The Next Credit Cycle: Scenarios for HY, Loans, and Private Debt

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Private debt, the fastest growing segment in US credit

By its very nature, the private debt market is more difficult to analyze as most deals never get included in any widely followed indexes or make it into otherwise publicly reported portfolios. Even estimating the size of this market is a challenge, and we had to go about it backwards, by starting with known overall corporate debt stack and removing otherwise known and attributable pieces. We think, the market is somewhere between $400-$700bn in size, and it was the fastest growing segment of US credit, including bonds, bank and non-bank loans, over the past five years.

This report outline our understanding of structure, major investor types, growth, sector composition, leverage and covenant trends, key risks and mitigating factors of the private debt space. We find this asset to feature many hallmarks of a classic new hot market, which often results in unsustainable growth trajectories leading to eventual corrections, required to stabilize the market at longer-term sustainable levels. This report is also part of our broader take on US lending landscape that we published in collaboration with our banks and asset managers equity research and economics teams.

Loan covenants are the defining feature of this cycle

The syndicated leveraged loans continued to attract investor interest since the GFC, as their investment thesis (significant yield pickup coupled with no interest-rate sensitivity) remains appealing to many. As a result, the leveraged loan market has grown by 19% in the last two years, 44% in the last five, and doubled in the last ten. Strong demand forces asset managers have to compete for new deal allocations on both pricing and structures. Coupons are getting squeezed, leverage pushed up, and covenants dropped. And while tight pricing and elevated leverage are expected side-effects at this stage of the cycle, the degree of covenant deterioration has reached new levels in recent years, well beyond the outdated “cov-lite” label.

The next credit cycle: modeling potential credit losses

We bring all our knowledge of the three segments of leveraged finance – HY, loans, and private debt – in one place by running side-by-side credit loss models for three distinct scenarios: consensus middle-of-the-road, mild recession and a full-scale recession. Our interest primarily focuses on the last one as it helps us better understand the downside scenario and help us make more informed risk management decisions.

Key takeaways

We estimate the next credit cycle, when it happens, could bring credit losses to the extent of 2x of expected annual yield income in high yield and leveraged loans, and 1.3x in private debt. Investors could also experience temporary mark-to-market losses of up to 5x of their annual income. To put this downside risk into perspective, it would take a 325bps increase in yield to wipe out 2 years of yield income in HY, given the 4yr duration of this asset class. In other words, a 150bps increase in Treasury yields coupled with a 150bps widening in spreads is less damaging than a cyclical turn.

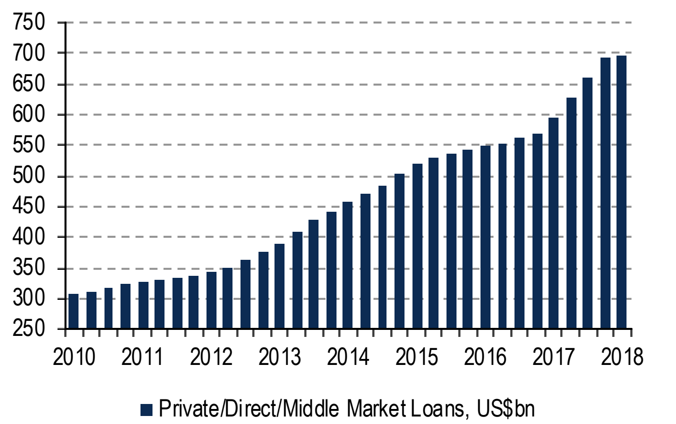
While we do not believe the next credit cycle turn is imminent, this evidence improves our confidence in the existing positioning recommendation to begin underweighting lowest quality segments of the market in favor of higher quality segments.

The shift to non-bank lending

This report aims to summarize our thoughts on the latest developments in the non-bank corporate lending space. This sector has experienced significant growth in recent years, driven by several factors, including changing regulatory environment for banks and broker-dealers, monetary policies leading to shortage of yield opportunities, and the savings glut driven by changes in global economic balance and demographics.

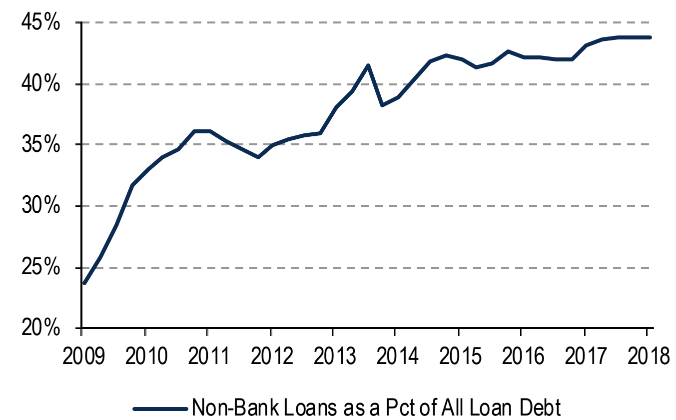
The capital markets have responded in a predictable way, by creating a new class of investors/vehicles, less constrained by regulatory hurdles and designed to take advantage of banks' retreat. Risk takers and risk budgets have migrated from bank desks and balance sheets to private lenders.

Figure 1: Private debt market size



Source: BofA Merrill Lynch Global Research

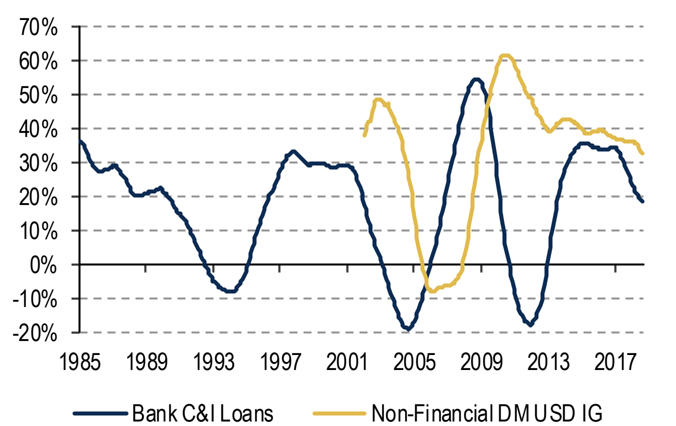
Figure 2: Non-bank loans as a pct of all corporate loans



Source: BofA Merrill Lynch Global Research

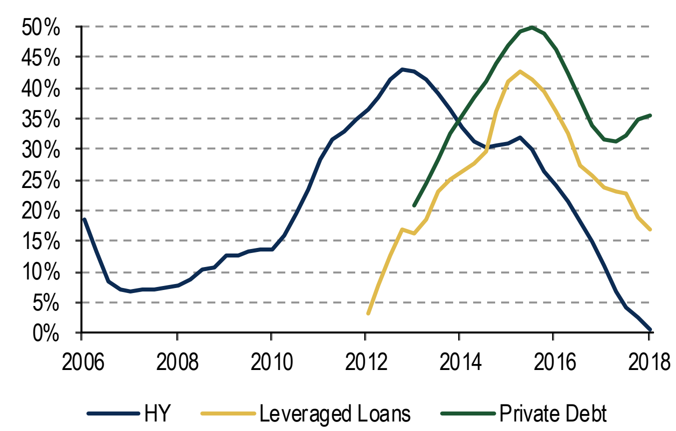
Our focus here will be on three primary channels of non-bank lending in the leveraged finance space, and in particular the private (or direct) lending to smaller issuers, sometimes referred to as middle-markets, and broadly syndicated loans to large issuers. All segments of corporate lending have experienced significant growth over the past decade, except for HY where the energy meltdown in 2014-2015 has changes the course of credit cycle.

Figure 3: Trailing 3yr growth rates in bank C&I loans, nonfinancial IG



Source: BofA Merrill Lynch Global Research, Federal Reserve

Figure 4: Trailing 3yr growth rates in nonfin HY, loans, private debt



Source: BofA Merrill Lynch Global Research, LSTA, Preqin

By its nature, the private debt market is more difficult to size; hence, our range of $400-$700bn. We define this market as the segment of total US non-financial debt space that is neither in a form of bonds, or bank-held-loans, or broadly syndicated leveraged loans. Using Fed's Flow of Funds allows us to estimate the private lending market at around

$700bn by taking overall US non-financial business credit and subtracting known components, such as bank loans, HY and IG bonds, commercial paper, and broadly syndicated loans.

An industry data source Preqin sizes the market at $650bn, though we note that this is as of year-end 2017 and includes about $250bn of "dry powder" – funds raised but not yet deployed. As such, we think an estimated range of $400bn-700bn for the private lending market is appropriate (Figure 1).

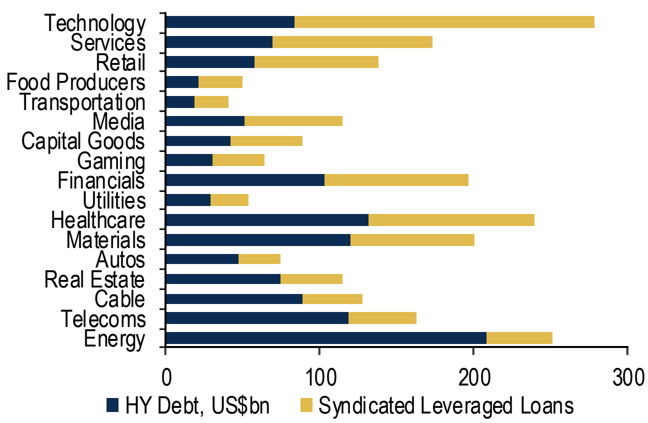
Cumulative growth in nonfinancial corporate credit over the past five years reached $2.8 trillion, and was distributed as following: private debt at $300bn (+78% at the upper end of our range), syndicated loans at $300bn (+44%), IG $1.4trln, bank-held C&I loans $680bn, HY $130bn. Banks continued to yield their ground in corporate lending to non-banks throughout the last decade (Figure 6).

Non-bank sector exposures

We show the sector distribution of leveraged finance debt (HY bonds + leveraged loans), ranked by proportion of total represented by loans in Figure 4. Overall, largest lev fin debt issuers are technology, energy, and healthcare. The sectors most heavily reliant on syndicated loans (as a percent of total indebtedness) are technology, services, and retail.

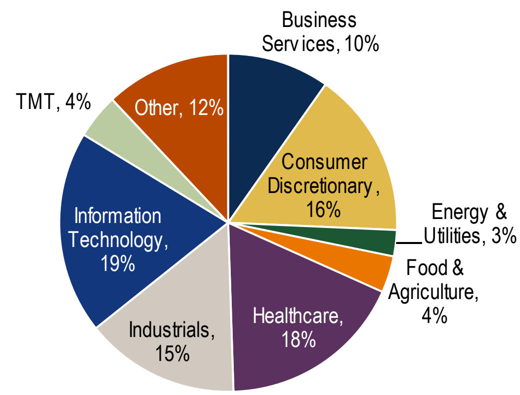
Figure 5: Sector distribution of debt in leveraged finance

Ranked by proportion of total debt represented by loans



Source: BofA Merrill Lynch Global Research, LSTA, Preqin

Figure 6: Sector distribution of private debt



Source: Preqin

The exposure of the private credit market is similar with the greatest exposure to the technology and healthcare sectors as measured by average volumes since 2010 (Figure 5).

Interestingly, these sectors heavily weighted in loans happen to be on the light end of distribution in terms of tangible asset coverage. This data point adds to the argument that recoveries in leveraged loan restructurings in the next cycle could be lower than historical experience would suggest.

Who are the non-bank credit providers?

The non-bank credit providers tend to be investment managers of different products and vehicles. All three asset classes (high yield, leveraged lending, private middle-market) are heavily institutional, which is a benefit in terms of relative stability of capital (Figure 3).

High yield is most exposed to retail/unconstrained institutional capital. Conversely, syndicated leveraged loans are more immune with 51% in locked in CLO (collateralized loan obligations) capital, although reinvestment periods are relatively short. Also, separately managed accounts and dedicated institutional funds in leveraged loan space are less likely to have meaningful restrictions on early withdrawals of capital.

Figure 7: Providers of non-bank leveraged finance capital

Segment weight, %	HY Bonds	Leveraged Loans	Private Debt
SMAs/Dedicated Funds	51	33	81
CLOs	10	51	7
Retail Funds	31	15	1
ETFs	8	1	0
BDCs	0	0	11
Total	**100**	**100**	**100**
Estimated market size, US$bn	1,300	1,100	400-700

Source: BofA Merrill Lynch Global Research
SMAs = separately managed accounts, BDCs = business development company

A new industry of alternative investment managers has emerged to participate in direct lending. Prequin estimates the number at 322 funds, roughly a quarter of which debuted in the last five years. While early entrants in this space are represented by veteran institutions such as Ares, Golub, Oaktree, Apollo, Blackstone and others, the number of new participants raises questions around their experience, ability to attract capital and build necessary analytical infrastructure.

Private debt funds, on the other hand, routinely restrict investor options for early withdrawals, making the structure of this market much less susceptible to sudden outflows and fire sales.

Private credit market providers primarily include institutional fund and separate account managers, CLO managers, as well as managers of BDCs (Business Development Companies), though there is less data available in the private credit market.

Key risks attributable to the rapid growth in private debt

Private debt was the fastest growing segment of an otherwise rapidly expanding US corporate debt pile over the past five years. It has attracted many new entrants from all sides, including fund managers, end investors, and borrowers.

Dry powder in private debt funds reached a record $235bn earlier this year, according to the same source. This leads to intense competition among money managers to deploy such capital, creating potential negative side-effects to quality of capital allocation processes.

Banks, feeling the pressure from a new competitor on their historical turf are also getting more aggressive in defending their lending business, offering competitive lending solutions to issuers who would otherwise borrow from direct lenders – mostly on rates. Their ability to do so remains constrained by the regulatory requirements.

These competitive pressures lead to more aggressive deal structures and pricing. To win deal allocations, managers come under pressure to provide higher leverage, accept looser documentation, or allow lower pricing.

> Such rapid development of private debt lending fits the description of a classic new hot market, which often results in unsustainable growth trajectories leading to eventual corrections, required to stabilize the market at longer-term sustainable levels.

The private debt market is by definition less transparent. This makes it more difficult to judge the aggregate credit quality trends as well as aggressiveness of new deals in that market. Names in private debt portfolios are less likely to be followed by broader equity/credit analysts in other asset classes – this decreases the likelihood of early detection of negative fundamental trends.

Secondary trading liquidity of private and middle-market debt is meaningfully more constrained given their private nature and small size even under normal volatility circumstances. For all practical purposes, such liquidity should be expected to evaporate entirely in a stressed market environment, unless price discounts get deep enough to capture the attention of distressed community.

Management fees in private debt have come under pressure, reflecting the broader trend in other asset classes. According to Preqin, such fees are averaging 150bp here, vs. 200bp five years ago, and 175bp in 2016. Lower fees force managers to control costs and lead to constraints imposed on efforts to retain top talent. Smaller issuers often lack diversity of funding sources, making them more prone to sudden loss of risk appetite from existing ones.

Key mitigating factors that could neutralize the risks

Given smaller capital structures, a limited number of investors typically own the whole deal by themselves. This allows investors to dictate covenants and exercise greater degree of control over the issuer. In a hypothetical debt restructuring, such an investor could also face less of a risk of competing claims reducing asset pool.

Middle market loans have a lower proliferation of standard “cov-lites” (absence of maintenance covenants) vs. the broadly syndicated loan market, and have tighter language around restricted payment baskets, asset sales and cash flow sweeps. EBITDA adjustments are also reported to be less prevalent, but nonetheless appears to be a growing problem. Anecdotal evidence suggests that covenants in middle market loans are generally stronger compared to overall leveraged loan market. Leverage in the middle market is estimated to be 5x-5.5x vs. 6.0x in syndicated loans. In contrast, most banks limit their middle market exposure to 4.0x leverage.

The asset class is relatively small and the potential for spillover to broader credit may be limited. At $400-$700bn, the private debt space could be up to 60% of the size of leveraged loans, 30% the size of global HY, and 10% the size of US IG. Assuming most vehicles that hold private debt are segregated from those holding public instruments, a distress in the former should not have an immediate contagion effect on the latter.

Having said that, there is a limit as to how far these factors would mitigate a deep stress scenario. For example, given that most BDCs are trading in 8-10% yield range, yields could easily reach high teens or even 20-ies, in a scenario where their prices were to drop substantially. This could lead to a flow of capital away from public debt markets and towards these newly created opportunities.

Illiquidity could have a mitigating side-effect, in that there will be fewer fire-sales that could otherwise set low price prints and become benchmarks for subsequent portfolio markdowns and further fire-sales. This factor does not change the underlying economic value of an asset, but it mitigates short-term price volatility.

The structure of broadly syndicated loan market today also relies less on mark-to-market instruments and daily liquidity funds, which could help it experience more orderly price adjustment in the next downturn.

In addition, poor liquidity could force better credit quality standards, as lenders know they are likely to own the deal to maturity. Absence of a realistic prospect of early exits through secondary markets forces lenders to adopt more conservative leverage requirements towards borrowers.

Direct lending funds typically do not use any leverage, or in some cases limit themselves to 1.5x-2x debt to 1x equity. BDCs are typically levered 1.5x:1. CLOs could be levered up to 8x in middle-markets and 10x in broadly syndicated space, however their liabilities are fixed for the duration of the deal, limiting the risk of a forced unwind.

Standard loan retail mutual funds hold only limited allocations to middle market loans. We analyzed portfolios of largest funds representing 25% of total AUM in this segment, and determined that less than 2% of their positions were in smaller-issuer loans. This limits the liquidity risk to their portfolios.

Loan covenants are an epitome of this cycle

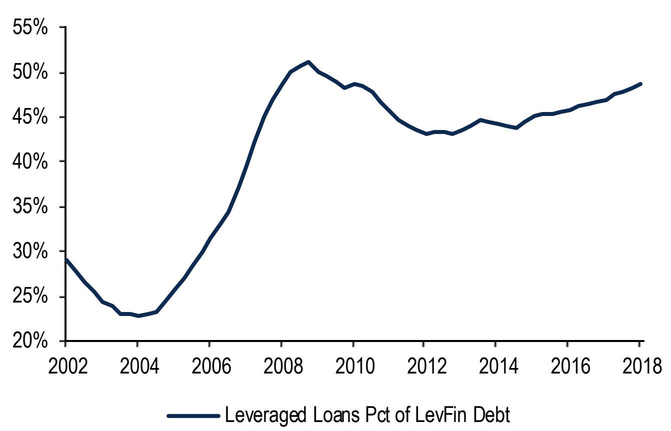
The syndicated leveraged loans continued to attract investor interest in the last few years, as their investment thesis (significant yield pickup coupled with no interest-rate sensitivity) remains appealing to many. As a result, the leveraged loan market has grown by 19% in the last two years, 44% in the last five, and doubled in the last ten. Both syndicated loan and CLO issuance is hitting new records (Figure 8).

With strong demand for loans in recent years, asset managers have to compete for new deal allocations primarily on two scales: pricing and structures. Coupons are getting squeezed, leverage pushed up, and covenants dropped.

CLOs are in a particularly sensitive spot, where their ability to compete on pricing and leverage is limited as they have to make math work over the cost of funding and adhere to minimum rating constraints. As a result, some managers could be more inclined to compete by accepting looser investor protections for the same price and leverage.

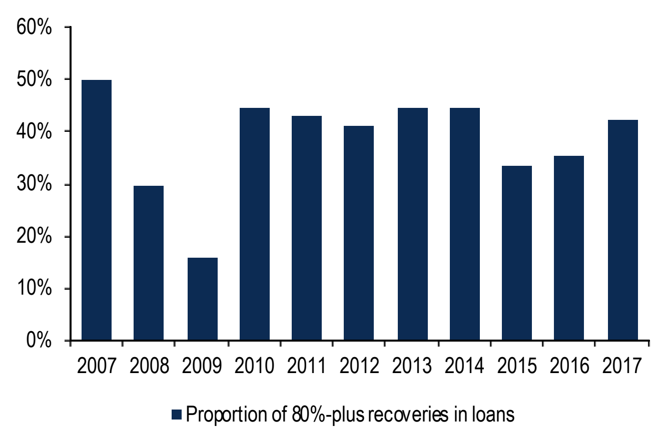
A typical CLO ramp-up period includes a warehousing stage that could last for about six months. During this stage, new loans are being acquired as a collateral for the future CLO deal, and an equity investor in a warehouse facility carries the risk of market conditions moving against them during this ramp-up period. Therefore, equity investors are incentivized to close the ramp-up period as soon as possible.

Figure 8: Syndicated loans as a pct of leveraged finance debt



Source: BofA Merrill Lynch Global Research

Figure 9: Proportion of 80%+ recoveries in leveraged loans



Source: BofA Merrill Lynch Global Research

This pressure is counterbalanced by established time windows on CLO warehousing facilities, which arguably allow managers some flexibility to bypass on deals they view as particularly unattractive. The choice of a CLO manager could depend on how quickly such manager is expected to complete this stage. There is a premium associated with well-established managers. In some cases, CLO manager and equity investor are the same entity.

Pressure to ramp up a portfolio for future CLO at the time of record CLO issuance volumes puts some managers in a position where they are forced to compete on the strength of investor protections for a given level of credit risk/coupon.

Retail funds also contribute to excess demand for loan product as they continue to see inflows. YTD 2018, loan funds are seeing a 10% inflow, compared to a 9% outflow from HY funds. Loan funds have higher tolerance towards lower quality (B2/B3) paper compared to CLOs.

While there are some natural limits on how aggressive they can be on pricing (via pricing floor on their liabilities), there are no immediate consequences to accepting looser covenants. During the period when default rates are low (like today), the impact from looser covenants through lower loan recoveries is negligible. This would likely change, once default rate increase in the next credit cycle.

Key risks in continued deterioration of investor protections

Strong competition in the new CLO/loan asset management space in the last few years led to deterioration in key investor protections, such as restricted payments, asset sales, EBITDA add-backs, and incremental debt capacity[1].

These covenants are critically important to recovery in case of default, as they are capable of directly affecting the pool of assets available to creditors in bankruptcy, and the extent of creditors' ability to establish claim over it vs. unsecured and equity investors.

Loan recoveries, defined as post-default trading prices, averaged a relatively high 65% since 2007 as a function a large proportion of loans recover near-par in restructuring. Tight covenant packages helped them achieve stronger controls over asset pools in bankruptcy or other distressed resolution.

This may change in the next cycle as key covenants have been eroded in recent years. Assuming the proportion of near-par recoveries is cut in half, average first lien loan recovery rate could drop to low-50s%. For example, on a $1.1tn loan market size with 15% peak default rate and 15% undershoot in recovery (50% vs 65% historical) this is an equivalent of $25bn of capital being permanently wiped out purely as a function of poor covenants. The next credit cycle is likely to bring some very poor recovery prints in certain most aggressive capital structures. We discuss various scenarios for defaults/recoveries later in this report.

Covenants are particularly weak in the broadly syndicated loan market, where the competition for new deal allocations is high. The private/direct lending space has also seen some deterioration in investor protections, but to a lesser extent than what we have seen in the syndicated transactions.

Key mitigating factors

Not all loans lacking covenants carry the same risk of low recovery. "Cov-lite" is not a new term, as it was coined at the end of last credit cycle, in 2006-2007, when a growing number of new loans were coming in without a maintenance covenant. In such cases,

[1] Definitions of certain key covenants: Structural subordination: Protection against lien dilution or structural subordination for existing lenders. Restricted payments: Protection against cash leakage and value transfers that depletes value of associated collateral. Debt Incurrence: Protection against issuers leveraging up or paying other debt holders at the detriment of existing lenders. Investments: Protection against issuer taking on risky investments through carve-outs and builder baskets. Asset sales: Protection for lenders to enable them to benefit from asset sale proceeds and excess cash flows.

issuers were not required to adhere to leverage tests once the loan was issued. We have long found this particular covenant mundane, as the experience of multiple breached maintenance covenants has demonstrated that lenders generally reserved their right to declare technical default, and instead chose to provide waivers for a fee.

Post-Global Financial Crisis, the number of such "cov-lites" has grown to the vast majority of new leveraged loans by around 2013, so again, not a new development. In a sense, the "cov-lite" misnomer is an unfortunate label that muddies the waters of a real problem for the next credit cycle, which is epitomized by the new structures lacking other key covenants.

The next credit cycle: sensitivity analysis

In this section, we take three major asset classes under our coverage: HY, syndicated loans and private debt, describe their current pricing in fundamentals, and run three scenarios for the future (Figure 10).

The first scenario is base-case, consensus, middle of the road: the current economic trajectory persists, the Fed delivers on its dot plot estimates, and credit losses stay relatively modest, even for the floating rate instruments.

Figure 10: Scenario analysis for credit losses in leveraged finance, private debt

		HY Bonds		Syndicated Loans		Private Debt	
	Pct Floating	25%		75%		95%	
	Fixed Coupon	6.65%		6.08%		7.75%	
	Floating Coupon (over Libor)	3.90%		3.33%		5.00%	
Current	Libor			2.40%			
	Weighted Average Coupon (w/ Libor)	6.56%		5.82%		7.42%	
	Total Debt, US$bn	$1,200		$1,100		$700	
	LTM EBITDA, US$bn	$255		$183		$133	
	Int Expense, US$bn	$79		$64		$52	
	Leverage Ratio	4.7x		6.0x		5.25x	
	Coverage Ratio	3.2x		2.9x		2.6x	
+100bp Fed Funds	Libor			3.40%			
	Weighted Average Coupon (w/ Libor)	6.81%		6.57%		8.37%	
	Total Debt, US$bn	$1,200		$1,100		$700	
	LTM EBITDA, US$bn	$255		$183		$133	
	Int Expense, US$bn	$82		$72		$59	
	Leverage Ratio	4.7x		6.0x		5.25x	
	Coverage Ratio	3.1x		2.5x		2.3x	
Stressed Case	Libor			0.50%			
	Weighted Average Coupon (w/ Libor)	6.09%		4.39%		5.61%	
	Earnings Growth			-30%			
	Total Debt, US$bn	$1,200		$1,100		$700	
	LTM EBITDA, US$bn	$179		$128		$93	
	Int Expense, US$bn	$73		$48		$39	
	Leverage Ratio	6.7x		8.6x		7.5x	
	Coverage Ratio	2.4x		2.7x		2.4x	
	Peak Default Rate	10.0%	8.0%	14.0%	10.0%	12.0%	9.0%
	Cycle Duration, yrs			2.0			
	Recovery Rate (price after default)	35.0%	40.0%	60.0%	70.0%	60.0%	75.0%
	Credit Loss (Permanent Loss), US$bn	$156	$115	$123	$66	$67	$32
	Secondary Dollar Price	0.65	0.80	0.70	0.80	0.60	0.85
	Mark-to-Market Loss (Temporary Loss), US$bn	$378	$221	$284	$198	$246	$96
	Current Income Generation, US$bn/yr	$79	$79	$64	$64	$52	$52
	Permanent Loss, multiple of Current Income	2.0x	1.5x	1.9x	1.0x	1.3x	0.6x
	Temporary Loss, multiple of Current Income	5x	3x	4x	3x	5x	2x

Source: BofA Merrill Lynch Global Research estimates

The second scenario, is the stressed case, which resembles a full scale recessionary environment, with earnings dropping 30% and the Fed being forced to cut rates back to zero. This is a scenario we pay most attention to in an attempt to properly manage a risk budget in coming years. The third scenario (shown in greyed-out columns next to stressed, is designed to represent a modest recession with better outcomes. Think of an energy experience in 2014-2015, perhaps a touch heavier or lasting a few months longer.

Note that while we show HY and syndicated loan spaces in two separate columns, the reality of the situation is that these spaces are not mutually exclusive as some issuers are present in both markets. With this limitation in mind, we think of this attribution as being defined by issuers that are predominantly HY or predominantly loans. We believe that such representation, while imperfect, allows us to more properly model the capital structure behavior of these otherwise distinct asset classes.

Scenario #1: +100bp move in LIBOR, "average" loss rates

This section is the base-case for the next couple of years, implies the macro environment remains broadly supportive and the Fed achieves its longer-term dot plot forecast. We note the following dynamics in our analysis:

- The impact on issuer fundamentals here is visible in changing coupons to the extent they are floating, and interest coverage ratios (ICRs) change in response to coupons.
- ICRs get somewhat problematic in syndicated loans and private debt space, but they remain generally manageable and comfortably above 2x.
- Leverage here is assumed to be unchanged, even though one could reasonably expect both earnings and debt to grow, somewhat out of sync with each other, over the next few years in a scenario where the Fed is able to deliver four more rate hikes. We did not aim to make this exercise about our judgment on those two imperfectly synchronized growth rates, and decided to leave leverage assumption unchanged in pursuit of simplicity and clarity of more consequential arguments that follow.
- We think some moderate credit losses could come out of this scenario, but unlikely to mark a turn in credit cycle more broadly. Such incremental moderate credit losses are more likely to surface in the syndicated loan and private debt spaces, where capital structures are predominantly floating rate.
- Importantly, we do not view this scenario as being directly linked to the next substantial pickup in credit losses. This is not how the cycle ends.

Scenario #2: a full-scale recession

The key component of our sensitivity analysis is designed to define a full-scale recessionary experience.

- We assume earnings decline 30% (normal recessionary range 30-40%), Fed cuts rate down to zero and Libor bottoms out at 0.50%, leverage/ICR ratios respond accordingly as functions of unchanged debt levels, lower earnings and somewhat lower interest expenses, to the extent of their floating nature.
- Given these changes in issuer fundamentals, leverage would be likely to increase to 6.7xin HY, 8.6x in syndicated loans, and 7.5x in private debt.
- Under these prevailing leverage conditions, we argue the default rates could hit 10% in HY (normal recessionary range 8-12%), meaningfully higher level of 14% in loans, and 12% in private debt.
    - The HY bond market has an established track record of peak default rates over three independent credit cycles, with a normal recessionary peak level of 8-12%. We thus argue for a middle-of-the-road type of default experience here in the next credit cycle.
    - Such track record is materially less reliable in syndicated loans, where the 2001-2002 cycle arrived when the asset class was in its infancy, and the 2008-2009 was arguably softened by the extraordinary policy response

aimed specifically at banks and structured finance products, although not directly CLOs.

- Our argument for a 14% default rate rests on our understanding of substantial growth rates that were witnessed here in recent years, coupled with the higher leverage measures relative to other related asset classes. Leverage in the syndicate loan market could hit 8.6x under a moderate assumption of a 30% drop in EBITDAs.

- Private debt space has no meaningful track record in previous credit cycles as the asset class has grown to its present size only in the past few years, although its early origins are traceable to the previous decade. We thus rely our 12% default rate assumption here primarily on its leverage measures, which are assumed to be (but not always directly observable) around 5x-5.5x, in between HY and syndicated loans.

- We also assume recovery rates of 35% in HY, 60% in loans and private debt. Recovery rates here are defined as trading prices shortly after the event of default. This measure differs from ultimate recovery, which is the payout on the other side of a restructuring process.

    - Syndicate loan recoveries are penalized as a function of three factors: poor investor protections/covenants and poor tangible asset coverage in sectors most exposed to syndicated loans (technology, services, and retail). We do give the loan market a benefit for the fact that its structure is now materially less exposed to mark-to-market instruments, thus limiting the extent of fire sales that took place in 2008-2009.

    - A 60% recovery assumption in private debt, is a very rough estimate, given absence of verifiable historical track records and extremely low liquidity. Paradoxically, the latter could be viewed as a benefit, as absence of any practical ability to trade out of a position could arguably prevent many private loans from ever being “marked-to-market” in a restructuring process. We aim to approach this question more holistically however, essentially making an argument that if an independent expert were to make a bona-fide assessment of such loan’s true market value in a distressed situation, he/she must have applied an additional discount for illiquidity.

    - While we heard a wide range of opinions on this particular aspect of our scenario analysis from various experts in this subject matter we felt that at the end of the day, inability to trade cannot be reasonably argued to increase intrinsic value, even if it does make its determination less transparent.

- Permanent credit losses are defined as the peak default rate times expected duration of the cycle (we assume 2 years) times (1 minus recovery rate).

    - We also calculate temporary mark-to-market losses based on assumed low print in secondary market prices of 65c in HY, 70c loans, and 60c in private debt. Naturally the confidence in these assumptions must be taken in consideration with expected depth of liquidity.

    - We separate between permanent and temporary loss here in an effort to highlight the fact that the latter is not crystalized unless an investor sells at that low print, although everyone is taken for a ride to that level. The permanent loss is unavoidable if a portfolio is exposed to an instrument in question.

- We estimate permanent losses to be roughly 2x the current annual income generated in HY and syndicated loans and 1.3x in private debt. Temporary losses are estimated at 4-5x the annual income level.

- To put it another way, investors stand to wipe out 4-5 years of their income if a recessionary scenario described above were to materialize in this exact form, although a material portion of that is likely to be recaptured in a subsequent upswing. They are also likely to never recover 2 years of their current income, assuming a passive benchmark exposure to HY/loans and 1.3 years to private debt.

Scenarios #3: a mild/short recession

- Highlighted in grey next to each scenario, we are also showing less stressed scenarios, to give readers a better sense of the range of likely outcomes. We think of these more- and less-stressed scenarios as equally likely to materialize over the next few years, dependent on currently unknown circumstances of the next downturn.

- We also give the private debt a greater benefit of the doubt that recoveries there could be materially better in such less stressed scenario, function of lower leverage and better covenant protections in that space.

- The key takeaway here is that temporary losses could be limited to 3 years of income in HY/loans and 2 years in private debt. Permanent losses could claim 1.5yrs, 1yrs, and 0.6x yrs respectively.

- In a more optimistic scenario, we assume somewhat lower credit losses in loans and private debt. Default rates are assumed at 10% in this less-stressed scenario, while recoveries are at 70% in syndicated loans and 75% in private debt (credit given for patient institutional capital, and better structured deals vs syndicated loans).

Constrained liquidity as a factor in our analysis

Liquidity has generally been a constraining factor throughout the history of leveraged finance markets. HY bond and leveraged loans have rarely provided investors with particularly deep secondary trading markets – at least, if one's point of reference is determined by experienced in large cap equities, higher-quality bonds, FX, or commodities.

In the past, there were episodes when lev fin liquidity was relatively good, as was the case in 2006-2007. Additionally, throughout history, there were selected large capital structures that often had deep two-sided markets. Rarely do experienced leveraged finance investors expect deep liquidity to last over considerable time or encompass a considerable number of issuers in this market.

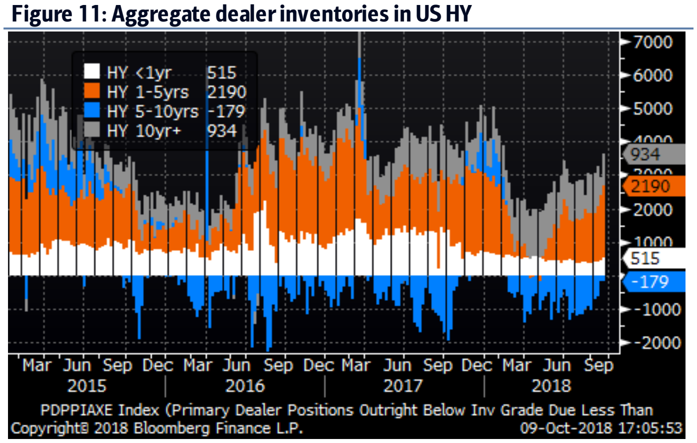
The topic of liquidity in the leveraged finance space has emerged as an issue of particular concern to credit investors, particularly after the Global Financial Crisis. After all, dealers curtailed their market-making activities as a result of both new regulations (capital requirements and the Volcker Rule, the latter which we detail later this section), as well as changes to dealer risk appetite and policies. The days of multi-billion dollar inventories of HY bonds on bank balance sheets came to an end shortly after 2008.

In recent years, aggregate dealer inventories in HY rarely exceed $5bn. This $5bn stand against a $1.3tn market by size and against $6-8bn of average trading volume it generates in a given day.

These facts lead to concerns that while the liquidity situation appears sustainable in times of inflows into the asset class, it may be easily disrupted in times of market stress and significant investor withdrawals. Additionally, if liquidity can be described as limited in HY bonds, and perhaps even more constrained in broadly syndicated loans, it is may be nonexistent in smaller middle-market and private debt spaces, where the whole tranches are often held in only a handful of accounts.

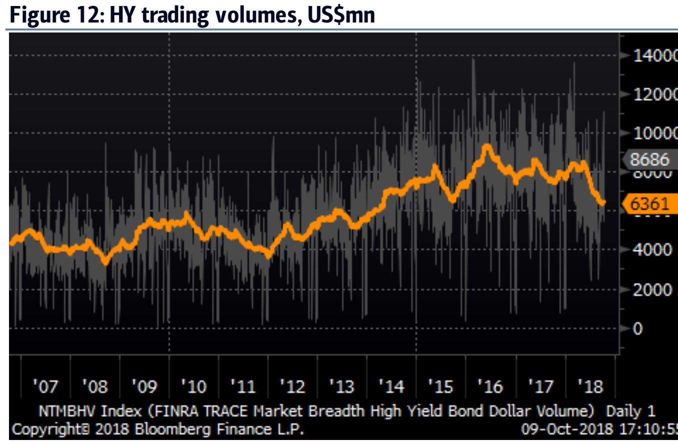
We generally share these concerns and agree with the argument that the next credit cycle will present an important test to the stability of leveraged finance market's trading infrastructure. The key point here is to remember that while the AUM (assets under management) in funds promising investors daily liquidity gas grown by hundreds of billions of dollars in recent years, the dealer balance sheets went the other way and compressed to a significant extent. With all these reservations in mind, we do not count ourselves among doomsayers that predict a severe dislocation in corporate credit as a result of liquidity constraints.

Figure 11: Aggregate dealer inventories in US HY



Source: The Federal Reserve

Figure 12: HY trading volumes, US$mn



Source: NASD FINRA

As we introduced this topic above, we started with a description of the secondary market that has been perennially illiquid with exceptions due to unusually lax risk management episodes or unusually well traded cap structures. Seasoned investors who have participated in this market over several credit cycles understand its liquidity constrains on the DNA level.

The fact that dealers have stepped back has been balanced with the fact of new trading venues, counterparties, and instruments emerging to fill the void. There are several competing electronic trading platforms in credit space today that did not exist prior to the financial crisis. Hedge funds and other opportunistic investor types are counting themselves among active market makers and they have stepped in during the recent episodes of market volatility with firm bids. Portfolio instruments such as ETFs, total return swaps, and options now complement CDX (credit default swap) indexes in allowing investors to transfer risk more efficiently.

Will the bid-ask spreads widen meaningfully in the next stress episode? Of course they will. Will the market necessarily malfunction in that scenario? Not necessarily. Recent deep stress volatility events such as Dec 2015 (a small distressed fund failing), Jun 2016 (Brexit), Nov 2016 (Trump election), and Jan 2017 (VIX fund failures) have proven that the leveraged finance markets continued to operate. In fact one could argue that all these episodes rewarded those who had the discipline, the risk budget, and the market sense to step in and take advantage of those temporary dislocations. We count ourselves among those who believe in this argument.

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