BARCLAYS

Quantitative Portfolio Strategy

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Liquidity Dynamics of Newly Issued Bonds

- It is well know that newly issued corporate bonds are usually in high demand and experience active market making in the first several weeks after issuance. But how does the liquidity of these bonds evolve shortly after their issuance? Is there a systematic relationship between transaction costs and the time elapsed since issuance?
- The metric that makes this study possible is Barclays LCS (Liquidity Cost Scores), a quantitative bond-level measure of liquidity based on simultaneous, bid-offer quotes from traders. LCS is defined as the cost of a round-trip institutional-size transaction and is computed on a monthly basis for more than 19,000 constituents of major Bloomberg Barclays indices.
- For a liquid subset of the IG and HY corporate bond markets, LCS is computed on a daily basis. These Daily LCS enable us to take a detailed look at the liquidity dynamics of newly issued bonds.
- Investment grade and high yield corporates show a similar and pronounced pattern: LCS increases steadily over the first three months then levels off. The initial rate of increase is quite high. (After 21 business days, the IG LCS is already 52% higher, having gone from 0.173% to 0.262% (normalized to January 2007 LCS levels); the HY LCS has increased by 44%). Then the LCS rise slows down, and by the mid-point, roughly 60 business days from issuance, LCS level becomes stable.
- The steady increase in LCS can make it difficult to interpret any bid-side OAS change since issuance. For example, does a bid-side OAS increase reflect an inherent cheapening of the bond, a widening of its bid-ask spread, or some combination of the two? If, instead of bid-side (index) OAS, we look at mid-OAS, we find that for our set of bonds, the mid-OAS changes less than the bid-side OAS in the days after issuance.

Vadim Konstantinovsky, CFA
+1 212 526 8290
vkonstan@barclays.com
BCI, US

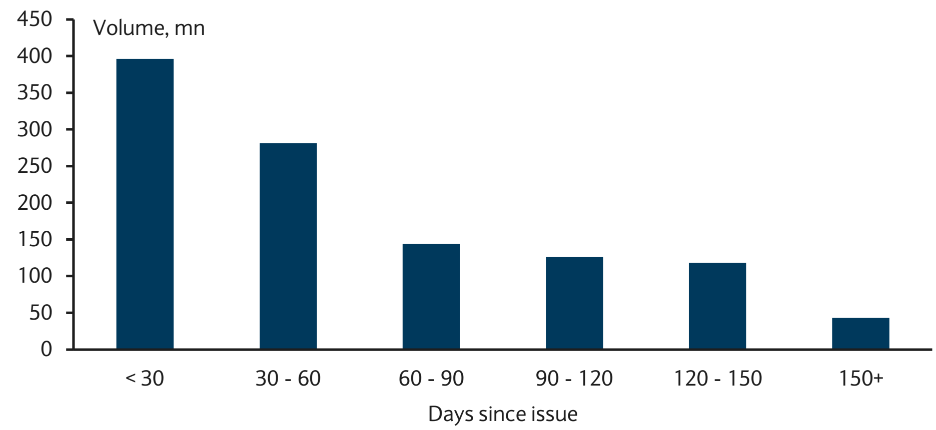
Bruce Phelps, CFA
+1 212 526 9205
bruce.phelps@barclays.com
BCI, US

www.barclays.com

Freshly issued corporate bonds are often in high demand and trade actively. Figure 1 shows the average trading volume per bond for the Bloomberg Barclays IG Corporate index in August 2016. Constituents of the index are sorted into six buckets according to the number of business days from issuance to 31 August 2016.1 There is a rather dramatic decline as we move further away from the issuance day. The average volume for bonds issued from 60 to 90 days prior to 31 August is a mere 36% of that for bonds still within 30 business days from issuance.

FIGURE 1

Average Trading Volume per Bond, Investment Grade Corporates, August 2016



Note: Days since issue are counted back from 31 August 2016. Source for all figures is Barclays Research

Less well known is how expensive, or cheap, new issues are to trade relative to similar but more seasoned issues. Is there any discernible pattern of change in their transaction costs in the first few weeks or months since issue? We answer these questions using Barclays LCS (Liquidity Cost Scores), a quantitative bond-level measure of liquidity based on simultaneous, bid-offer quotes from traders. LCS is defined as the cost of a round-trip institutional-size transaction[2] and is computed on a monthly basis for every bond in major Bloomberg Barclays indices. For a liquid subset[3] of the IG and HY corporate bond markets, LCS is computed on a daily basis.[4] The Daily LCS metric provides us with a tool for precise monitoring of liquidity of newly issued bonds for a period after issuance.

The objective of this study is to find out whether there is a consistent trend in a bond's liquidity during the early period of its existence. We define the "early period" as the first six months (126 business days), and proceed as follows:

We form a sample of all the bonds that have been members of the Bloomberg Barclays IG and HY Corporate indices at any point since January 2007 (the LCS inception date), and have a Daily LCS computed on at least one of the first 126 business days since issue (Day 1 through Day 126). Then, for all the bonds in the sample, we line up Daily LCS observations (if any) for each of the first 126 trading days following their issue – irrespective of actual dates.

We then average (using equal weights) the first-day LCS across all bonds in the sample, the second-day LCS etc. For example, suppose Bond A was issued on July 13, 2009, while Bond B was issued on October 20, 2015. Then Bond A's LCS on July 15, 2009, and Bond B's LCS on October 22, 2015, will contribute equally to the same Day Two average.

[1] The "issuance" is based on the "Issue Date" field in POINT.
[2] See, *Konstantinovsky, V., K. Y. Ng, and B. Phelps, Measuring Bond-Level Liquidity: Liquidity Cost Scores (LCS), Barclays Research, 24 July 2015*
[3] This subset is determined at the previous month-end and includes trader-quoted bonds that satisfy certain liquidity criteria, such as trading volume, age, maturity etc. All Daily LCS values are based solely on trader simultaneous bid-offer quotes.
[4] *LCS Report - February 2015, Barclays Research*

FIGURE 2
Index LCS Ratio: January 2007 to Current

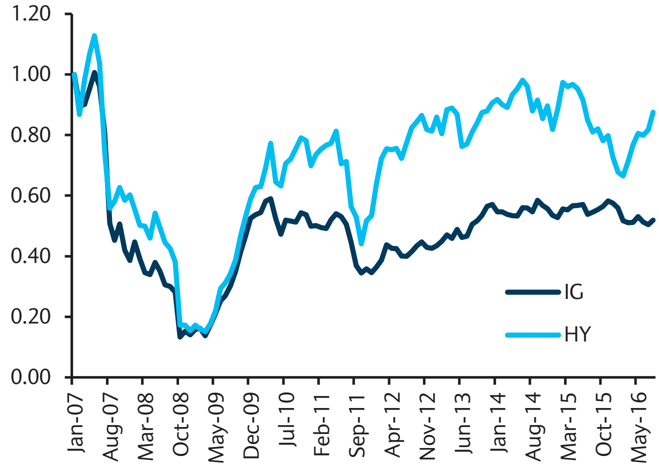
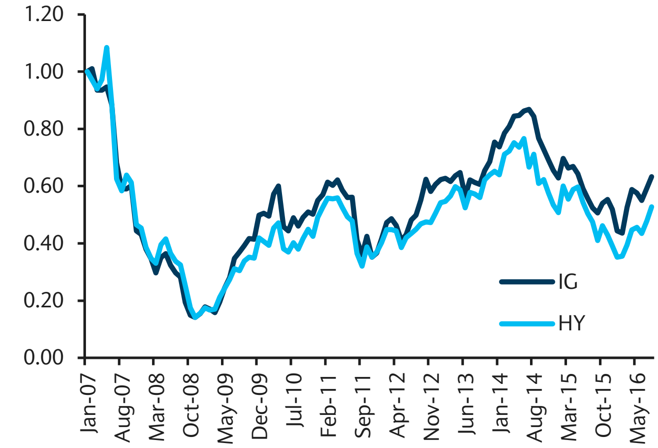


FIGURE 3
Index OAS Ratio: January 2007 to Current



There is one complication, however. We are interested in measuring the progression of a bond's LCS after issuance, regardless of the bond's absolute LCS level. Yet, when we average LCS of a set of bonds for, say, Day Two, these LCS values can come from very different liquidity environments. For example, we could end up averaging a bond's Day Two LCS from 2008 (when LCS was relatively high) with another bond's Day Two LCS from 2016 (when LCS was much lower). Consequently, for each of the N-days since issuance, the average LCS value can vary due to changes in the mix of bonds coming from different liquidity environments used to compute a particular day's average value.

To get a reliable picture of how LCS is evolving since issuance, we have to normalize all Daily LCS to a common level. To do so, we adjust every LCS observation by the ratio of the market (index) LCS at some reference point to the market LCS in the month that particular observation comes from. We chose January 2007, the starting point of the study period, as the reference point (although any arbitrary month would do just as well).

In other words, before contributing to the Day Two Average, Bond A's July 15, 2009 LCS is multiplied by the January 2007 IG Corporate Index LCS and divided by the July 2009 IG Corporate Index LCS (assuming Bond A is investment-grade). The precise calculation is:

$$LCS^{Adj}_{15\ Jul\ 2009} = LCS_{15\ Jul\ 2009} \times \frac{LCS^{Corp\ index}_{Jan\ 2007}}{LCS^{Corp\ index}_{Jul\ 2009}}$$

Figures 2 and 3 illustrate the necessity and the magnitude of these adjustments, reflecting significant fluctuations in market liquidity and spread level relative to January 2007 over the past decade.

Having obtained the normalized daily LCS sample, we compute averages for each of the first 126 business days since issue (Figures 4 and 5). Investment grade and high yield corporates show a similar and remarkably clear pattern: LCS increases steadily over the first three months then levels off. The initial rate of increase is quite high: after just 20 business days, ie, about one month from issuance, a newly issued IG bonds' LCS increases by roughly 50% (0.170% to 0.260%).[5] Then the pace slows, and by the mid-point, roughly 60 business days from issuance, a bond's LCS level becomes stable.

[5] As a reminder, these are normalized averages, and should not be compared to index LCS levels other than January 2007 (IG Corp index LCS = 0.376).

FIGURE 4

Average Normalized Daily LCS, First 126 Days Since Issue, Investment Grade Corporates, January 2007 – August 2016, Normalized to January 2007

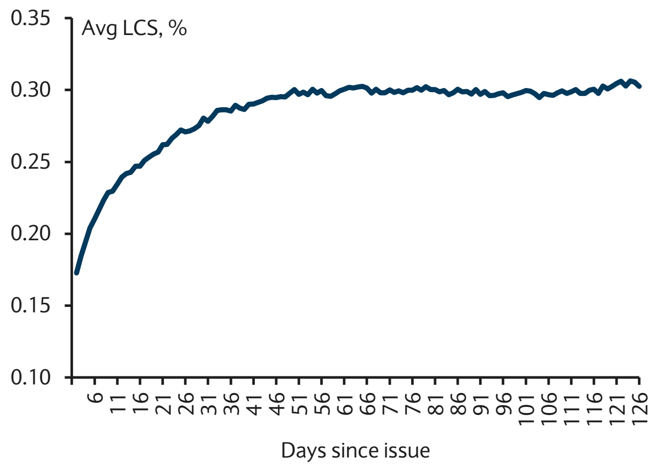
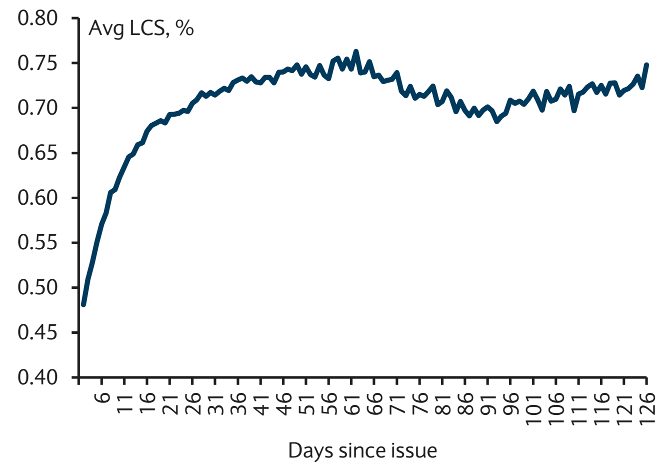


FIGURE 5

Average Normalized Daily LCS, First 126 Days Since Issue, High Yield Corporates, January 2007 – August 2016, Normalized to January 2007



This is not surprising. There is always a strong trading activity in new issues. Investors who did not get an allocation may hasten to establish a position; some of those who did may try to monetize the not-infrequent new-issue concession. Our results, however, add precision to this well-known fact, by quantifying the liquidity increases and by showing their time spans. Apparently, in both markets, the elevated level of interest in new bonds declines quickly and levels off after about 60 business days since issuance.

Figures 6 through 9 show a more detailed picture of LCS dynamics, with the sample broken down by rating and quality, for IG and HY. The pattern is essentially the same for all, even for relatively sparsely populated CAA-C and HY UTL buckets.

FIGURE 6

Average Normalized Daily LCS, First 126 Days Since Issue, IG Corporates by Rating, January 2007 – August 2016, Normalized to January 2007

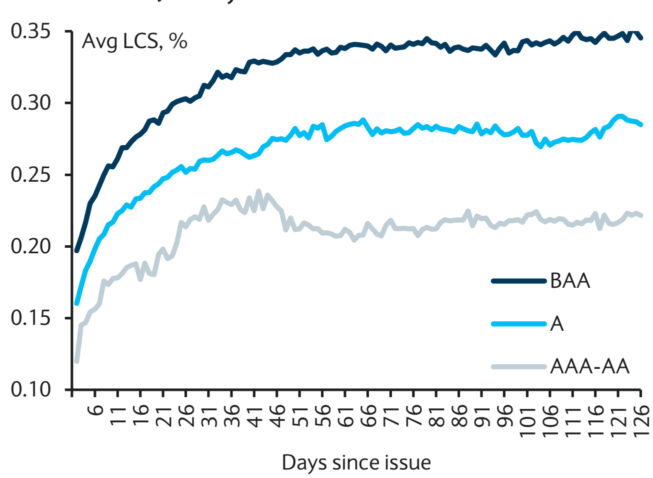


FIGURE 7

Average Normalized Daily LCS, First 126 Days Since Issue, IG Corporates by Sector, January 2007 – August 2016, Normalized to January 2007

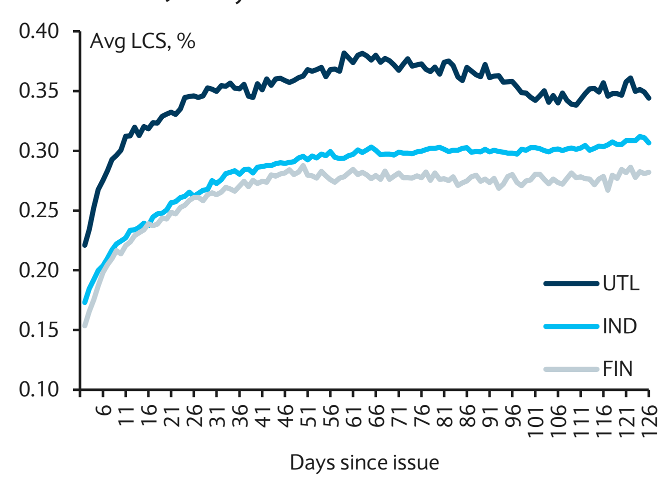


FIGURE 8

Average Normalized Daily LCS, First 126 Days Since Issue, HY Corporates by Rating, January 2007 – August 2016, Normalized to January 2007

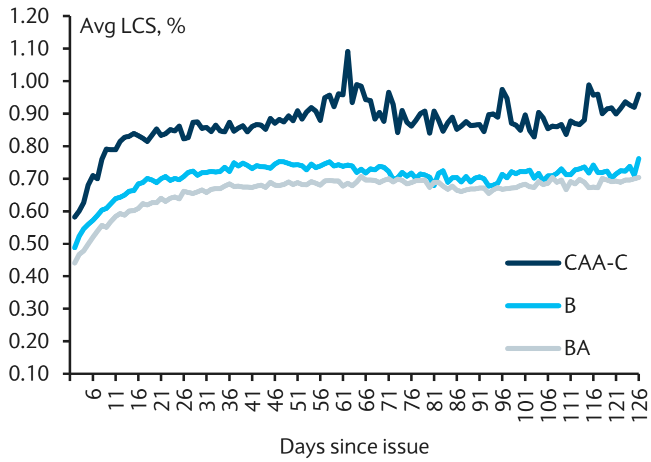


FIGURE 9

Average Normalized Daily LCS, First 126 Days Since Issue, HY Corporates by Sector, January 2007 – August 2016, Normalized to January 2007

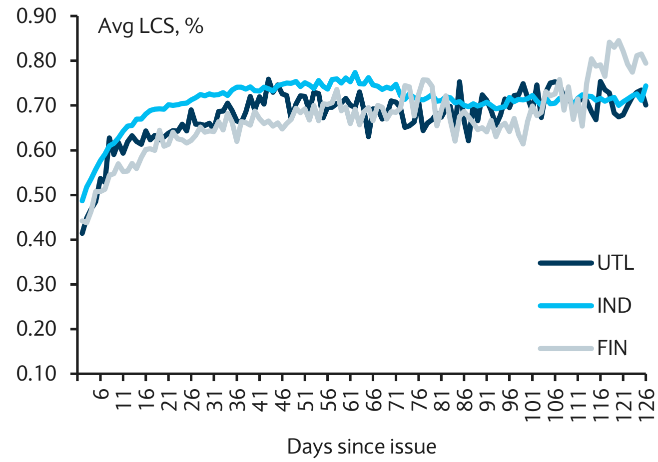


FIGURE 10

Number of Bonds with Daily LCS Observations, First 126 Days Since Issue, Investment Grade Corporates, January 2007 – August 2016

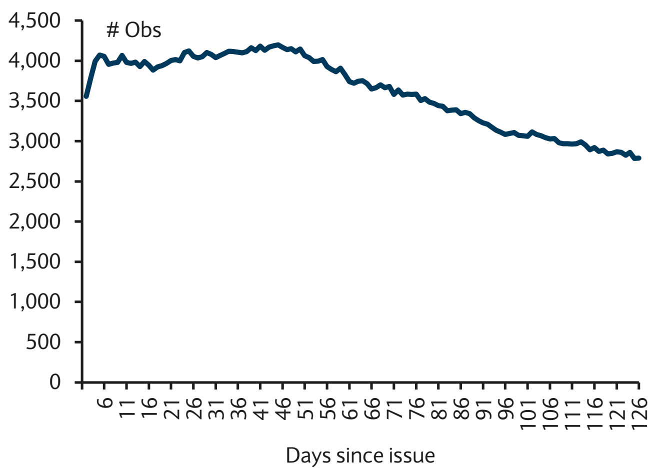
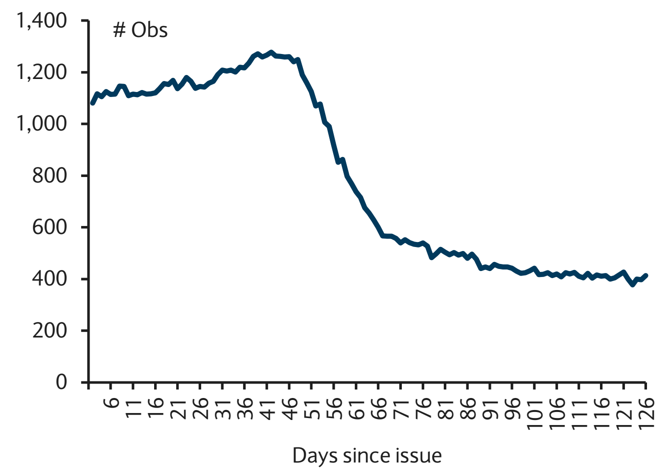


FIGURE 11

Number of Bonds with Daily LCS Observations, First 126 Days Since Issue, High Yield Corporates, January 2007 – August 2016



Another, albeit indirect, way to assess liquidity changes in the first few months since issuance is to look at the level of trader two-way quote activity. Figures 10 and 11 show, for each of the first 126 business days, the number of bonds that had a Daily LCS (ie, were trader quoted). We see a clear pattern of initially high and then, 40-50 days after issuance, gradually declining activity – a confirmation of what LCS has already told us. Interestingly, the decline is considerably steeper in HY. Perhaps because HY issues are usually smaller than IG, the initial demand is satisfied faster?

Besides normalizing LCS to account for changing market levels, we perform another check to make sure that the set of bonds that contribute to each N-days since issuance average is similar over time. LCS is positively correlated with spread duration. As a precaution against the (extremely unlikely) possibility that the observed increase of the N-days since issuance LCS average is caused by an increase in the sample's spread duration from a changing mix of bonds, we looked at average OASD of the sample on each of the 126 days. As Figures 12 and 13 show, OASD of the sample declines very slightly, so its effect on LCS is negligible. In fact, plots (not shown) of bid-ask spreads, ie, LCS / OASD, look identical to those of LCS.

FIGURE 12

Average Daily OASD, First 126 Days Since Issue, Investment Grade Corporates, January 2007 – August 2016

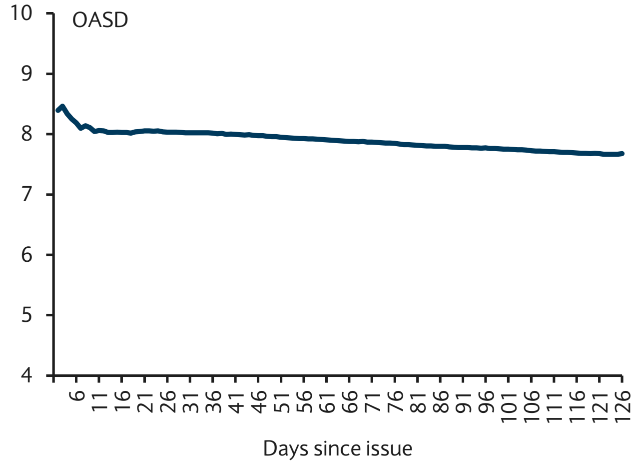
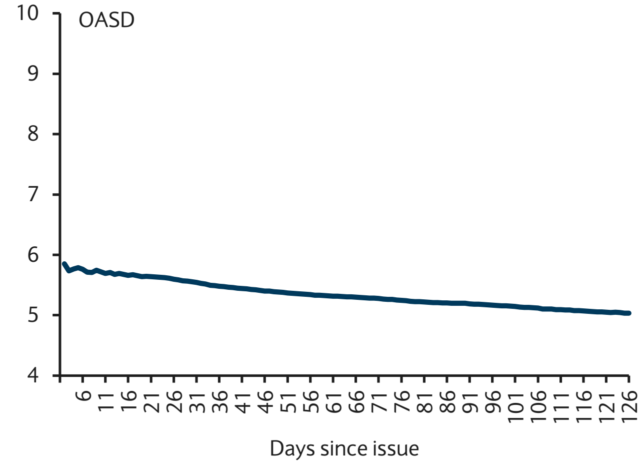


FIGURE 13

Average Daily OASD, First 126 Days Since Issue, High Yield Corporates, January 2007 – August 2016



Along with LCS, we look at the pattern of OAS changes over the same 126-day since issuance period. Just as with LCS, OAS values across bonds are normalized to January 2007 before contributing to the averages. Figures 14 and 15 show that the rise in LCS we saw earlier is accompanied by an increase in OAS. Why would the spread of a newly issued bond widen in the first few months? The answer might be that it does not. The OAS used in our analysis is computed off index prices which are bid-side. Obviously, when a bid-side OAS increase is accompanied by a simultaneous widening of bid-ask spreads (LCS increase), the "true" spread – which we may define as the mid-spread, ie, the average of the offer-side OAS and bid-side OAS – may be flat, widening or even tightening, depending on the relative magnitudes of LCS and bid-side OAS increases. In fact, the LCS increase is much stronger relative to that of OAS. For IG corporates, for example, the ratio of the period maximum and minimum LCS is 1.77, while the same ratio for the bid-side OAS is just 1.05.

FIGURE 14

Average Normalized Daily OAS, First 126 Days Since Issue, Investment Grade Corporates, January 2007 – August 2016, Normalized to January 2007

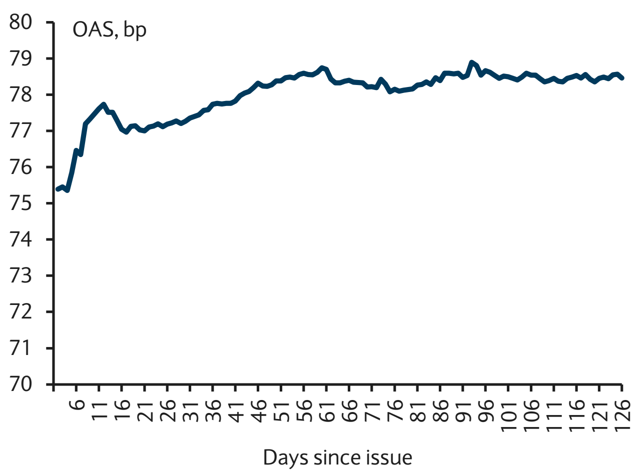
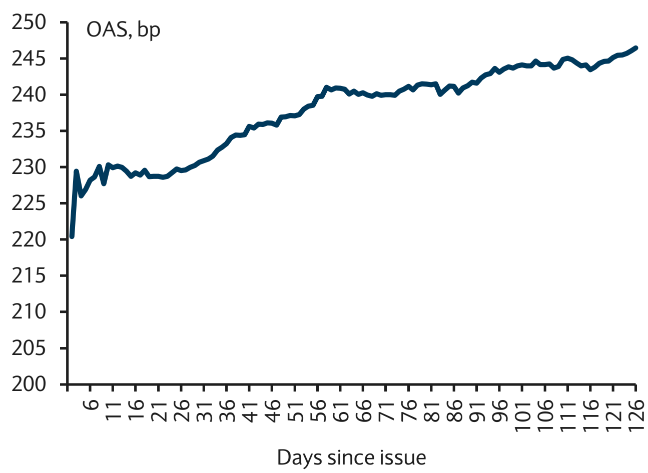


FIGURE 15

Average Normalized Daily OAS, First 126 Days Since Issue, High Yield Corporates, January 2007 – August 2016, Normalized to January 2007



Our findings raise more general questions. At any time, there is more than one “spread” for a bond: there are bid, ask, and mid spreads. Before drawing any conclusion from a particular pattern in a bond’s spread, for example, richening/cheapening in relative value, we should know which of the three spreads we are looking at. This distinction can be safely ignored when we look at equity prices as their bid-ask spread is typically measured in cents. However, with bonds, particularly corporate bonds, things are more complicated because bid-ask spreads are a much larger fraction of a bond’s value.

This is especially important in stressful periods, which, of course, is precisely when we pay the most attention. The often overlooked fact is that such idiosyncratic events as downgrades are rarely purely credit events. They are usually accompanied by significant changes in the bond’s liquidity. So, all of a sudden, the distinction between bid and ask spreads starts to matter. If the bid-ask spread is changing, the behavior of bid spreads may be sufficiently different from that of ask spreads. As a somewhat extreme example, if a bond’s LCS is increasing, the bond’s bid spread may be widening while its offer spread is tightening (and the mid-spread stays relatively constant). Is this bond getting cheaper or richer? The same argument, of course, automatically extends into the price space. Figure 16 illustrates IG corporates.

FIGURE 16

Bid-side, Offer-side, and Mid OAS, First 126 Days Since Issue, Investment Grade Corporates, January 2007 – August 2016, Normalized to January 2007

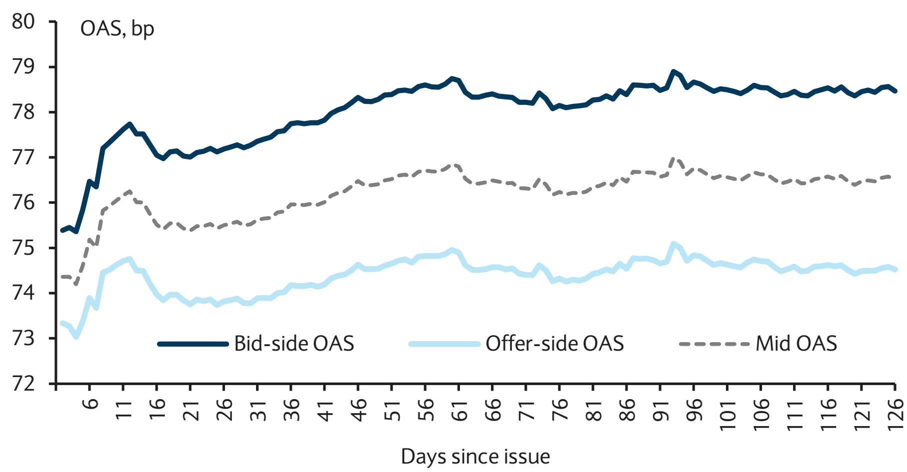


Figure 16 shows that the average bid-side OAS has widened by 3.1bp in the 126 days since issuance. However, the mid-OAS widened by 2.1bp (only a 1.2bp widening of the offer-side OAS). The difference is due to the widening of the bid-ask spread. Based on the mid-OAS, the new issues in our sample did not cheapen over time by as much as the bid-side OAS change would indicate.

So, how can one get the “true story” if only the bid-side metrics are available? The solution lies in bringing a liquidity measure into the picture. In other words, we should be looking at two issues at the same time: a bond’s spread (or price) behavior and changes in the bond’s liquidity, ie, widening or narrowing of bid-ask spreads. Perhaps the mid-OAS is a better indicator of the bond’s credit condition, whereas the change between the bid- and mid-OAS reflects the change in the bond’s liquidity.

Suppose a bond’s OAS widens. The immediate conclusion one could make is that the bond has become a riskier credit. But is it necessarily true? There is a likelihood that dealers are becoming reluctant to make markets in this security and are widening their bid-offer quotes, either because of an increase in their risk aversion unrelated to the bond itself or because of reduced trading and client interest. Hence, we should know what price was used in the OAS calculation. In most cases, this is the bid price (ie, index price). Depending on the change in the bid-ask spread, the OAS based on the offer price might show no widening at all. The best approach during idiosyncratic events when the bid-ask spread may be volatile is to compute analytics based on the mid price. Unfortunately, offer and mid prices may not be readily available. In this case, they can be estimated using the bond's LCS.

The first few months since issuance are just one instance of a "special time" in a bond's life. There are others. For example, periods before and after a downgrade, trading at distressed levels, or dropping out of widely followed benchmark indices. The behavior of individual bonds in such cases is often a subject of research, and sometimes provides ideas behind investment strategies. Knowing how much the change in spread around such events is due to changes in credit risk, and how much to changes in liquidity, may help investors make better-informed decisions.

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