

Benoît Cœuré: What yield curves are telling us

Speech by Mr Benoît Cœuré, Member of the Executive Board of the European Central Bank, at the Financial Times European Financial Forum "Building a New Future for International Financial Services", Dublin, 31 January 2018.

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Accompanying [slides](#).

The US Treasury yield curve flattened considerably last year, reducing the spread between ten-year and two-year US Treasury yields to less than 60 basis points. When Alan Greenspan first referred to a bond market “conundrum” in 2005, the spread was around 80 basis points.¹ In the euro area, by contrast, the term spread remained broadly unchanged last year.

At face value, a simple reconciling factor of recent international bond price developments is the tightening cycle that has gained traction in the United States. It is well known that a rise in policy rates typically leads to a flattening of the sovereign yield curve as long-term rates tend to increase by less than short-term rates.

In my remarks this morning I will try to shed some more light on the potential factors currently affecting long-term rates. I will argue that, in and of itself, policy normalisation in the US cannot fully explain the pronounced flattening of the US Treasury curve. I will argue instead that two factors are likely to weigh on long-term yields in the US – and, in part, also on the yields in other advanced economies, including the euro area – which are fairly global in their nature and origin, namely cross-border capital flows and a depressed inflation risk premium.

The implications for policymakers are twofold. First, unlike in 2005, international capital flows mainly reflect portfolio rebalancing efforts by private investors and are less the result of interventions by official institutions.² This suggests that, while the present episode shares some similarities with Greenspan’s bond conundrum, changes in bond prices are likely to be driven by more price-sensitive investors this time around.

Second, because the decline in long-term inflation swap yields in recent years is mainly due to a fall in the inflation risk premium, market-based inflation expectations at these tenors remain well anchored at levels consistent with price stability, both in the US and the euro area. We therefore see no evidence that the long period of low inflation has undermined the credibility of central banks’ inflation aims.

Are current yield curves signalling recession risks?

Let me set the scene with a snapshot of the recent trend in the slope of the US Treasury and the German Bund curves.

You can see this on my first slide, measured as the simple difference between ten-year and two-year yields. You can see the marked flattening of the Treasury curve last year which has only recently come to a halt. The US yield curve is currently at its flattest level for more than ten years, with ten-year Treasuries yielding just about 60 basis points more than two-year bonds. At the start of 2017, the difference was around 130 basis points.

You can also see that the German Bund curve is currently about twice as steep as the US Treasury curve and has remained relatively stable, with ten-year bonds over most of the time yielding around 100 basis points more than two-year bonds – not very far from the average observed over the past 20 years.

My second slide focuses on the US Treasury curve. What you can see here is the ten-year yield

and a model-based breakdown of the yield into its two main components: the average of the current and expected future short-term interest rates over the maturity of the bond and the term premium. All series are shown as cumulative changes since the start of last year.

Two facts can be drawn from this chart.

The first is that the recent marked flattening of the curve reflects what markets call a “bear flattening” – that is, short-term rates have been rising faster than long-term rates. This is evident from the fact that the ten-year yield – the blue solid line – today is about the same as it was a year ago. Short-term interest rates, meanwhile, have risen by around 90 basis points.

At face value, this would suggest that the repricing of interest rate expectations at the short end of the US curve has not been passed through to long-term rates. This interpretation is incorrect, however.

Indeed, and this is my second point, the broad stability of the ten-year yield masks two sharply diverging developments: a marked fall in the term premium – the yellow area – and an appreciable repricing by markets of the expected future path of short-term interest rates – the dark orange area. You can see this clearly on the slide.

Put simply, if it weren't for the parallel fall in the term premium, ten-year Treasuries would trade some 50 basis points above their January 2017 levels and we wouldn't be having a discussion about flattening. US long-term yields have resisted upward pressure only because of a considerable re-compression of the term premium. Only shortly after the UK's referendum on EU membership in summer 2016 was the US ten-year term premium more negative than it is today.

This allows for one preliminary conclusion but begs one question.

The conclusion is that markets seem sanguine about the prospects for the US, and probably also for the global, economy. Judging from the average expected short-term rate over the next ten years, the markets appear to have shaken off some of the pessimism that caused them to tread very carefully over the past few years.

Past and currently expected policy rate changes are predicted to last. This also means that the flattening of the US yield curve is unlikely to signal a looming recession, as it may have done in previous business cycles.

The question, then, is what has caused the US term premium to fall to such an extent since the start of last year.

In answering this question, I will distinguish between two broad factors. The first relates to international portfolio rebalancing considerations and the second to investors' views of the risks surrounding the medium to long-term inflation outlook.

International capital flows and long-term yields

I have already examined the first factor in other speeches.³ Today I would like to shed some more light on the direction and extent of cross-border spillovers that might currently contribute to keeping long-term yields compressed.

To recall, from mid-2014 onwards we observed a striking turnaround in capital flows in the euro area from net inflows to net outflows, just when the ECB had announced its first credit easing package and when expectations were gradually growing among market participants that we would also soon begin purchasing government bonds. You can see this on my next slide.

Since then, capital outflows have remained substantial, peaking at nearly 5% of euro area GDP. What has happened is that bond investors, both inside and outside the euro area, have

rebalanced their portfolios, moving out of euro area debt securities and into the closest substitutes – bonds issued by the safest sovereigns outside the euro area. And within that asset class, most market participants have rebalanced their portfolios towards US Treasuries and government agency bonds. This confirms that the portfolio rebalancing channel has been instrumental in delivering the intended benefits of our quantitative easing.

Slide 4 shows the extent of this rebalancing more clearly. Since the start of our asset purchase programme (APP), euro area investors alone accounted for more than half of foreign purchases of US debt securities. History suggests that these shares are highly unusual for the euro area. Only recently has the share started to decline again.

Now, according to conventional models of the term structure, such capital flows should play no direct role in determining yields.⁴ In these models, the term premium reflects the covariance between expected bond returns and the representative investor's stochastic discount factor. However, the conditions under which the supply of and demand for bonds are entirely neutral on yields are very restrictive and unlikely to hold in practice.

Indeed, it is now widely accepted that arbitrageurs are often risk-averse and that many investors have so-called preferred habitats for certain assets or segments of the yield curve.⁵ Pension funds, for example, typically need to invest a significant portion of their assets in safe long-dated bonds to match the liability side of their balance sheet. With arbitrageurs capital-constrained, changes in the demand from preferred habitat investors can then affect the price of duration risk and hence term premia. The effectiveness of central bank asset purchase programmes rests on this critical assumption.⁶

It is now easy to see that these programmes can trigger substantial cross-border capital flows and that these are likely to affect the term premia of assets in the receiving economy. As a result, returns on US Treasuries, German Bunds and Japanese government bonds, given their close similarities in terms of safety and liquidity characteristics, are often driven by a common component as investors attempt to equalise their risk-adjusted returns.

Slide 5 illustrates this mechanism through the lens of a Japanese investor. It shows the evolution of the return on a ten-year Bund and equivalent US Treasury on an exchange rate-hedged basis. You can see that, in recent years, a Japanese investor in US Treasuries would have been able to lock in a significant yield pick-up over a domestic government bond, and at times also over a German Bund without incurring exchange rate risk. Only recently has it become more attractive for a Japanese investor to invest in German Bunds, reflecting the increased cost of hedging resulting from the rise in US short-term yields.

Empirical analysis on the direction of international spillovers in bond markets corroborates this view. On slide 6 you can see that ECB researchers, using the Diebold-Yilmaz methodology, find that bond market spillovers from the euro area to the United States spiked sharply by mid-2014, just when capital flows started to turn. According to this methodology, spillovers from the euro area accounted for around half the variance in US Treasuries for most of 2015. And these spillovers have been regaining momentum since mid-2017.

Strong correlation between international asset prices therefore doesn't necessarily result from a common shock. Indeed, in the light of the strong idiosyncratic forces that have increasingly driven a wedge between the monetary policy cycles of advanced economies in recent years, portfolio rebalancing by private investors due to domestic shocks is likely to have increased over time.

A dominant chase for yield by private investors, in turn, also distinguishes the current situation from that in 2005 and 2006, which was the last time global yield curves were unusually flat. Back then, purchases by foreign official institutions – themselves often reflecting large current account

surpluses in certain parts of the world – coincided to drive down long-term yields in the United States, whereas official investors have been net sellers of US long-term Treasuries over the past couple of years. You can see this clearly on my next slide. To the extent that private capital flows are more volatile, the ECB's November 2017 Financial Stability Review noted the risk of a sudden repricing in fixed income markets should investors decide to rebalance their portfolios.

Low inflation risk and bond term premia

This brings me to my second factor.

One feature that may cause global investors to rebalance their portfolios in the future is a reappraisal of the prevailing outlook for inflation and, hence, for monetary policy across advanced economies. Such a reappraisal may occur as we are currently observing that the long period of very low global inflation may have affected investors' deep-seated beliefs about the future. This is most visible when looking at current levels of long-term inflation risk premia in both the United States and the euro area.

You can see this on my next slide. Here we have a decomposition of long-term inflation-linked bonds and swaps into the same two components that I showed for nominal bonds on my second slide, namely expected future inflation and an inflation risk premium. The interpretation is identical: just as investors demand a premium for interest rate uncertainty, they also demand a premium for the uncertainty around the expected future inflation rate.

And while in the past this premium tended to be positive on average – even during the most turbulent times of the great financial crisis – it fell sharply in 2014 and is still in negative territory in the United States today. In other words, investors are willing to pay a higher price for nominal bonds because they value them as a hedge against low inflation.

So, this slide conveys two messages. The first is that markets do not question the credibility or ability of central banks to steer the economy towards their inflation aims. Medium-term inflation expectations per se have remained firmly anchored around levels consistent with price stability. This is in line with our reading of survey-based inflation expectations.

The second message is that markets are, however, deeply sceptical that inflation can surprise much on the upside in the future. This is corroborated by survey-based measures, which show that, since the financial crisis, survey participants have been more concerned about deviations in the direction of lower inflation and less concerned about deviations in the direction of higher inflation.⁷

Another way of looking at this is to consider the option-implied distribution of average inflation over the next five years. You can see this on my next slide in the case of the euro area. Although this distribution reflects expectations over a nearer horizon, it re-emphasises the point that investors assign only a small probability for inflation to surprise much to the upside. But it also demonstrates convincingly that markets have by and large priced out deflationary risks in the euro area. As you can see, when we announced the APP in January 2015 these risks were considered to be very different.

I see two main factors that may help explain why investors and professional forecasters are currently casting doubt on positive inflation risks.

The first is related to how we form our beliefs, opinions and attitudes.⁸ Specifically, the peculiar economic cycle that followed the global financial crisis – where very low interest rates around the world succeeded in reducing economic slack and in inflating the value of some assets, but not the prices of goods and services – may have made investors doubt the recurrence of upside inflation risk. And this may have led to a downward migration of the future inflation risk distribution.

This means that large shocks can push the economy into a previously unknown state – in our case a low inflation state – where the absence of, or break with, past regularities, such as the relationship between slack and inflation, may imply a long transition phase to a new steady state.⁹ Worse, if the beliefs I just mentioned guide our actions, then low growth or low inflation can be the result of self-fulfilling pessimistic expectations and can lead to so-called “stagnation traps”.¹⁰

The second, related, factor is that the nature of the uncertainties we face today may have changed compared with the pre-crisis period. For example, Barbara Rossi and co-authors find that while risk fell sharply after the great financial crisis, Knightian uncertainty – situations in which people might be unable to assign correct probabilities to future outcomes – remained persistently high even after the end of the crisis.¹¹ In these cases, investors still have to make a decision, and judgement – often based on current observables – is usually the only basis they have.

Whatever the ultimate reasons, does it matter if the inflation risk premium is low?

There are two sides to the discussion. From a *monetary policy perspective*, what matters most is that inflation expectations remain at levels consistent with price stability. At the margin, a low inflation risk premium is positive as it signals increased confidence in the central bank’s ability to achieve its inflation aim.

But from a *financial stability perspective*, and here I again refer to previous work presented in the ECB’s Financial Stability Review, a low inflation risk premium may be a matter of concern if it indicates complacency about future adjustments.¹² In this case, a reappraisal of investors’ view about future risks to global inflation may cause a correction of global risk premia, in particular in an environment of historically low volatility, as you can see on my next slide.

Oil prices may be a potential catalyst. ECB internal research finds that energy price shocks have become considerably more persistent lately, which could fool investors into believing that they are bound to stay at current moderate levels in the foreseeable future. Incidentally, as oil prices moved higher in recent weeks, the inflation risk premia also rose amid an increasing willingness on the part of investors to hedge against inflation in an environment of strongly declining deflation probabilities.

This is also consistent with survey-based evidence. For example, a recent survey of 62 fund managers by Bank of America Merrill Lynch revealed that a rise in inflation is thought to be the most underestimated tail risk for global financial markets in 2018. One fund manager in two considers a rise in inflation as a risk to current market prices.

Now, whether or not this risk is real, or how much we should worry about it, is an entirely different question. I will pass no judgment on the US. In the euro area, however, we see no such inflation tail risks at the current juncture. Inflation is expected to converge only very gradually to levels closer to 2%. For this reason, an ample degree of monetary stimulus remains necessary for underlying inflation pressures to continue to build up, and we expect the ECB’s key interest rates to remain at their present levels for an extended period of time, and well past the horizon of our net asset purchases.

At the same time, we currently see no reason to believe that the distribution of future inflation risks has moved permanently lower.¹³ It is true that it is taking longer than usual for inflationary pressure to emerge. But this is likely to reflect the delayed effects of the double-dip recession rather than structural changes to the economy.

Conclusion

Let me conclude.

Current financial market conditions have given rise to much comment. Concerns have been voiced that low long-term yields are a precursor to economic slowdown or recession. These concerns, however, are inconsistent with the marked rise in expected future short-term rates in some jurisdictions and the parallel increase in stock prices in many others. We currently see no concrete evidence of market uncertainty about the sustainability of the current economic expansion.

We do see evidence, however, suggesting that market participants globally consider upside risks to future inflation to be limited at present. While this might be a natural corollary of the protracted period of low inflation, it may also be a matter of concern if it indicates complacency over future adjustments.

However, we see no such risks in the euro area today. Accordingly, an ample degree of monetary stimulus remains necessary for underlying inflation pressures to continue to build up, and we expect the ECB's key interest rates to remain at their present levels for an extended period of time, and well past the horizon of our net asset purchases.

Thank you.

¹ See Greenspan, A. (2005), Testimony before the Committee on Banking, Housing, and Urban Affairs, U.S. Senate, February 16.

² See e.g. Warnock, F. and V. Warnock (2009), "International capital flows and U.S. interest rates", *Journal of International Money and Finance*, 28, pp. 903–919; and Caballero, R. and A. Krishnamurthy (2009), "Global Imbalances and Financial Fragility", *American Economic Review: Papers & Proceedings*, 99:2, pp. 584–588.

³ See Cœuré, B. (2017), "The international dimension of the ECB's asset purchase programme", speech at the Foreign Exchange Contact Group meeting, 11 July; and Cœuré, B. (2017), "Monetary policy, exchange rates and capital flows", speech at the 18th Jacques Polak Annual Research Conference hosted by the International Monetary Fund, Washington D.C., 3 November.

⁴ See e.g. Eggertsson, G. B. and M. Woodford (2003), "The Zero Bound on Interest Rates and Optimal Monetary Policy", *Brookings Papers on Economic Activity* No 1, pp. 139–211.

⁵ See e.g. Culbertson, J. (1957), "The Term Structure of Interest Rates", *Quarterly Journal of Economics*, 71, pp. 485–517; and Vayanos, D. and J.-L. Vila (2009), "A Preferred-Habitat Model of the Term Structure of Interest Rates", NBER Working Paper, No 15487.

⁶ See e.g. Cœuré, B. (2015), "Embarking on public sector asset purchases", speech at the Second International Conference on Sovereign Bond Markets, Frankfurt, 10 March; and Altavilla, C., G. Carboni and R. Motto (2015), "Asset purchase programmes and financial markets: lessons from the euro area", ECB Working Paper No 1864; and Blattner, T. and M. Joyce (2017), "Net debt supply shocks in the euro area and the implications for QE", ECB Working Paper No 1957.

⁷ Dovern, J. and G. Kenny (2017), "The long-term distribution of expected inflation in the euro area: what has changed since the great recession?", ECB Working Paper No. 1999.

⁸ See Kozłowski, J., L. Veldkamp and V. Venkateswaran (2015), "The Tail that Wags the Economy: Beliefs and Persistent Stagnation", NBER Working Paper No. 21719. The authors argue that if people base their beliefs on past realisations, then extreme, albeit transitory, events can generate persistent changes in our cognitive framework.

⁹ See e.g. Gerba, E. and D. Żochowski (2017), "Knightian uncertainty and credit cycles", ECB Working Paper No 2068.

¹⁰ See e.g. Benigno, G. and L. Fornaro (2017), "Stagnation traps", ECB Working Paper No 2038.

¹¹ See Rossi, B., T. Sekhposyany and M. Souprez (2017), "Understanding the Sources of Macroeconomic

Uncertainty”, Barcelona GSE Working Paper No 920.

¹² See e.g. ECB (2017), Financial Stability Review, May and November.

¹³ See e.g. Draghi, M. (2017), “Accompanying the economic recovery”, speech at the ECB Forum on Central Banking, Sintra, 27 June.