

Moody's Investors Service ("MIS")

Exhibit 1

Credit Ratings Performance Measurement Statistics

Performance Measurement Statistics, consisting of transition and default rates for each applicable asset class and subclass of credit rating over 1-year, 3-year, and 10-year time periods through December 31, 2018, are provided in the Transition/Default Matrices on the following pages, pp. 1-28 (the "Matrices").¹ Please note that all the numbers in the Matrices are in percentage.

Financial Institutions, Brokers and Dealers

Financial Institutions, Brokers and Dealers - 1-Year Transition and Default Rates

(December 31, 2017 through December 31, 2018)

Credit Ratings as of 12/31/2017		Credit Ratings as of 12/31/2018 (Percent)																					Other Outcomes During 12/31/2017 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	43	95%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa1	17	0%	94%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	0%
Aa2	58	0%	10%	69%	14%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	3%
Aa3	116	0%	3%	11%	80%	3%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%
A1	274	0%	0%	5%	8%	80%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
A2	215	0%	0%	1%	1%	24%	66%	2%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	1%
A3	223	0%	0%	0%	0%	1%	13%	79%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	3%
Baa1	220	0%	0%	0%	0%	2%	1%	11%	82%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%
Baa2	198	0%	0%	0%	0%	0%	4%	3%	7%	77%	7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%
Baa3	200	0%	0%	0%	0%	0%	1%	0%	0%	15%	70%	4%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	5%
Ba1	70	0%	0%	0%	0%	0%	0%	0%	0%	4%	13%	53%	6%	3%	9%	3%	0%	0%	0%	0%	0%	0%	0%	3%	7%
Ba2	75	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	9%	71%	1%	1%	8%	0%	0%	0%	0%	0%	0%	0%	1%	5%
Ba3	89	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13%	80%	0%	2%	2%	0%	0%	0%	0%	0%	0%	0%	2%
B1	75	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%	16%	53%	13%	3%	0%	0%	0%	0%	0%	0%	5%	7%
B2	104	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	3%	13%	68%	10%	1%	0%	0%	0%	0%	0%	0%	5%
B3	38	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	68%	5%	0%	0%	0%	0%	0%	0%	21%
Caa1	36	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	22%	67%	6%	0%	0%	0%	0%	0%	6%
Caa2	19	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	47%	16%	11%	0%	0%	0%	5%	16%
Caa3	11	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	82%	18%	0%	0%	0%	0%	0%
Ca	4	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	75%
C	-																								
Total	2,085																								

¹ Ratings withdrawn for reasons other than having defaulted or been paid off are accounted for in the column titled "Withdrawn (other)."

Financial Institutions, Brokers and Dealers - 3-Year Transition and Default Rates

(December 31, 2015 through December 31, 2018)

Credit Ratings as of 12/31/2015		Credit Ratings as of 12/31/2018 (Percent)																				Other Outcomes During 12/31/2015 - 12/31/2018 (Percent)			
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	46	85%	4%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	7%	
Aa1	23	0%	78%	9%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%	0%	
Aa2	83	0%	4%	41%	33%	4%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	11%	7%	
Aa3	96	0%	1%	22%	36%	27%	2%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	5%	
A1	197	0%	0%	1%	17%	55%	11%	6%	4%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	2%	
A2	266	0%	0%	1%	5%	39%	35%	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	3%	
A3	217	0%	0%	0%	1%	1%	18%	53%	8%	3%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%	6%	
Baa1	199	0%	0%	0%	0%	2%	2%	20%	58%	8%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	4%	
Baa2	164	0%	0%	0%	0%	0%	1%	2%	20%	49%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	12%	
Baa3	201	0%	0%	0%	0%	0%	0%	1%	3%	21%	38%	4%	7%	3%	4%	3%	0%	0%	0%	0%	0%	0%	5%	8%	
Ba1	92	0%	0%	0%	0%	0%	2%	1%	0%	4%	21%	20%	14%	10%	1%	2%	0%	0%	0%	0%	0%	0%	14%	11%	
Ba2	65	0%	0%	0%	0%	0%	2%	0%	0%	3%	11%	8%	31%	9%	3%	6%	0%	2%	0%	0%	0%	0%	2%	9%	
Ba3	57	0%	0%	0%	0%	2%	0%	0%	0%	4%	9%	2%	9%	35%	9%	4%	5%	0%	0%	0%	0%	0%	2%	12%	
B1	79	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	5%	4%	27%	20%	11%	9%	1%	0%	1%	0%	0%	5%	15%	
B2	87	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	2%	8%	13%	36%	7%	6%	1%	0%	0%	0%	1%	3%	
B3	58	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	0%	0%	3%	10%	16%	22%	3%	2%	0%	0%	0%	10%	2%	
Caa1	38	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%	3%	24%	3%	37%	3%	0%	0%	0%	3%	5%	
Caa2	29	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	31%	31%	7%	0%	0%	0%	10%	17%	
Caa3	7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	29%	43%	14%	0%	0%	0%	14%	
Ca	3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	
C	1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	
Total	2,008																								

Financial Institutions, Brokers and Dealers - 10-Year Transition and Default Rates

(December 31, 2008 through December 31, 2018)

Credit Ratings as of 12/31/2008		Credit Ratings as of 12/31/2018 (Percent)																				Other Outcomes During 12/31/2008 - 12/31/2018 (Percent)			
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	135	27%	4%	13%	13%	2%	1%	1%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	24%	13%
Aa1	188	0%	4%	5%	12%	24%	6%	6%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	22%	16%
Aa2	197	0%	0%	4%	13%	22%	7%	4%	4%	3%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	23%	18%
Aa3	219	0%	0%	3%	7%	19%	7%	4%	8%	4%	4%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	3%	14%	26%
A1	234	0%	0%	1%	2%	13%	16%	11%	3%	3%	3%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	14%	29%
A2	250	0%	1%	0%	1%	5%	8%	12%	10%	2%	4%	2%	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%	4%	17%	33%
A3	171	0%	0%	0%	0%	1%	8%	13%	9%	8%	5%	1%	3%	0%	0%	1%	0%	0%	0%	0%	0%	0%	5%	12%	35%
Baa1	100	0%	0%	0%	0%	0%	5%	15%	13%	3%	8%	5%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	8%	6%	34%
Baa2	108	0%	0%	0%	0%	0%	3%	3%	18%	14%	12%	2%	3%	2%	1%	0%	6%	0%	0%	0%	0%	0%	6%	6%	26%
Baa3	71	0%	0%	0%	0%	0%	0%	3%	4%	11%	10%	1%	15%	1%	1%	1%	1%	0%	0%	0%	0%	0%	4%	10%	35%
Ba1	51	0%	0%	0%	0%	2%	0%	0%	2%	10%	6%	4%	4%	2%	4%	4%	0%	2%	0%	0%	0%	0%	6%	22%	33%
Ba2	77	0%	0%	0%	0%	0%	0%	0%	3%	9%	10%	5%	8%	13%	4%	4%	4%	8%	0%	0%	0%	0%	5%	1%	26%
Ba3	50	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	0%	4%	12%	10%	10%	0%	0%	0%	0%	0%	0%	12%	2%	46%
B1	67	0%	0%	0%	0%	0%	0%	0%	0%	19%	3%	0%	0%	6%	9%	12%	0%	0%	0%	0%	0%	0%	6%	3%	42%
B2	56	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	2%	0%	5%	4%	9%	4%	9%	2%	0%	0%	0%	7%	2%	52%
B3	55	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	0%	13%	13%	11%	0%	0%	0%	7%	4%	49%	
Caa1	44	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%	0%	0%	11%	11%	5%	14%	0%	0%	0%	0%	0%	2%	9%	41%
Caa2	7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	29%	0%	71%	
Caa3	-																								
Ca	3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	
C	5	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	40%	60%	
Total	2,088																								

Insurance Companies

Insurance Companies - 1-Year Transition and Default Rates

(December 31, 2017 through December 31, 2018)

Credit Ratings as of 12/31/2017		Credit Ratings as of 12/31/2018 (Percent)																					Other Outcomes During 12/31/2017 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	6	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa1	12	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa2	65	0%	0%	98%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa3	95	0%	0%	0%	99%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
A1	133	0%	0%	0%	0%	95%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%
A2	202	0%	0%	0%	0%	6%	86%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%
A3	104	0%	0%	0%	0%	0%	15%	76%	2%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	1%
Baa1	70	0%	0%	0%	0%	0%	0%	10%	81%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	3%
Baa2	75	0%	0%	0%	0%	0%	0%	1%	15%	75%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	1%
Baa3	32	0%	0%	0%	0%	0%	0%	0%	0%	19%	75%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%
Ba1	24	0%	0%	0%	0%	0%	0%	0%	0%	4%	17%	46%	25%	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ba2	13	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	69%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	0%
Ba3	11	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%	73%	9%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%
B1	13	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	92%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
B2	11	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	64%	27%	0%	0%	0%	0%	0%	0%	0%	9%
B3	2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%	0%	0%	0%	0%	0%	0%	50%
Caa1	2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%
Caa2	8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	88%	0%	0%	0%	0%	13%	0%
Caa3	2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%
Ca	-																								
C	-																								
Total	880																								

Insurance Companies - 3-Year Transition and Default Rates

(December 31, 2015 through December 31, 2018)

Credit Ratings as of 12/31/2015		Credit Ratings as of 12/31/2018 (Percent)																					Other Outcomes During 12/31/2015 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	6	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa1	12	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa2	76	0%	0%	82%	17%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Aa3	69	0%	0%	3%	81%	4%	1%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%
A1	167	0%	0%	0%	16%	62%	16%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%
A2	173	0%	0%	0%	0%	12%	67%	10%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	8%
A3	112	0%	0%	0%	0%	3%	32%	52%	4%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	5%
Baa1	70	0%	0%	0%	0%	1%	4%	14%	57%	9%	0%	0%	0%	1%	0%	0%	3%	0%	0%	0%	0%	0%	0%	3%	7%
Baa2	73	0%	0%	0%	0%	0%	0%	5%	25%	49%	8%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	7%
Baa3	37	0%	0%	0%	0%	0%	0%	0%	3%	30%	30%	8%	16%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	5%
Ba1	25	0%	0%	0%	0%	0%	0%	0%	0%	16%	8%	28%	4%	4%	0%	4%	0%	0%	0%	0%	0%	0%	0%	0%	36%
Ba2	8	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	13%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	13%
Ba3	8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	13%	0%	13%	0%	0%	0%	0%	0%	0%	13%	13%
B1	13	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	31%	8%	31%	0%	0%	0%	0%	0%	0%	0%	0%	0%	31%
B2	8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13%	13%	25%	0%	0%	25%	0%	0%	0%	0%	0%	0%	25%
B3	12	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%	25%	8%	0%	0%	0%	0%	0%	0%	0%	33%
Caa1	3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%	0%	0%	67%	0%	0%	0%	0%	0%	0%
Caa2	6	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%	33%	0%	0%	0%	0%	33%	0%
Caa3	-																								
Ca	-																								
C	-																								
Total	878																								

Insurance Companies - 10-Year Transition and Default Rates

(December 31, 2008 through December 31, 2018)

Credit Ratings as of 12/31/2008		Credit Ratings as of 12/31/2018 (Percent)																				Other Outcomes During 12/31/2008 - 12/31/2018 (Percent)			
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	18	28%	39%	17%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	11%
Aa1	22	0%	23%	14%	18%	14%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	23%
Aa2	108	0%	0%	39%	31%	1%	5%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	16%
Aa3	173	0%	0%	1%	17%	27%	13%	8%	2%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	26%
A1	89	0%	0%	0%	1%	30%	17%	3%	1%	7%	1%	0%	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	2%	34%
A2	245	0%	0%	0%	8%	13%	32%	11%	2%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	29%
A3	112	1%	0%	0%	1%	7%	18%	13%	13%	3%	1%	2%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	1%	4%	37%
Baa1	56	0%	0%	0%	0%	0%	14%	7%	21%	9%	5%	0%	0%	0%	0%	2%	0%	4%	0%	0%	0%	0%	0%	11%	27%
Baa2	42	0%	0%	0%	0%	2%	0%	2%	21%	38%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	21%	12%
Baa3	38	0%	0%	0%	0%	0%	8%	0%	13%	11%	13%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	11%	42%
Ba1	22	0%	0%	0%	5%	0%	0%	18%	0%	9%	0%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%	0%	9%	5%	50%
Ba2	5	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	80%
Ba3	25	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	16%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	12%	64%
B1	13	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	23%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	77%
B2	10	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	50%	10%	0%	0%	0%	0%	0%	0%	0%	0%	30%
B3	12	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%	67%
Caa1	7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14%	14%	0%	0%	0%	14%	57%
Caa2	1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Caa3	-																								
Ca	4	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%	50%
C	-																								
Total	1,002																								

Corporate Issuers

Corporate Issuers - 1-Year Transition and Default Rates

(December 31, 2017 through December 31, 2018)

Credit Ratings as of 12/31/2017		Credit Ratings as of 12/31/2018 (Percent)																				Other Outcomes During 12/31/2017 - 12/31/2018 (Percent)			
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	14	93%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%	0%
Aa1	8	0%	88%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13%
Aa2	43	0%	0%	98%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%
Aa3	47	0%	0%	2%	79%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%
A1	160	0%	0%	0%	4%	91%	3%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
A2	208	0%	0%	0%	0%	1%	93%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
A3	292	0%	0%	0%	0%	0%	2%	82%	11%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	1%
Baa1	412	0%	0%	0%	0%	0%	0%	8%	83%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Baa2	416	0%	0%	0%	0%	0%	0%	0%	8%	83%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%
Baa3	365	0%	0%	0%	0%	0%	0%	0%	0%	14%	78%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	2%
Ba1	148	0%	0%	0%	0%	0%	0%	0%	0%	0%	18%	65%	9%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	5%	2%
Ba2	138	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	12%	69%	3%	3%	2%	0%	0%	0%	0%	0%	0%	0%	5%	1%
Ba3	172	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	4%	12%	67%	4%	1%	2%	1%	0%	0%	0%	0%	0%	9%	1%
B1	143	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	11%	67%	5%	3%	0%	0%	0%	0%	0%	0%	8%	2%
B2	129	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	14%	60%	5%	2%	2%	0%	0%	0%	2%	10%	2%
B3	177	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	4%	11%	60%	8%	3%	1%	1%	0%	1%	10%	1%
Caa1	135	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	2%	13%	48%	11%	5%	0%	0%	4%	13%	2%
Caa2	67	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	6%	61%	4%	1%	0%	4%	19%	0%
Caa3	27	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	11%	22%	11%	0%	41%	15%	0%
Ca	15	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13%	27%	0%	40%	20%	0%
C	5	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	40%	20%	20%
Total	3,121																								

Corporate Issuers - 3-Year Transition and Default Rates

(December 31, 2015 through December 31, 2018)

Credit Ratings as of 12/31/2015		Credit Ratings as of 12/31/2018 (Percent)																				Other Outcomes During 12/31/2015 - 12/31/2018 (Percent)			
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	15	87%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%	7%
Aa1	24	0%	25%	46%	29%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa2	36	0%	0%	75%	8%	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	0%
Aa3	78	0%	0%	4%	33%	55%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	1%
A1	139	0%	0%	0%	5%	57%	29%	4%	1%	1%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%
A2	213	0%	0%	0%	0%	9%	57%	15%	7%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	1%
A3	313	0%	0%	0%	0%	0%	9%	55%	19%	4%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%	4%
Baa1	363	0%	0%	0%	0%	0%	1%	11%	64%	12%	3%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	1%
Baa2	402	0%	0%	0%	0%	0%	0%	0%	14%	55%	11%	4%	1%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	9%	2%
Baa3	395	0%	0%	0%	0%	0%	0%	1%	2%	24%	42%	7%	6%	1%	0%	0%	0%	1%	0%	0%	0%	0%	1%	13%	4%
Ba1	149	0%	0%	0%	0%	0%	0%	0%	0%	4%	20%	26%	15%	7%	5%	0%	1%	0%	0%	1%	0%	0%	1%	19%	1%
Ba2	140	0%	0%	0%	0%	0%	0%	0%	0%	1%	16%	9%	30%	14%	4%	3%	1%	0%	1%	0%	0%	0%	0%	17%	5%
Ba3	139	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	4%	13%	30%	9%	6%	4%	2%	1%	0%	0%	0%	0%	22%	5%
B1	140	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	2%	4%	13%	28%	6%	11%	1%	0%	0%	0%	0%	4%	26%	4%
B2	136	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	10%	16%	21%	11%	5%	4%	1%	0%	0%	5%	23%	2%
B3	155	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	2%	5%	12%	25%	4%	5%	1%	1%	0%	8%	32%	6%
Caa1	184	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	3%	4%	10%	15%	8%	3%	0%	0%	11%	41%	4%
Caa2	90	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	4%	9%	13%	0%	2%	0%	30%	32%	3%
Caa3	40	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%	3%	0%	3%	3%	3%	0%	75%	10%	3%
Ca	22	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	86%	9%	0%
C	4	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	75%	0%	25%
Total	3,177																								

Corporate Issuers - 10-Year Transition and Default Rates

(December 31, 2008 through December 31, 2018)

Credit Ratings as of 12/31/2008		Credit Ratings as of 12/31/2018 (Percent)																						Other Outcomes During 12/31/2008 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)	
Aaa	36	31%	6%	3%	25%	3%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14%	17%	
Aa1	56	0%	5%	21%	18%	20%	0%	2%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	16%	16%	
Aa2	50	0%	0%	10%	12%	28%	2%	10%	4%	0%	2%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	24%	
Aa3	53	0%	0%	9%	13%	19%	19%	4%	2%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	19%	13%	
A1	154	0%	0%	5%	0%	26%	16%	9%	8%	3%	2%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	17%	13%	
A2	235	0%	0%	3%	0%	8%	18%	13%	14%	9%	1%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14%	17%	
A3	309	0%	0%	0%	0%	1%	11%	17%	20%	5%	4%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	18%	23%	
Baa1	323	0%	0%	0%	0%	1%	5%	11%	22%	18%	7%	1%	1%	0%	0%	0%	1%	0%	0%	1%	0%	0%	0%	18%	15%	
Baa2	350	0%	0%	0%	0%	1%	1%	5%	15%	22%	10%	4%	2%	0%	1%	1%	1%	0%	0%	0%	0%	0%	0%	17%	18%	
Baa3	277	0%	0%	0%	0%	0%	1%	5%	9%	17%	14%	4%	3%	1%	1%	1%	1%	0%	0%	0%	0%	0%	1%	23%	18%	
Ba1	87	0%	0%	0%	0%	0%	0%	1%	2%	10%	16%	11%	7%	1%	0%	0%	0%	0%	0%	0%	0%	0%	6%	20%	25%	
Ba2	94	0%	0%	0%	0%	0%	0%	0%	0%	4%	4%	7%	9%	5%	3%	2%	4%	2%	1%	0%	0%	0%	2%	33%	22%	
Ba3	104	0%	0%	0%	0%	0%	0%	0%	2%	6%	6%	2%	3%	7%	5%	0%	2%	0%	1%	0%	0%	0%	10%	37%	21%	
B1	107	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	3%	11%	4%	3%	1%	1%	0%	0%	0%	0%	16%	39%	21%	
B2	115	0%	0%	0%	0%	0%	0%	1%	0%	2%	2%	0%	3%	2%	5%	3%	2%	1%	1%	0%	2%	0%	23%	30%	25%	
B3	128	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	3%	2%	2%	0%	1%	0%	0%	0%	20%	45%	23%	
Caa1	113	0%	0%	1%	0%	0%	0%	0%	0%	1%	0%	0%	2%	1%	2%	2%	2%	3%	0%	1%	0%	0%	35%	32%	19%	
Caa2	64	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	3%	2%	0%	0%	0%	0%	0%	56%	22%	16%	
Caa3	27	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	0%	4%	0%	0%	0%	85%	7%	0%	
Ca	22	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	86%	9%	5%	
C	6	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	83%	0%	17%	
Total	2,710																									

Short Term Corporate Commercial Paper

Short Term Corporate Commercial Paper - 1-Year Transition and Default Rates

(December 31, 2017 through December 31, 2018)

Credit Ratings as of 12/31/2017		Credit Ratings as of 12/31/2018 (Percent)				Other Outcomes During 12/31/2017 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	P-1	P-2	P-3	NP	Default	Paid Off	Withdrawn (other)
P-1	693	96%	2%	0%	0%	0%	2%	0%
P-2	575	3%	88%	3%	1%	0%	4%	1%
P-3	88	0%	16%	67%	3%	0%	13%	1%
NP	141	0%	0%	6%	84%	0%	5%	5%
Total	1,497							

Short Term Corporate Commercial Paper - 3-Year Transition and Default Rates

(December 31, 2015 through December 31, 2018)

Credit Ratings as of 12/31/2015		Credit Ratings as of 12/31/2018 (Percent)				Other Outcomes During 12/31/2015 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	P-1	P-2	P-3	NP	Default	Paid Off	Withdrawn (other)
P-1	638	85%	8%	0%	0%	0%	5%	2%
P-2	544	6%	71%	5%	3%	0%	11%	4%
P-3	68	0%	29%	34%	12%	0%	21%	4%
NP	108	0%	3%	13%	63%	0%	13%	8%
Total	1,358							

Short Term Corporate Commercial Paper - 10-Year Transition and Default Rates

(December 31, 2008 through December 31, 2018)

Credit Ratings as of 12/31/2008		Credit Ratings as of 12/31/2018 (Percent)				Other Outcomes During 12/31/2008 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	P-1	P-2	P-3	NP	Default	Paid Off	Withdrawn (other)
P-1	825	47%	14%	2%	2%	0%	17%	18%
P-2	406	6%	43%	6%	3%	0%	23%	19%
P-3	37	0%	35%	8%	0%	0%	16%	41%
NP	83	0%	4%	5%	18%	2%	23%	48%
Total	1,351							

Residential Mortgage Backed Securities (RMBS)

RMBS - 1-Year Transition and Default Rates

(December 31, 2017 through December 31, 2018)

Credit Ratings as of 12/31/2017		Credit Ratings as of 12/31/2018 (Percent)																				Other Outcomes During 12/31/2017 - 12/31/2018 (Percent)			
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	2,536	87%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	2%
Aa1	534	25%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	19%	5%
Aa2	717	17%	29%	22%	12%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	16%	4%
Aa3	329	21%	14%	11%	33%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	12%	9%
A1	520	17%	9%	7%	12%	37%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	9%
A2	503	9%	4%	9%	7%	7%	51%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%	5%
A3	635	6%	3%	2%	3%	9%	3%	40%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14%	18%
Baa1	856	3%	2%	2%	2%	6%	5%	2%	27%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%	42%
Baa2	571	2%	1%	1%	2%	6%	7%	7%	5%	28%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%	30%
Baa3	920	1%	0%	1%	1%	3%	1%	3%	3%	5%	33%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	9%	38%
Ba1	984	0%	1%	0%	0%	1%	1%	3%	5%	3%	4%	35%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	7%	38%
Ba2	697	0%	0%	0%	0%	1%	1%	2%	4%	3%	6%	5%	35%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	5%	35%
Ba3	795	0%	0%	0%	0%	1%	0%	1%	2%	2%	5%	8%	3%	37%	3%	0%	0%	0%	0%	0%	0%	0%	0%	3%	36%
B1	1,101	0%	0%	0%	0%	0%	0%	1%	0%	1%	3%	3%	4%	2%	50%	0%	1%	0%	0%	0%	0%	0%	0%	4%	30%
B2	659	0%	0%	0%	0%	0%	0%	0%	0%	1%	2%	3%	4%	4%	8%	34%	0%	2%	0%	0%	0%	0%	0%	3%	38%
B3	671	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	2%	2%	3%	9%	2%	31%	3%	1%	0%	0%	0%	1%	5%	39%
Caa1	1,243	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	2%	4%	3%	1%	39%	1%	0%	0%	0%	4%	5%	39%
Caa2	1,243	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	3%	2%	41%	1%	0%	0%	6%	2%	40%
Caa3	1,061	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	2%	4%	1%	59%	1%	0%	4%	3%	20%
Ca	1,886	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	2%	3%	2%	71%	0%	3%	2%	14%
C	1,557	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	2%	1%	4%	4%	62%	7%	4%	14%
Total	20,018																								

RMBS - 3-Year Transition and Default Rates

(December 31, 2015 through December 31, 2018)

Credit Ratings as of 12/31/2015		Credit Ratings as of 12/31/2018 (Percent)																				Other Outcomes During 12/31/2015 - 12/31/2018 (Percent)			
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	1,849	63%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	35%	2%
Aa1	361	27%	20%	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	47%	5%
Aa2	671	4%	23%	8%	11%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	49%	4%
Aa3	322	8%	14%	2%	16%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	54%	4%
A1	604	10%	7%	3%	6%	16%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	49%	8%
A2	553	12%	5%	3%	2%	4%	32%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	35%	6%
A3	778	9%	2%	2%	2%	3%	1%	22%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	44%	15%
Baa1	1,067	9%	2%	1%	2%	1%	1%	1%	15%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	26%	38%
Baa2	631	8%	2%	3%	4%	3%	3%	3%	2%	14%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	26%	29%
Baa3	1,077	5%	2%	2%	2%	2%	2%	1%	3%	2%	14%	0%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	25%	38%
Ba1	990	5%	3%	2%	2%	2%	1%	2%	2%	2%	3%	16%	0%	1%	2%	0%	0%	0%	0%	0%	0%	0%	1%	24%	33%
Ba2	798	2%	1%	1%	2%	3%	1%	3%	2%	2%	4%	3%	14%	1%	3%	0%	1%	0%	0%	0%	0%	0%	1%	18%	39%
Ba3	878	2%	2%	1%	0%	3%	1%	1%	2%	1%	3%	6%	2%	14%	2%	2%	0%	0%	0%	0%	0%	0%	0%	15%	42%
B1	980	2%	0%	1%	0%	2%	1%	2%	1%	1%	3%	5%	3%	3%	24%	0%	2%	1%	0%	0%	0%	0%	3%	15%	30%
B2	945	1%	1%	0%	1%	1%	1%	1%	2%	2%	3%	3%	4%	4%	6%	10%	0%	12%	1%	0%	0%	0%	2%	14%	32%
B3	881	1%	0%	1%	1%	2%	0%	1%	2%	1%	3%	3%	3%	4%	9%	3%	13%	4%	1%	1%	0%	0%	3%	12%	34%
Caa1	1,418	0%	0%	0%	0%	1%	0%	0%	1%	1%	1%	2%	1%	3%	5%	2%	1%	17%	2%	1%	0%	0%	14%	11%	36%
Caa2	1,619	0%	0%	0%	0%	0%	0%	1%	1%	0%	1%	2%	1%	2%	5%	2%	2%	2%	24%	1%	0%	0%	17%	7%	30%
Caa3	1,434	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	2%	1%	2%	5%	3%	2%	5%	4%	37%	2%	1%	13%	5%	17%
Ca	2,457	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	1%	2%	1%	2%	3%	3%	2%	51%	1%	11%	6%	14%
C	2,565	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	4%	2%	1%	2%	2%	4%	5%	36%	21%	9%	12%
Total	22,878																								

RMBS - 10-Year Transition and Default Rates

(December 31, 2008 through December 31, 2018)

Credit Ratings as of 12/31/2008		Credit Ratings as of 12/31/2018 (Percent)																				Other Outcomes During 12/31/2008 - 12/31/2018 (Percent)				
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)	
Aaa	21,388	4%	1%	0%	0%	1%	1%	0%	1%	0%	1%	1%	0%	0%	1%	0%	1%	1%	2%	1%	1%	0%	21%	29%	33%	
Aa1	2,232	2%	1%	0%	1%	1%	1%	1%	1%	1%	2%	1%	1%	1%	3%	0%	1%	1%	1%	1%	1%	1%	37%	21%	20%	
Aa2	2,809	2%	1%	1%	1%	1%	1%	2%	1%	1%	3%	3%	1%	2%	4%	1%	1%	1%	1%	2%	1%	26%	21%	21%		
Aa3	2,145	2%	2%	1%	1%	1%	3%	1%	1%	0%	1%	2%	2%	1%	4%	1%	0%	1%	1%	1%	2%	1%	33%	26%	14%	
A1	1,895	2%	1%	0%	1%	1%	1%	1%	1%	1%	1%	2%	1%	2%	4%	1%	1%	1%	1%	3%	2%	2%	49%	13%	11%	
A2	2,779	1%	1%	1%	1%	1%	1%	0%	1%	0%	1%	1%	1%	1%	4%	1%	1%	1%	1%	2%	3%	2%	40%	17%	17%	
A3	1,628	0%	0%	0%	1%	1%	0%	0%	0%	0%	1%	1%	1%	1%	3%	1%	1%	2%	1%	3%	4%	4%	51%	12%	10%	
Baa1	2,290	0%	0%	0%	1%	1%	0%	1%	0%	0%	1%	1%	1%	1%	3%	1%	1%	5%	2%	2%	5%	4%	42%	18%	10%	
Baa2	2,335	0%	0%	0%	1%	0%	0%	1%	0%	0%	1%	1%	1%	1%	2%	1%	1%	1%	1%	2%	4%	4%	52%	17%	10%	
Baa3	1,447	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	1%	1%	1%	2%	1%	1%	1%	1%	2%	5%	3%	60%	12%	7%	
Ba1	1,139	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	2%	1%	1%	1%	1%	3%	6%	5%	61%	10%	5%	
Ba2	1,389	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	1%	0%	1%	1%	1%	5%	2%	71%	10%	5%	
Ba3	987	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	1%	1%	1%	2%	7%	5%	72%	6%	4%	
B1	844	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	1%	2%	5%	4%	76%	6%	2%	
B2	1,134	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	1%	8%	2%	78%	5%	4%	
B3	1,512	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	6%	3%	81%	4%	2%	
Caa1	766	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	13%	7%	70%	3%	2%
Caa2	933	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	7%	4%	84%	2%	1%	
Caa3	420	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	1%	5%	4%	84%	2%	1%	
Ca	2,403	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	94%	1%	1%	
C	4,888	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	99%	0%	0%	
Total	57,363																									

Commercial Mortgage Backed Securities (CMBS)

CMBS - 1-Year Transition and Default Rates

(December 31, 2017 through December 31, 2018)

Credit Ratings as of 12/31/2017		Credit Ratings as of 12/31/2018 (Percent)																				Other Outcomes During 12/31/2017 - 12/31/2018 (Percent)			
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	1,884	89%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	11%	0%
Aa1	89	8%	80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	12%	0%
Aa2	172	2%	3%	81%	2%	0%	2%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%	0%
Aa3	227	1%	0%	4%	86%	0%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%	0%
A1	140	1%	0%	4%	6%	79%	0%	1%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	0%
A2	81	2%	1%	0%	4%	5%	67%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	19%	0%
A3	160	1%	0%	1%	1%	3%	3%	81%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%	0%
Baa1	94	3%	0%	1%	0%	0%	1%	5%	54%	16%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	19%	0%
Baa2	72	0%	0%	0%	0%	0%	0%	1%	6%	56%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	36%	0%
Baa3	126	2%	0%	0%	1%	0%	2%	1%	6%	2%	65%	4%	1%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	15%	0%
Ba1	65	0%	0%	0%	0%	0%	2%	0%	2%	2%	2%	58%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	34%	0%
Ba2	89	0%	0%	0%	0%	0%	0%	1%	1%	0%	1%	6%	66%	2%	3%	0%	1%	0%	0%	0%	0%	0%	0%	18%	0%
Ba3	65	0%	0%	0%	0%	0%	2%	0%	3%	0%	0%	3%	3%	58%	5%	2%	2%	0%	0%	2%	0%	0%	0%	22%	0%
B1	66	0%	0%	0%	0%	0%	0%	0%	2%	0%	3%	6%	5%	5%	47%	2%	3%	0%	0%	2%	0%	0%	0%	27%	0%
B2	66	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	5%	71%	6%	5%	0%	0%	0%	0%	0%	11%	0%
B3	67	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	10%	4%	51%	1%	4%	0%	0%	1%	4%	21%	0%
Caa1	66	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	8%	45%	2%	3%	2%	0%	3%	35%	0%
Caa2	46	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	2%	7%	61%	4%	2%	0%	2%	20%	0%
Caa3	98	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	2%	3%	65%	3%	2%	6%	16%	0%
Ca	26	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	65%	4%	12%	12%	0%
C	109	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	2%	1%	61%	32%	3%	0%
Total	3,808																								

CMBS - 3-Year Transition and Default Rates

(December 31, 2015 through December 31, 2018)

Credit Ratings as of 12/31/2015		Credit Ratings as of 12/31/2018 (Percent)																						Other Outcomes During 12/31/2015 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)	
Aaa	1,730	58%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	42%	0%	
Aa1	113	8%	37%	0%	3%	0%	1%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%	
Aa2	203	4%	6%	40%	1%	0%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	46%	0%	
Aa3	204	2%	3%	5%	51%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	35%	0%	
A1	186	2%	0%	1%	8%	45%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	41%	0%	
A2	136	3%	0%	1%	5%	11%	27%	0%	2%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	49%	0%	
A3	191	2%	0%	1%	1%	3%	5%	52%	1%	0%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	1%	35%	0%	
Baa1	107	3%	0%	0%	1%	0%	0%	3%	24%	13%	1%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	50%	0%	
Baa2	109	2%	0%	2%	1%	0%	2%	3%	8%	14%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	1%	0%	2%	65%	0%	
Baa3	205	2%	0%	0%	1%	0%	0%	2%	3%	6%	29%	4%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	47%	0%	
Ba1	118	3%	1%	1%	0%	0%	0%	1%	0%	0%	2%	17%	3%	1%	1%	0%	1%	0%	0%	2%	0%	0%	2%	67%	0%	
Ba2	126	1%	1%	1%	0%	0%	0%	1%	2%	0%	2%	3%	36%	6%	7%	1%	2%	0%	0%	1%	0%	0%	2%	36%	0%	
Ba3	94	3%	0%	0%	0%	1%	0%	0%	2%	0%	0%	3%	1%	20%	4%	2%	3%	0%	1%	1%	0%	0%	4%	53%	0%	
B1	94	4%	0%	0%	1%	1%	1%	0%	4%	1%	0%	3%	1%	0%	10%	2%	2%	1%	1%	1%	1%	0%	4%	61%	0%	
B2	125	0%	0%	0%	0%	0%	1%	0%	2%	0%	1%	1%	2%	2%	3%	31%	7%	7%	1%	2%	0%	1%	6%	35%	0%	
B3	120	1%	0%	1%	0%	0%	0%	0%	1%	0%	1%	3%	0%	2%	8%	3%	13%	3%	5%	3%	0%	1%	8%	48%	1%	
Caa1	118	0%	0%	1%	0%	0%	0%	0%	1%	1%	0%	1%	1%	2%	1%	1%	3%	10%	3%	2%	2%	3%	22%	47%	0%	
Caa2	127	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	1%	3%	1%	1%	6%	13%	9%	0%	5%	22%	37%	1%	
Caa3	214	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%	2%	0%	1%	2%	2%	22%	3%	5%	29%	28%	2%	
Ca	71	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%	3%	17%	14%	35%	27%	1%	
C	211	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	19%	65%	13%	0%	
Total	4,602																			1%	0%					

CMBS - 10-Year Transition and Default Rates

(December 31, 2008 through December 31, 2018)

Credit Ratings as of 12/31/2008		Credit Ratings as of 12/31/2018 (Percent)																				Other Outcomes During 12/31/2008 - 12/31/2018 (Percent)			
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	3,267	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	75%	19%
Aa1	264	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	0%	0%	2%	13%	70%	8%
Aa2	613	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	2%	16%	64%	11%
Aa3	363	1%	0%	0%	2%	0%	1%	1%	1%	0%	0%	1%	0%	0%	1%	0%	0%	1%	1%	1%	0%	2%	20%	59%	7%
A1	292	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%	1%	0%	0%	1%	1%	3%	22%	59%	9%
A2	586	1%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	1%	1%	1%	1%	25%	57%	10%
A3	430	1%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	2%	33%	53%	5%
Baa1	464	2%	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%	1%	0%	0%	0%	0%	2%	0%	1%	38%	46%	6%
Baa2	599	1%	0%	0%	0%	0%	0%	0%	0%	3%	0%	1%	1%	0%	0%	0%	0%	0%	0%	1%	1%	0%	36%	47%	9%
Baa3	568	1%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	1%	0%	1%	43%	46%	4%
Ba1	391	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	0%	1%	1%	0%	1%	52%	39%	4%
Ba2	466	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	55%	38%	4%
Ba3	378	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	62%	31%	2%
B1	299	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	67%	27%	2%
B2	339	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	66%	29%	2%
B3	302	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	1%	72%	24%	1%
Caa1	83	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	87%	10%	2%
Caa2	67	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	82%	12%	3%
Caa3	40	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	90%	10%	0%
Ca	29	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%	3%	93%	0%	0%
C	32	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%
Total	9,872																								

CMBS: Commercial real estate (CRE) CDOs, where 70% or more of the collateral is comprised of CRE loans, are classified as CMBS. If the collateral backing the transaction contains less than 70% CRE loans, then the deal is classified as a CDO.

Collateralized Loan Obligations (CLOs)

CLOs - 1-Year Transition and Default Rates

(December 31, 2017 through December 31, 2018)

Credit Ratings as of 12/31/2017		Credit Ratings as of 12/31/2018 (Percent)																				Other Outcomes During 12/31/2017 - 12/31/2018 (Percent)			
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	1,537	53%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	47%	0%
Aa1	244	9%	30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	62%	0%
Aa2	691	0%	1%	63%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	36%	0%
Aa3	14	7%	0%	0%	21%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	71%	0%
A1	86	0%	3%	2%	3%	24%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	66%	0%
A2	658	0%	0%	0%	1%	2%	60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	37%	0%
A3	23	0%	4%	0%	0%	9%	0%	26%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	61%	0%
Baa1	20	0%	0%	0%	0%	0%	0%	0%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	75%	0%
Baa2	192	0%	0%	1%	0%	0%	0%	1%	3%	60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	36%	0%
Baa3	513	0%	0%	0%	0%	0%	0%	0%	0%	1%	56%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	43%	0%
Ba1	20	0%	0%	0%	0%	5%	0%	0%	5%	0%	0%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	75%	0%
Ba2	200	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	1%	60%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	38%	0%
Ba3	517	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	59%	0%	0%	0%	0%	0%	0%	0%	0%	0%	41%	0%
B1	31	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	0%	52%	0%	0%	0%	0%	0%	0%	0%	0%	42%	0%
B2	220	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	55%	2%	3%	1%	0%	0%	0%	0%	38%	0%
B3	104	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	53%	1%	1%	0%	0%	0%	0%	45%	0%
Caa1	7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	43%	29%	14%	0%	0%	0%	14%	0%
Caa2	1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%
Caa3	4	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%	25%	25%	0%	0%
Ca	1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%
C	-																								
Total	5,083																								

CLOs - 3-Year Transition and Default Rates

(December 31, 2015 through December 31, 2018)

Credit Ratings as of 12/31/2015		Credit Ratings as of 12/31/2018 (Percent)																				Other Outcomes During 12/31/2015 - 12/31/2018 (Percent)			
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	2,019	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	98%	0%
Aa1	109	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	98%	0%
Aa2	527	1%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	96%	0%
Aa3	48	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%
A1	68	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	97%	0%
A2	428	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	94%	0%
A3	55	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%
Baa1	61	2%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	95%	0%
Baa2	113	1%	0%	0%	0%	0%	0%	0%	0%	3%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	96%	0%
Baa3	363	0%	0%	0%	0%	0%	0%	1%	1%	1%	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	89%	0%
Ba1	78	0%	0%	0%	0%	1%	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	96%	0%
Ba2	169	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	1%	11%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	85%	0%
Ba3	343	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	21%	0%	1%	0%	0%	0%	0%	0%	0%	0%	78%	0%
B1	46	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	4%	0%	0%	0%	0%	0%	0%	0%	4%	89%	0%
B2	160	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	18%	3%	6%	3%	1%	0%	0%	0%	66%	0%
B3	94	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	20%	2%	2%	1%	0%	0%	0%	72%	0%
Caa1	4	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%
Caa2	6	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	17%	83%	0%	
Caa3	9	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%	67%	0%	
Ca	2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%	0%	50%	0%	
C	-																								
Total	4,702																								

CLOs - 10-Year Transition and Default Rates

(December 31, 2008 through December 31, 2018)

Credit Ratings as of 12/31/2008		Credit Ratings as of 12/31/2018 (Percent)																				Other Outcomes During 12/31/2008 - 12/31/2018 (Percent)			
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	1,348	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	96%	4%
Aa1	140	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	98%	1%
Aa2	636	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	98%	1%
Aa3	15	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	80%	20%
A1	46	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	96%	4%
A2	676	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	97%	1%
A3	48	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	96%	4%
Baa1	13	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	92%	8%
Baa2	611	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	96%	2%
Baa3	212	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	92%	5%
Ba1	20	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	90%	0%
Ba2	436	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	96%	0%
Ba3	122	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	10%	85%	2%
B1	4	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	75%	0%
B2	13	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	15%	85%	0%
B3	7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14%	43%	43%
Caa1	5	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	60%	40%	0%
Caa2	4	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	75%	25%
Caa3	-																								
Ca	3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%
C	2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%	50%
Total	4,361																								

Collateralized Debt Obligations (CDOs)

CDOs - 1-Year Transition and Default Rates

(December 31, 2017 through December 31, 2018)

Credit Ratings as of 12/31/2017		Credit Ratings as of 12/31/2018 (Percent)																				Other Outcomes During 12/31/2017 - 12/31/2018 (Percent)			
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	163	54%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	46%	0%
Aa1	59	5%	68%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	27%	0%
Aa2	63	2%	6%	60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	32%	0%
Aa3	46	2%	9%	13%	67%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%	2%
A1	30	0%	7%	0%	0%	77%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13%	0%
A2	49	0%	0%	0%	4%	4%	51%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	41%	0%
A3	20	0%	0%	0%	0%	10%	5%	80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%
Baa1	14	0%	0%	0%	7%	0%	21%	0%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	21%	0%
Baa2	11	0%	0%	0%	0%	0%	0%	0%	0%	91%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%	0%
Baa3	46	0%	0%	0%	0%	0%	2%	0%	0%	2%	50%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	43%	0%
Ba1	29	0%	0%	0%	0%	0%	0%	7%	0%	0%	10%	62%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	21%	0%
Ba2	20	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	65%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	35%	0%
Ba3	27	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	52%	0%	0%	0%	0%	0%	0%	0%	0%	0%	44%	4%
B1	18	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	0%	17%	33%	0%	0%	0%	0%	0%	0%	0%	0%	22%	22%
B2	12	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	0%	0%	58%	0%	0%	0%	0%	0%	0%	0%	17%	17%
B3	25	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	12%	8%	60%	0%	4%	0%	0%	0%	0%	16%	0%
Caa1	20	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	95%	0%	0%	0%	0%	0%	5%	0%
Caa2	13	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	69%	0%	0%	0%	0%	31%	0%
Caa3	36	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	0%	69%	8%	0%	8%	11%	0%
Ca	196	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	61%	19%	18%	0%	1%
C	325	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	75%	24%	0%	1%
Total	1,222																								

CDOs - 3-Year Transition and Default Rates

(December 31, 2015 through December 31, 2018)

Credit Ratings as of 12/31/2015		Credit Ratings as of 12/31/2018 (Percent)																						Other Outcomes During 12/31/2015 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn [other]	
Aaa	211	16%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	83%	0%	
Aa1	53	13%	34%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	51%	2%	
Aa2	59	5%	12%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	68%	0%	
Aa3	41	0%	29%	17%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	37%	2%	
A1	42	0%	12%	17%	14%	7%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	45%	2%	
A2	75	0%	0%	7%	8%	4%	13%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	68%	0%	
A3	37	3%	0%	3%	16%	22%	3%	16%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	38%	0%	
Baa1	21	0%	0%	0%	10%	14%	5%	10%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	57%	0%	
Baa2	12	0%	0%	0%	0%	0%	0%	8%	0%	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	83%	0%	
Baa3	49	2%	4%	2%	0%	12%	8%	4%	4%	2%	6%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	53%	0%	
Ba1	41	0%	0%	0%	0%	0%	2%	2%	5%	5%	7%	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	63%	5%	
Ba2	27	0%	0%	0%	4%	4%	0%	0%	0%	4%	7%	4%	11%	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%	59%	4%	
Ba3	25	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	12%	0%	12%	0%	0%	0%	0%	4%	0%	0%	0%	0%	68%	0%	
B1	30	0%	3%	0%	0%	3%	3%	0%	3%	0%	3%	17%	20%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	43%	0%	
B2	32	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%	9%	0%	6%	6%	0%	0%	19%	0%	0%	0%	0%	0%	56%	0%	
B3	27	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	4%	4%	7%	4%	15%	26%	0%	4%	0%	0%	0%	0%	33%	0%	
Caa1	33	0%	3%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	3%	12%	3%	3%	24%	0%	0%	0%	0%	0%	45%	3%	
Caa2	34	0%	0%	0%	0%	0%	0%	3%	0%	0%	6%	0%	0%	0%	0%	0%	12%	6%	9%	0%	0%	0%	0%	65%	0%	
Caa3	94	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	2%	5%	1%	1%	4%	22%	3%	0%	6%	50%	3%	
Ca	249	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	48%	15%	19%	16%	1%	
C	363	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	1%	0%	67%	26%	6%	1%	
Total	1,555																									

CDOs - 10-Year Transition and Default Rates

(December 31, 2008 through December 31, 2018)

Credit Ratings as of 12/31/2008		Credit Ratings as of 12/31/2018 (Percent)																				Other Outcomes During 12/31/2008 - 12/31/2018 (Percent)				
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)	
Aaa	1,182	2%	2%	2%	1%	2%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	54%	35%	
Aa1	183	2%	2%	1%	0%	1%	1%	0%	1%	0%	1%	0%	0%	0%	0%	1%	2%	1%	0%	0%	0%	0%	0%	1%	51%	37%
Aa2	407	0%	2%	0%	1%	1%	1%	0%	0%	0%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	6%	61%	21%	
Aa3	231	1%	2%	1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%	3%	3%	1%	11%	50%	23%	
A1	190	1%	1%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	2%	7%	1%	12%	37%	39%	
A2	371	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%	1%	0%	1%	0%	1%	1%	0%	0%	1%	2%	2%	7%	58%	23%	
A3	202	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	1%	0%	1%	1%	1%	4%	2%	16%	42%	25%	
Baa1	183	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	1%	0%	0%	4%	3%	19%	45%	25%	
Baa2	383	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	1%	1%	1%	2%	1%	13%	63%	18%	
Baa3	202	0%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	3%	10%	47%	32%	
Ba1	185	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	5%	3%	21%	41%	28%	
Ba2	257	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	5%	16%	64%	12%	
Ba3	150	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	1%	0%	1%	4%	6%	19%	53%	15%	
B1	170	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	2%	9%	29%	38%	21%	
B2	151	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	9%	5%	23%	39%	23%	
B3	155	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	3%	2%	0%	0%	2%	9%	29%	33%	21%	
Caa1	141	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	1%	0%	1%	3%	10%	36%	33%	14%	
Caa2	110	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	11%	44%	21%	20%	
Caa3	296	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	15%	56%	17%	8%	
Ca	669	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	11%	62%	14%	13%	
C	604	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%	71%	4%	18%	
Total	6,422																									

CDO: Derivative securities such as structured notes and repackaged securities are not considered as part of this sector. Commercial real estate (CRE) CDOs are also excluded (see the definition of CMBS).

Asset-Backed Commercial Paper (ABCP)

ABCP - 1-Year Transition and Default Rates

(December 31, 2017 through December 31, 2018)

Credit Ratings as of 12/31/2017		Credit Ratings as of 12/31/2018 (Percent)				Other Outcomes During 12/31/2017 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	P-1	P-2	P-3	NP	Default	Paid Off	Withdrawn (other)
P-1	166	66%	1%	0%	0%	0%	33%	1%
P-2	7	14%	71%	0%	0%	0%	14%	0%
P-3	6	0%	0%	33%	0%	0%	33%	33%
NP	-							
Total	179							

ABCP - 3-Year Transition and Default Rates

(December 31, 2015 through December 31, 2018)

Credit Ratings as of 12/31/2015		Credit Ratings as of 12/31/2018 (Percent)				Other Outcomes During 12/31/2015 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	P-1	P-2	P-3	NP	Default	Paid Off	Withdrawn (other)
P-1	180	54%	1%	0%	0%	0%	42%	3%
P-2	7	14%	43%	0%	0%	0%	29%	14%
P-3	1	0%	0%	0%	0%	0%	0%	100%
NP	-							
Total	188							

ABCP - 10-Year Transition and Default Rates

(December 31, 2008 through December 31, 2018)

Credit Ratings as of 12/31/2008		Credit Ratings as of 12/31/2018 (Percent)				Other Outcomes During 12/31/2008 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	P-1	P-2	P-3	NP	Default	Paid Off	Withdrawn (other)
P-1	354	21%	1%	0%	0%	0%	29%	49%
P-2	2	0%	0%	0%	0%	0%	50%	50%
P-3	-							
NP	-							
Total	356							

This subclass covers all Moody's rated public short-term issuances

Other Asset Backed Securities (Other ABS)

Other ABS - 1-Year Transition and Default Rates

(December 31, 2017 through December 31, 2018)

Credit Ratings as of 12/31/2017		Credit Ratings as of 12/31/2018 (Percent)																				Other Outcomes During 12/31/2017 - 12/31/2018 (Percent)			
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	2,522	76%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	24%	0%
Aa1	169	33%	41%	2%	8%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	15%	0%
Aa2	246	21%	17%	32%	10%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	18%	0%
Aa3	188	14%	5%	7%	47%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	26%	0%
A1	230	7%	4%	10%	9%	54%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14%	0%
A2	174	5%	2%	6%	7%	6%	53%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	17%	0%
A3	117	0%	3%	3%	7%	4%	12%	57%	3%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%
Baa1	106	1%	0%	3%	2%	5%	9%	6%	45%	1%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	23%	0%
Baa2	139	1%	4%	1%	1%	4%	1%	4%	14%	56%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14%	0%
Baa3	174	1%	0%	0%	2%	1%	1%	2%	4%	5%	71%	2%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%
Ba1	72	1%	0%	0%	0%	0%	0%	1%	3%	0%	8%	64%	3%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	18%	0%
Ba2	72	0%	0%	0%	0%	1%	0%	3%	0%	4%	3%	7%	53%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	28%	1%
Ba3	54	0%	0%	0%	0%	2%	0%	2%	0%	0%	0%	0%	4%	69%	0%	0%	2%	0%	0%	0%	0%	0%	0%	20%	2%
B1	57	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	74%	2%	0%	4%	0%	0%	0%	0%	0%	18%	0%
B2	56	0%	0%	0%	0%	0%	0%	0%	2%	2%	0%	2%	0%	0%	2%	77%	0%	2%	0%	0%	0%	0%	0%	14%	0%
B3	51	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	2%	6%	69%	2%	0%	0%	0%	0%	0%	16%	2%
Caa1	31	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	71%	6%	19%	0%	0%	0%	3%	0%
Caa2	24	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	0%	17%	58%	4%	0%	4%	0%	13%	0%
Caa3	37	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	3%	5%	59%	0%	0%	0%	24%	3%
Ca	31	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	65%	3%	3%	26%	3%
C	90	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	87%	7%	3%	1%
Total	4,640																								

Other ABS - 3-Year Transition and Default Rates

(December 31, 2015 through December 31, 2018)

Credit Ratings as of 12/31/2015		Credit Ratings as of 12/31/2018 (Percent)																					Other Outcomes During 12/31/2015 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	2,430	31%	1%	0%	1%	1%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	64%	0%
Aa1	244	31%	9%	2%	2%	5%	1%	2%	2%	2%	7%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	37%	0%
Aa2	360	30%	3%	8%	3%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	54%	1%
Aa3	259	24%	3%	3%	6%	4%	0%	1%	2%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	55%	0%
A1	177	11%	5%	7%	6%	8%	3%	2%	2%	1%	0%	1%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	53%	0%
A2	256	23%	4%	0%	4%	5%	14%	4%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	45%	0%
A3	154	10%	3%	0%	7%	9%	2%	14%	1%	1%	3%	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	47%	0%
Baa1	131	8%	1%	2%	5%	4%	6%	4%	8%	5%	5%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	52%	0%
Baa2	158	8%	1%	1%	4%	4%	3%	4%	6%	15%	3%	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	50%	0%
Baa3	92	4%	1%	0%	1%	1%	1%	5%	10%	1%	17%	9%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	46%	0%
Ba1	67	0%	3%	0%	0%	1%	1%	1%	1%	7%	6%	18%	4%	1%	0%	1%	0%	0%	1%	0%	0%	0%	0%	49%	1%
Ba2	72	0%	3%	6%	0%	0%	0%	1%	1%	0%	3%	4%	15%	3%	1%	0%	4%	10%	0%	1%	0%	0%	0%	46%	1%
Ba3	48	2%	0%	0%	0%	2%	0%	6%	0%	2%	0%	0%	15%	33%	8%	0%	0%	0%	0%	0%	0%	0%	0%	31%	0%
B1	93	1%	1%	0%	0%	1%	0%	0%	0%	0%	2%	2%	0%	6%	22%	8%	1%	0%	0%	0%	1%	0%	0%	55%	0%
B2	54	0%	0%	0%	2%	0%	0%	2%	2%	0%	0%	0%	0%	4%	4%	44%	7%	2%	0%	0%	0%	0%	0%	33%	0%
B3	56	0%	0%	0%	0%	0%	0%	0%	2%	2%	0%	2%	2%	2%	0%	9%	38%	9%	2%	5%	0%	0%	2%	27%	0%
Caa1	50	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	4%	4%	4%	18%	10%	18%	0%	4%	0%	32%	4%
Caa2	25	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%	0%	0%	8%	0%	12%	20%	0%	8%	0%	0%	48%	0%
Caa3	48	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	2%	6%	2%	8%	4%	23%	4%	4%	4%	27%	13%
Ca	40	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	3%	0%	0%	0%	0%	0%	5%	3%	23%	10%	5%	33%	18%
C	99	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	3%	73%	7%	12%	4%
Total	4,913																								

Other ABS - 10-Year Transition and Default Rates

(December 31, 2008 through December 31, 2018)

Credit Ratings as of 12/31/2008		Credit Ratings as of 12/31/2018 (Percent)																				Other Outcomes During 12/31/2008 - 12/31/2018 (Percent)			
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	3,959	7%	1%	0%	1%	1%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	59%	27%
Aa1	197	11%	1%	1%	1%	7%	3%	4%	3%	4%	9%	3%	1%	3%	0%	1%	2%	1%	1%	0%	0%	0%	3%	26%	18%
Aa2	384	3%	0%	1%	1%	1%	1%	1%	1%	0%	1%	0%	1%	1%	1%	0%	1%	1%	1%	0%	1%	0%	2%	38%	45%
Aa3	617	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	1%	53%	39%
A1	327	1%	1%	0%	0%	1%	0%	1%	1%	0%	0%	0%	0%	1%	1%	1%	1%	1%	1%	0%	1%	0%	4%	58%	28%
A2	958	4%	1%	0%	2%	1%	1%	1%	1%	0%	0%	1%	0%	1%	1%	1%	0%	0%	0%	1%	0%	0%	2%	56%	28%
A3	231	2%	2%	0%	2%	3%	0%	3%	0%	1%	0%	1%	2%	0%	0%	1%	0%	2%	1%	2%	0%	2%	9%	46%	21%
Baa1	464	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	1%	0%	0%	0%	3%	4%	43%	46%
Baa2	537	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%	1%	2%	64%	28%
Baa3	432	0%	0%	0%	0%	0%	0%	1%	2%	0%	1%	1%	1%	1%	0%	3%	3%	1%	0%	1%	0%	0%	11%	47%	23%
Ba1	171	1%	1%	0%	0%	0%	0%	1%	1%	2%	1%	1%	0%	1%	1%	0%	0%	0%	1%	0%	1%	1%	5%	56%	30%
Ba2	152	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	1%	0%	0%	0%	0%	3%	0%	2%	5%	58%	30%
Ba3	57	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	0%	2%	0%	0%	7%	53%	33%
B1	35	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	26%	11%	31%	31%
B2	47	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	15%	9%	45%	32%
B3	47	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	2%	0%	0%	0%	0%	13%	21%	38%	21%
Caa1	53	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	8%	19%	62%	9%
Caa2	15	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%	0%	0%	27%	20%	27%	20%
Caa3	20	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	45%	30%	5%
Ca	32	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	9%	47%	19%	22%
C	46	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	43%	33%	4%
Total	8,781																								

Other Structured Finance Products (Other SFPs)

Other SFPs - 1-Year Transition and Default Rates

(December 31, 2017 through December 31, 2018)

Credit Ratings as of 12/31/2017		Credit Ratings as of 12/31/2018 (Percent)																				Other Outcomes During 12/31/2017 - 12/31/2018 (Percent)			
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	1,294	93%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%	0%
Aa1	289	28%	68%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%
Aa2	174	3%	19%	61%	5%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%	2%
Aa3	76	0%	9%	9%	72%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	1%
A1	137	0%	1%	5%	4%	74%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	15%	0%
A2	143	0%	1%	6%	1%	6%	72%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	2%
A3	107	0%	1%	0%	2%	2%	12%	68%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	11%	2%
Baa1	85	0%	0%	0%	0%	1%	5%	1%	38%	4%	1%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13%	32%
Baa2	73	0%	1%	1%	0%	4%	3%	4%	11%	37%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	12%	26%
Baa3	82	0%	0%	0%	0%	1%	0%	1%	1%	5%	30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	24%	37%
Ba1	95	0%	0%	0%	0%	0%	0%	2%	2%	1%	0%	52%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%	31%
Ba2	57	0%	0%	0%	0%	0%	4%	2%	0%	0%	5%	12%	26%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	16%	33%
Ba3	62	0%	0%	0%	0%	0%	0%	0%	3%	0%	3%	8%	5%	44%	0%	3%	0%	2%	0%	0%	0%	0%	0%	5%	27%
B1	69	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	12%	49%	6%	4%	0%	0%	0%	0%	0%	0%	9%	20%
B2	116	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	9%	2%	40%	5%	2%	0%	0%	0%	0%	0%	3%	39%
B3	107	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	1%	2%	4%	37%	7%	10%	1%	1%	1%	0%	9%	21%
Caa1	166	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	1%	3%	2%	44%	4%	0%	0%	1%	0%	11%	31%
Caa2	477	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	45%	6%	1%	3%	0%	10%	33%
Caa3	575	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	57%	3%	3%	0%	5%	31%
Ca	516	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	67%	3%	1%	6%	21%
C	624	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	66%	2%	13%	19%
Total	5,324																								

Other SFPs - 3-Year Transition and Default Rates

(December 31, 2015 through December 31, 2018)

Credit Ratings as of 12/31/2015		Credit Ratings as of 12/31/2018 (Percent)																				Other Outcomes During 12/31/2015 - 12/31/2018 (Percent)			
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	1,034	75%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	24%	0%
Aa1	146	34%	41%	5%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	18%	1%
Aa2	155	1%	14%	48%	4%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	31%	2%
Aa3	110	5%	4%	12%	31%	5%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	43%	1%
A1	142	7%	5%	3%	4%	27%	4%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	49%	0%
A2	187	0%	1%	3%	1%	20%	44%	1%	3%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	21%	5%
A3	138	1%	2%	0%	4%	3%	9%	37%	1%	4%	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	36%	2%
Baa1	109	1%	1%	0%	2%	1%	2%	3%	17%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	42%	32%
Baa2	75	0%	1%	0%	0%	0%	0%	0%	7%	11%	0%	1%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	51%	27%
Baa3	122	0%	0%	2%	1%	0%	0%	1%	2%	4%	11%	0%	4%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	44%	31%
Ba1	91	0%	1%	2%	0%	0%	0%	1%	2%	1%	2%	23%	5%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	24%	34%
Ba2	78	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	23%	6%	1%	5%	0%	3%	0%	0%	0%	0%	0%	0%	27%	32%
Ba3	398	1%	1%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	5%	4%	6%	2%	1%	1%	0%	1%	7%	0%	29%	41%
B1	145	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	1%	1%	1%	7%	3%	3%	2%	1%	0%	1%	13%	2%	21%	42%
B2	151	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	1%	0%	11%	3%	6%	1%	1%	1%	9%	1%	21%	47%
B3	169	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	11%	11%	4%	2%	3%	7%	1%	21%	38%
Caa1	331	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	1%	0%	2%	2%	13%	7%	3%	1%	7%	0%	17%	47%
Caa2	597	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	1%	29%	7%	2%	6%	1%	18%	33%
Caa3	835	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	33%	13%	7%	0%	14%	29%
Ca	604	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	4%	38%	14%	2%	12%	27%
C	450	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	2%	41%	5%	29%	21%
Total	6,067																								

Other SFPs - 10-Year Transition and Default Rates

(December 31, 2008 through December 31, 2018)

Credit Ratings as of 12/31/2008		Credit Ratings as of 12/31/2018 (Percent)																				Other Outcomes During 12/31/2008 - 12/31/2018 (Percent)			
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	6,172	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	1%	5%	34%	55%
Aa1	305	1%	0%	1%	0%	9%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	5%	23%	60%
Aa2	266	0%	0%	1%	0%	0%	0%	0%	0%	2%	1%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	45%	47%
Aa3	435	3%	1%	0%	0%	2%	12%	0%	2%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	38%	39%
A1	379	0%	1%	0%	0%	0%	0%	6%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	1%	0%	1%	2%	39%	47%
A2	324	0%	0%	0%	0%	0%	3%	1%	0%	0%	1%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	3%	46%	44%
A3	304	1%	0%	0%	0%	0%	0%	3%	0%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	47%	45%
Baa1	246	1%	1%	0%	0%	0%	1%	1%	1%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	48%	37%
Baa2	271	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%	1%	7%	51%	35%
Baa3	262	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	1%	1%	1%	7%	53%	33%
Ba1	110	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	0%	1%	0%	0%	0%	0%	1%	1%	0%	7%	42%	45%
Ba2	153	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	1%	0%	1%	7%	43%	46%
Ba3	88	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	3%	1%	18%	36%	40%
B1	64	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	22%	38%	39%
B2	84	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	8%	13%	35%	42%
B3	86	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	34%	40%	26%
Caa1	40	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	3%	13%	58%	25%
Caa2	54	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	6%	17%	52%	24%
Caa3	215	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	2%	22%	50%	25%
Ca	363	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	3%	25%	51%	20%
C	281	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	21%	42%	35%
Total	10,502																								

Other SFPs includes the following Moody's rated long-term product lines: *

- » ABCP - Fully Supported
- » ABCP - Fully Supported LOC
- » ABCP - Mortgage Warehouse
- » ABCP - MTN
- » ABCP - Other
- » ABCP - Partially Supported
- » CDO - Repackaged Securities
- » CDO - Repackaged Securities - CBO
- » CDO - Repackaged Securities - CLO
- » Covered Bonds **
- » Other - CAPCO
- » Other - Collateralized GICs
- » Other - Credit Derivatives
- » Other - DPC
- » Other - DPC (FS)
- » Other - Insurance Linked
- » Other - Other
- » Other - Preferred Stock
- » Other - Repackaged Securities
- » Other - Structured Covered Bonds
- » Other - Structured Notes
- » Other - Tax Credit Linked Structured Notes
- » Structured Investment Vehicles – ABCP
- » Structured Investment Vehicles - CDO

* Starting from November 1, 2016, nonconventional securities like Interest-Only (IO) tranches and combination securities (combo notes) are reclassified as Other SFPs.

** Please note that single-issuer covered bonds are reported on deal level instead of on series level. The rationale is that ratings of a covered bond deal are almost always unambiguously the same as ratings of such deal's underlying series. Given that a covered bond deal could have as many as 300 series issued under it, reporting on series level would introduce a great amount of redundancy. In the rare cases where a covered bond deal has different ratings on its concurrently outstanding series, the rating for the covered bond deal generally corresponds to the rating of the highest rated series.

Sovereign Issuers

Sovereign Issuers - 1-Year Transition and Default Rates

(December 31, 2017 through December 31, 2018)

Credit Ratings as of 12/31/2017		Credit Ratings as of 12/31/2018 (Percent)																					Other Outcomes During 12/31/2017 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	12	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa1	2	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa2	8	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa3	6	0%	0%	0%	83%	17%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A1	6	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A2	5	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A3	8	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa1	3	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa2	10	0%	0%	0%	0%	0%	0%	0%	10%	70%	20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa3	6	0%	0%	0%	0%	0%	0%	0%	0%	17%	83%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ba1	8	0%	0%	0%	0%	0%	0%	0%	0%	0%	13%	75%	0%	13%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ba2	5	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	80%	0%	20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ba3	8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13%	88%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
B1	12	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	50%	42%	0%	0%	0%	0%	0%	0%	0%	0%	0%
B2	12	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	92%	8%	0%	0%	0%	0%	0%	0%	0%	0%
B3	15	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	87%	13%	0%	0%	0%	0%	0%	0%	0%
Caa1	4	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	75%	25%	0%	0%	0%	0%	0%	0%	0%
Caa2	3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%	33%	33%	0%	0%	0%	0%	0%	0%
Caa3	1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%
Ca	-																								
C	-																								
Total	134																								

Sovereign Issuers - 3-Year Transition and Default Rates

(December 31, 2015 through December 31, 2018)

Credit Ratings as of 12/31/2015		Credit Ratings as of 12/31/2018 (Percent)																					Other Outcomes During 12/31/2015 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	14	86%	14%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa1	3	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa2	7	0%	0%	71%	29%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa3	6	0%	0%	0%	50%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A1	6	0%	0%	0%	0%	67%	17%	0%	0%	0%	17%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A2	3	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A3	7	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa1	4	0%	0%	0%	0%	0%	25%	0%	50%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa2	12	0%	0%	0%	0%	0%	0%	8%	8%	42%	33%	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa3	9	0%	0%	0%	0%	0%	0%	0%	11%	22%	11%	11%	22%	11%	0%	11%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ba1	8	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	50%	13%	0%	13%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ba2	1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%
Ba3	12	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	25%	17%	25%	8%	8%	0%	0%	0%	0%	8%	0%	0%
B1	13	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	38%	23%	31%	0%	0%	0%	0%	0%	0%	0%	0%	0%
B2	7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	43%	29%	14%	0%	0%	0%	0%	14%	0%	0%
B3	11	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%	0%	82%	0%	0%	0%	0%	0%	9%	0%	0%
Caa1	1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%
Caa2	3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%	0%	33%	0%	0%	0%	33%	0%	0%
Caa3	3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%	33%	0%	0%	0%	0%	33%	0%	0%
Ca	-																								
C	-																								
Total	130																								

Sovereign Issuers - 10-Year Transition and Default Rates

(December 31, 2008 through December 31, 2018)

Credit Ratings as of 12/31/2008		Credit Ratings as of 12/31/2018 (Percent)																				Other Outcomes During 12/31/2008 - 12/31/2018 (Percent)			
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	19	63%	11%	16%	0%	0%	5%	0%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Aa1	2	0%	0%	0%	50%	0%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Aa2	8	0%	0%	50%	13%	0%	0%	0%	13%	0%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Aa3	5	0%	0%	0%	60%	20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	0%	
A1	8	0%	0%	0%	0%	63%	13%	13%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13%	0%	
A2	7	0%	0%	14%	0%	14%	29%	14%	0%	0%	14%	0%	0%	0%	0%	14%	0%	0%	0%	0%	0%	0%	0%	0%	
A3	4	0%	0%	0%	0%	0%	0%	50%	0%	0%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Baa1	6	0%	0%	0%	0%	0%	0%	33%	17%	0%	17%	33%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Baa2	4	0%	0%	0%	0%	0%	0%	0%	25%	0%	25%	0%	0%	0%	0%	25%	0%	0%	0%	0%	0%	0%	25%	0%	
Baa3	4	0%	0%	0%	0%	0%	0%	0%	0%	25%	25%	0%	25%	0%	0%	0%	25%	0%	0%	0%	0%	0%	0%	0%	
Ba1	8	0%	0%	0%	0%	0%	0%	13%	0%	25%	0%	13%	25%	0%	13%	0%	13%	0%	0%	0%	0%	0%	0%	0%	
Ba2	6	0%	0%	0%	0%	0%	0%	0%	0%	17%	0%	17%	0%	17%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Ba3	3	0%	0%	0%	0%	0%	0%	0%	0%	33%	0%	0%	0%	67%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
B1	10	0%	0%	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	0%	10%	20%	30%	0%	0%	0%	0%	0%	20%	0%	
B2	6	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	17%	17%	17%	17%	0%	0%	0%	0%	0%	17%	17%	
B3	5	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	0%	20%	0%	0%	40%	0%	0%	0%	0%	0%	20%	0%	
Caa1	4	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	0%	0%	25%	0%	0%	0%	25%	25%	
Caa2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Caa3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ca	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total	109	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

United States Public Finance

United States Public Finance - 1-Year Transition and Default Rates

(December 31, 2017 through December 31, 2018)

Credit Ratings as of 12/31/2017		Credit Ratings as of 12/31/2018 (Percent)																					Other Outcomes During 12/31/2017 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	684	95%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	3%
Aa1	984	2%	92%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	3%
Aa2	2,554	0%	3%	91%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%
Aa3	2,226	0%	0%	4%	90%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	3%
A1	2,203	0%	0%	0%	4%	87%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	4%
A2	1,170	0%	0%	0%	1%	5%	85%	3%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	4%
A3	693	0%	0%	0%	0%	1%	5%	85%	4%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	2%
Baa1	322	0%	0%	0%	0%	0%	2%	6%	80%	4%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	5%
Baa2	243	0%	0%	0%	0%	0%	0%	1%	6%	79%	6%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	4%
Baa3	198	0%	0%	1%	0%	0%	0%	1%	2%	11%	76%	4%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%
Ba1	64	0%	0%	0%	0%	0%	0%	0%	0%	3%	6%	70%	5%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13%
Ba2	34	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	6%	68%	3%	6%	0%	3%	0%	0%	0%	0%	0%	0%	0%	12%
Ba3	21	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%	86%	0%	5%	0%	0%	0%	0%	0%	0%	0%	0%	5%
B1	14	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14%	14%	43%	14%	7%	0%	0%	0%	0%	0%	0%	0%	7%
B2	4	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	75%	25%	0%	0%	0%	0%	0%	0%	0%	0%
B3	10	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%	10%	40%	20%	10%	0%	0%	0%	0%	0%	10%
Caa1	6	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	17%	17%	33%	0%	17%	0%	0%	0%	0%	17%
Caa2	1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%
Caa3	1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%
Ca	1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%
C	4	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%
Total	11,437																								

United States Public Finance - 3-Year Transition and Default Rates

(December 31, 2015 through December 31, 2018)

Credit Ratings as of 12/31/2015		Credit Ratings as of 12/31/2018 (Percent)																				Other Outcomes During 12/31/2015 - 12/31/2018 (Percent)			
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	617	87%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	7%
Aa1	933	10%	76%	5%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	7%
Aa2	2,681	0%	8%	74%	4%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	7%
Aa3	2,358	0%	1%	12%	68%	5%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	8%
A1	2,524	0%	0%	1%	11%	64%	5%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	10%
A2	1,220	0%	0%	0%	2%	12%	60%	7%	2%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	11%
A3	631	0%	0%	0%	0%	1%	3%	13%	58%	7%	3%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	10%
Baa1	338	0%	0%	0%	1%	1%	4%	13%	45%	9%	3%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	17%
Baa2	230	0%	0%	0%	0%	0%	2%	5%	10%	46%	8%	4%	1%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	14%
Baa3	173	0%	1%	0%	0%	0%	1%	1%	3%	17%	42%	6%	1%	2%	2%	0%	1%	1%	1%	0%	0%	0%	0%	2%	21%
Ba1	51	0%	0%	0%	0%	0%	0%	2%	0%	6%	18%	27%	14%	6%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%
Ba2	31	0%	0%	0%	0%	0%	0%	0%	0%	3%	6%	13%	13%	26%	6%	0%	0%	0%	3%	0%	0%	0%	0%	0%	29%
Ba3	22	0%	0%	0%	0%	0%	0%	0%	0%	5%	9%	0%	0%	27%	9%	0%	5%	5%	0%	0%	0%	0%	0%	9%	32%
B1	11	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	27%	18%	0%	18%	0%	0%	0%	0%	0%	0%	0%	0%	36%
B2	3	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%	0%	0%	67%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
B3	6	0%	0%	0%	0%	0%	0%	0%	0%	0%	17%	0%	0%	0%	0%	0%	33%	17%	17%	0%	0%	0%	17%	0%	0%
Caa1	8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	13%	0%	0%	0%	0%	0%	0%	13%	25%
Caa2	1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Caa3	5	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	20%	40%	0%	20%
Ca	5	0%	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	40%	40%	0%	0%
C	2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%	50%	0%
Total	11,850																								

United States Public Finance - 10-Year Transition and Default Rates

(December 31, 2008 through December 31, 2018)

Credit Ratings as of 12/31/2008		Credit Ratings as of 12/31/2018 (Percent)																					Other Outcomes During 12/31/2008 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	1,212	34%	6%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	30%	28%
Aa1	895	12%	48%	14%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%	14%
Aa2	3,034	1%	10%	45%	9%	3%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	11%	18%
Aa3	2,543	0%	2%	14%	34%	9%	3%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	15%	20%
A1	3,122	0%	1%	6%	10%	27%	6%	3%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	18%	26%
A2	1,264	0%	0%	2%	9%	12%	17%	6%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	22%	27%
A3	793	0%	0%	1%	5%	9%	8%	11%	3%	2%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	28%	31%
Baa1	458	0%	0%	0%	2%	3%	3%	7%	10%	4%	2%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	34%	33%
Baa2	293	0%	0%	0%	0%	2%	4%	2%	4%	9%	4%	0%	0%	1%	0%	0%	0%	1%	0%	0%	0%	0%	1%	30%	42%
Baa3	233	0%	0%	0%	0%	0%	2%	3%	2%	4%	5%	2%	1%	1%	0%	1%	0%	0%	0%	0%	0%	0%	1%	33%	43%
Ba1	38	0%	0%	0%	0%	0%	0%	3%	3%	3%	8%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	13%	61%
Ba2	33	0%	0%	0%	0%	0%	0%	6%	0%	9%	6%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	3%	27%	45%
Ba3	33	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	3%	0%	6%	0%	0%	0%	0%	0%	0%	0%	0%	6%	21%	61%
B1	12	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	8%	67%
B2	6	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	17%	33%	50%
B3	11	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	36%	0%	64%
Caa1	1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%
Caa2	2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%
Caa3	2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	50%	0%
Ca	2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	50%	0%
C	3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	67%	33%
Total	13,990																								

Short Term Municipal - P Scale

Short Term Municipal - 1-Year Transition and Default Rates

(December 31, 2017 through December 31, 2018)

Credit Ratings as of 12/31/2017		Credit Ratings as of 12/31/2018 (Percent)				Other Outcomes During 12/31/2017 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	P-1	P-2	P-3	NP	Default	Paid Off	Withdrawn (other)
P-1	86	94%	0%	0%	0%	0%	0%	6%
P-2	1	0%	100%	0%	0%	0%	0%	0%
P-3	-							
NP	-							
Total	87							

Short Term Municipal - 3-Year Transition and Default Rates

(December 31, 2015 through December 31, 2018)

Credit Ratings as of 12/31/2015		Credit Ratings as of 12/31/2018 (Percent)				Other Outcomes During 12/31/2015 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	P-1	P-2	P-3	NP	Default	Paid Off	Withdrawn (other)
P-1	94	83%	1%	0%	0%	0%	0%	16%
P-2	-							
P-3	-							
NP	-							
Total	94							

Short Term Municipal - 10-Year Transition and Default Rates

(December 31, 2008 through December 31, 2018)

Credit Ratings as of 12/31/2008		Credit Ratings as of 12/31/2018 (Percent)				Other Outcomes During 12/31/2008 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	P-1	P-2	P-3	NP	Default	Paid Off	Withdrawn (other)
P-1	67	61%	1%	0%	0%	0%	7%	30%
P-2	-							
P-3	-							
NP	-							
Total	67							

Short Term Municipal - MIG Scale

Short Term Municipal - 1-Year Transition and Default Rates

(December 31, 2017 through December 31, 2018)

Credit Ratings as of 12/31/2017		Credit Ratings as of 12/31/2018 (Percent)				Other Outcomes During 12/31/2017 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	MIG 1	MIG 2	MIG 3	SG	Default	Paid Off	Withdrawn (other)
MIG 1	160	96%	0%	0%	0%	0%	4%	1%
MIG 2	11	0%	100%	0%	0%	0%	0%	0%
MIG 3	3	0%	0%	67%	0%	0%	0%	33%
SG	-							
Total	174							

Short Term Municipal - 3-Year Transition and Default Rates

(December 31, 2015 through December 31, 2018)

Credit Ratings as of 12/31/2015		Credit Ratings as of 12/31/2018 (Percent)				Other Outcomes During 12/31/2015 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	MIG 1	MIG 2	MIG 3	SG	Default	Paid Off	Withdrawn (other)
MIG 1	177	34%	0%	0%	0%	0%	55%	10%
MIG 2	6	0%	17%	0%	0%	0%	50%	33%
MIG 3	2	0%	0%	0%	0%	0%	50%	50%
SG	1	0%	0%	0%	0%	0%	0%	100%
Total	186							

Short Term Municipal - 10-Year Transition and Default Rates

(December 31, 2008 through December 31, 2018)

Credit Ratings as of 12/31/2008		Credit Ratings as of 12/31/2018 (Percent)				Other Outcomes During 12/31/2008 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	MIG 1	MIG 2	MIG 3	SG	Default	Paid Off	Withdrawn (other)
MIG 1	423	6%	0%	0%	0%	0%	87%	7%
MIG 2	3	0%	0%	0%	0%	0%	100%	0%
MIG 3	1	0%	0%	0%	0%	100%	0%	0%
SG	-							
Total	427							

International Public Finance

International Public Finance - 1-Year Transition and Default Rates

(December 31, 2017 through December 31, 2018)

Credit Ratings as of 12/31/2017		Credit Ratings as of 12/31/2018 (Percent)																					Other Outcomes During 12/31/2017 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	17	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa1	11	0%	91%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%
Aa2	22	0%	5%	86%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%
Aa3	10	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A1	22	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A2	12	0%	0%	0%	0%	0%	92%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%
A3	4	0%	0%	0%	25%	0%	0%	25%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa1	12	0%	0%	0%	0%	0%	0%	25%	58%	17%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa2	15	0%	0%	0%	0%	0%	0%	0%	33%	20%	47%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa3	15	0%	0%	0%	0%	0%	0%	0%	0%	20%	67%	13%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ba1	19	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	58%	21%	11%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	11%
Ba2	29	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	34%	55%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%
Ba3	24	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	88%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
B1	22	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	73%	18%	0%	0%	0%	0%	0%	0%	0%	0%	5%
B2	14	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	86%	0%	0%	0%	0%	0%	0%	0%	0%	14%
B3	4	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%
Caa1	5	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	40%	60%	0%	0%	0%	0%	0%	0%	0%
Caa2	2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	50%	0%	0%	0%	0%	0%	0%	0%
Caa3	-																								
Ca	-																								
C	-																								
Total	259																								

International Public Finance - 3-Year Transition and Default Rates

(December 31, 2015 through December 31, 2018)

Credit Ratings as of 12/31/2015		Credit Ratings as of 12/31/2018 (Percent)																					Other Outcomes During 12/31/2015 - 12/31/2018 (Percent)		
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	18	89%	11%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa1	15	7%	53%	33%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%
Aa2	20	0%	5%	60%	20%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	5%
Aa3	2	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A1	16	0%	0%	0%	0%	94%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A2	4	0%	0%	0%	0%	25%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%
A3	5	0%	0%	0%	0%	0%	20%	20%	40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%
Baa1	9	0%	0%	0%	0%	0%	0%	22%	67%	11%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa2	17	0%	0%	0%	0%	0%	0%	0%	24%	18%	41%	12%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%
Baa3	15	0%	0%	0%	0%	0%	0%	0%	7%	13%	33%	13%	7%	20%	7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ba1	21	0%	0%	0%	0%	0%	0%	0%	0%	5%	5%	38%	29%	5%	0%	5%	0%	0%	0%	0%	0%	0%	0%	0%	14%
Ba2	28	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	36%	32%	14%	4%	0%	0%	4%	0%	0%	0%	0%	0%	0%	11%
Ba3	22	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	50%	18%	9%	5%	5%	0%	0%	0%	0%	0%	5%	5%
B1	14	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14%	64%	7%	0%	0%	0%	0%	0%	0%	0%	0%	14%
B2	8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	38%	0%	0%	0%	0%	0%	0%	0%	0%	38%
B3	3	0%	0%	0%	33%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%	0%	0%	0%	0%	0%	0%	0%	33%
Caa1	5	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	40%	40%	0%	0%	0%	0%	0%	0%	0%	20%
Caa2	5	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	80%	20%	0%	0%	0%	0%	0%	0%	0%	0%
Caa3	2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	50%	0%	0%	0%	0%	0%	0%	0%
Ca	-																								
C	-																								
Total	229																								

International Public Finance - 10-Year Transition and Default Rates

(December 31, 2008 through December 31, 2018)

Credit Ratings as of 12/31/2008		Credit Ratings as of 12/31/2018 (Percent)																				Other Outcomes During 12/31/2008 - 12/31/2018 (Percent)			
Credit Ratings	Number of Ratings Outstanding	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C	Default	Paid Off	Withdrawn (other)
Aaa	33	42%	15%	12%	0%	0%	0%	6%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	18%
Aa1	36	6%	14%	11%	6%	33%	0%	0%	6%	6%	0%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	8%
Aa2	26	0%	4%	19%	8%	0%	4%	0%	4%	4%	4%	8%	0%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	42%
Aa3	17	0%	0%	0%	0%	6%	0%	0%	0%	0%	24%	6%	0%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	59%
A1	12	0%	0%	0%	0%	8%	0%	0%	0%	0%	17%	8%	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	8%	42%
A2	9	0%	0%	0%	0%	22%	22%	0%	0%	0%	0%	11%	22%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	22%
A3	5	0%	0%	0%	0%	0%	20%	0%	20%	0%	20%	0%	20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%
Baa1	7	0%	0%	0%	0%	0%	0%	14%	43%	0%	0%	14%	0%	0%	14%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14%
Baa2	3	0%	0%	0%	0%	0%	0%	0%	0%	33%	0%	33%	33%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa3	13	0%	0%	0%	0%	0%	0%	0%	0%	15%	31%	23%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	15%
Ba1	25	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	12%	20%	0%	0%	0%	8%	0%	0%	0%	0%	0%	0%	52%
Ba2	25	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	12%	16%	16%	0%	0%	0%	0%	0%	0%	0%	0%	0%	52%
Ba3	19	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	21%	26%	11%	5%	0%	0%	0%	0%	0%	0%	0%	32%
B1	16	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	0%	13%	13%	6%	6%	0%	0%	0%	0%	0%	13%	0%	44%
B2	1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
B3	3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%	0%	0%	0%	0%	0%	0%	67%	0%	0%
Caa1	-																								
Caa2	-																								
Caa3	-																								
Ca	-																								
C	-																								
Total	250																								

Definition of Symbols

Moody's definitions of the symbols, numbers and scores in the rating scales used by Moody's to denote credit rating categories and notches within those categories for the classes and subclasses of credit ratings shown in the Matrices, are as follows:

Moody's Global Rating Scales

Ratings assigned on Moody's global long-term and short-term rating scales are forward-looking opinions of the relative credit risks of financial obligations issued by non-financial corporates, financial institutions, structured finance vehicles, project finance vehicles, and public sector entities. Moody's defines credit risk as the risk that an entity may not meet its contractual financial obligations as they become due and any estimated financial loss in the event of default or impairment. The contractual financial obligations² addressed by Moody's ratings are those that call for, without regard to enforceability, the payment of an ascertainable amount, which may vary based upon standard sources of variation (e.g., floating interest rates), by an ascertainable date. Moody's rating addresses the issuer's ability to obtain cash sufficient to service the obligation, and its willingness to pay.³ Moody's ratings do not address non-standard sources of variation in the amount of the principal obligation (e.g., equity indexed), absent an express statement to the contrary in a press release accompanying an initial rating.⁴ Long-term ratings are assigned to issuers or obligations with an original maturity of one year or more and reflect both on the likelihood of a default or impairment on contractually promised payments and the expected financial loss suffered in the event of default or impairment. Short-term ratings are assigned to obligations with an original maturity of thirteen months or less and reflect both on the likelihood of a default or impairment on contractually promised payments and the expected financial loss suffered in the event of default or impairment.^{5,6} Moody's issues ratings at the issuer level and instrument level on both the long-term scale and the short-term scale. Typically, ratings are made publicly available, although private and unpublished ratings may also be assigned.

Moody's differentiates structured finance ratings from fundamental ratings (i.e., ratings on nonfinancial corporate, financial institution, and public sector entities) on the global long-term scale by adding (sf) to all structured finance ratings.⁷ The addition of (sf) to structured finance ratings should eliminate any presumption that such ratings and fundamental ratings at the same letter grade level will behave the same. The (sf) indicator for structured finance security ratings indicates that otherwise similarly rated structured finance and fundamental securities may have different risk characteristics. Through its current methodologies, however, Moody's aspires to achieve broad expected equivalence in structured finance and fundamental rating performance when measured over a long period of time.

² In the case of impairments, there can be a financial loss even when contractual obligations are met. See the definition of Impairment in this Exhibit.

³ For issuer level ratings, see the definition of Issuer Ratings in this Exhibit. In some cases the relevant credit risk relates to a third party, in addition to, or instead of the issuer. Examples include credit-linked notes and guaranteed obligations.

⁴ Because the number of possible features or structures is limited only by the creativity of issuers, Moody's cannot comprehensively catalogue all the types of non-standard variation affecting financial obligations, but examples include indexed values, equity values and cash flows, prepayment penalties, and an obligation to pay an amount that is not ascertainable at the inception of the transaction.

⁵ For certain structured finance, preferred stock and hybrid securities in which payment default events are either not defined or do not match investors' expectations for timely payment, long-term and short-term ratings reflect the likelihood of impairment (as defined below in this publication) and financial loss in the event of impairment.

⁶ Supranational institutions and central banks that hold sovereign debt or extend sovereign loans, such as the IMF or the European Central Bank, may not always be treated similarly to other investors and lenders with similar credit exposures. Long-term and short-term ratings assigned to obligations held by both supranational institutions and central banks, as well as other investors, reflect only the credit risks faced by other investors unless specifically noted otherwise.

⁷ Like other global scale ratings, (sf) ratings reflect both the likelihood of a default and the expected loss suffered in the event of default. Ratings are assigned based on a rating committee's assessment of a security's expected loss rate (default probability multiplied by expected loss severity), and may be subject to the constraint that the final expected loss rating assigned would not be more than a certain number of notches, typically three to five notches, above the rating that would be assigned based on an assessment of default probability alone. The magnitude of this constraint may vary with the level of the rating, the seasoning of the transaction, and the uncertainty around the assessments of expected loss and probability of default.

Global Long-Term Rating Scale

Aaa	Obligations rated Aaa are judged to be of the highest quality, subject to the lowest level of credit risk.
Aa	Obligations rated Aa are judged to be of high quality and are subject to very low credit risk.
A	Obligations rated A are judged to be upper-medium grade and are subject to low credit risk.
Baa	Obligations rated Baa are judged to be medium-grade and subject to moderate credit risk and as such may possess certain speculative characteristics.
Ba	Obligations rated Ba are judged to be speculative and are subject to substantial credit risk.
B	Obligations rated B are considered speculative and are subject to high credit risk.
Caa	Obligations rated Caa are judged to be speculative of poor standing and are subject to very high credit risk.
Ca	Obligations rated Ca are highly speculative and are likely in, or very near, default, with some prospect of recovery of principal and interest.
C	Obligations rated C are the lowest rated and are typically in default, with little prospect for recovery of principal or interest.

Note: Moody's appends numerical modifiers 1, 2, and 3 to each generic rating classification from Aa through Caa. The modifier 1 indicates that the obligation ranks in the higher end of its generic rating category; the modifier 2 indicates a mid-range ranking; and the modifier 3 indicates a ranking in the lower end of that generic rating category. Additionally, a "(hyb)" indicator is appended to all ratings of hybrid securities issued by banks, insurers, finance companies, and securities firms.*

Note: For more information on long-term ratings assigned to obligations in default, please see the definition "Long-Term Credit Ratings for Defaulted or Impaired Securities" in the Other Definitions section of this publication.

** By their terms, hybrid securities allow for the omission of scheduled dividends, interest, or principal payments, which can potentially result in impairment if such an omission occurs. Hybrid securities may also be subject to contractually allowable write-downs of principal that could result in impairment. Together with the hybrid indicator, the long-term obligation rating assigned to a hybrid security is an expression of the relative credit risk associated with that security.*

Global Short-Term Rating Scale

P-1	Issuers (or supporting institutions) rated Prime-1 have a superior ability to repay short-term debt obligations.
P-2	Issuers (or supporting institutions) rated Prime-2 have a strong ability to repay short-term debt obligations.
P-3	Issuers (or supporting institutions) rated Prime-3 have an acceptable ability to repay short-term obligations.
NP	Issuers (or supporting institutions) rated Not Prime do not fall within any of the Prime rating categories.

Standard Linkage Between the Global Long-Term and Short-Term Rating Scales

The following table indicates the long-term ratings consistent with different short-term ratings when such long-term ratings exist.⁸

LONG-TERM RATING	SHORT-TERM RATING
Aaa Aa1 Aa2 Aa3 A1 A2 A3 Baa1 Baa2 Baa3	Prime-1 Prime-2 Prime-3
Ba1, Ba2, Ba3 B1, B2, B3 Caa1, Caa2, Caa3 Ca, C	Not Prime

US Municipal Short-Term Debt and Demand Obligation Ratings

Short-Term Obligation Ratings

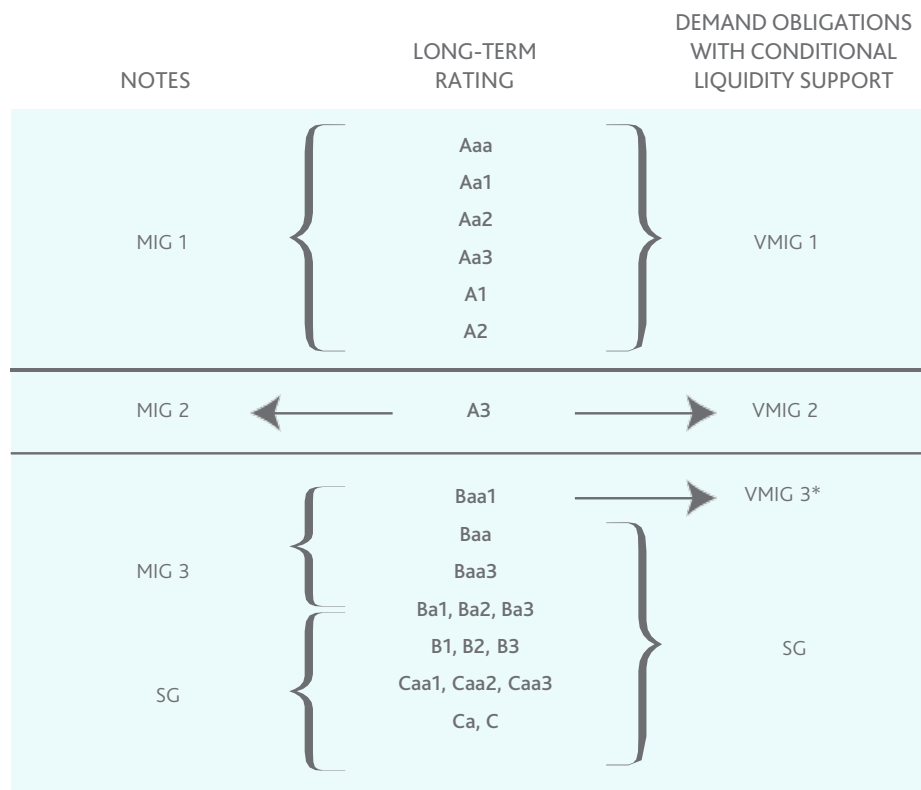
While the global short-term 'prime' rating scale is applied to US municipal tax-exempt commercial paper, these programs are typically backed by external letters of credit or liquidity facilities and their short-term prime ratings usually map to the long-term rating of the enhancing bank or financial institution and not to the municipality's rating. Other short-term municipal obligations, which generally have different funding sources for repayment, are rated using two additional short-term rating scales (i.e., the MIG and VMIG scales).

The Municipal Investment Grade (MIG) scale is used to rate US municipal bond anticipation notes of up to three years maturity. Municipal notes rated on the MIG scale may be secured by either pledged revenues or proceeds of a take-out financing received prior to note maturity. MIG ratings expire at the maturity of the obligation, and the issuer's long-term rating is only one consideration in assigning the MIG rating. MIG ratings are divided into three levels—MIG 1 through MIG 3—while speculative grade short-term obligations are designated SG.

MIG 1	This designation denotes superior credit quality. Excellent protection is afforded by established cash flows, highly reliable liquidity support, or demonstrated broad-based access to the market for refinancing.
MIG 2	This designation denotes strong credit quality. Margins of protection are ample, although not as large as in the preceding group.
MIG 3	This designation denotes acceptable credit quality. Liquidity and cash-flow protection may be narrow, and market access for refinancing is likely to be less well-established.
SG	This designation denotes speculative-grade credit quality. Debt instruments in this category may lack sufficient margins of protection.

⁸ Structured finance short-term ratings are usually based either on the short-term rating of a support provider or on an assessment of cash flows available to retire the financial obligation.

US Municipal Short-Term vs. Long-Term Ratings



* For VRDBs supported with conditional liquidity support, short-term ratings transition down at higher long-term ratings to reflect the risk of termination of liquidity support as a result of a downgrade below investment grade.

VMIG ratings of VRDBs with unconditional liquidity support reflect the short-term debt rating (or counterparty assessment) of the liquidity support provider with VMIG 1 corresponding to P-1, VMIG 2 to P-2, VMIG 3 to P-3 and SG to not prime.

For more complete discussion of these rating transitions, please see Annex B of Moody's Methodology titled [Variable Rate Instruments Supported by Conditional Liquidity Facilities](#)

Issuer Ratings

Issuer Ratings are opinions of the ability of entities to honor senior unsecured debt and debt like obligations.⁹ As such, Issuer Ratings incorporate any external support that is expected to apply to all current and future issuance of senior unsecured financial obligations and contracts, such as explicit support stemming from a guarantee of all senior unsecured financial obligations and contracts, and/or implicit support for issuers subject to joint default analysis (e.g. banks and government-related issuers). Issuer Ratings do not incorporate support arrangements, such as guarantees, that apply only to specific (but not to all) senior unsecured financial obligations and contracts.

While Issuer Ratings reflect the risk that debt and debt-like claims are not serviced on a timely basis, they do not reflect the risk that a contract or other non-debt obligation will be subjected to commercial disputes. Additionally, while an issuer may have senior unsecured obligations held by both supranational institutions and central banks (e.g., IMF, European Central Bank), as well as other investors, Issuer Ratings reflect only the risks faced by other investors.

Long-Term and Short-Term Obligation Ratings

Moody's assigns ratings to long-term and short-term financial obligations. Long-term ratings are assigned to issuers or obligations with an original maturity of one year or more and reflect both on the likelihood of a default on contractually promised payments and the expected financial loss suffered in the event of default. Short-term ratings are assigned to obligations with an original maturity of thirteen months or less and reflect both on the likelihood of a default on contractually promised payments and the expected financial loss suffered in the event of default.

⁹ Issuer Ratings as applied to US local governments typically reflect an unlimited general obligation pledge, which may have security and structural features in some states that improve credit quality for general obligation bondholders, but not necessarily for other counterparties holding obligations that may lack such features.

Definition of Default

Moody's definition of default is applicable only to debt or debt-like obligations (e.g., swap agreements). Four events constitute a debt default under Moody's definition:

- a. a missed or delayed disbursement of a contractually-obligated interest or principal payment (excluding missed payments cured within a contractually allowed grace period), as defined in credit agreements and indentures;
- b. a bankruptcy filing or legal receivership by the debt issuer or obligor that will likely cause a miss or delay in future contractually-obligated debt service payments;
- c. a distressed exchange whereby 1) an issuer offers creditors a new or restructured debt, or a new package of securities, cash or assets that amount to a diminished value relative to the debt obligation's original promise and 2) the exchange has the effect of allowing the issuer to avoid a likely eventual default; or
- d. a change in the payment terms of a credit agreement or indenture imposed by the sovereign that results in a diminished financial obligation, such as a forced currency re-denomination (imposed by the debtor, or the debtor's sovereign) or a forced change in some other aspect of the original promise, such as indexation or maturity¹⁰.

We include distressed exchanges in our definition of default in order to capture credit events whereby issuers effectively fail to meet their debt service obligations but do not actually file for bankruptcy or miss an interest or principal payment. Moody's employs fundamental analysis in assessing the likelihood of future default and considers various indicators in assessing loss relative to the original promise, which may include the yield to maturity of the debt being exchanged.

Moody's definition of default does not include so-called "technical defaults," such as maximum leverage or minimum debt coverage violations, unless the obligor fails to cure the violation and fails to honor the resulting debt acceleration which may be required. For structured finance securities, technical defaults (such as breach of an overcollateralization test or certain other events of default as per the legal documentation of the issuer), or a temporary missed interest payment on a security whose terms allow for the deferral of such payments together with corresponding interest (such as PIKable securities) prior to its legal final maturity date do not constitute defaults. Also excluded are payments owed on long-term debt obligations which are missed due to purely technical or administrative errors which are 1) not related to the ability or willingness to make the payments and 2) are cured in very short order (typically, 1-2 business days).

Finally, in select instances based on the facts and circumstances, missed payments on financial contracts or claims may be excluded if they are the result of legal disputes regarding the validity of those claims.

¹⁰ Moreover, unlike a general tax on financial wealth, the imposition of a tax by a sovereign on the coupon or principal payment on a specific class of government debt instruments (even if retroactive) would represent a default. Targeted taxation on government securities would represent a default even if the government's action were motivated by fairness or other considerations, rather than inability or unwillingness to pay.

Definition of Impairment

A security is impaired when investors receive – or expect to receive with near certainty – less value than would be expected if the obligor were not experiencing financial distress or otherwise prevented from making payments by a third party, even if the indenture or contractual agreement does not provide the investor with a natural remedy for such events, such as the right to press for bankruptcy.

Moody's definition of impairment is applicable to debt, preferred stock, and other hybrid securities. A security is deemed to be impaired if:

- a. all events that meet the definition of default (above);
- b. contractually-allowable payment omissions of scheduled dividends, interest or principal payments on debt, preferred stock or other hybrid instruments¹¹ or contractually allowable interruptions of interest payments to similar structured finance instruments¹²;
- c. downgrades to Ca or C, signaling the near certain expectation of a significant level of future losses;
- d. write-downs or "impairment distressed exchanges"¹³ on debt, preferred stock or other hybrid instruments due to financial distress whereby (1) the principal promise to an investor is reduced according to the terms of the indenture or other governing agreement¹⁴, or (2) an obligor offers investors a new or restructured debt, or a new package of securities, cash or assets and the exchange has the effect of allowing the obligor to avoid a contractually-allowable payment omission as described in (b) above¹⁵.

The impairment status of a security may change over time as it migrates from impaired to cured (e.g., if initially deferred cumulative preferred dividends are ultimately paid in full) and possibly back again to impaired.

Credit Rating Histories

The credit rating histories required to be disclosed pursuant to 17 CFR 17g-7(b) are located on Moody's website, www.moodys.com, at the following URL: <https://www.moodys.com/Pages/reg001004.aspx>.

¹¹ For example, a debt security would become impaired when an obligor exercises a payment-in-kind option on a toggle bond. Examples of impairment events on non-debt securities include dividend omissions on preferred stock (both cumulative and non-cumulative), coupon omissions on other hybrid debt securities, and write downs or conversions to equity of contingent capital securities (CoCos). Excluded from impairment events are 1) missed payments due to purely technical or administrative errors which are not related to the ability or willingness to make the payments and 2) are cured in very short order (typically, 1-2 business days after the error is recognized).

¹² Moody's studies of historical impairments are likely to focus on those impairments that are sustained and not cured. Among some structured finance asset classes, where cure rates within a 12-month time frame can be high, many impairments are not likely to be included in impairment studies.

¹³ Impairment distressed exchanges are similar to default distressed exchanges except that they have the effect of avoiding an impairment event, rather than a default event.

¹⁴ While contractually-allowable principal write-downs on structured finance securities are impairments, failures to pay principal as contractually required are defaults. Once written down, complete cures, in which securities are written back up to their original balances are extraordinarily rare; moreover, in most cases, a write-down of principal leads to an immediate and permanent loss of interest for investors, since the balance against which interest is calculated has been reduced.

¹⁵ Examples of such impairments include mandatory conversions of contingent capital securities to common equity and mandatory write-downs of other hybrid securities that are the direct result of obligor distress.