HY Retail in CLOs and Loan recovery

Lessons for the future

- CLO investors are focused on tail risk in B3/B- loans. The B3-B1 loan spread basis has actually declined since September, but CLO BB and B have widened, and this dislocation could signal an entry point to CLOs. In CLOs, reported collateral ratings are deal specific (facility or Corporate Family Rating) but in a newer analysis we show CLO holdings of loans both by facility and by CFR. CLOs are overexposed to B3 and B- at 8.8% and 15% compared to the loan market, but are actually in line with the loan market at the issuer level.

- Following joint work on Healthcare and Technology with J.P. Morgan High Yield Research, we turn to Retail. While exposure to Retail has dropped in CLOs to 4% (with dispersion across managers) these vehicles hold about half (50%) of Retail loans. We believe there is a lot to learn from Retail as a broader case study on CLO credit: the decline in exposure, sectoral changes, and capital structure implications. Retail operating performance is most driven by the underlying health of the consumer and the economy, followed by consumer trend changes and retail strategies.

- Since 2010, the average first-lien loan recovery rate is 62.5% based on 149 issuer defaults (dispersion by year/industry/issuer/loan). Also, there is divergence of recovery rates for loan-only issuers (43.3% LTM) and loan and bond issuers (72.4% LTM), though the sample size is small. Therefore, CLO investors are concerned with recovery rates and timing. Using Retail as an example, it is increasingly difficult to evaluate potential recovery given capital structure complexity and the wide number of parties. In many cases, investors/lenders have tapped any unencumbered assets, securing them to exchange formerly unsecured debt into secured debt (at a discount) and extend maturity. The result is a longer runway (longer lag time for loan and CLO default risk for some names) which gives companies time to try and grow EBITDA and cash flow, but lower recovery rates for unsecured and even traditional TL debt.

- Toys R Us was one of the most interesting cases for recovery in our history of covering Retail, where we learned a few key lessons when the company completed a stressed exchange in 3Q16 (adding complexity to an already complex capital structure), filing for Chapter 11 bankruptcy in September 2017, and ultimately for Chapter 7 liquidation in early 2018. While this is one example, in one sector, we think there are lessons to be learned both on a high and granular level that could be useful in thinking about default and recovery frameworks when stressing CLO portfolios.

US HY Credit Research

Carla Casella, CFA AC
(1-212) 270-6798
carla.casella@jpmorgan.com
J.P. Morgan Securities LLC

Sarah S Clark
(1-212) 834-5488
sarah.s.clark@jpmchase.com
J.P. Morgan Securities LLC

CLO Research

Rishad Ahluwalia AC
(44-20) 7134-0254
rishad.ahluwalia@jpmorgan.com
J.P. Morgan Securities plc

Heather A Rochford
(1-212) 834-3578
heather.a.rochford@jpmorgan.com
J.P. Morgan Securities LLC

Michael (Xin) Huang
(1-212) 834-3047
michael.xin.huang@jpmorgan.com
J.P. Morgan Securities LLC

See page 12 for analyst certification and important disclosures.

Rishad Ahluwalia
(44-20) 7134-0254
rishad.ahluwalia@jpmorgan.com

Heather A Rochford
(1-212) 834-3578
heather.a.rochford@jpmorgan.com

Michael (Xin) Huang
(1-212) 834-3047
michael.xin.huang@jpmorgan.com

Carla Casella, CFA
(1-212) 270-6798
carla.casella@jpmorgan.com

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Rishad Ahluwalia
(44-20) 7134-0254
rishad.ahluwalia@jpmorgan.com

Michael (Xin) Huang
(1-212) 834-3047
michael.xin.huang@jpmorgan.com

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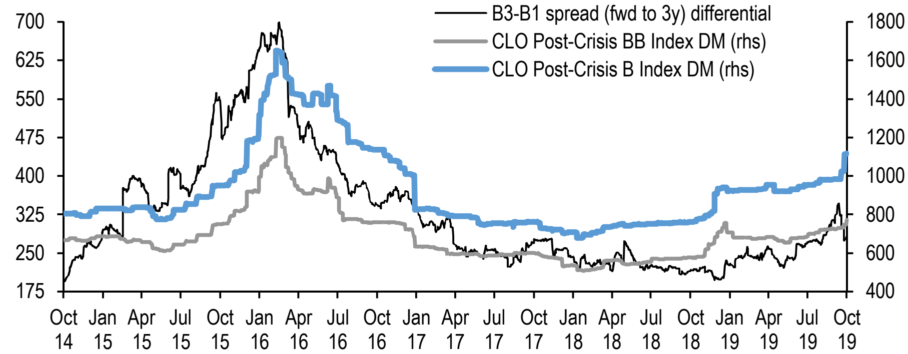
(1-212) 834-3578
heather.a.rochford@jpmorgan.com

Carla Casella, CFA
(1-212) 270-6798
carla.casella@jpmorgan.com

Relative Value: A broader analogy of Loan B3/B- risk

CLO investors are focused on tail risk in B3/B- loans. The B3-B1 loan spread basis has actually declined since the recent peak in September, whereas CLO BB and B tranches (the most exposed to riskier loans) are widening. This emerging (if tentative) dislocation in what has been a close pricing relationship could be a signal suggesting an entry point to CLO BB and B, which after softening pay 9-13%.

Exhibit 1: Loan B3-B1 spread (bps) differential versus CLOIE BB and B discount margin (bps)



Source: J.P. Morgan.

In the loan market based on tranche rating, 8.6% of the index is Moody's B3, versus a low of 2.4% in February 2013, and a record high 13.9% is S&P B-, compared to a low of 2.1% in December 2012. At an issuer rating, the amount of B3 and B- paper in the loan market actually rises to 28.3% and 15.6%. In CLOs, reported ratings are deal specific (i.e. facility or Corporate Family Rating), but, in a newer analysis, we show US CLO holdings of loans both by facility and by CFR. CLOs are overexposed to B3 and B- at 8.8% and 15.0% of portfolios compared to the loan market (Exhibit 2), but are in line at the issuer level (Exhibit 3).

Exhibit 2: CLO and loan current exposure to Moody's and S&P facility ratings

Moody's Loan Rating	% in CLOs	% in Loans
Baa2	0.7%	0.5%
Baa3	2.2%	2.1%
Ba1	4.3%	5.8%
Ba2	8.3%	9.4%
Ba3	13.5%	13.2%
B1	20.1%	18.9%
B2	36.8%	34.5%
B3	8.8%	8.6%
Caa1	1.9%	1.7%
Caa2	1.5%	1.4%
Caa3	0.3%	0.3%
Ca	0.2%	0.3%
C	0.0%	0.0%
NR	1.3%	3.3%

S&P's Loan Rating	% in CLOs	% in Loans
BBB	0.1%	0.0%
BBB-	6.0%	7.2%
BB+	5.8%	6.4%
BB	6.8%	7.7%
BB-	11.9%	11.3%
B+	16.9%	15.5%
B	30.3%	29.3%
B-	15.0%	13.9%
CCC+	3.2%	3.2%
CCC	1.4%	1.3%
CCC-	0.3%	0.2%
CC	0.2%	0.2%
C	0.0%	0.0%
D	0.1%	0.0%
NR	1.7%	3.6%

Source: J.P. Morgan, INTEX. Includes 955 US Post-Crisis CLOs with deal factor >= 80% and first pay day <= 8/30/2019, excluding Middle Market CLOs. Based on $490bn in collateral. As of October 1st, 2019. JPM Loan Index stats based on Par Amount Out.

Rishad Ahluwalia
(44-20) 7134-0254
rishad.ahluwalia@jpmorgan.com

Heather A Rochford
(1-212) 834-3578
heather.a.rochford@jpmorgan.com

Michael (Xin) Huang
(1-212) 834-3047
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Carla Casella, CFA
(1-212) 270-6798
carla.casella@jpmorgan.com

Exhibit 3: CLO and loan current exposure to Moody's and S&P issuer ratings

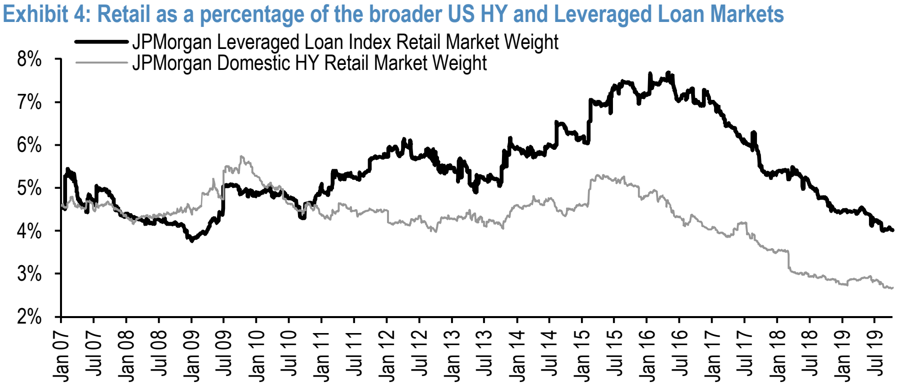
Moody's Issuer Rating	% in CLOs	% in Loans	S&P's Issuer Rating	% in CLOs	% in Loans
Baa2	0.5%	0.0%	BBB	0.1%	0.0%
Baa3	0.4%	0.3%	BBB-	1.1%	0.7%
Ba1	2.3%	2.2%	BB+	3.6%	4.4%
Ba2	4.6%	5.6%	BB	6.1%	7.2%
Ba3	9.6%	10.8%	BB-	10.5%	10.8%
B1	15.0%	14.0%	B+	15.9%	14.9%
B2	28.5%	24.7%	B	34.1%	30.8%
B3	27.9%	28.3%	B-	16.2%	15.6%
Caa1	2.6%	3.0%	CCC+	2.3%	2.9%
Caa2	0.7%	1.1%	CCC	0.9%	1.5%
Caa3	0.3%	0.5%	CCC-	0.2%	0.3%
Ca	0.3%	0.3%	CC	0.1%	0.1%
C	0.0%	0.0%	C	0.0%	0.0%
NR	7.4%	9.2%	D	0.1%	0.0%
			NR	8.6%	10.8%

Source: J.P. Morgan, INTEX. Includes 955 US Post-Crisis CLOs with deal factor >= 80% and first pay day <= 8/30/2019, excluding Middle Market CLOs. Based on $490bn in collateral. As of October 1st, 2019. JPM Loan Index stats based on Par Amount Out.

HY Retail in CLOs and Loan recovery: Lessons for the future

Following joint work on Healthcare and Technology with J.P. Morgan High Yield Research, we turn our attention to Retail. While exposure to Retail has dropped in the HY and loan markets, and correspondingly, in CLOs, these vehicles hold about half (50%) of Retail loans, with manager dispersion. Given our focus on economic risk, we believe there is a lot to learn from Retail as a broader case study on CLO credit: the decline in exposure, sectoral changes, and capital structure implications. We attribute the drop in exposure to defaults, distressed exchanges, the drying up of the LBO market for Retail, and a generally out-of-favor sector.

Exhibit 4: Retail as a percentage of the broader US HY and Leveraged Loan Markets



Source: J.P. Morgan.

Industry changes have affected the retail market

Retail sector operating performance is most driven by the underlying health of the consumer and the economy, followed by consumer trend changes and retail strategies. While we are seeing increasing press and fears about recession, the consumer remains intact. Unemployment remains below 4%, and real disposable income and consumer spending remain solid, spurred by continued wage growth and access to capital. We are seeing only modest cracks in the consumer armour like disappointing September retail sales (headline sales declining 0.3% vs. estimates for modest growth). The recent weakening in job growth and consumer sentiment could be headwinds for consumption, but so far our economists don't see much evidence of a meaningful pullback in spending apart from this latest retail sales print (link).

The bigger issue for retailers is changing consumer trends, or the "sea change" of how the consumer shops (online + Omni channel) and what consumers shop for (experiences + value). Increased bandwidth, cheaper data plans, and the proliferation of smart phones has put an endless aisle in each consumer's hand, made comparison pricing easier, and given more retailers the ability to compete across products. For retailers, this shift in consumer buying patterns has created both a threat (broader competitive set and sharper pricing) as well as an opportunity (another way to connect with the customer). The problem for our universe of HY or levered-retailers is lack of financial flexibility and cash flow to invest in its business, brands, and new technology to adapt to these consumer changes. It is not as simple as cutting costs, closing stores and shifting spend to online. Closing stores hurts online sales and consumer perception, and the investment needed to compete online (from IT infrastructure to fulfilment) is greater than that which was formerly required to build stores (and it has to be replaced/upgraded more regularly). Retailers – particularly legacy LBOs retailers –have had to focus on fixing the balance sheet (or extending) rather than investing in the business.

Capital structures have evolved – for better or for worse

Retail capital structures have become much more complex over the past 10 years, mostly post-2012 downturn, as many formerly highly levered companies have needed to use creative financing to address maturities in the absence of EBITDA growth (and true business deleveraging).

Retail/Consumer deal leverage peaked during the 2005-2007 LBO boom (Burlington, Claire's, Dollar General, GNC, Linens 'n Thinks, Michaels Stores, Neiman Marcus, Toys R Us, Yankee Candle) at ~7x (~4x bank debt leverage + senior or subordinated bonds), then steped down to 5-6x in the next round of LBOs (2010-2011, including Burger King, CKE Restaurants, Dave & Busters, Del Monte, Gymboree, J. Crew, Michael Foods, NBTY, PF Chang's) with bank debt in the 3.5x range. Today a healthy HY retailer will have a revolver (or asset based loan – ABL) that is secured by inventory and receivables, *sometimes* a term-loan (secured by other assets or a second lien on the revolver assets), and bonds. The average secured leverage is 0-2x and total leverage 3-4x. However, for the legacy LBO credits (and other highly levered retailers) we see a range of highly complex capital structures with multiple levels of debt and security. Some interesting uses of security include real estate financings – like TOY Propcos I and II, JCP TL and 1L bonds, or NMG TL and 2L bonds – all of which used both owned and leased properties and separate subsidiaries (some bankruptcy remote); or IP financing (brand names or subsidiary intellectual property). Over the past 18 months, as former LBO credits have hit maturity walls, we have seen an increase in retail bankruptcies, but also in stressed exchanges. Since late 2016, we have seen ~30 HY or levered loan retailers default (or pursue distressed exchanges, some of which later ended up in bankruptcy), and we believe there are more to come.

Framework for calculating recoveries and thinking about lag time

We are keeping a number of retailers on watch for potential default risk, some of which are stressed by the changing retail environment (EBITDA decline and lack of flexibility to invest and adapt) and some of which are burdened by increased interest expense post distressed exchanges (i.e. layering on more costly debt). It is increasingly difficult to evaluate potential recovery given capital structure

Rishad Ahluwalia
(44-20) 7134-0254
rishad.ahluwalia@jpmorgan.com

Michael (Xin) Huang
(1-212) 834-3047
michael.xin.huang@jpmorgan.com

Heather A Rochford
(1-212) 834-3578
heather.a.rochford@jpmorgan.com

Carla Casella, CFA
(1-212) 270-6798
carla.casella@jpmorgan.com

complexity and the wide number of parties involved in the fight for value in a complex structure (further complicated by cross ownership between TL, bonds, preferred/equity, and CDS). In many cases, investors/lenders have tapped any unencumbered assets, securing them to exchange formerly unsecured debt into secured debt (at a discount) and extend maturity. **The result is a longer runway (longer lag time for loan and CLO default risk for some names) which gives companies time to try and grow EBITDA and cash flow, but lower recovery rates for unsecured and even traditional TL debt.**

In retail, recovery levels are highly dependent on the assets that secure each piece of debt, and how many parties (or debt instruments) have access to those assets. Each situation is highly unique, and any appraiser will disagree with broad brush approach to valuing assets, but here is a generalized framework we use to value underlying assets, and therefore calculate recovery:

Exhibit 5: Simplified Recovery Rates on Key Assets

Asset	Recovery thoughts	Considerations
Accounts Receivable	**% of book value**	**Used to secure DIP, AR, ABL**
AR	80-90% of book	Usually debt recovers fully because advance rate is < recovery value
Inventory	**% of book value**	**Used to secure DIP, AR, ABL**
Apparel, linens, small goods	80-100% of book	Usually debt recovers fully because advance rate is < recovery value
Technology, hard goods	40-60% of book	Cost to transport, new technology
Intellectual property	**Revenue multiple**	**Used to secure TL or IPCo**
Strong growing brand	3-10x revenue	i.e. LULU trades at 6.7x revenue, Nike 3.5x, Aritzia 2.7x
Mature strong brand	1-2x revenue	Capri 1.8x, Ralph Lauren 1.5x, Carters 1.6x
Declining brand	<1x revenue	Gap 0.8x, Guess 0.8x
Stressed brand or biz	0.3-0.5x revenue	Ascena 0.2x, Chico's 0.5x
Real Estate	**Value/SF**	**Used to secure FILO, TL, bonds**
Owned stores	$25-$1,000/sf	Varies dramatically; TOY CMBS recovered <50%, Albertsons has been doing sale-leasebacks at values > appraised value
Leased stores	PV of ($/sf discount to mkt rent x remaining life of lease)	JCP monetized 2 stores (below market leases) for $33mn and $50mn, SRG is re-leasing Sears' stores at 4x the prior rent
Distribution Centers	$15-$50/sf	Highly dependent on size, location: JCP sold 3 DCs ranging from $15/sf to $121/sf
Owned businesses	**Multiple of revenue or EBTIDA**	**Used to segment debt structure by business**
Healthy operating business	Can usually add 3-4x leverage	Highly situational based on size and scope of business (GPS Old Navy spin vs. NMG myTheresa)
Small growing business	Value 2-5x revenue, 8-20x EBITDA, but may not be leverable	Can use equity value (NMG MyTheresa) as backing for bonds or preferred
Weaker declining business	< 1x revenue	Remove a distraction, i.e. TLRD sold Corporate apparel for 4.3x EBITDA (0.3x sales)

Source: J.P. Morgan.

Lessons learned – the Toys R Us example

Toys R Us was one of the most interesting cases for recovery in our history of covering retail, where we learned a few key lessons when the company completed a stressed exchange in 3Q16 (adding complexity to an already complex capital structure), filing for Chapter 11 bankruptcy in September 2017, and ultimately for Chapter 7 liquidation in early 2018. While this is one example, in one sector, we think there are lessons to be learned both on a high and granular level that could be useful in thinking about defaults and recovery frameworks, particularly for stressing CLO portfolios.

Exhibit 6: TOY select security pricing / recovery

	Pre CH 11	Post Ch 11	Apr 2018
TL B3	50	30	37
TL B4 (secured by IP, residual RE and excess ABL)	82	62	45
Taj Intl IP Co	97	35	<10
Unsec 2021 holco bonds	97	30	<10

Source: J.P. Morgan, Bloomberg.

Rishad Ahluwalia
(44-20) 7134-0254
rishad.ahluwalia@jpmorgan.com

Heather A Rochford
(1-212) 834-3578
heather.a.rochford@jpmorgan.com

Michael (Xin) Huang
(1-212) 834-3047
michael.xin.huang@jpmorgan.com

Carla Casella, CFA
(1-212) 270-6798
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- A bankruptcy filing is not always driven by failure to make a debt payment
  > *in Toys' case, vendors perpetuated the bankruptcy, limiting terms during the peak holiday season*
- Chapter 11 can quickly turn into Chapter 7 (liquidation)
  > *Toy filed for Chapter 11 in September 2017*

  > *Began liquidating immediately after holiday 2017 (1Q18)*
- Recovery can vary dramatically based on which assets back the debt and how many others are fighting for value
  > *Inventory-secured debt (ABL, DIP) recovered at or near par, helped by liquidating occurring during peak season*

  > *TL B4, which was an "enhanced" TL backed by residual ABL, equity of certain subsidiaries (inc RE) traded from the low 80s pre-bankruptcy to the low-60s one-month after to the mid-40s in 1Q18*

  > *Real-estate CMBS debt recovered <50 cents on the dollar*

  > *"Taj" international debt secured by the IP traded from near par in to the mid-30s one month after the Chapter 11 to <10 after the Chapter 7 filing*

  > *Unsecured bonds traded from the high-90s in Sept 2017 to ~30 one month after filing for Chapter 11 to <10 after the Chapter 7 filing*

Recovery rates lower for loan-only credits

Looking to historicals, since 2010, the average first-lien loan recovery rate is 62.5% based on 149 issuer defaults. One number does not paint the full picture. There is dispersion by year/industry/issuer/loan as each credit and structure has a story, which makes predicting recoveries or using a 'one size fits all' recovery rate challenging, particularly when modelling CLO cashflows. For context, throughout the 2008 financial crisis, the first-lien loan recovery rates were 58.1% in 2008 then dropped to average 48.3% in 2009, but immediately went back to an average of 71.2% in 2010. However, with changes to the loan market such as covenant-lite loans dominating the market, a pushed out maturity wall, and a growing portion of loan-only issuers (35% in 2008 versus 55% currently), recoveries currently average 59.12% and drifted lower (down ~4% from 63.44% 2018YE). Though the sample size is small, we also highlight the divergence of recovery rates for loan-only issuers and loan and bond issuers. Specifically on first-lien loan, loan-only issuers' recovery rate is an average 43.3% over LTM, also the lowest recovery level since 2010, meanwhile loan-and-bond issuers' recovery rate is 72.4% over LTM (Exhibit 7).

Rishad Ahluwalia
(44-20) 7134-0254
rishad.ahluwalia@jpmorgan.com

Heather A Rochford
(1-212) 834-3578
heather.a.rochford@jpmorgan.com

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(1-212) 834-3047
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Carla Casella, CFA
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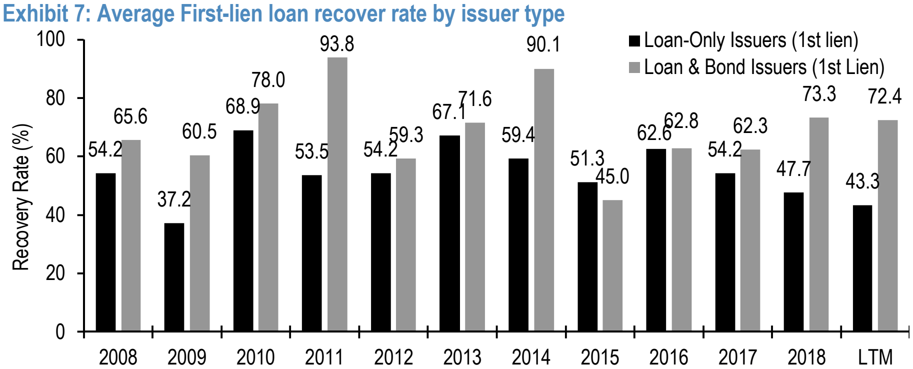
Exhibit 7: Average First-lien loan recover rate by issuer type



Source: J.P. Morgan.

CLO exposure to Retail sector

CLOs hold an average 4.1% of portfolios in retail currently (Exhibit 8). The 2013-2016 vintages have above average exposure (4.3%-4.8%) while more recent vintages have below average (3.7%-4%). There is also dispersion by manager, ranging from ~1% to ~11% (Exhibit 9). There are currently 5 Retail borrowers in the top 100 across all industries in CLOs: Bass Pro Shops (#23), EG Group (#35), Albertsons (#63), Michael's (#70), Harbor Freight Tools (#84).

Exhibit 8: Retail as a percentage of US CLO portfolios, statistics by vintage

Vintage	2012	2013	2014	2015	2016	2017	2018	2019	Total
Deal Count	19	82	91	152	136	165	278	32	955
Max	**8.5%**	**8.0%**	**12.4%**	**10.2%**	**10.0%**	**10.2%**	**9.3%**	**11.5%**	**12.4%**
+1 Stddev	5.4%	6.3%	7.0%	6.2%	6.2%	5.8%	5.4%	6.0%	6.0%
Average	**3.6%**	**4.5%**	**4.8%**	**4.3%**	**4.3%**	**4.0%**	**3.7%**	**3.7%**	**4.1%**
-1 Stddev	1.8%	2.8%	2.7%	2.4%	2.4%	2.1%	1.9%	1.4%	2.2%
Min	0.7%	0.6%	0.7%	0.6%	0.8%	0.8%	0.2%	0.4%	0.2%
Stddev	**1.8%**	**1.7%**	**2.2%**	**1.9%**	**1.9%**	**1.9%**	**1.7%**	**2.3%**	**1.9%**

Source: J.P. Morgan, INTEX. Includes 955 US Post-Crisis CLOs with deal factor >= 80% and first pay day <= 8/30/2019, excluding Middle Market CLOs.

Rishad Ahluwalia
(44-20) 7134-0254
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Michael (Xin) Huang
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michael.xin.huang@jpmorgan.com

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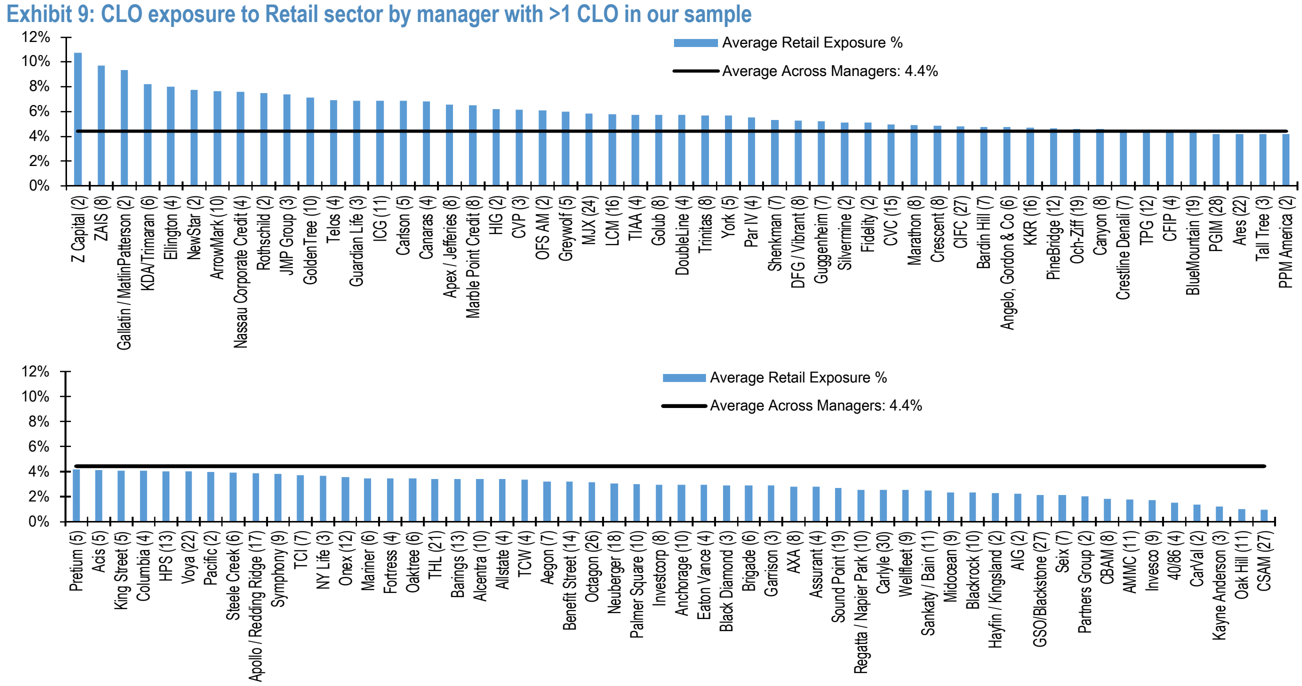
Exhibit 9: CLO exposure to Retail sector by manager with >1 CLO in our sample



Source: J.P. Morgan, INTEX. Includes 955 US Post-Crisis CLOs with deal factor >= 80% and first pay day <= 8/30/2019, excluding Middle Market CLOs. Includes managers with >1 eligible CLO.

Rishad Ahluwalia
(44-20) 7134-0254
rishad.ahluwalia@jpmorgan.com

Michael (Xin) Huang
(1-212) 834-3047
michael.xin.huang@jpmorgan.com

Heather A Rochford
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heather.a.rochford@jpmorgan.com

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Appendix

Exhibit 1: Global CLO spreads & recommendations (bp)

Sector	Current WAL (yrs)	Current Spread	Change vs 10/11	Change YTD	Rec*
US 3.0					
AAA	4.0-5.5	130	**8**	*(10)*	N
AA	5.5-7.0	195	**10**	*(15)*	N
A	6.5-8.0	273	**21**	*(32)*	N
BBB	7.0-8.5	425	**30**	**15**	N
BB	7.5-9.0	810	**25**	**35**	N
B	8.0-9.5	1225	**100**	**225**	N
US New Issue					
AAA	5-6	133-145	**2**	**3**	N
AA	6-8	180-225	**10**	*(8)*	N
A	6-9	260-310	**15**	*(25)*	N
BBB	7-9	385-425	**13**	*(3)*	N
BB	7-9	675-850	0	0	N
B	7-9	975-1100	**50**	*(63)*	N

Sector	Current WAL (yrs)	Current Spread	Change vs 10/11	Change YTD	Rec*
EUR 2.0					
AAA	4-5	120	0	*(5)*	N
AA	6-7	175	0	*(10)*	N
A	6-7	235	0	0	N
BBB	6-7	338	0	*(25)*	N
BB	7-8	655	0	**5**	N
B	7-8	880	0	**30**	N
EUR New Issue					
AAA	5-6	92	0	*(11)*	N
AA	7-8	168	0	*(23)*	N
A	7-8	245	0	*(10)*	N
BBB	7-8	380	0	**10**	N
BB	8-9	675	0	0	N
B	8-9	975	0	**100**	N

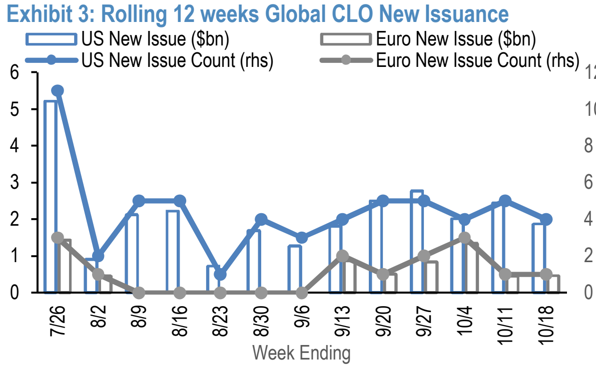
Source: J.P. Morgan. Spread to Libor or Euribor (bp) for originally-rated categories. *Rec shows recommendations where OW is Overweight, N is Neutral, and UW is Underweight. US New issue spreads represent a range of spreads to indicate manager tiering. All secondary spreads represent 'mid-quality' of secondary levels of CLOs. US 3.0 spreads represent US CLOs issued after 2013 and EUR 2.0 spreads represent CLOs issued Post-Crisis. EUR new issue does not reflect positive impact of EURIBOR floors on spreads.

Exhibit 2: CLO annual issuance totals

		2013	2014	2015	2016	2017	2018	YTD18	YTD19	YoY Change
US Issuance ($bn)	Total	87.28	131.46	109.59	113.47	284.73	278.84	236.55	135.21	-43%
	New	86.08	124.10	99.07	72.42	118.07	129.68	106.74	96.49	-10%
	Refi/Reset/Re-Issue	1.20	7.35	10.53	41.05	166.66	149.16	129.81	38.71	-70%
Euro Issuance (€bn)	Total	7.77	14.49	13.86	21.03	45.10	43.21	36.73	32.82	-11%
	New	7.77	14.49	13.56	16.82	19.12	27.27	21.56	23.79	10%
	Refi/Reset/Re-Issue	0.00	0.00	0.31	4.21	25.98	15.94	15.17	9.03	-40%
Global Issuance ($bn)	Total	97.61	150.57	124.95	136.51	335.81	329.82	280.64	171.98	-39%
	New	96.42	143.21	114.07	90.97	139.81	161.84	132.90	123.22	-7%
	Refi/Reset/Re-Issue	1.20	7.35	10.87	45.54	196.00	167.98	147.74	48.76	-67%

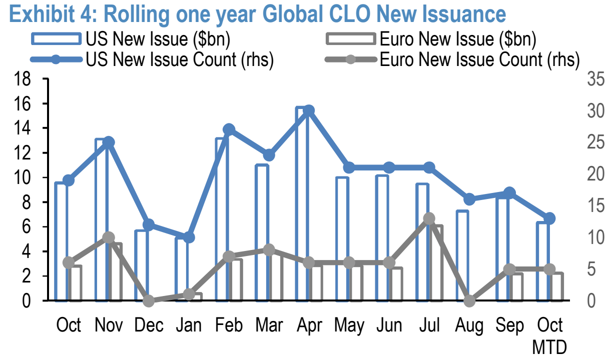
Source: J.P. Morgan.

Exhibit 3: Rolling 12 weeks Global CLO New Issuance



Source: J.P. Morgan. Data excludes refinanced, reset, re-issued and repriced CLOs.

Exhibit 4: Rolling one year Global CLO New Issuance



Source: J.P. Morgan. Data excludes refinanced, reset, re-issued and repriced CLOs.

Rishad Ahluwalia
(44-20) 7134-0254
rishad.ahluwalia@jpmorgan.com

Michael (Xin) Huang
(1-212) 834-3047
michael.xin.huang@jpmorgan.com

Heather A Rochford
(1-212) 834-3578
heather.a.rochford@jpmorgan.com

Carla Casella, CFA
(1-212) 270-6798
carla.casella@jpmorgan.com

Exhibit 5: CLOIE simple average and portfolio discount margin (bps)

Simple Avg. Discount Margin	Current	1m Δ	YTD Δ	1yr Δ
Total CLOIE	195	6	(19)	33
AAA	122	2	(24)	13
AA	183	3	(23)	23
A	260	2	(22)	57
BBB	404	26	(2)	103
BB	774	54	47	224
B	1,118	137	181	369
Pre-Crisis CLOIE	227	4	34	50
AAA	0	0	(53)	(53)
AA	90	13	(15)	6
A	95	0	(16)	(23)
BBB	185	0	(30)	(5)
BB	398	0	(1)	9
Post-Crisis CLOIE	195	6	(19)	33
AAA	122	2	(24)	13
AA	183	3	(23)	23
A	260	2	(22)	57
BBB	404	26	(3)	102
BB	776	54	46	224
B	1,118	137	181	369

Portfolio Discount Margin	Current	1m Δ	YTD Δ	1yr Δ
Total CLOIE	228	4	(2)	44
AAA	128	3	(19)	17
AA	186	3	(21)	28
A	263	3	(22)	63
BBB	408	27	1	120
BB	775	50	41	197
B	1,116	133	175	355
Pre-Crisis CLOIE	236	3	1	27
AAA	0	0	(54)	(53)
AA	78	1	(19)	(6)
A	95	0	1	(4)
BBB	191	1	(30)	5
BB	386	0	(6)	(1)
Post-Crisis CLOIE	228	4	(2)	44
AAA	128	3	(19)	17
AA	186	3	(21)	28
A	263	3	(22)	63
BBB	408	27	1	119
BB	775	50	40	196
B	1,116	133	175	355

Source: J.P. Morgan.

Exhibit 6: CLOIE total returns, Simple Avg. Yield, Coupon, and Margin

Total Returns (%)	MTD	QTD	YTD2019	YTD2018
Total CLOIE	(0.21%)	(0.21%)	4.20%	2.47%
AAA	0.04%	0.04%	3.83%	2.10%
AA	(0.02%)	(0.02%)	4.76%	2.37%
A	(0.11%)	(0.11%)	5.49%	2.64%
BBB	(1.25%)	(1.25%)	5.16%	3.17%
BB	(2.09%)	(2.09%)	5.31%	5.57%
B	(6.30%)	(6.30%)	0.43%	8.74%
Pre-Crisis CLOIE	0.21%	0.21%	3.75%	2.73%
AAA	0.00%	0.00%	0.94%	1.97%
AA	0.15%	0.15%	2.77%	1.96%
A	0.15%	0.15%	2.37%	2.20%
BBB	0.20%	0.20%	3.54%	3.08%
BB	0.29%	0.29%	5.34%	5.09%
Post-Crisis CLOIE	(0.21%)	(0.21%)	4.21%	2.47%
AAA	0.04%	0.04%	3.83%	2.10%
AA	(0.02%)	(0.02%)	4.76%	2.38%
A	(0.11%)	(0.11%)	5.49%	2.64%
BBB	(1.26%)	(1.26%)	5.17%	3.17%
BB	(2.10%)	(2.10%)	5.32%	5.57%
B	(6.30%)	(6.30%)	0.43%	8.74%

	Simple Avg. Yield	Portfolio Yield	Coupon	Margin (bps)
Total CLOIE	3.61%	3.87%	3.90%	171
AAA	2.89%	2.84%	3.35%	116
AA	3.44%	3.44%	3.87%	168
A	4.25%	4.22%	4.44%	225
BBB	5.69%	5.70%	5.47%	328
BB	9.45%	9.44%	8.24%	605
B	12.97%	12.96%	9.64%	746
Pre-Crisis CLOIE	4.12%	4.12%	4.25%	198
AAA	0.00%	0.00%	0.00%	0
AA	2.92%	2.68%	2.64%	36
A	2.69%	2.69%	2.98%	70
BBB	3.66%	3.61%	3.72%	145
BB	5.79%	5.63%	6.14%	388
Post-Crisis CLOIE	3.61%	3.87%	3.90%	171
AAA	2.89%	2.84%	3.35%	116
AA	3.44%	3.44%	3.87%	168
A	4.25%	4.22%	4.44%	225
BBB	5.69%	5.70%	5.47%	328
BB	9.46%	9.44%	8.24%	605
B	12.97%	12.96%	9.64%	746

Source: J.P. Morgan.

Rishad Ahluwalia
(44-20) 7134-0254
rishad.ahluwalia@jpmorgan.com

Heather A Rochford
(1-212) 834-3578
heather.a.rochford@jpmorgan.com

Michael (Xin) Huang
(1-212) 834-3047
michael.xin.huang@jpmorgan.com

Carla Casella, CFA
(1-212) 270-6798
carla.casella@jpmorgan.com

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Rishad Ahluwalia
(44-20) 7134-0254
rishad.ahluwalia@jpmorgan.com

Michael (Xin) Huang
(1-212) 834-3047
michael.xin.huang@jpmorgan.com

Heather A Rochford
(1-212) 834-3578
heather.a.rochford@jpmorgan.com

Carla Casella, CFA
(1-212) 270-6798
carla.casella@jpmorgan.com

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