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Has the U. S. Turned a Corner on Inflation?

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1 OVERVIEW

The months of Feb. 2020 and Feb. 2022 brought numerous developments — in society, in economics and in geopolitics — which have persisted. In my previous depatches, I have sought to present how financial markets in equity, debt and commodities have reflected and quantified these crises. At this time, I address the issue of whether, at long last, there is a perception of "light at the end of the tunnel" when it comes to the rate of inflation in the U. S. The reader will clearly observe the academic caution manifested in the use of the indefinite article in this analysis' title.

While briefly summarizing the myriad impacts on inflation of economic variables, and the degree of responsiveness by fiscal and monetary authorities in the U. S., quantitatively I will focus on those measures of forward-looking inflation provided to us by the financial markets. I seek to document here a possible positive sign regarding a prospective decline in the rate of inflation in the remainder of 2022 and in 2023. I briefly comment on oil prices at the conclusion.

2 Economic Impacts on U. S. Inflation

2.1 Supply-Chain Disruptions and the U. S. Civilian Participation Rate

Other than the impact of energy prices emanating from the Feb. 2022 European crisis, two of the most-often cited causes of inflation have been the matter of supply-side disruptions, causing bottlenecks and insufficient supplies reaching markets,

and the mystifying paradox of the low U. S. Civilian Participation Rate which has deprived the economy of an adequate labor supply.

I have no insights into supply-chain disruptions, and can only document the U. S. Bureau of Labor Statistics report on the decline in the civilian participation rate:

Table 1 — U. S. Civilian Participation Rate

Month	Rate
Sep. 2002	66.7%
Feb. 2020	63.4%
April 2020	60.2%
Aug. 2022	62.4%

Whereas the participation rate has been declining since 2002, there remains a 1% deficiency in the current participation rate relative to that observed upon the Feb. 2020 onset of the pandemic. This represents over 2.5 million workers.

2.2 The Federal Fiscal Stimulus Continues

It is of interest to contrast the current Federal deficit relative to the prior fiscal year. While admittedly lower than the gargantuan $2.7 trillion deficit of FY 2021, the Federal Gov't continues incurring a budget deficit at a substantial clip. In its Sep. 9, 2022 release of "Monthly Budget Review: August 2022," the Congressional Budget Office reports:

> "The federal budget deficit was $944 billion in the first 11 months of fiscal year 2022 (that is, from October 2021 through August 2022), the Congressional Budget Office estimates — $1.8 trillion less than it was at the same point last year.
>
> "This year, both the timing and the amounts of the changes to the student loan program are uncertain. Without the changes to student loans, CBOs projection of the 2022 budget deficit would be about $1.0 trillion . . . . If significant numbers of student loans are modified in September, the 2022 deficit could be considerably larger than CBO has estimated. [I concede

student loan forgiveness may be subject to legal challenge.] Some of the announced changes (such as the changes to income-driven repayment plans) will increase deficits in future years."

By way of comparison, the current U. S. GDP is $20.94 trillion.

At the risk of venturing somewhat into the political realm, the two points I would make here are these:

1. Ignoring the trade deficit, we have inflation because aggregate demand $C + I + G$ exceeds aggregate supply.

2. As it runs at least a $1 trillion budget deficit, the Federal Gov't is making substantial demand on the economy. Consequently, the only way to reduce aggregate demand is to reduce the goods and services acquired by consumers C and corporations I. In the absence of fiscal restraint, the Fed's increase in interest rates, the sole tool currently used, will have to be sufficient to generate the requisite reduction.

3 The Break-Even Rate of Inflation

While technically defined as "that rate which equalizes the nominal yield to maturity on nominal and real bonds," the break-even rate of inflation is more typically described as "the difference between the nominal yield on a fixed-rate investment and the real yield (fixed spread) on an inflation-linked investment of similar maturity and credit." Briefly, there are three pertinent aspects to clarify here:

1. When computing the U. S. break-even rate of inflation, we use nominal Treasury securities and real, Treasury-Protected Inflation Securities (the acronym is TIPS) for inflation-indexed instruments.

2. The importance of this measure is it is forward-looking — i.e., it reports the average rate of inflation over the maturity (two-, five- or even thirty-years) in the future.

3. Financial economists like to assume markets are informationally-efficient, meaning they are efficient in using available information to assess future events.

> Since markets involve actual money invested, that implies they are reflective of investors' sentiment. In so doing, markets are merely doing the best they can.[1]

In its upper panel, Fig. 1 below presents the two- and five-year break-even rates of inflation over the past five years. The figure's lower panel presents the day-by-day difference between the break-even rate of inflation for two years, and its five-year counterpart.

(PLACE FIG. 1 HERE.)

[1]One debate economists occasionally entertain is whether markets provide "unbiased predictors" that are correct on average. The alternative hypothesis is these inflation forecasts might entail an inflation risk premium. I will briefly comment below on the inflation risk premium in discussing break-even rates of inflation over different times to maturity.

3.1 The Timeliness of the Federal Reserve Board Response to Inflation

As early as April 2021, the chairman of the Federal Reserve Board used the term "transitory" to characterize the prevailing rate of inflation. That word was "retired" on Nov. 30, 2021.

Fig. 1 permits us to assess the timeliness of the Fed's actions by observing the markets' two to five years inflation forecasts. Both the two- and five-year break-even rates of inflation moved ahead of the 2% Fed long-term objective in early Jan. 2021 and exceeded 3% for the first time in Oct. 2021. The two rates then peaked at 4.93% for the two-year and 3.73% for the five-year on March 25, 2022. Not coincidentally, the Fed "announced the first hike on the interest rates on March 16 [and] ... signaled that it would raise rates six more times this year in an effort to slow the four decade-high inflation."

To be fair to the Fed, there is an element in Fig. 1 that does speak to the hoped-for impermanence of inflation: Beginning in early 2021, the break-even rate for two years is substantially above that of the five-year, signaling the markets believed inflation would diminsh over the two- to five-year time frame.[2]

3.2 The "Term Structure" of the Break-Even Rate of Inflation

The notion of a "term structure" of the Break-Even Rate of Inflation refers simply to the fact we can compute break-even rates of inflation for all maturities, all the way out to thirty years. Fig. 2 below presents the term structure of the break-even rate of inflation on Sep. 24, 2022.

(PLACE FIG. 2 HERE.)

[2]It should also be noted the Fed focuses on the Personal Consumption Expenditures (PCE) deflator, which is slightly different from the Consumer Price Index for Urban Dwellers, CPI-U, at the heart of TIPS securities.

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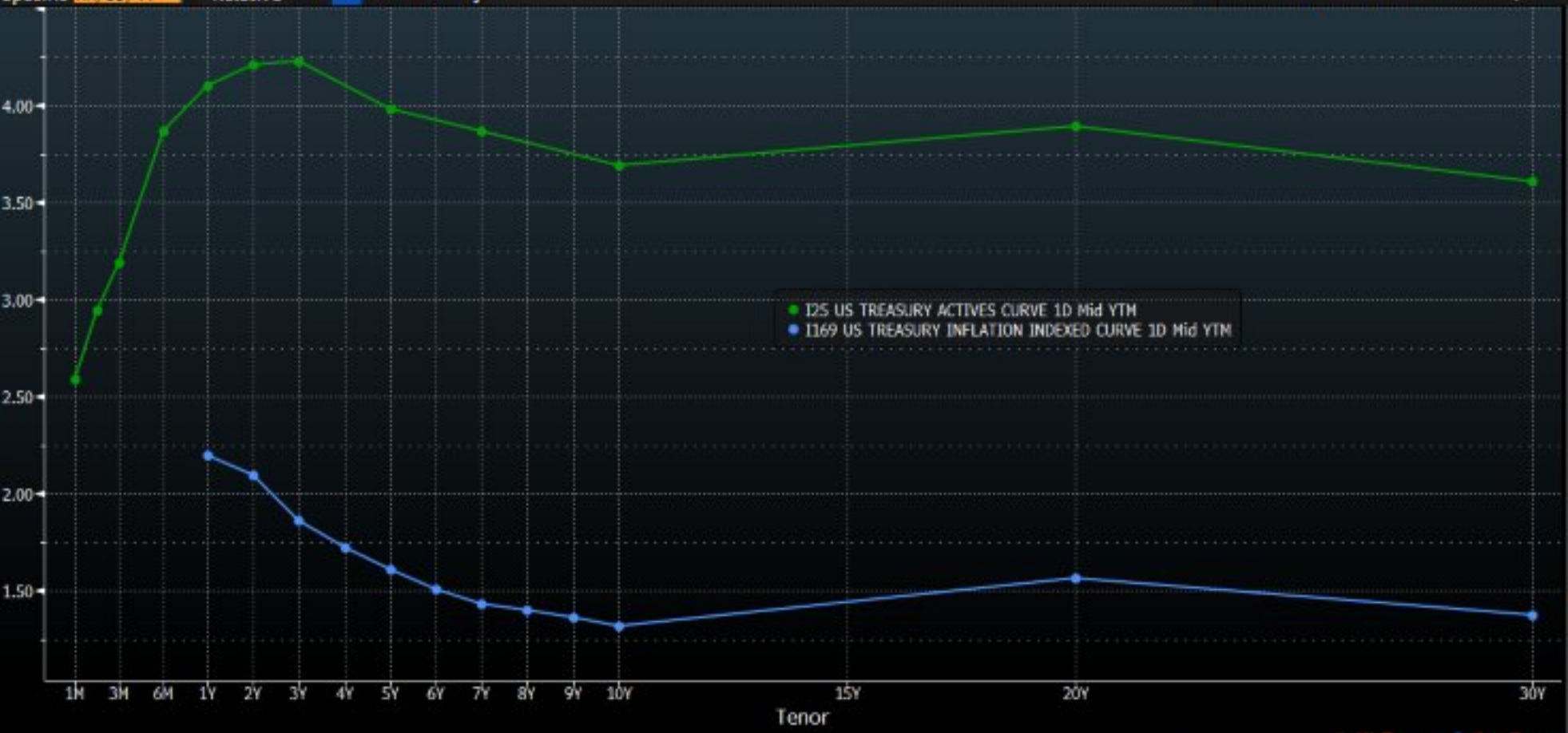

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	Curve Id	1M	3M	2Y	5Y	10Y	20Y	30Y
11)	I25	2.588	3.190	4.206	3.981	3.689	3.894	3.608
12)	I169			2.094	1.608	1.319	1.566	1.379
13)	I25 - I169			211.2	237.3	236.9	232.7	222.9

Fig. 2 reveals the current term structure of the break-even rate of inflation is, for the most part, upward-sloping. This can be seen by observing the very last line of the graph, which reports the maturity-by-maturity difference between the nominal and real (i.e., TIPS) yields for that maturity. The point to note is the two-year break-even rate is lower than all the longer-maturity values.

There are two elements noteworthy about this Fig. 2 and the previous Fig. 1:

1. Fig. 2 reveals a positive slope in the break-even rates' term structure we previously observed in Fig. 1 going back to 2017. Until Dec. 18, 2020, the break-even term structure has almost always been upward-sloping. This means the rate for longer maturities exhibited a higher break-even rate.[3] That slope turned negative in Dec. 2020, likely indicating the market expected greater inflation in the near, rather than the long, term.

2. Fig. 1 reveals when the negative slope recently reversed to a positive one: Almost exactly one month ago on Aug. 26, 2022, the two-year break-even rate became less than the corresponding five-year rate. It is also comforting to note the two rates, 2.21% for the two-year rate and 2.44% for the five-year, are not that distant from, and currently declining towards, the Fed's stated long-term objective of 2%.

4 Inflation Swap Rates

In addition to trading nominal and TIPS securities, "academic comprehensiveness" on my part requires I recognize the market for inflation swaps, which thus also constitutes an indicator of future inflation rates. Inflation swaps provide for the exchange of a fixed number, known as the swap rate, for the actual relized rate of inflation. There are some subtle distinctions between inflation swap rates and the

[3]One simple explanation for this positive slope is what might be termed an "inflation risk premium": Even if "expected inflation" is the same for two and five years, the market requires a compensation for the uncertainty of that inflation rate.

break-even rates of inflation,[4] which give rise to slightly different forward rates of inflation. Fig. 3 below confirms Fig. 1's relative values of the two- and five-year inflation swap rates.

(PLACE FIG. 3 HERE.)

[4]For details on this, see Fleckenstein, Longstaff and Lustig, "The TIPS–Treasury Bond Puzzle," *Journal of Finance,* Vol. LXIX, No. 5, Oct. 2014.

Fig. 3 confirms aspects of Fig. 1:

1. Most of the time, the two-year rate lies below its five-year conterpart.
2. The reversal of this long-term pattern occurred on Feb. 23, 2021. Whereas the inflation swap market has not yet returned to a two-year rate below the five-year, the difference has declined from a max of 1.27% to a current level of .08%.

5 Oil Prices: Recession, with Lingering Impact from Ukraine

Before concluding, I'd like to comment briefly on the behavior of oil prices, which recently declined to a price of $78.74 and have thus contributed to moderating this non-core component of inflation. This is an entirely predictable result of recession concerns in the U. S. In my analysis dated March 20, 2022, I showed the U. S. equity markets appear to decouple from the Ukraine crisis on March 16, 2020. What I would like to show in the following graph, is the lingering effect of the Ukraine crisis.

In my July 28, 2020 analysis, I showed the Correlation between Oil Prices and Equity Prices mirrors particularly closely whether we are in a supply- or demand-side crisis: That correlation is negative for a supply-side crisis (oil prices increase while equity prices decline) whereas it is positive for a demand-side crisis (both prices decline).

Financial markets do not permit us to observe forward-looking measures of correlation,[5] so Fig. 4 below presents that 45-day (backward-looking) moving-window correlation for 2022.

(PLACE FIG. 4 HERE.)

[5]Using the methodology of Ronn (2021), "Using Equity, Index and Commodity Options to Obtain Forward-Looking Betas and Conditional-CAPM Expected Crude-Oil Spot Prices," *Journal of Energy Markets,* Dec. 2021, we can obtain forward-looking correlations.

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What is noteworthy is not just the sign of that correlation switched from a supply-side crisis negative value to a demand-side positive value on May 12, 2022, but that the value of the positive correlation is relatively low. In past demand-side recessions, that correlation has been as high as 0.6 or even 0.8. In addition to the relatively elevated price of \$78/bbl. in contrast to pre-pandemic values of \$60/bbl., this relatively-low correlation of 0.119 may be indicative of the impact of the ongoing supply-side crisis in Ukraine.

6 Conclusions

Back in 1974, the Federal Gov't distributed "WIN" buttons, "Whip Inflation Now," suitable for placement on shirt lapels. While public exhortation may be a dubious macroeconomic tool, it would appear the Federal Reserve Board's past and prospective increases in the Fed Funds rate may be achieving the goal of cooling excess demand and reducing inflation.

Especially at this time in the world, the standard caveats apply:

1. Market prices can and do change.
2. Even those of us who profess confidence in financial markets informational efficiency do not claim these markets are omniscient, prescient or that they display perfect foresight.