Vanguard

Global macro matters

Unwinding loose monetary policy: Yields expected to rise only modestly

Vanguard Research | June 2021

Authors: Alexis Gray, M.Sc.; Shaan Raithatha, CFA; and Roxane Spitznagel, M.Sc.

As the world economy continues to recover from the pandemic, we expect inflationary pressures to build, supported by accommodative monetary and fiscal policy. In our central scenario, we anticipate central bank policy rates in major developed economies to lift off from 2023 onward while quantitative easing (QE) unwinds. However, our model suggests that this gradual normalisation of monetary policy will lead to only a modest lift in long-term government bond yields.

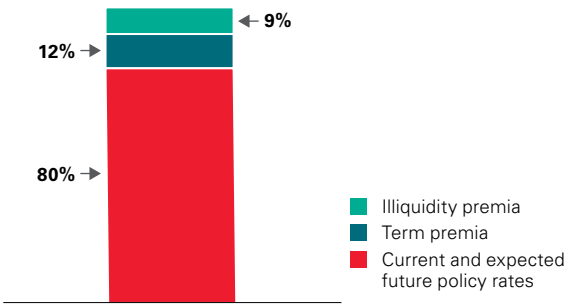
This paper outlines our framework for assessing the drivers of bond yields, uses that framework to illustrate the effect of QE announcements on yields and provides forecasts for 10-year yields across regions based on three key macro scenarios.

QE helped depress bond yields during the pandemic's early stages

In March 2020, as the severity of the impact of Covid-19 on the global economy and financial markets was becoming more apparent, major central banks intervened by cutting interest rates, announcing additional QE purchases and implementing other liquidity support measures to bolster financial conditions.

During this period of high financial-market volatility, changes in 10-year government bond yields were predominantly driven by changes in three factors: current and expected future policy rates, term premia and illiquidity premia (**Figure 1**).

Figure 1. Drivers of daily changes in the 10-year US Treasury yield around the Federal Reserve's March 2020 QE announcement



Notes: Decomposition of the drivers is derived from the model described on page 2. Daily changes in 10-year yields around the US Federal Reserve's March 2020 QE announcement (on 16 March 2020) are regressed on (1) the QE news-flow variable, (2) daily changes in the 3-month yield and daily changes in the difference between the 3-year and the 3-month yield to account for changes in current and expected future policy rates, and (3) daily changes in 10-year government bond bid-ask spreads to account for liquidity effects. The chart shows the average attribution of each driver over the sample period, which covered the 30 days before and 45 days after the QE announcement. Percentages do not total 100 because of rounding.

Sources: Vanguard, using data from Bloomberg.

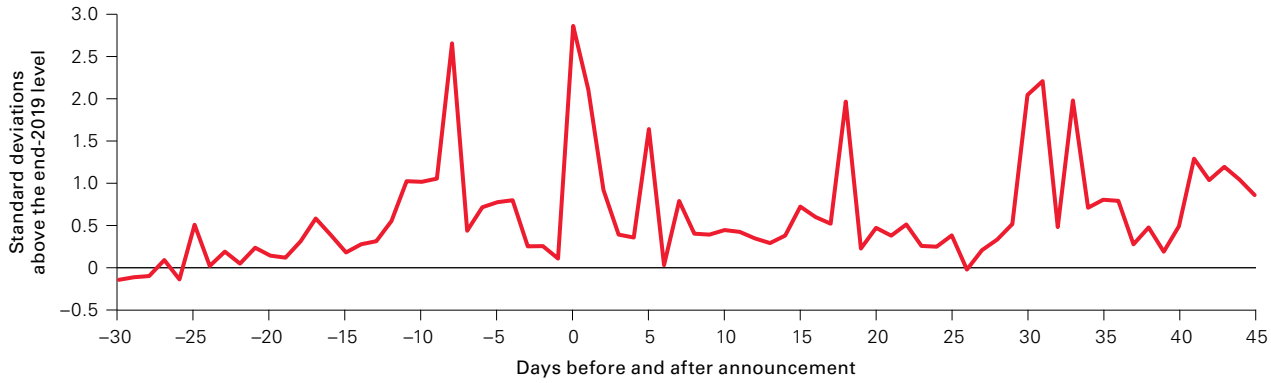
We use natural language-processing techniques to isolate the impact of QE announcements on government bond term premia[1]. This method uses the relative frequency of news stories that are linked to central bank announcements as a way of identifying QE-related "events"[2]. The key advantage of this approach is that the identification of QE events is systematic, rather than the more manual approach adopted by traditional event studies (Hamilton et al., 2018). **Figure 2** shows how this variable measuring QE-related news has evolved over the sample period.

We apply this method to several markets. For each, we regress daily changes in 10-year yields on QE-related news, while controlling for other high-frequency factors that drive yields such as changes in current and future expected policy rates and liquidity effects[3].

By comparing the fitted values of our model to a counterfactual where no QE announcements are assumed, we can extract an estimate for the effect of QE announcements on term premia. **Figure 3a** shows the difference between our fitted model values (dark teal line) and the counterfactual of no QE announcements (purple line) for the 10-year US Treasury yield around the time of the Federal Reserve's March 2020 QE announcement. The estimated impact on term premia is 57 basis points.

Figure 3b shows the results of this analysis for other markets, including the United Kingdom, Canada and Germany. The results have been scaled to account for the size of each central bank's QE program. It appears that during March and April 2020, central bank QE announcements had a significant and negative effect on long-term government bond yields, even after controlling for current and expected future policy rates and liquidity effects.

Figure 2. QE-related news over the sample period



Note: The chart shows a weighted average of QE-related news stories for the European Central Bank (ECB), the Bank of England (BoE), the US Federal Reserve (Fed), and the Bank of Canada (BoC) around the March 2020 QE announcements (US Fed: 16 March; ECB: 18 March; BoE: 19 March; BoC: 27 March), expressed as standard deviations above the end-2019 level.

Source: Bloomberg News Trends function.

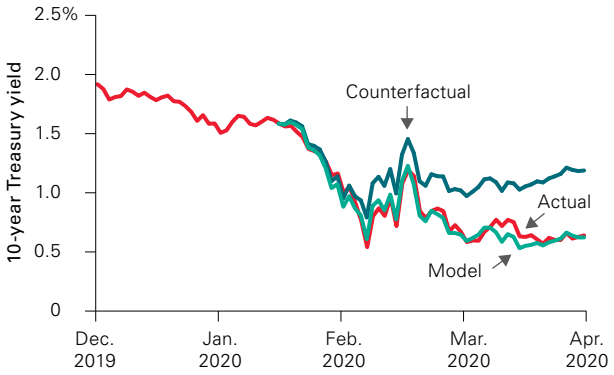
1 Quantitative easing may also affect yields through changing expectations of future policy rates. This potential signalling effect is not captured by our results.

2 This was attained using the Bloomberg "News Trends" function. This function allows us to analyse the volume of news published on specific topics over time. It is built on a vast archive of news stories and social media posts from over 150,000 sources.

3 This method assumes that any changes in 10-year yields that were not driven by changes in policy-rate expectations or liquidity effects are driven by changes in term premia. Our estimated impacts may also be picking up changes in term premia that are not driven by QE announcements, though any effect is assumed to be small given the narrow time window.

Figure 3. QE announcements had a significant and negative impact on government bond term premia

a. 10-year US Treasury note yield (actual versus model versus counterfactual)

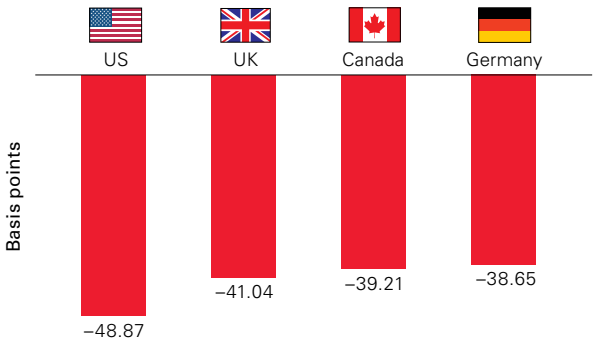


Past performance is not a reliable indicator of future results.

Notes: The chart shows the fitted values from the analysis described in this section and compares them to a counterfactual where no QE announcements are assumed, around the time of the Federal Reserve's March 2020 QE announcement (16 March 2020). The difference between the model and the counterfactual is the estimate for the effect of QE announcements on term premia.

Sources: Vanguard, using input data from Bloomberg.

b. Estimated impact of QE announcements on term premia across countries



Past performance is not a reliable indicator of future results.

Sources: Vanguard, using input data from Bloomberg. QE announcements for US Federal Reserve: 16 March; European Central Bank: 18 March; Bank of England: 19 March; Bank of Canada: 27 March.

Global bond yields to move modestly higher as ultra-accommodative monetary policy eventually unwinds

In this section, we seek to project 10-year government bond yields out to 2030 in order to set reasonable expectations for investors. We start with our forward-looking macro views regarding the business cycle, policy rates and QE, which are constructed by our global economics team. We then map these views onto bond yields using our proprietary model.

Our modelling approach involves a vector error correction model (VECM) where bond yields are a function of the neutral rate[4]; the policy rate; the difference between the 3-year yield and 3-month yield, which aims to capture changes in expectations of future policy rates; and the government bond "free float" (Gagnon et al., 2011). The free float captures changes in central banks' holdings of QE-related assets[5].

4 The neutral rate is the interest rate that supports the economy at full employment/maximum output while keeping inflation constant.

5 The government free float is calculated as the total stock of outstanding government bonds less central bank holdings of government bonds and other holdings of government bonds that are not freely traded in financial markets.

We ran forecasts for each market under three scenarios: a baseline reflation scenario, a recession scenario and a "super-hot" recovery scenario. Our forecasts are driven by assumptions made on central bank policy rates and the size of central bank balance sheets as illustrated in **Figure 4.1** and **Figure 4.2**.

Our 10-year bond yield forecasts are presented in **Figure 5**. Despite market fears of a sharp rise in yields, the figure illustrates that we anticipate only a moderate lift across US, Germany, and UK 10-year yields over the next decade as monetary policy slowly tightens. This is based on our expectation that central bank balance sheets will remain relatively large, even after normalisation of monetary policy[6], and that policy rates will rise only modestly above the zero lower bound over the next decade, to 2.5% in the US and the UK, 1.5% in the euro area and roughly 0% in Japan.

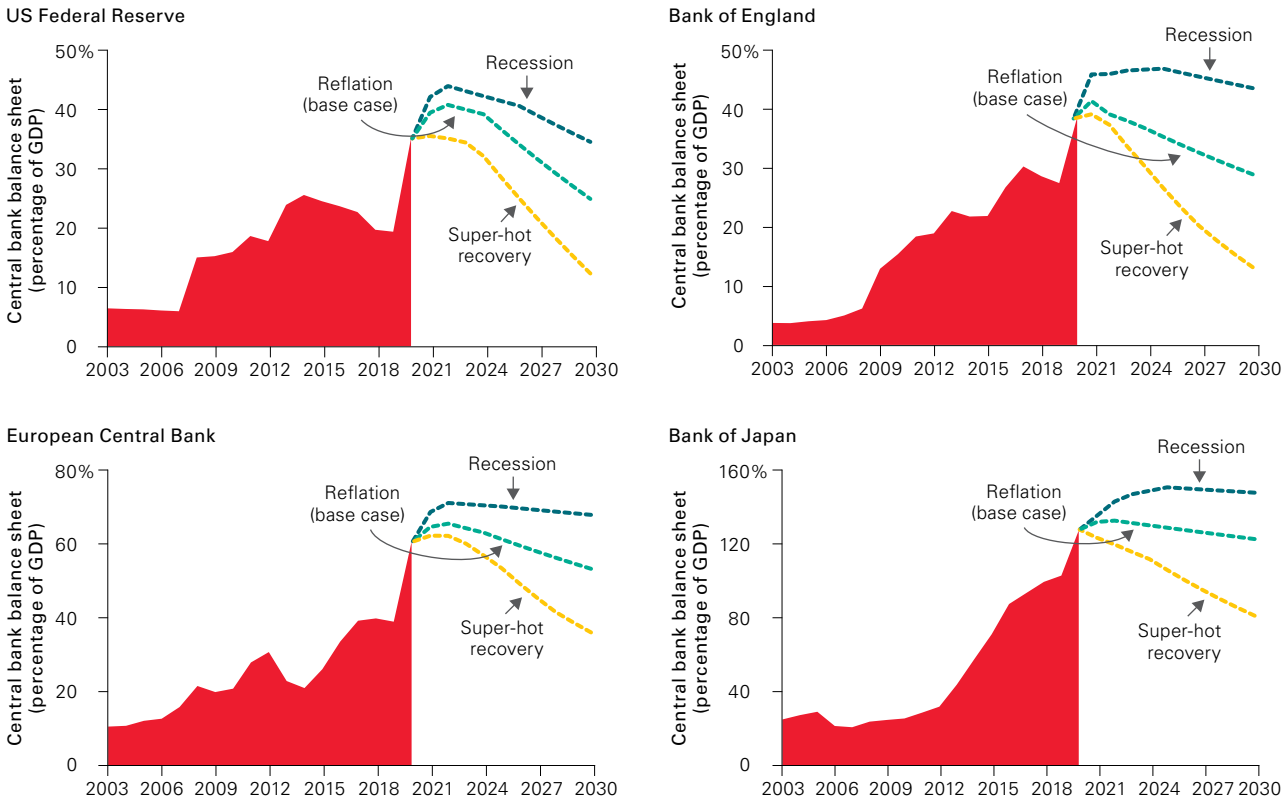
Figure 4.1. Policy rates are expected to lift only modestly over the next decade

	Lift-off date	2025	2030
Federal Reserve	Q3 2023	1.25%	2.50%
Bank of England	Q1 2023	1.25%	2.50%
European Central Bank	Q4 2023	0.60%	1.50%
Bank of Japan	—	–0.10%	–0.10%

Any projections should be regarded as hypothetical in nature and do not reflect or guarantee future results.

Source: Vanguard forecasts as at June 2021.

Figure 4.2. Central bank balance sheets are expected to remain large relative to history



Any projections should be regarded as hypothetical in nature and do not reflect or guarantee future results.

Sources: Vanguard, using historical central bank balance sheet data from Bloomberg. Historical data from 1 January 2003 to 31 December 2020; Vanguard forecasts to end 2030.

6 Central bank balance sheets are likely to be larger in equilibrium than they were before QE started, both in nominal terms and as a percentage of GDP. This is because many central banks moved from a "corridor" to a "floor" system after the global financial crisis to ensure that they can still influence short-term rates with an abundance of excess reserves. Following stricter regulatory capital and liquidity requirements, banks now also demand higher levels of central bank reserves.

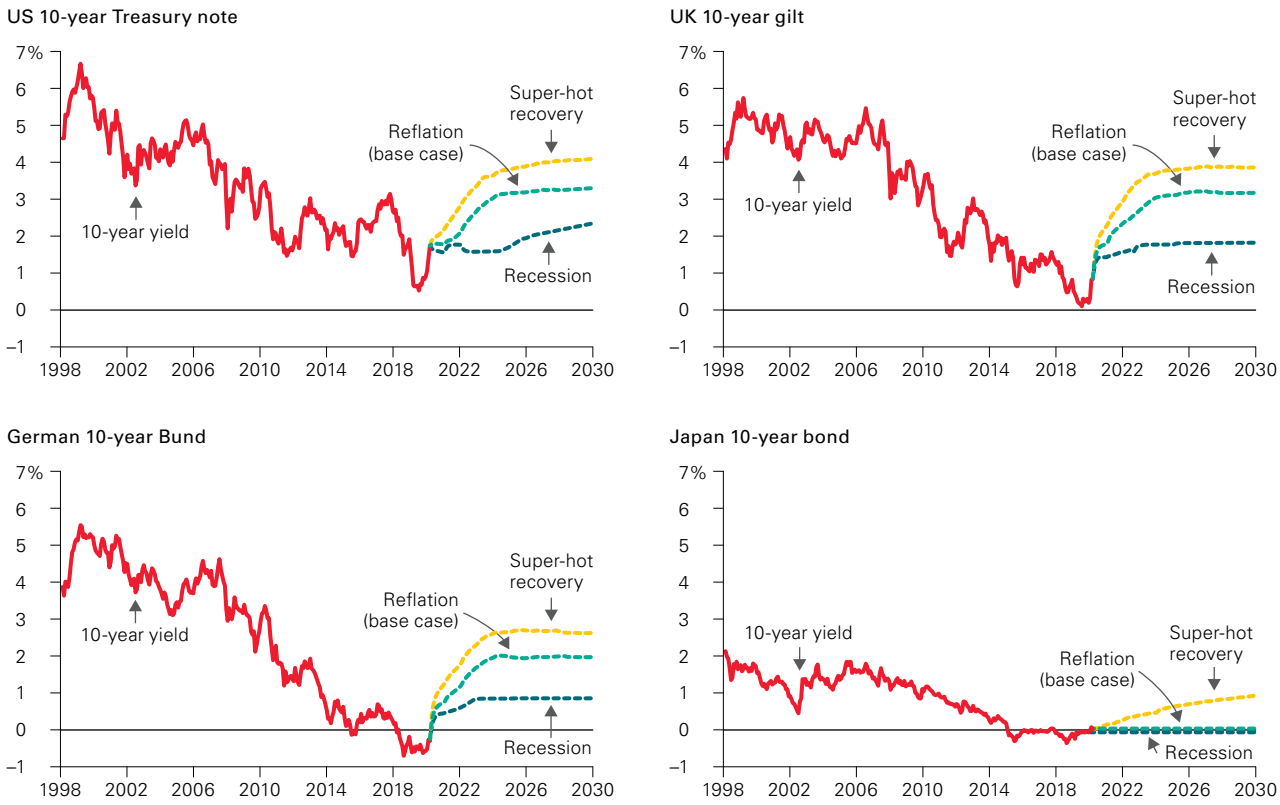
The largest increase in yields is expected in the US and the UK because of a greater expected increase in the policy rate and a greater reduction in the balance sheet. By contrast, in Japan, we do not expect a tightening of monetary policy this decade, and as such, we expect the 10-year yield to remain relatively anchored around 0%.

Even under more aggressive monetary tightening assumptions, as illustrated by our super-hot recovery scenario, where the policy rate reaches 4% in the US, 3.8% in the UK, 2.6% in the euro area and 0.9% in Japan, we are hard-pressed to see bond yields returning to pre-global financial crisis (GFC) levels.

Conclusion

The recovery from the pandemic is likely to accelerate as vaccines are rolled out and life slowly returns to normal. Despite this, it will take several years for unemployment rates and spare capacity to fall back to pre-pandemic levels and for inflation to consistently meet central bank targets. This implies that monetary policy will not begin to normalise for several years. Indeed, we expect policy rates to lift off in 2023 and rise a modest amount above the zero lower bound. Central bank balance sheets are also expected to remain elevated. The upshot of this is that bond yields will rise further over coming years but perhaps not as much as some market participants fear.

Figure 5. 10-year bond yields are expected to remain below pre-GFC levels



Past performance is not a reliable indicator of future results.

Any projections should be regarded as hypothetical in nature and do not reflect or guarantee future results.

Sources: Vanguard, using historical 10-year government bond yield data from Bloomberg. Historical data from 1 January 1998 to 31 March 2021; Vanguard forecasts to end 2030.

References

Aliaga-Díaz, Roger, Qian Wang, Joshua M. Hirt, Shaan Raithatha and Ashish Rajbhandari, 2018. *Global Macro Matters—Rising Rates, Flatter Curve: This Time Isn't Different, It Just May Take Longer*. Valley Forge, Pa.: The Vanguard Group.

Breedon, Francis, Jagjit S. Chadha and Alex Waters, 2012. *The Financial Market Impact of UK Quantitative Easing*. BIS Working Paper No 65. Basel, Switzerland: Bank for International Settlements.

Christensen, Jens H.E., and Glenn D. Rudebusch, 2012. *The Response of Interest Rates to US and UK Quantitative Easing*. Federal Reserve Bank of San Francisco Working Paper No. 2012-06. San Francisco, Calif.: Federal Reserve Bank of San Francisco.

Davis, Joseph, Roger A. Aliaga-Díaz, Peter Westaway, Qian Wang, Andrew J. Patterson, Kevin DiCiurcio, Alexis Gray and Jonathan Lemco, 2020. *Vanguard Economic and Market Outlook for 2021: Approaching the Dawn*. Valley Forge, Pa.: The Vanguard Group.

Dell'Ariccia, Giovanni, Pau Rabanal and Damiano Sandri, 2018. *Unconventional Monetary Policies in the Euro Area, Japan, and the United Kingdom*. Hutchins Center Working Paper No. 48. Washington, D.C.: The Brookings Institution.

Gagnon, Joseph, Matthew Raskin, Julie Remache and Brian Sack, 2011. The Financial Market Effects of the Federal Reserve's Large-Scale Asset Purchases. *International Journal of Central Banking* 7(1):3–43.

Gagnon, Joseph E., 2016. *Quantitative Easing: An Underappreciated Success*. Peterson Institute for International Economics, No. PB16-4.

Greenlaw, David, James D. Hamilton, Ethan Harris and Kenneth D. West, 2018. *A Skeptical View of the Impact of the Fed's Balance Sheet*. NBER Working Paper No. 24687. Cambridge, Mass.: National Bureau of Economic Research.

Joyce, Michael, Ana Lasaosa, Ibrahim Stevens and Matthew Tong, 2010. *The Financial Market Impact of Quantitative Easing*. Bank of England Working Paper No. 393. London, England: Bank of England.

Krishnamurthy, Arvind, and Annette Vissing-Jorgensen, 2011. *The Effects of Quantitative Easing on Interest Rates: Channels and Implications for Policy*. NBER Working Paper No. 17555. Cambridge, Mass.: National Bureau of Economic Research.

Middeldorp, Menno, and Oliver Wood, 2016. *Too Eagerly Anticipated: The Impact of the Extension of ECB QE on Asset Prices*. Bank Underground; available at https://bankunderground.co.uk/2016/03/04/too-eagerly-anticipated-the-impact-of-the-extension-of-ecb-qe-on-asset-prices.

Swanson, Eric T., 2011. *Let's Twist Again: A High-Frequency Event-Study Analysis of Operation Twist and Its Implications for QE2*. Federal Reserve Bank of San Francisco Working Paper No. 2011-08. San Francisco, Calif.: Federal Reserve Bank of San Francisco.

Connect with Vanguard® > global.vanguard.com

Vanguard global economics team

Joseph Davis, Ph.D., Global Chief Economist

Europe

Peter Westaway, Ph.D., Europe Chief Economist
Shaan Raithatha, CFA
Roxane Spitznagel, M.Sc.

Asia-Pacific

Qian Wang, Ph.D., Asia-Pacific Chief Economist
Alexis Gray, M.Sc.
Beatrice Yeo, CFA

Americas

Roger A. Aliaga-Díaz, Ph.D., Americas Chief Economist
Joshua M. Hirt, CFA
Jonathan Lemco, Ph.D.
Andrew J. Patterson, CFA
Asawari Sathe, M.Sc.
Adam Schickling, CFA
Maximilian Wieland
Sim Singh

Investment risk information

The value of investments, and the income from them, may fall or rise and investors may get back less than they invested.

Past performance is not a reliable indicator of future results.

Any projections should be regarded as hypothetical in nature and do not reflect or guarantee future results.

Funds investing in fixed interest securities carry the risk of default on repayment and erosion of the capital value of your investment and the level of income may fluctuate. Movements in interest rates are likely to affect the capital value of fixed interest securities. Corporate bonds may provide higher yields but as such may carry greater credit risk increasing the risk of default on repayment and erosion of the capital value of your investment. The level of income may fluctuate and movements in interest rates are likely to affect the capital value of bonds.

Important information

For professional investors only as defined under the MiFID II Directive. In Switzerland for professional investors only. Not to be distributed to the public. This document is published by Vanguard Group Inc. It is for educational purposes only and is not a recommendation or solicitation to buy or sell investments. It should be noted that it is written in the context of the US market and contains data and analysis specific to the US.

The information contained in this document is not to be regarded as an offer to buy or sell or the solicitation of any offer to buy or sell securities in any jurisdiction where such an offer or solicitation is against the law, or to anyone to whom it is unlawful to make such an offer or solicitation, or if the person making the offer or solicitation is not qualified to do so. The information in this document does not constitute legal, tax, or investment advice. You must not, therefore, rely on the content of this document when making any investment decisions.

Issued in EEA by Vanguard Group (Ireland) Limited which is regulated in Ireland by the Central Bank of Ireland.
Issued in Switzerland by Vanguard Investments Switzerland GmbH.
Issued by Vanguard Asset Management, Limited which is authorised and regulated in the UK by the Financial Conduct Authority.

CFA® is a registered trademark owned by CFA Institute.

Vanguard®

ISGFBY 062021