Market Pulse

Implications of ECB QE on CEE-3 term premia

Introduction

Term premia in local bonds of CEE-3 could fall if ECB QE surprises to the upside, with Poland likely to outperform. In fact, Polish local bond yields appear particularly attractive given still-wide term premia stemming from recent political noise due to the change in government last October. On the other hand, risk premia in Czech Republic and Hungary appear stretched already. We estimate that an unexpected increase in the European Central Bank’s QE program worth EUR 10bn should cause 10-year term premia in CEE-3 to decline by 38bp (Czech Republic), 22bp (Hungary) and 21bp (Poland). The market seems to be pricing in an expansion of asset purchases of roughly EUR 10bn per month, though there is scope for an upward surprise.

Our analysis also shows that risk premia in CEE-3 economies have been sizable throughout the sample period, but have declined significantly in the years following the Global Financial Crisis, driven by disinflationary dynamics and easier monetary policies (both globally and at the regional level). CEE-3 risk premia now look negligible for Czech Republic and Hungary. On the other hand, Polish term premium has spiked as of late, driven by more uncertain domestic politics following last year’s elections that put the right-wing PiS party back in power. Finally, we find that the unemployment rate plays a significant role for most countries in CEE-3, though the role of inflation volatility is less definite.

1 CEE-3 refers to Central & Eastern Europe, in particular the three countries of the Czech Republic, Hungary, and Poland.

2 ECB: European Central Bank.

3 QE: Quantitative Easing.

4 We use “term premium” and “risk premium” interchangeably.

5 Forecasts/estimates are based on current market conditions, subject to change, and may not necessarily come to pass.
Term premium model

The bond market term premium refers to the compensation demanded for holding long-maturity bonds. The expectations hypothesis of the term structure of interest rates postulates that longer rates are simple averages of future short-term interest rates and that risk premium is zero. Thus, under this hypothesis, an upward-sloping curve implies expectations of increasing short-term rates in the future. However, empirical literature has provided ample evidence that the expectation hypothesis does not hold, as investors demand non-negligible (and time-varying) compensation for holding duration risk. Furthermore, risk premium appears to be driven by economic fundamentals. For example, a recent term structure model developed by researchers at the New York Fed\(^6\) show that estimates of US term premia are countercyclical, rising during recessions and falling during expansions, which is in line with macroeconomic models showing that risk premium is higher in “bad” states of the world, and lower in “good” states of the world. In addition, the same authors have shown that US term premium is positively correlated with disagreements among analysts over the level of future bond yields. Other research points to a positive relationship between term premium and measures of inflation volatility.\(^7\)

Literature on term premia has largely focused on developed markets, given their ample liquidity and the availability of long time series, while work on emerging market risk premia has been infrequent.\(^8\) In the present piece, we attempt to fill this gap and report estimates of term premium for EM local currency bonds. We fit a dynamic no-arbitrage model of the term structure on EM local currency zero-coupon bond yields, following the methodology introduced by Adrian, Crump, and Moench (ACM) at the NY Fed. ACM estimate a five-factor model of the US term structure via ordinary least-squares regressions.\(^9\) In our analysis of CEE-3 term premia, we use Bloomberg’s monthly zero-coupon bond yields for maturities ranging from 3 months to 10 years, spanning the January 2004–February 2016 period.

ECB Asset Purchase Program

In an effort to achieve its “just below 2%” inflation target, on January 2015 the ECB announced an expanded asset purchase program, which added public sector securities buying to the existing private sector asset purchase program. Total monthly purchases under the expanded program amount to EUR 60bn, and were initially set to expire on September 2016. Despite the massive intervention by the ECB, inflation expectations remain stuck at levels substantially below the 2% target. This fact together with a fragile Euro Area recovery, deflationary pressures from plummeting oil prices, fears over Chinese growth, and the latest slowdown in US activity have led markets to anticipate further ECB easing measures. In fact, at a press conference following the January 23 meeting, ECB Governor Mario Draghi hinted at further policy action as early as March 10. Potential measures would include another cut in the deposit rate, and/or a pick-up in the pace of asset purchases by at least EUR 10bn/month.

Sizable, though declining, CEE-3 term premia

CEE-3 comprises a set of open economies, highly-linked to the Euro Area, in particularly, Germany. Additionally, these countries have developed financial markets featuring heavy participation of Eurozone-based investors. Therefore, financial developments in the Euro Area,

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\(^7\) Jonathan Wright, Term Premiums and Inflation Uncertainty: Empirical Evidence from an International Panel Dataset, Federal Reserve Board, 2008-25.

\(^8\) See, for example, Demyanets, Alexander, Estimating term premia in local currency bonds, Citigroup, Emerging Markets Strategy, October 14, 2015, and references therein.

\(^9\) For further details, see the Appendix.
such as ECB easing, should have significant spillover effects on local markets in CEE-3 (the figure below shows the high level of correlation between Bunds yields and CEE-3 yields).

Display 1: **10-year Government Bond Yields**

![Graph showing 10-year Government Bond Yields](image)

Source: Bloomberg.

We plot CEE-3's 10-year term premia estimates from the ACM model. Risk premia has been sizable and time-varying during the sample period, averaging 233bp, 202bp, and 201bp for Czech Republic, Hungary, and Poland, respectively. However, CEE-3 term premia have steadily declined since the end of the Global Financial Crisis, with short-lived spikes caused by different episodes in the Eurozone crisis, and by idiosyncratic developments (most notably in Hungary during 2011, on the back of PM Orbán's controversial policies). As of last month, term premia in Czech Republic at -26bp was close to revisiting all-time lows reached prior to the “Bunds taper tantrum” in May-June ’15. Meanwhile, term premia in Hungary as of last month turned negative (-14bp) but still above all-time lows reached in January 2015 (-74bp). The situation was different in Poland, where term premia remained relatively elevated at 89bp last month, after spiking last November on heightened political uncertainty brought about by the new PiS government. We also note that 10-year Eurozone term premium (computed from 10-year Bunds) is also trading at all-time low levels, offering no cushion in a situation where ECB disappoints the market and delivers less easing than expected.

Display 2: **10-year Yield Term Premia**

![Graph showing 10-year Yield Term Premia](image)

Source: MSIM estimates.

Another observation from the chart above is that CEE-3 term premia series tend to co-move, suggesting that common factors (likely global ones such as QE) have an influence on their behavior.
ECB’s QE plays a significant role at explaining CEE-3 term premium

Our regression results show that ECB’s asset purchase program has significant effects on CEE-3’s 10-year term premia. For example, an unexpected expansion of the ECB asset purchase program by EUR 10bn in the March 10 meeting should cause reductions of 10-year term premia of 38bp in Czech Republic, 22bp in Hungary, and 21bp in Poland.

We conducted the country-by-country regressions of monthly term premium for the January 2004 – February 2016 period on the following variables: seasonally-adjusted unemployment rates, inflation volatility, VIX (to account for global risk aversion), and ECB’s net purchases of debt securities under the Public Sector Purchase Program (to capture ECB easing).

Display 3: Regression Results

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>CZECH REPUBLIC</th>
<th>HUNGARY</th>
<th>POLAND</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERCEPT</td>
<td>36.3</td>
<td>-72.7</td>
<td>188.0</td>
</tr>
<tr>
<td>UNEMPLOYMENT</td>
<td>13.6</td>
<td>28.9</td>
<td>11.2</td>
</tr>
<tr>
<td>UNOBLATION volatility</td>
<td>50.9</td>
<td>-31.8</td>
<td>-145.4</td>
</tr>
<tr>
<td>VIX</td>
<td>2.6</td>
<td>4.5</td>
<td>4.2</td>
</tr>
<tr>
<td>ECB NET PURCHASES (IN EUR BN)</td>
<td>-3.8</td>
<td>-2.2</td>
<td>-2.1</td>
</tr>
<tr>
<td>R²</td>
<td>57%</td>
<td>67%</td>
<td>45%</td>
</tr>
</tbody>
</table>

Coefficient estimates and t-stats below. ECB denotes ECB’s net asset purchases (in EUR bn). Variables in bold type denote significant estimates at 5% level, while those in italics denote significant estimates but with counterintuitive signs. Forecasts/estimates are based on current market conditions, subject to change, and may not necessarily come to pass.

Unemployment rates in Hungary and Poland play a large role in explaining variation in term premium, though they are only significant at the 10% level in Czech Republic. On the other hand, the impact of inflation volatility on CEE-3 term premium is more debatable: it displays the correct (positive) sign and at a significant level only in Czech Republic, whereas in the remaining countries it remains significant but with a counterintuitive (negative) sign. Meanwhile, the VIX index, a proxy for global risk aversion expectedly plays a large role in explaining variation in risk premia across all CEE-3 economies.

The hypothesis is that term premium is countercyclical, rising during recessions (when unemployment is high) and falling during expansions. See http://libertystreeteconomics.newyorkfed.org/2013/04/do-treasury-term-premia-rise-around-monetary-tightenings-.html#.VsYCl172bcs.

We expect a positive relation between inflation volatility and risk premium, as higher uncertainty over inflation would prompt investors to demand additional compensation for holding long-term nominal bonds. We measure inflation volatility as the three-year rolling standard deviation of historical inflation.

The significance level is the probability of rejecting the null hypothesis when it is actually true (in this case, the null hypothesis that the explanatory variable (unemployment) has no effect on the dependent variable (the term premium)). The usual significance level in statistical tests is 5%, whereas a 10% level implies a higher probability of rejecting a null hypothesis that is true, and thus a lower confidence level.
Conclusion

We estimate a dynamic term structure model for CEE-3 local yields. Our analysis shows that CEE-3 term premia are sizable, time-varying and highly correlated with each other. We estimate that an unexpected EUR 10bn increase in ECB asset purchases would bring term premia down by 38bp, 22bp and 21bp in Czech Republic, Hungary, and Poland, respectively. Despite Czech Republic’s higher sensitivity to surprises in ECB asset purchases, we are reluctant to increase duration in Czech local bonds given term premium is already at stretched levels. On the other hand, we think Poland local bonds, still trading at wide levels, should benefit the most in the event of a more-aggressive-than-expected ECB easing at the March 10 meeting. In addition, Poland’s higher term premium offers a much larger cushion than the other CEE-3 countries in a risk scenario where ECB disappoints or barely meets current market expectations.
Appendix

The ACM model, developed by researchers at the NY Fed, assumes an arbitrage-free term structure model driven by five factors following Gaussian dynamics. The novelty of their approach resides on the estimation: the model parameters are estimated from excess returns by simple ordinary-least squares regressions. This innovation simplifies enormously the estimation of dynamic term structure models, which have been usually done via time-consuming and unstable numerical methods. Given its speed and robustness, the ACM approach also facilitates daily estimation of term structure models, allowing for a decomposition of the yield curve at any time between an expected future rates and term premium components.

The NY Fed publishes the term premium data estimated from the ACM model on a daily basis (the model is originally estimated on a monthly basis, and then extended to a daily frequency). To verify the accuracy of our model implementation, we compared our model’s estimates of US 10-year term premium with those published by the NY Fed data. The results are reassuring as the figure below shows that both measures are nearly identical.

Display 4: **10-year U.S. Term Premium Estimates**

Source: MSIM estimates and NY Federal Reserve.
About the Author

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Mariano is a member of the Global Emerging Markets Debt team. He joined Morgan Stanley in 2011 and has 12 years of investment experience. Prior to joining the firm, Mariano worked as a Latin American economist at Citigroup. Previously, he was a senior associate at CRA International and a senior consultant at ERS Group. Mariano received a B.A. in economics from Universidad Católica Argentina and a Ph.D. in economics from UCLA.

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