
The Guide to the CLO Style Guide

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October 10, 2017

Please see page 32 for the rating definitions, important disclosures and required analyst certifications. 10/10/17 at 3:00 p.m. ET
This report is available on wellsfargoresearch.com and on Bloomberg WFRE
All estimates/forecasts are as of 10/10/17 unless otherwise stated.



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CLO Style Guide Data: Overview and Caveats

- We present *The Guide to the CLO Style Guide*, a companion to our monthly CLO Manager Style Guide.
- We believe that evaluating manager performance should always be viewed within the appropriate context. This report intends to give investors the tools needed to evaluate the CLOs in their respective portfolios.
- We provide descriptions and strengths/weaknesses for 14 different metrics. Investors may prioritize certain performance metrics; using these metrics, investors can evaluate holdings using market and manager data for a specific metric.
- The data are only a snapshot (based on each deal's most recent Intex update), yet investors can also use the data to infer prior tactical or strategic maneuvers.
- Investors can compare relative position within various metrics. We urge investors not to focus on the specific number; differences can be small.

CLO Style Guide Data: Overview and Caveats

- In addition to the individual strengths and weaknesses listed, we also note that **ALL the metrics listed are subject to the following drawbacks:**
- All the data are a snapshot - as of the latest Intex update within the three months prior to the Style Guide (with the exception of price data, leverage and equity payment data), and does not account for the starting point or the path taken to the current point.
 - Therefore, the managers' style may have changed over time. A manager could have had a high-spread portfolio in 2014 but have since rotated to lower-spread assets.
 - Deals with lower OC cushions may have been issued with tighter cushion.
 - Similarly, loans <80 do not account for purchase price. A manager may have purchased loans at 50 versus purchasing the loans at new issue.
- All the metrics are averages, and may mask distortions, such as barbellings.
- All the data are subject to vintage biases – for example, 2016 deals have a very different profile than 2013 or 2014 deals. Therefore, if a manager's outstanding deals are overweight one vintage, their data may be skewed.
- We believe that even given these drawbacks, the metrics, when combined, can provide a directional look at manager style / performance.

CLO Metric Summary

Metric	Description	Curr. Mkt Avg.	Strength	Weakness
WAS	The calculated <u>Wt. Avg Spread</u> of the portfolio – giving no credit for LIBOR or for LIBOR floors	357	Straightforward - loan market's perception of risk expressed as average coupon	Does not account for liquidity May not match CLO reported WAS
WARF	Measures the <u>weighted average Moody's rating</u> of the assets. Lower WARF = Higher average credit rating Higher WARF = Lower average credit rating	2802	Commonly used, expresses average rating of portfolio	Assumes ratings are a good proxy for risk May not be calculated the same way across all deals
Adj. NAV	<u>Adj. NAV</u> is the equity NAV of the CLO, but not carrying all loans at their current market value. Calculated using loans trading at 85+ carried at par; 75 - 85 = 80; and < 75 = 65.	67.1%	Compensates for weaknesses of liquidation NAV and par based NAV	Less intuitive; Does not adequately punish very low priced loans (< 50) NAV is affected by vintage and how notes/equity are sold at new issue
Div.	<u>Moody's diversity score</u> : based on how many assets, how many industries and how big the positions are. A par weighted calculation that indicates collateral concentration in terms of both issuer and industry concentration.	74	Commonly used measure of portfolio concentration	Diversity score may not be correlated with credit quality Industry classifications may not be standardized
Norm. Eq. Pmt	The total sum of all <u>equity payments</u> made during reinvestment, converted to an average quarterly payment. Equity distribution is the quarterly equity payment divided by the equity notional value.	4.3%	Looks at avg equity pmt over time Adjusts for the fact that the first equity pmts often differ in payment period length, and differing first pmt periods can produce high or low first pmts	Does not account for debt cost or vintage differences Not adjusted for refi/ reset, which can affect equity NAV & payments
Lev.	<u>Leverage</u> provided by CLO structure; Total initial deal balance / equity notional balance.	10.8	Easy to calculate in Intex Uses equity notional balance - similar to equity pmt data	Based on structural leverage, not actual asset leverage, which technically would be more accurate
Min. OC	Difference between <u>actual OC level</u> and <u>OC Test limit</u> for the tightest OC test in the deal (not including Int. Diversion tests – only true OC tests)	419	Intuitive & commonly used Lower OC cushion are typically indicative of losses or stressed assets	Does not account for initial structuring or OC calculation differences Only a snapshot; does not show OC gained or lost
Caa/CCC	Intex's fields show % of the portfolio rated <u>Caa or below</u> , and the % of the portfolio rated <u>CCC or below</u>	4.3% / 3.8%	Intuitive & commonly used Quick measure of lower rated assets	May be calculated differently from deal to deal Also, the data reported in Intex may refer to concentration limits, not to Excess Caa or Excess CCC Test levels used for OC test calculation May not include data from deals not rated by that rating agy
2nd Lien	The percent of <u>2nd lien loans</u> held by the CLO	1.77	The percent of 2nd lien loans held by the CLO	Not much differentiation; may not serve as a stand alone proxy for risk
<80	Average # of loans in the pool that have <u>current market prices below 80</u>	2.4%	Current data on loan market's view of more likely default candidates Commonly used metric for tail risk in CLO portfolios	Does not account for purchase price At times, \$80 may be not be the right cut-off price
Bid Depth	Weighted average of the <u># of bids</u> on the loans in the CLO portfolio.	4.9	Proxy for liquidity of underlying loans - which can be used as a proxy for holdings of smaller or "lightly syndicated" loans	Does not account for quality/size of bids in the market
NAV	Equity <u>Net Asset Value</u> : the current liquidation value of the portfolio, less outstanding note balance.	58.0%	Commonly used metric for equity valuation	CLO is not a mark to market vehicle; likely is only an estimate of true liquidation value due to transaction costs and management fees senior to equity. NAV is affected by vintage and how notes/equity are sold at new issue
BB MVOC	The <u>Market Value OC</u> Ratio of the BB notes (Portfolio liquidation value coverage of BB notes)	107.0	Commonly used metric	CLO is not a mark to market vehicle

CLO Metrics: Weighted Average Spread (WAS)

Metric

Weighted Average Spread (WAS)

The calculated Wt. Avg Spread of the portfolio – giving no credit for LIBOR or for LIBOR floors
i.e. if all the loans are L+350, the metric would be 350 bps

Can infer risk appetite / risk profile of the loan pool.
All else equal, a lower spread manager should have less risky assets. if a manager has low spread – and low equity distributions – investors may expect a higher NAV, since they are taking less risk in the portfolio.

Description/ Uses

Market Stats

Time	Median Level	Chg. From Current
Current (Sep 2017)	357	
12M Ago (Sep 2016)	384	-27
18M Ago (Mar 2016)	381	-24

Common Metric Pairs/Tradeoffs

Higher Spread Pool

Higher equity payments
More risky assets - higher WARF/ Caa/ CCC/ 2nd Lien
Lower market-value metrics - NAV, Adj. NAV, BB MVOC

Lower Spread Pool

Lower equity payments
Less risky assets - lower WARF/ Caa/ CCC/ 2nd Lien
Higher market-value metrics - NAV, Adj. NAV, BB MVOC

Metric Analysis

Strengths

- Easy to calculate/provided in Intex
- Straightforward - loan market's perception of risk expressed as average coupon
- Strong relationship with Equity Payments

Weaknesses

- Subject to vintage bias - spread levels are dependent on loans available in the market
- Managers that have a larger share of deals issued in 2016/2017 may have lower WAS levels than managers with a larger share of 2013/2014 deals
- May not account for liquidity / size of underlying loans

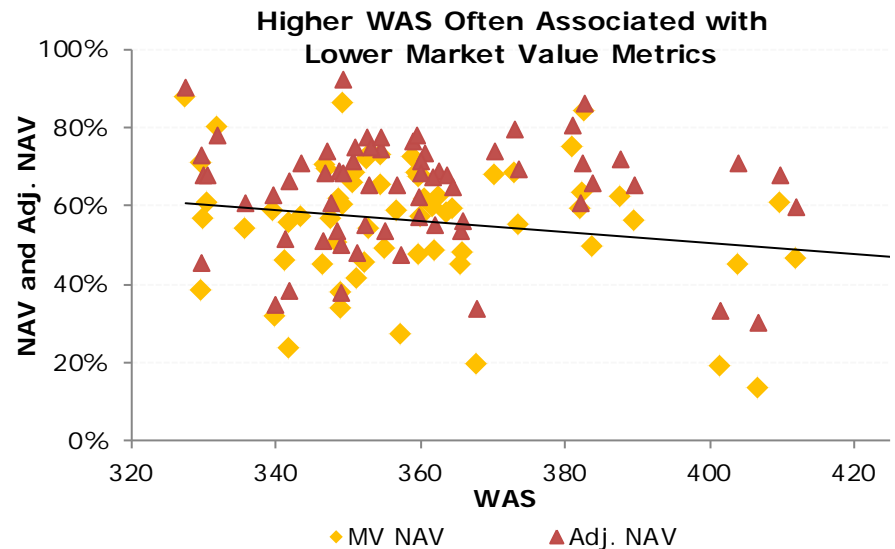
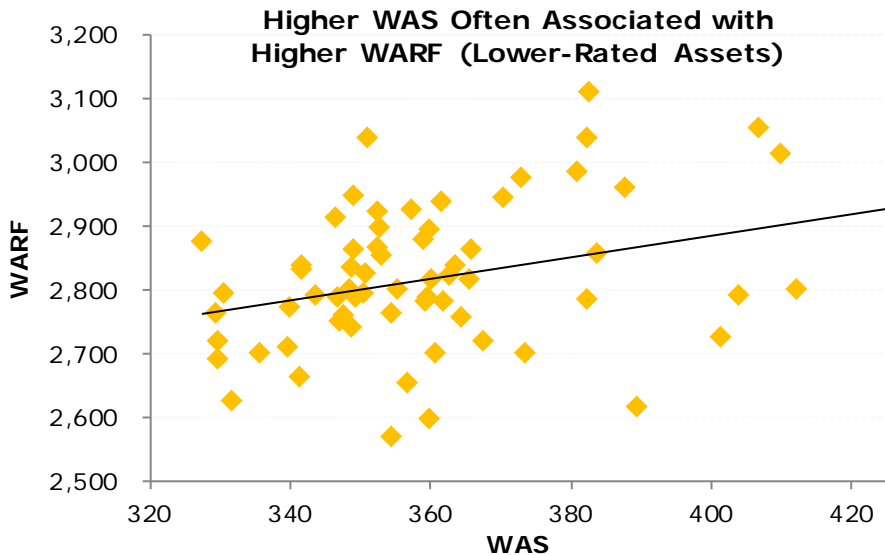
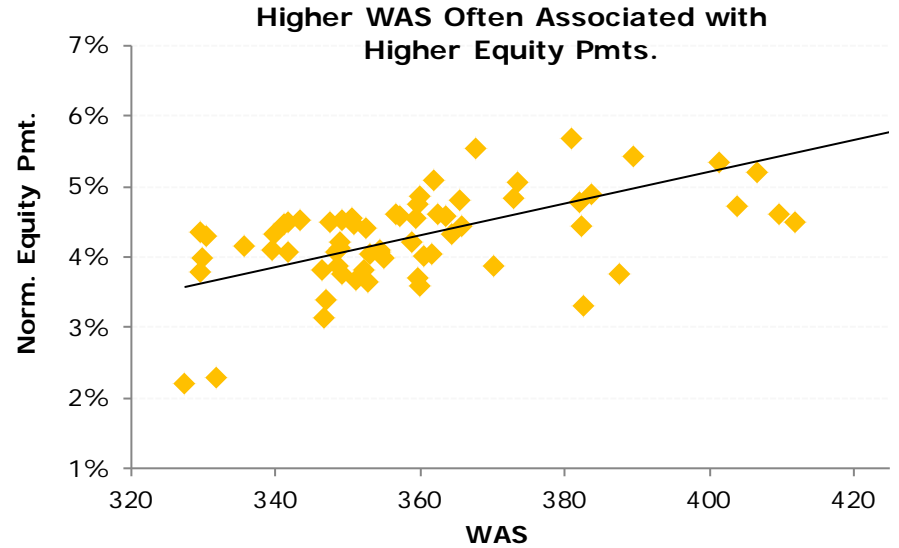
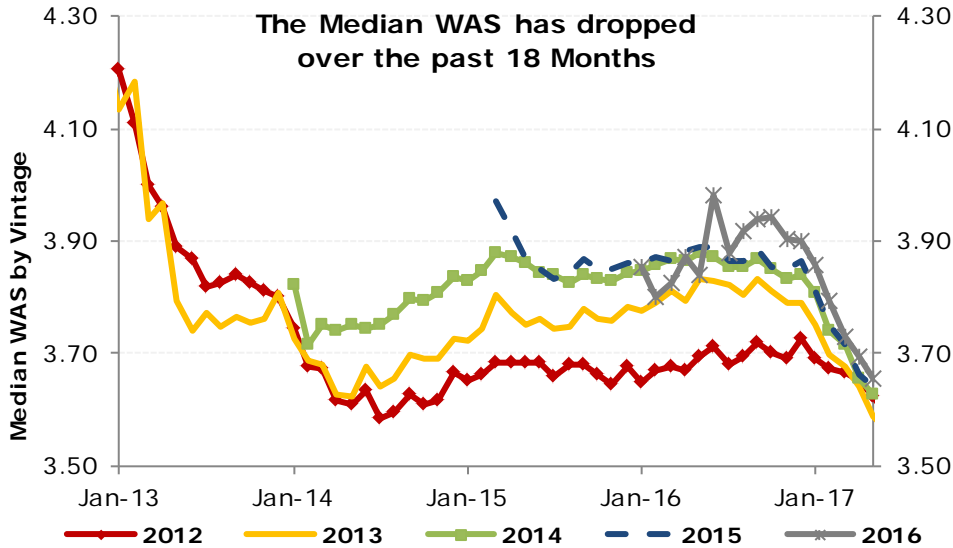
Calculation Example

Asset	Holding (\$mm)	3mL + Spread
Loan 1	5	3mL + 300
Loan 2	2.5	3mL + 350
Loan 3	2.5	3mL + 425
Weighted Avg. Spread		3mL + 344

Data Source

Intex

CLO Metrics: Weighted Average Spread (WAS)



CLO Metrics: Weighted Average Rating Factor (WARF)

Metric

Weighted Average Rating Factor (WARF)

Description/ Uses

Measures the weighted average Moody's rating of the assets. Used to determine the risk in the pool.

Lower WARF = **Higher** average credit rating

Higher WARF = **Lower** average credit rating

Some investors may view WARF as a "filter" metric; for example, an investor prefers deals with WARF below a certain level. For reference, a CLO with a WARF of 2,833 is roughly equivalent to a B2 rating.

Market Stats

Time	Median Level	Chg. From Current
Current (Sep 2017)	2802	
12M Ago (Sep 2016)	2861	-59
18M Ago (Mar 2016)	2801	1

Common Metric Pairs/Tradeoffs

Higher WARF Pool

Higher WAS and potentially higher equity payments
 Lower rated assets - more exposure to Caa/ CCC/ 2nd Lien
 Lower market-value metrics - NAV, Adj. NAV, BB MVOC

Lower WARF Pool

Lower WAS and potentially lower equity payments
 Higher rated assets - Less exposure to Caa/ CCC/ 2nd Lien
 Higher market-value metrics - NAV, Adj. NAV, BB MVOC

Metric Analysis

Strengths

- Easy to calculate/provided in Intex

Weaknesses

- Assumes ratings are a good proxy for risk
- May not be calculated the same way across all deals

Calculation Notes

Each obligor is assigned a Rating Factor based on Moody's Default Probability Rating; this represents the idealized default rate at a 10-year time horizon, multiplied by 10,000. For example: an Obligor with a rating of Baa3 may have a Rating Factor of 610, or a 610/10,000 (6.1%) probability that it will default within a 10-year time horizon.

**Many CLOs use the Moody's Corporate Family Rating (CFR) when calculating WARF. CFRs may be 1-2 notches lower than the rating on a 1st lien sr secured loan. Also, the Moody's rating for WARF may be adjusted if the loan is on watch or outlook.

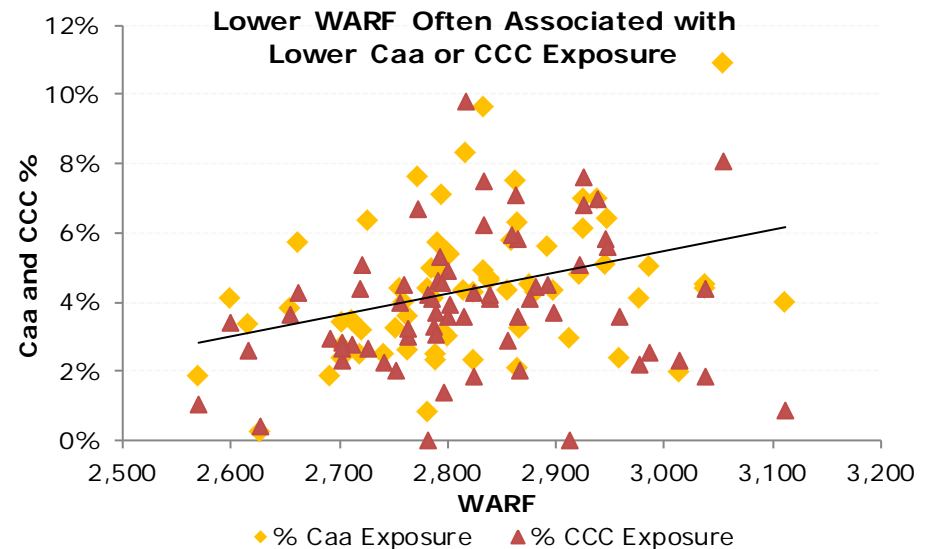
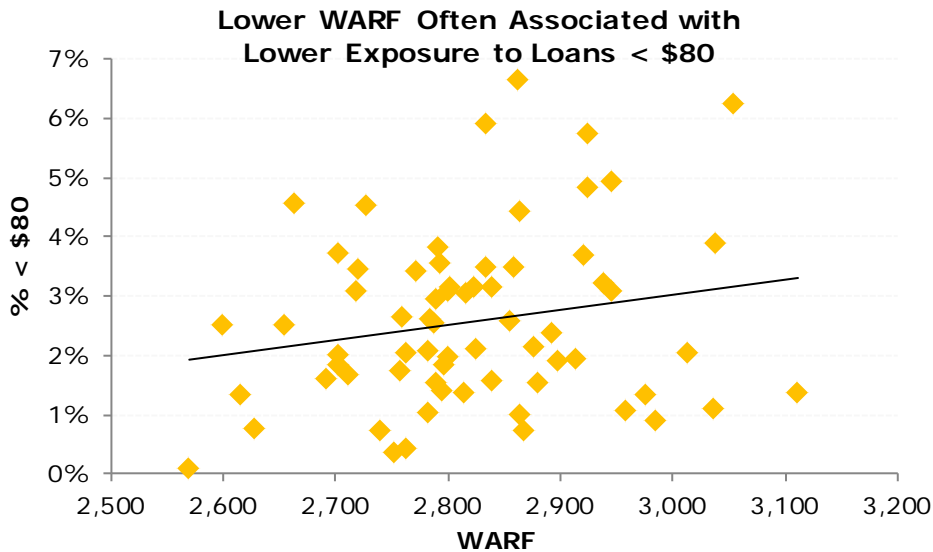
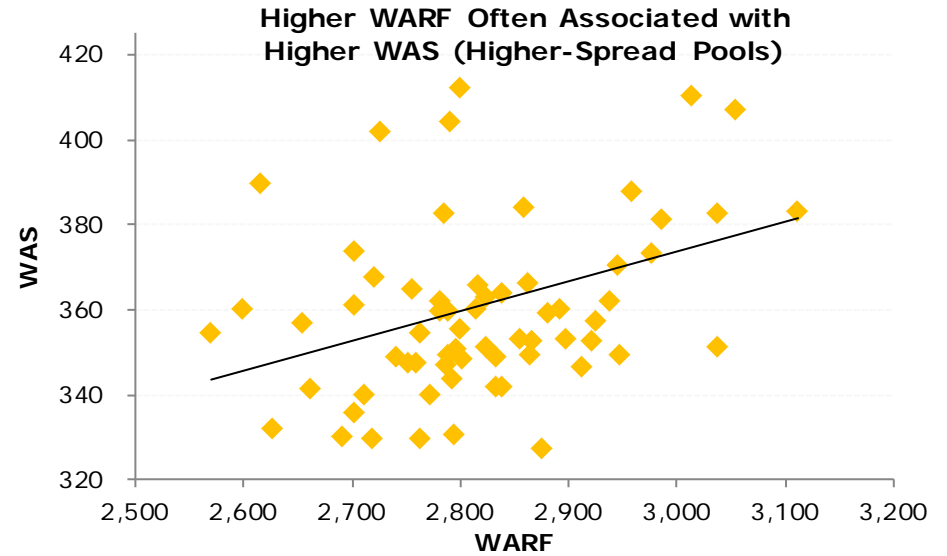
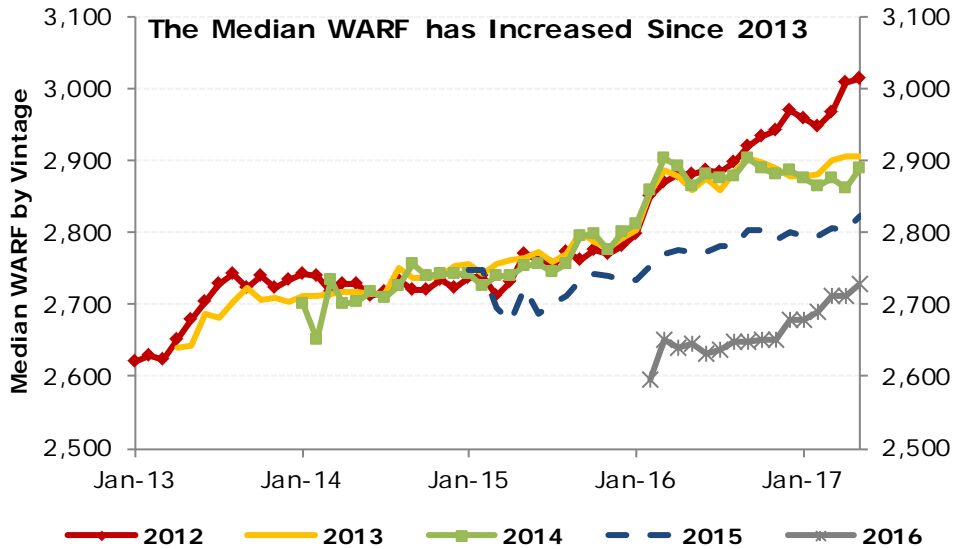
Moody's Rating	Equiv. S&P	Rating Factor
Aaa	AAA	1
Aa1	AA+	10
Aa2	AA	20
Aa3	AA-	40
A1	A+	70
A2	A	120
A3	A-	180
Baa1	BBB+	260
Baa2	BBB	360
Baa3	BBB-	610

Moody's Rating	Equiv. S&P	Rating Factor
Ba1	BB+	940
Ba2	BB	1,350
Ba3	BB-	1,766
B1	B+	2,220
B2	B	2,720
B3	B-	3,490
Caa1	CCC+	4,770
Caa2	CCC	6,500
Caa3	CCC-	8,070
Ca	CC	10,000

Data Source

Intex

CLO Metrics: Weighted Average Rating Factor (WARF)



CLO Metrics: Adjusted Net Asset Value (Adj. NAV)

Metric

Adjusted Net Asset Value (Adj. NAV)

Description/ Uses

Adjusted NAV is an attempt to compensate for the weaknesses of both pure market value NAV and a par-based measurement. Adj. NAV is the equity NAV of the CLO, but not carrying all loans at their current market value.

Calculated using loans trading at 85+ carried at par; 75 - 85 carried at 80; and < 75 carried at 65 (low end of hist. recovery).

Market Stats

Time	Median Level	Chg. From Current
Current (Sep 2017)	67.1%	
12M Ago (Sep 2016)	53.9%	13.2%
18M Ago (Mar 2016)	41.1%	26.0%

Common Metric Pairs/Tradeoffs

Higher Adj. NAV Pool
Lower risky-asset exposure (Caa/CCC/ 2nd liens)
Higher BB MVOC
Lower equity distributions

Lower Adj. NAV Pool
Higher risky-asset exposure (Caa/CCC/2nd liens)
Lower BB MVOC
Higher equity distributions

Metric Analysis

Strengths
<ul style="list-style-type: none"> Compensates for weaknesses of pure market-value NAV and is less volatile Used as a proxy for how many loans are "money good" (Loans 85+) – so this NAV would be a proxy for ultimate terminal value for the equity – a PO estimate – as opposed to liquidation value.

Weaknesses
<ul style="list-style-type: none"> Not easily provided in Intex NAV metrics affected by vintage & equity / note prices May not adequately punish very low priced loans (ex <\$50) Only provides a snapshot of the loan prices on a specific day; this applies to all market-value metrics (NAV, loans < 80, BB MVOC).

Calculation Example

Liabilities		
Tranche	Rating	Size
A	AAA	307,500
B	AA	63,750
C	A	28,125
D	BBB	31,250
E	BB	29,375
F	B	5,938
Subord	NR	44,385
Total		510,323

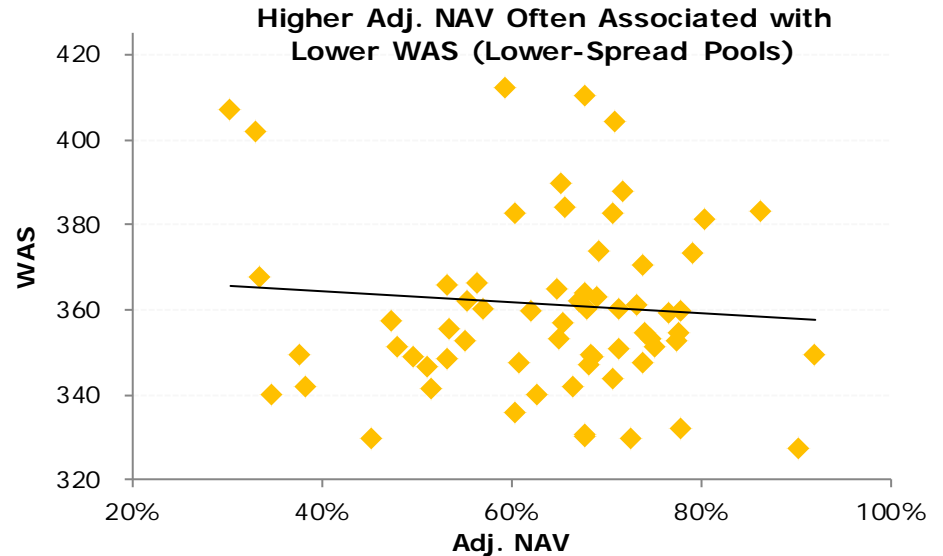
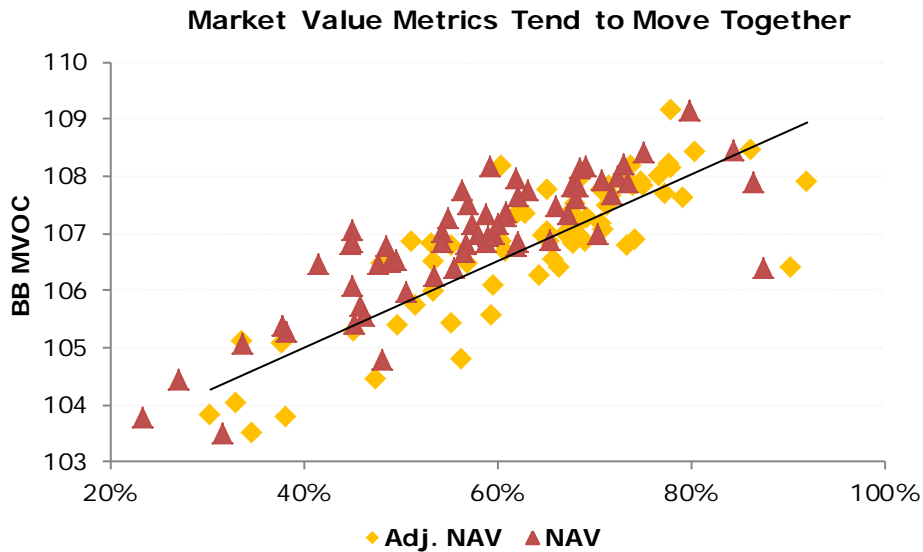
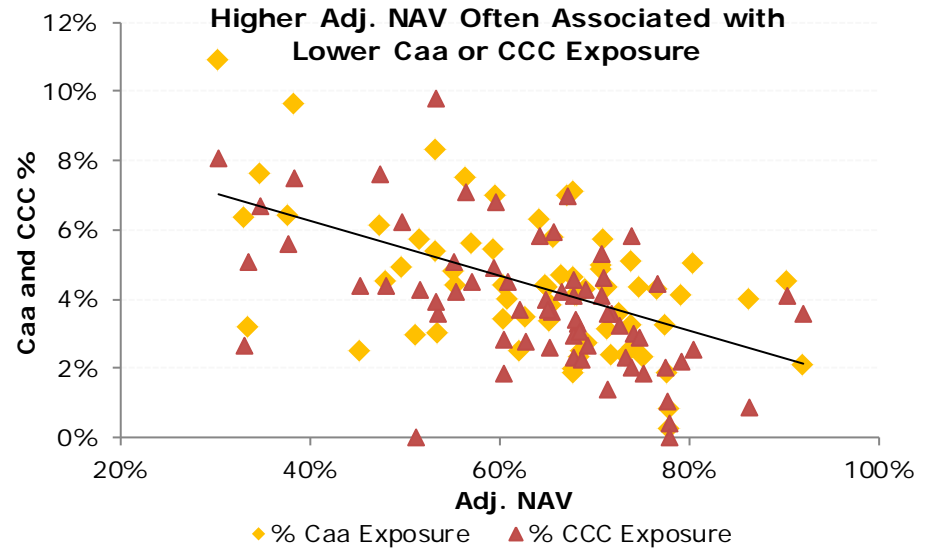
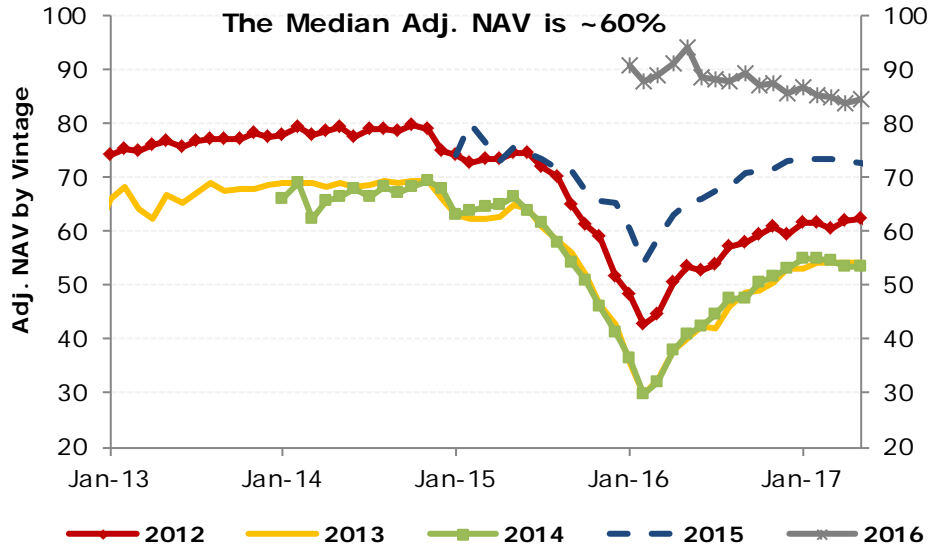
Assets				
Assets	\$ Holdings	Mkt. Px	NAV	Adj. NAV
Loans 1-105	240,000	100.3	100.3	100.0
Loans 106-130	120,000	99.5	99.5	100.0
Loans 131-160	80,000	94.0	94.0	100.0
Loans 161-171	28,000	84.0	84.0	80.0
Loans 171-176	10,000	74.5	74.5	65.0
Loans 176-180	14,000	63.0	63.0	65.0
Par or Mkt Val	492,000		475,110	478,000
NAV			21%	27%

In a loan market selloff, if the average loan price drops to \$96 or \$94, the loans would likely still be money good but the typical MV NAV would look worse; Adj. NAV would hold these loans at par.

Data Source

Intex, Wells Fargo Securities

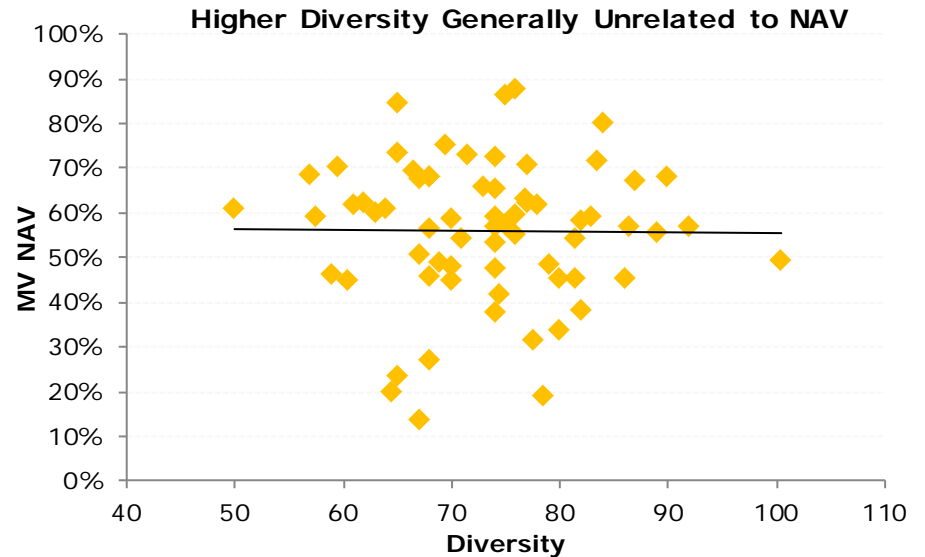
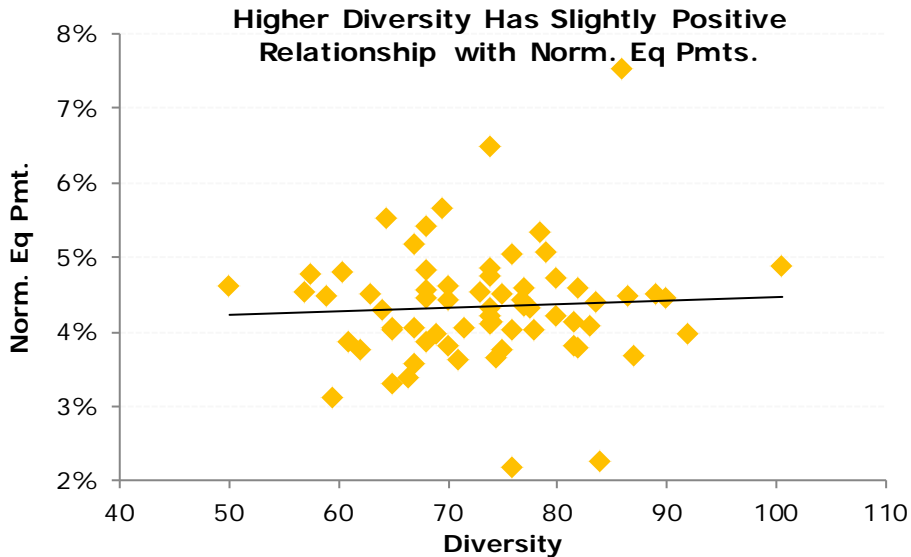
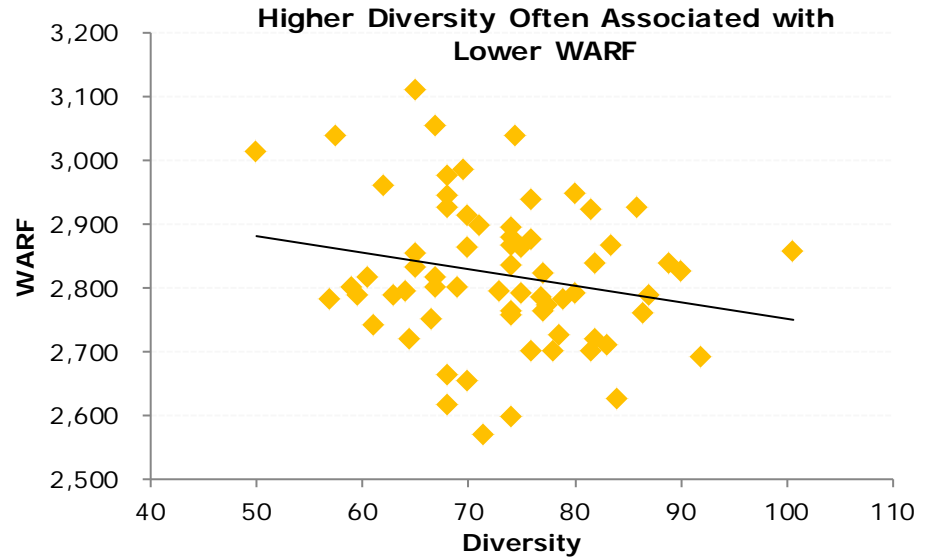
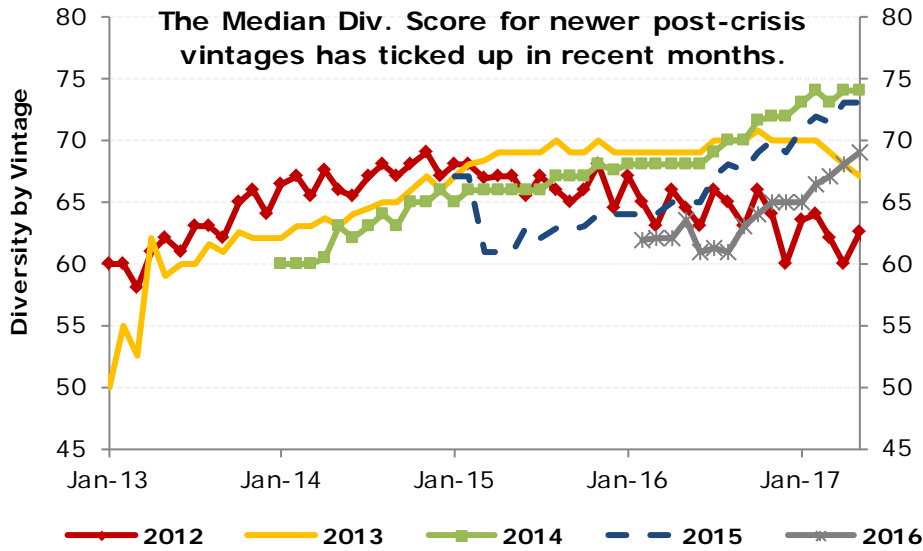
CLO Metrics: Adjusted Net Asset Value (Adj. NAV)



CLO Metrics: Moody's Diversity Score

Metric	Moody's Diversity Score														
Description/ Uses	<p>Moody's diversity score: based on how many assets, how many industries and how big the positions are. A par weighted calculation that indicates collateral concentration in terms of both issuer and industry concentration.</p> <p>The Moody's Diversity score has three primary inputs: 1) number of industries, 2) number of assets and 3) par value of each asset. The drivers of a higher diversity score are one or more of the following: more assets, less correlated assets (widely distributed across more industries) and more evenly distributed par amount of the assets.</p>														
Market Stats	<table border="1"> <thead> <tr> <th>Time</th> <th>Median Level</th> <th>Chg. From Current</th> </tr> </thead> <tbody> <tr> <td>Current (Sep 2017)</td> <td>74</td> <td></td> </tr> <tr> <td>12M Ago (Sep 2016)</td> <td>70</td> <td>4</td> </tr> <tr> <td>18M Ago (Mar 2016)</td> <td>68</td> <td>6</td> </tr> </tbody> </table>	Time	Median Level	Chg. From Current	Current (Sep 2017)	74		12M Ago (Sep 2016)	70	4	18M Ago (Mar 2016)	68	6		
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Common Metric Pairs/Tradeoffs	<p style="text-align: center;">Higher Diversity Pool</p> <ul style="list-style-type: none"> • More diversity is generally associated with lower idiosyncratic risk and industry risk. • On the flip side, extremely diverse pools could be overweight smaller names or industries relative to the market. 	<p style="text-align: center;">Lower Diversity Pool</p> <ul style="list-style-type: none"> • Lower diversity could be a sign of manager conviction in a certain name or industry. 													
Metric Analysis	<p style="text-align: center;">Strengths</p> <ul style="list-style-type: none"> • Easy to calculate/provided in Intex 	<p style="text-align: center;">Weaknesses</p> <ul style="list-style-type: none"> • Diversity score may not be correlated with credit quality • Managers may increase diversity to help with matrix tests • Industry classifications may not be standardized 													
Calculation Notes	<p>Moody's diversity score is provided in Intex.</p> <p>A deal's minimum diversity limit is calculated based on the Moody's Matrix, which is a sliding scale based on WAS, WARF, loan recovery levels and diversity.</p>														
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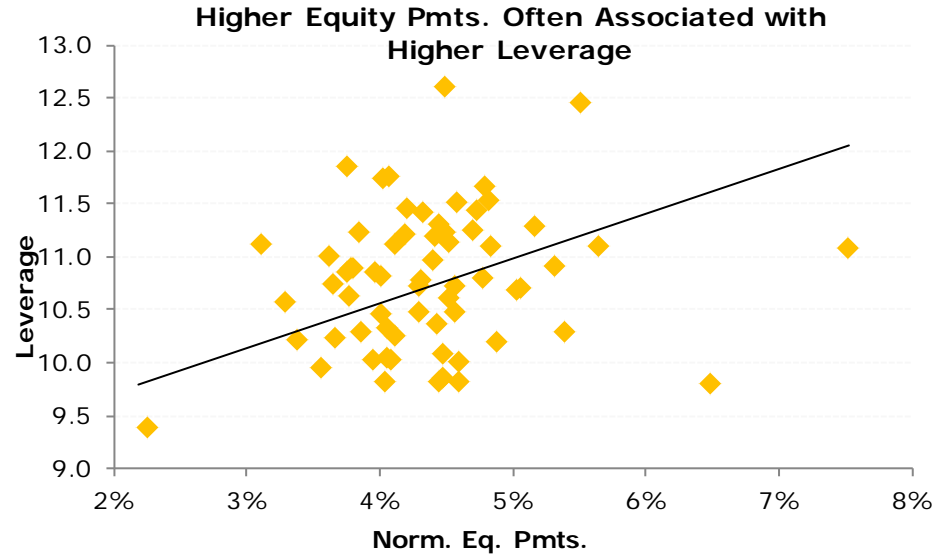
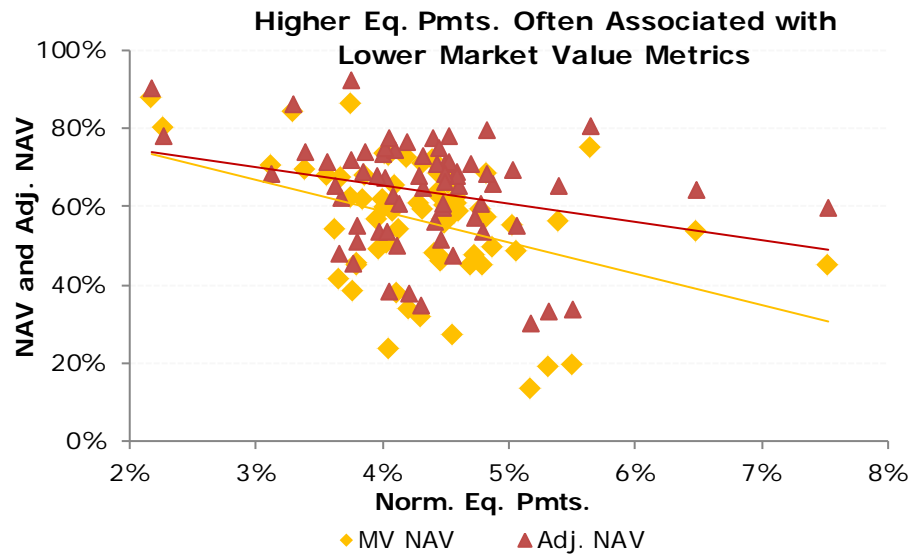
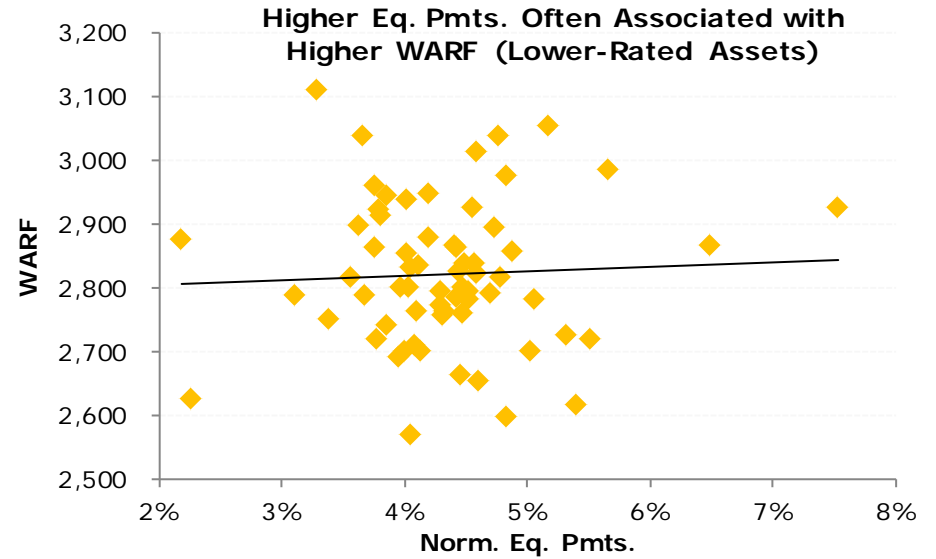
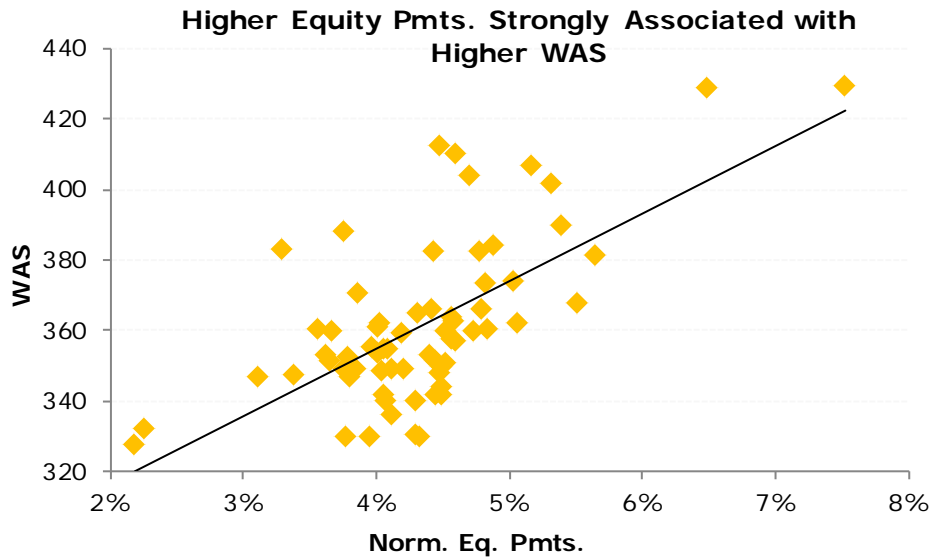
CLO Metrics: Moody's Diversity Score



CLO Metrics: Normalized Equity Payment

Metric	Median Normalized Quarterly Equity Payment																																						
Description/ Uses	<p>Total Equity Distributions (during Reinvest. Period), converted to quarterly payments. The total sum of all equity payments made during reinvestment, converted to an average quarterly payment. Equity distribution is the quarterly equity payment divided by the equity notional value.</p> <p>We can think of the quarterly distributions (the IO) and the NAV (the PO) as the two parts of the return – with the total return as the distributions received to date plus the current portfolio value. If a manager has a low WAS portfolio – and low equity distributions – then, all else equal, they should have a higher NAV, since they are taking less risk in the portfolio.</p>																																						
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Data Source	Intex, Wells Fargo Securities																																						

CLO Metrics: Normalized Equity Payment



CLO Metrics: Leverage

Metric

Median Leverage

Description/ Uses

- Total initial deal balance / equity notional balance.
- The leverage category can be used to show how the manager is working to achieve equity returns: structural leverage vs. leverage in the assets. When structuring a CLO, there are certain trade-offs – all else equal, a lower WARF (higher rated assets) or higher diversity should allow for more leverage on the pool.

Market Stats

Time	Median Level	Chg.
Current (Sep 2017)	10.8	
12M Ago (Sep 2016)	10.5	0.3
18M Ago (Mar 2016)	10.4	0.4

Common Metric Pairs/Tradeoffs

Higher Leverage

- One manager style is to add an extra turn or two of leverage, but with a very clean pool (below avg WAS, better than avg WARF).
- Higher structural leverage allows more room for lower asset leverage (potentially lower WAS or WARF)
- Higher diversity

Lower Leverage

- Higher WARF (lower rated assets)
- Lower diversity

Metric Analysis

Strengths

- Easy to calculate in Intex
- Uses equity notional balance - similar to equity payment data
- Less volatile than calculating based on asset leverage which is constantly changing
- More levered deals will show faster moves in market value metrics (NAV, MVOC)

Weaknesses

- Based on structural leverage, not actual asset leverage – not based on assets/ (assets-debt), which technically would be more accurate; based on total deal balance / equity notional.
- We use structural leverage because a) equity pmts are frequently quoted as a pct of notional par and b) the asset balance is constantly changing.

Calculation Example

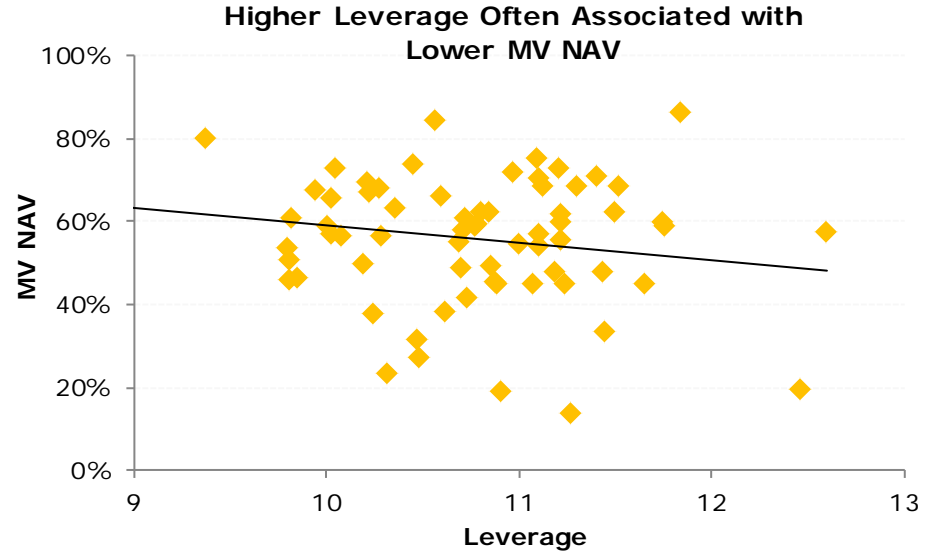
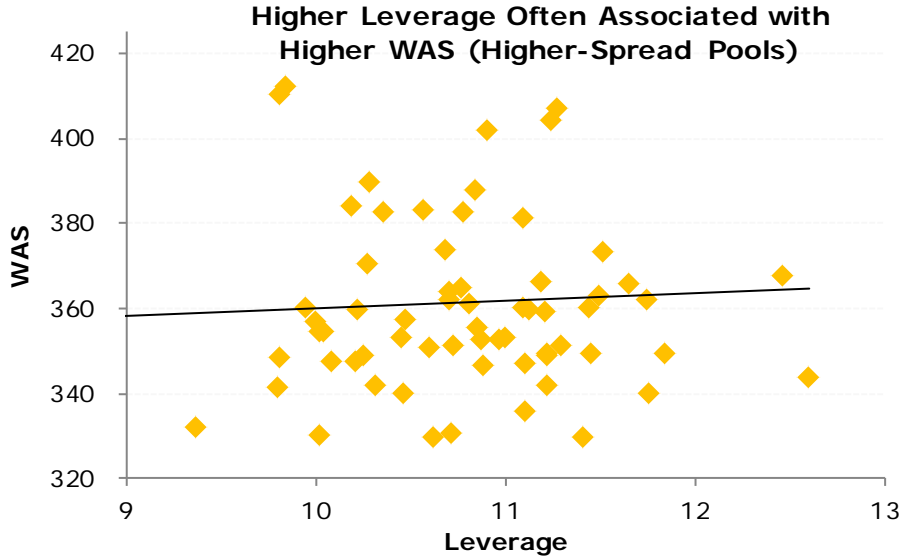
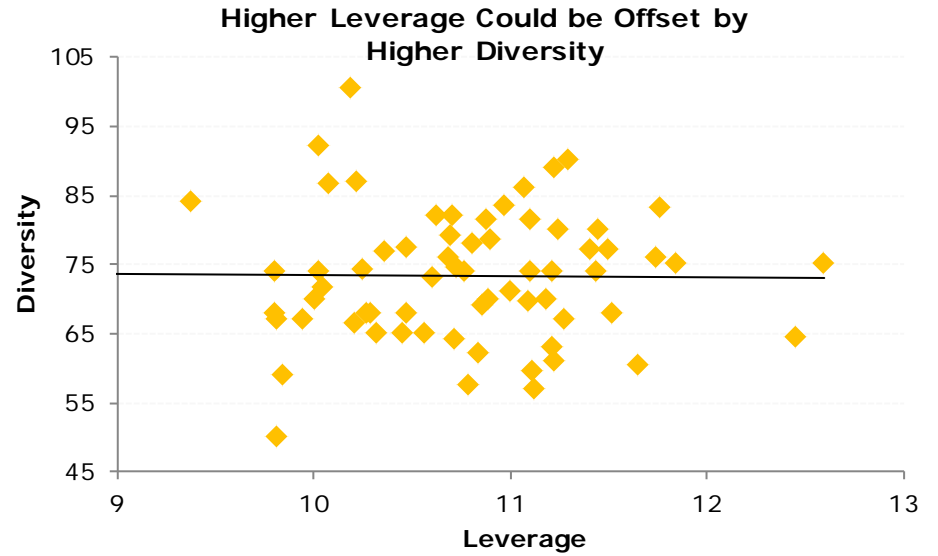
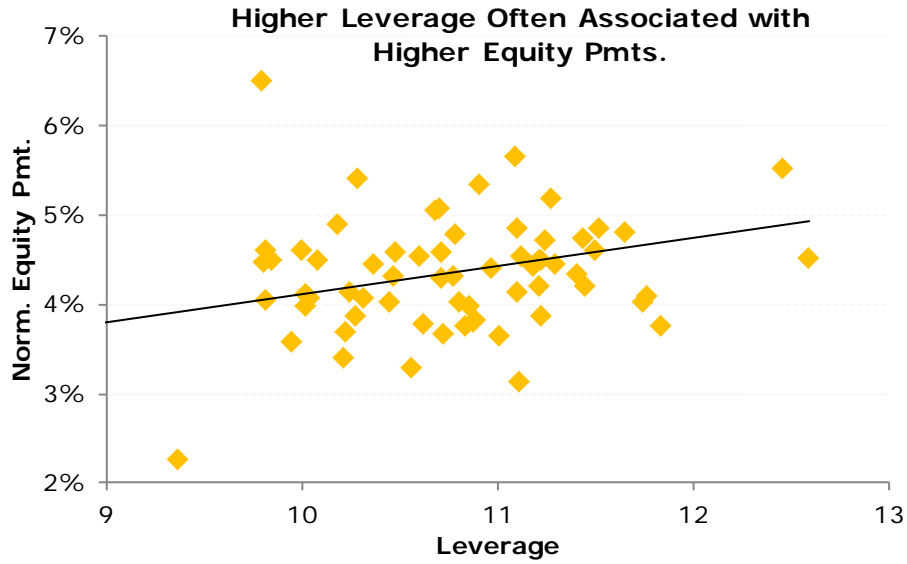
Tranche	Rating	Size
A	AAA	372,000
B	AA	84,000
C	A	36,000
D	BBB	36,000
E	BB	24,000
Subord	NR	56,000
Total		608,000

Leverage	= 608,000 / 56,000
Structural Leverage	10.9

Data Source

Intex, Wells Fargo Securities

CLO Metrics: Leverage



CLO Metrics: Min. OC Cushion

Metric

Median Minimum Overcollateralization Cushion (Min OC Cushion)

Description/ Uses

- Difference between actual OC level and OC Test limit for the **tightest OC test in the deal** (not including Int. Diversion tests – only true OC tests). Used to show how close an equity cashflow diversion is.
- OC Test: Par-based asset/liability coverage test. Given a tranche, X, the OC ratio = Adj. Principal Value of Collateral / Sum of prin. for tranche X and all tranches senior to X

Market Stats

Time	Median Level	Chg.
Current (Sep 2017)	419	
12M Ago (Sep 2016)	391	28
18M Ago (Mar 2016)	425	-5

Common Metric Pairs/Tradeoffs

Higher Min. OC
<ul style="list-style-type: none"> • Lower Caa / CCC / Defaulted asset exposure - which can sometimes be haircut in the min. OC cushion calculation

Lower Min. OC
<ul style="list-style-type: none"> • In theory, we would hope a manager with lower Min. OC cushion would have recently cleaned up their pool/sold assets at a discount at the cost of min. OC

Metric Analysis

Strengths
<ul style="list-style-type: none"> • Included in Intex • Provides a proxy for par building • Haircut for excess Caa / CCC exposure, defaulted assets and discount purchases

Weaknesses
<ul style="list-style-type: none"> • Some deals may have single B OC tests (~ 20-30% of single-B tranches have OC tests) • Does not account for initial structuring or OC calculation differences. • Only a snapshot; does not show OC gained or lost

Calculation Example

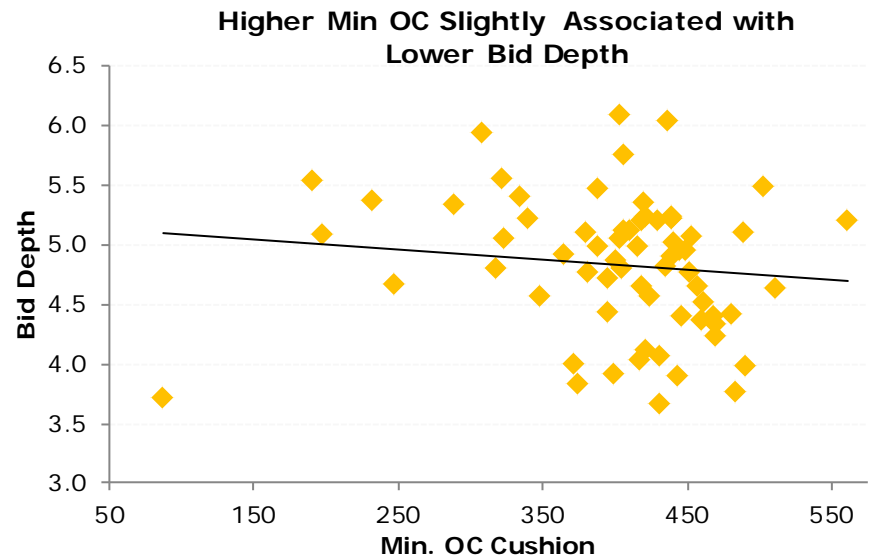
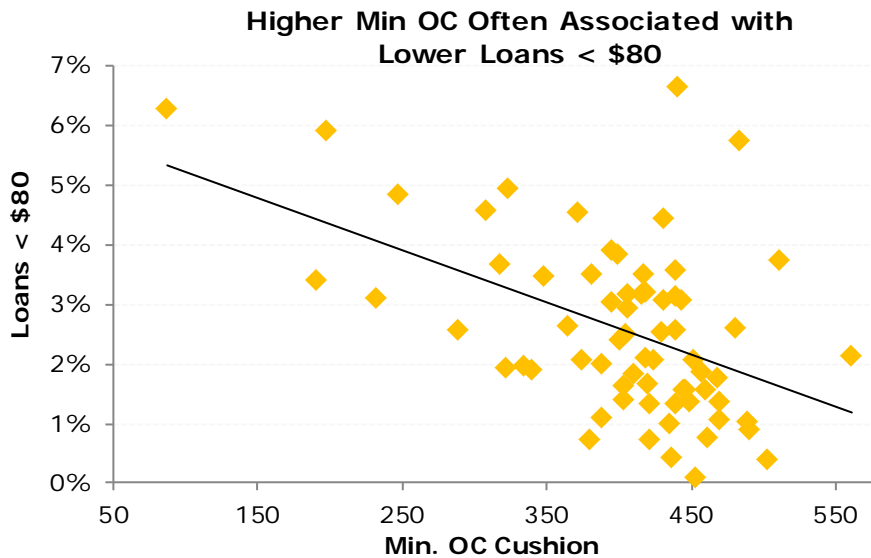
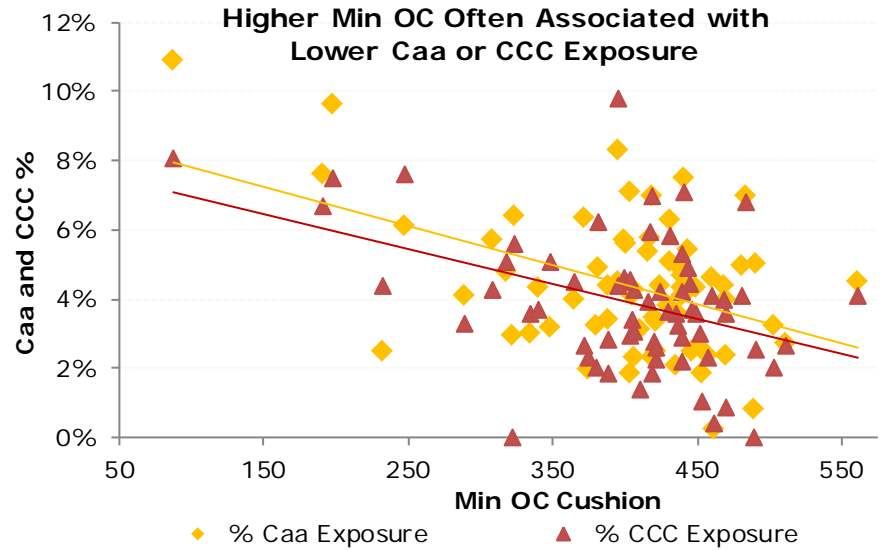
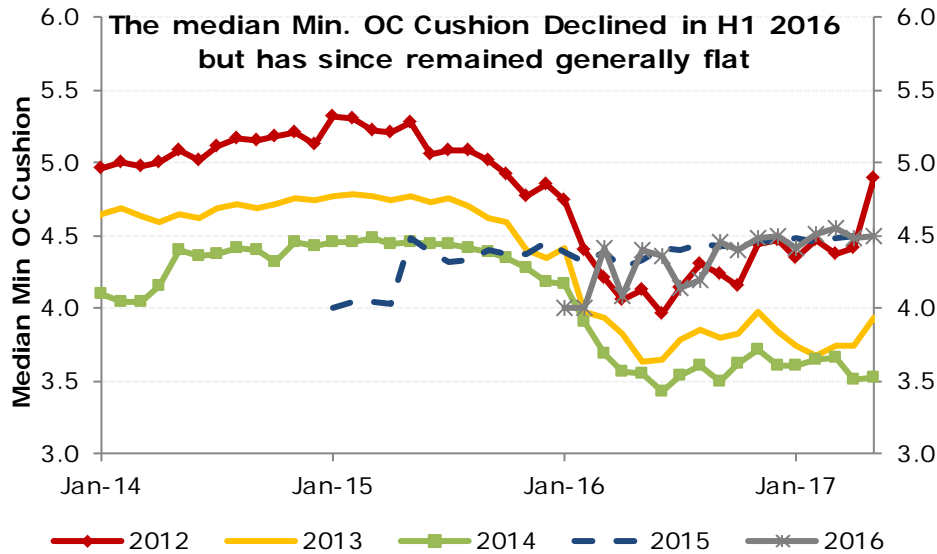
Tranche	Rating	Size	Denominator Calc	Numer. Curr. Val	Trigger	Cushion (bps)	P/F	
A-1	AAA	372	[372]	600	1.61		PASS	
A-2	AA	84	[372 + 84]	600	1.32	1.21	1058	PASS
B	A	36	[372 + 84 + 36]	600	1.22	1.14	795	PASS
C	BBB	36	[372 + 84 + 36 + 36]	600	1.14	1.08	564	PASS
D	BB	24	[372 + 84 + 36 + 36 + 24]	600	1.09	1.05	400	PASS
Subord	NR	56						
Total Liabilities		608						
OC Ratio Numerator								
Agg. Principal Value of Underlying Assets			595					
Cash & Eligible Investments			5					
Total Assets			600					

This example deal has a min. OC cushion of 400 bps.

Data Source

Intex, Wells Fargo Securities

CLO Metrics: Min. OC Cushion



CLO Metrics: Caa Exposure and CCC Exposure

Metric

Median Caa Exposure and Median CCC Exposure

- Intex's fields show % of the portfolio rated Caa or below, and the % of the portfolio rated CCC or below
- Generally, we have found that Moody's Caa exposure in a CLO is based on **facility** rating, while S&P's CCC exposure is based on **issuer** rating.

Description/ Uses

Market Stats

Time	Med. Caa	Chg.
Current (Sep 2017)	4.30	
12M Ago (Sep 2016)	4.88	-0.58
18M Ago (Mar 2016)	3.97	0.33

Med. CCC	Chg.
3.80	
3.93	-0.13
2.45	1.35

Higher Caa or CCC Exposure

- Higher spread assets (higher WAS)
- Higher WARF
- Lower Min OC Cushion
- Lower market-value metrics (NAV, Adj. NAV, BB MVOC)

Lower Caa or CCC Exposure

- Cleaner pools - lower WARF
- Lower spread pools
- Higher Min OC Cushion
- Higher market-value metrics (NAV, BB MVOC)

Common Metric Pairs/Tradeoffs

Strengths

- Included in Intex
- Clear calculation of lower-rated assets in the portfolio

Weaknesses / Caveats

- May be calculated differently from deal to deal.
- Also, the data reported in Intex may refer to concentration limits, not to Excess Caa or Excess CCC Test levels used for OC test calculation; Actual Caa or CCC holdings may be higher or lower.
- May not include data from deals not rated by that rating agy. If Moody's did not rate the deal, we may not have Caa% data.

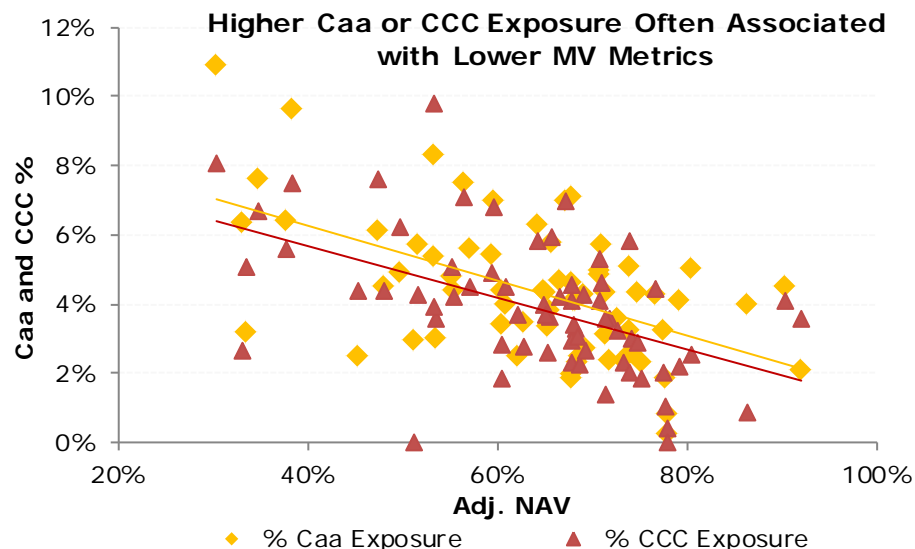
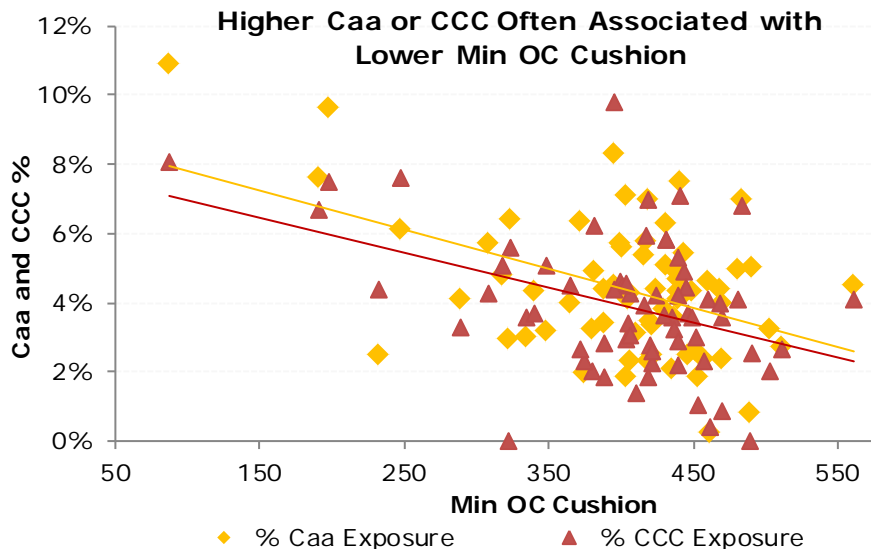
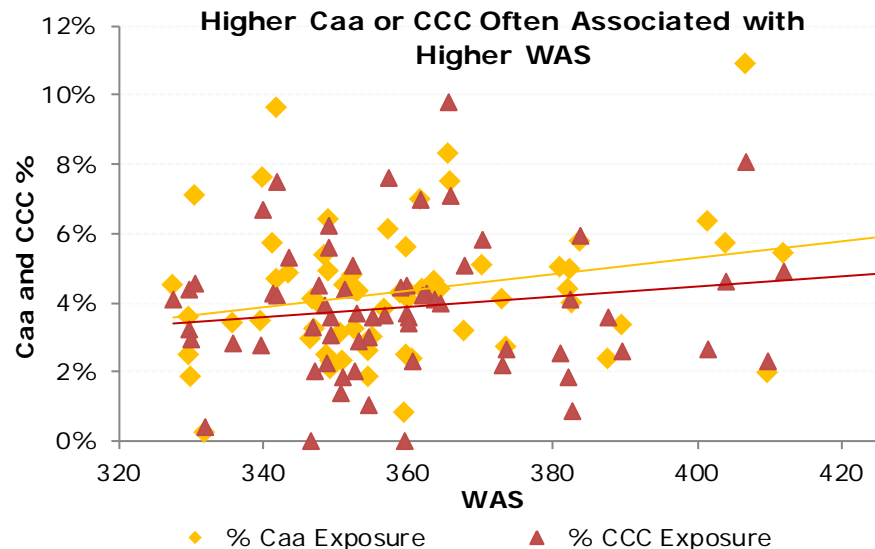
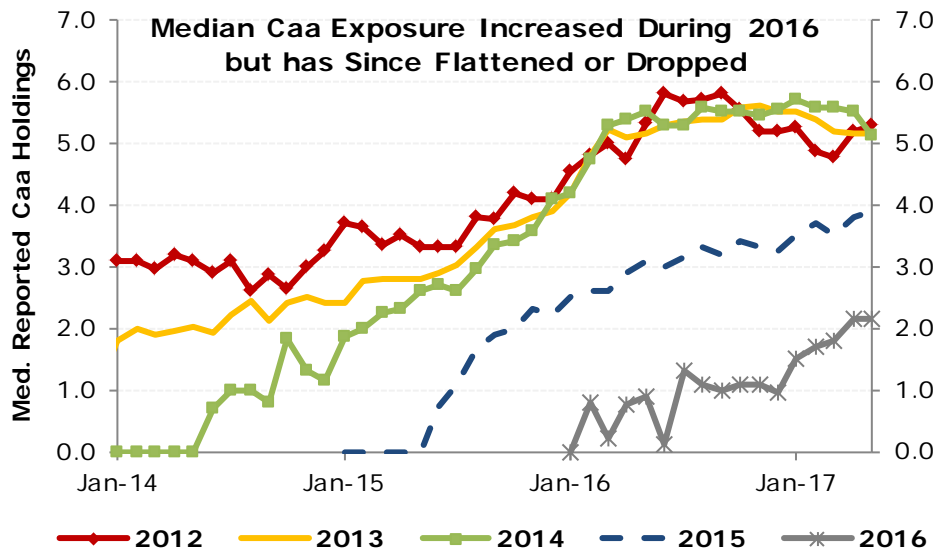
Metric Analysis

Security	Prin. Bal.	MDY Rtg	S&P Rtg
Company 1	3.0	B3	CCC
Company 2	2.9	B3	CCC+
Company 3	2.9	Caa1	CCC-
Company 4	2.5	Caa3	CCC-
Company 5	3.7	Caa1	CCC
Company 6-200	479.3	B2	BB
Total Asset Bal	494.3		

	Caa Exp	CCC Exp
		3.0
		2.9
	2.9	2.9
	2.5	2.5
	3.7	3.7
Total Caa or CCC	9.1	15.0
Total Assets	494.3	494.3
% Exposure	1.8%	3.0%

Calculation Example

CLO Metrics: Caa Exposure and CCC Exposure



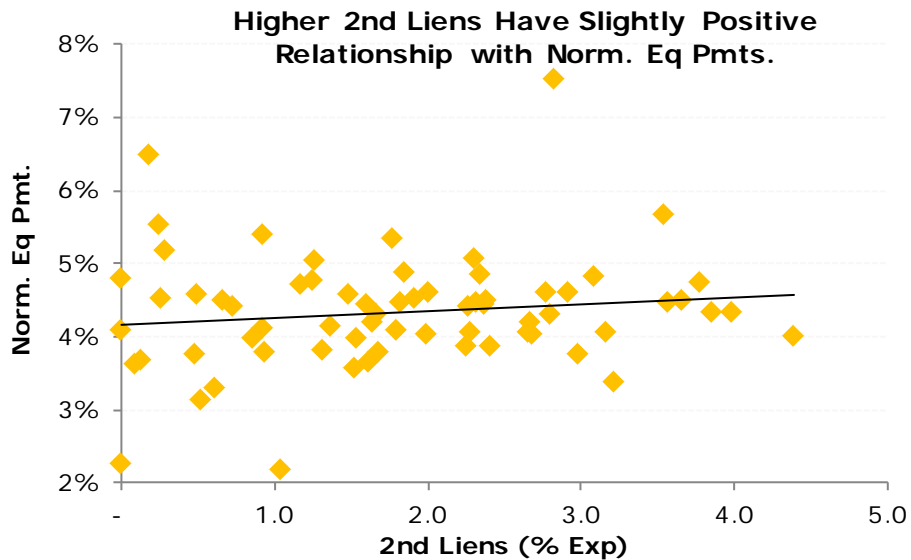
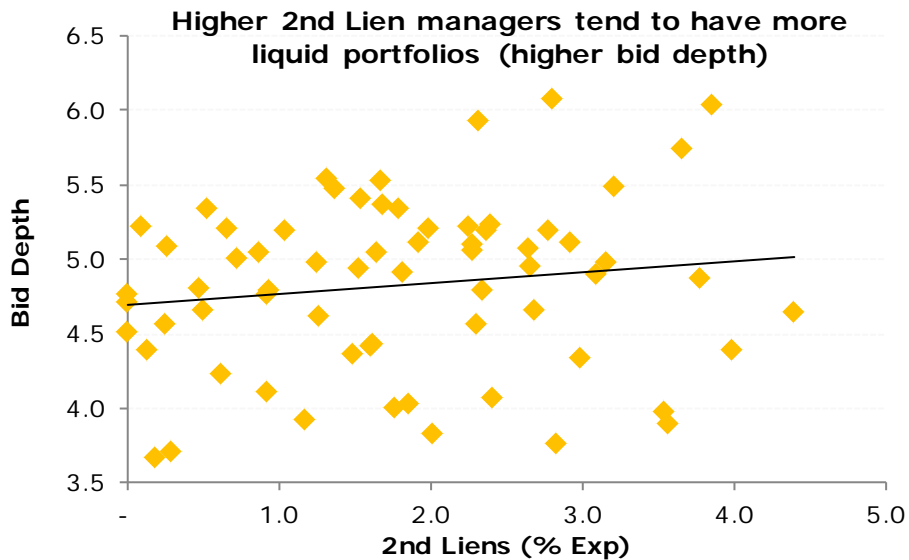
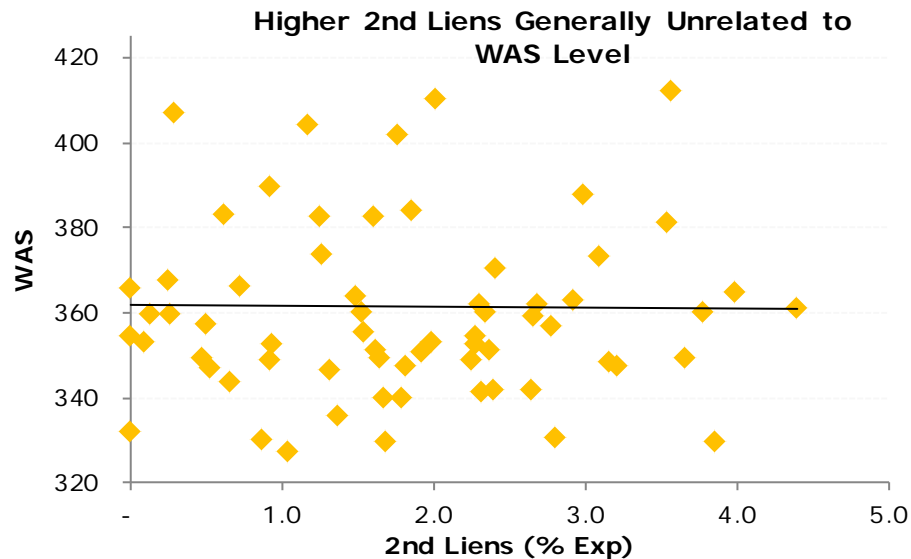
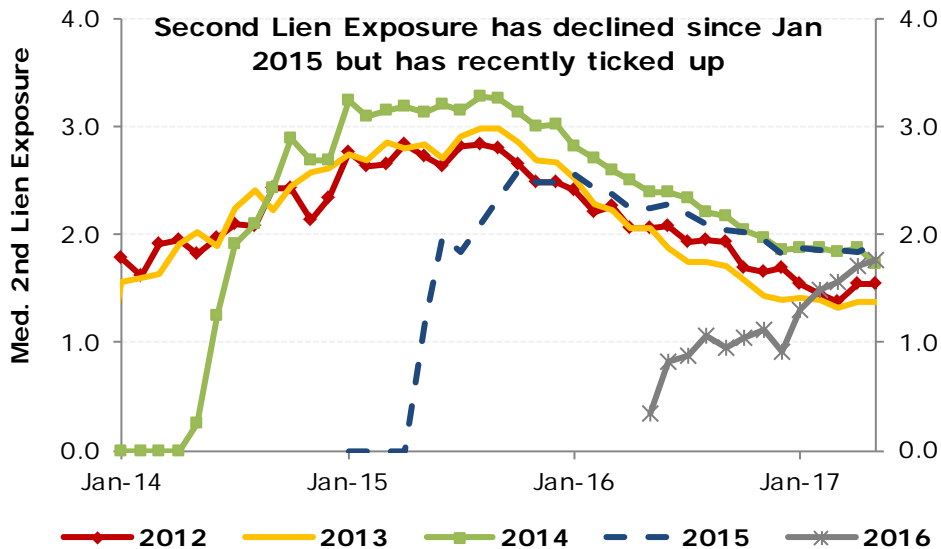
Sources: Intex, LPC Collateral
Scatter plots show manager median data from the 9/2017 Style Guide

CLO Metrics: Second Lien Exposure

Metric	Median 2nd Lien Exposure												
Description/ Uses	<ul style="list-style-type: none"> • The percent of 2nd lien loans held by the CLO • Used as a proxy for portfolio risk 												
Market Stats	<table border="1"> <thead> <tr> <th>Time</th> <th>Med. Caa</th> <th>Chg.</th> </tr> </thead> <tbody> <tr> <td>Current (Sep 2017)</td> <td>1.77</td> <td></td> </tr> <tr> <td>12M Ago (Sep 2016)</td> <td>2.14</td> <td>-0.37</td> </tr> <tr> <td>18M Ago (Mar 2016)</td> <td>2.64</td> <td>-0.87</td> </tr> </tbody> </table>	Time	Med. Caa	Chg.	Current (Sep 2017)	1.77		12M Ago (Sep 2016)	2.14	-0.37	18M Ago (Mar 2016)	2.64	-0.87
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18M Ago (Mar 2016)	2.64	-0.87											
Common Metric Pairs/Tradeoffs	<p style="text-align: center;">Higher 2nd Lien Exposure</p> <ul style="list-style-type: none"> • In general, we would expect higher 2nd liens to be associated with: <ul style="list-style-type: none"> • Higher spread assets (higher WAS) • Higher WARF • Lower market-value metrics (NAV, Adj. NAV, BB MVOC) <p>However, some managers appear to employ a barbell approach, where higher second lien exposure doesn't necessarily equate to a riskier portfolio</p>												
Metric Analysis	<p style="text-align: center;">Strengths</p> <ul style="list-style-type: none"> • Included in Intex • Clear calculation of second-lien assets in portfolio 												
Calculation Example	<p>Provided in Intex as a percent of the deal's asset balance</p>												
Data Source	Intex, Wells Fargo Securities												

Lower 2nd Lien Exposure
<ul style="list-style-type: none"> • Cleaner pools - lower WARF • Lower spread pools • Higher market-value metrics (NAV, BB MVOC)
Weaknesses / Caveats
<ul style="list-style-type: none"> • Does not stand alone as a proxy for risk - managers may employ a barbell approach in choosing assets • Deals with high 2nd lien holdings may see a disconnect between Caa and CCC % (facility rating vs. issuer rating)

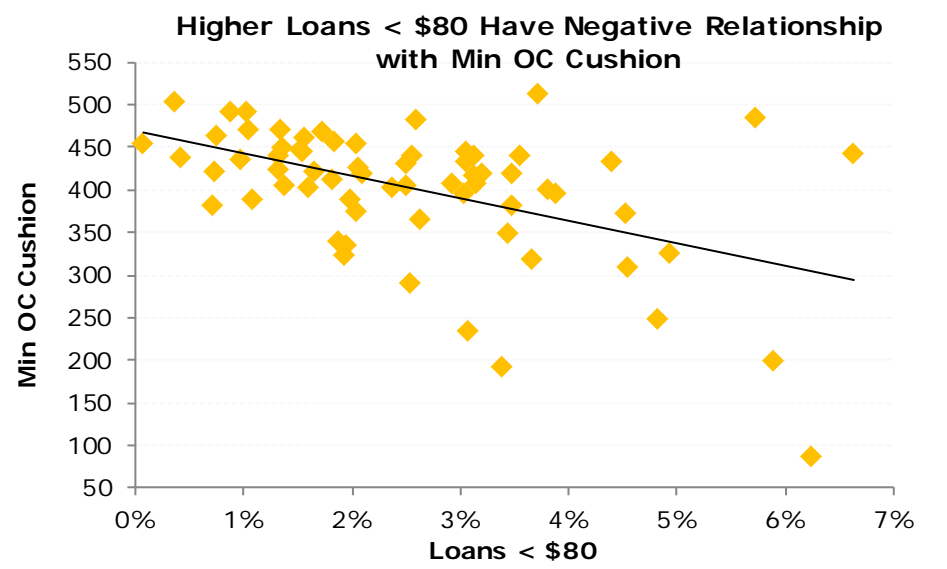
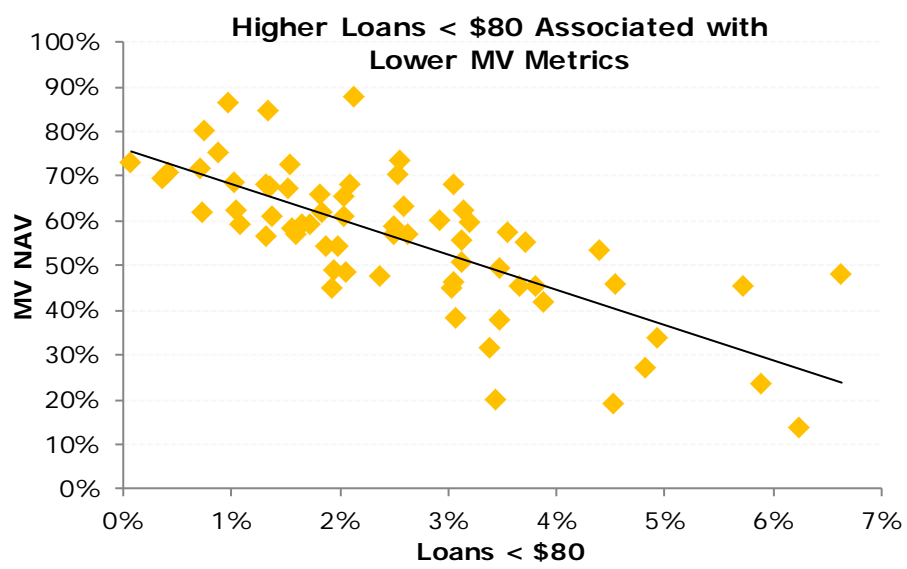
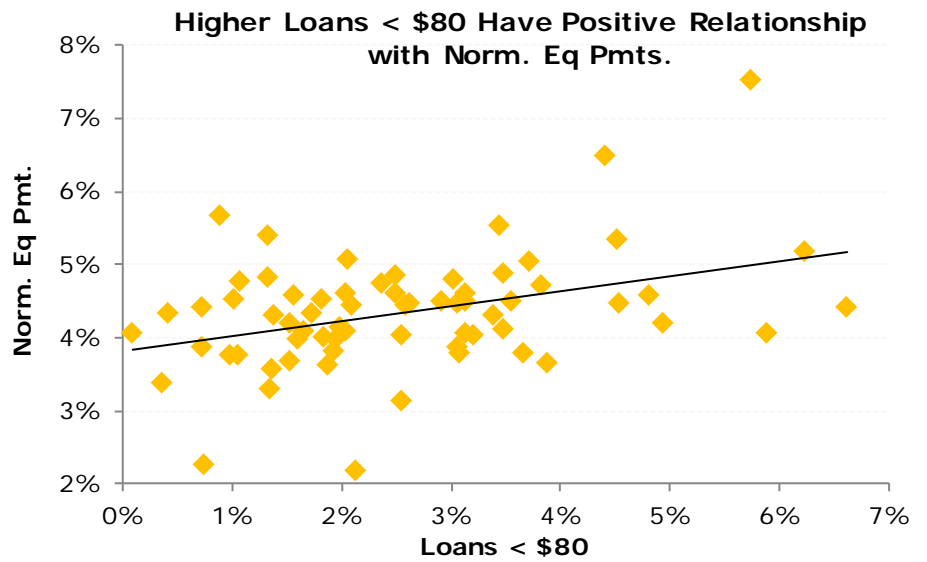
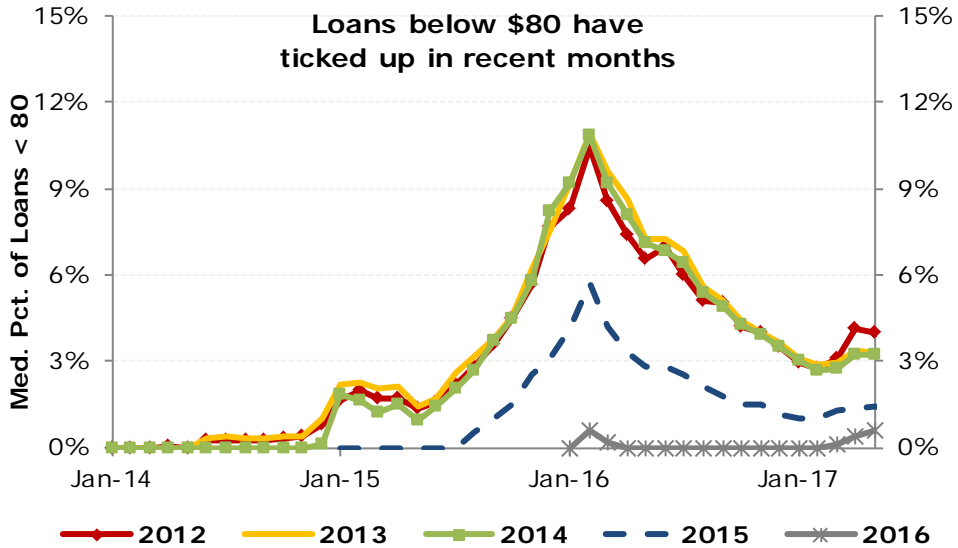
CLO Metrics: Second Lien Exposure



CLO Metrics: < \$80 Exposure

Metric	Median Exposure to Loans Trading < \$80																
Description/ Uses	<ul style="list-style-type: none"> • Average # of loans in the pool that have current market prices below 80 – the traditional cut-off for a ‘distressed loan’ in the loan market. • Used to illustrate tail risk or as a proxy for near term (12-24 month) default risk in the pool. • If average recoveries (measured by post default trading price) are ~65, then a loan trading below 80 is typically trading as if the market thinks it will default. 																
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Calculation Example	Provided in LPC Collateral's Database by Deal																
Data Source	LPC Collateral																

CLO Metrics: < \$80 Exposure



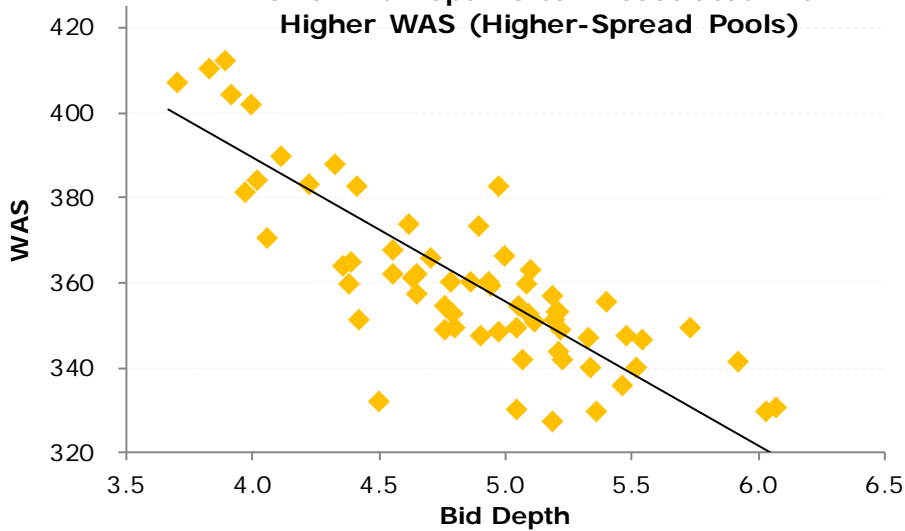
Sources: Intex, LPC Collateral
Scatter plots show manager median data from the 9/2017 Style Guide

CLO Metrics: Wtd. Avg. Bid Depth

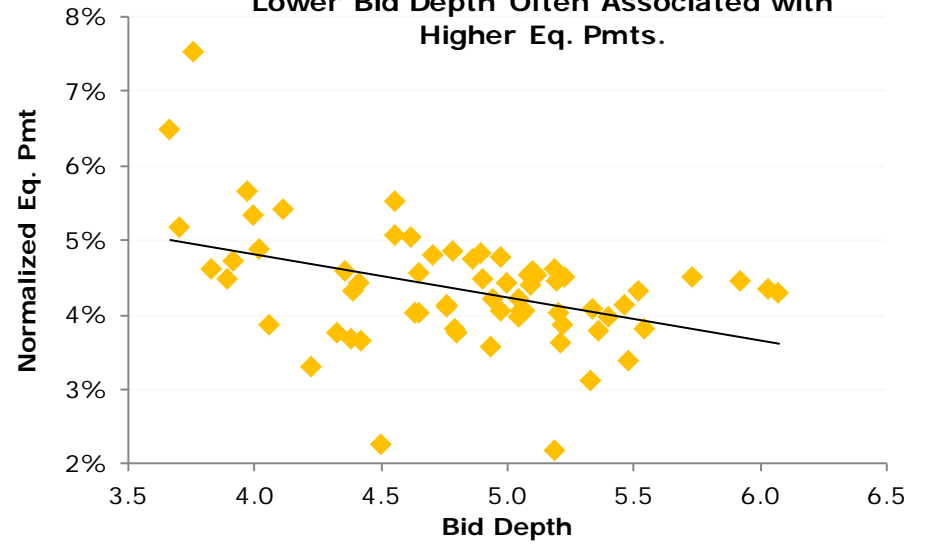
Metric	Median Weighted Average Bid Depth																																		
Description/ Uses	<ul style="list-style-type: none"> • Average of the # of bids on the loans in the CLO portfolio used in our portfolio pricing, per our CLO asset pricing tool • Avg. Bid depth is an attempt to show the level of liquidity on assets in underlying CLO portfolios. Used to show which managers are taking liquidity risk – typically, we would think of loans with fewer bids as smaller loans – ‘upper middle market’ or ‘lightly syndicated loans.’ • Because a CLO is not a mark to market vehicle, and the CLO does not have forced liquidation provisions, we believe liquidity risk within a CLO portfolio is acceptable – however, we also want CLO investors to understand how certain managers may be achieving higher spread pools or driving a favorable WAS/WARF ratio. 																																		
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Common Metric Pairs/Tradeoffs	Higher Bid Depth <ul style="list-style-type: none"> • More volatile market-value metrics, due to increased liquidity • Lower spread pools 		Lower Bid Depth <ul style="list-style-type: none"> • Typically, a lower bid depth corresponds with higher spread portfolios. • More stable market-value metrics, due to less liquidity—but may face larger jumps in prices in a stress period. 																																
	Strengths <ul style="list-style-type: none"> • Can help investors understand how a CLO manager may be achieving higher spread pools or driving a favorable WAS/WARF ratio. 		Weaknesses / Caveats <ul style="list-style-type: none"> • Does not account for quality/size of bids in the market. 																																
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CLO Metrics: Wtd. Avg. Bid Depth

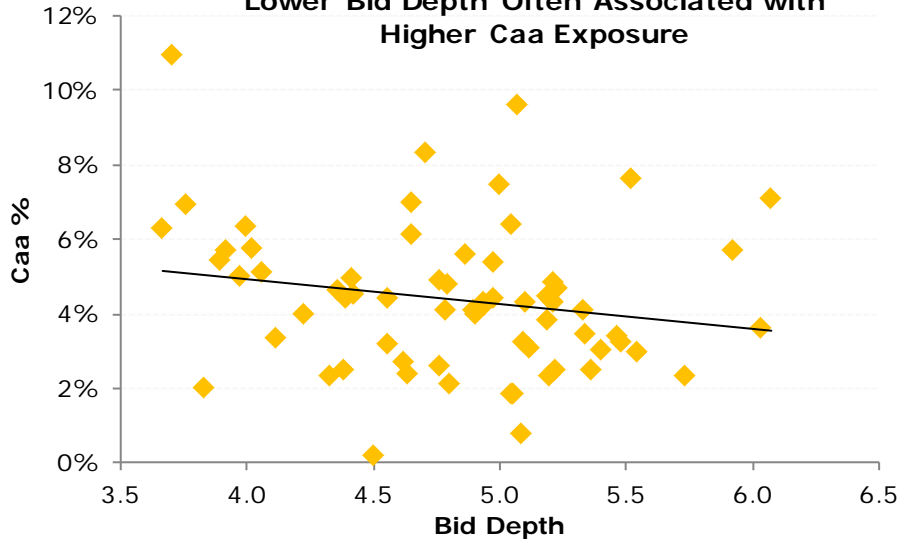
Lower Bid Depth Often Associated with Higher WAS (Higher-Spread Pools)



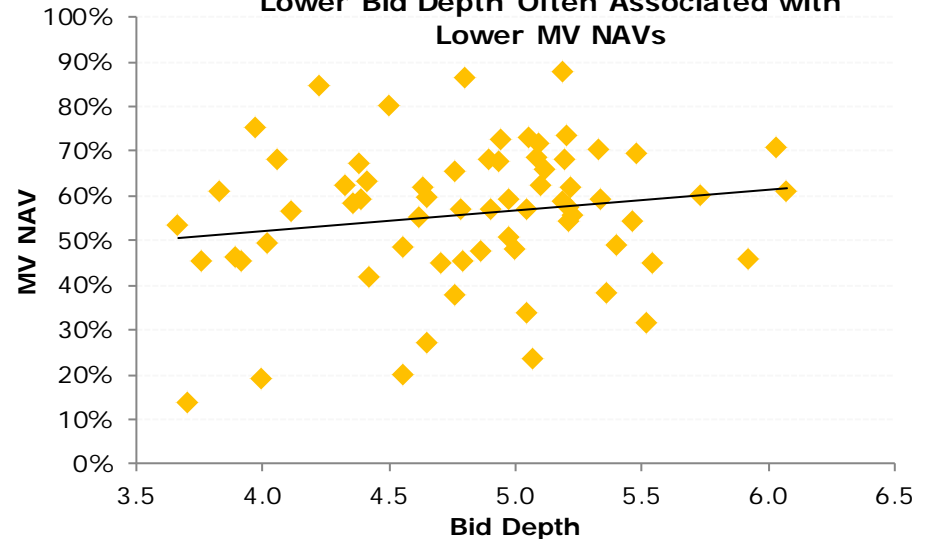
Lower Bid Depth Often Associated with Higher Eq. Pmts.



Lower Bid Depth Often Associated with Higher Caa %



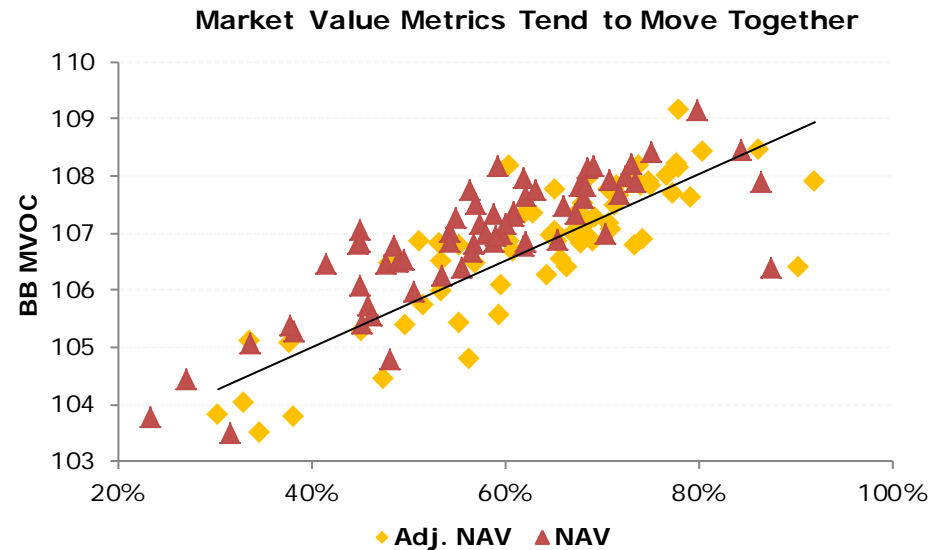
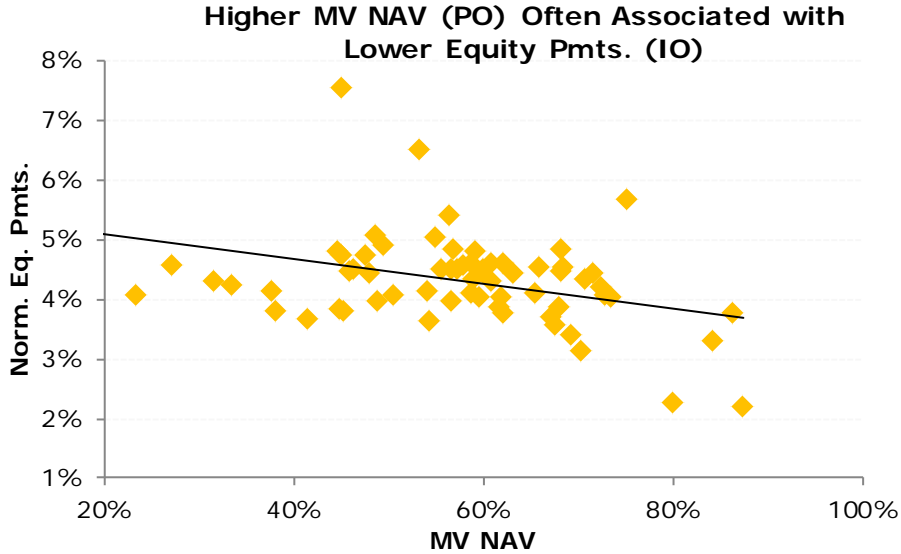
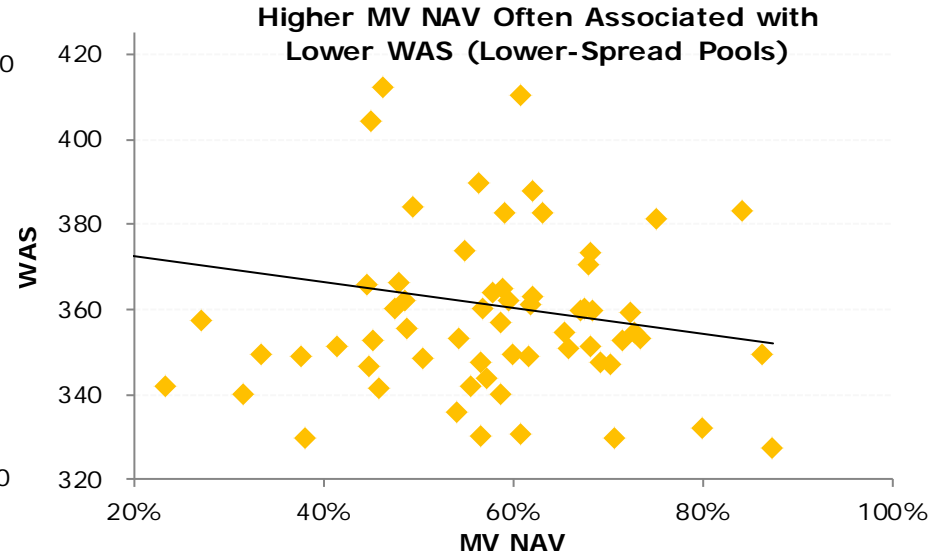
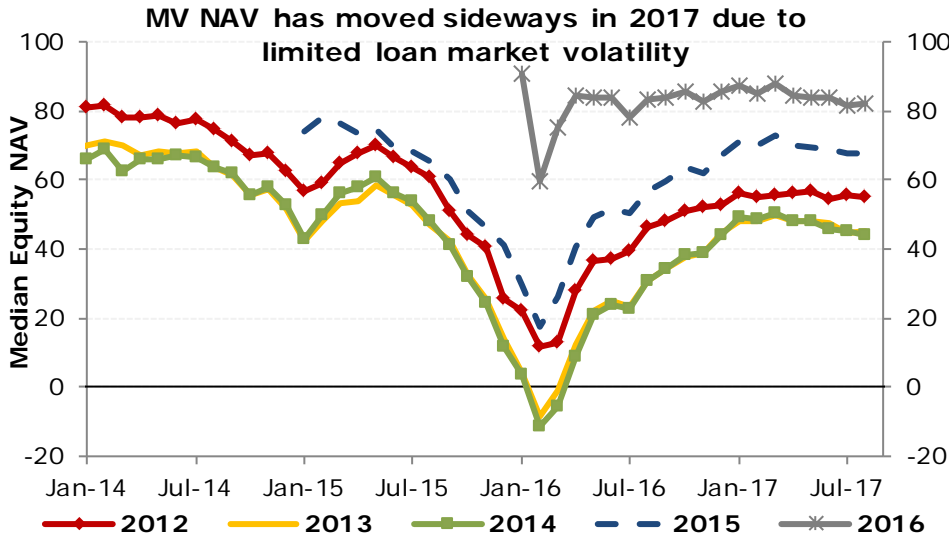
Lower Bid Depth Often Associated with Lower MV NAVs



CLO Metrics: MV NAV

Metric	Market Value NAV																																																								
Description/ Uses	The equity market value NAV of the CLO equity tranche (expressed as a pct of equity notional balance). Can be thought of as the liquidation value of the CLO – the value to the equity if the manager sold all the assets and paid off the notes. Calculated by taking the market value of the portfolio minus the face value of all debt tranches outstanding, divided by equity notional. May not account for incentive mgmt. fees or deferred fees.																																																								
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CLO Metrics: MV NAV



CLO Metrics: BB MVOC

Metric

BB MVOC

Description/ Uses

- The Market Value OC Ratio of the BB notes. For example, if we liquidated the pool today, how covered are BB notes. OC ratio uses the most recent market value of the collateral instead of the par / haircut value.
- Class B MVOC = market value of collateral / (Par value class A notes + Par value class B notes outstanding).

Market Stats

Time	Median Level	Chg.
Current (Sep 2017)	107.0	
12M Ago (Sep 2016)	105.7	1.3
18M Ago (Mar 2016)	101.1	5.9

Common Metric Pairs/Tradeoffs

Higher BB MVOC Pool
Lower risky-asset exposure (Caa/CCC/ 2nd liens)
Lower loans < \$80 exposure

Lower BB MVOC Pool
Higher risky-asset exposure (Caa/CCC/2nd liens)
Higher loans < \$80 exposure

Metric Analysis

Strengths
<ul style="list-style-type: none"> • Provides proxy for market value coverage of the BB tranche • Commonly used in pricing and trading secondary tranches

Weaknesses
<ul style="list-style-type: none"> • Data is based on a snapshot of the loan prices on the day we determine the underlying portfolio market value • Does not account for initial structuring differences. Deals may have higher or lower OC cushion at issuance due to trade-offs in the structuring process. • CLO is not a mark to market vehicle, and the CLO does not have forced liquidation provisions. A CLO provides the equity investor with term leverage with no mark to market pressure, and investors can't force a liquidation prior to the call – so measuring daily loan price movements may not always make sense.

Calculation Example

Liabilities		
Tranche	Rating	Size
A	AAA	314
B	AA	61
C	A	36
D	BBB	26
E	BB	23
Subord	NR	53
Par Value of Liabilities		513
Market Value of Assets		490

OC Calculations	
OC Coverage	OC Ratio
= 490 / [314]	156.0
= 490 / [314+61]	130.7
= 490 / [314+61+36]	119.2
= 490 / [314+61+36+26]	112.2
= 490 / [314+61+36+26+23]	106.5

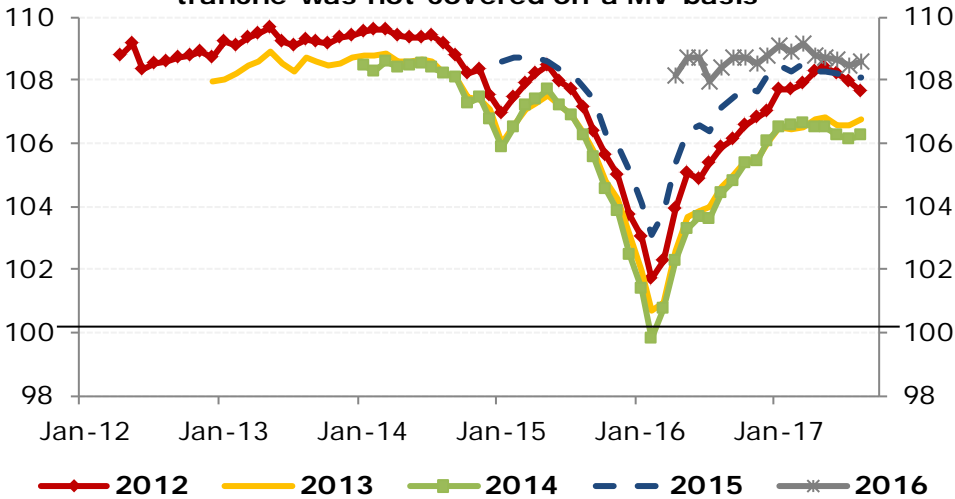
The BB tranche is 1.06x covered on a market value basis

Data Source

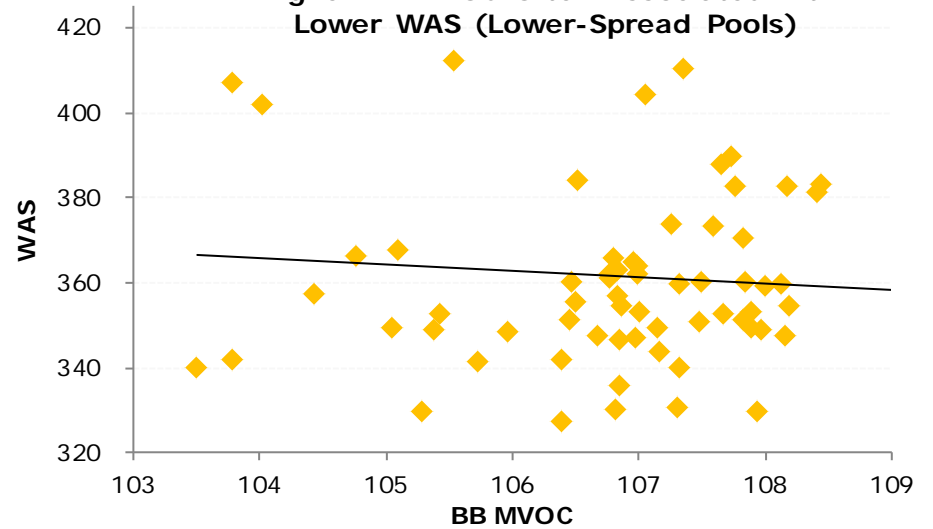
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CLO Metrics: BB MVOC

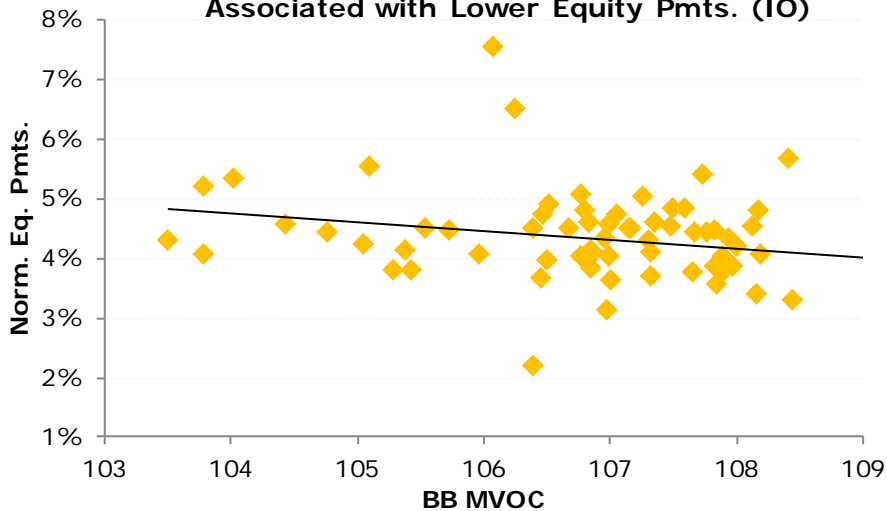
At the trough of 2016 volatility, the average BB tranche was not covered on a MV basis



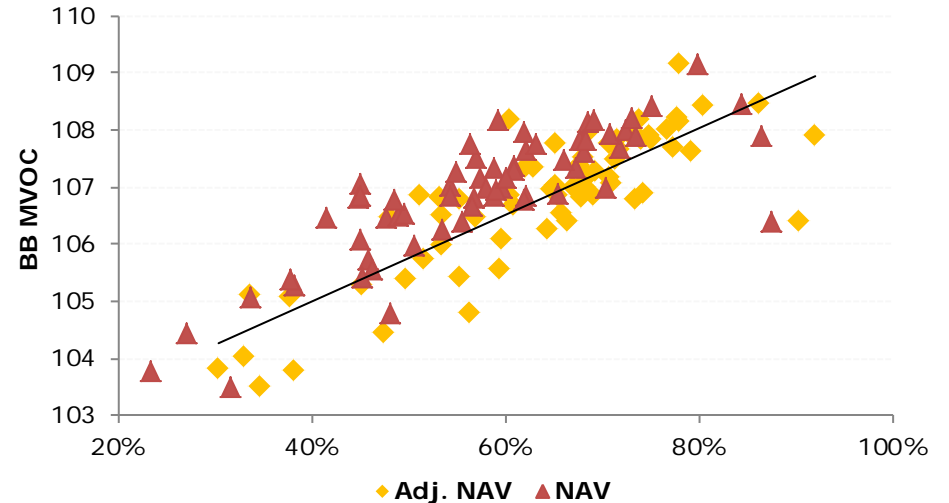
Higher BB MVOC Often Associated with Lower WAS (Lower-Spread Pools)



Higher MV Metrics (like BB MVOC) Often Associated with Lower Equity Pmts. (IO)



Market Value Metrics Tend to Move Together



Additional information is available on request.

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