

Fall 2018

FIRST PRINCIPLES QUARTERLY



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Contact:

First Principles Capital Management, LLC

140 Broadway, 21st Floor
New York, NY 10005
Tel: 212.380.2280
Fax: 212.380.2290
www.fpcmlc.com

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CIO LETTER



Mark G. Alexandridis

Chief Investment Officer

malexandridis@fpcmlc.com

212.380.2293

Not so tragic

Abrupt, adverse repricings in the financial markets bear great similarities to Greek tragedies. Unhappy endings are generally always attributed to a well identified tragic flaw in the protagonist. The sharp sell-off in the Treasury market, however, fails to follow the script.

The profound transformation of the US Treasury curve over the last two months has startled investors with both its swiftness (since late August) and inability to attribute the shift in sentiment to one discernable catalyst. The 10-year note broke out of its narrow three-month trading range (Chart 1) and the yield curve halted the post-election virtual monotonic flattening. What happened and where do rates go prospectively?

Chart 1: 10yr Treasury, breakeven, and 30yr minus 10yr



Source: Bloomberg

Inflation expectations?

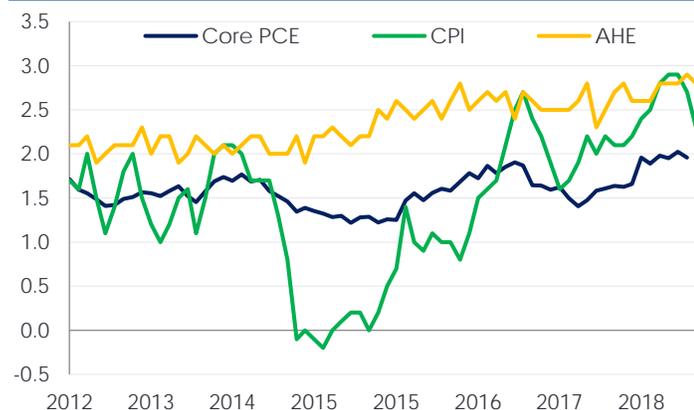
After an approximately 40 basis point (bp) sell-off in long-term nominal yields, the concomitant implied inflation breakevens were, surprisingly, largely unchanged. That is, the full change was absorbed into the real yield and/or term premia.

There has been substantial progress over the last year in moving the key inflation metrics -- CPI, Core PCE, and average hourly earnings (AHE) -- towards levels that are consistent with the very tight employment market, robust economy, and the FOMC's targets as shown in Chart 2. However, recent data have been either subdued (AHE) and/or disappointing (CPI, PCE, and PMI surveys). As such,

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the breakeven curve has plateaued at levels near two percent given the lack of momentum in the data.

Chart 2: Core PCE, CPI, and average hourly earnings [YoY/%]



Source: Bloomberg

Fed speak

The messaging by several Federal Reserve policy makers after the last FOMC meeting (26 September) has been decidedly hawkish in terms of their assessment of the economy's strength ("extraordinary" and "extremely vibrant"), the desirability of future rate increases, and the possibility of moving the Federal Funds level above the neutral rate (restrictive).

Chairman Powell's remarks on October 3rd were particularly provocative in their directness. He indicated that "rates are still accommodative ... (and they) may go past neutral ... (and) we're a long way from neutral...". Moreover, the risks to inflation were uniformly downplayed by most. In fact, Vice Chairman Williams averred, "we are not seeing any inflationary pressures ... so I think this is a bit of a Goldilocks economy."

Additionally, both Chairman Powell and Governor Brainard have introduced the concept of both a short (cyclical) and long-term neutral rate. The proxy for the FOMC's estimate of the long-term rate is the longer term "dot" (median estimate of 3%). Intuitively, the cyclical neutral rate today should exceed the 3% estimate given the FOMC's glowing appraisal of the domestic economy.

The cumulative effect of these comments point to expectations of higher rates across the curve, but with the exception of the Brainard comment, most were delivered

well after the 10-year decisively broke out of its tight trading range.

Technical factors

The supply/demand balance has been negatively affected by the: (1) acceleration in quantitative tightening at the end of September, (2) prohibitive cost of buying USD bonds and hedging them into lower yielding currencies (e.g., EUR and JPY), and (3) forecast of a substantially larger net supply of Treasuries (ex T-Bills) in the second half of 2018.

Central banks gradually withdraw from QE. At the end of September, both the ECB and the Federal Reserve reduced their bond purchases. The Fed will reinvest \$50bn fewer maturing securities (Treasuries and agency mortgages) in the SOMA portfolio each month starting in October until further notice. This amount was \$40bn/month in Q3 and only \$10bn/month one year ago. Similarly, the ECB reduced the size of its Asset Purchase Program (public and private securities) from €30bn/month to €15bn/month in October. The ECB's quantitative easing program is set to expire at the end of 2018. And, the introduction of yield curve control by the Bank of Japan has reduced the purchases of long-term JGBs in 2018.

Treasuries are expensive on a currency hedged basis. As the Federal Reserve continues to normalize monetary policy and other developed markets maintain their ultra-low rates, the cost of hedging USD assets back into local currency is roughly equivalent to the differential in interest rates. The other component of the cost is the cross-currency basis which is driven by the demand for one currency versus another. Most Asian currencies and the euro have negative basis swap spread versus the USD for virtually all tenors.

The three- and six-month costs to hedge USD back into yen and euro currently exceed 3% on an annualized basis. The three-month currency hedged 10-year Treasury yields for EUR and JPY are shown in Charts 3 and 4. Not only are current effective yields at year-to-date lows, but both are less than prevailing domestic 10-year yields. Hence foreign demand for Treasuries – for institutions that hedge – is on the wane. And the prohibitive cost of hedging is likely to dampen demand for US corporate bonds as well.

Obviously, the symmetry in currency dynamics render foreign sovereign bonds hedged into dollars attractive to US investors as they provide a meaningful yield boost relative to Treasuries.

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Anticipated Treasury net supply is elevated at year-end. The total net supply of Treasuries (FRNs, TIPS, and Nominals) in 2018 is expected to exceed \$900bn. And, nearly half of the total will be raised in the last four months of the year (Chart 5).

And the CBO estimates that federal deficits will average \$1.2 trillion over the next ten years (2019 – 2028) which they predict will result in a deficit greater than 5% of GDP for several years (currently exceeds 4%).

Outlook

The transition to greater than 3% long-term Treasury rates appears to be more of a regime shift than a temporary correction. The confluence of adverse technical conditions (increased supply and lower demand), a hawkish and ebullient FOMC, and solid growth prospects have prompted the market to reprice real rates across the curve (1.2% in 30 years) as inflation moderates at the FOMC's target.

The open question is, how vulnerable are long rates as the Fed methodically moves the policy rate to neutral over the next year (3% – 3.5%)? Has the market achieved a new equilibrium or have rates consolidated at current levels only to move higher with short rates?

Higher rates would need to be impelled by: (1) a further deterioration in supply/demand imbalance, (2) improved economic optimism, and/or (3) evidence that the tight labor market is leading to increased wages. Additional deficit fueled spending by Congress (e.g., a meaningful infrastructure initiative, Tax Cut 2.0) would exacerbate Chairman Powell's concerns that "...we're not on a sustainable fiscal path ..." and potentially reawaken the bond vigilantes.

Firming growth expectations, domestically and internationally, could cause the FOMC to reassess the cyclical neutral rate, thereby forcing long-term real rates to adjust higher. Given the recent modest downgrade of global growth by the IMF (3.7% from 3.9% in July) and the FOMC's forecast for modest growth (2.5%) in 2019/20 and unemployment stabilizing at 3.5%, the risk of this outcome does not appear material.

In the absence of inflationary pressures, the new range for the 10-year note is expected to be 3% – 3.4% over the next

two quarters. Any material breach of the range for a protracted period of time is predisposed to follow a more conventional script – one identifiable flaw/misjudgement that is more likely to evoke fear than pity.

Chart 3: JPY hedged 10yr Treasury and 10yr JGB yields [%]



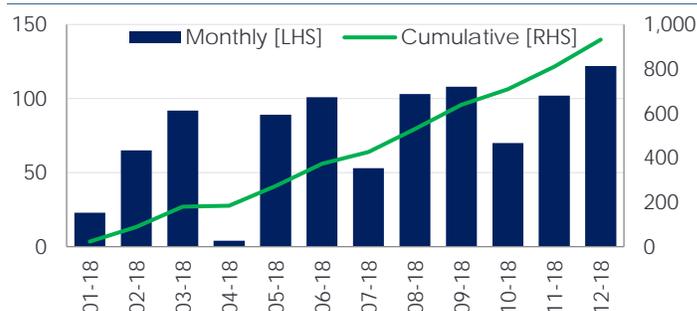
Source: Bloomberg

Chart 4: EUR hedged 10yr Treasury and 10yr Bund yields [%]



Source: Bloomberg

Chart 5: Monthly and cumulative 2018 Treasury (ex T-Bills) net supply forecast [\$bn]



Source: Citibank

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MUNICIPALS



David Ho

MD, Asset Management

dho@fpcmlc.com

212.380.2292

QUICK READ

- Municipals sold off proportionate to Treasuries in Q3
- Janus v. AFSCME may significantly dent public union influence, increasing states' negotiating power
- States are enjoying increased tax receipts
- Despite tailwinds for state credit, munis may be affected by spillover from significant taxable debt supply

Municipal bonds sell off in unison with Treasuries

Municipal bonds sold off roughly one-for-one with Treasuries in the third quarter of 2018. Observable by the AAA Bloomberg General Obligation Bond (AAA GO), yields increased by 24 basis points (bp), compared with Treasuries' selloff of 23bp over the same period.

Janus v. AFSCME – a landmark decision, credit-positive for states

On June 27, 2018, the Supreme Court ruled 5-4 in favor of Mark Janus, an Illinois child support specialist with the Department of Healthcare and Family Services, against the American Federation of State, County and Municipal Employees (AFSCME). Janus, a non-union member, contested that government union fees required as a condition of his employment by Illinois state law violated his First Amendment rights, and the Supreme Court ultimately agreed with his view.

This is a landmark decision, as it is expected to positively impact state credit by diminishing the clout of public unions across the country. US states face a collective \$1.8 trillion of pension deficits (as at 1Q18) according to Federal Reserve data. Weakened unions bode well for politicians seeking to renegotiate retirement benefits with employees in the pursuit of hopefully alleviating deficits.

Under this ruling, states that currently do not have right-to-work laws, i.e., allowing coercion of union dues from non-union members, should stand to gain the most from a credit perspective. New York, Rhode Island, Connecticut, New Jersey, Hawaii, and California are expected to see the largest percentage decrease in union membership according to the Illinois Economic Policy Institute.

Increased tax collection also credit-positive for states

According to the latest data released by the Census Bureau, 2Q18 tax collections were approximately 7.4% higher than taxes collected during the same period in 2017. All four tax categories recorded increases: corporate tax, individual income tax, property tax, and sales tax -- granted, corporate tax receipts were boosted by repatriation of foreign cash and property taxes were pre-paid prior to the effective date of the new tax law (where state and local tax (SALT)

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deductions would be capped). Even after adjusting for these one-time effects, tax receipts were still strong and have been for several quarters.

States generally have benefitted from a strong economy. As long as unemployment remains low and the equity market remains stable, states should continue to enjoy healthy tax receipts, benefitting states' credit quality.

Looking forward

While the healthy economy and weakened public unions should economically benefit states, crumbling infrastructure and caps on SALT deductions will create issues for a number of states in the future. States that are slow to rebuild their infrastructure may see growth weaken as a result. And for states with high SALT levies, the cap on deductibility means they may lose wealthy residents who move to other, more tax-friendly domiciles. Though these are more medium to long-term considerations, they nonetheless warrant continued monitoring.

Near-term, the market is pricing in a high probability for a fourth 2018 rate hike by the Fed in December. Globally, central bankers have contemplated if not already begun to set in motion the removal of monetary accommodation. The US is projected to finance close to \$1 trillion or more of deficit annually with Treasuries in 2019 and beyond. Additionally, states must begin issuing to finance infrastructure projects, so there will be a surfeit of debt projected to hit the market in 2019. While most new issues expected to flood the market will be taxable bonds, we believe municipal bonds will encounter spillover from taxable supply and consequently will also cheapen, and therefore we urge investors to exercise caution with respect to the duration of their portfolios.

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RATES



Laura Malvaez-Penalosa
 VP, Asset Management
 lmalvaez@fpcmlc.com
 212.380.2285

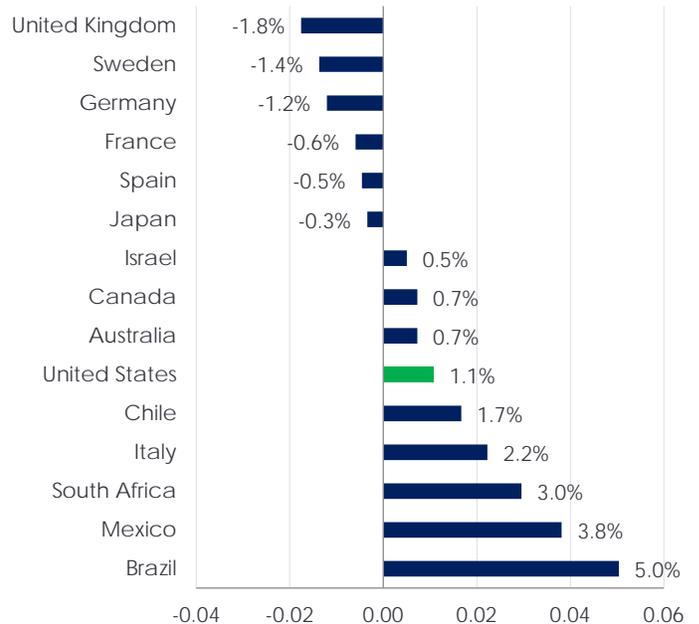
QUICK READ

- After a subdued beginning to the summer, rates have since spiked
- Inflation expectations have held, as real rates have been the primary driver in nominal rates rising
- Retirement complex remains an active buyer of Treasuries
- Widening expectations with respect to monetary policy outcomes could afford room for continued Fed rate hikes

Make America positively real again

Price action in the rates market was relatively quiet over the early summer despite the cacophony of trade wars, emerging markets crisis, and Italian budget stories – all of which caused only small ripples in markets, as risk assets reached multi-year highs. It was not until September that the market broke through its range and rates moved 20 basis points (bp) higher in relatively orderly fashion -- with the market focused on the relative strength of the US economy, it allowed the Fed to hike for the 8th time this cycle. Most of the change in nominal rates during the quarter can be attributed to higher real yields, as inflation expectations remained mostly unchanged (Chart 3). Inflation break-evens have struggled to break their range since February -- despite tailwinds from higher oil prices and strong domestic data, noisy CPI readings have weighed on investors' expectations. The curve for US real rates currently is positive across tenors - - together with Canada and Australia, the three are the only developed economies with this characteristic.

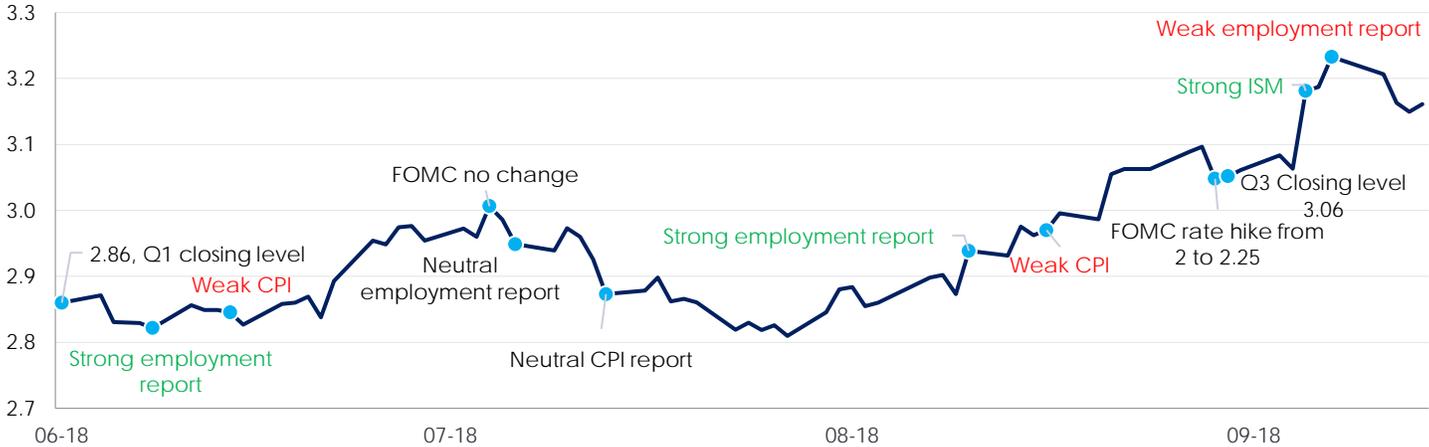
Chart 1: 10-year real yields by country



Source: Bloomberg

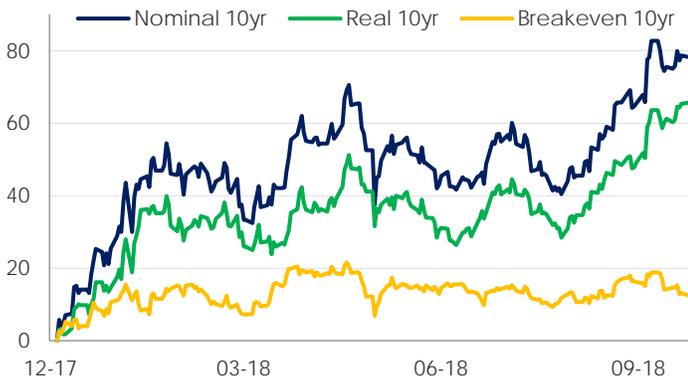
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Chart 2: 10-year Treasury Yields [%]



Source: Bloomberg

Chart 3: YTD change in nominal rates can be mostly attributed to higher real rates



Source: Bloomberg

Long end swap spreads also encountered significant repricing during the quarter, moving just below negative 3bp at the beginning of July -- the highest level since 2014 -- and traded in a close range until the end of the quarter, closing at negative 7bp (Chart 4). Among the factors driving Treasuries' richening versus swaps are: 1) easing of bank balance sheet constraints, 2) flattening of the Treasury curve, and 3) paying flows from variable annuity hedgers. Increased demand for Treasuries from pension plans is evident by the pickup in stripping activity and in the recent Fed transaction data report, which shows that private defined benefit pensions bought \$25bn of Treasuries 1H18.

Chart 4: 30-year swap spread



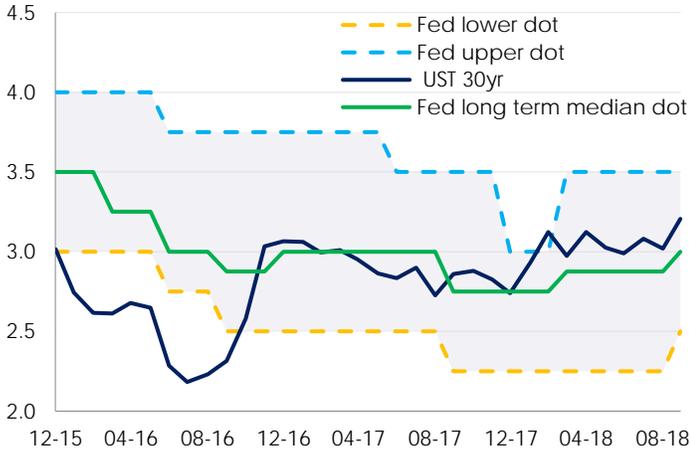
Source: Bloomberg

anchors aweigh

As can be observed in Chart 5, the market has looked to the Fed's neutral rate estimate -- also known as the median of "longer run" federal funds rate projections by the FOMC -- as a guide for long-term Treasury yields. As such, recent comments from Fed Chairman Powell and NY Fed President Williams on the vagueness of the Fed's "neutral rate" estimation have triggered meaningful shifts in yield levels, the shape of the curve, and a spike in rates volatility (Chart 6). A steepening of the curve is not common at this stage of the hiking cycle, but it might be a blessing in disguise for the Fed -- a market that expects a wider range of rate policy outcomes might provide enough resistance to an inversion of the curve and its related prophetic, cataclysmic effects on the economy.

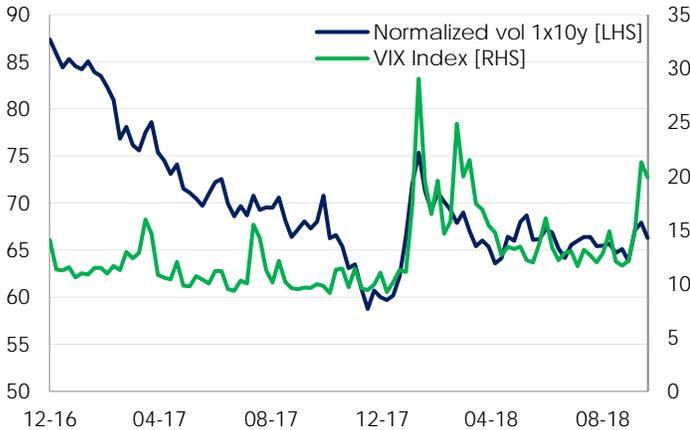
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Chart 5: Fed anchored long term expectations



Source: Bloomberg

Chart 6: Volatility

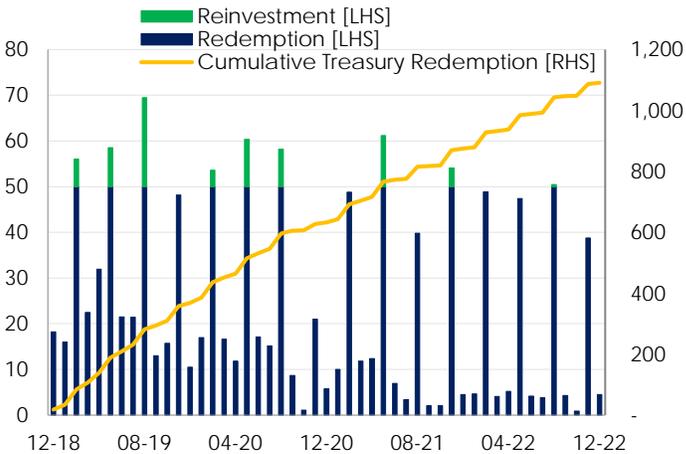


Source: Bloomberg

SOMA update

The Fed’s SOMA portfolio holdings fell below \$4 trillion for the first time in 4 years at the beginning of October and the roll-off went to the maximum of \$50bn per month -- \$30bn of US Treasuries and \$20bn of mortgage-backed securities. The cap will be binding mostly in mid-quarter months for the majority of 2019 (Chart 7).

Chart 7: SOMA Treasuries Maturity Profile [\$bn USD]



Source: Federal Reserve

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MORTGAGE-BACKED SECURITIES



Mattan Horowitz

VP, Asset Management

mhorowitz@fpcmlc.com

212.324.6018

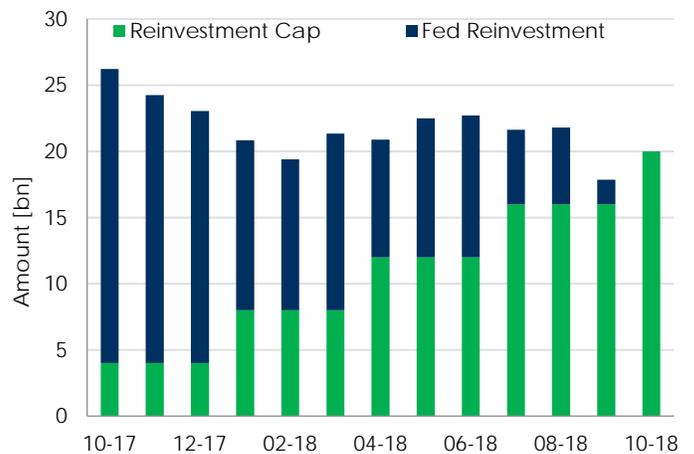
QUICK READ

- Mortgage prepayments are declining in the face of rising rates
- The Fed is no longer purchasing mortgages and is letting its current holdings paydown
- Fed MBS purchases removed significant negative convexity from the MBS market
- With the Fed out of the equation, investors could expect increased MBS spread volatility

FED up with MBS

A lot has changed in a year. 30-year fixed mortgage rates are higher by approximately 90 basis points (bp) making it uneconomical for most existing borrowers to refinance their mortgage – a dynamic which has caused principal pay-downs on the Federal Reserve’s System Open Market Account mortgage-backed securities (SOMA, MBS respectively) portfolio to decline from \$24.5bn in September of 2017 to \$17.9bn in September 2018. This decline in prepayments has coincided with increasing caps on reinvestment in the SOMA portfolio. At the end of Q318 the monthly cap reaches its terminal level of \$20bn a month – far above expected prepayments given the current level of rates. In other words, apart from a sharp rally in rates, the Fed has stopped purchasing mortgages and is letting its portfolio run off.

Chart 1: MBS taper

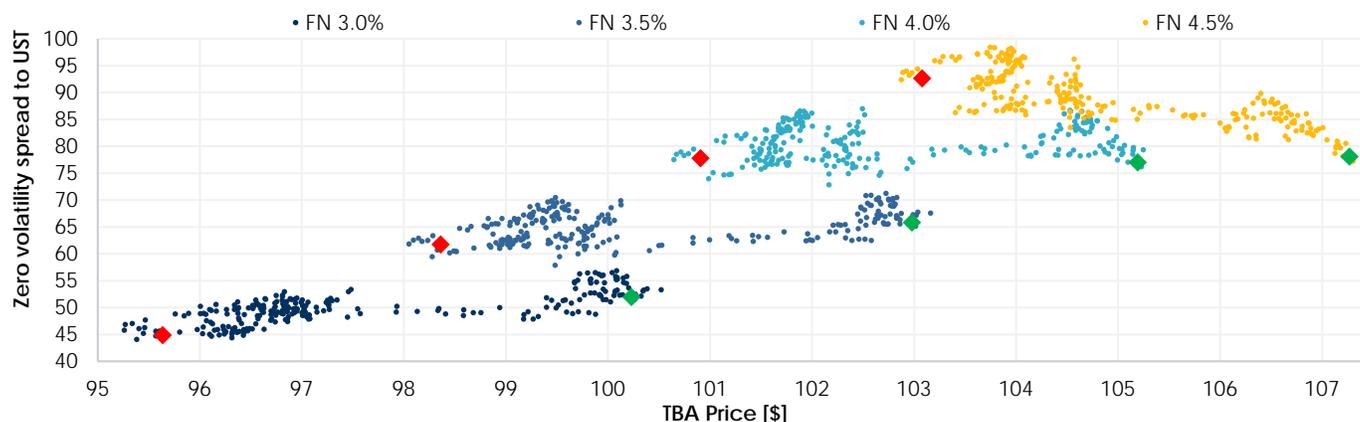


Source: Federal Reserve, Wells Fargo

Clients have been keen to understand what the absence of the Fed in the mortgage market means for MBS spreads. Over the past year, mortgage spreads have widened noticeably. Typically, lower dollar prices on MBS correlate with lower zero-volatility spread to Treasuries. As the dollar price of an MBS pool decreases, the interest rates on the underlying mortgages fall below market rates, so borrowers have less incentive to refinance their mortgages. With lower prepayment (negative convexity) risk, MBS investors require

MORTGAGE-BACKED SECURITIES

Chart 2: MBS spread [bp] – then (green) vs now (red)



Source: Credit Suisse

less spread. As shown by Chart 2, we see that MBS spreads are 10-25bp wider versus a year ago for given dollar prices in TBA¹. Given this widening, it is likely that the market has already priced in the effect of the Fed's MBS purchase tapering.

While the move in mortgage spreads stands out, what is not immediately apparent is how muted mortgage spread volatility has been -- for a given coupon, spreads have roughly traded in a 15bp band. One key component in the volatility of mortgage spreads is the negative convexity of MBS.

Fed MBS purchases removed a considerable amount of negative convexity from the mortgage market, as the Fed purchased current production MBS – among the most negatively convex mortgages in the market. The Fed also purchased MBS by taking delivery of TBAs, so not only was it taking in the worst coupons, but the Fed was also being delivered the cheapest-to-deliver pools in those coupons (i.e. pools with the worst convexity). To make matters worse, the coupons in the existing Fed portfolio are now out-of-the money, so those positions became less negatively convex, leaving only the most negatively convex current coupon MBS available to the market.

Table 1: Production coupon

30Y Conventional Coupon	% of Fed Portfolio	Option Adjusted Convexity		
		09/29/2017	09/28/2018	Chg.
2.5	1%	(36)	(28)	8
3	35%	(47)	(34)	13
3.5	36%	(58)	(43)	15
4	21%	(56)	(52)	4
4.5	5%	(39)	(51)	(13)
5	2%	(14)	(43)	(29)
5.5	0%	(4)	(14)	(10)
6	0%	0	(8)	(8)
6.5	0%	(2)	(5)	(3)

Source: The Yieldbook

With the Fed removing less negative convexity from the mortgage market, we could see mortgage spread volatility increase. We recommend investors not shy away from MBS given the absence of the Fed in the market, but we caution investors to be ready for a bumpier ride.

¹ To Be Announced. These are forward contracts for MBS that trade based on program (e.g. Fannie, Freddie, Ginnie I, etc.), term (15Y or 30Y), and coupon (e.g. 3.5%, 4%, 4.5%, etc.).

CORPORATE CREDIT



Sandy Jephson

Vice President, Senior Credit Analyst

sjephson@fpcmlc.com

212.324.6014

QUICK READ

- A high-conviction, concentrated credit portfolio is often preferable to a broadly diversified portfolio
- Over-diversification occurs when the number of investments in a portfolio exceeds the point where the marginal reduction of expected return is greater than the marginal benefit of reduced risk
- An adequately diversified portfolio implies owning a number of names large enough to nearly eliminate unsystematic risk, but small enough to manage
- Comparative analysis demonstrates that the orthodoxy that concentrated portfolios are uniformly riskier investments and translate into lower returns versus their benchmark belies the data
- Benchmark-outperformance is extremely challenging for managers adopting an index-replicating strategy

The merits of a concentrated credit strategy

A high-conviction, concentrated credit portfolio can be an effective component of a well-executed asset allocation strategy. Leaving aside the empirical evidence, there are logical reasons for owning a concentrated portfolio. With fewer credits to oversee, a concentrated portfolio allows portfolio managers to more intimately understand their exposures and own a portfolio of their best ideas.

If an investor's objective is maximization of risk-adjusted return, what style of portfolio management holds the most promise – diversified or concentrated? An evaluation of two investing strategies illustrates the potential outperformance of a concentrated credit strategy versus its benchmark, with comparable risk-adjusted returns. An important inference from our analysis is that credit investors could benefit from managers holding more concentrated portfolios. However, it should be noted that there are times when a diversified portfolio strategy could be appropriate -- e.g., following the Great Recession credit investors benefitted from the substantial and indiscriminate rally across the corporate index, producing total returns of almost 19% in 2009. This is hardly the case today, as credit spreads are approaching post-crisis lows.

Can an investment portfolio be overly diversified?

The virtues of diversification have been well documented as a tenet of a successful investment strategy. However, the notion of excessive diversification garners much less attention. Over-diversification occurs when the number of investments in a portfolio exceeds the point where the marginal reduction of expected return is greater than the marginal benefit of reduced risk. Certainly, an ample level of diversification is needed to reduce portfolio risk, but after that point, the marginal benefit from adding more securities to the portfolio diminishes -- a threshold where additional securities do not significantly reduce risk and may actually diminish returns. In the classic book *A Random Walk Down Wall Street*, economist Burton Malkiel -- a strong proponent of diversification and a skeptic of active management -- asserts that once a stock portfolio reaches twenty or so equal-sized and well-diversified holdings, the incremental reduction in portfolio volatility from the new holdings is de

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minimis (Chart 1). At the twenty holdings watermark, “the total risk (standard deviation of returns) of the portfolio is reduced by 70%. Further increase in the number of holdings does not produce any significant further risk reduction.”

Chart 1: Benefits of Diversification Decay Quickly



Source: A Random Walk Down Wall Street, Burton Malkiel
Diversification: Total portfolio risk as a function of # of stocks held

Diversification requires optimization

In 2011, a quantitative research study¹ from Citigroup found that a corporate bond portfolio of only 50 bonds selected by systematically cutting allocation from riskiest credits and rotating to cheapest credits produced an average excess return of 50 basis points (bp) per annum versus the Citigroup investment grade index in every year tested from 1994 – 2011, with lower default risk and a higher risk-adjusted return.

Conversely, a large number of securities in a portfolio implies that the positions are so small relative to the overall portfolio that no individual bond can affect portfolio returns – negatively or positively – with any real degree of significance. The smallest position in the Bloomberg Barclays corporate index represents less than 0.1% of the index! Excessive diversification might cause managers to dilute their best ideas given an unnecessarily large number of bonds in the portfolio, as each position exerts a smaller influence on the portfolio. An adequately diversified portfolio implies owning a number of individual investments large enough to nearly eliminate unsystematic risk, but small

enough to allow the manager to focus on a manageable number of quality investments.

Can a concentrated credit strategy outperform its benchmark?

If a concentrated portfolio can outperform its benchmark, how much alpha can be expected? And how does this strategy compare to the benchmark on a risk-adjusted basis? To answer these questions, we simulate the performance of two strategies using historical data (December 2011 – June 2018)² from the Bloomberg Barclays US Corporate Bond Index. Both strategies focus on only one dimension of investing, i.e. a narrower sector allocation versus the index (in reality, active returns in credit markets can be attributed to myriad factors including issuer selection, sector allocation, yield curve, market timing and duration strategies). The investment strategies were designed to focus on the maximum performance that could have been attained from a concentrated strategy provided the manager had perfect foresight (i.e., the manager exhibits perfect skill at anticipating market direction -- scenario #1), as well as the performance produced from a more mechanical investment strategy that requires no manager skill (scenario #2).

Scenario #1: Perfect foresight. In the first scenario, a hypothetical manager with perfect foresight semi-annually allocates exposure to the index’s eight best performing sectors, from eleven broad index categories. Once the decision is made to favor these eight particular sectors, the sector weights are scaled from the index’s weights to reflect this view. When trading costs do not justify rebalancing the portfolio, the manager constrains the portfolio’s sector and weights to conform to the benchmark. By design, our assumptions imply that the manager is skilled and always makes an optimal decision, which leads to a 100% probability of outperforming the index. However, she only realizes index-like returns when she chooses to mirror the index’s sector allocation. We do not imply that this is a realistic approach to sector allocation, but the extreme approach is useful to quantify the maximum

¹ Beating Credit Benchmarks: The “Cut-and-Rotate” Strategy, Citigroup, November 2011.

² Financials’ issuers’ weighting in the US corporate index soared to over 50% in 2008 and remains around 33% today. Financials’ volatile performance during the global financial crisis has therefore significantly impacted the total returns of portfolios benchmarked against corporate bond indices. We avoid bias to the industry by focusing on a less volatile sample period.

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outperformance a manager could have produced versus the benchmark during the sample period.

Scenario #2: Imperfect foresight. The second strategy assumes the manager has imperfect foresight and is based on the level of spreads by industry. Rather than overweighting the index's top performing sectors, the manager systematically removes allocations from the two widest-trading sectors (deemed the riskiest sectors), as well as the two tightest-trading sectors (deemed the richest sectors with poor relative value). The rebalancing is analogous to that used for the perfect foresight scenario, i.e., the portfolio is rebalanced semi-annually, and the manager positions the sector allocation to be neutral to the benchmark as transaction costs become too onerous.

Results. The results for both strategies are depicted in Chart 2. The orthodoxy that concentrated portfolios are uniformly riskier investments and translate into lower returns versus their benchmark belies the data. The analysis reveals that both strategies would have outperformed the Bloomberg Barclays US Corporate Bond Index during the sample period. Under scenario 1, the strategy produces a solid average annual gain of 1.2% versus the benchmark (94bp after trading costs). The reason that this strategy outperforms is clear, as the manager's knowledge of prospective returns is used to determine which sector allocation is optimal. The simple mechanical approach (scenario 2) produces an average annual outperformance of 84bp versus the benchmark (70bp after trading costs). Predictably, the more concentrated the portfolio, the higher its absolute risk (as measured by the standard deviation of returns), and the perfect foresight scenario produces the highest absolute risk (5.6% standard deviation versus 4.9% for the benchmark). But most disconcertingly, both strategies outperformed their benchmark with comparable risk-adjusted levels (the Sharpe ratio differs by less than 0.05 for both strategies versus the benchmark). As the data clearly illustrate, investors should not summarily dismiss the idea of less diversified credit portfolios.

Chart 2: Results of our two scenarios



Source: Bloomberg, FPCM

Does indexing have a role in credit investing?

Yes, but it serves a different set of portfolio objectives than actively managed concentrated strategies. Index replicating strategies can allow investors to generate returns close to the index with low trading costs and high liquidity. Most credit indices focus on the most liquid issuers as they are capitalization-weighted (the more indebted issuers have the larger weights in the index), with a minimum issue size of \$500 million. This excludes a substantial number of smaller less liquid bond issues from the index. Furthermore, portfolio managers employing tactical asset allocation may be interested in indexing to quickly and cheaply adjust their portfolio's allocation to various asset classes (e.g., Treasuries versus corporates) to enhance returns.

Can indexing strategies beat their benchmark?

The question might be construed as paradoxical. It seems extremely challenging for the average manager adopting an index-replicating strategy to outperform its benchmark – because of over-diversification, it is improbable that such a portfolio's performance will ever differ materially from its respective index. While diversification might decrease overall risk (when a market sector performs poorly, other investments in the portfolio with a negative correlation to the poorly performing investments should perform better and partially offset losses, reducing the overall portfolio volatility), it may decrease potential return since the portfolio will mirror the performance of the overall market. Passive managers,

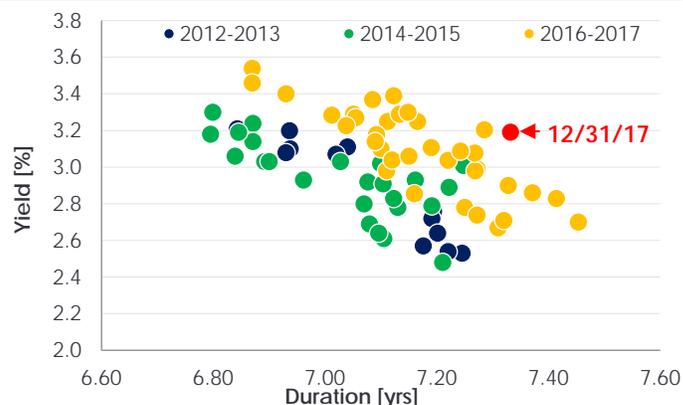
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by their very nature, do not steer clear of over-valued bonds if they are included in the index. If an investor's goal is to cheaply match benchmark performance (which is a perfectly reasonable goal), then broad market diversification makes perfect sense. However, if an investor's goal is to outperform the market, the level of diversification should be optimized, not maximized. What investors should avoid is attempting to outperform the market by investing in strategies that are excessively diversified.

Conclusion

There is ample reason to believe that many investors – even sophisticated institutional investors – do not fully appreciate the benefits of a concentrated investment approach to corporate credit and tend to judge individual investments on their idiosyncratic risk rather than on their potential to enhance a portfolio's risk-adjusted returns. While some level of diversification should be a consideration in constructing an investment portfolio, it should not be the single determinant of an investment strategy. We believe most fixed income managers make the same error of overdiversifying their portfolios to closely mirror their benchmark, which confines investors to market-like returns (or worse after fees). The focus on tracking error and investors' implicit tolerance for benchmark risk has obscured shifts in overall volatility and riskiness of the underlying credit benchmark, as credit yields have generally trended lower while duration has extended, at least through the end of 2017 (Chart 3). A concentrated investment strategy requires active management, and we believe that managers' unfettered ability to mitigate risks – credit, interest rate, etc. – offers the potential to improve a portfolio's risk/return profile. Concentrated active fixed income strategies are designed for investors seeking to achieve their objectives in both bullish and bearish environments, and provide the latitude needed to manage risks more nimbly and seize opportunities.

Chart 3: Investment Grade Corporate index



Source: Bloomberg

Nonetheless, a concentrated portfolio is not unequivocally a dominant strategy. Rather, such an approach can only generate alpha if it is accompanied by a strong research process capable of uncovering quality companies at attractive valuations. However, the decision by a fund manager to concentrate purchases should be viewed as a signal of manager skill rather than a weakness.

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Rongfeng "Becky" Li, CFA
SVP, Asset Management

bli@fpcmlc.com

212.380.2296

QUICK READ

- Student debt reached a record \$1.53 trillion, of which 92% is financed by the federal government and 8% by private capital
- Headlines abound on the growing student debt crisis, but the mess mostly resides in the dominant federal student loan space
- Non-credit underwritten federal student loans are easy to obtain and unsurprisingly perform poorly compared with the credit underwritten private student loans
- With proposed reforms for federal student loans, the private student loan market could play an increasing and more efficient role in the financing of college education
- More private student loans could be financed in the asset-backed securities (ABS) market down the road, where spreads could potentially widen

A tale of two student loan markets: federal vs. private

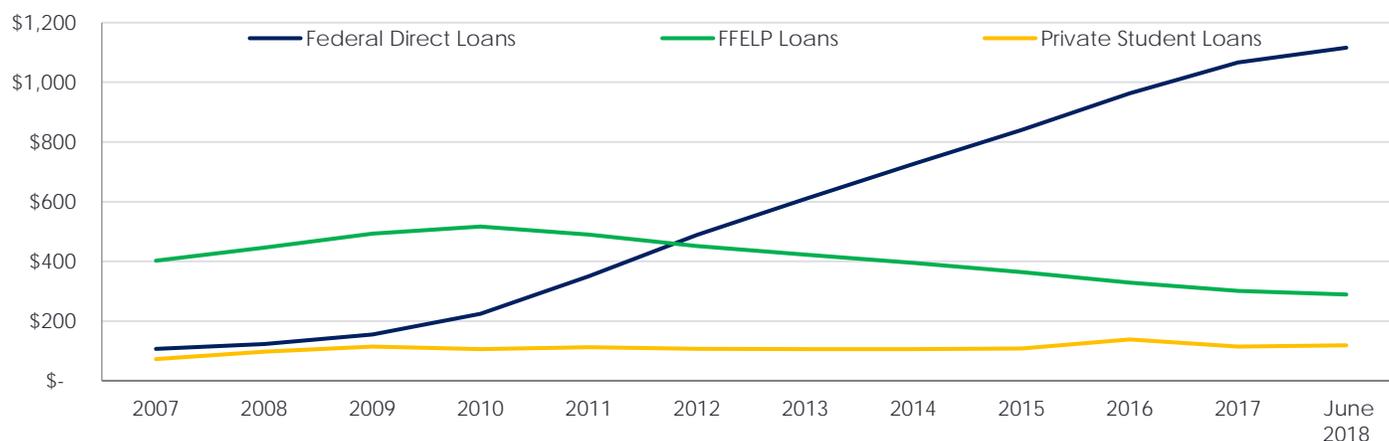
Student debt reached a record \$1.53 trillion in June 2018. That is larger than \$1.1 trillion auto debt and \$1 trillion credit card debt. Headlines abound on the growing student debt crisis, but the mess today mostly resides in the dominant federal student loan space and not in the small credit underwritten private debt market. With proposed reforms for federal loans, the private market could play a more important role in the financing of college education. This would be a good thing, as more discerning private capital could lead to better choices of the types of colleges and programs to enroll for students. More credit underwritten private student loans could also portend more private student loan asset-backed securities (ABS) down the road.

The financing of college education has become predominantly a federal policy effort. Lack of credit underwriting and absence of aggregate lending limits in the federal loan market have led to taxpayer losses. One recent eye-catching story in WSJ is about a 37-year old orthodontist in Utah who has amassed over \$1 million federal student loans (mostly Grad Plus loans). Facing this daunting debt, the orthodontist has entered into a government income-based repayment plan under which he pays only \$1,590 per month (10% of his discretionary income). This payment amount falls short of even covering interest on his debt, let alone paying down his principal. The balance of this negative amortizing debt will keep growing, but the orthodontist's government student debt will be forgiven 25 years after he has been under the income-based repayment plan. Who will bear the cost of his forgiven interest and principal? It's the federal government, through you and me, the taxpayers.

The federal government is a giant elephant in the student loan market. The size and scope of the federal student loan program have grown enormously since Congress enacted the first college financing program in 1958 with the passing of the National Defense Education Act. Of the \$1.53 trillion student debt outstanding today, only 8% is private student debt. The remaining 92% is financed by the federal government in various forms – primarily Direct Loans and FFELP (Federal Family Education Loan Program). After the

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Chart 1: Student Loans Outstanding [\$bn]



Source: Federal Reserve/US Department of Education

elimination of the FFELP program in 2010, Direct Loans took off and have increased by approximately \$1 trillion since then. Such relentless rise in federal student debt is driven by several factors: 1) more people went to colleges after the Great Recession; 2) ease of borrowing from the federal government; 3) rising tuition at both private and public colleges, somewhat perversely encouraged by higher federal borrowing limits for undergraduate students as well as lack of aggregate lending limits for parent and graduate student borrowers; and 4) interest accrual on loans.

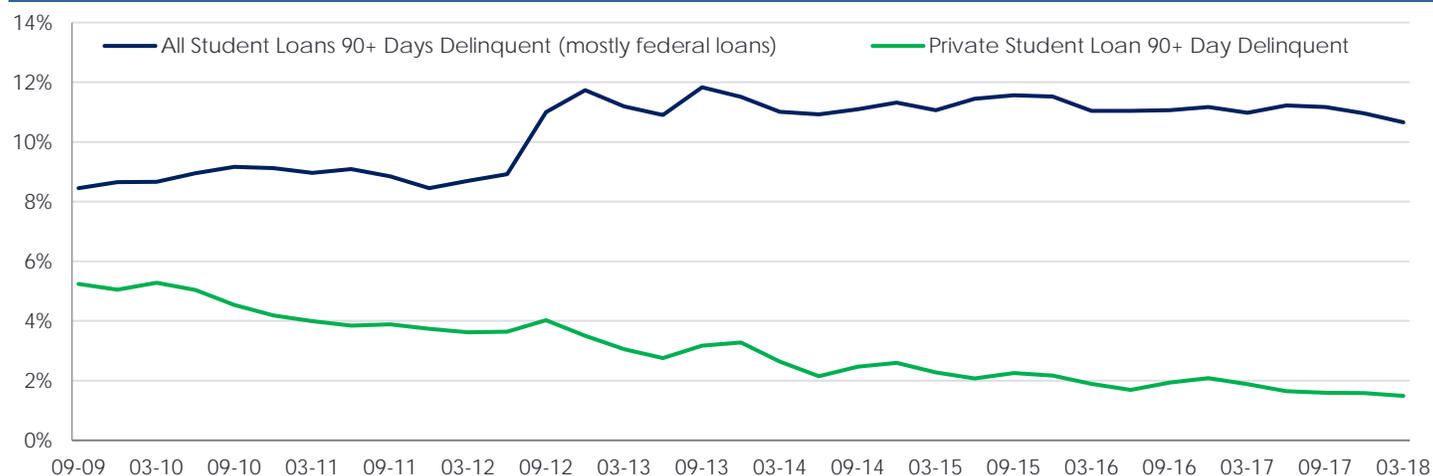
Borrowing from the federal government is easy, with hardly any credit underwriting involved. Practically anyone can get a student loan from the government regardless of his or her credit profile, income level, type and quality of chosen colleges or programs. Since there are no annual or lifetime borrowing limits for federal Parent Plus and Grad Plus loans so long as the borrowers don't have adverse credit history, these borrowers can borrow up to the full cost of college attendance, including tuition, fees, and room and board, as in the case of the orthodontist mentioned above. Such easy

credit on his Grad Plus borrowing contributed to his astonishingly high student debt level, part of which will be paid by taxpayers.

In sharp contrast, the private student loan market has tightened their underwriting standards since the Great Recession by requiring higher FICO scores and co-signers (usually mom and dad). Today, over 90% of private in-school student loans have co-signers who must step in to fulfill debt repayment obligations if the students cannot pay, as student debt is not dischargeable through bankruptcy. Not surprisingly, we see a sharply diverging performance trend between private and federal student loans, where private loans' 90+ day delinquency rate has been steadily falling since 2009 to 1.5% today while federal loans' delinquency remains elevated. It should be pointed out that federal income driven repayment plans have artificially lowered federal student loans' delinquency rates, which would be even higher absent the rising popularity of these generous repayment plans. It is clear that credit underwriting matters in student loan lending, as it does in all other areas of lending.

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Chart 2: Diverging Trends in 90+ dpd Delinquency Performance

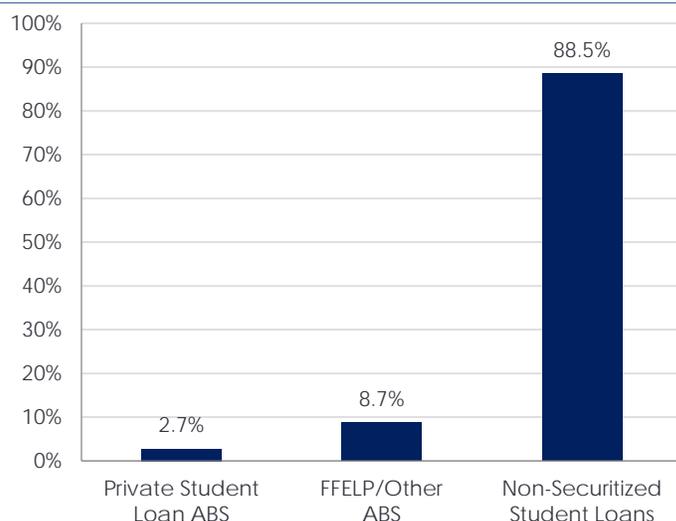


Source: Federal Reserve Bank of NY, MeasureOne

Reform is much needed in the dominant federal student lending space to rein in rising student debt and to reduce costs on taxpayers. Imposing loan limits would be a sensible step. Congress proposed the “PROSPER Act” in December 2017, which is awaiting House approval. The Act seeks to impose new aggregate lending limits on how much graduate students and parents of undergraduate students can borrow from the federal government, with a proposed lifetime cap of \$150,000 under Grad PLUS program and \$56,250 under Parent PLUS per student. If the Act is passed, there would likely be less new federal student debt and more private student loan origination. This is a good thing for the more efficient private loan market.

Private student loan asset-backed securities (ABS) represent approximately 3% of the total student loan financing market. These student loan ABS are performing well and offer ample protection for investors, with sizable enhancement and structural protection. If the proposed “PROSPER” Act is passed, we would likely see more private student loans made, some of which would be financed in the ABS market as well. Competition would probably heat up for private student loan origination and private lenders may start to loosen their tight underwriting standards. We could potentially see private student loan ABS spreads widen from less stringent underwriting and perhaps weaker structural enhancement.

Chart 3: Only roughly 12% of \$1.53 trillion student loans are securitized



Source: SIFMA/National Student Data System/Federal Reserve