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INVESTMENT MANAGEMENT

Global Multi-Asset Viewpoint

Secular Outlook for Bond Yields: Structurally Higher

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It is well known that government bond yields in advanced economies tend to be closely linked to nominal GDP growth. It is less well known that this relationship has been unsteady over time. Economic theory (as in Solow Growth Model) postulates that bond yields should equal nominal GDP growth, and many market participants concur. But in reality the relationship between government bond yields and nominal GDP (we refer to this differential as the "yield -GDP gap") has experienced six distinct regime shifts since the beginning of the 20th century. Our analysis shows that two factors best explain these regime shifts: 1) the trend in inflation, and 2) the pace of aggregate debt growth (in relation to the size of the economy). In other words, the faster debt grows relative to GDP, the higher the bond yields for a given pace of nominal GDP growth. And the lower inflation has been in the prior period, the lower the yield-GDP gap will be. At present, when taking into account a likely acceleration in debt to GDP growth which would contribute to structurally higher rates, and the (partially offsetting) impact of low inflation over the last decade, we estimate that over the next 5 years, the average yield-GDP gap will rise 80 basis points, suggesting the U.S. 10-year yield could reach 3.5-3.7% by 2023 (Display1).

While U.S. Treasury yields have fluctuated closely with perceptions of nominal GDP growth since the Global Financial Crisis (GFC), as they have done for most of their history, to many market participants the level of bond yields has seemed abnormally depressed. On average, the U.S. 10-year Treasury yield has been 82 basis points below nominal GDP growth since 2008, compared to 67 basis points

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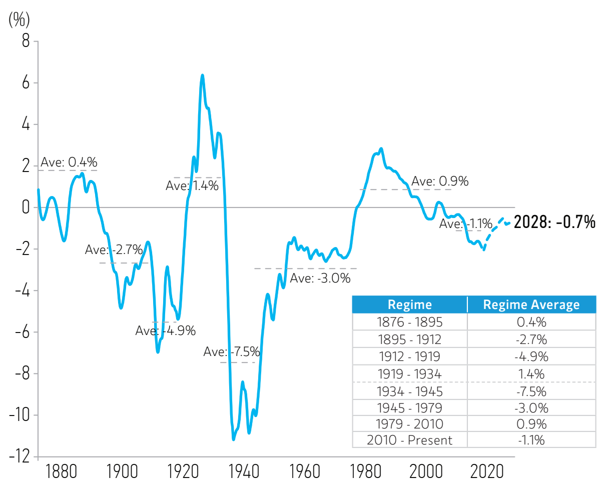
Display 1: **Yield-GDP Gap Has Fluctuated Over Time**

U.S. Nominal 10-Year Yield Minus Nominal GDP YoY (10-Year mavg)



Regime	Regime Average
1876 - 1895	0.4%
1895 - 1912	-2.7%
1912 - 1919	-4.9%
1919 - 1934	1.4%
1934 - 1945	-7.5%
1945 - 1979	-3.0%
1979 - 2010	0.9%
2010 - Present	-1.1%

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Source: MSIM Global Multi-Asset Team Analysis. Data as of February 15, 2019.

above it since 1980 and 115 basis points above it in the 1990's. (Some academic research has attributed this apparently-depressed yield level to the effect of quantitative easing.[1] To us, it seems that other forces affecting the entire rates structure have been at play, as the yield curve slope has not been flatter than usual and indeed it has been steeper on average since 2008, at 162 basis points, than since 1980, when it was 102 basis points on average).

It seems to us that the yield-GDP gap may have entered a new regime after the GFC. By historical standards the post GFC yield-GDP regime (-82 bps) has actually not been abnormal. Although distinctly lower than in recent history, it is close to the post-war average of -102 basis points.

We find that in modern U.S. history (since 1953), the yield-GDP gap has been a statistically significant predictor of future bond returns, particularly at the point of regime shifts. The lower the gap, the worse the subsequent returns for U.S. government bonds. Thus, a regime shift in the yield-GDP gap would represent a potentially significant opportunity for bond investors.

In our analysis of what causes such regime shifts in the yield-GDP gap, we found the most consistently predictive factors to be inflation and debt growth.

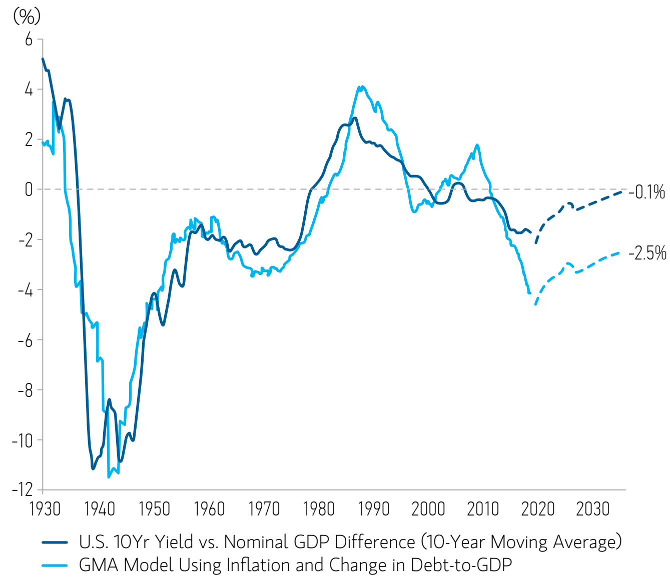
First, prolonged periods of falling inflation, with a considerable lag, have worked to depress the yield-GDP gap. Low and falling inflation tends to breed complacency among investors and afterwards is extrapolated.

Second, various measures of debt growth—particularly the change in the aggregate debt to GDP ratio—also appear to explain shifts in the yield-GDP gap. This also seems intuitive: when debt grows faster than average, demand for funding is high and interest rates—the cost of funding—tend to be higher than they would be otherwise.

The lower yield-GDP gap since 2008, compared with preceding decades, is somewhat well explained by these two variables (Display 2). The 10-year change in the debt to GDP ratio decelerated from a peak of +104 percentage points in 2008 to -29 percentage points in 2018. And average inflation (using the core PCE deflator) during the past 10 years was 1.6%, progressively lower than average inflation in the preceding decades (1.8% in 2000's and 2.4% in the 1990's).

Display 2: **Inflation and Debt Growth Suggest Yield-GDP Gap to Move Higher**

GMA Long-Term Yield-GDP Gap Model



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Source: MSIM Global Multi-Asset Team Analysis.
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Monetary policy regime shifts have likely impacted the yield-GDP gap, either directly or indirectly because they affected inflation and debt dynamics. A recent paper from the Bank of International Settlements identifies distinct monetary policy regimes over the past 150 years, including transition periods, which correspond well with yield-GDP gap regimes.[2] Although in principle it is intuitive that monetary policy shifts would reset the yield-GDP gap, predicting future monetary policy is difficult. The advantage of inflation and debt growth as explanatory variables is that they are easier to assess: inflation has affected the yield-GDP gap with a lag, and debt dynamics can be somewhat more easily predicted than structural monetary policy changes.

Global comparisons corroborated our findings: inflation and debt growth have also been predictive of the yield-GDP gap in other economies such as Sweden, Japan and the UK. In these economies, yield-GDP gap regime shifts also tended to coincide with changes in monetary policy regimes.

Many factors we initially thought would be relevant did not appear significant, based on our analysis. Contrary to our expectations, we did not find net international investment position, current account balance or budget balance to have been a statistically significant predictor of the yield-GDP gap. While this may be explained in the case of the U.S. by the reserve currency role of the U.S. dollar, it is harder to explain this in the case of smaller economies such as Sweden. However, other research has found some of these variables significant. For example, a recent study by the IMF concluded that fiscal deficits were a key factor and that a 1 percentage point increase in projected fiscal deficit (as a share of GDP) increased long-term interest rates by 20 basis points.[3]

The near term outlook for the yield-GDP gap appears relatively benign. Inflation remains below target and, according to our model, the past decade's low inflation will continue to depress bond yields over the coming decade (given the lag). We expect that the impact of past inflation should lower the yield-GDP gap by approximately 50 basis points over the next five years, everything else equal. On the other hand, debt growth will likely more than offset this. According to the U.S. Congressional Budget Office (CBO), the U.S. budget deficit will increase to almost 5% by 2028. If private sector debt grows merely in line with nominal GDP, the 10-year change in the U.S. debt/GDP ratio will swing from -32% in 2018 to 0% in in 2023 and will likely cause the yield-GDP gap to increase by around +130 basis points in five years. The net effect of these two forces should mean structurally higher rates going forward, with the decade-average 10-year Treasury yield rising by +80 basis points over the next 5 years, all else equal, from -80 bps on average since GFC, to approximately zero. Based on this, we expect the U.S. 10-year Treasury yield should average 3.5-3.7%, over the next 5 years assuming 3.75% nominal GDP growth (i.e. trend economic growth remains at 1.5% and inflation is 2.25% going forward).[4]

The risks to this forecast cut both ways. On the downside, there is the Japan-like scenario where persistent budget deficits and growth of public debt are insufficient to offset the deflationary effect of private sector deleveraging. In this context, even deficit monetization fails and the yield-GDP gap continues to fall. However, it appears that the unique structure of Japan's labor market, declining population and aggressive private sector deleveraging are unlikely to occur simultaneously in the U.S. or in most other major economies.

In terms of upside risks to the yield-GDP gap, the U.S. aggregate debt growth trajectory may turn out to be more pronounced if aggressive fiscal stimulus is employed during the next downturn. Conceivably, as monetary policy faces the effective lower bound constraint, a new monetary policy regime may emerge. Recently-debated alternatives among academics and policy makers, such as average inflation targeting, price level targeting and nominal GDP targeting, may be deployed. While hard to calibrate precisely, such a policy outcome would likely lead to a higher yield-GDP gap than we project. Lastly, perhaps some of the factors that have not mattered and cannot be assessed empirically will become significant. While net international investment position (NIIP) has not mattered for the U.S. yield-GDP gap (and in fact the yield-GDP gap contracted as NIIP worsened over recent decades), it is conceivable that the market could focus on this in the observable future. The reserve currency role of the U.S. dollar may no longer offset NIIP deterioration beyond a certain point, though admittedly that inflection point is difficult to predict. At -47% today, NIIP is already extremely high by historical standards given the U.S. ran a positive NIIP prior to 1989, and averaged -4% in the 1990's, and -15% in the 2000's. For comparison, the UK's NIIP is currently -5%, Germany's is at +59% and Japan's is at 61%. While it is difficult to tell when this will matter and what the impact will be, this potential risk may well become relevant over the next 5-10 years once US's net international investment position begins to approach 75-100% of GDP.

In the absence of deflation or concerns over a higher NIIP, we expect the structural (10-year average) fair value of the U.S. 10-year government bond yield to increase by +80-100 bps over the next 5-10 years, primarily due to higher debt, but taking into account the partially offsetting effects of low inflation.

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FOOTNOTES

[1] Gagnon, Raskin, Remache and Sack, 2010, "Large-Scale Asset Purchases by the Federal Reserve: Did They Work?"

[2] Borio et al, 2017 "Why so low for so long? A long-term view of real interest rates"

[3] Baldacci and Kumar, 2010 "Fiscal Deficits, Public Debt, and Sovereign Bond Yields"

[4] Source: MSIM Global Multi-Asset Team Analysis; trend fair value for U.S.10-year Treasury yields based on nominal GDP growth, trend inflation, and aggregate debt/GDP growth.

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