
Current Conditions & Outlook for Global Credit Markets: Is It a Bubble?

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Is It a Bubble?

- **Or, Just Opportunistic Debt Financing?**
- **Focus on Default Rates in Credit Markets**
- **Length of Benign Credit Cycles**
- **Coincidence with Recessions: U.S. & European Scenarios**
- **Comparative Health of High-Yield Firms (2007 vs. 2012/2014)**
- **High-Yield and CCC New Issuance**
- **LBO Statistics and Trends**
- **Liquidity Concerns (Markets & Dealers)**
- **Potential Downgrades Far Exceed Upgrades (S&P) as of Beginning of 2015**
- **Large Increase in the Distress Ratio**
- **Possible Timing of the Bubble Burst**

Historical H.Y. Bond Default Rates

Straight Bonds Only Excluding Defaulted Issues From Par Value Outstanding, (*US\$ millions*), 1971 – 2015 (5/29))

Year	Par Value Outstanding ^a (\$)	Par Value Defaults (\$)	Default Rates (%)
2015 (5/29)	1,540,308	20,593	1.337
2014	1,496,814	31,589	2.110
2013	1,392,212	14,539	1.044
2012	1,212,362	19,647	1.621
2011	1,354,649	17,963	1.326
2010	1,221,569	13,809	1.130
2009	1,152,952	123,878	10.744
2008	1,091,000	50,763	4.653
2007	1,075,400	5,473	0.509
2006	993,600	7,559	0.761
2005	1,073,000	36,209	3.375
2004	933,100	11,657	1.249
2003	825,000	38,451	4.661
2002	757,000	96,855	12.795
2001	649,000	63,609	9.801
2000	597,200	30,295	5.073
1999	567,400	23,532	4.147
1998	465,500	7,464	1.603
1997	335,400	4,200	1.252
1996	271,000	3,336	1.231
1995	240,000	4,551	1.896
1994	235,000	3,418	1.454
1993	206,907	2,287	1.105
1992	163,000	5,545	3.402
1991	183,600	18,862	10.273
1990	181,000	18,354	10.140
1989	189,258	8,110	4.285
1988	148,187	3,944	2.662

^a Weighted by par value of amount outstanding for each year.

Year	Par Value Outstanding* (\$)	Par Value Defaults (\$)	Default Rates (%)
1987	129,557	7,486	5.778
1986	90,243	3,156	3.497
1985	58,088	992	1.708
1984	40,939	344	0.840
1983	27,492	301	1.095
1982	18,109	577	3.186
1981	17,115	27	0.158
1980	14,935	224	1.500
1979	10,356	20	0.193
1978	8,946	119	1.330
1977	8,157	381	4.671
1976	7,735	30	0.388
1975	7,471	204	2.731
1974	10,894	123	1.129
1973	7,824	49	0.626
1972	6,928	193	2.786
1971	6,602	82	1.242

Standard Deviation (%)

Arithmetic Average Default Rate (%)

1971 to 2014	3.117	3.097
1978 to 2014	3.340	3.273
1985 to 2014	3.843	3.416

Weighted Average Default Rate (%)*

1971 to 2014	3.491
1978 to 2014	3.496
1985 to 2014	3.513

Median Annual Default Rate (%)

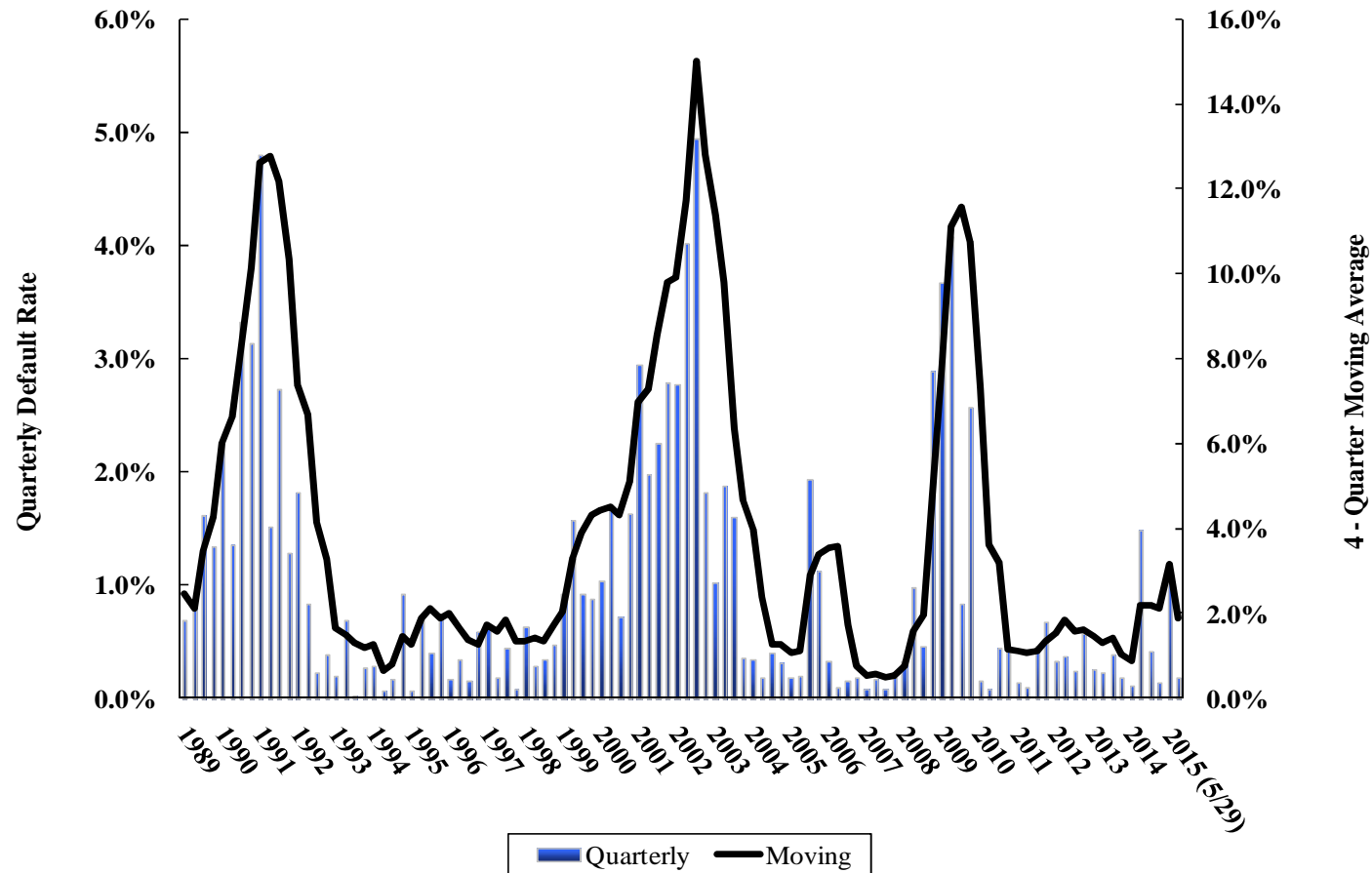
1971 to 2014	1.664
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Source: Author's compilation and Citigroup/Credit Suisse estimates

Default Rates on High-Yield Bonds

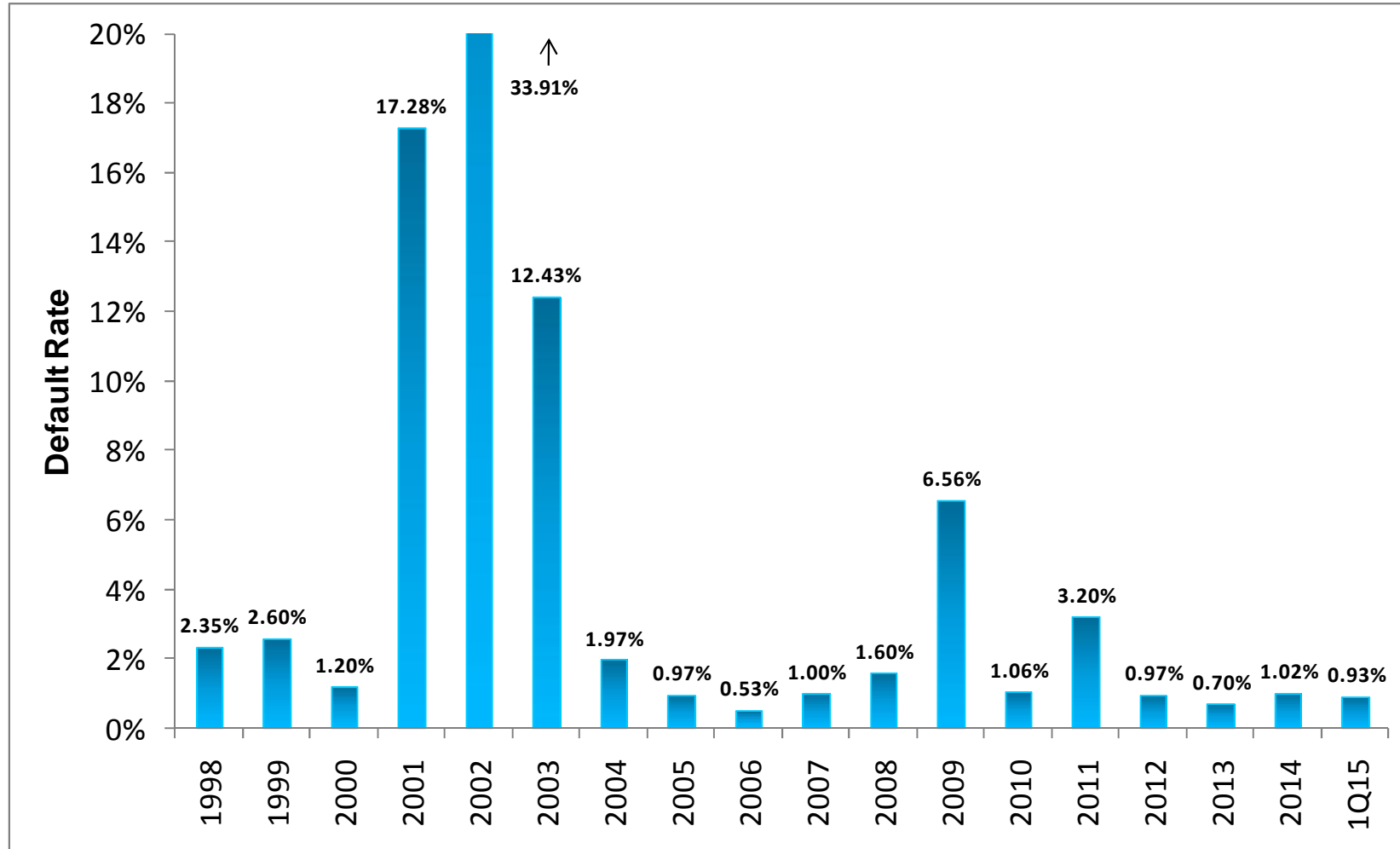
Quarterly Default Rate and Four-Quarter Moving Average

1989 – 2015 (5/29)



Source: Author's Compilations

Historical Annual European High-Yield Default Rates

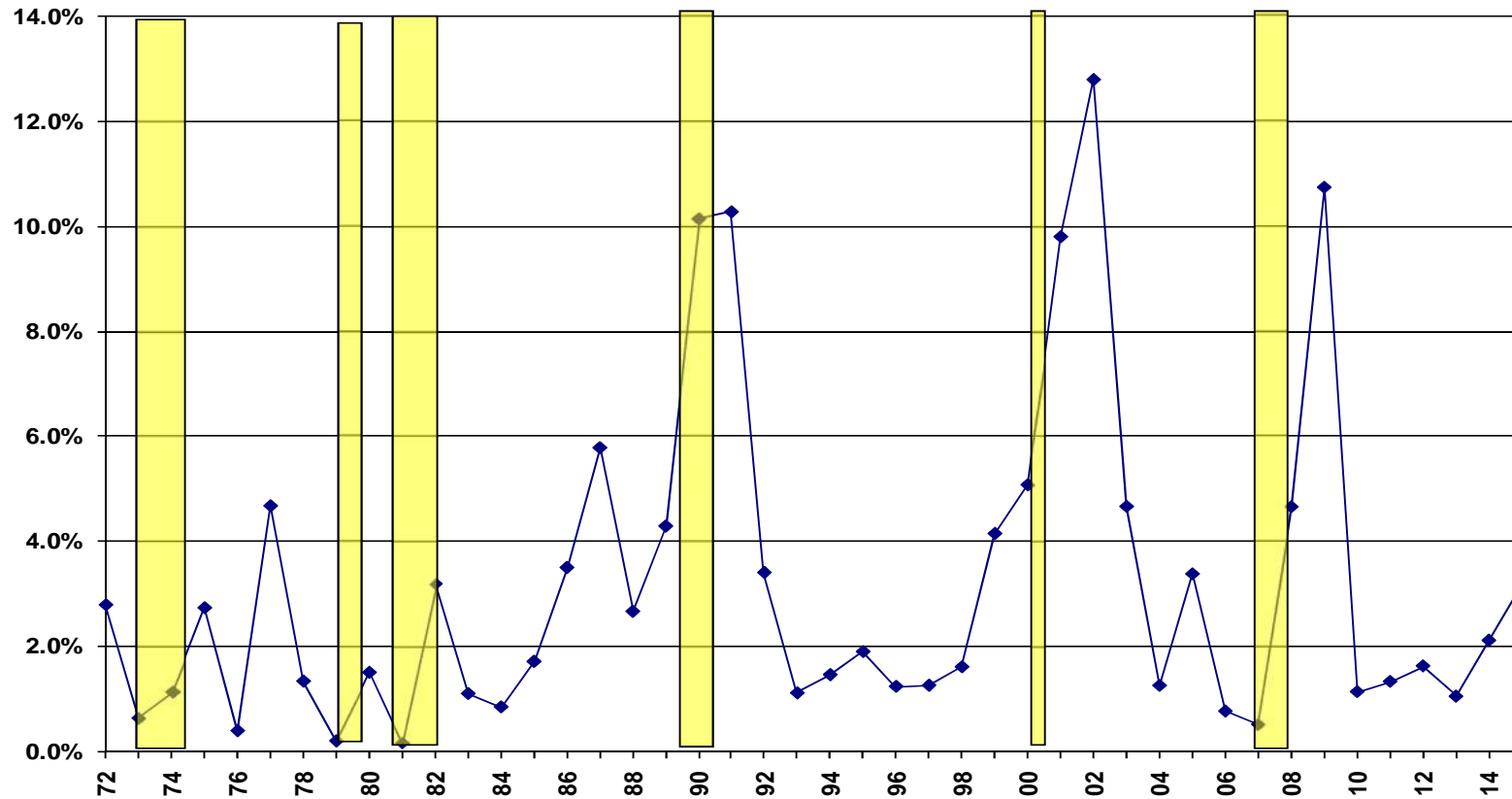


Note: 1Q15 is LTM

Source: Credit Suisse

Historical Default Rates and Recession Periods in the U.S.

High-Yield Bond Market (1972 – 2015 (1Q))



Periods of Recession: 11/73 - 3/75, 1/80 - 7/80, 7/81 - 11/82, 7/90 - 3/91, 4/01 - 12/01, 12/07 - 6/09

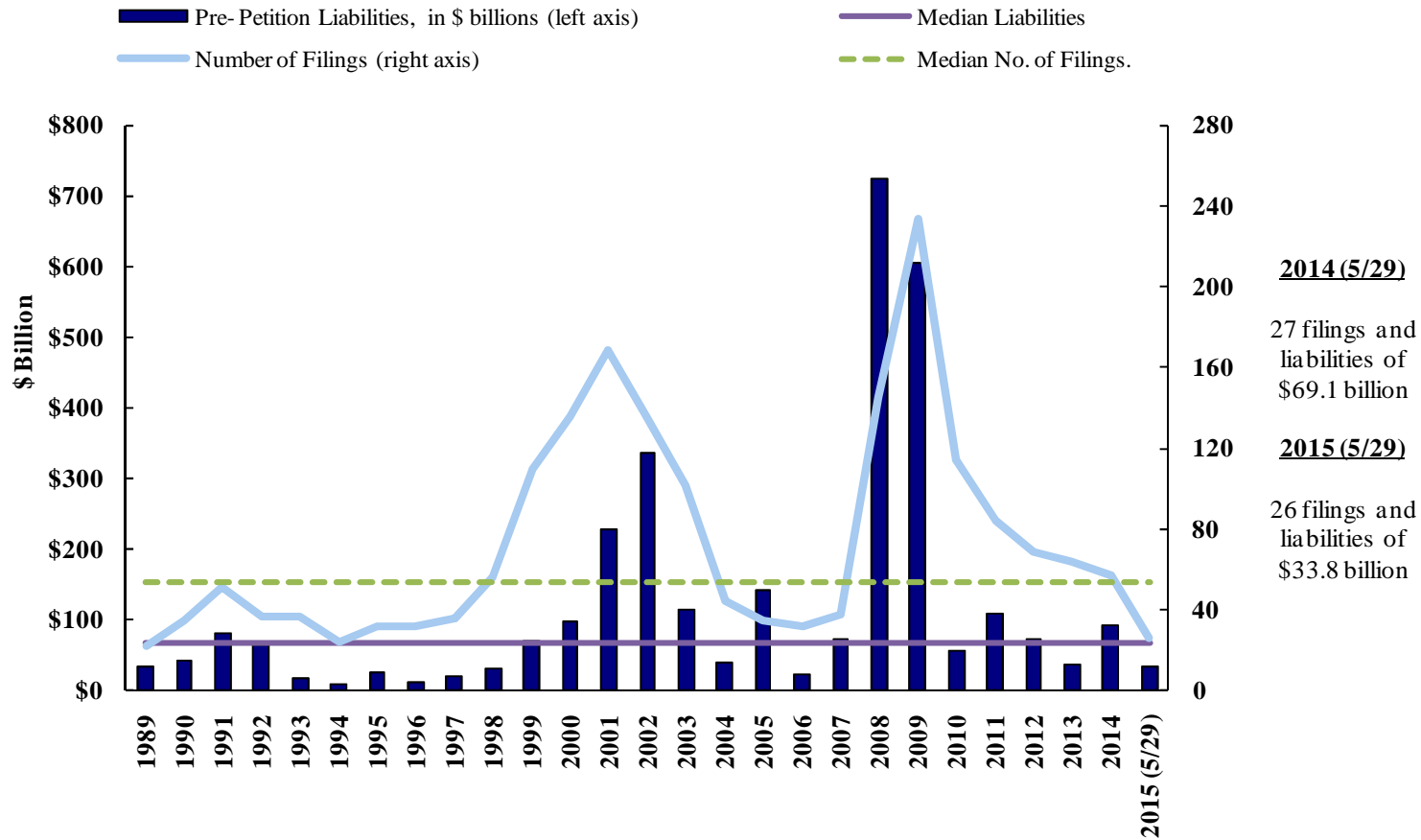
*All rates annual, except 1Q 2015 which is the LTM.

Source: E. Altman (NYU Salomon Center) & National Bureau of Economic Research

Filings for Chapter 11

Number of Filings and Pre-petition Liabilities of Filing Companies

1989 – 2015 (5/29)

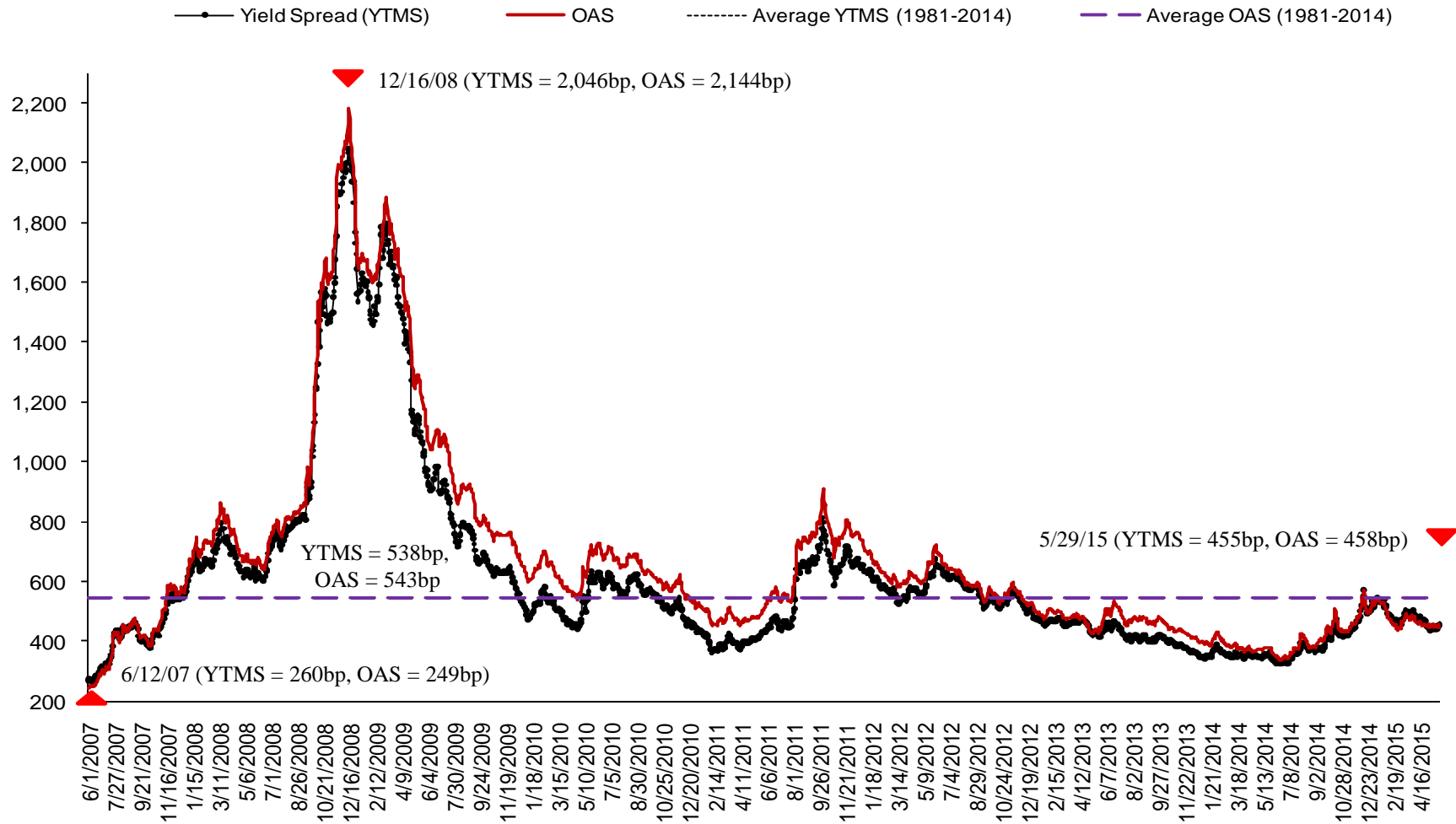


Note: Minimum \$100 million in liabilities
 Source: NYU Salomon Center Bankruptcy Filings Database

Mean 1989-2014: 74 filings
 Median 1989-2014: 54 filings

YTM & Option-Adjusted Spreads Between High Yield Markets & U.S. Treasury Notes

June 01, 2007 – May 29, 2015



Sources: Citigroup Yieldbook Index Data and Bank of America Merrill Lynch.

Comparative Health of High-Yield Firms (2007 vs. 2012/2014)

Z-Score Component Definitions and Weightings

Variable	Definition	Weighting Factor
X_1 - - - - -	$\frac{\text{Working Capital}}{\text{Total Assets}}$	1.2
X_2 - - - - -	$\frac{\text{Retained Earnings}}{\text{Total Assets}}$	1.4
X_3 - - - - -	$\frac{\text{EBIT}}{\text{Total Assets}}$	3.3
X_4 - - - - -	$\frac{\text{Market Value of Equity}}{\text{Book Value of Total Liabilities}}$	0.6
X_5 - - - - -	$\frac{\text{Sales}}{\text{Total Assets}}$	1.0

Z" Score Model for Manufacturers, Non-Manufacturer Industrials; Developed and Emerging Market Credits

$$Z'' = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4 + 3.25$$

$$X_1 = \frac{\text{Current Assets} - \text{Current Liabilities}}{\text{Total Assets}}$$

$$X_2 = \frac{\text{Retained Earnings}}{\text{Total Assets}}$$

$$X_3 = \frac{\text{Earnings Before Interest and Taxes}}{\text{Total Assets}}$$

$$X_4 = \frac{\text{Book Value of Equity}}{\text{Total Liabilities}}$$

Average Z-Score by S&P Bond Rating

Rating	Average Z-Score	Standard Deviation
AAA	6.2	2.1
AA	4.7	2.4
A	3.7	2.3
BBB	2.8	1.5
BB	2.4	1.9
B	1.8	1.9
CCC	0.3	1.2
D	-0.2	2.5

Source: E. Altman and E. Hotchkiss (2006), **Corporate Financial Distress and Bankruptcy**, John Wiley & Sons, pp.247/248.

Comparing Financial Strength of High-Yield Bond Issuers in 2007 & 2012/2014

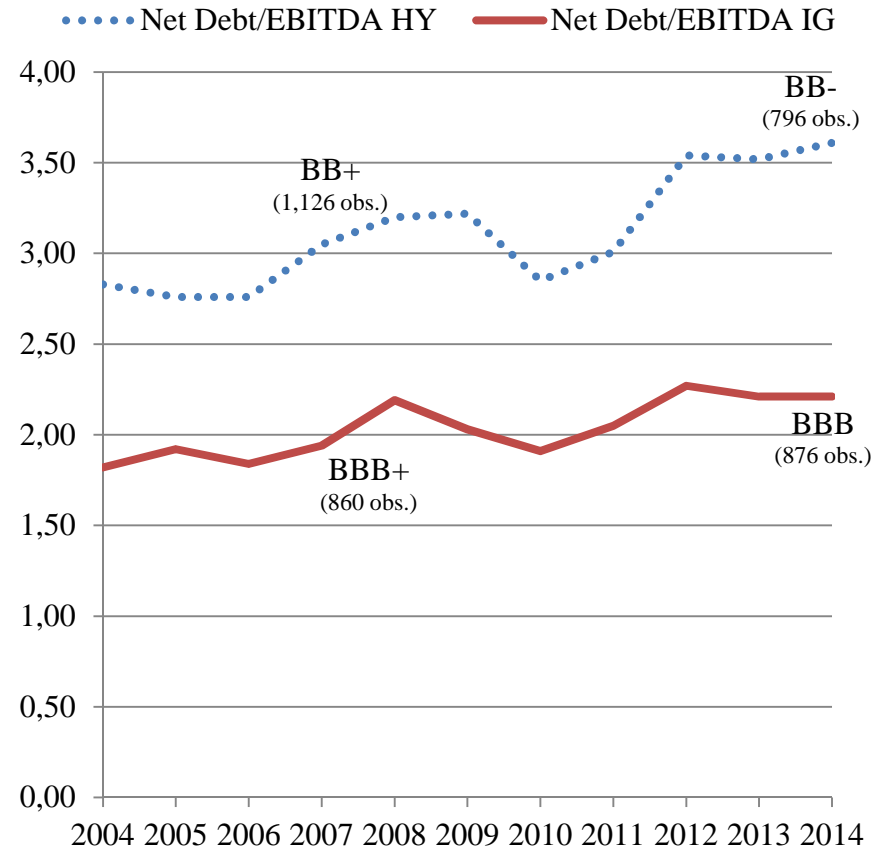
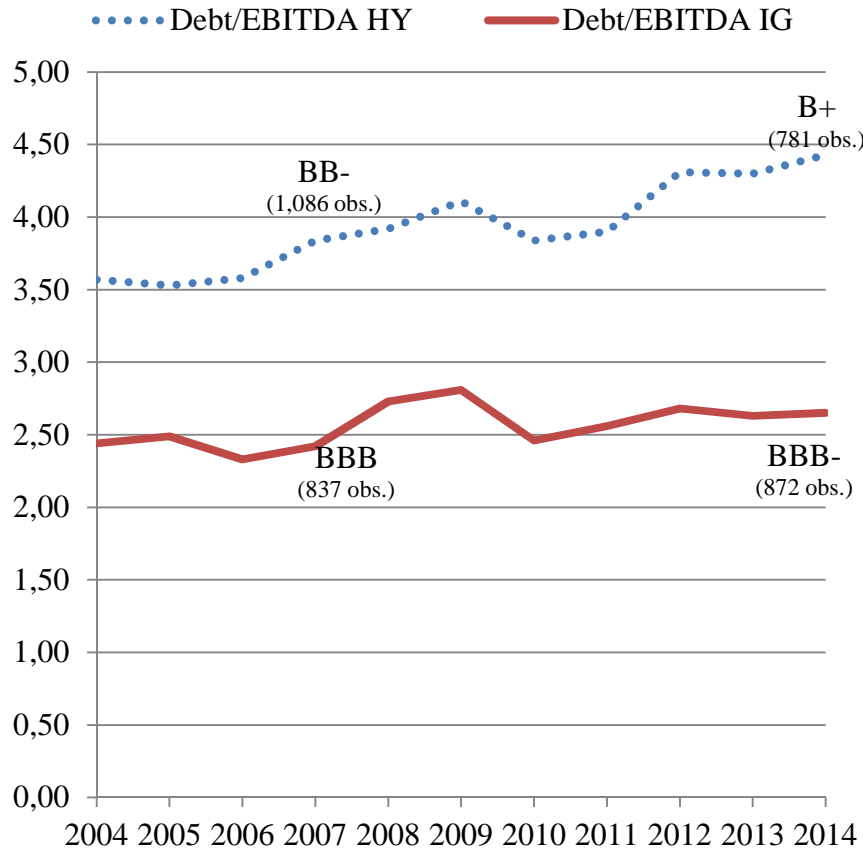
Number of Firms		
	Z-Score	Z''-Score
2007	277	383
2012	404	488
2014	558	760

Year	Average Z-Score/ (BRE)*	Median Z-Score/ (BRE)*	Average Z''-Score/ (BRE)*	Median Z''-Score/ (BRE)*	
2007	1.89 (B)	1.81 (B)	4.58 (B+)	4.61 (B+)	
2012	1.66 (B)	1.59 (B)	4.60 (B+)	4.60 (B+)	
2014	2.03 (B+)	1.80 (B)	4.67 (B+)	4.56 (B+)	
Difference in Means Test (2007 vs. 2012/2014)					
Model	Average Difference (2012/2014)	Standard Deviation (2007/2012/2014)	t-test (2012/2014)	Significance Level (2012/2014)	Significant at .05? (2012/2014)
Z-Score	-0.23/+0.14	1.29 / 1.15/1.78	-2.38/+1.30	0.88%/9.70%	Yes /No
Z''-Score	+0.02/+0.09	2.50 / 2.07/2.65	+0.13/+0.56	44.68%/28.78%	No/No

*Bond Rating Equivalent

Source: Authors' calculations, data from Altman and Hotchkiss (2006) and S&P *Capital IQ*.

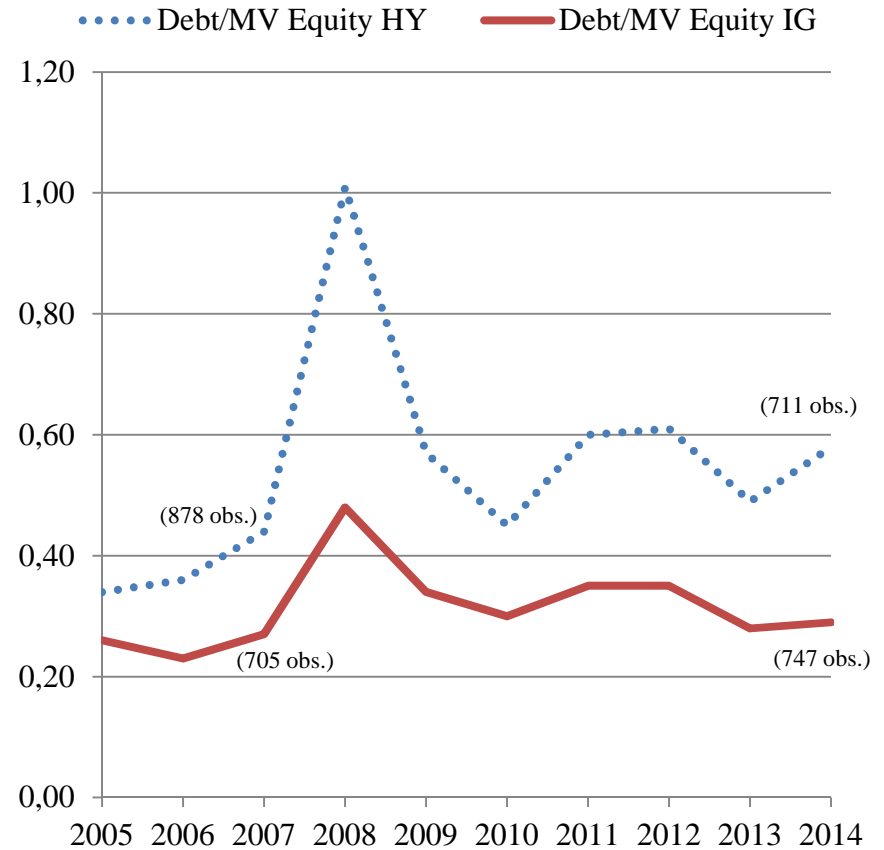
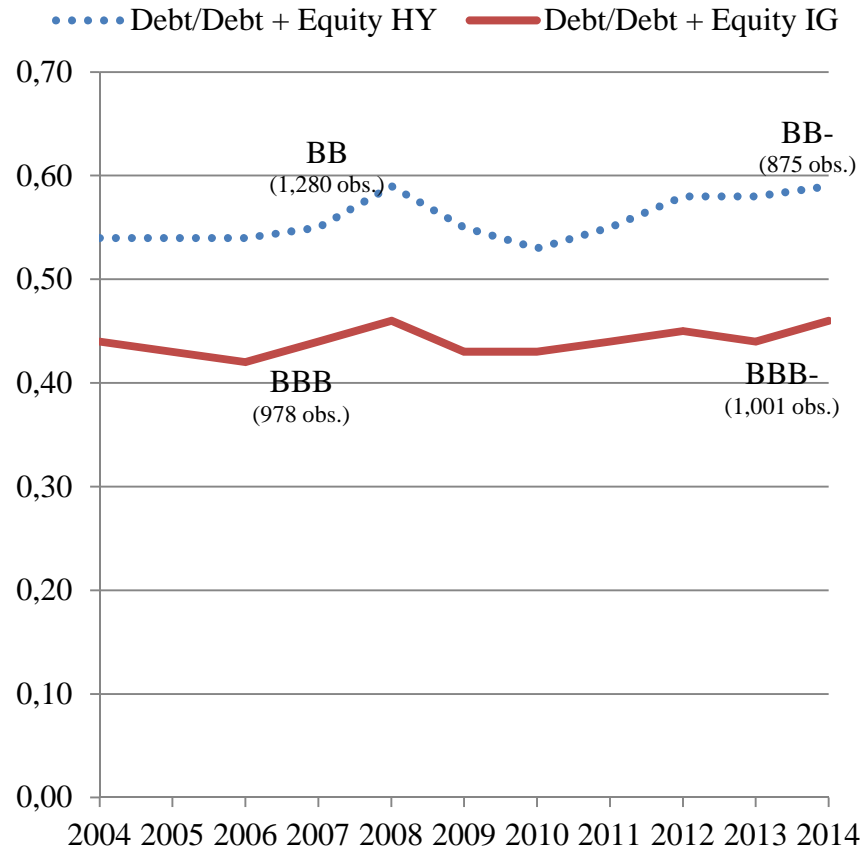
Debt/EBITDA & Net Debt/EBITDA: U.S. High-Yield (HY) and Investment Grade (IG), (Median Levels, 2004-2014*)



*Bond Rating Equivalents (BRE) based on Aggregate S&P Statistics

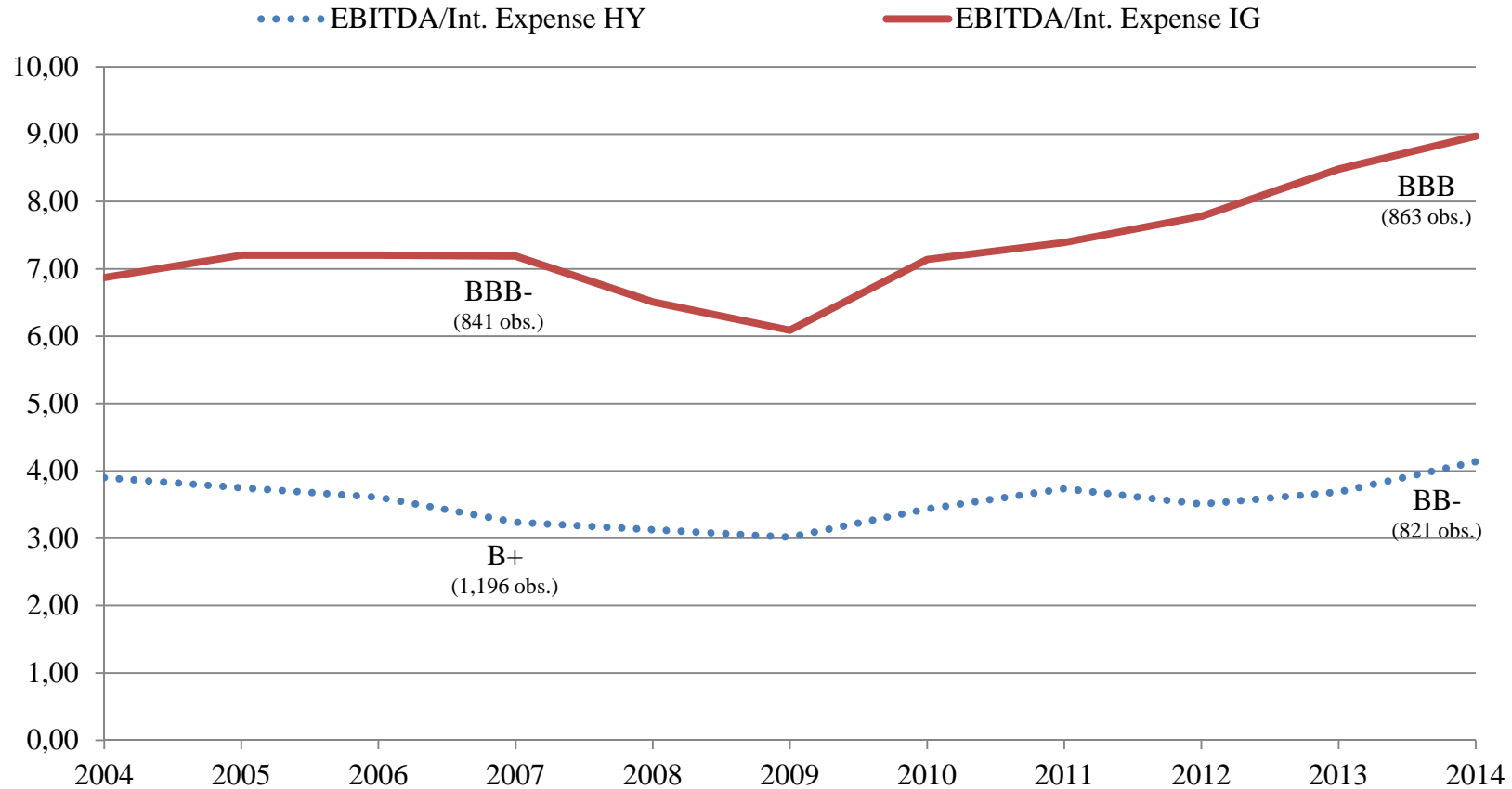
Sources: S&P *Capital IQ* and *Ratings Direct* and NYU Salomon Center calculations.

Debt/Debt + Equity & Debt/MV Equity : U.S. High-Yield (HY) and Investment Grade (IG), (Median Levels, 2004-2014)



Sources: S&P Capital IQ and Ratings Direct and NYU Salomon Center calculations.

EBITDA/Interest Expense : U.S. High-Yield (HY) and Investment Grade (IG), (Median Levels, 2004-2014)



Sources: S&P *Capital IQ* and *Ratings Direct* and NYU Salomon Center calculations.

Distribution of Credit Ratios for U.S. High-Yield Bonds (2007 vs. 2014)

		Debt/EBITDA				EBITDA/Interest Expense			
		2014	BRE	2007	BRE	2014	BRE	2007	BRE
Decile	10%	1.36x	A+	0.87x	AA+	1.03x	CCC	0.91x	CCC
	20%	2.23x	BBB	1.75x	A-	1.93x	B-	1.59x	CCC+
	30%	2.90x	BB+	2.40x	BBB	2.55x	B	2.05x	B-
	40%	3.56x	BB	3.07x	BB	3.36x	B+	2.57x	B
	50%	4.43x	B+	3.84x	BB-	4.14x	BB-	3.24x	B+
	60%	5.05x	B+	4.70x	B+	5.23x	BB	4.21x	BB-
	70%	5.94x	B	5.70x	B	6.64x	BBB-	6.06x	BB+
	80%	7.08x	CCC+	7.01x	B-	9.84x	BBB+	9.07x	BBB
	90%	10.16x	CCC-	9.38x	CCC-	17.86x	AA-	19.35x	AA

Sources: S&P *Capital IQ* and *Ratings Direct* and NYU Salomon Center calculations.

New Issuance: U.S. High-Yield Bond Market (\$ millions)

2005 – 2015 (5/31)

Annual	Total	Ratings				
		BB	B	CCC	(CCC % H.Y.)	NR
2005	83,373.6	19,415.0	47,132.5	16,235.9	(19.5%)	590.2
2006	126,130.1	36,761.2	64,943.8	22,966.8	(18.2%)	1,458.2
2007	131,008.9	23,713.2	54,490.1	49,288.1	(37.6%)	3,517.5
2008	44,243.3	12,393.0	22,151.9	7,243.8	(16.4%)	2,454.6
2009	133,078.3	40,757.8	81,587.1	10,113.4	(7.6%)	620.0
2010	227,505.5	54,859.0	133,389.7	36,086.8	(15.9%)	3,170.0
2011	189,319.2	54,175.0	96,559.4	35,023.0	(18.5%)	3,521.8
2012	280,450.3	71,852.1	153,611.1	48,690.2	(17.4%)	6,297.0
2013 (1Q)	73,492.3	31,953.1	29,534.2	11,480.0	(15.6%)	525.0
(2Q)	62,135.0	24,380.0	23,665.0	13,790.0	(22.2%)	300.0
(3Q)	73,770.8	22,964.2	32,610.0	18,196.6	(24.7%)	0.0
(4Q)	60,936.8	24,050.0	22,686.8	14,175.0	(23.3%)	25.0
2013 Totals	270,334.8	103,347.3	108,495.9	57,641.6	(21.3%)	850.0
2014 (1Q)	51,634.7	17,585.0	25,792.2	7,842.5	(15.2%)	415.0
(2Q)	74,629.6	23,893.7	30,852.3	19,363.6	(25.9%)	520.0
(3Q)	59,777.3	25,537.3	22,550.0	10,875.0	(18.2%)	815.0
(4Q)	52,721.1	21,975.0	28,906.1	1,840.0	(3.5%)	0.0
2014 Totals	238,762.7	88,991.0	108,100.6	39,921.1	(16.7%)	1,750.0
2015 (1Q)	76,059.5	23,184.2	44,785.3	8,090.0	(10.6%)	0.0
(4/01-5/31)	50,666.3	13,425.0	30,299.2	6,942.1	(13.7%)	0.0

Source: Bank of America Merrill Lynch

New Issuance: European High-Yield Bond Market

Face Values (US\$)

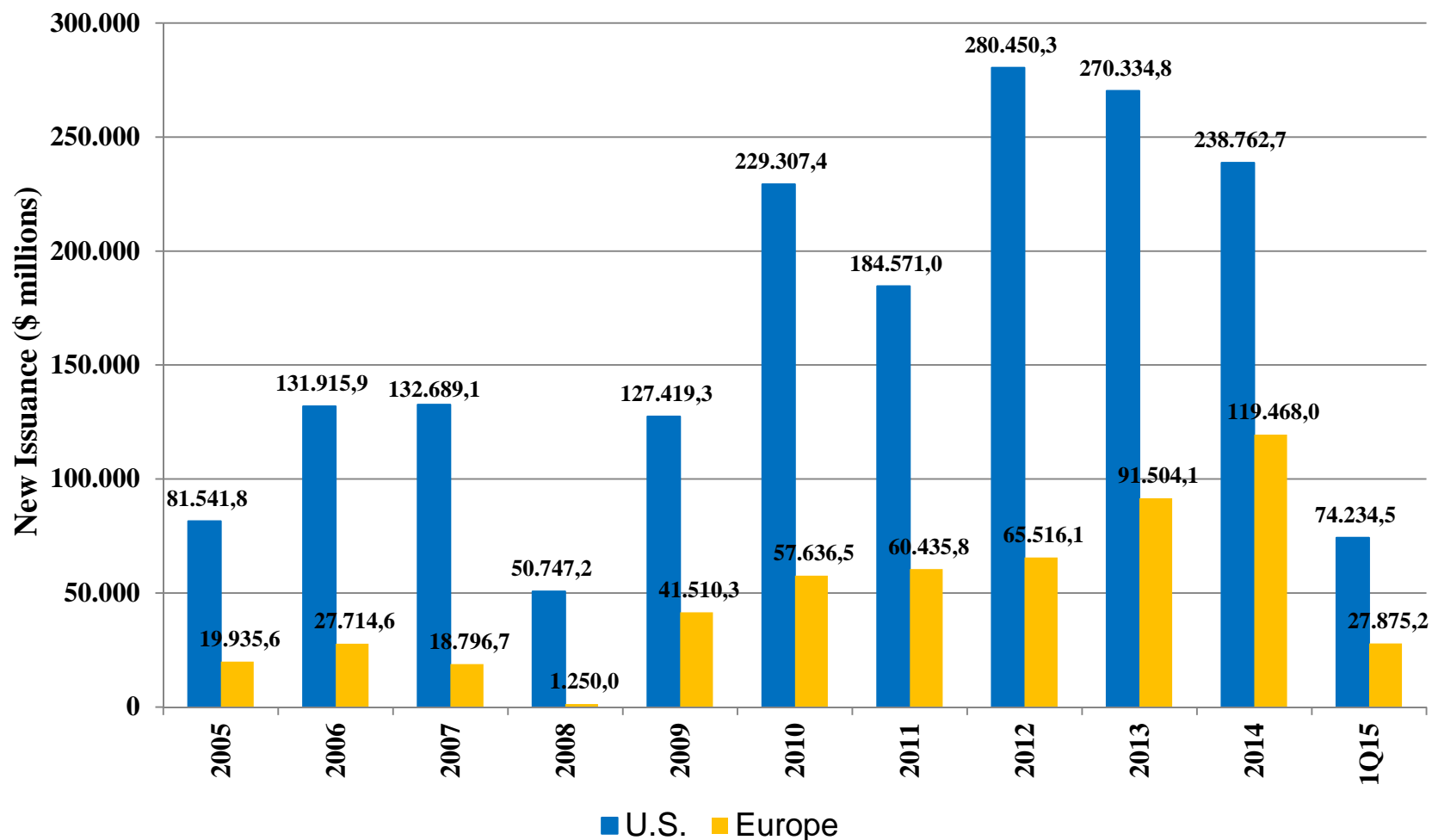
2005 – 2015 (5/31)

Annual	Total	Ratings					USD	EUR	GBP
		BB	B	CCC	(CCC % HY)	NR			
2005	20,900.2	1,463.3	13,296.0	4,961.6	(23.7%)	1,179.3	5,023.7	13,882.2	1,668.3
2006	31,736.0	5,696.2	18,136.1	7,197.8	(22.7%)	705.9	11,592.8	19,919.9	223.3
2007	19,176.2	6,097.8	10,806.0	1,351.5	(7.0%)	920.9	5,835.5	10,172.2	3,168.5
2008	7,306.9	1,250.0	2,266.3	3,790.6	(51.9%)		7,306.9		
2009	37,300.3	12,856.3	18,120.5	4,771.3	(12.8%)	1,552.2	11,180.0	25,622.0	498.3
2010	58,903.9	19,314.3	33,338.3	2,945.7	(5.0%)	3,305.6	13,945.0	43,245.2	1,403.3
2011	57,151.0	22,842.1	28,385.2	4,745.2	(8.3%)	1,178.6	15,670.0	31,523.1	8,842.4
2012	65,516.1	27,001.7	29,013.0	7,186.7	(11.0%)	2,314.6	28,198.0	32,270.4	2,929.3
2013 (1Q)	27,954.5	6,783.8	15,008.4	5,160.6		1,001.7	10,050.0	12,380.7	4,837.4
(2Q)	30,335.3	6,860.2	19,295.1	3,724.1		455.9	9,913.0	14,149.9	6,074.0
(3Q)	16,558.4	3,375.3	9,609.6	2,721.8		851.7	5,310.0	8,644.0	2,604.4
(4Q)	16,655.9	2,588.0	10,657.6	2,366.4		1,043.9	5,210.0	9,086.5	2,359.4
2013 Totals	91,504.1	19,607.3	54,435.2	13,972.9	(15.3%)	3,353.2	30,483.0	44,125.6	15,875.3
2014 (1Q)	27,169.2	12,565.7	11,685.2	1,230.0	(4.5%)	1,688.3	7,315.0	16,352.8	3,501.4
(2Q)	65,671.4	13,730.1	45,808.3	4,111.1	(6.2%)	2,021.9	23,150.0	36,009.0	6,096.7
(3Q)	15,980.5	3,586.3	10,593.2	1,241.3	(7.8%)	559.7	2,750.0	8,216.2	4,744.6
(4Q)	10,646.9	3,893.7	4,288.8	654.5	(6.1%)	1,810.0	6,305.0	4,341.9	
2014 Totals	119,468.0	33,775.8	72,375.4	7,236.9	(5.1%)	6,080.0	39,520.0	64,919.9	14,342.7
2015 (1Q)	30,535.5	15,387.8	10,054.6	938.7	(3.1%)	4,154.3	10,225.0	17,149.0	2,622.0
(4/01-5/31)	17,376.2	8,282.6	7,331.6	1,174.1	(6.8%)	587.8	8,990.0	7,622.3	297.2

Source:
BoAML

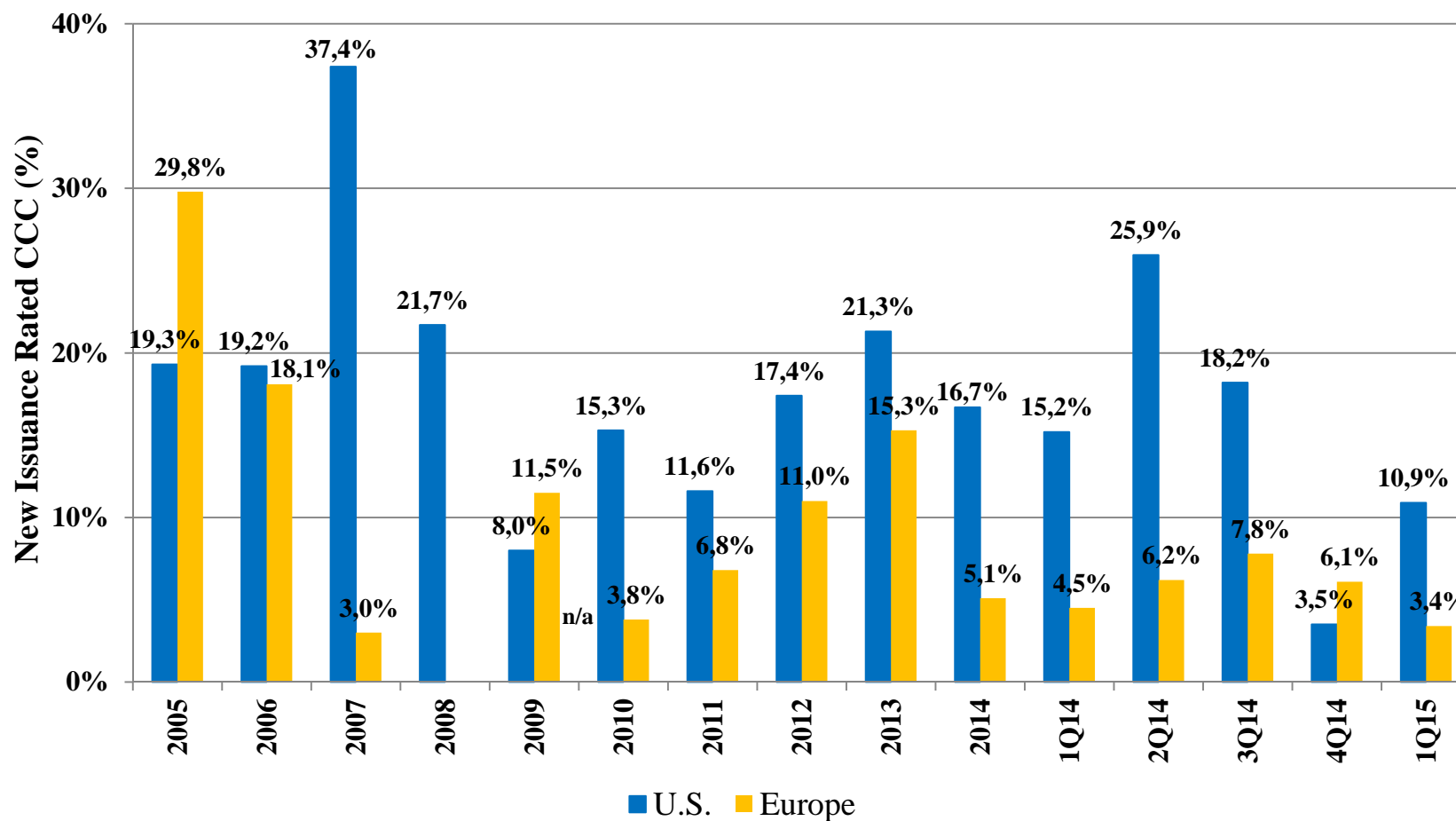
U.S. & European High-Yield Bond Market: New Issuance (\$ millions)

2005 – 2015 (1Q)



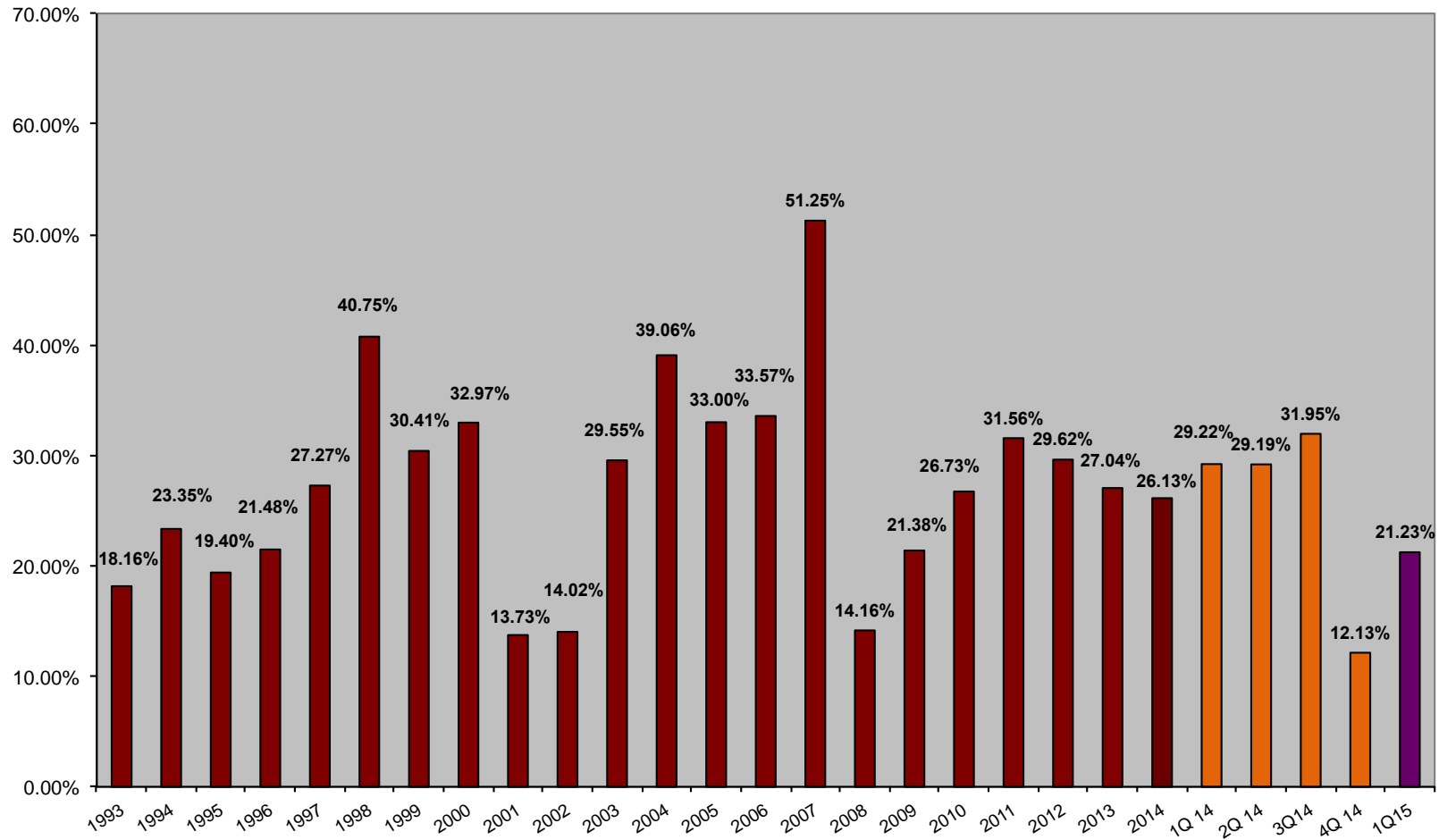
U.S. & European High-Yield Bond Market: CCC Rated New Issuance (%)

2005 – 2015 (1Q)



New Issues Rated B- or Below, Based on the Dollar Amount of Issuance

(1993 - 2015 (1Q))



Source: S&P Capital IQ LCD

Mortality Rates by Original Rating

All Rated Corporate Bonds*
1971-2014

Years After Issuance

		1	2	3	4	5	6	7	8	9	10
AAA	Marginal	0.00%	0.00%	0.00%	0.00%	0.01%	0.02%	0.01%	0.00%	0.00%	0.00%
	Cumulative	0.00%	0.00%	0.00%	0.00%	0.01%	0.03%	0.04%	0.04%	0.04%	0.04%
AA	Marginal	0.00%	0.00%	0.22%	0.08%	0.02%	0.01%	0.01%	0.01%	0.02%	0.01%
	Cumulative	0.00%	0.00%	0.22%	0.30%	0.32%	0.33%	0.34%	0.35%	0.37%	0.38%
A	Marginal	0.01%	0.03%	0.13%	0.14%	0.11%	0.07%	0.02%	0.26%	0.08%	0.05%
	Cumulative	0.01%	0.04%	0.17%	0.31%	0.42%	0.49%	0.51%	0.77%	0.85%	0.90%
BBB	Marginal	0.34%	2.38%	1.28%	1.01%	0.51%	0.23%	0.27%	0.15%	0.15%	0.35%
	Cumulative	0.34%	2.71%	3.96%	4.93%	5.41%	5.63%	5.88%	6.03%	6.17%	6.50%
BB	Marginal	0.95%	2.03%	3.90%	1.97%	2.35%	1.53%	1.47%	1.13%	1.45%	3.15%
	Cumulative	0.95%	2.96%	6.75%	8.58%	10.73%	12.10%	13.39%	14.37%	15.61%	18.27%
B	Marginal	2.86%	7.74%	7.86%	7.81%	5.71%	4.46%	3.56%	2.09%	1.77%	0.76%
	Cumulative	2.86%	10.38%	17.42%	23.87%	28.22%	31.42%	33.86%	35.24%	36.39%	36.87%
CCC	Marginal	8.15%	12.44%	17.92%	16.35%	4.68%	11.53%	5.45%	4.86%	0.69%	4.30%
	Cumulative	8.15%	19.58%	33.99%	44.78%	47.37%	53.43%	55.97%	58.11%	58.40%	60.19%

*Rated by S&P at Issuance
Based on 2,847 issues

Source: Standard & Poor's (New York) and Author's Compilation

CCC New Bond Issuance by Purpose

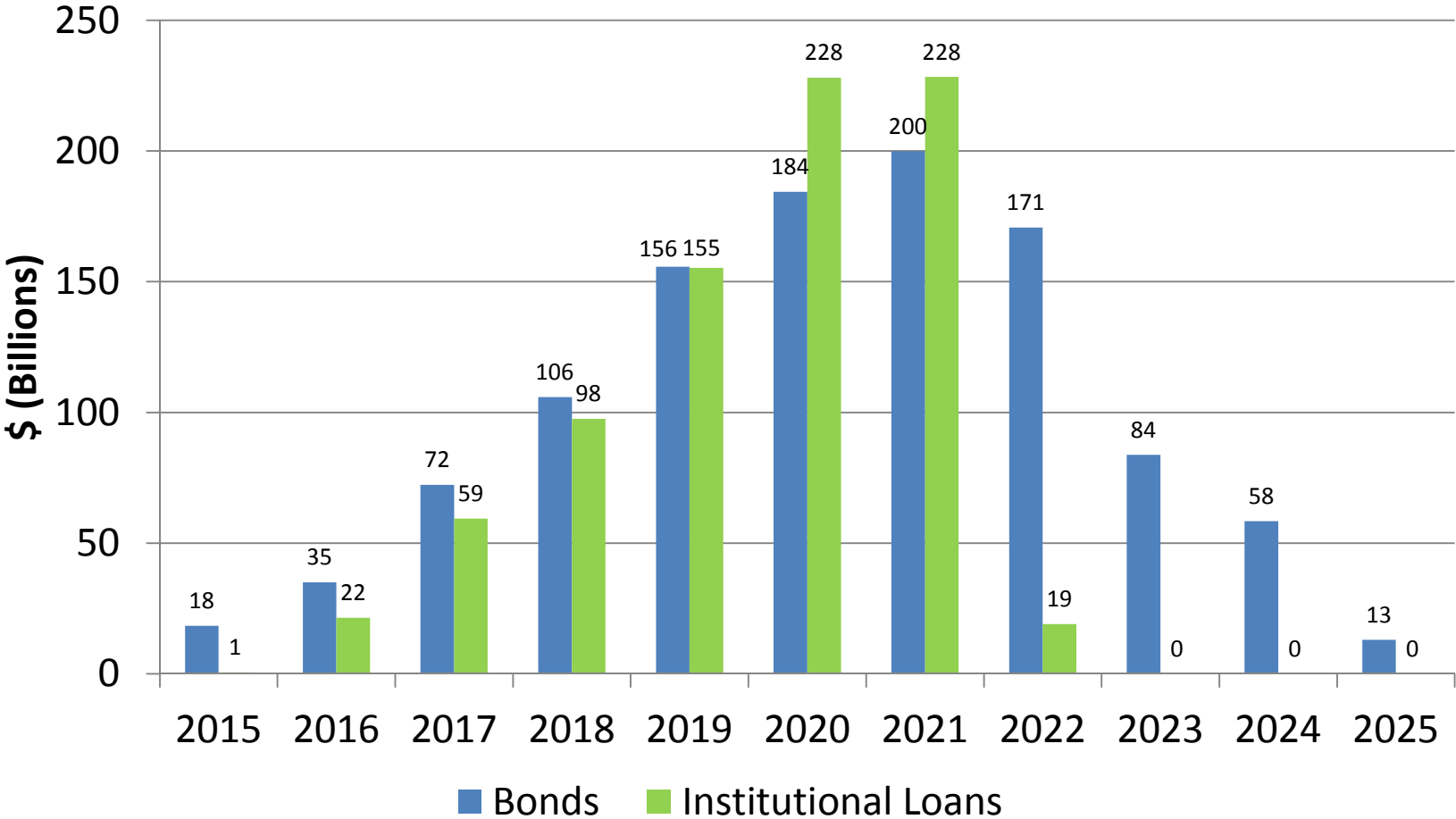
2015 (1Q)

	U.S.	Europe
Refinancing	42.66%	47%
M&A	41.25%	40%
LBO	15.26%	
Recap/Dividends	0.83%	13%
Corporate Purpose	0.00%	
Project Financing	0.00%	
Total	100%	100%

*Loans Only

Source: Standard & Poor's LCD & Credit Suisse

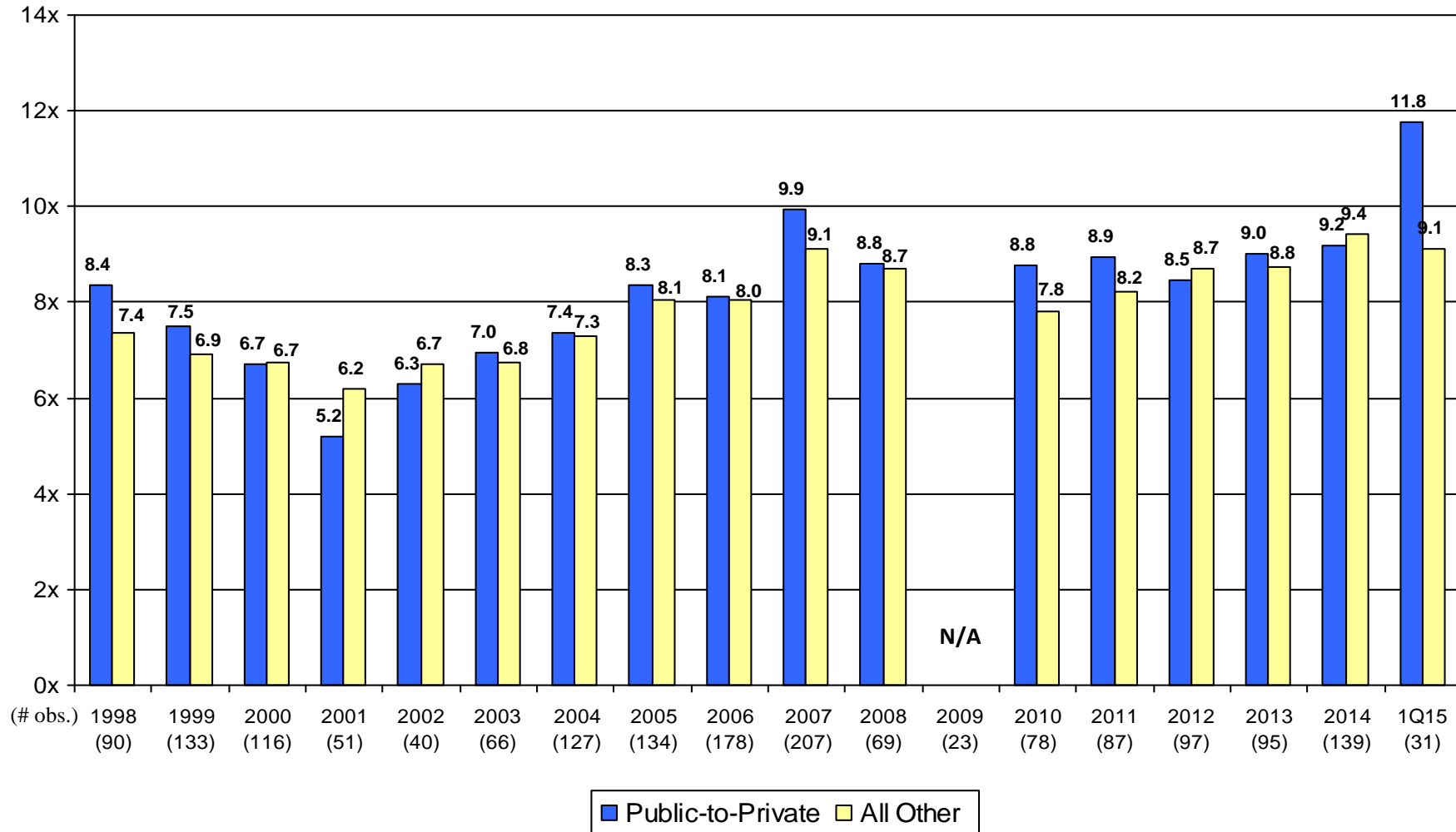
Maturity Profile of Leveraged Debt – As of 12/31/14



Source: S&P Capital IQ LCD

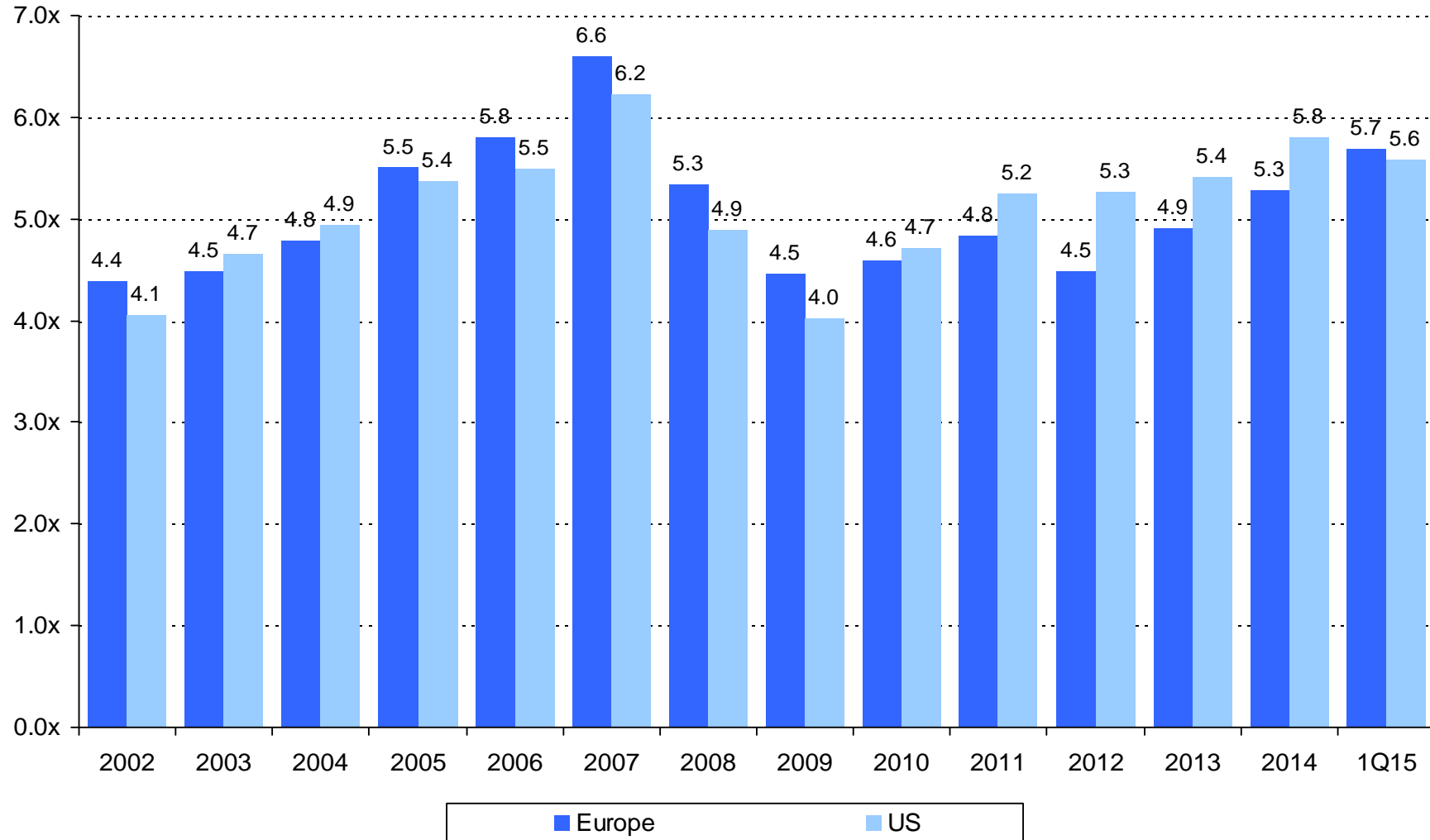
Purchase Price Multiples

Purchase Price Multiple excluding Fees for LBO Transactions



Source: S&P Capital IQ LCD

Average Total Debt Leverage Ratio for LBO's: Europe and US with EBITDA of €/\$50M or More



Source: S&P Capital IQ LCD

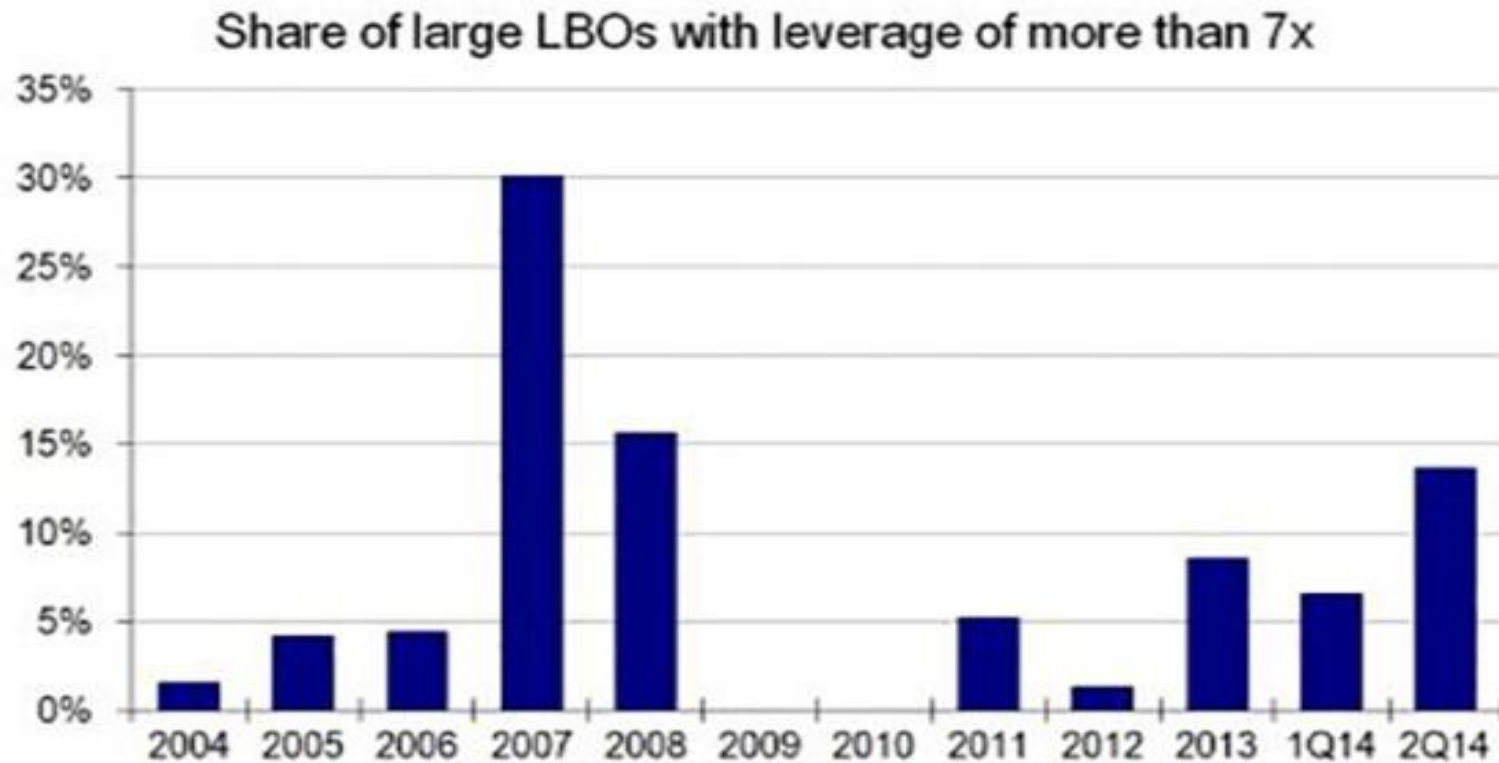
LBO Statistics & Ratios: 2007 vs. 2014

	2007	2014	Direction of Change
M&A/LBO as a % of Total Issuance	62%	41%	↓
Purchase Multiple	9.1-9.9x	9.2-9.4x	←
Debt to EBITDA @ Inception	6.2x	5.8x	↓
EBITDA to Cash Interest	2.1x	3.5x	↑
Equity Contribution	31%	37%	↑

Source: Guggenheim Investments and S&P *Capital IQ*

Share of Large LBOs with Leverage More than 7x

2004 – 2Q 2014



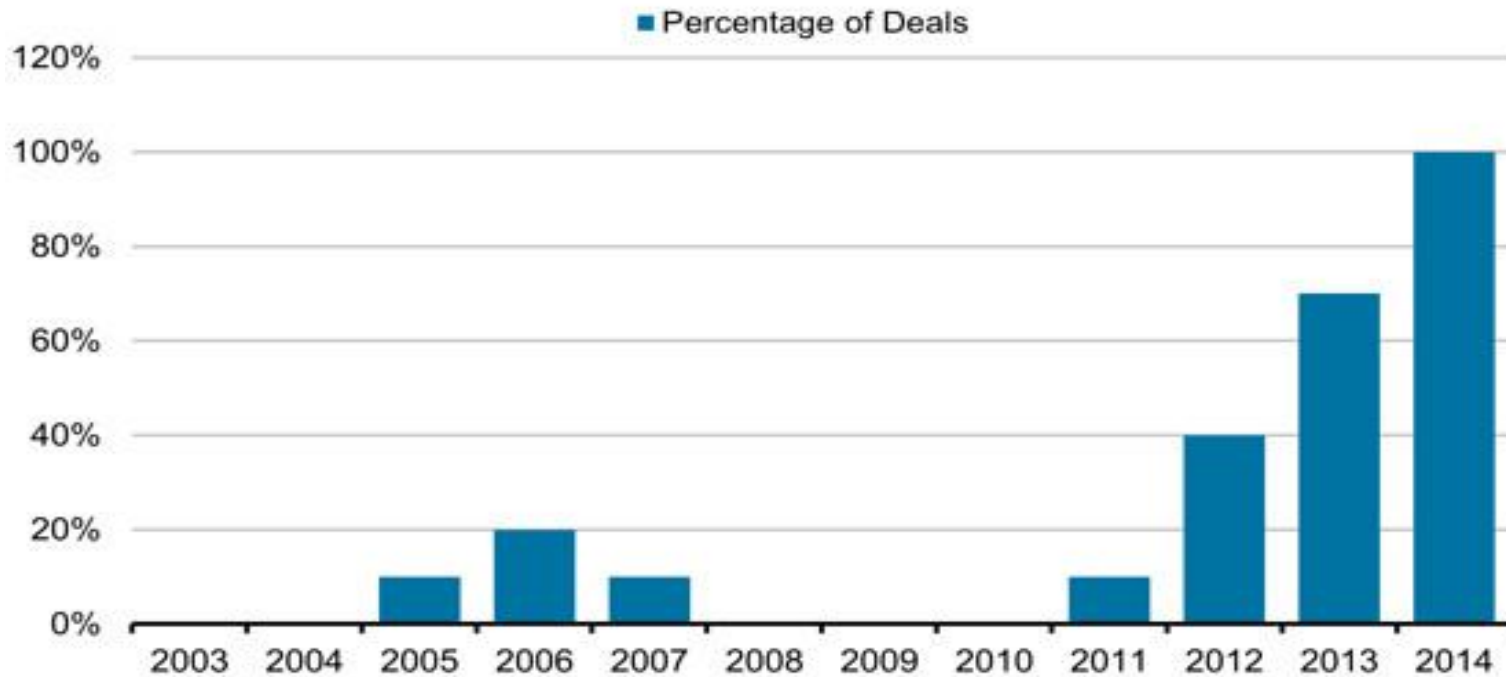
Source: S&P Capital IQ LCD

Lenders Leave the Lite On

2003 – 2Q 2014

Lenders Leave the Lite On

Percentage of 10 largest LBOs each year structured with covenant lite loans



Source: S&P Capital IQ LCD | WSJ.com