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From

Spillovers from ECB quantitative easing to UK corporate bonds

Main Message: **ECB QE appears to have compressed investment grade (IG) corporate bond spreads in both the euro area *and* the UK.**

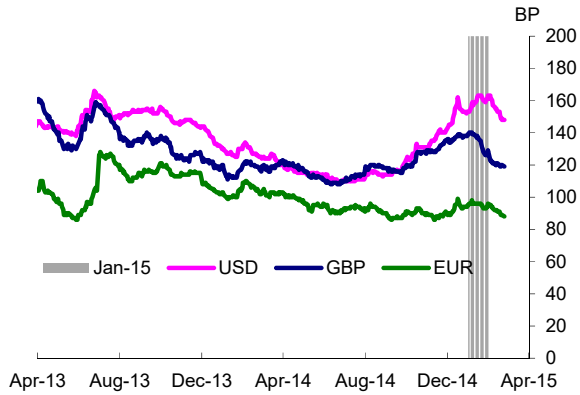
Key Points:

- UK investment grade corporate bond spreads experienced a highly unusual decline in January relative to their historical relationship with US and euro-area spreads.
- The frequency of Bloomberg news articles about ECB QE is a significant explanatory variable for both euro area and UK corporate bond spreads.
- Euro area spreads appear to have been compressed since 2014, while the pass-through to UK spreads occurred more recently, particularly in the period before and after the January announcement of ECB sovereign QE.
- Market intelligence confirms that investors shifted into euro area corporate bonds in 2014 and into sterling corporate bonds at the start of this year.

I: The January decline in UK corporate bond spreads was highly unusual

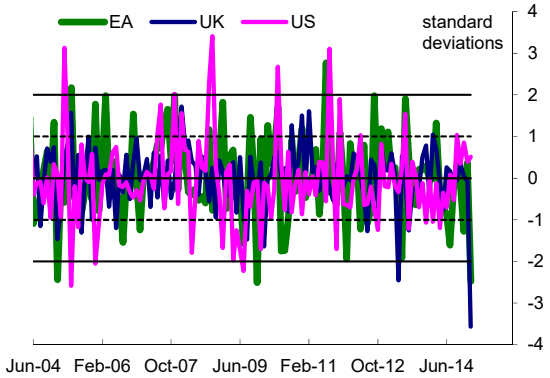
1. During January sterling investment grade corporate bond spreads declined abruptly (**Chart 1**). Although the decline in itself was not particularly large compared to earlier moves in UK spreads, the fact that it happened at the same time as US spreads rose was highly unusual. The model of US, euro-area and UK spreads presented in a note for January MPC can be used to quantify this. It described the relationship between UK BBB corporate bond spreads, economic growth expectations and similar spreads in the US and the euro area. The actual movement in UK spreads in January was 3.6 standard deviations below what the model predicted, indicating a highly statistically significant deviation (**Chart 2**).

Chart 1: Investment grade spreads[a]



a) Daily option-adjusted spreads for all investment grade non-financial non-utility corporate bonds in designated currency
Source: BoAML

Chart 2: Spread model residuals[a]



a) Based on analysis of monthly BBB industrial bonds of domestic companies in domestic currency with a maturity of 4-10 years. Details in this note and its technical appendix.

2. The decline in GBP spreads followed a period in which euro area spreads themselves had detached from rising UK and US spreads and coincided with growing anticipation and announcement of quantitative easing by the ECB[1]. QE by other central banks appears to have had an impact on assets that were not

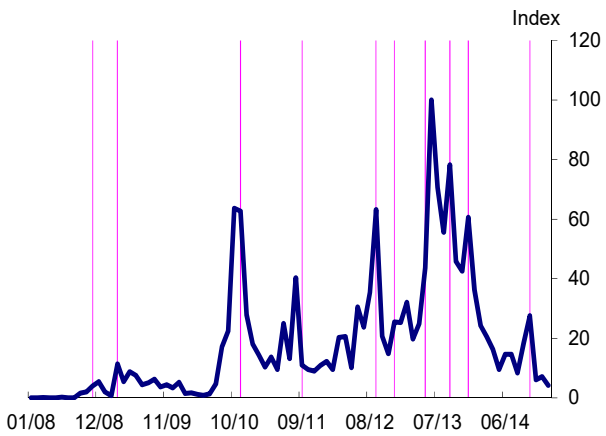
[1] See the International Economics Monthly for a more general discussion of the impact of ECB and BoJ QE, including international spillovers.

directly purchased, including assets in other countries[2]. So an obvious question is whether spillovers from ECB QE have contributed to the decline of UK spreads. As shown below, regressions using the incidence of QE news on Bloomberg as an explanatory variable suggest that QE pushed down euro area spreads in the middle of last year and more recently UK spreads. It is less clear why the impact of QE on euro area spreads preceded that on UK spreads and why US spreads did not appear to respond to the ECB QE announcement (they only started declining in February). Market intelligence suggests some potential explanations, including the gradual portfolio rebalancing by investors and the relative size of the UK versus the US corporate bond market.

II: Bloomberg news as an indicator of QE

3. A challenge in identifying the effects of QE on financial markets is that investors are likely to price in expectations of QE prior to official announcements or other communications. Measuring the response of market prices to policy speeches, statements and the official announcements of QE in event studies can identify some of the impact[3] . However, market participants know that QE is a potential policy tool and are likely to form expectations of QE in line with economic data, even prior to confirmation from policy makers. Therefore an alternative approach is to use the quantity of news about QE as an indicator of market attention to QE. Bloomberg news will typically report not only on statements by ECB officials but also on the views of economists, strategists and market participants who comment on QE, including analysis of QE-related news, their forecasts of QE and their opinions about whether market moves are due to QE expectations. The incidence of Bloomberg articles with QE-related terms has tended to be heightened both before and after QE related speeches, announcements and other events for the Fed (**Chart 3**) and Bank of England (**Chart 4**), suggesting this is a sensible measure. Importantly, news volume typically rises in advance of such events and peaks just after major announcements.

Chart 3: **Fed QE news index and relevant events[a]**



a) Ratio of monthly count of Bloomberg news articles that meet search terms below divided by count of all Bloomberg news articles. Indexed so that the maximum ratio is set to 100. Pink lines denote days of listed events/announcements listed below.

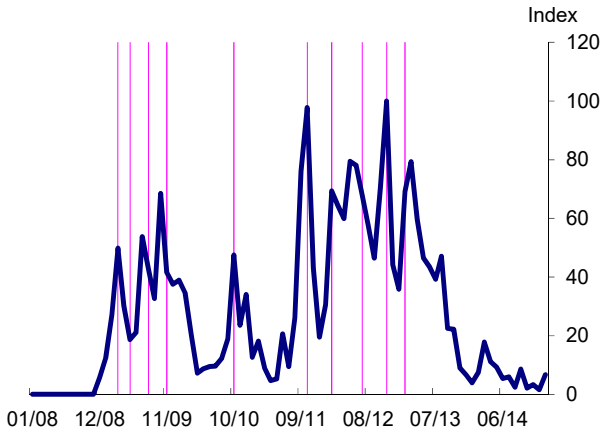
(**"FEDERAL RESERVE**"OR"FED") AND ("QE" OR "QUANTITATIVE EASING" OR "ASSET PURCHASE*") AND NOT ("BANK OF ENGLAND" OR "BOE" OR "ECB" OR "EUROPEAN CENTRAL BANK" OR "BOJ" OR "JAPAN")

2008 Nov	600bn USD (100 agency + 500 MBS)
2009 Mar	1150bn USD
2010 Nov	600bn USD + 300bn reinvestment
2011 Sep	Operation Twist
2012 Sep	40bn USD per month
2012 Dec	+45bn USD per month
2013 May	Bernanke testimony "taper" comment
2013 Sep	FOMC does not taper
2013 Dec	Taper starts
2014 Oct	QE ends

The charts also illustrate some of the drawbacks of this approach. While peaks in the index clearly match major QE events, the relative height of the peaks does not have a stable relationship with the scale of the subsequent QE announced. Furthermore, the news indicator peaks around important QE news, regardless of the direction of the news, e.g. the highest news ratio for the Fed is around the time when the market feared the Fed would taper (i.e. reduce) its asset purchase program while earlier peaks precede the announcement of more QE.

[2] Within the extensive literature, a few examples for corporate bonds are Krishnamurthy and Vissing-Jorgensen (2011), Wright (2011) and Joyce, Lasaoasa, Steven and Tong (2011) and Kimura and Small (2004). For international effects, see Fratzscher, Lo Duca and Straub (2013), Bauer and Neely (2013) and Moore, Nam, Suh and Tepper (2013), among others.
[3] for this type of analysis.

Chart 4: BoE QE news index and relevant events[a]

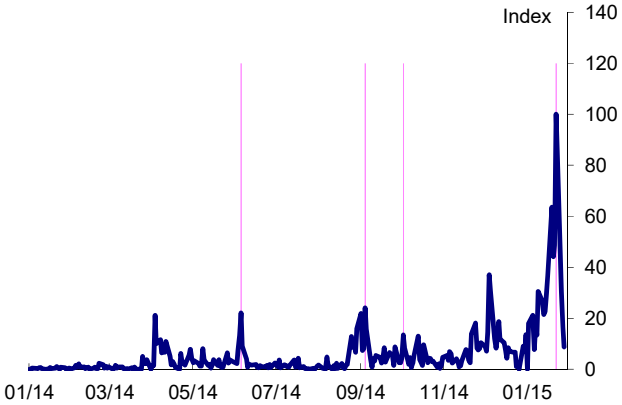


("**BANK OF ENGLAND**"OR"BOE") AND ("QE" OR "QUANTITATIVE EASING") NOT ("FED" OR "FEDERAL RESERVE" OR "UNITED STATES" OR "ECB" OR" EUROPEAN CENTRAL BANK" OR "BOJ" OR "JAPAN")

2009 Mar	75bn GBP
2009 May	50bn GBP
2009 Aug	50bn GBP
2009 Nov	25bn GBP
2010 Oct	1 vote for QE
2011 Oct	75bn GBP
2012 Feb	50bn GBP
2012 Jul	50bn GBP
2012 Nov	1 vote for QE
2013 Feb	3 votes for QE

4. The deficiencies of the straightforward news approach could be ameliorated by more sophisticated text mining techniques. Nevertheless, even this relatively crude ratio can work well over specific periods if it is plausible that QE expectations are mostly heading in one direction. This criterion appears to be fulfilled in the case of daily ECB QE news over the last year (**Chart 5**).

Chart 5: ECB QE news index and announcements[a]



a) Ratio of daily count of Bloomberg news articles that meet search term below divided by count of all Bloomberg news articles. Indexed so that the maximum ratio is set to 100.

("ECB") AND ("QE" OR "QUANTITATIVE EASING") NOT ("BANK OF ENGLAND" OR "BOE" OR "FED" OR "FEDERAL RESERVE" OR "UNITED STATES" OR" BOJ" OR "JAPAN")

Pink lines denote days of listed events/announcements.

2014 Jun 5	Preparatory work for ABS announced
2014 Sep 4	ABS/Covered bonds purchases
2014 Oct 2	Details of ABS/Covered bond program
2015 Jan 22	60bn EUR per month inc. sovereigns

III: Response of UK and EA corporate bond markets to ECB QE

5. Armed with a plausible QE indicator, it is fairly straightforward to run regressions of daily changes of spreads on the QE indicator while using daily changes in US spreads as a control to capture global factors:

$$(EA)_t = \alpha(news_t+news_{t-1})+\beta(US_t)+C$$
$$(UK)_t= \alpha(news_t+news_{t-1})+\beta(US_t)+C$$

(EA) Daily changes in the option-adjusted spread of investment grade bonds denominated in euros issued by euro zone corporations excluding financials, insurance and utilities.

(US) Daily changes of similar US corporate bond spread

(UK) Daily changes of similar UK corporate bond spread

$news_t$ Daily Bloomberg news ratio. The regressions use the two period sum of the news ratio.[4]

As mentioned above, the news indicator may not adequately capture the relative scale of QE across different periods. In addition, for ECB QE there was an important difference in the type of assets the ECB announced it would purchase. To reflect this the sample is split into two. The first period runs from the start of 2014 until just

[4] Using separate coefficients for the current and lagged news variable yields very similar results in that the joint significance of the two coefficients leads to the same inference, the average of the two coefficients are almost identical to the single coefficient and the regressions have very similar fit (measured by adjusted R^2).

after the announcement on 4 September 2014 of the ECB ABS and covered bond purchases. These assets are a much more direct substitute for other credit products like European corporate bonds. The second period runs until just after the announcement of the sovereign bond purchase program on 22 January 2015. The split between these two samples is not precise, since there were already some expectations of ECB sovereign QE earlier in 2014, and ahead of the January ECB meeting there was still some discussion of the possibility that the ECB would purchase corporate bonds. Nonetheless there was a clear difference in the relative importance of credit vs. sovereign focussed purchases in each period, and the regression results (**Table 1**) bear this out.[5]

Table 1: Regression results for daily changes in EA and UK IG spreads

	Samples	01/01/2014 - 06/09/2014		07/09/2014 - 31/01/2015	
		News ratio	**Δ US IG spread**	**News ratio**	**Δ US IG spread**
Δ EA IG spread	**Coefficient**	-111	0.63	-15	0.09
	P-value[a]	0%	0%	5%	28%
Δ UK IG spread	**Coefficient**	-39	0.37	-84	0.28
	P-value[a]	38%	4%	0%	2%

a) Based on standard errors robust to heteroskedasticity and autocorrelation

6. For the euro area, during both periods the news ratio is significant and consistent with ECB QE pulling down on euro area spreads. The effects are considerably stronger during the first period, when asset purchases were predominantly focussed on private sector assets, which are more direct substitutes for European corporate bonds.

7. For the UK the news ratio is insignificant in the first period. But in the second period spreads are significantly lowered by the QE news variable, with the effect actually stronger in the UK than for the EA. Within this second period, the addition of the QE news variable is particularly important in explaining the movement of UK spreads in January, both before and after the ECB's announcement. Without the QE variable, there are several highly significant model errors in January (**Chart 6**), while the model with the QE variable fits this data very well (**Chart 7**) without increasing model errors earlier in the sample.

Chart 6: **Fit of UK spread model without QE news**

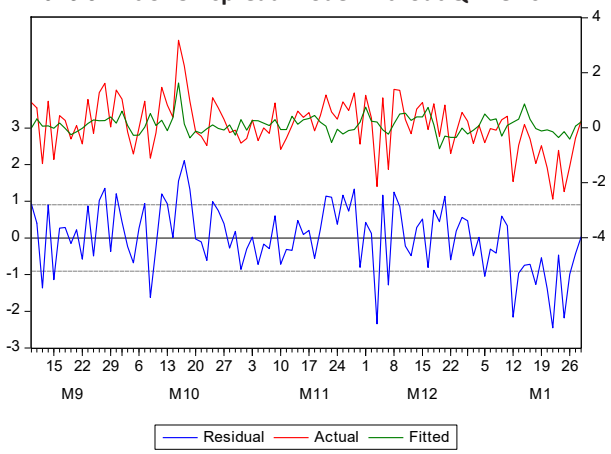
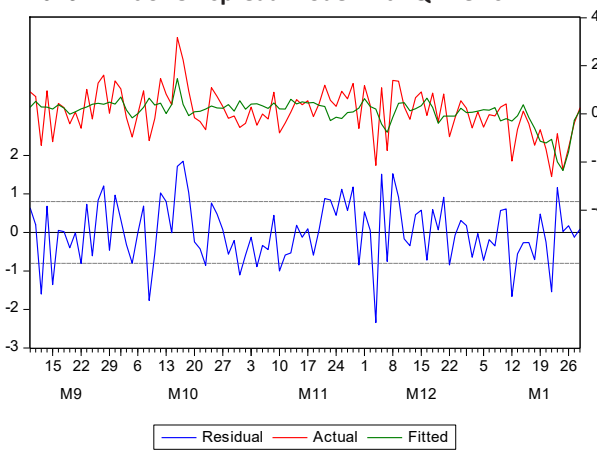


Chart 7: **Fit of UK spread model with QE news**



[5] This is also borne out by a Quandt-Andrews test for an unknown breakpoint in the regression for euro area spread for the combined sample. It finds statistically significant evidence (i.e. rejects the null of no break) for a break in September or early October.

8. Section I notes the divergence of euro area and UK spreads versus US spreads, with the large model errors shown in Chart 2 as a result. This pattern is also observed in the later sample of the model using daily data outlined above. For this daily model, the coefficients on the US IG spread in the early sample (i.e 0.63 and 0.37 for the euro are and UK respectively in **Table 1**) are similar to those found in the model discussed in Section I, which is estimated using over a decade of monthly data. In the later sample, however, the coefficient on the US spread for the EA regression is statistically indistinguishable from zero while the equivalent coefficient in the UK regression is also smaller.

IV: Explaining the extent and timing of the QE spillovers to the UK corporate bond market

9. It is interesting that the impact on UK spreads is confined to the latter sample, after the largest adjustment in euro area spreads had already taken place. It is also notable that the spillovers so far have been confined to the UK and do not appear to have affected the US.

10. In principle, in a frictionless market we might expect all asset prices to adjust immediately to reflect changes in QE expectations. However for previous QE by other central banks, it appeared pass-through to certain markets may have taken longer. Market intelligence from two credit strategist[6] offers us some potential explanations for why this may have been the case this time. Both described investors shifting assets away from their preferred habitats as returns decline and consequently push up valuations of (and lowering returns on) substitute assets. They felt that euro area corporate bond spreads had been compressed by QE expectations from the middle of last year, in part because investors that had traditionally invested in sovereign bonds had allocated more of their portfolios to credit. One highlighted macro hedge funds and the other sovereign wealth funds and reserve managers. Although both typically preferred sovereign bonds, they had the flexibility within their mandate to invest in other assets and current lower yields meant they had shifted into credit markets. One strategist noted that this transmission mechanism meant that corporate bond spreads were probably similar to what they would have been if the ECB had decided to buy corporate bonds.

11. Tight corporate bond spreads in the euro area meant that investors with a credit mandate, who did not have the flexibility to invest in other assets but could move across currencies, may have subsequently reallocated to corporate bonds in other currencies. Other long term institutional investors, like pension funds and insurers, who had more flexibility in their assets and geographies, were also allocating more to credit outside the euro area.

12. While the dollar market has had the scale to absorb these inflows, the sterling corporate bond market is much smaller (the market value of the bonds in the BoAML industrial corporates index is less than a tenth of the equivalent US index). Furthermore, sterling bond issuance had been weak in January, reflecting the preference of companies to fund in euros and suggesting that spillovers from tight credit spreads in the euro area affected both the demand and supply of corporate bonds.

[6] talked to and

V: Conclusions

To summarize, the evidence presented suggests that ECB QE has had the following effects

- During the period before and just after the ECB ABS and covered bond program there was a clear tightening of euro area corporate spreads but not UK corporate bonds. This caused euro area corporate bonds to decouple from US corporate bonds.
- The period before and just after the announcement sovereign purchase program in January saw some additional impact on euro area corporate spreads and a significant impact on UK corporate spreads.

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