In the valuation section I’ve made the case that inflation risk is priced at very low levels. Now I’d like to talk about how, on a fundamental basis, inflation risk is increasing. There are many indicators that would point to increasing inflation over the next few months. Rather than discussing those I want to discuss some of the structural changes that are occurring that suggest inflation risk is increasing on a secular basis at exactly the moment when inflation risk is priced at the lowest it has been in decades.

## Trade

One of the most significant impacts depressing inflation over the last several decades has been the explosion in global trade. The opening of global markets has created tremendous efficiencies and led to "good" deflation through productivity gains. This trend is clearly apparent in US inflation trends over the past several decades.

<sup>3</sup> TIPS accrue headline Consumer Price Inflation (CPI) which has measurement differences from Core PCE. While the relationship between the two is volatile over time, the long-term average difference between the two measures is 50 bps

Figure 5: CPI for Goods and Services

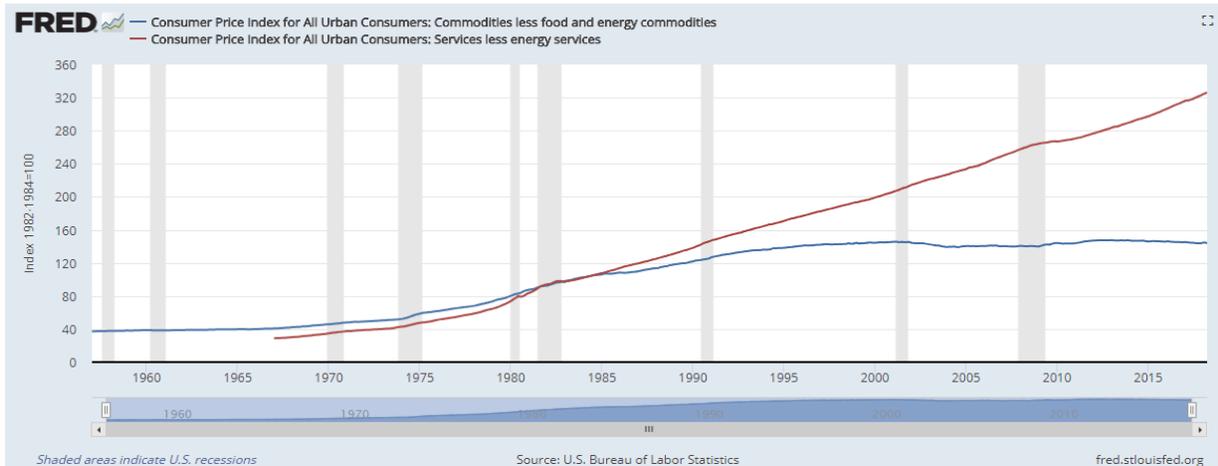
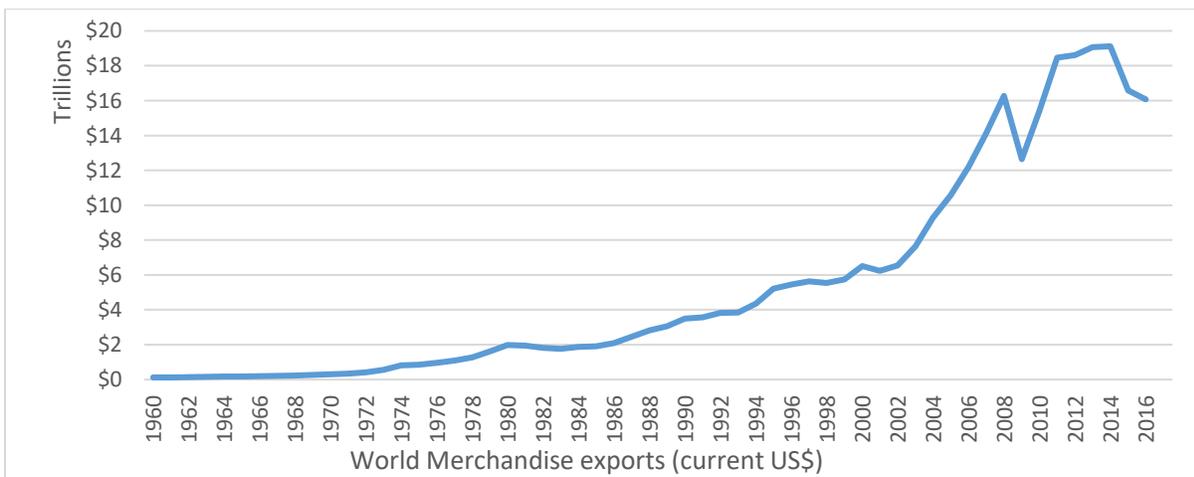


Figure 5 shows the indices for goods prices (generally things that can be easily imported from other countries) in blue, and services (things that generally must be purchased locally) in red. A basket of goods costs the same as it did 25-years ago while services prices have steadily increased at around a 3% rate excluding recessions. The historically low inflation that the US (and other countries) have experienced over the last two decades hasn't been uniform, but the result of moderate inflation in one large part of the inflation measure and disinflation in the other part.

Given how important the lack of inflation in goods prices has been in keeping inflation contained, it puts the recent trend globally towards political nationalism, protectionism, and tariffs in a different context. It's not just that they will tend to raise prices, but they will also remove the primary cause of stable, low inflation. And it looks like the shift away from trade may have already started. Total global trade has stalled. Trade in 2016 was at the same level it was in 2008<sup>4</sup>. If the incremental benefits of global trade are mostly behind us, then the related disinflation is also likely behind us.

Figure 6:WTO Total Global Trade

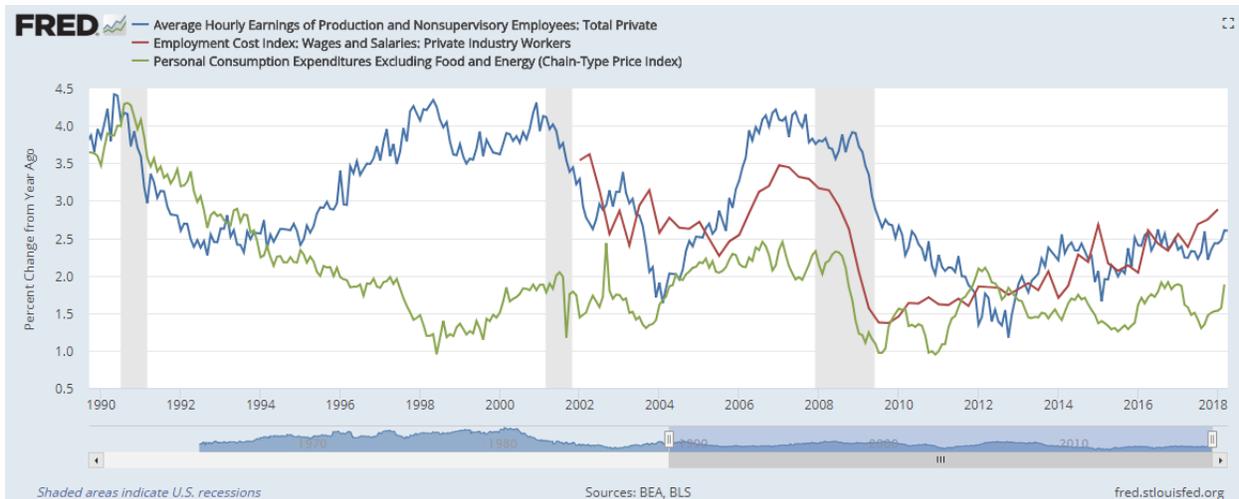


<sup>4</sup> World Trade Organization data sourced from the World Bank  
<https://data.worldbank.org/indicator/TX.VAL.MRCH.CD.WT>

## Wages

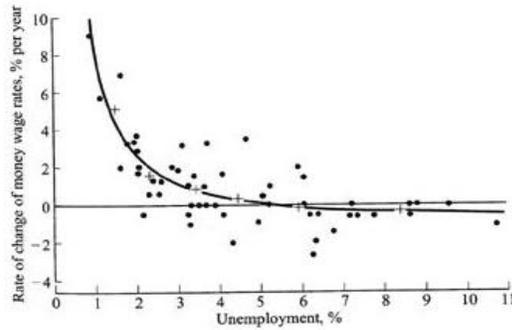
There has been a lot of focus recently on wages -- concern that wages haven't increased meaningfully since 2008. I think it's too early to completely dismiss the idea of a meaningful wage inflation for several reasons. Before I speak to where wages could go in the future, I want to level set for where wages have gone since the Great Recession. There's a common misconception that there hasn't been any improvement in wages since the Great Recession. Both main wage indicators show improvement in wages. The Employment Cost Index (ECI) hit a low of 1.4% in 2009 and is 2.9% as of its last print. Average Hourly Earnings of Production Employees (AHE) was as low as 1.2% in 2012 and is now 2.6%. These wage inflation rates do still look low relative to history and the improvement has been gradual, but both measures are already trending upward and are outpacing inflation.

Figure 7 US wage measures: Average Hourly Earnings and Employment Cost Index versus Core PCE



The other misconception that I think exists around inflation is about the theoretical work on how wages should relate to the unemployment rate. Figure 8 shows the Phillips curve, the theoretical relationship between the unemployment rate and real wages, as it was empirically derived. It's important to note two things. First, it's not a linear relationship. Second, it doesn't indicate that real wages should be increasing meaningfully until the unemployment rate pushes below 4%. The implications are that, although it has been many years since the recession, we shouldn't have started to see an increase in real wages until very recently because the labor markets have only recently tightened enough to generate wage pressure. Second, now that the labor markets are tight, the potential for wages to increase is much greater than might be expected because the relationship isn't linear.

Figure 8 The Phillips Curve



9.7 Phillips’s empirically derived unemployment–money-wage-change relation

One possible consideration for why wages have been depressed over the last several decades is that, with the increase in global trade, wages are increasingly set globally. As has already been discussed, trade is no longer growing at the same rate it had, so that trend is likely already shifting. Additionally, labor markets globally are the tightest they’ve been in decades. Unemployment in the US was only lower that it is currently in the 2000s tech bubble and before that in the 1960s, when Phillips did his empirical work. Japanese unemployment is the tightest it’s been since 1993, before their descent into secular stagnation. German unemployment hasn’t been this tight since the 1980s and UK unemployment since 1975. Even if wages are set globally, the tightness of labor markets globally would suggest the potential for higher wages more generally. We may be in a moment when labor reasserts itself.

Figure 9 Unemployment Rates for the US, UK, Germany, and Japan



## Technology

There is a common belief that the recent disinflation that we’ve experienced is because of technology. I think this is something that should be met with a healthy dose of skepticism. Which is not to say that technology hasn’t depressed prices but that this effect might be mostly behind us. In the 1990s and 2000s technology led to significant gains in productivity and the non-inflationary growth potential of the economy. But in this decade capital investment has been anemic, and as a result productivity has been

incredibly low relative to history. Some believe that the data are mis-measured and understate the productivity from technology that they assume must be there. I think it's also possible that the technological improvements this decade have been relatively narrow in terms of the population they've reached and, with a few exceptions, have been more about shifting leadership within a category than raising the overall growth rate. If technology hasn't raised the potential growth rate, then the non-inflationary trend growth rate for the economy is possibly extremely low relative to recent decades. This raises concerns about secular stagnation. Attempts to have the economy grow in line with historical norms is potentially extremely inflationary because the productive capacity of the economy today is so anomalously low.

	Productivity	+ Labor Growth	= Potential GDP
1950s	2.3	1.1	3.4
1960s	2.9	1.7	4.6
1970s	1.5	2.7	4.2
1980s	1.7	1.7	3.4
1990s	2.3	1.2	3.5
2000s	2.3	1.0	3.3
2010s	0.6	0.5	1.1

### Fiscal Stimulus

Many people have pointed out the risks of overheating the economy from enacting very large fiscal stimulus at a time when labor markets are the tightest they've been in decades and monetary policy is still accommodative. Fiscal accommodation tends to be more immediately and reliably stimulative to growth than monetary stimulus. The immediate concern is that by increasing growth, when the economy is already strong and labor markets are already tight, will generate more inflation than growth because there is not much spare economic capacity currently. I think this is the most likely outcome over the next year.

There is a secondary concern about the recent tax cut that is much longer term. This has to do with the expectation that the increase in budget deficits and debt outstanding will lead to fiscal dominance. I'm going to take the projections directly from the Congressional Budget Office.<sup>5</sup> I think the CBO highlights the long-term inflation risks very well in a section titled *Debt Held by the Public is Projected to Approach 100 Percent of GDP*, so I'll quote in full (emphasis is mine):

*As deficits accumulate in CBO's projections, debt held by the public rises from 78 percent of GDP (or \$16 trillion) at the end of 2018 to 96 percent of GDP (or \$29 trillion) by 2028. **That percentage would be the largest since 1946 and well more than twice the average over the past five decades (see Summary Figure 2). Such high and rising debt would have serious negative consequences for the budget and the nation:***

- *Federal spending on interest payments on that debt would increase substantially, especially because interest rates are projected to rise over the next few years.*
- *Because federal borrowing reduces total saving in the economy over time, the nation's capital stock would ultimately be smaller, and productivity and total wages would be lower.*
- *Lawmakers would have less flexibility to use tax and spending policies to respond to unexpected challenges.*

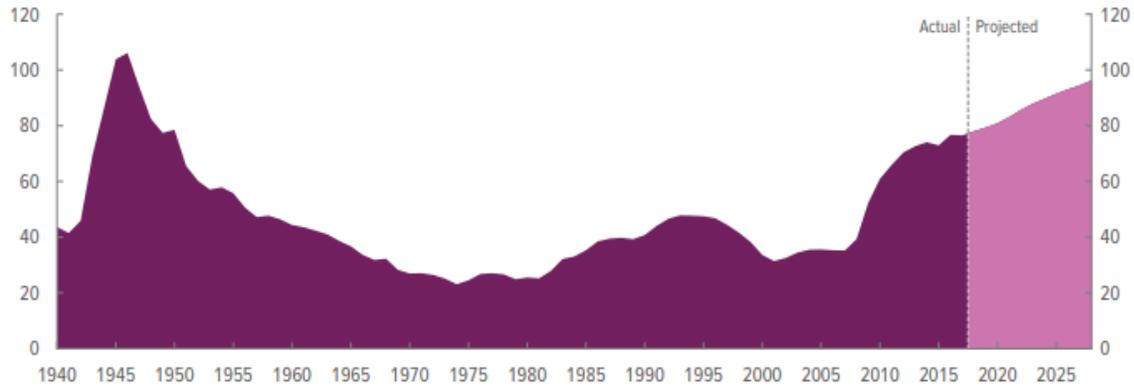
<sup>5</sup> <https://www.cbo.gov/system/files/115th-congress-2017-2018/reports/53651-outlook.pdf>

*• The likelihood of a fiscal crisis in the United States would increase. There would be a greater risk that investors would become unwilling to finance the government’s borrowing unless they were compensated with very high interest rates; if that happened, interest rates on federal debt would rise suddenly and sharply*

Summary Figure 2.

**Federal Debt Held by the Public**

Percentage of Gross Domestic Product



Source: Congressional Budget Office.

At present, the US has the confluence of the following events:

- An expanding federal budget deficit that will likely lead to the highest level of public debt at any point in its history
- A looming State and Local debt crisis via unfunded pensions that also has a potential to be its own debt crisis with potential impacts on Federal debt as through Federal debt assistance
- A current account deficit at -2.4% of GDP that the CBO estimates will need to exceed -3% due to the foreign investment needed to fund the budget deficit without crowding out domestic investment and saving
- A central bank that is already monetizing the country’s fiscal deficit with holdings already exceeding \$4 Trillion
- Real yields that are low relative to history, economic growth, and profit growth that may not attract enough foreign ownership to keep the currency stable
- A Treasury Secretary who has said “Obviously a weaker dollar is good for us as it relates to trade and opportunities”<sup>6</sup> and a President who has stated that he favors a weaker dollar<sup>7</sup>
- Movements away from dollarization with the rise of alternative currencies and new pricing methods like petro yuan

The US has benefited from reserve currency status for as long as any investor can remember. It has had many real (but hard to quantify) benefits. Confidence is fragile (also hard to quantify) and often lost when it’s taken for granted. There are many modern examples of significant currency regime changes from the international rescue of the British pound in the 1960s to the 1990s Asian financial crisis. I’m not arguing for anything nearly that dramatic. I do think, however, that it’s likely that going forward the

<sup>6</sup> <https://www.cnbc.com/2018/01/24/a-weaker-dollar-is-good-for-the-us-treasury-secretary-mnuchin-says.html>

<sup>7</sup> <https://www.wsj.com/articles/trump-says-dollar-getting-too-strong-wont-label-china-currency-manipulator-1492024312>

main benefits of a reserve currency, a lower required real yield for a stable currency, will diminish over time which means higher trend inflation all else equal. The risk that the CBO highlights well is that, with a debt burden so very high, small changes in confidence or desire to hold US debt can have much larger impacts on interest expense, the budget, and future debt and spending.

## Technicals

*“A counter-productive job description, badly executed.”*

*– Jeremy Grantham on the Federal Reserve*

I’m going to start this section with an anecdote. I pick this anecdote not because of its remarkableness but because of its banality. In this decade of Quantitative Easing I would attend at least a meeting a week it seems where a central bank trained economist would explain some feature of our new monetaristic financial system. I think this time we were discussing the ECB and negative rates. The economist was saying that the ECB would affirm their commitment to negative rates and the markets would respond by pricing a higher inflation premium into the bond market. I disagreed. He told me I was wrong because negative rates were inflationary. I told him that it might create inflation months or years from now but at that moment the markets were worried about peripheral European bank stock weakness. I explained what I thought would happen: negative rates would knock bank earnings expectations, bank stocks would continue their decline, inflation bond investors would see the bank indices fall and worry that the transmission mechanism for monetary policy into the real economy is broken and price in deflation, not inflation risk. After enough conversations like this I began to realize that when the economist said I was wrong he wasn’t doubting that I was right on my market call but thought the markets were just getting monetary policy wrong. But that’s the funny thing about markets. They don’t always do what theory would dictate.

Quantitative easing has been generally disappointing in terms of its impact on the real economy. The people who support QE would argue that we can’t know the counterfactual. QE has been effective, and without QE we’d have pervasive deflation and large parts of Europe would be in fiscal crisis. That’s true, we can’t know the counterfactual. I’ll suggest a different possible counterfactual, that beyond the initial response to the financial crisis, QE was counterproductive, depressed inflation and its removal will serve to push inflation higher.

When I was a student, Amartya Sen’s work on famines<sup>8</sup> made a big impression on me. When I eventually became an investor, I would often think about his work as various manias and panic unfolded. Grossly oversimplifying the recollection of my term paper from two decades ago, he found that famine wasn’t caused by actual scarcity of food but the fear of scarcity which led to hoarding behavior and the hoarding behavior ultimately created the supply disruptions that caused the famine. The way markets behave in a leveraged unwind has similarities, where an isolated liquidity problem or leveraged stop out can spread because fear of a generalized liquidity problem causes people to trade more conservatively and hoard liquidity which then creates its own illiquidity.

Before the Federal Reserve was created after the panic of 1907, hoarding of liquidity and related bank runs seemed to cause a market to collapse every few years. Fed Funds helps prevent market collapse from this liquidity hoarding impulse by providing any quantity money through overnight loans to maintain the target Fed funds rate. Because a theoretically infinite amount of money was always

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<sup>8</sup> <http://www.oxfordscholarship.com/view/10.1093/0198284632.001.0001/acprof-9780198284635>

available on an overnight basis it relieved the money hoarding impulse that exacerbated these earlier financial panics.

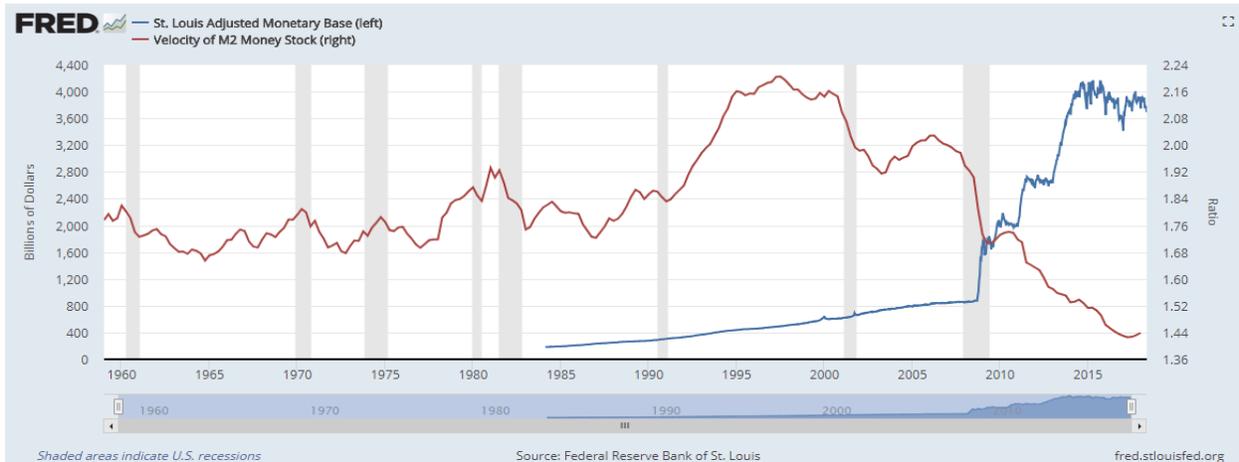
Quantitative Easing behaves in the exact opposite way of traditional monetary policy. Instead of relieving fear of scarcity, central banks are creating it. The theory is that if you make something too expensive, people won't want it and will want to own something else. In practice that's not always how people behave when confronted with scarcity. If you drive the price of something up by making it hard to get, especially if it's something that people need and are worried they won't have access to, sometimes it makes people want it more: the hoarding impulse.

Many of the largest holders of bonds must hold bonds for regulatory or policy reasons. This includes but is not limited to life insurance companies, pension funds, banks, etc. Magnifying this issue, these are also parts of the economy that due to long-term economic shifts and demographics, are much larger parts of every developed economy today than at any point when one might have tried to gather data to create a macroeconomic model. Because they are forced holders, attempts to get them to make other investments will necessarily be unsuccessful because they have no alternative. Moreover, because they have no alternative they are susceptible to the hoarding impulse because attempts to displace them also create threats to their business model. Negative rate policies amplify the hoarding impulse for many financial players because all these business models assume that time value of money holds and the lack of access to positive future yields threatens the core of their business.

This behavior was most clearly visible in Japan in 2016 when QE caused an almost panicked collapse of the entire yield curve to 0%. Life insurance companies are regulated in a way that requires them to hold high quality bonds and their entire business model centers around being able to get a positive yield on their investment portfolio. As negative rates push further out the yield curve it creates an almost existential crisis for the financial sector. Can life insurance exist in a world where the yield on a 30-year portfolio of high quality assets is negative? What is a pension if the risk adjusted return for a decade is negative? It creates a panic and a run to get any positive yield (while it still exists) collapsing the entire yield curve to zero. And ultimately it forced the Bank of Japan to return to a policy that looks much more like traditional central banking where they target a price, provide the quantity needed to maintain that price, and therefore alleviate the scarcity concerns they were creating. I give credit to the Bank of Japan for being flexible and adjusting course quickly. For other central banks I think this experience should be concerning because it's a clear example of negative rates and quantitative easing being counterproductive.

Most central bankers at some point discuss how their ability to impact the real economy through money is variable over time and depends highly on things they have little control over. Alan Greenspan called this effect animal spirits. Looking at the velocity of money, which is the amount of growth from money creation, it's the lowest it has ever been although it has hooked up recently and perhaps not coincidentally with the beginning of the removal of QE. If you can motivate with the carrot or a stick then lowering Fed Funds was a carrot, giving the market more of what it wanted at a better price, but negative rates and QE were a stick prodding the market to go where it didn't want to. Animal spirits aren't stirred by feelings of compulsion or fear. Perhaps anecdotal, the excitement around central bankers getting out of the business of being market participants is growing. Markets are finally getting back to being markets and as a result animal spirits are growing, all with base money still close to an all-time high.

Figure 10 Velocity of M2 Money and the Monetary Base



## Investment Implications

*“[A] successful investment is one into which one enters almost bashfully.... The kind of investment that one can hardly bear to admit to tends to be unpopular, therefore cheap.” – James Grant*

Pulling this all together, valuation for assets related to inflation are cheap and the fundamental backdrop keeping inflation low may be changing, so what is one to do about it? Returns so far this year might be an early taste as to how bad inflation can be for a generic 60/40 balanced investment portfolio where stocks and bonds don't offset each other but instead compound losses.

I think we are just at the beginning of a much longer shift in trend. First, I will specifically discuss the inflation risk to a typical balanced portfolio and how it compares to other economic risks. Then I will discuss more generally how inflation will shift investing generally and, if we are entering a new regime, what the best investments of the future will look like.

## Returns to Shifts in Inflation

There is justifiably a lot of concern about the risk of the next recession. I'd like to suggest that the next recession could look very different from recessions in the recent past. I think causes of recessions are the release of excesses built up over the previous expansion. In my experience, the place to look for the next recession are those places where traditional financial analysis has been thrown away to justify something that just a few years prior would have seemed absurd. In the late 1990s it was the tech stocks trading to P/Es over 100 because we were in some post revenue world. In 2008 it was AAA-rated levered structured products offering Libor +200 when every other AAA-rated bond in the world was trading at Libor flat to minus. Today I think it's negative rates, which is every bit as ridiculous. But you don't have to agree with me on that to agree that this is the meaningful risk to most investment portfolios. Let me put some numbers behind that.

Let's start with looking broadly at stocks and bonds in two different inflation scenarios, one in which inflation falls 2% below target to 0% and in the other case that it exceeds target by 2% to 4%. Before I get push back about assuming 4% inflation, I'd like to point out that CPI was routinely above 4% at the end of the last business cycle, exceeding 4% for portions of every year from 2005 to 2008 and getting as

high as 5.5% in 2008 right before the recession. Late cycle inflation is very typical and should be expected. Often late cycle inflation is one of the causes of the transition from late cycle to end cycle because inflation leads to higher interest rates and lower margins, both of which slow the economy.

Bonds are relatively straight forward. A drop of inflation to 0% would mean 5-year bond yields fall from 3% to 0% because inflation expectations would drop, and monetary stimulus would resume. With a duration of 4.5, a 3% yield change results in approximately a 13% return. However, this is at least symmetric. If inflation were to go back to 4%, real yields would need to rise and inflation expectations would rise, and yields could go back closer to 6%.

Stocks are more complicated. A lot of analysis of returns to inflation are based on how stocks and inflation have been correlated in recent history. I think it's unlikely that this is how stocks will behave going forward because the starting valuations and fundamentals are extreme and particularly vulnerable to rising inflation:

- Profit margins are the highest they've been in data going back to the mid-1940s in part because compensation of employees as a percentage of GDP is the lowest it has been since the late 1940s. This is likely unsustainable in a rising inflation environment because wages will be increasing.
- Corporate debt outstanding is the highest it has ever been. With interest rates low and profits high, the debt burden is manageable, but it makes corporations more sensitive to increases in interest rates than at any time in recent history. Higher inflation will mean higher real and nominal interest rates which will mean lower profits to shareholders either because of higher interest expense or cash flow going to pay down debt with higher interest burdens.
- P/Es remain high relative to history. Traditional valuation metrics like the rule of 20 would suggest that every percentage increase in inflation above 2% should reduce the P/E by 1 point, so 4% inflation would reduce the fair value P/E by 2 points.

Taken together, more pessimistic estimates would put fair value for equities as much as 50% lower. This combined with the forecast paints a picture where the bigger risk to investment portfolios could easily be inflation and not a recession. For that reason, investors need to consider what they have in their portfolios that can offer diversification and positive returns in that inflationary scenario.

	Deflation: CPI to 0% from 2%	Inflation: CPI to 4% from 2%
Bond Return	13%	-13%
Stock Return	-30%	-50%
60/40 Stock/Bond Portfolio	-13%	-35%

### Inflation Investment Options

What is doubly problematic is that many of the Inflation hedging options that investors typically include in their portfolios suffer from the same valuation distortions that plague other financial assets. This makes it questionable whether these assets will provide the portfolio level inflation protection that they are expected to provide. Each has a benefit (but flawed) which means that these assets will likely perform better than other assets but not well in absolute terms and certainly won't provide a beta to inflation that will offer protection at a portfolio level.

#### Inflation-linked Bonds

Inflation-linked bonds have the advantage of paying measured inflation. Some view this as a disadvantage because government measured inflation has measurement flaws and is arguably susceptible to manipulation. But these measures offer the best access to wage inflation, which is hard to

access through financial assets and particularly negative for equity real returns because of how wage inflation reduces margins. The problem with inflation-linked bonds is their real rate duration. Inflation-linked bond indices can have significant exposure to higher real interest rates that can easily more than offset any benefit from inflation. We've seen this in the mini inflation scare that occurred in Q1/2018, the TIPS index, with a real yield duration of 7.7 returned -1.2% through the end of April. While that is certainly better than many other fixed income indices, if inflation rises, a good inflation product has positive returns not less negative returns. It will be challenging for TIPS to have positive returns in a rising inflation environment because of the large exposure to real rates, how low real rates still are and how much the Federal Reserve will need to increase real rates to combat higher inflation.

### REITS

REITS have a similar problem to TIPS. While rising interest rates with rising inflation will eventually lead to higher rents, higher inflation, and higher cap rates; currently cap rates are very low and will not reset higher immediately. Additionally, part of why REITS did well in the late 1970s and early 1980s was because of tax changes that favored REITS. Starting at a point with historically unusually high deficits forecasted, the likelihood of additional tax cuts from here are unlikely. Therefore, the performance is unlikely to match the returns in the inflation of the 1970s and 1980s. REITS will perform better than other asset classes but likely not offer positive real returns while this reset in cap rates is occurring.

### Commodities

Commodities also performed well in the last major inflationary period but it's not clear that commodities will perform as well in the next inflationary period. The economy has shifted significantly from goods to services since the 1970s. Goods as a portion of the consumption basket has shrunk. In addition, raw commodity prices are a small input into most goods that we consume. The goods people buy have a much higher intellectual property and service component to their pricing that often dwarfs raw material pricing. If the inflation we experience is driven more by wage inflation, it's possible that commodities do well on an absolute basis but still lag overall inflation.

## Characteristics of A Good Investment in an Inflationary Regime

The recent low inflation, low volatility trend has also favored certain investment types and styles. As we move to an inflationary regime the types of investment strategies that will perform best will also shift. I think the investment strategies that will be best suited for an environment of increasing inflation will have, among other things, the following three characteristics:

- **Short Duration/Absolute Return:** The primary trade that will need to be unwound as inflation increases is the depressed interest rate/discount rate trade. I think it's important for investors to really look critically at returns over the last decade and ask what portion of that performance should be attributed to the depressed discount rate increasing the present value of the same cash flows. Strategies that lever long duration assets/long dated cash flows would be most vulnerable because they get hurt both on the present value of the assets decreasing and the cost of leverage increasing. I think it's also important that investors look at the duration risk in the assets they've selected to protect them against a rise in inflation. To bring up a previous example, the US TIPS index has a real rate duration of 7.7 years, so if TIPS yields increase to 2%, which is still below what they were yielding in the bond conundrum of the mid-2000s, TIPS would lose 8.5% on the real yield move, more than offsetting any possible benefit from inflation.
- **Actively Managed:** There has been a trend towards passive management over the last decade for many reasons but in an inflationary regime that trend will likely start to reverse. In periods of higher volatility, passive funds can meaningfully underperform the index for several reasons.

One is that they sometimes provide liquidity that can become inconsistent with market liquidity. For example, even in strong markets this can be a problem where inflows can create a significant cash drag if they keep receiving inflows. Passive funds are also price takers which is a vulnerable position to be if market liquidity or pricing is not continuous. These risks haven't come up as much recently because they're minimal in a stable, low volatility environment, but a higher inflation and lower liquidity market increases these risks. Further, lower volatility means fewer opportunities for active managers. A higher rate, higher volatility environment means the weaknesses of passive funds increase and the advantages of active funds also increase, making the value of active investing better on both an absolute and relative basis than in recent history.

- **Experienced Management:** An inflationary, rising rate environment is something that hasn't been experienced in developed markets for decades. As a result, it will be hard to invest successfully just relying on what has worked in recent history. To compensate for the lack of good data about how markets behave in inflation, assumptions need to be made. This puts a significant advantage to experience in the field and asset class when deciding how to make those assumptions. This means that, especially in the initial moves higher in inflation, the advantage will shift abruptly back to traditional fundamental analysis. In addition, inflation markets are highly specialized with unusual features that makes it challenging to invest in them opportunistically. Inflation-linked bonds are among the most technical bonds. They are factor bonds that accrete up and down, there is a significant income component that is routinely larger than the high yield index on a one-month basis and can easily overwhelm price movements, and most inflation bonds have embedded puts but with a different strike for each individual security. Inflation is highly seasonal but with each country experiencing different seasonal patterns and with each country having different sensitivity to different commodity price movements. This creates an advantage to the experienced players if interest in these markets increases and the pool of players expands to include less experienced participants.

## Conclusion

A decade of experimental monetary policy has created significant distortions in financial markets and investment portfolios. These policies have driven investors into positions with higher duration risk and at valuations that make it almost impossible for portfolios to perform well in any potential outcome. The biggest risk to these positions is the return of inflation. The valuations for duration and inflation risk in financial markets are at levels that will result in significant losses with even a modest increase in inflation. Inflation is naturally bad for the duration risk that investors have taken on, but it will also trigger an unwind of central bank policy, compounding negative returns. Not only is risk to higher inflation a significant risk in most investor portfolios, many of the assets traditionally used to protect against inflation suffer from the same valuation problems. Inflation risk is increasing and financial assets are beginning to reprice to the risk. It is time for investors to think outside the box and consider not just the risk this poses but the opportunity it creates and how to capitalize on that opportunity.

## About the Author

Lindsay Politi began her career at Wellington Management in Boston where she was head of Global Inflation-linked Investments. In that role she was one of the top TIPS managers by assets, managing over \$10 billion in dedicated assets, with a top quintile track record for excess returns and information ratio in her peer group. She then joined Tudor Investment Corporation in Greenwich as a discretionary macro investor, translating her inflation strategy onto a macro hedge fund platform. At the start of 2018 Lindsay joined One River Asset Management, where she leads a subsidiary dedicated to inflation strategies and solutions. In her nearly 20-years as an inflation investor, Lindsay has come to believe both in the need for good inflation solutions for client portfolios and that the current offerings in the space are inadequate to meet those needs. Lindsay's new One River Inflation Fund and customized inflation solutions are engineered to address this.

## About One River Asset Management

One River is an innovative investment manager dedicated to delivering high-conviction absolute-return strategies that help our clients build superior portfolios. We see the world in a period of major economic and political transition, with the investment landscape shifting in ways that will make the coming five years look profoundly different from the past five. Our strategies are built to profit from this dynamic environment while providing strong diversification benefits to traditional investment portfolios. Each is developed and managed in-house by our diverse team of investment professionals with deep expertise in volatility, thematic macro, systematic, and inflation trading/investing.

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