CHIEF INVESTMENT OFFICE
Investment Insights

JUNE 2018

The "Real" Impact of Rising Rates

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Positive inflation data have finally convinced markets that the Federal Reserve (Fed) will continue its rate hike path, leading to a sharp rise in bond yields. Since September 2017, the 2-year Treasury has more than doubled to 2.6%, and the 10-year has broken the key 3% barrier. The Fed forecasts two more hikes this year, three in 2019 and several more in 2020, which may pressure market rates higher still. Based on our outlook – a resilient economy, moderate inflation, a gradual but sustained rise in rates, strong employment, an increase in capital expenditures eventually leading to increased productivity – we believe markets are well-positioned to deal with these higher yields.

Issuers have used accommodative capital markets to lower interest costs and lengthen maturities. For corporations and municipalities, changes in interest costs and credit metrics only occur gradually as they slowly roll their existing debt over a multi-year period. Banks may actually see rising revenues, even if the yield curve flattens, unlike previous cycles. In addition, for municipalities, credit metrics may actually strengthen from the standpoint that funding ratios for pensions would improve as bonds within the pensions' investment portfolios contribute more income.

For consumers, the rise in mortgage rates will likely not impact affordability enough to overwhelm the supply and demand dynamics currently underpinning home prices. Consumer credit metrics are also robust enough to deal with significantly higher rates with little to no economic downturn; we believe most consumer-based loan quality metrics will remain strong. While there are pockets of consumer credit where lending standards have become too loose, none appear to be a significant threat to the economy or the banking sector.

We believe most investors should welcome higher rates – especially the most risk-averse investors, including some retirees. U.S. Treasurys generally yield the inflation rate or higher. While higher rates may be a slight headwind for stocks, the difference between earnings yields on stocks and bond yields is not enough to forestall the grind higher in equities that we expect to continue into year-end. Investors with the willingness and ability to hold their bonds to term should be less concerned about mark-to-market losses as they now have the ability to reinvest at higher yields. The era of financial repression is ending; we believe investors should feel optimistic about how the market is currently adapting to the change.

U.S. CORPORATE AND MUNICIPAL ISSUERS: WELL PREPARED FOR RISING RATES

We believe that U.S. fixed income borrowers are well positioned to handle rising rates as long as the economy remains on track. Investment grade ('IG') and high yield ('HY') borrowers have both benefitted from low borrowing costs and easy access to capital, contributing to significant growth in debt outstanding. Higher yields may, therefore, have a meaningful impact on corporations: higher interest costs, lower profit margins, and tighter access to capital. However, we believe that – assuming a measured increase in yields, our baseline forecast – the credit impact will be manageable. The same generally holds true for municipal issuers. The vast majority of municipal debt is long-term, fixed-rate, with serial maturities, and municipalities have the lowest aggregate refinancing risk of any sector. Higher yields could actually be a modest positive for states with significantly underfunded pension liabilities; higher returns on bonds within pension investment portfolios would translate into improved funding ratios.

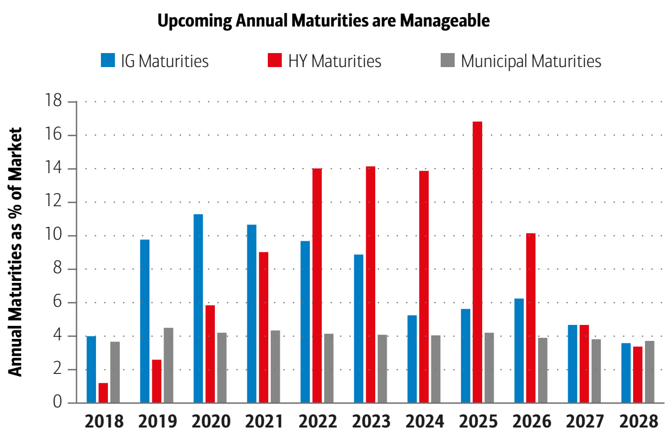
Issuers have locked in Low-Cost Funding and Extended Debt Maturities – Higher Rates Are Only a Modest Headwind That Plays out over Time

The first order impact on bond issuers will be a gradual repricing of coupons as maturing debt is refinanced at higher yields, and higher interest burdens on incremental debt issuance. All things being equal, higher funding costs

Data as of 6/4/18 and subject to change.

weaken corporate operating margins and operating cash flows, and also lower coverage ratios (i.e., EBITDA / annual interest expense). The real impact will take several years to flow through, though, as lower funding costs have been effectively "locked in" for a period of time; there are relatively modest upcoming annual maturities in both the IG and HY markets, as issuers have termed out their maturity profiles and effectively spread their bond redemptions over time. Overall, roughly 4%–10% of the amount outstanding in IG, HY, and municipal markets mature annually over the next several years, as shown in the exhibit below. Notice in particular that municipal issuers average about 4% due in any given year, in aggregate. Furthermore, current coupons in the investment grade taxable and tax-exempt markets remain well below long-term averages. Interest rates – all else being equal – could rise 200–300 basis points (bps) before leading to a meaningful impact on credit quality and ratings, in our opinion.

Exhibit 1: Since annual maturities are well spread out over time, higher rates only significantly impact companies' ability to service debt with a substantial, multi-year lag



Source: Chief Investment Office, May 2018.

Issuers most acutely impacted by rising rates include lower-quality high yield credits with more highly-levered balance sheets, weak cash flow generation, and thus a more limited cushion to absorb the impact of higher borrowing costs. However, notice from Exhibit 1 that HY issuers appear to have done the best job of back-end loading their maturities. Additionally, issuers with a greater dependence on debt funding markets and with large concentrations of floating-rate or short-maturity debt would be disproportionately impacted relative to companies with longer-maturity, fixed-rate borrowings outstanding. These include HY issuers that utilize the bank loan market, and IG financials which have a large proportion of short-term debt outstanding – although there are positive impacts for financials that offset this somewhat, that we will discuss.

In terms of municipals, some issuers – particularly hospitals and colleges/universities – have a greater proportion of variable-rate debt, but their interest-rate risk is generally hedged by the entities' investment portfolios.

Bank Net Interest Margins Should Improve Even As Curve Flattens

Given their sensitivity to both the overall rate environment and shape of the yield curve, banks are a special case. Roughly two-thirds of U.S. banks' revenue is net interest income[1] – the difference between what banks earn on assets and pay out on liabilities. Higher rates have boosted banks' profitability, with net interest margins ('NIMs')[1] rising in six out of the last seven quarters after declining for almost a decade, according to Bloomberg. We believe the recent trend of NIM expansion will continue even if the yield curve flattens and deposit costs begin to accelerate from current low levels.

This is not always true when the yield curve rises and flattens. In 2004–2006, rates rose while the difference between 2-year and 10-year debt collapsed from 2% to roughly 0%. Most banks saw NIMs decline; they held long-dated assets that did not reprice as quickly or to the same degree as their liabilities.

Today, however, banks hold more short-duration assets that reprice quickly when short-term rates rise. On the liability side, deposits remain a large funding source, are elevated versus historic norms, and are not as sensitive to rises in rates. The Fed Funds rate has risen 150 bps, but we estimate deposit rates for U.S. banks have risen only 20 bps, for example. While a flatter yield curve dampens the positive impact on longer-dated assets, higher yields on a larger portion of short-dated assets combined with still-low funding costs should provide a modest tailwind for bank earnings with higher rates.

U.S. INVESTORS SHOULD WELCOME THE END OF THE ERA OF FINANCIAL REPRESSION

As opposed to just managing through higher rates, we believe investors should rejoice. With the right perspective, rising rates can be an unambiguous positive. This is the first time in a decade that an investor can essentially keep pace with inflation on short-dated risk-free assets, or earn positive inflation-adjusted returns by extending out the curve slightly in municipal or investment grade credit. For example, a 3-year short-dated corporate bond portfolio currently yields ~3.4% – more than a 10-year Treasury with significantly less interest-rate risk, and more than 1% above inflation. Tax-equivalent

[1] Net interest income is defined as the interest earned on a bank's assets minus interest paid on its liabilities. Net interest margin or 'NIM' is net interest income as a percentage of a bank's interest-bearing assets

valuations in the municipal market are similar. We expect this to bring significant cash off the sidelines.

Fixed income should be an income generator, a source of portfolio stability, and – importantly – a diversifier for risk assets. Higher rates clearly improve bonds' income-generating capability; reinvesting at higher yields is worthwhile compensation for lower existing bond prices, which would eventually mature at par anyway, assuming no credit event. Higher running yields also mean diversification improves as income contributes more to total return.

Lower market bond prices due solely to a rate rise should not, in our view, be concerning; capital appreciation should generally not be a bond portfolio's goal. Absent a credit event, lower market prices have no impact on value at maturity. If sold before maturity (and not reinvested in similar bonds, as is the case with most pooled vehicles) there is a possibility of a significant economic loss to be incurred.

For municipal bonds, significantly higher rates may have a more detrimental effect. Discount bonds purchased in the secondary market – bonds trading below par, which occurs if yields are above coupon rates – may be subject to a taxable capital gain, an anathema for tax-exempt investors. Price declines generally accelerate below par to compensate for this liability. Even worse, if the price drops below a threshold (0.25% per year to maturity, the "*de minimis*" threshold), that tax liability would be subject to ordinary income tax rates, generally resulting in an even steeper price decline. We do not believe this risk is widespread or a current concern; outstanding municipal coupons are typically around 4% to 5% while current 10-year AAA yields are only 2.55%. Therefore, yields would need to rise precipitously for tax risks to affect the broader municipal market. Finally, many municipal bonds are callable. If yields rise above a callable bond's coupon rate, issuers have less incentive to call the bond and it will most often trade on a yield-to-maturity instead of a yield-to-call basis – known as "extension risk." This could also cause a steeper price decline, and would increase the bond's duration, making it even more sensitive to interest-rate risk.

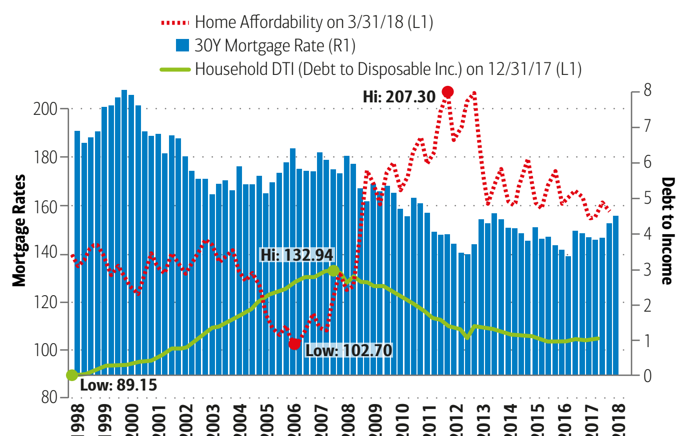
The search-for-yield has, however, led some retail investors into unfamiliar fixed income territory. We see risk where investors have incorrectly matched risk tolerance, timeframe, or both to these investments. For example, the percentage of "leveraged loans" or "banks loans" – floating-rate loans to high yield companies – held by retail investors through pooled vehicles is without precedent. Any investor using bank loans as a money market surrogate will be surprised by the price volatility when the credit cycle turns; this may cause a knock-on effect where redemptions fuel market price losses which fuel further redemptions in a vicious cycle.

While rate rises themselves are not likely a catalyst for this, a recession may be. Esoteric fixed income assets held directly or indirectly by retail investors will be a key area to watch. Investors can best protect themselves by "looking under the hood" of any investments, and making sure that they can hold any bond investments – either as individual securities or through pooled vehicles – through the weighted-average maturity of that investment, so as to not be forced to sell before market prices rebound, turning what could simply be an unrealized market loss into a permanent impairment of capital.

HOUSING MARKET SHOULD BE RESILIENT BASED ON SUPPLY AND DEMAND DYNAMICS FOR CONSUMERS WITH SOLID FINANCIALS

Rising interest rates – as in and of them themselves – should not unduly burden consumers or the housing market. Gradual increases in mortgage rates would make housing slightly less affordable and slow the last decade's record refinancing activity. Even if rates rise as expected, though, mortgage rates will still be at relatively low levels. Furthermore, new home inventories are very tight, ownership rates are at 20-year lows, credit standards are loosening, and pent-up housing demand exists. Therefore, we believe that supply and demand dynamics will continue to favor home sellers over buyers.

Exhibit 2: Housing affordability, mortgage rates and debt-to-income ratios

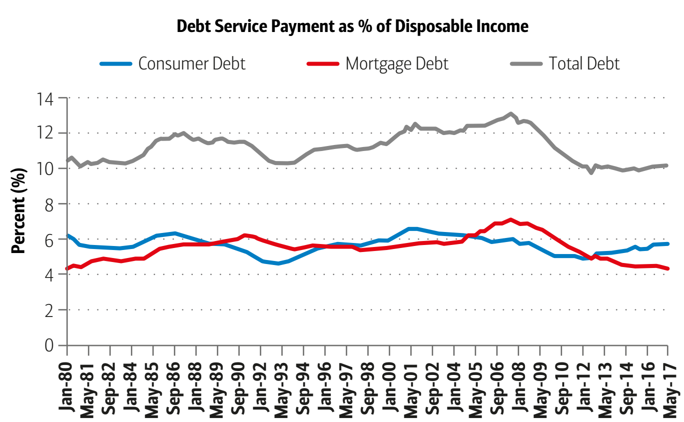


Source: Bloomberg, May 2018.

A shift in new construction towards smaller, cheaper homes should improve affordability and, in part, offset additional debt burden from rising mortgage rates. More importantly, a steady economy, robust job creation, and growth in disposable income should outweigh a marginal increase in debt costs caused by higher mortgage rates. Given the average spread of 150 bps between primary mortgage rates and 10-year Treasury yields, mortgage rates could rise an additional 50–75 bps to a 5%–5.25% level (from about 4.56% currently) in the next 12 to 18 months. We further estimate that every 25 bps increase in mortgage rates increases payments by about 2.5% and debt-to-income ratios by less than a 1%, everything else held constant. This would cause the mortgage payment for a median-priced U.S. home to go up by $75–$120 – an increase of 5%–7.5%.* While these amounts are not insignificant, they should have limited impact on homeowners' leverage – which has been declining since the financial crisis – and the affordability of home ownership – in our view not enough to significantly change consumer behavior, given our favorable economic outlook.

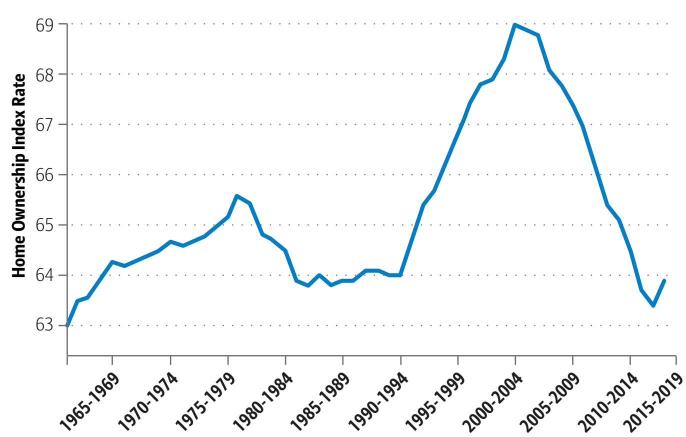
* assuming the 2Q 2017 median house price of $253,600, 4.50% average 30-year fixed rate, and a 20% down payment

Exhibit 3: Mortgage debt service and consumer debt service



Source: Federal Reserve, July 2017 (latest data available).

Exhibit 4: Homeownership rate



Source: Bloomberg, December 2017.

In terms of other consumer credit, rising interest rates would be a negative, weakening the credit quality of credit card receivables and auto, student, and personal loans. Higher rates would have a more pronounced impact on new loans, as lenders pass on higher financing costs to consumers, which increases the likelihood of defaults. However, consumer finances today are better than they have been in years, as Exhibit 3 shows debt being a lower percentage of consumers' disposable income. While defaults in auto and consumer lending are increasing somewhat, they are occurring from near-record low levels and in a manageable fashion within the context of the overall economy. We would expect the auto sector's deep-subprime segment, especially where funded by private-equity, would experience weak performance. However, this segment is quite small relative to the overall market and is unlikely to cause a widespread meltdown similar to the latest subprime mortgage crisis and is not a major concern, in our view. Absent a major economic shock, consumer credit is expected to remain robust and leverage should remain relatively low.

Finally, in commercial lending, higher rates translate into higher coupons for new loans, and this reduces a given property's debt service coverage ratio and cash flow. Within certain markets and property types, loan-to-value ratios on commercial real estate loans would likely increase, and property values could be expected to come under downward pressure from potentially higher capitalization rates. Lower property values would impact the ability of borrowers to refinance, which could lead to higher defaults. Retail, in particular, will face greater challenges in a higher rate environment.

CONCLUSION

In summary, we think the market in aggregate – investors, issuers, consumers – is well-positioned to withstand a return to a more normal interest-rate environment. The Fed has thus far successfully navigated a path off the "zero lower bound" of interest rates – and it is the first central bank to be able to do so. The rates market is becoming further convinced that even higher rates are to come, and this has occurred with relatively benign market impact thus far. While some asset classes or areas have higher risk than others, none appear likely to be systemic. On balance, the end of the era of financial repression is a welcome development.

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