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Why has the mortgage basis been so stable?

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Volatility in mortgage basis lowest in nearly 20 years
Mortgage basis (defined as the difference between the yield on current coupon MBS and the average of 5- and 10-year Treasury rates) has stayed within a narrow band over the past year. In fact, the 6-month trading range for the mortgage basis has fallen to its lowest level in nearly 20 years.

MBS supply and bank demand do not seem to be the key driver
As such a low volatility is not observed in other asset markets, we examine factors that are specific to agency MBS. We show that supply (measured by both gross and net issuance of agency MBS) and bank demand do not seem to be the main driver of the ultra-low volatility in mortgage basis.

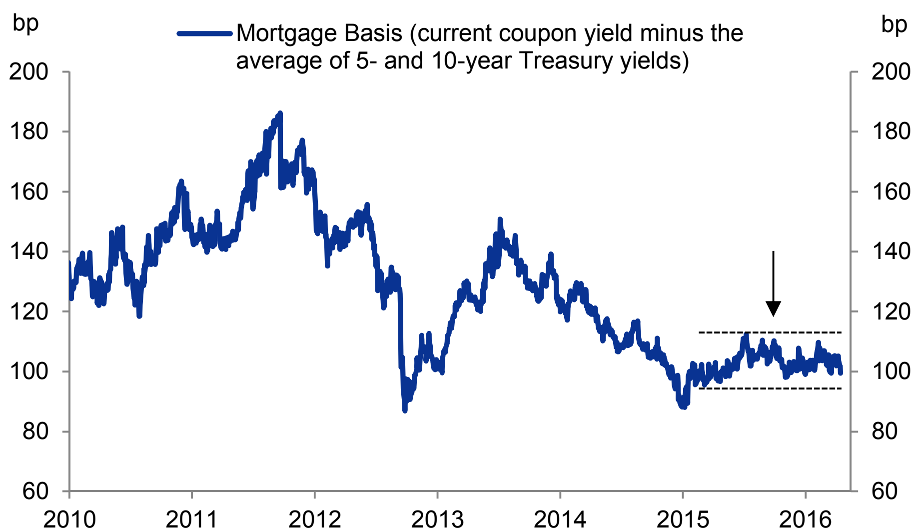
Fed reinvestments may be a stabilizing factor
We find evidence that the Fed tends to purchase more MBS when the mortgage basis is wide and less when the mortgage basis is tight. This finding suggests that Fed reinvestments in MBS may be one reason why the mortgage basis has been so remarkably stable over the past year.

We expect mortgage basis to stay range-bound for another year
Fed communications indicate that reinvestments will not be tapered until the Fed funds rate reaches the 1-2% range. Under our US Economics team's baseline forecast, this implies full reinvestments through late 2017. If Fed reinvestments are indeed the reason why the mortgage basis has been so stable, we expect the mortgage basis to remain range-bound for at least another year.

Why has the mortgage basis been so stable?

Mortgage basis has been trading within a remarkably tight range lately (Exhibit 1). Our preferred definition of mortgage basis is the difference between the yield on current coupon agency MBS and the average of 5- and 10-year Treasury rates. For example, the yield on current coupon agency MBS is 2.52% while 5-year and 10-year Treasuries are at 1.26% and 1.80%, respectively. This leaves the mortgage basis at 99bp (=252-(126+180)/2). We choose the average of 5- and 10-year Treasury rates as the benchmark instead of the 10-year Treasury rate alone because the former matches the duration of agency MBS better than the latter.

Exhibit 1: Mortgage basis has been hovering around 100bp over the past year
Difference between current coupon mortgage rate and the average of 5- and 10-year Treasury rates, 2010-2016

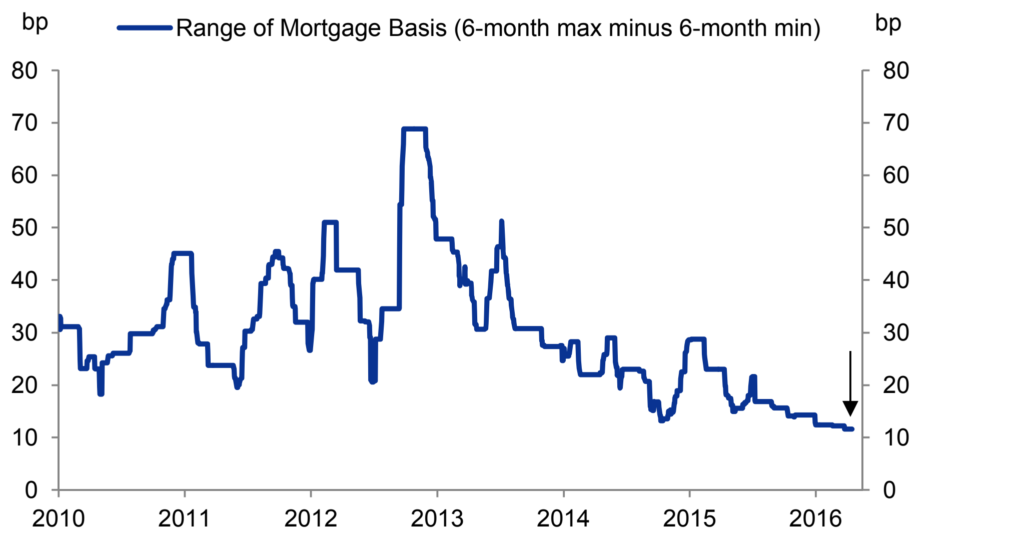


Source: Goldman Sachs Global Investment Research.

The stability in mortgage basis is unique when compared with other asset classes. Exhibit 2 shows that the 6-month trading range has fallen to near all-time lows for the mortgage spreads to Treasuries: the difference between the widest and tightest levels of mortgage basis seen over the past six months is less than 12bp. By contrast, the trading range for 10-year Treasuries is close to its 5-year averages (Exhibit 3). Volatilities in the equity and credit markets draw an even sharper contrast to the stability in mortgage basis: Exhibit 4 shows that the trading range for S&P 500 and high-yield corporate bond spreads are at their widest levels since the 2011-2012 European debt crisis.

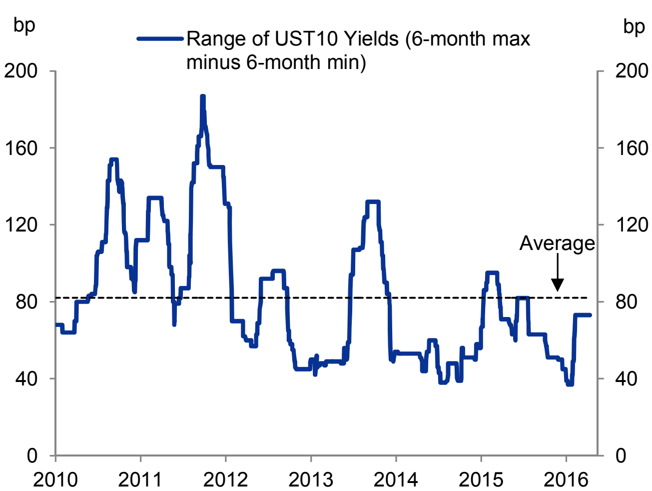
What has driven the volatility of mortgage basis to such a low level? The comparison with other asset classes described above suggests that it is unlikely to be macro factors that influence all markets. In this *Mortgage Analyst*, we examine three factors that are specific to agency MBS. On the supply side, we look at the volatility of gross and net issuance of agency MBS. On the demand side, we look at the demand from banks and the Federal Reserve over the past year. The results from our analysis suggest that Fed buying may be a stabilizing factor for mortgage basis after the end of QE3. If this finding is indeed true, then we should see the mortgage basis stay range-bound for at least another year as we project the central bank to fully reinvest in MBS until late 2017.

Exhibit 2: 6-month trading range for mortgage basis is near all-time lows
Difference between maximum and minimum mortgage basis within a rolling 6-month window



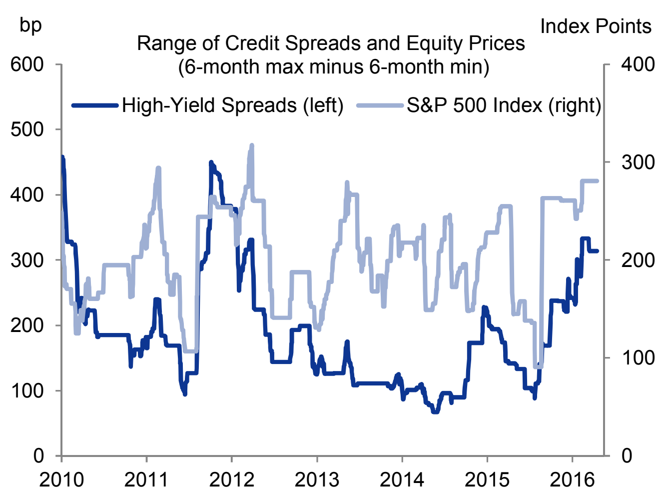
Source: Goldman Sachs Global Investment Research.

Exhibit 3: 6-month trading range for 10-year Treasuries close to historical average…
Difference between maximum and minimum 10-year Treasury yields within a rolling 6-month window



Source: Goldman Sachs Global Investment Research.

Exhibit 4: …while credit spreads and equity prices have been the most volatile since 2011-2012
Difference between maximum and minimum high-yield spreads and S&P 500 index within a rolling 6-month window

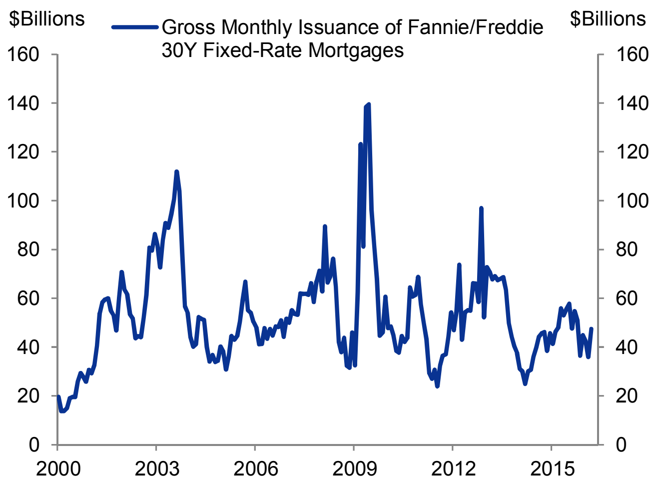


Source: BAML, Haver Analytics and Goldman Sachs Global Investment Research.

Volatility in MBS issuance low but not the lowest on record

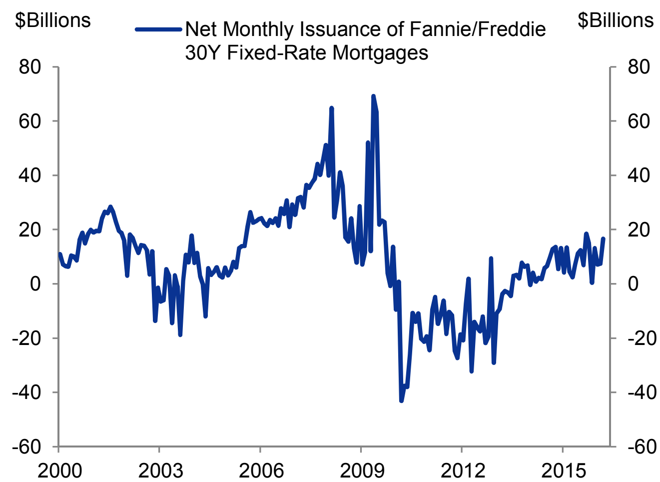
We first look at the agency MBS supply. If the stability in mortgage basis is driven by supply, we should see MBS issuance becomes less variable and more predictable now than before. Exhibits 5 and 6 show the monthly gross and net issuance of Fannie Mae and Freddie Mac 30-year fixed MBS from January 2000 to March 2016. While the issuance volatility has indeed been low by historical standards, they are not at record-low levels as the mortgage basis is. For example, the 12-month standard deviation is currently at its 26th percentile of the 2000-2016 distribution for gross issuance and 35th percentile for net issuance. Therefore, we do not think stability of supply is the main reason why the mortgage basis has been trading within a tight range.

Exhibit 5: Volatility of gross issuance is at 26th percentile
Monthly gross issuance of conventional 30-year fixed MBS, Jan2000-Mar2016



Source: eMBS and Goldman Sachs Global Investment Research.

Exhibit 6: Volatility of issuance is at 35th percentile
Monthly net issuance of conventional 30-year fixed MBS, Jan2000-Mar2016

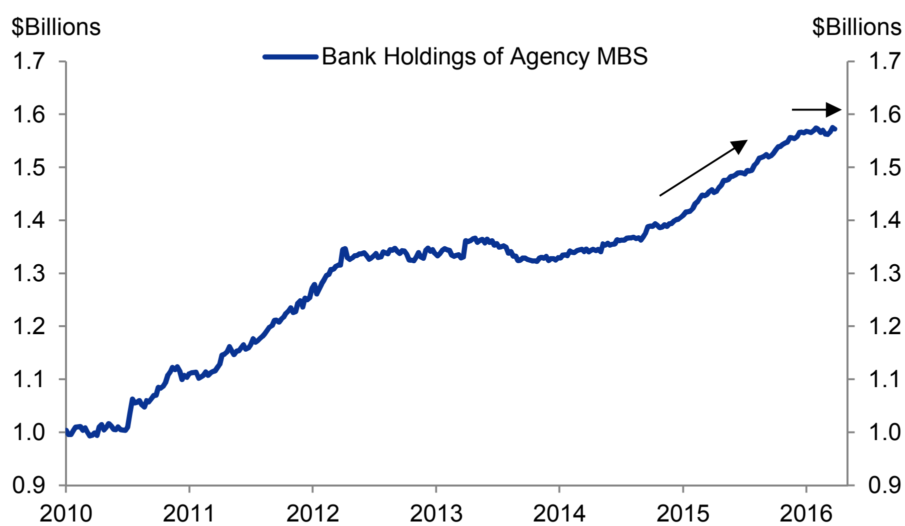


Source: eMBS and Goldman Sachs Global Investment Research.

Banks absorbed all net issuance in 2015 but stopped adding in 2016

We next look at bank demand. Banks were aggressive buyers of agency MBS in 2015. Of the $168 billion net issuance last year, banks took away $159 billion. If banks added MBS whenever the mortgage basis widened, they could be the reason why the mortgage basis were so stable in 2015. However, banks stopped expanding their MBS portfolios in 2016 but the mortgage basis continued to trade range-bound. Out of the $70 billion net issuance during the first three months of this year, banks absorbed only $7 billion. Therefore, bank demand is unlikely to be the major stabilizing factor either.

Exhibit 7: Banks stopped adding MBS in 2016 but mortgage basis stays range-bound
Bank holdings of agency MBS, 2010-2016



Source: Federal Reserve.

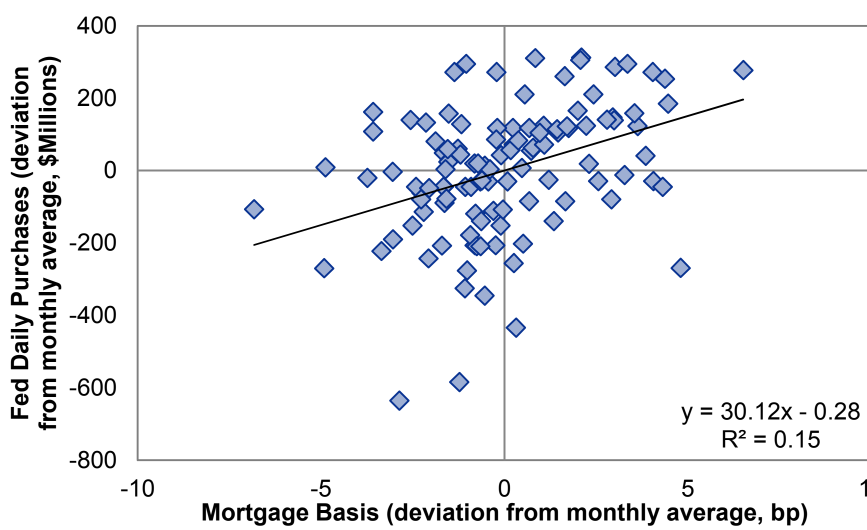
Fed reinvestments may be a stabilizing factor

Lastly we look at Fed reinvestments. In September 2012, the Federal Reserve announced the QE3 program during which it added $40 billion agency MBS to its balance sheet each month on net. In December 2013, the central bank announced the tapering of the QE3 program. In October 2014, net purchases were officially ended and the Fed holdings of agency MBS increased by nearly $900 billion over the two-year period. Since then, the Federal Reserve has been fully reinvesting agency MBS paydowns.

Fed reinvestment can potentially stabilize the mortgage basis. While the Open Market Trading Desk (the Desk) at the New York Fed publishes a tentative reinvestment amount on or around the eight business day of each month, the Desk has some discretion over how much to purchase on any given operation day. For example, in the latest operation schedule published on the New York Fed website, it states that the Desk will buy up to $850 million FNCL 3.0 and up to $375 million FNCL 3.5 on 4/18/2016.[1] If the Desk tends to purchase more MBS when the mortgage basis is wide and to purchase less MBS when the mortgage basis is tight, then it essentially serves as a stabilizer for mortgage basis.

Exhibit 8 suggests that this may indeed be the case. To avoid housing turnover seasonals and interest rate movements from overly influencing the analysis, we remove the monthly averages from both mortgage basis and Fed purchases. Exhibit 8 shows that when the mortgage basis is wide, the Fed tends to purchase more MBS the next day. The magnitude of our estimates suggests that daily purchases by the Federal Reserve increase $300 million when the mortgage basis is 10bp wider. Even though this amount is small relative to MBS daily trading volumes, Fed is still the largest MBS buyer in the market, absorbing 25-30% of total gross issuance since the end of QE3. Thus, operation strategies of the Fed could have an outsized effect on the market. Lastly, why didn't Fed purchases stabilize the mortgage basis during 2012-2014 when the monthly purchase amount was higher? One possible explanation is that the Desk had less discretion in its daily operations when the priority was to achieve the $40 billion net purchases each month.

Exhibit 8: Federal Reserve tends to purchase more agency MBS when basis is wide
Fed daily purchases vs. mortgage basis on days when the Desk is scheduled to purchase Fannie and Freddie 30-year MBS (monthly averages are removed from both variables), 2015



Source: Goldman Sachs Global Investment Research.

[1] https://www.newyorkfed.org/medialibrary/media/markets/ambs/AMBS_Schedule_041316.pdf.

To be clear, we are certainly not claiming that Fed purchases are the only reason why the mortgage basis has been trading within a tight range. For example, interest rate volatility has been more stable than before (i.e., the "vol of vol" is relatively low although it is not near all-time lows as the mortgage basis volatility is). Prepayments have become more muted than before even when mortgage rates decline sharply ("Prepays catching up to Quicken? Not so quick," *The Mortgage Analyst*, February 5, 2016). However, if it is true that Fed reinvestments are an important driver of the ultra-low volatility in mortgage basis, then returns on mortgages should stay high on a Sharpe ratio basis when hedged with Treasuries. Fed communications suggest that policymakers do not plan to taper reinvestments until the Fed funds rate reaches 1-2%. Under our US Economics team's central forecast of the Fed funds rate path, this implies that full reinvestments continue through late 2017 and the mortgage basis remains range-bound for at least another year.

Hui Shan

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