



# Spotlight on European CLOs

A floating rate alternative

Aza Teeuwen  
Partner, Portfolio Management

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Elena Rinaldi  
Portfolio Management

# Agenda

**01** CLOs are an integral part of the European ABS market

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**02** Introduction to CLOs

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**03** Due diligence and underwriting

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**04** Fundamentals and lessons from the past

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**05** Liquidity and relative value

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# CLOs are an integral part of the European ABS market



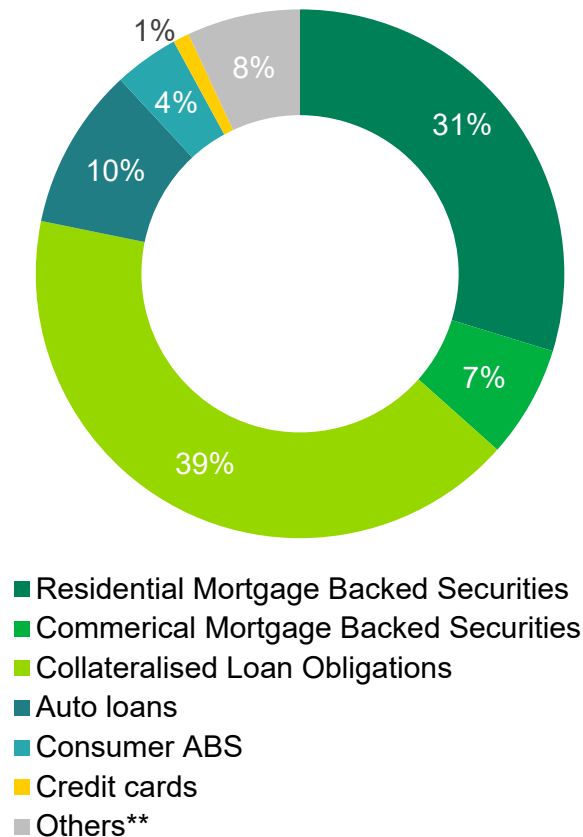
# European ABS market overview

Size of market: **€492 bn\***

## Main investors

- Bank treasuries
- Pension schemes
- Asset managers/Wealth managers (normally held within diverse credit portfolios)
- Insurance companies (normally only higher rated tranches, due to Solvency 2 treatment)
- Hedge funds
- Central banks

## Main collateral pools



## Main Issuer Geography



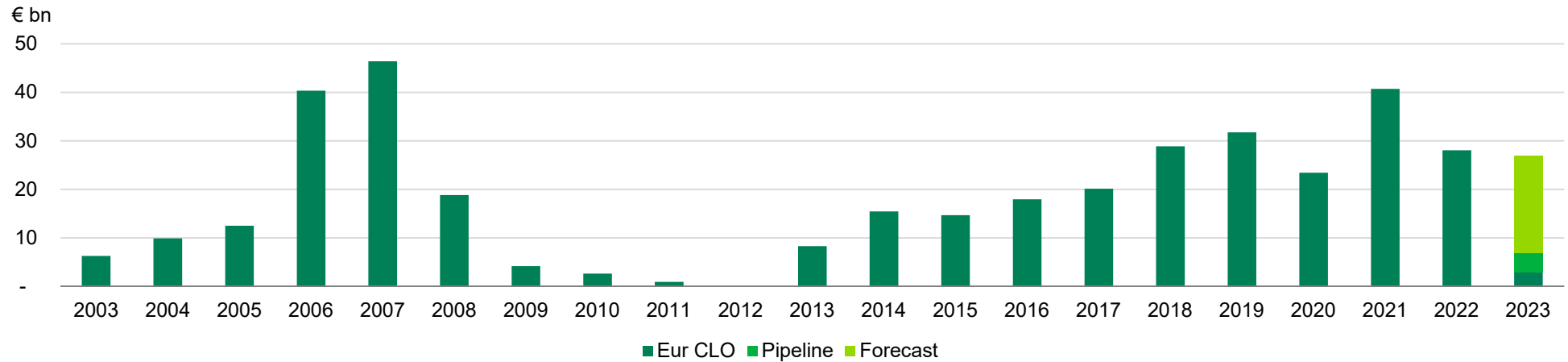
- UK, Netherlands and Spain are the largest issuers, but other core Europe and periphery also issue ABS
- CLOs include loans from a diverse range of geographies

\*Source: JPM International ABS, CB Research, Morgan Stanley, at as 30 September 2022

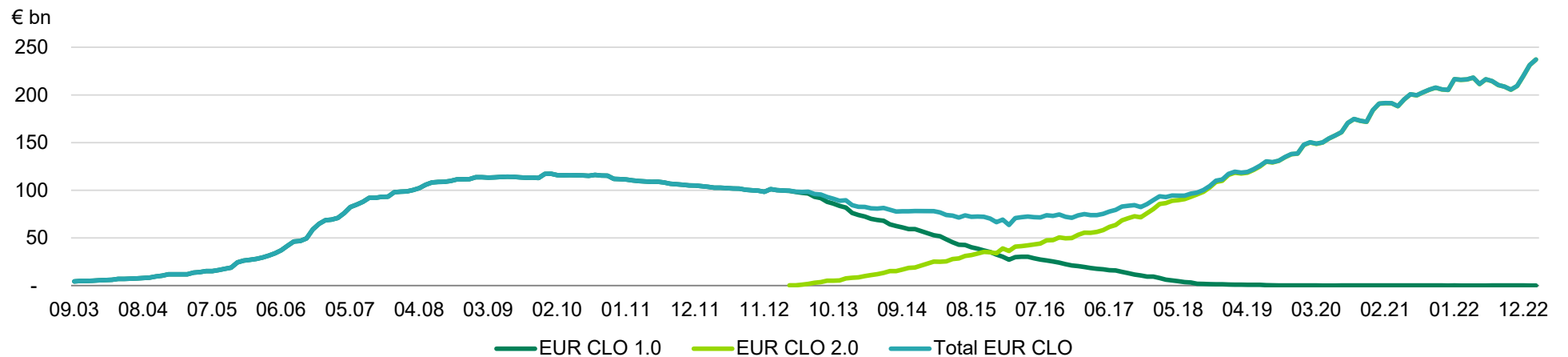
\*\*Others include assets such as SME ABS, Leases and Student Loans

# European CLO market restarted in 2013

## Primary Euro CLO issuance



## European CLOs outstanding



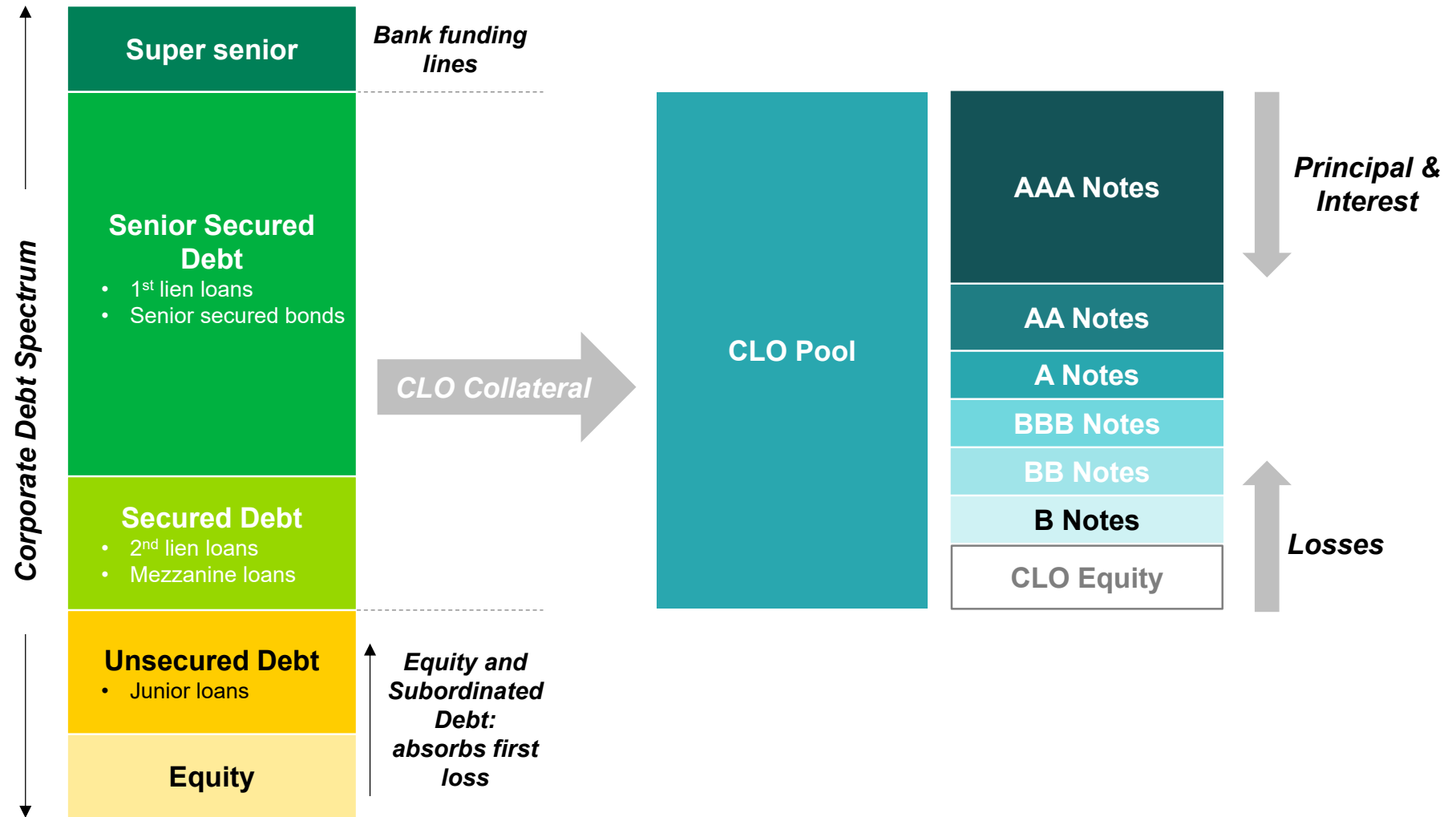
Pipeline and Forecast are based on announcements to date and current expectations which are subject to change as market conditions evolve.

Source: CitiVelocity, TwentyFour  
20 February 2023

# Introduction to CLOs

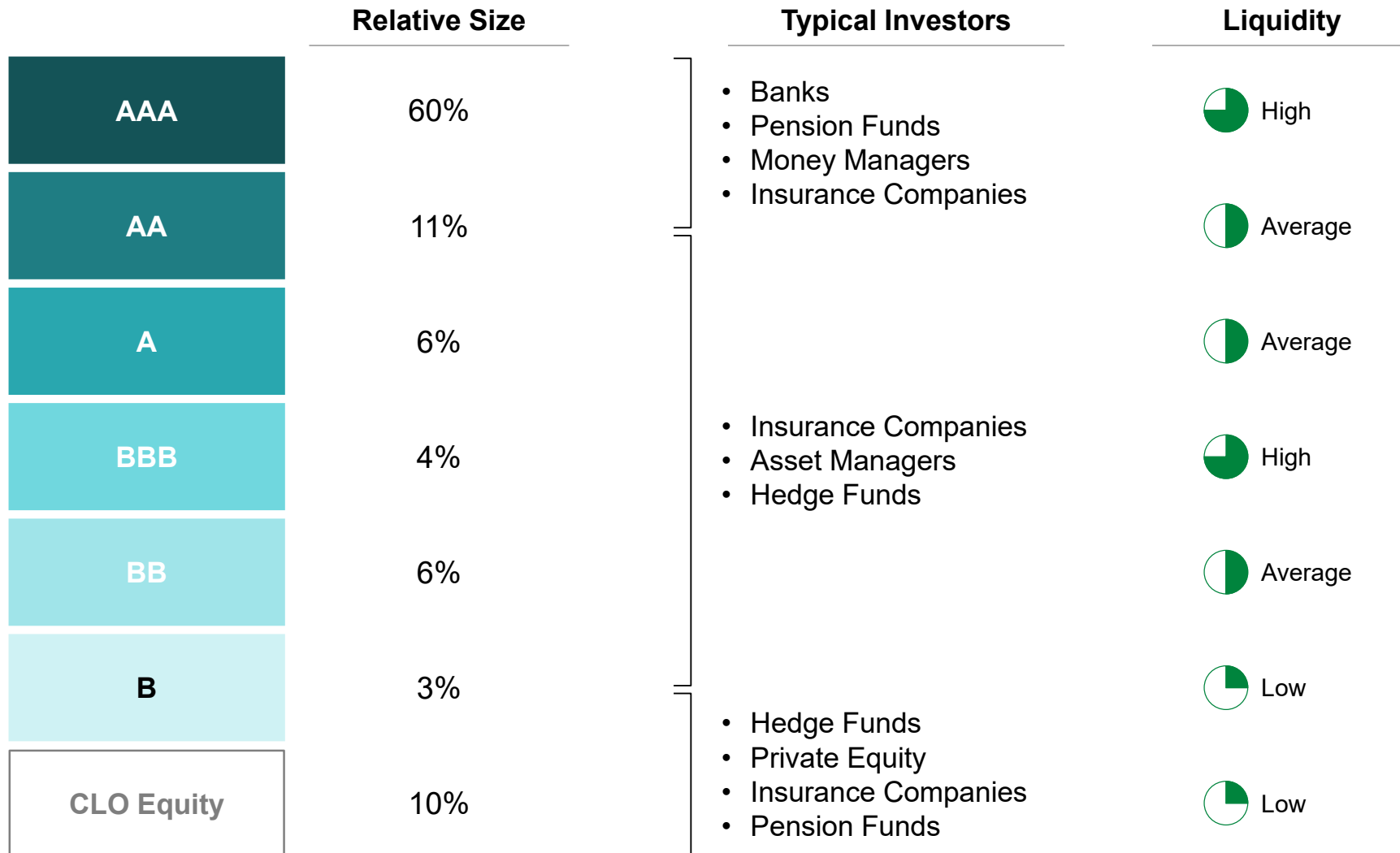


## CLO: A sample structure



Used for illustrative purposes to demonstrate the typical structure and not based on a particular security.

## Typical investors across the CLO capital structure



Used for illustrative purposes to demonstrate the typical structure and investor base, not based on a particular security. Observations are based on TwentyFour's trading experience and market observations which may not be reflective of those experienced by others. Views and expectations on liquidity and quality are also based on normal market conditions, they may change in abnormal conditions.



# Due diligence & underwriting



## Analysing a CLO – The 3 Pillars

To analyse a CLO we concentrate on 3 fundamental components; manager, pool and structure



### The Manager

- Corporate structure
  - Management and key personnel
  - Infrastructure and organisation
  - Risk management
  - Investment research process
  - Past performance
  - Management style
- There are over 60 CLO managers in Europe, and another ~10 new managers in the pipeline that we're aware of
  - There is a big difference between these managers, for example:
    - > Staffing (have they been through a cycle, turnover, etc)
    - > Systems
    - > Risk Management / Compliance
    - > Size / AUM
    - > European presence
    - > Track record (or the lack of)
    - > Investment process, sourcing
    - > Trading / Style (e.g. getting out of problem names early)
    - > Culture (will this team still be together in 5 years)
  - Different managers manage deals in a different way and in our experience much of this has to do with how much risk they are willing to take, and how big are the equity return incentives
  - Different managers require different CLO docs

## Analysing a CLO - The 3 Pillars



### The Pool

- Issuance
- Spread performance
- Broad market default cycle
- Prepayments and refinancing
- Internal analysis including applying haircuts on the pool

Rating	Par	% of Total
Ba1	-	[0.0]%
Ba2	€ [ 5,029,024 ]	[1.3]%
Ba3	€ [ 13,330,000 ]	[3.3]%
B1	€ [ 47,662,827 ]	[11.9]%
B2	€ [ 195,216,119 ]	[48.8]%
B3	€ [ 138,762,030 ]	[34.7]%
Caa1 or low	-	[0.0]%

Top 10 Countries	Par	% of Total
1 France	€ [ 101,356,182 ]	[25.3]%
2 Germany	€ [ 76,784,286 ]	[19.2]%
3 Netherlands	€ [ 44,840,000 ]	[11.2]%
4 United States	€ [ 42,206,410 ]	[10.6]%
5 United Kingdom	€ [ 36,459,024 ]	[9.1]%
6 Sweden	€ [ 18,822,203 ]	[4.7]%
7 Spain	€ [ 16,500,000 ]	[4.1]%
8 Luxembourg	€ [ 15,942,029 ]	[4.0]%
9 Ireland	€ [ 10,450,000 ]	[2.6]%
10 Finland	€ [ 7,500,000 ]	[1.9]%

Item	ID Number	Asset Name	Unique ID	Prepay Rate	Prepay Units	Default Rate	Default Units	Recovery Rate	Recovery Units	Recovery L
1	000001	AI Plex Acquico GmbH - Facility B1 (EUR)	LXLX194191		Deal Level		Deal Level		Percent	
2	000003	AI Sirona (Luxembourg) Acquisition S.a.r.l. - Term Lo...	LXLX192479		Deal Level		Deal Level		Percent	
3	000006	Adevinta ASA - Facility B1-x1	LXLX190423		Deal Level		Deal Level		Percent	
4	000009	Adevinta ASA - Facility B1-x2	LXLX190423		Deal Level		Deal Level		Percent	

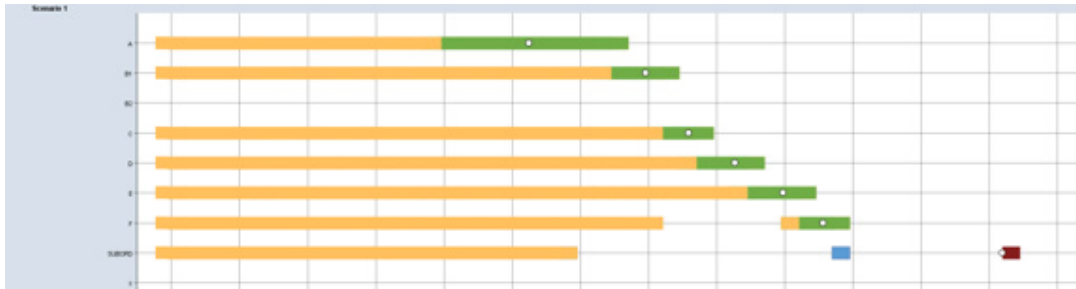


### The Structure

- Credit enhancement
- Payments waterfall
- Portfolio limits
- Reinvestment period
- Risk retention
- Management fees
- Leverage

Indicative Capital Structure*	Notional (EUR)	Rating (Fitch / Moody's)	C/E (%)	Issue Price	Coupon	DM
Class A Notes	[248,000,000]	[AAA(sf) / Aaa sf.]	[38.00]%	[100.00]%	TBD	TBD
Class B-1 Notes	[28,800,000]	[AA(sf) / Aa2 sf.]	[28.30]%	[100.00]%	TBD	TBD
Class B-2 Notes	[10,000,000]	[AA(sf) / Aa2 sf.]	[28.30]%	[100.00]%	TBD	TBD
Class C Notes	[24,000,000]	[A(sf) / A2 sf.]	[22.30]%	[100.00]%	TBD	TBD
Class D Notes	[30,400,000]	[BBB-(sf) / Baa3 sf.]	[14.70]%	[100.00]%	TBD	TBD
Class E Notes	[20,000,000]	[BB-(sf) / Ba3 sf.]	[9.70]%	TBD	TBD	TBD
Class F Notes	[11,600,000]	[B-(sf) / B3 sf.]	[6.80]%	TBD	TBD	TBD
SUB Notes	[30,900,000]	NR		TBD		
	[403,700,000]					

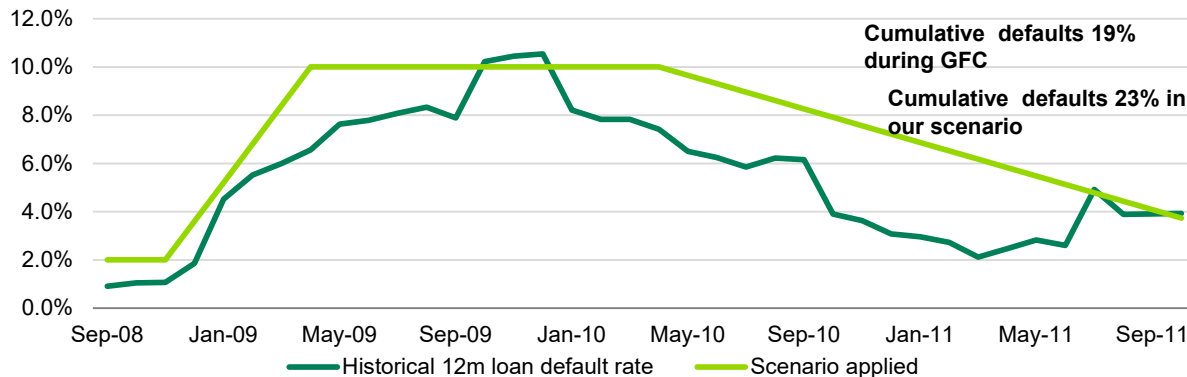
# Modelling and stress testing for CLOs



Overview of interest payment, sequential payment of principal, and trigger tests

Given: Price 96.0	E	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Scenario 8	Scenario 9
Recovery:90 Percent	Gross Implied Writedown (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Recovery:80 Percent	Gross Implied Writedown (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Recovery:70 Percent	Gross Implied Writedown (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Recovery:60 Percent	Gross Implied Writedown (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.07	34.68
Recovery:50 Percent	Gross Implied Writedown (%)	0.00	0.00	0.00	0.00	0.00	10.36	41.27	70.89	97.54
Recovery:40 Percent	Gross Implied Writedown (%)	0.00	0.00	0.00	0.00	19.95	57.74	95.06	100.00	100.00
Recovery:30 Percent	Gross Implied Writedown (%)	0.00	0.00	0.00	14.89	61.98	100.00	100.00	100.00	100.00
Recovery:20 Percent	Gross Implied Writedown (%)	0.00	0.00	2.82	50.58	100.00	100.00	100.00	100.00	100.00
Recovery:10 Percent	Gross Implied Writedown (%)	0.00	0.00	24.57	84.14	100.00	100.00	100.00	100.00	100.00
Forecasts	Scenario	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Scenario 8	Scenario 9
	Spread To (EURIBOR Swap)	6mo: -0.502 1yr: ...	6mo: -0.502 1yr: ...	6mo: -0.502 1yr: ...	6mo: -0.502 1yr: ...	6mo: -0.502 1yr: ...	6mo: -0.502 1yr: ...	6mo: -0.502 1yr: ...	6mo: -0.502 1yr: ...	6mo: -0.502 1yr: ...
	Z-Spread To (EURIBOR Swap)	6mo: -0.502 1yr: ...	6mo: -0.502 1yr: ...	6mo: -0.502 1yr: ...	6mo: -0.502 1yr: ...	6mo: -0.502 1yr: ...	6mo: -0.502 1yr: ...	6mo: -0.502 1yr: ...	6mo: -0.502 1yr: ...	6mo: -0.502 1yr: ...
	E-Spread To (US Swap)	3mo: 0.511 6mo: ...	3mo: 0.511 6mo: ...	3mo: 0.511 6mo: ...	3mo: 0.511 6mo: ...	3mo: 0.511 6mo: ...	3mo: 0.511 6mo: ...	3mo: 0.511 6mo: ...	3mo: 0.511 6mo: ...	3mo: 0.511 6mo: ...
	EURIBOR (3mo)	-0.562 -0.562 -0....	-0.562 -0.562 -0....	-0.562 -0.562 -0....	-0.562 -0.562 -0....	-0.562 -0.562 -0....	-0.562 -0.562 -0....	-0.562 -0.562 -0....	-0.562 -0.562 -0....	-0.562 -0.562 -0....
	Prepay	20 CPR	20 CPR	20 CPR	20 CPR	20 CPR	20 CPR	20 CPR	20 CPR	20 CPR
	Default Scenario Multiplier	100 Percent	100 Percent	100 Percent	100 Percent	100 Percent	100 Percent	100 Percent	100 Percent	100 Percent
	Default	2 CDR	3 CDR	4 CDR	5 CDR	6 CDR	7 CDR	8 CDR	9 CDR	10 CDR

**Stress test 1:** simple matrix CDR/LS



**Stress test 2:** shock test simulating similar defaults seen during the GFC

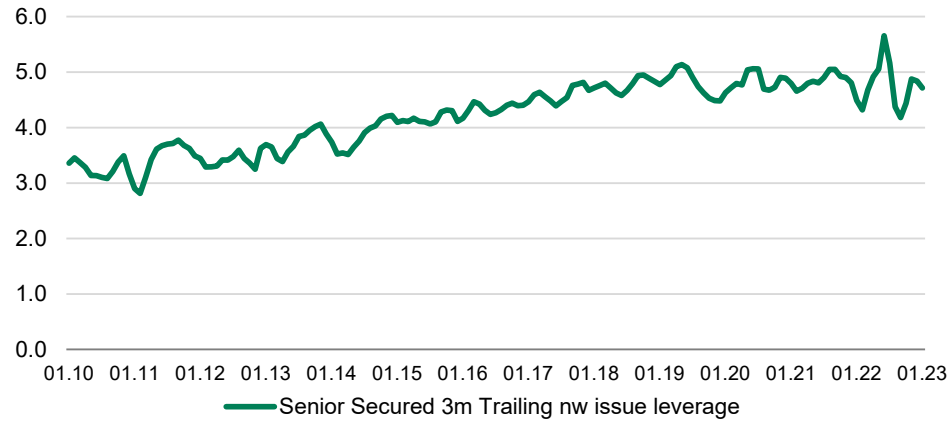
Past performance and forecasted performance (whether via modelling, stress testing or similar) are not guarantees of current or future performance. Stress testing will be based on certain assumptions and are subject to inherent weaknesses. Please see Important Information slides for further information.

# Fundamentals & lessons from the past

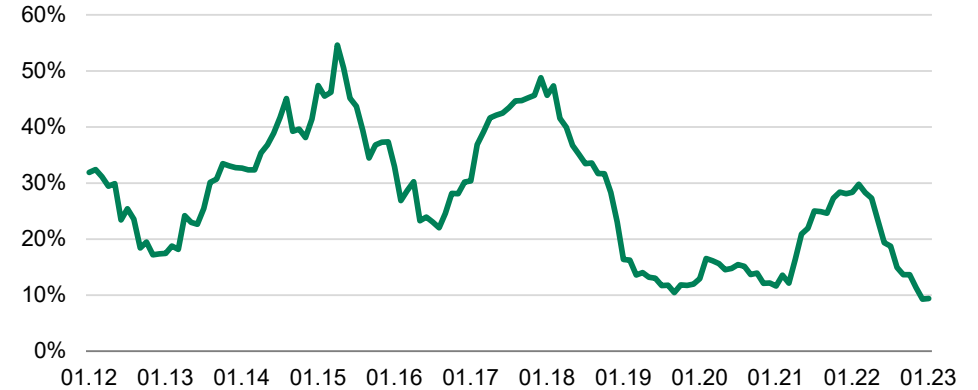


# European corporate defaults still very low, but likely more sensitive to a recession

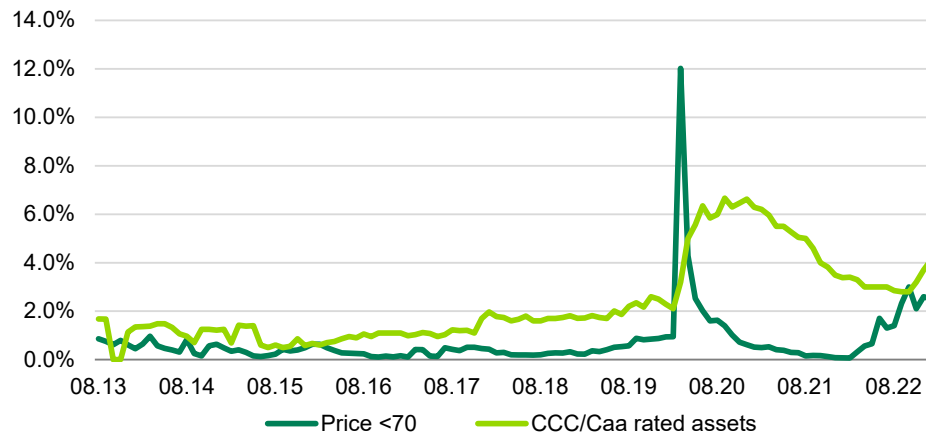
## Senior secured leverage



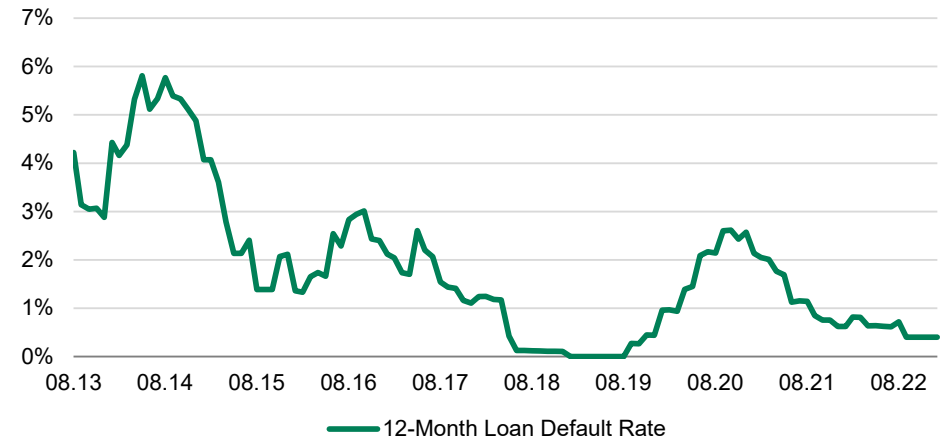
## EU prepayment rate



## CCC/distressed and defaulted loans



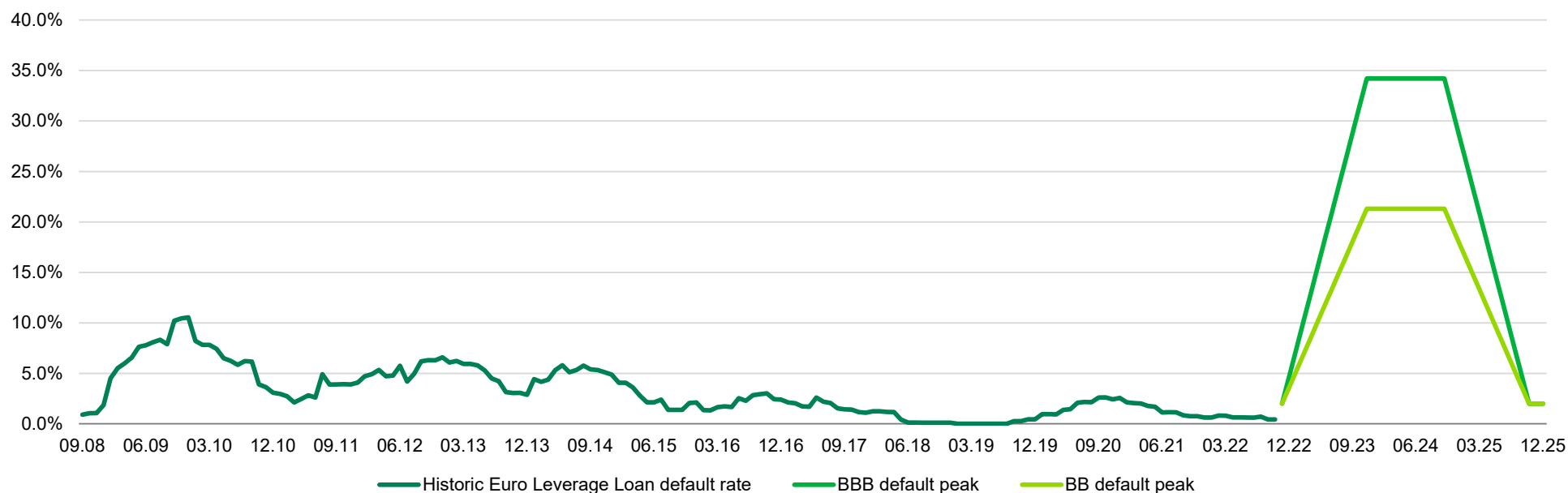
## Leverage loan defaults still very low



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Data source: Barclays, S&P LCD, Bloomberg. Data as at 31 January 2023

## Default break-even analyses: North Westerly CLO 7

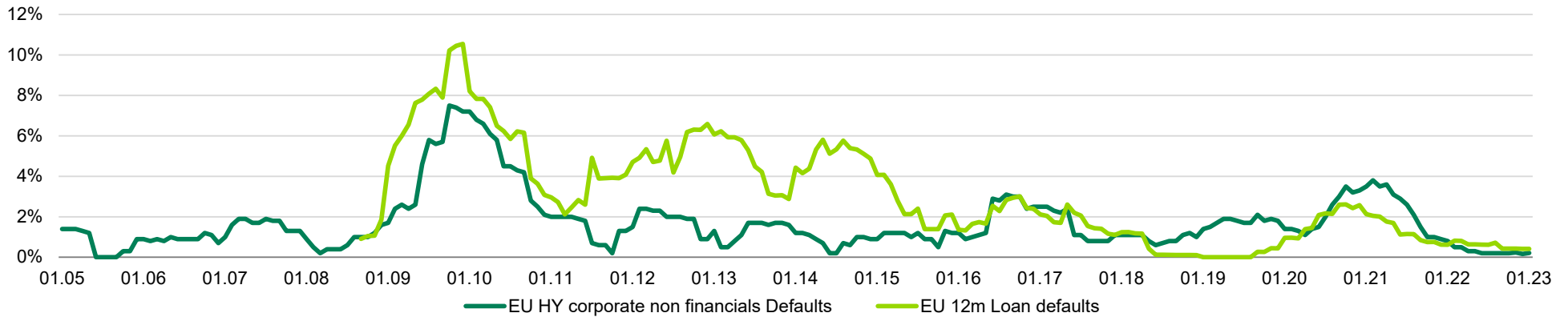
Class	Size (£)	Rating (M/S)	Coupon	Credit support (%)	Price	Spread (bps)	Yield (%)	Weighted average life (years)	Peak default for first € loss (%)	Lifetime defaults (%)	Peak default for 0% IRR (%)
NWEST VII-X A	248,000,000	Aaa/AAA	Euribor + 0.84%	38.0%	96.65	170	4.9%	4.3			
NWEST VII-X B1	27,500,000	Aa2/AA	Euribor + 1.50%	28.0%	94.41	260	5.7%	6.0			
NWEST VII-X B2	12,500,000	Aa2/AA	2% fixed	28.0%	81.21	260	5.7%	6.0			
NWEST VII-X C	28,000,000	A2/A	Euribor + 2.00%	21.0%	91.93	350	6.6%	6.6	49.5%	66.5%	55.0%
NWEST VII-X D	24,000,000	Baa3/BBB	Euribor + 2.95%	15.0%	88.63	500	8.2%	7.4	34.2%	51.4%	39.5%
NWEST VII-X E	20,000,000	Ba2/BB	Euribor + 5.66%	10.0%	85.05	850	11.7%	8.2	21.3%	36.7%	27.3%
NWEST VII-X F	12,000,000	B2/B-	Euribor + 8.14%	7.0%	81.22	1,200	15.4%	8.7	14.3%	28.3%	18.6%
NWEST VII-X SUB	36,950,000	NR/NR									
	<b>408,950,000</b>										



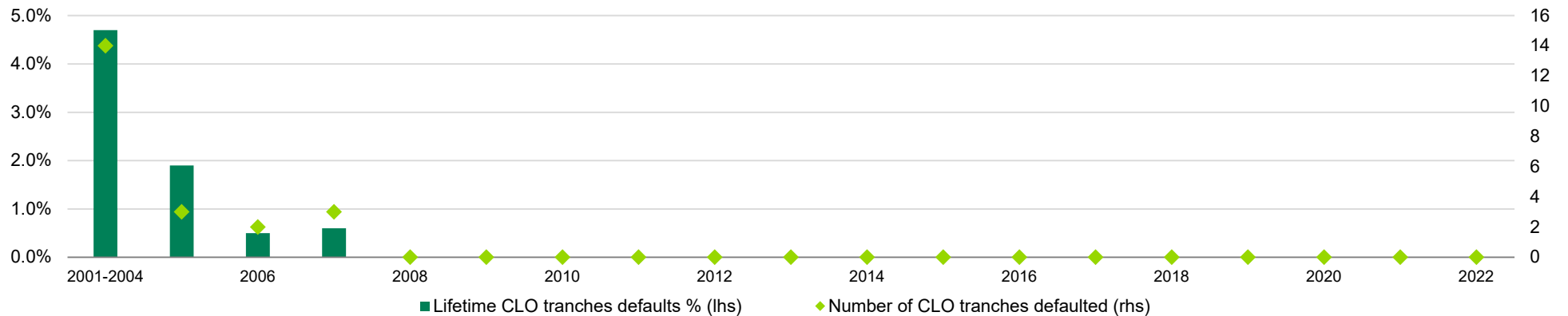
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# European default rates in HY, Leveraged loans and CLOs

## European HY corporate and leveraged loan defaults



## European CLO tranches defaults by vintages



- CLO tranches impacted were from 2003 to 2007 vintages and subsequently reported as defaults between 2015 and 2018 as the CLOs were approaching their maturity
- **Lifetime defaults are 0.1% for IG rated tranches (only BBB rated) and 1.9% for Sub-IG rated tranches**

Past performance is not a reliable indicator of current or future performance.  
Sources: S&P, Barclays, JPM; 31 January 2023

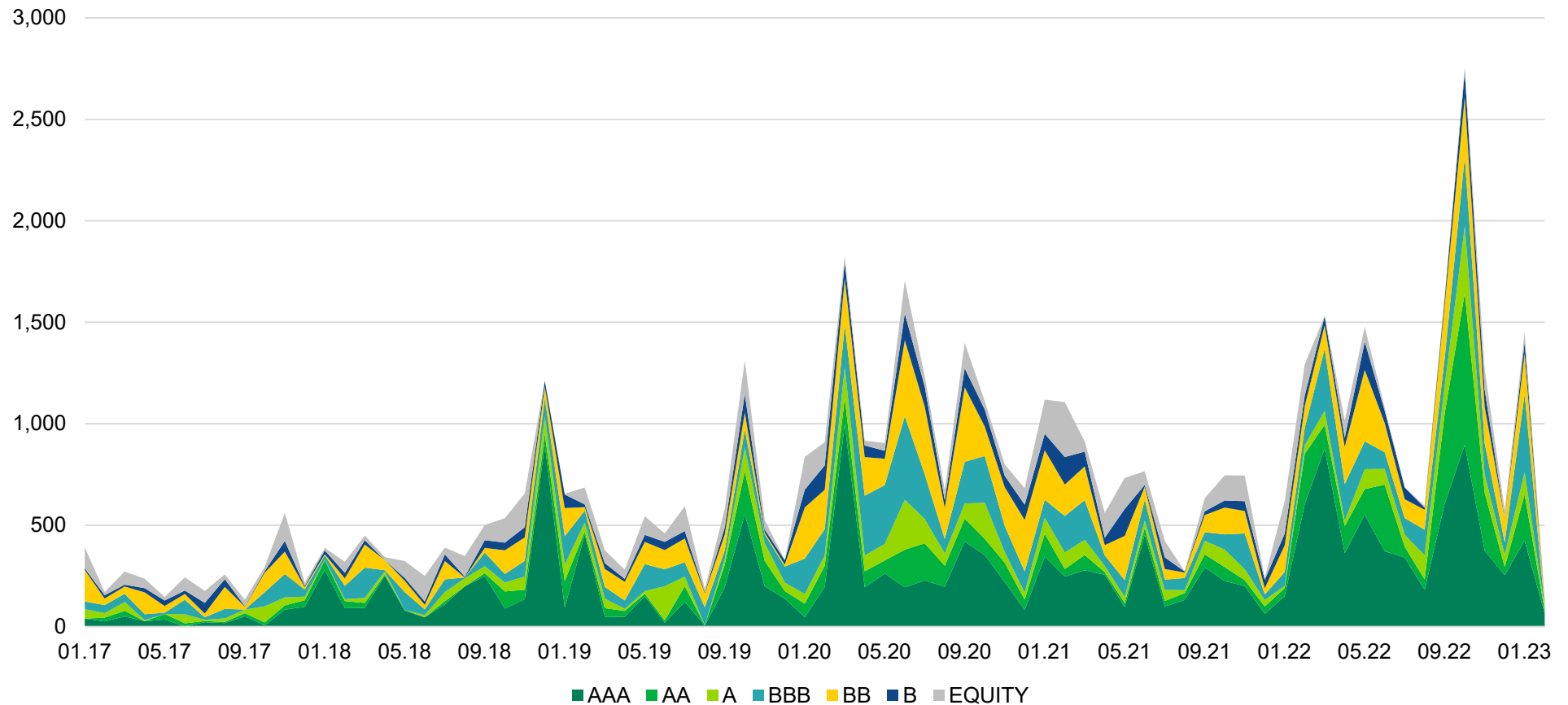


# Liquidity and relative value



## Resilient liquidity through enhanced volatility

### Monthly CLO BWIC volume by rating



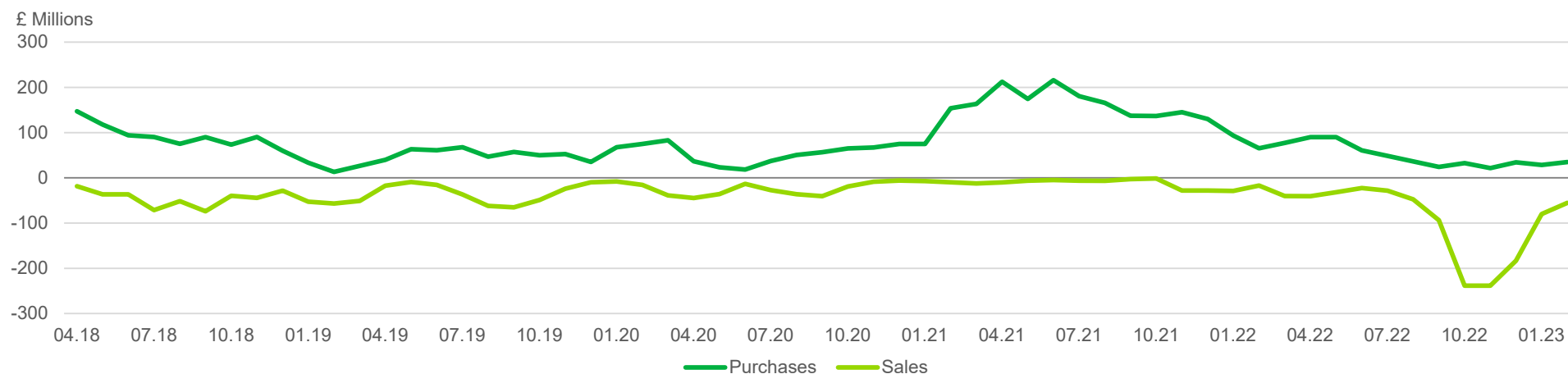
**Total of €4.4bn of BWICs following the UK Mini-Budget – As much selling in late September and into October as in the previous five months combined**

Past performance is not a reliable indicator of current or future performance.

Source: Citi Velocity; 20 February 2023

## CLOs form a core of our holdings and liquidity

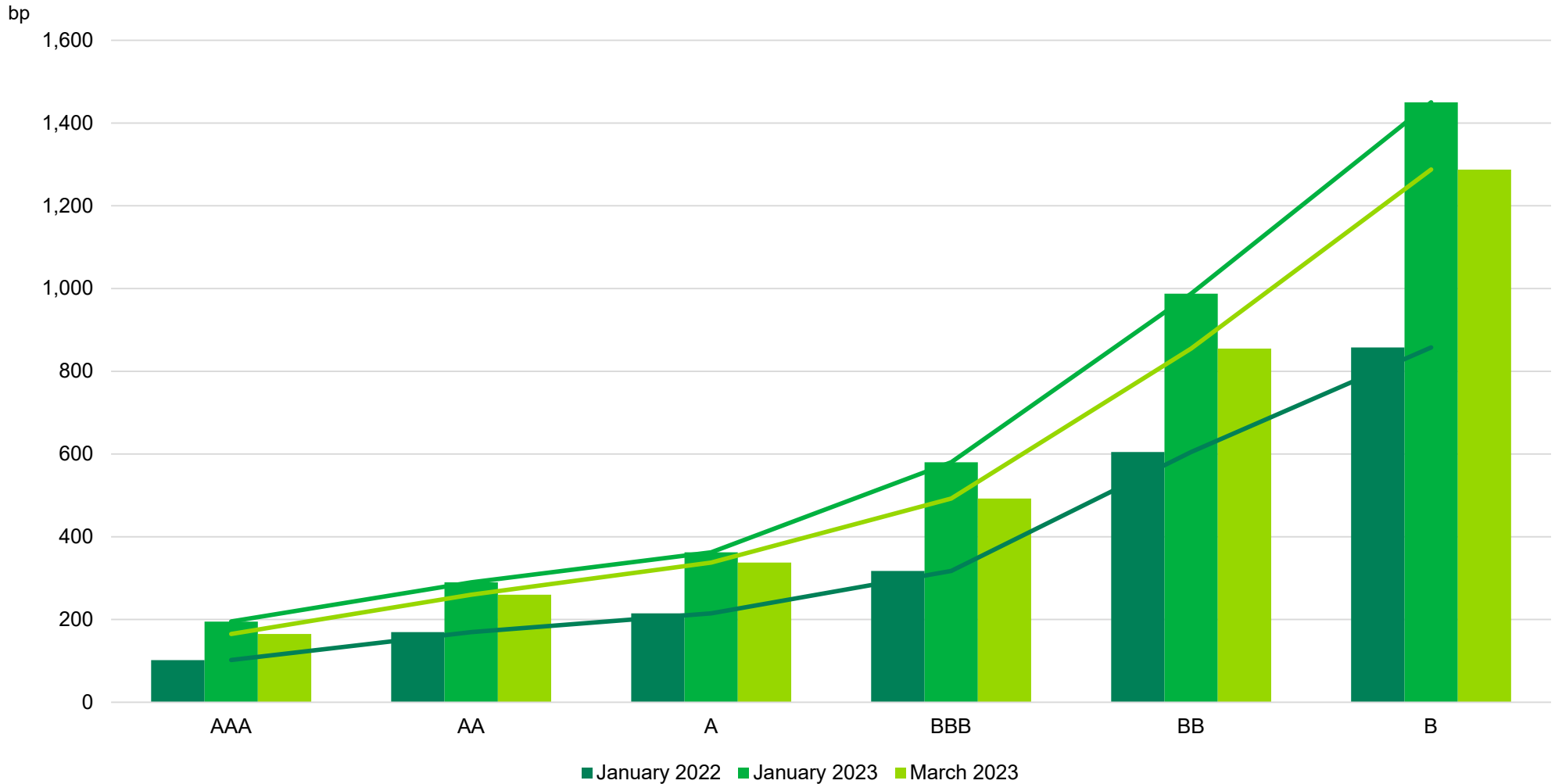
	2023	2022	2021		
Current CLO AUM	£2.24bn				
	AAA	7.14%			
	IG Mezz	15.11%			
	HY	77.75%			
Volume CLOs traded		£1.4bn	£1.8bn		
Secondary		89%	20%		
Primary		11%	80%		
Sold		63%	7%		
Purchased		37%	93%		
				<b>Indicative bid-offer</b>	
				<b>LDI Crisis</b>	<b>Today</b>
AAA		24%	14%	1 - 1.5%	0.5%
IG Mezz		35%	24%	2 - 3%	1%
HY Mezz		41%	62%	3 - 4%	2%
Equity				No market	~10-20%



Past performance is not a reliable indicator of current or future performance.

Sources: TwentyFour; 22 February 2023

## Risk looks to be priced much more appropriately



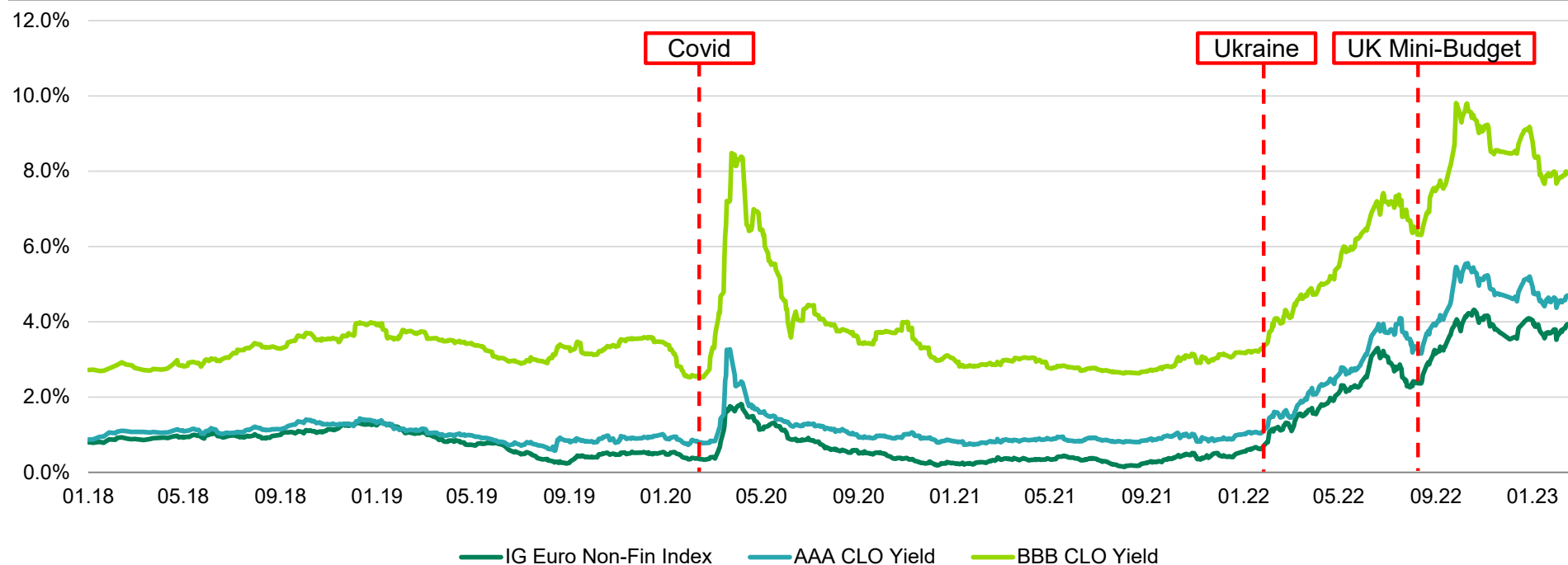
**Spread curves widened and then steepened in 2022, pricing in meaningful downside**

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Source: TwentyFour; data as at 20 February 2023

## CLOs offer significant yield pick up opportunities

	IG Euro Non-Fin Index	HY Euro Index	AAA CLO	BBB CLO	BB CLO
<b>Spread</b>	70bps	320bps	165bps	495bps	855bps
<b>Yield</b>	3.9%	6.7%	4.7%	7.9%	11.6%
<b>Rating</b>	BBB+	BB-	AAA	BBB	BB
<b>Duration</b>	5.07	3.1	0.1	0.1	0.1
<b>Maturity</b>	5.7	3.7	4.5	6.5	7.5
<b>Coupon</b>	1.7%	3.7%	3.9%	6.2%	8.7%
<b>Total Return 2022</b>	-13.9%	-11.5%	-2.0%	-7.6%	-9.8%






**Past performance is not a reliable indicator of current or future performance.** The value of an investment and the income from it can fall as well as rise as a result of market and currency fluctuations and you may not get back the amount originally invested. Yield for floating rate assets calculated by adding the credit spread to the relevant swap-rate. It is not possible to invest directly in an index and they will not be actively managed. Source: Citi Velocity, ICE Indices, Bloomberg; 20 February 2023

# Questions?

*Please check out our insights on ABS and CLOs:*

## Blogs

 <p>TwentyFour Blog   Read   2 min 6 Feb 2023</p> <p><b>Is the CLO whale back in the water?</b></p> <p>With Norinchukin Bank reportedly looking again at CLOs, Aza Teuwen looks at the potential impact the return of the one of the market's biggest buyers might have on spreads.</p> <p><a href="#">Read more</a></p>	 <p>TwentyFour Blog   Read   3 min 2 Feb 2023</p> <p><b>No, you haven't missed the fixed income rally</b></p> <p>Strong performance across markets in January has left some investors feeling they've missed out on the rally in bonds. No need to worry, says Felipe Villamoel.</p> <p><a href="#">Read more</a></p>	 <p>TwentyFour Blog   Read   5 min 30 Jan 2023</p> <p><b>The compelling case for ABS in 2023</b></p> <p>Having done its job of delivering lower volatility and better performance than mainstream bond markets in 2022, the income and defensive characteristics of European ABS look equally compelling in 2023, says Doug Charleston.</p> <p><a href="#">Read more</a></p>
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## Videos



**What is a European CLO, and how do they work?**

07:26

## Whitepapers

<p>White Paper   Read   12 min 7 Nov 2022</p> <p><b>Sustainability and ABS - what's going on?</b></p> <p>Since we published our October 2019 whitepaper, ESG and ABS at TwentyFour, the global ESG market has continued to grow dramatically. We have seen a Green ABS market begin to emerge, improvements in sustainable data and an increasing focus on ESG in the leveraged loan and CLO markets. But what does all this mean for investors?</p> <p><a href="#">Read more</a></p>	
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