

Distortions in rate curves: The Spanish Treasury curve, a case in point

David Cano and Miguel Arregui¹

Monetary authorities' reactions in response to the Great Recession have altered the path of financial variables, including exchange rates and, most particularly, interest rates. The resulting financing environment should ultimately improve the debt sustainability outlook for Spain.

Unconventional monetary policy measures pursued by central banks in response to the failure of the monetary transmission mechanism have distorted financial variables. The most notable effect has been on long-term interest rates, which have been driven down below levels justified by economic fundamentals and into negative territory. At present, the ECB's extraordinary lax monetary conditions, coupled with a more positive outlook for the Eurozone and subsequently debt/GDP stabilisation, have reduced financing costs for public debt, despite record high levels. Moreover, given that price and volatility are traditionally negatively correlated in the sovereign debt market, the sharp reduction in price volatility, coupled with the extensive liquidity facilities guaranteed by the ECB, is now fuelling the purchase of peripheral sovereign bonds, driving yields south, especially now that GDP has ceased contracting. All of this should contribute to stabilisation of the ratio of debt-to-GDP in these countries, Spain included.

Introduction

In recent decades, the main tool available to central banks has been the interest rates charged to banks for the provision of very short-term funding. In the structural liquidity deficit environment triggered by the reserve requirement, the monetary base barely moved, which meant that in practice, this mechanism did not perform its role as a monetary policy tool. The banking system took care of transmitting monetary policy by increasing the monetary supply and altering its cost by means of the money multiplier and the

interbank interest rate. However, the solvency problems engulfing the credit system –across the US, Eurozone and UK– since the end of 2008, and the limited scope for further benchmark rate cuts, have prompted the central banks to take direct aim at the monetary base in an attempt to sway longer term interest rates.

10-year rates, below nominal growth. The US and German cases

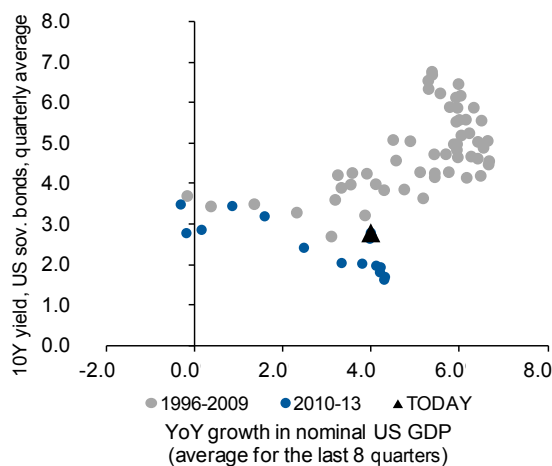
There is abundant literature underpinning the thesis that long-terms rate should match nominal

¹ A.F.I. - Analistas Financieros Internacionales, S.A.

GDP growth, i.e., the rate of real growth plus the rate of inflation. This figure then has to be grossed up, as warranted, by risk premiums, such as the liquidity risk premium and, above all, the credit risk premium. Since the outstanding balance of sovereign issues in developed countries is very high, the liquidity risk premium can be disregarded in determining 10-year sovereign rates. And, to an extent, at least for treasuries with high credit standing, the credit risk premium can be similarly omitted. Accordingly, the long-term sovereign interest rate should coincide with nominal GDP growth. This has been largely the case until the start of the Great Recession, as depicted in Exhibits 1 and 2 below (for the US and Germany, respectively).

Exhibit 1

Growth in nominal GDP and 10-year rates in the US



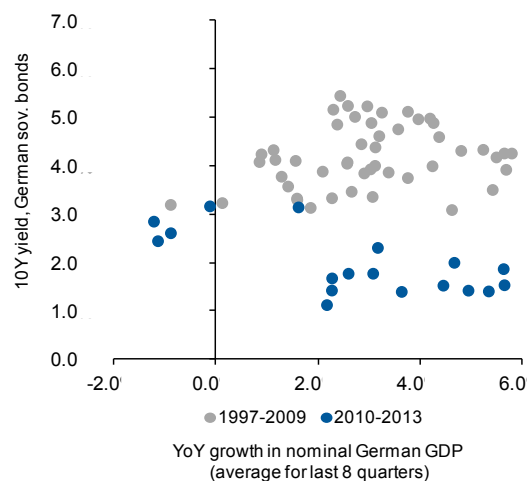
Sources: Bloomberg and AFI.

However, since 2008, central bank reliance on non-conventional monetary policy, the main tool being the direct buyback of debt (in the form of successive quantitative easing programmes by the Federal Reserve in the US) or the injection of liquidity into the banks, mainly for the purpose of facilitating their purchase of sovereign bonds (the ECB's 3-year LTRO facilities), has clearly distorted this relationship. This distortion is evident

in the two Exhibits: the readings corresponding to recent years are far removed from the regression line and well below theoretical yield levels for a given nominal GDP figure.

Exhibit 2

Growth in nominal GDP and 10-year rates in Germany



Sources: Bloomberg and AFI.

Central bank intervention is shaping the long end of the interest rate curve, thereby expanding the monetary authorities' scope of intervention, which until 2008 had been substantially limited to the short end of the curve. In short, the drop in the money multiplier, and the associated interference with monetary policy transmission, is obliging the monetary authorities to act on other financial variables (and not just rate curves, as their interventions are affecting stock market prices) and this has emerged as the crux of the current debate about the role of the central banks.

Negative interest rates: An anathema?

Not only has central bank intervention driven nominal long-term rates below the levels justified by economic fundamentals, it has resulted in extraordinary circumstances, such as negative

interest rates. This anomaly is forcing economists to revisit certain economic theories and conventions which held that rates could not go below 0.0%. While it was perhaps possible in the summer of 2012, i.e. at the height of the Eurozone sovereign debt crisis with the economic bloc's survival in doubt, to justify negative rates on German paper as a result of its undeniable role as safe haven, the fact that a good number of sovereign issuers are looking at below-zero rates today is more surprising. Moreover, another unique factor has come into play: the rate on the ECB's marginal deposit facility is also in negative territory.

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Since June 6th, the ECB has been remunerating the overnight deposits it accepts from banks at -0.10%, unquestionably distorting overnight

Table 1

Sovereign interest rates
(data as of August 28th, 2014)
(percentage)

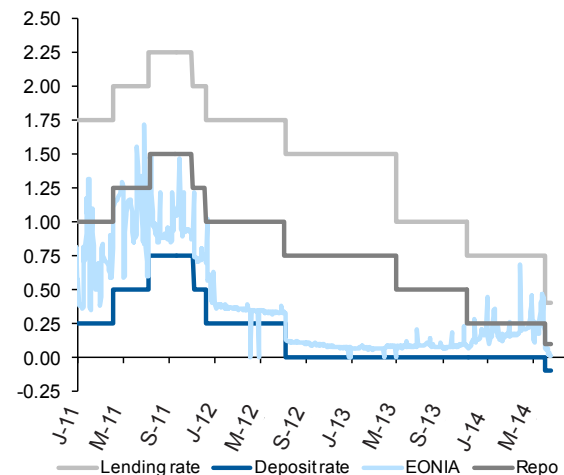
	1Y	2Y	3Y	4Y
Germany	-0.04	-0.04	-0.03	0.04
Ireland	-0.12	-0.02	0.24	0.43
Austria	-0.02	-0.01	0.05	0.14
Belgium	-0.01	0.00	0.05	0.15
Netherlands	-0.03	-0.01	0.01	0.07
Finland	-0.13	-0.03	0.02	0.08
Denmark	-0.13	-0.01	0.00	0.00
France	-0.01	0.01	0.06	0.19
Spain	0.09	0.11	0.35	0.59
Italy	-0.02	0.44	0.00	1.03
Portugal	0.05	0.61	0.93	1.29

Source: Bloomberg.

rates. As illustrated in Exhibit 3, the EONIA rate is trading at around 0.0%, i.e., not at negative levels, in contrast to a fair number of euro area sovereign issues (e.g. German bonds out to the 3-year maturity). The reason for these negative interest rates, in addition to the abundance of liquidity injected by the ECB, lies with the outlook for low inflation in the short term. The negative rates are no longer really shaped by the risk of the break-up of the EMU or economic uncertainty, as equities have been notably bullish in recent months. Regardless of the causes, the convention that interest rates were subject to an unbreakable floor of 0.0% needs to be rethought.

Exhibit 3

Benchmark ECB rates vs. EONIA
(percentage)



Source: ECB.

When interest rates and sovereign debt balances head in opposite directions: The case of Spain

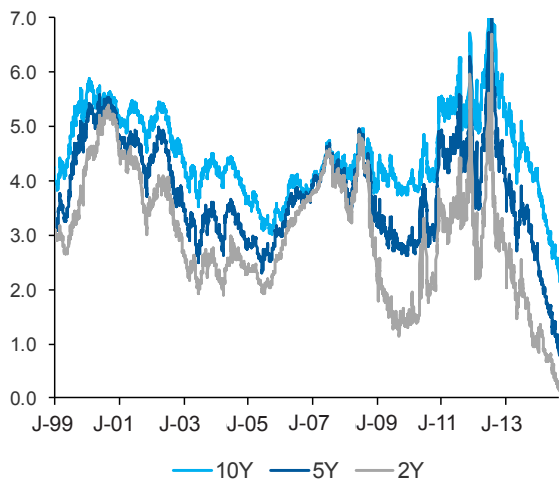
As is well known, Spain, along with the rest of the EMU periphery, saw its cost of borrowing rise sharply from early 2010 (Exhibit 4).

Until that juncture, sovereign debt had reliably provided safe haven during the periods of

Exhibit 4

Trend in Spanish sovereign yields (several maturities)

(percentage)



Source: Bloomberg.

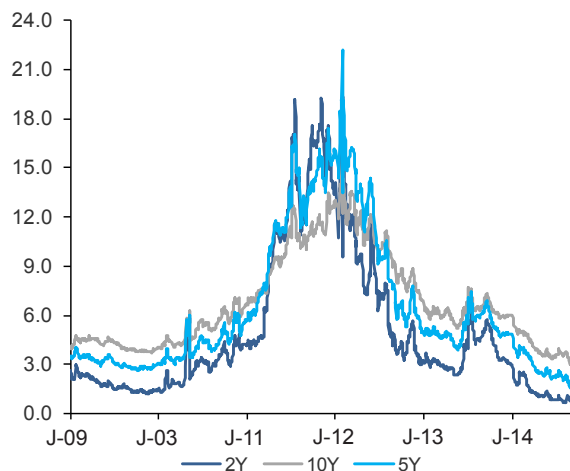
public debt was higher than previously reported unleashed a wave of investor jitters with respect to all the more vulnerable economies. The subsequent bailouts of Ireland and Portugal had the effect of sending peripheral sovereign rates spiralling higher, even as yields in core issuer nations tightened (Exhibit 5).

This rate upswing was exacerbated by the disclosure of solvency issues at Bankia (May 2012) as well as murmurings by certain national authorities about their possible exit from the euro area. All this until the ECB chairman, Mario Draghi, made his now famous speech on July 23rd, 2012, ("whatever it takes") and the subsequent announcement, in September, of the OMT programme.² Indications signalling the possible end of the recession, the first signs of GDP growth and a slew of ratings upgrades have since driven a reduction in peripheral sovereign rates that can only be described as extraordinary, just as the upward spiral had been similarly unprecedented.

Exhibit 5

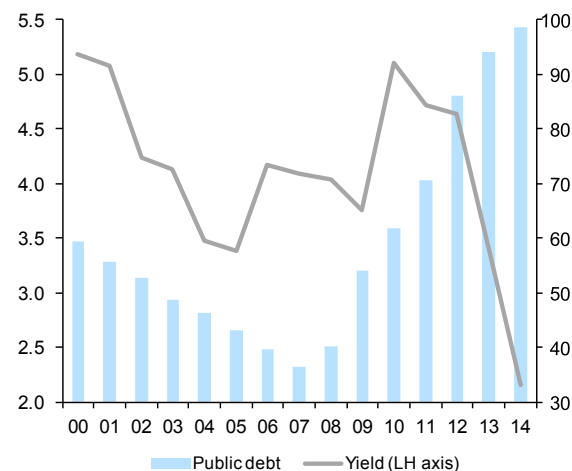
Trend in Portuguese sovereign yields (several maturities)

(percentage)



Source: Bloomberg.

Exhibit 6

Trend in Spanish sovereign interest rates (yield, %) and Spanish sovereign debt levels (debt/GDP, percentage)

Sources: Spanish Treasury, Bank of Spain and AFI.

² A monetary policy tool as yet unused.

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And here we stumble upon fresh evidence challenging another of the precepts of basic financial theory: the relationship between outstanding debt and its interest rate. Exhibit 6 illustrates the trend in both variables in the case of the Spanish Treasury, evidencing the fact that the positive correlation has decoupled since 2012. Unquestionably, the extraordinarily lax monetary conditions imposed by the ECB, coupled with the growth in the monetary base, explain the fact that the cost of financing has fallen back to historical lows despite record levels of public debt. Dissipation of the fear of a euro area break-up and, more recently, the outlook for renewed economic

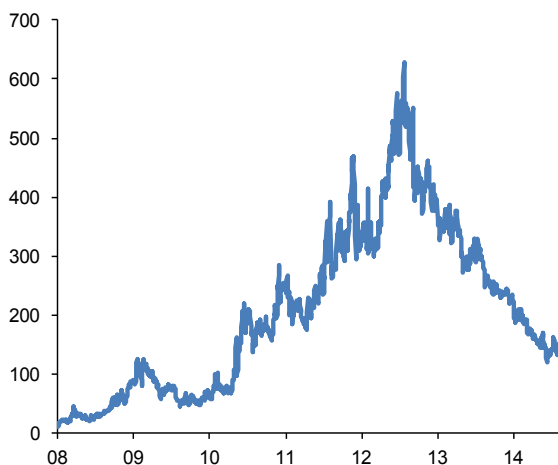
growth and, therefore the prospect of stabilisation in the ratio of debt/GDP (all of which are reflected in the spread between the Spanish and German 10Y bond yields, Exhibit 7), are the main factors explaining the breakdown of the traditionally positive correlation between outstanding debt and borrowing costs.

Relationship between curve movements and volatility: Impact on public debt portfolio management

There is evidence of negative correlation between the trend in financial asset prices and their volatility. To measure this correlation, we resort to the unbiased estimator, i.e., the sample quasi standard deviation of daily returns. In the absence of consensus regarding the size of the moving average sample window, the most common approach is to take a 6 month window, which is what is used to prepare Exhibit 8, which depicts the Eurostoxx 50 and its volatility. The symmetry is obvious: index gains are accompanied by reductions in volatility and vice versa.

Exhibit 7

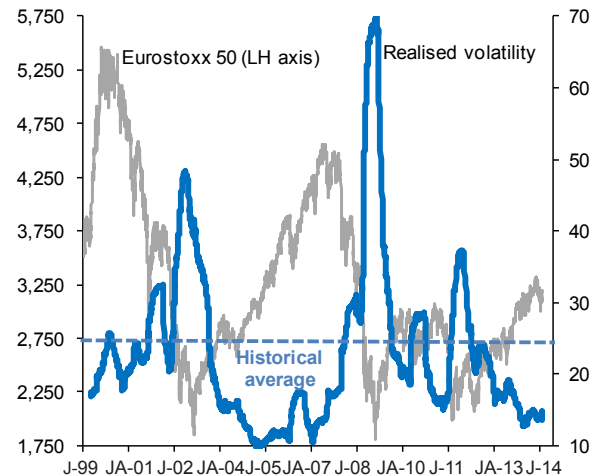
Trend in the 10Y Spanish risk premium (basis points)



Source: Bloomberg.

Exhibit 8

Trend in the Eurostoxx (level) and volatility (6m sample window, percentage)



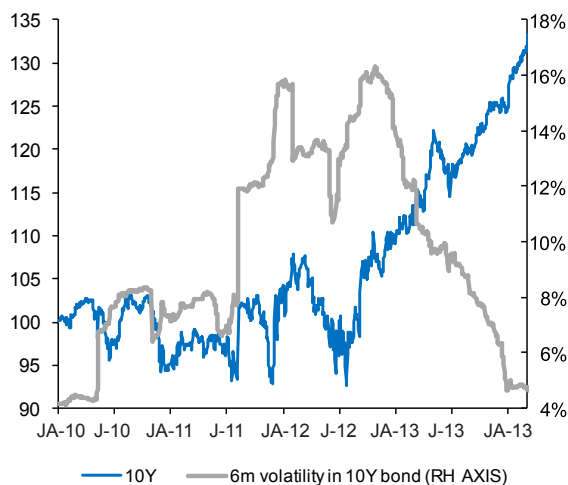
Sources: Bloomberg and AFI.

Accordingly, during periods of price corrections, there tends to be greater volatility, which may condition the actions of portfolio managers restricted by certain market risk parameters. It is increasingly common to encounter portfolio VaR (value-at-risk) limitations, an indicator which is closely linked to market risk, as is well known. Imagine a portfolio manager operating with a portfolio VaR limit of 5.0%. If volatility increases during episodes of price correction, he or she will be obliged to modify the composition of the portfolio, unwinding positions in more volatile assets in order to replace them with less volatile (more liquid) assets.

There are additional risk control techniques which factor in not only portfolio volatility as a whole but also that of the underlying assets so that a spike in the volatility of a specific asset above the stipulated threshold will force the portfolio manager to unwind the position. This risk control methodology is not exclusive to equities; it is also used in managing public debt portfolios, albeit obviously using lower volatility thresholds.

Exhibit 9

Trend in the Afi 10Y Spanish sovereign bond index (total return) versus its volatility (6m sample window)



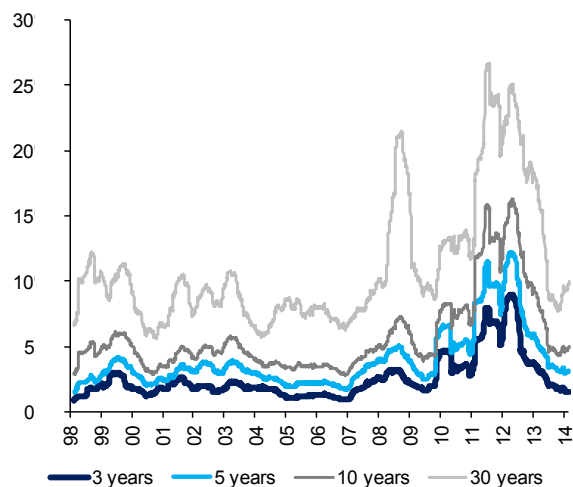
Sources: www.afi.es and AFI.

Exhibit 9 shows the trend in the Afi 10Y Spanish sovereign bond index versus its volatility. Once again in this instance, we note that price corrections (increases in yields), as we saw at the end of 2011 and 2012, drove spikes in the VaR of portfolios invested in Spanish public debt to levels that were significantly above long-run averages and certainly above the levels permitted to many fixed income portfolio managers.

Exhibit 10 illustrates the trend in the volatility of Afi's various Spanish sovereign debt indices, revealing that risk intensified sharply over all maturities. Table 2 compares the historical average volatility of the various sections of the sovereign rate curve with the highs of 2012 and the averages for other financial asset classes. Note that volatility doubled, unquestionably prompting a large number of players to automatically unwind their sovereign debt positions, irrespective of their opinions as to the likelihood of a default by the Spanish Treasury. The 10-year bond experienced volatility akin to that of equities. These forces

Exhibit 10

Trend in the volatility (6m sample window) of Afi's Spanish sovereign debt indices at various maturities (total return)



Sources: www.afi.es and AFI.

combined to generate price corrections which, in turn, drove volatility higher, creating a vicious circle which hindered the public deficit reduction process, which in practice derived from restrictive monetary policy for a country in the throes of recession.

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Table 2

Volatility of the Afi Spanish sovereign debt indices and the Afi investment fund indices (6m sample window). Historical average, average between June and September 2012 and record high (*)

Category	Historical	Jun-Oct. 12	High
1d repos	0.1%	0.0%	0.0%
Bills	1.3%	2.5%	3.3%
3Y bonds	3.1%	7.7%	8.9%
5Y bonds	4.6%	10.6%	12.2%
10Y bonds	6.5%	14.2%	16.3%
30Y bonds	12.1%	22.7%	26.7%

Category	Historical	High
High yield	4.2%	11.4%
Convertible fixed income	5.0%	10.7%
Emerging market fixed income	7.8%	14.5%
USD/EUR	9.7%	19.8%
Commodities	12.3%	23.1%
Euro equities	15.8%	35.6%

Note: (*) In the case of Afi's sovereign debt indices, these highs were reached in the summer of 2012, compared to the end of 2008, in the wake of the Lehman Brothers bankruptcy, as in the case of Afi's investment fund indices.

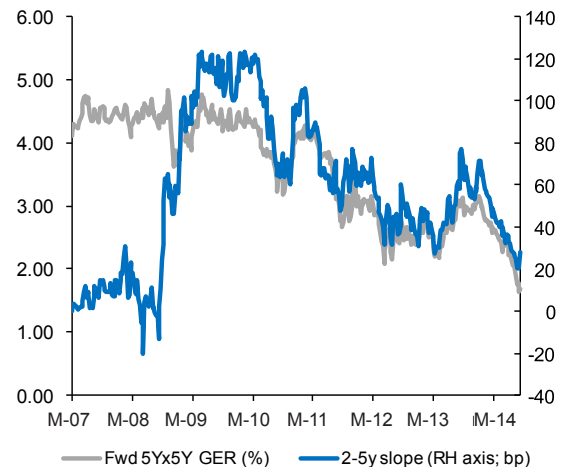
Sources: www.afi.es and AFI.

Curve slopes

The unconventional monetary policy pursued by the central banks has had the effect of depressing rates at the long end of the sovereign rate curves. Forecasts for low growth and inflation, coupled with an abundance of liquidity, are the prime causes. Exhibit 11 illustrates the market's outlook, using the German rate curve, for low 5-year rates five years out as a result of the delicate health of the euro area economy as a whole.

Exhibit 11

5 year, 5-year forward rate (5-year rates discounted by the market for 5 years' time) and 2-5 year slope (German curve)

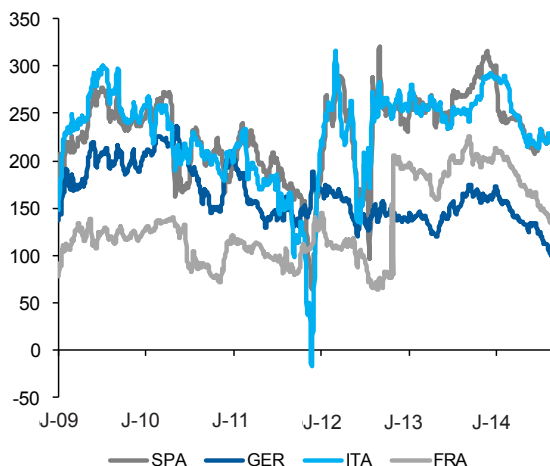


Sources: Bloomberg and AFI.

These two factors - low expectations coupled with short-term rates of zero - have shifted investors further out along the yield curve in search of higher returns. The upshot: significant curve flattening for both core and non-core sovereign issuers.

This trend could well continue, especially if prevailing macro and financial constraints persist. The phenomenon could even become more pronounced if the ECB announces any additional monetary stimulus measures (quantitative easing

Exhibit 12

**2Y-10Y slopes across euro area countries
(basis points)**

Sources: Reuters and AFI.

sovereign yields (summer 2012), proving that in this market, as in the equities market, prices and volatility are negatively correlated. The increasingly frequent risk control mechanisms used in portfolio management may have exacerbated the sell-off by institutional investors of the sovereign debt of countries such as Spain when volatility peaked well above long-run averages. Working the other way, the sharp reduction in price volatility, coupled with the extensive liquidity facilities guaranteed by the ECB (most recently the TLTRO facilities), is now fuelling the purchase of peripheral sovereign bonds, driving yields south, especially now that GDP has ceased contracting. All of this should contribute to stabilisation of the ratio of debt-to-GDP in these countries, Spain included.

in the form of public bond buybacks), particularly in peripheral countries. In fact, the 2Y-10Y slopes for Spanish and Italian sovereign paper are currently around 50 basis points above their long-run average, whereas core sovereign issuers' slopes are broadly in line with historical levels.

Conclusions

Interest rate curve yields have settled at all-time lows. The intense bout of benchmark rate cutting by the central banks accounts for the drop, especially at the short end of the curve, in sovereign yields. However, at the long end, the downward trend in yields is also being shaped by sharp growth in the monetary base. Yields have dipped below the levels dictated by economic fundamentals, i.e., nominal GDP growth or the outlook for the trend in benchmark rates. The existence of negative rates provides further evidence of the extraordinary times being lived by the fixed-income market, a market which has also sustained sharp increases in volatility, particularly along the euro area's periphery. This phenomenon coincided in time with the surge in