

Vítor Constâncio: Understanding the yield curve

Opening address by Mr Vítor Constâncio, Vice-President of the European Central Bank, at the ECB workshop “Understanding the yield curve: what has changed with the crisis?”, Frankfurt am Main, 8 September 2014.

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Ladies and gentlemen,

It is a great pleasure for me to welcome you on behalf of the Executive Board of the European Central Bank to this topical workshop on “Understanding the yield curve: what has changed with the crisis?”. This event is part of a sequence of very productive workshops on asset pricing that have been jointly organised by the ECB and the Bank of England for several years now. I am very pleased to see this established practice of collaboration across our two central banks continuing and gaining further ground.

I would also like to welcome all participants: colleagues from other central banks, among them many from the Federal Reserve System and from the co-organising Bank of England, the participants from academia, guests from the private sector and colleagues from the European Central Bank.

In my remarks today, I will first give a short overview of the role of the yield curve in monetary policy deliberations, mentioning also the impact of the crisis. I will then go on to talk about some topical and much discussed issues that are related to the challenges central banks face in interpreting the information coming from fixed income markets.

The role of the yield curve in monetary policy deliberations

As we all know, the understanding of the dynamic evolution and the forecasting of the yield curve has many practical applications: pricing asset and derivatives, devising strategies for public debt programs, managing risk and conducting monetary policy. An old simple use of the yield curve, more common in the US, was to use its slope to forecast recessions. In 2009, Rudebusch and Williams¹ published a paper about what they call “the puzzle of the enduring power of the yield curve” to forecast recessions. In 2006, when the US yield curve got inverted predicting a recession, the whole idea was dismissed as having finally failed only to be confirmed by the Great Recession. In a very recent paper, Chinn and Kucko² examine the issue for the US, the euro area and eight European countries. The results show that the slope indicator performance has deteriorated in recent years although it seems to work better than other leading indicators for some European countries.

Today we are mainly interested in examining the important role the yield curve has for the conduct of monetary policy.

The yield curve is important mainly for two reasons. First, it is an indicator of what the market is thinking about the expected path of future monetary policy. This follows because long-term rates under certain conditions reflect expectations of the future path of short-term rates. Of course, besides future rate expectations, longer maturity yields typically contain risk premia. The quantification of these premia is not without challenges even in normal times.

¹ Rudebusch, G. and J. Williams, (2009), “Forecasting Recessions: The Puzzle of the Enduring Power of the Yield Curve”, *Journal of Business & Economic Statistics*, *American Statistical Association*, vol. 27(4).

² Chinn, M. and K. Kucko, (2014) “The predictive power of the yield curve across countries and time”, mimeo available at http://www.ssc.wisc.edu/~mchinn/Chinn_Kucko_Feb2014.pdf

The second reason results from the yield curve being a key part of the transmission mechanism of monetary policy. Therefore, it is something the central bank wants to influence, not only just learn from. In particular, while the first step in the transmission process of monetary policy is typically related to very short-term interbank interest rates, the wider transmission requires that these effects spread more widely to medium- and longer-term rates. In the next step, the monetary policy impulse spreads to the pricing of assets that are relevant for the financing conditions of households and corporations, their consumption, production and investment decisions and, finally, inflation.

The impact of the crisis

Naturally, the crisis has brought up a number of challenges for our understanding of the yield curve.

For example, credit and liquidity premia have been important drivers of sovereign yields in the euro area and elsewhere, thereby complicating the process of inferring market expectations of the future path of policy, and also impairing the transmission mechanism of monetary policy to the wider economy. Moreover, high sovereign spreads in the euro area have raised the question of what is the appropriate yield curve to monitor. In an article in the July Monthly Bulletin we discussed this issue in the context of measuring the euro area risk-free rate. Should we use Bund yields, euro area average AAA rates or OIS rates, or does it depend on the matter at hand?

Incidentally, an intriguing question in a currency union is the following: if it is difficult to identify a risk-free rate in a currency union, this means that there is no risk-free asset either, besides the central bank's own liabilities, the currency. Whether this peculiar situation adds to the challenges facing the central bank of a monetary union, in terms of signal-extraction and analysis of expectations, I leave to you as a topic for reflection.

The crisis has also proved the important role that central banks play in influencing the yield curve through both their conventional and unconventional policies; including forward guidance, asset purchases and enhanced credit support. This raises a host of questions about the relative effectiveness of these policies, but also about conventional yield curve models and whether they adequately capture the mechanisms that explain the role of these policies, particularly given that for tractability and simplicity real-world complications like credit and liquidity premia, pricing anomalies and even the influence of the macro economy and monetary policy are often not directly considered.

It is well known that during decades the fields of finance and macroeconomics dealt with interest rates, asset prices and the yield curve in a total different way and without much interaction. As Diebold and Rudebusch point out in their book published last year on "Yield curve modelling and forecasting":³ *"In macro models, the entire financial sector is often represented by a single interest rate with no accounting for credit or liquidity risk and no role for financial intermediation or financial frictions. Similarly, finance models often focus on the consistency of asset prices across markets with little regard for underlying macroeconomic fundamentals. To understand important aspects of the recent financial crisis ... a joint macro-finance perspective is likely necessary"*.

The macro-finance approach to the analysis of the yield curve had several developments even before the crisis. In 2006, Hördahl, Tristani and Vestin,⁴ (the last two, ECB

³ Diebold, F. X. and G. Rudebusch, (2013), "Yield curve modelling and forecasting: the dynamic Nelson-Siegel approach", *Princeton University Press*.

⁴ Hördahl P., O. Tristani and D. Vestin, (2006), "A joint econometric model of macroeconomic and term structure dynamics", *Journal of Econometrics*, 131. See also by the same authors (2008), "The Yield Curve and Macroeconomic Dynamics", *Economic Journal, Royal Economic Society*, vol. 118(533).

researchers), published a paper embedding the analysis of the term structure of interest rates into a DSGE model. With a few changes in the standard framework of the time, they were able to replicate key features of the term structure usually present in the data. Diebold, Rudebusch and Aruoba, also in 2006,⁵ provided a bidirectional connection between the factors of a dynamic Nelson-Siegel model of the yield and macro variables. The first factor, the level, showing a high correlation with inflation and the second factor, the slope, being highly correlated with real economy activity. Later, in 2007, Rudebusch and Wu⁶ developed a macro-finance model with a no-arbitrage dynamic specification of the term structure and a small new Keynesian model. In an application of this model to the great moderation period, they find the level factor associated with the perceived inflation target of monetary policy and the slope factor connected with the cyclical response of monetary policy with the economy. The field of macro-finance continued to expand and recently focused on how to consider the zero lower bound into yield curve models and we have an example of that research in our workshop.

Current policy questions

Judged in terms of the number of policy questions, this is an excellent time to be doing research on yield curves. Yields in the euro area have recently fallen to record lows. Does this reflect the underlying fundamentals in the euro area, the expectation of additional monetary loosening, or some kind of mispricing by markets? What is the risk that yields could suddenly snap back to much higher levels?

For all the analysis that has been done on the effects of unconventional monetary policies on the yields curve, there is still a great deal of disagreement on the effectiveness of these policies and the main channels they work through. What can be said about this and how can we best evaluate the relative impact of these policies? As well as guiding the future use of these policies, this is also important for gauging the likely impact when these policies are removed. With the Fed about to end its asset purchases and both the Fed and Bank of England expected to start raising policy rates next year, long rates should have increased. However, in the US, after an increase last year following the May tapering announcement, long rates have been decreasing since the beginning of the year in what James Hamilton has called the bond market *conundrum redux*.

Given that the euro area is some way from exiting non-standard policies, a related issue is on the nature of the likely spillovers of the US monetary policy. At various times in the past, we have seen US and euro yields move very closely together but they have diverged somewhat recently. In contrast, UK and US rates are currently very closely linked. What determines the degree of coupling or decoupling between yields and what can we expect going forward? And finally, when do markets expect the ECB to start raising rates? Given the role of term premia and the impact of the zero lower bound, how can we best estimate this date?

The workshop papers and concluding remarks

Many of these issues are taken up in some way by the papers that are going to be discussed over the next day and a half. A couple of the papers will look at the impact of Treasury supply on yields, drawing on new research based on the US experience and also research on the economic mechanisms involved, the so-called portfolio balance channel. There are also

⁵ Diebold, F. X., G. Rudebusch and S. B. Aruoba, (2006), "The macroeconomy and the yield curve: a dynamic latent factor approach", *Journal of Econometrics*, 131, 309–338.

⁶ Rudebusch, G. and T. Wu (2007) "Accounting for a shift in term structure behaviour with no-arbitrage and macro-finance models", *Journal of Money, Credit and Banking*, 39, 395–422.

some papers that look more specifically at recent asset purchase programmes and how they have affected yields and also the spillovers from them to other countries.

Other papers look at the impact of monetary policy on the yield curve, finding for example that monetary policy is one of the factors that explain movements in the term premium. There are also several papers that estimate so-called shadow rate models that recognise the zero lower bound that prevents interest rates going negative. There are also papers that look more specifically at euro area bonds markets during the crisis and the role of credit and liquidity premia and evidence of pricing anomalies, in both cases highlighting the role of the ECB's interventions.

We are also pleased to welcome two keynote speakers from the US, Gregory Duffee and Glenn Rudebusch, who are both leading researchers in the literature, representing academia and the Federal Reserve System, respectively. Both will talk about the influence of unconventional monetary policy on the yield curve and it will be enlightening to hear their perspectives on the subject.

Finally, we have a distinguished panel of market experts, who have been primed to talk to some of the issues I have mentioned, followed by a Q & A, which should ensure that the workshop ends on a high note.

These are the reasons that make almost superfluous my wish for some stimulating discussions over the next day and a half and a very productive workshop.

Thank you for your attention.