

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

(December 31, 2018 through December 31, 2019)

Credit Ratings as of 12/31/2018		Credit ratings as of 12/31/2019 (%)																					Other Outcomes During 12/31/2018 - 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	16	100.0%																							
AA+	3	33.3%	66.7%																						
AA	18			88.9%																				11.1%	
AA-	85				83.5%	12.9%																		3.5%	
A+	98				3.1%	92.9%																		4.1%	
A	183					0.5%	93.4%	2.7%	0.5%															2.7%	
A-	112					0.9%	4.5%	83.9%	2.7%			1.8%										0.9%		5.4%	
BBB+	179							3.4%	81.6%	10.6%	0.6%													3.9%	
BBB	142								7.7%	81.0%	3.5%													7.7%	
BBB-	128								0.8%	24.2%	66.4%	3.9%												4.7%	
BB+	90										22.2%	62.2%	5.6%	4.4%									1.1%	4.4%	
BB	225										2.2%	5.8%	84.9%	1.8%	1.8%									3.6%	
BB-	107													52.3%	23.4%									6.5%	
B+	75													17.8%	68.0%	4.0%								13.3%	
B	67														10.4%		4.5%		6.0%		11.9%			9.0%	
B-	42															19.0%	66.7%					4.8%		9.5%	
CCC+	4																	75.0%	25.0%						
CCC	2																	50.0%	50.0%						
CCC-																									
CC	6																				33.3%			66.7%	
C	1																							100.0%	
TOTAL	1583																								

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

(December 31, 2016 through December 31, 2019)

Credit Ratings as of 12/31/2016		Credit ratings as of 12/31/2019 (%)																					Other Outcomes During 12/31/2016 - 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	14	92.9%																							
AA+	3	33.3%	66.7%																						
AA	16			62.5%	31.3%																				
AA-	82			3.7%	62.2%	15.9%			6.1%																
A+	96				10.4%	64.6%	12.5%		1.0%																
A	153				0.7%	11.1%	73.9%	6.5%	2.0%														2.1%		
A-	135					1.5%	22.2%	51.1%	11.1%	3.7%	0.7%														
BBB+	141					1.4%	4.3%	9.2%	53.2%	13.5%	0.7%	1.4%										0.7%			
BBB	152							0.7%	25.0%	44.1%	7.2%	2.0%	0.7%		11.2%										
BBB-	161								0.6%	24.8%	37.3%	8.7%	4.3%	3.1%	6.2%								0.6%		
BB+	80								1.3%	6.3%	25.0%	28.8%	6.3%	5.0%	13.8%								1.3%	1.3%	
BB	218								0.5%	6.0%			76.1%	4.6%	0.9%	1.4%							0.5%		
BB-	77										1.3%	7.8%	22.1%	27.3%	7.8%	2.6%	2.6%								
B+	47							2.1%					6.4%	36.2%	29.8%	6.4%									
B	53													3.8%	22.6%	15.1%	11.3%		1.9%		11.3%		3.8%		
B-	53														3.8%	37.7%	18.9%				1.9%		9.4%		
CCC+																									
CCC	11															18.2%	9.1%				54.5%				
CCC-																									
CC																									
C	1																					100.0%			
TOTAL	1493																								

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

(December 31, 2009 through December 31, 2019)

Credit Ratings as of 12/31/2009		Credit ratings as of 12/31/2019 (%)																					Other Outcomes During 12/31/2009 - 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	16	62.5%						6.3%																	31.3%
AA+	3		33.3%																						66.7%
AA	27			7.4%	18.5%	29.6%		7.4%	11.1%																25.9%
AA-	122			5.7%	27.9%	10.7%	9.0%	4.1%		4.9%		1.6%													36.1%
A+	160			0.6%	8.1%	22.5%	13.8%	5.0%	5.0%	0.6%	1.3%		0.6%										1.3%		41.3%
A	109					1.8%	32.1%	15.6%	3.7%	4.6%	3.7%	2.8%	2.8%	0.9%									3.7%		28.4%
A-	137				1.5%	2.2%	9.5%	14.6%	11.7%	3.6%	0.7%	2.2%	1.5%	0.7%	0.7%									1.5%	49.6%
BBB+	129				0.8%		1.6%	7.8%	14.0%	8.5%	3.1%	2.3%	0.8%	0.8%										5.4%	55.0%
BBB	127							5.5%	10.2%	15.7%	4.7%	3.9%	2.4%	0.8%			0.8%							2.4%	53.5%
BBB-	88						1.1%	1.1%		9.1%	14.8%	4.5%	3.4%	11.4%	2.3%									1.1%	51.1%
BB+	45								2.2%	8.9%	15.6%	6.7%	13.3%	4.4%	17.8%	2.2%								4.4%	24.4%
BB	55									10.9%	14.5%	14.5%	5.5%	7.3%	3.6%							1.8%			41.8%
BB-	56								1.8%		7.1%	3.6%	5.4%	3.6%	3.6%										67.9%
B+	39											2.6%	2.6%	7.7%	7.7%	2.6%	5.1%					7.7%	10.3%		53.8%
B	55										5.5%	12.7%	3.6%	9.1%	3.6%		3.6%		1.8%		5.5%	3.6%	3.6%		50.9%
B-	58									1.7%			6.9%	1.7%		10.3%	3.4%				8.6%		12.1%		55.2%
CCC+																									
CCC	21									28.6%					9.5%						9.5%	9.5%			42.9%
CCC-	1																								100.0%
CC	3																								66.7%
C	5																					20.0%	80.0%		
TOTAL	1256																								

B. Insurance Companies - 1-Year Transition and Default Rates

(December 31, 2018 through December 31, 2019)

Credit Ratings as of 12/31/2018		Credit ratings as of 12/31/2019 (%)																				Other Outcomes During 12/31/2018 - 12/31/2019 (%)			
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA																									
AA+	6		100.0%																						
AA	21			95.2%																				4.8%	
AA-	155				100.0%																				
A+	157				0.6%	87.3%	0.6%																	11.5%	
A	231					1.3%	94.8%	0.4%																3.5%	
A-	190						7.9%	87.4%	2.1%															2.6%	
BBB+	123							7.3%	88.6%	2.4%														1.6%	
BBB	48								22.9%	68.8%														8.3%	
BBB-	22								4.5%	45.5%	36.4%	4.5%												9.1%	
BB+	12							8.3%		8.3%	25.0%	50.0%												8.3%	
BB	10											10.0%	60.0%	20.0%										10.0%	
BB-	2												50.0%	50.0%											
B+	10													20.0%	60.0%	10.0%								10.0%	
B	17													5.9%	5.9%	58.8%	11.8%							17.6%	
B-	6															33.3%	16.7%							50.0%	
CCC+	2																		100.0%						
CCC																									
CCC-																									
CC																									
C																									
TOTAL	1012																								

B. Insurance Companies - 3-Year Transition and Default Rates

(December 31, 2016 through December 31, 2019)

Credit Ratings as of 12/31/2016		Credit ratings as of 12/31/2019 (%)																				Other Outcomes During 12/31/2016 - 12/31/2019 (%)			
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA																									
AA+	6		100.0%																						
AA	21			90.5%																				9.5%	
AA-	154				95.5%	1.9%																		2.6%	
A+	146				1.4%	76.7%	2.1%	4.8%																15.1%	
A	249					4.0%	77.5%	6.4%	0.8%															11.2%	
A-	178					2.8%	13.5%	69.7%	2.8%	1.1%														10.1%	
BBB+	122						1.6%	13.9%	76.2%	1.6%														6.6%	
BBB	36					2.8%		8.3%	25.0%	50.0%														13.9%	
BBB-	23								17.4%	39.1%	26.1%	4.3%		4.3%										8.7%	
BB+	13							7.7%				15.4%	7.7%											69.2%	
BB	6									16.7%	16.7%	16.7%	33.3%											16.7%	
BB-	7											42.9%	14.3%				14.3%		28.6%						
B+	6													33.3%	50.0%	16.7%									
B	10													10.0%		40.0%								50.0%	
B-	4															75.0%							25.0%		
CCC+																									
CCC																									
CCC-																									
CC																									
C																									
TOTAL	981																								

B. Insurance Companies - 10-Year Transition and Default Rates

(December 31, 2009 through December 31, 2019)

Credit Ratings as of 12/31/2009		Credit ratings as of 12/31/2019 (%)																					Other Outcomes During 12/31/2009 - 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	1																								
AA+	7		28.6%	14.3%	57.1%																				
AA	3				66.7%																				
AA-	21			4.8%	47.6%	33.3%	4.8%	4.8%																	
A+	44				11.4%	31.8%	13.6%	9.1%	2.3%																
A	49				2.0%	34.7%	18.4%	8.2%	6.1%																
A-	59					1.7%	16.9%	16.9%	3.4%																
BBB+	59				1.7%		13.6%	11.9%	10.2%	10.2%															
BBB	37						8.1%	10.8%	16.2%	8.1%															
BBB-	22								4.5%	27.3%															
BB+	5								20.0%																
BB	7													28.6%											
BB-	5											20.0%													
B+	2								50.0%	50.0%															
B																									
B-	2																								
CCC+																									
CCC																									
CCC-																									
CC																									
C																									
TOTAL	323																								

C. Corporate issuers - 1-Year Transition and Default Rates

(December 31, 2018 through December 31, 2019)

Credit Ratings as of 12/31/2018		Credit ratings as of 12/31/2019 (%)																					Other Outcomes During 12/31/2018 - 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	1																							100.0%	
AA+	1		100.0%																						
AA	6			100.0%																					
AA-	14				85.7%	14.3%																			
A+	49					75.5%	18.4%																	6.1%	
A	107					1.9%	86.0%	5.6%	0.9%															5.6%	
A-	159						1.3%	90.6%	5.0%														0.6%	2.5%	
BBB+	251						0.8%	6.4%	79.3%	5.2%	2.4%	0.8%												5.2%	
BBB	302							0.3%	8.3%	82.1%	3.3%		0.3%										0.7%	5.0%	
BBB-	344								0.3%	13.4%	75.3%	3.2%	1.5%	0.6%		0.3%							0.6%	0.6%	4.4%
BB+	138										5.8%	75.4%	8.7%	4.3%										0.7%	5.1%
BB	166										2.4%	5.4%	71.7%	9.6%	3.0%									1.2%	6.6%
BB-	139											7.2%	67.6%	7.9%	5.8%			2.2%	0.7%				0.7%		7.9%
B+	142									0.7%			1.4%	8.5%	54.2%	5.6%	4.2%	2.1%					2.1%	0.7%	20.4%
B	284													0.7%	4.2%	57.4%	13.0%	2.8%	8.5%	0.4%		0.4%	1.8%	1.1%	9.9%
B-	232														0.4%	6.5%		56.9%	7.3%	4.3%	1.7%	2.2%	0.9%	2.6%	17.2%
CCC+	30																	23.3%	26.7%	16.7%	10.0%		3.3%		20.0%
CCC	24																	4.2%	4.2%	25.0%	25.0%		20.8%		12.5%
CCC-	6																		16.7%		16.7%	33.3%	16.7%		16.7%
CC	7																				14.3%		71.4%	14.3%	
C	5																						100.0%		
TOTAL	2407																								

C. Corporate issuers - 3-Year Transition and Default Rates

(December 31, 2016 through December 31, 2019)

Credit Ratings as of 12/31/2016		Credit ratings as of 12/31/2019 (%)																				Other Outcomes During 12/31/2016 - 12/31/2019 (%)			
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	1																								
AA+	1		100.0%																						
AA	8			50.0%	12.5%	12.5%																		25.0%	
AA-	18				55.6%	5.6%			5.6%															33.3%	
A+	59				1.7%	52.5%	25.4%	6.8%															1.7%	11.9%	
A	101					5.0%	59.4%	9.9%	7.9%	2.0%														15.8%	
A-	157						8.9%	65.6%	4.5%	1.9%	1.3%													17.8%	
BBB+	262						1.1%	12.6%	55.0%	10.7%	1.5%	0.4%					0.4%						0.8%	0.8%	16.8%
BBB	256							1.6%	11.3%	63.3%	9.0%	0.4%	1.2%	0.4%		0.4%								0.8%	11.7%
BBB-	288								2.4%	21.9%	51.0%	5.2%	2.4%	2.4%				1.0%						0.7%	12.8%
BB+	140									3.6%	22.9%	32.1%	19.3%	2.9%	1.4%						0.7%				17.1%
BB	104									1.0%	2.9%	11.5%	43.3%	9.6%	1.0%	1.0%	1.0%		5.8%				1.0%	1.9%	20.2%
BB-	102										2.9%	2.0%	14.7%	39.2%	3.9%	2.0%	2.9%					2.0%			30.4%
B+	133									0.8%	0.8%	0.8%	3.8%	10.5%	22.6%	6.8%	3.8%	3.8%	0.8%	0.8%	0.8%	0.8%	3.8%	1.5%	38.3%
B	151													0.7%	3.3%	17.2%	9.3%	1.3%	6.6%	3.3%	1.3%	1.3%	6.0%	2.6%	47.0%
B-	57													1.8%	3.5%	10.5%	7.0%	3.5%	1.8%	1.8%	5.3%	3.5%	7.0%		54.4%
CCC+																									
CCC	34													14.7%		14.7%			11.8%		5.9%		23.5%	2.9%	26.5%
CCC-																									
CC	13														15.4%						53.8%	7.7%	15.4%		7.7%
C	2																						100.0%		
TOTAL	1887																								

C. Corporate issuers - 10-Year Transition and Default Rates

(December 31, 2009 through December 31, 2019)

Credit Ratings as of 12/31/2009		Credit ratings as of 12/31/2019 (%)																					Other Outcomes During 12/31/2009 - 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	2																								
AA+	6		16.7%		16.7%	16.7%																			
AA	11			9.1%	18.2%				9.1%																
AA-	13			7.7%		7.7%	23.1%	15.4%	7.7%																
A+	71				11.3%	14.1%	19.7%	12.7%	2.8%	4.2%													1.4%	33.8%	
A	126					3.2%	20.6%	27.0%	11.9%	2.4%	0.8%	0.8%			0.8%				4.0%				2.4%	26.2%	
A-	125					1.6%	3.2%	21.6%	15.2%	12.8%	8.8%	1.6%	0.8%			0.8%						0.8%		32.8%	
BBB+	151						2.6%	11.3%	27.8%	19.9%	4.0%	1.3%		1.3%										31.8%	
BBB	223						0.9%	7.2%	13.0%	19.7%	7.2%	2.7%	1.8%	0.9%			0.4%					0.4%	2.7%	43.0%	
BBB-	185							3.8%	9.7%	16.2%	15.7%	2.2%	3.2%	1.1%	0.5%	0.5%		1.6%			0.5%		0.5%	1.6%	42.7%
BB+	92								5.4%	15.2%	16.3%	6.5%	3.3%			1.1%	1.1%					2.2%	3.3%	45.7%	
BB	83									10.8%	8.4%	3.6%	6.0%	1.2%	2.4%				1.2%			1.2%	4.8%	3.6%	56.6%
BB-	82									8.5%	2.4%	3.7%	9.8%	4.9%	2.4%	2.4%		1.2%	1.2%			2.4%	4.9%	56.1%	
B+	59								1.7%	3.4%	1.7%	1.7%	8.5%	5.1%	3.4%	5.1%	1.7%				6.8%	6.8%	1.7%	52.5%	
B	91										2.2%	3.3%	3.3%		1.1%	1.1%		2.2%			1.1%	9.9%	1.1%	74.7%	
B-	53										1.9%		7.5%	1.9%	5.7%	1.9%	1.9%		1.9%		1.9%	11.3%	3.8%	60.4%	
CCC+																									
CCC	25									4.0%			8.0%	4.0%	4.0%	8.0%						20.0%	4.0%	48.0%	
CCC-																									
CC	5																				20.0%		60.0%	20.0%	
C	3																						33.3%	66.7%	
TOTAL	1406																								

D(i) Residential mortgage backed securities ("RMBS") - 1-Year Transition and Default Rates

(December 31, 2018 through December 31, 2019)

Credit Ratings as of 12/31/2018		Credit ratings as of 12/31/2019 (%)																					Other Outcomes During 12/31/2018 - 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	3,156	86.8%	0.03%	0.2%			0.1%						0.03%			0.03%			0.03%		0.03%			12.4%	0.4%
AA+	155	30.3%	65.2%																					4.5%	
AA	739	36.7%	1.9%	46.7%			1.4%			0.3%												0.1%	0.3%	12.2%	0.5%
AA-	50	24.0%	22.0%	10.0%	38.0%																			4.0%	2.0%
A+	220	3.6%	5.9%	0.5%	2.7%	73.2%	0.5%	0.9%	0.9%						0.5%	0.5%								10.9%	
A	1,382	3.8%	0.8%	15.1%	0.4%	2.2%	61.9%	0.1%	0.1%	1.9%			0.9%						0.1%		0.1%			11.5%	1.2%
A-	88			18.2%	4.5%	15.9%	17.0%	31.8%	4.5%															8.0%	
BBB+	92	2.2%	2.2%	3.3%	3.3%	32.6%	4.3%	7.6%	35.9%															8.7%	
BBB	1,297	0.5%	0.1%	1.9%	0.2%	1.2%	22.4%	0.4%	1.3%	58.3%		0.1%	6.0%			0.6%			0.2%			0.1%	4.5%	2.2%	
BBB-	77				1.3%	1.3%	3.9%	39.0%	7.8%	16.9%	28.6%												1.3%		
BB+	153						0.7%	2.0%	49.0%	9.2%	9.8%	22.2%												7.2%	
BB	2,262			0.4%			3.9%	0.04%	0.4%	28.4%	2.4%	2.1%	55.1%	0.04%	0.1%	1.3%	0.04%		0.7%			0.2%	2.8%	2.1%	
BB-	326				0.6%			0.6%		0.3%	32.2%	30.7%	12.9%	21.2%		0.3%								1.2%	
B+	58							3.4%		1.7%	6.9%	50.0%	6.9%	27.6%										3.4%	
B	1,415			0.2%		0.1%	1.0%			5.9%		0.1%	33.4%	5.2%	6.6%	37.0%			3.7%		1.1%	0.2%	0.3%	3.4%	1.8%
B-	16											6.3%	6.3%		6.3%	68.8%	12.5%								
CCC+																									
CCC	984						0.1%			1.5%	0.2%	0.1%	11.1%	0.3%	0.6%	29.9%	0.2%		41.3%		4.9%	5.2%	0.4%	2.6%	1.6%
CCC-																									
CC	781												0.9%			9.5%	0.1%		24.8%		42.8%	14.2%	4.2%	1.3%	2.2%
C	1,711												0.1%			0.6%			2.8%		8.8%	72.9%	11.1%	1.0%	2.7%
TOTAL	14962																								

D(i) Residential mortgage backed securities ("RMBS") - 3-Year Transition and Default Rates

(December 31, 2016 through December 31, 2019)

Credit Ratings as of 12/31/2016		Credit ratings as of 12/31/2019 (%)																				Other Outcomes During 12/31/2016 - 12/31/2019 (%)			
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	2280	64.4%	0.04%	0.4%	0.04%	0.4%	0.3%	0.04%		0.1%			0.04%		0.3%				0.04%			0.04%		33.7%	0.4%
AA+	202	25.2%	7.4%	16.3%		2.5%	0.5%		0.5%						0.5%									47.0%	
AA	849	24.7%	0.9%	15.2%		0.9%	4.6%	0.1%		5.3%			0.4%								0.1%	0.1%	0.4%	44.9%	2.4%
AA-	72	22.2%	11.1%	5.6%	11.1%	1.4%	2.8%	1.4%							2.8%									40.3%	1.4%
A+	123	7.3%	3.3%	5.7%	1.6%	30.1%	2.4%		0.8%	0.8%								0.8%						47.2%	
A	1896	12.3%	0.6%	6.2%	0.3%	2.1%	28.2%	0.1%	0.1%	6.1%			2.1%		0.1%	0.2%		0.1%		0.1%	0.1%	0.5%	38.3%	2.7%	
A-	94	7.4%	2.1%	2.1%	2.1%	14.9%	8.5%	6.4%	1.1%		1.1%					3.2%								50.0%	
BBB+	76	5.3%	2.6%		5.3%	22.4%	6.6%	3.9%	17.1%	2.6%						1.3%				1.3%				31.6%	
BBB	1561	5.4%	0.1%	6.0%	0.2%	1.5%	11.6%	0.1%	0.7%	29.1%		0.1%	9.9%		1.0%			0.3%			0.3%	1.6%	25.6%	6.3%	
BBB-	104	20.2%	18.3%	3.8%	1.9%	16.3%	1.0%	5.8%	2.9%	3.8%			2.9%		1.9%			1.0%						20.2%	
BB+	81	4.9%		8.6%	3.7%	23.5%	4.9%	12.3%	7.4%	1.2%	3.7%	6.2%	1.2%			2.5%		1.2%						18.5%	
BB	2251	1.5%	0.2%	1.9%	0.1%	0.5%	8.6%	0.3%	0.9%	15.4%	0.2%	0.2%	39.0%	0.04%	0.2%	1.6%		1.0%			0.1%	0.4%	2.6%	18.5%	6.4%
BB-	27					3.7%		11.1%	3.7%	22.2%	3.7%	14.8%	7.4%				3.7%							25.9%	3.7%
B+	44				4.5%	4.5%		2.3%	25.0%	15.9%	4.5%	15.9%	4.5%		4.5%								2.3%	15.9%	
B	1571	0.4%		1.4%	0.1%	0.4%	7.3%	0.6%	0.3%	14.3%	0.8%	0.6%	23.6%	0.2%	0.4%	16.6%		4.5%			1.8%	2.2%	3.4%	15.7%	5.4%
B-	25								4.0%		24.0%		12.0%	8.0%	8.0%	8.0%								12.0%	
CCC+																									
CCC	1779	0.3%		0.6%		0.1%	3.0%	0.1%	0.1%	10.1%	0.1%	0.4%	15.7%	0.4%	0.4%	15.2%	0.17%		19.8%		5.8%	9.3%	5.7%	9.9%	2.9%
CCC-																									
CC	1665			0.1%			0.4%			1.5%			4.5%	0.1%	0.1%	8.7%	0.1%		14.1%		21.0%	27.3%	14.4%	5.4%	2.3%
C	2042												0.3%			0.7%			1.1%		2.9%	36.3%	28.5%	2.0%	28.2%
TOTAL	16742																								

D(i) Residential mortgage backed securities ("RMBS") - 10-Year Transition and Default Rates

(December 31, 2009 through December 31, 2019)

Credit Ratings as of 12/31/2009		Credit ratings as of 12/31/2019 (%)																				Other Outcomes During 12/31/2009 - 12/31/2019 (%)			
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	12449	2.6%	0.1%	1.4%	0.02%	0.3%	3.9%	0.01%	0.01%	4.9%	0.02%	0.02%	5.0%		0.02%	1.2%			0.4%		0.3%	0.5%	1.6%	62.1%	15.6%
AA+	488	2.9%	0.2%	2.0%		1.0%	4.3%			9.2%			5.1%	0.2%		4.1%			3.1%		1.2%	0.6%	1.2%	55.3%	9.4%
AA	1880	2.9%	0.3%	1.3%	0.1%	0.6%	2.6%	0.2%	0.2%	6.6%	0.2%		12.8%			3.2%			2.6%		0.7%	2.9%	5.3%	45.3%	12.2%
AA-	216	1.4%		0.9%	1.9%	1.9%	6.5%	1.4%	0.5%	6.5%		0.5%	0.9%			2.3%			1.4%		1.4%	3.2%	3.2%	51.9%	14.4%
A+	247	2.0%	0.8%	2.0%		3.2%	4.0%	2.0%	0.4%	2.4%			2.4%		0.4%	5.3%			1.2%		2.0%	2.8%	4.0%	57.5%	7.3%
A	1817	1.7%	0.3%	1.7%	0.4%	1.0%	3.3%	0.2%	0.3%	4.3%	0.1%	0.1%	11.3%	0.1%	0.1%	3.2%	0.1%		3.0%		1.8%	3.3%	7.7%	46.0%	10.2%
A-	127	2.4%	1.6%	2.4%	1.6%	4.7%	3.1%	3.1%	0.8%	3.1%	0.8%	0.8%	3.9%	0.8%		4.7%			1.6%			4.7%	7.1%	41.7%	11.0%
BBB+	159		0.6%	3.1%		5.7%	1.9%	1.3%	3.8%	3.8%		1.3%	2.5%			3.1%			2.5%		5.7%	1.9%	10.7%	43.4%	8.8%
BBB	2425	0.5%	0.04%	0.8%	0.04%	0.7%	3.0%	0.2%	0.3%	3.6%	0.1%	0.2%	9.4%	0.1%	0.1%	3.8%			4.0%		3.2%	5.8%	19.5%	35.3%	8.9%
BBB-	143	1.4%	0.7%	1.4%	0.7%	2.1%	1.4%	1.4%	0.7%	1.4%	1.4%	1.4%	2.8%		0.7%	3.5%	0.7%		6.3%		2.8%	6.3%	12.6%	39.9%	10.5%
BB+	70			11.4%		1.4%	1.4%		2.9%	1.4%		2.9%	2.9%		2.9%	4.3%			5.7%		1.4%	5.7%	17.1%	27.1%	11.4%
BB	1409	0.8%	0.1%	0.2%	0.2%	0.2%	2.9%	0.1%	0.8%	4.1%			4.4%	0.1%		4.0%	0.1%		5.0%		3.6%	5.7%	32.6%	25.5%	9.6%
BB-	72								2.8%	2.8%			4.2%		1.4%	1.4%			8.3%		4.2%	6.9%	19.4%	40.3%	8.3%
B+	36						13.9%						2.8%			2.8%			2.8%		5.6%	5.6%	25.0%	27.8%	13.9%
B	1886	0.5%		1.1%		0.1%	2.8%		0.4%	2.7%	0.1%	0.2%	4.9%	0.1%	0.1%	3.6%			3.1%		3.3%	6.3%	42.6%	17.8%	10.2%
B-	14	7.1%					7.1%			7.1%	7.1%											7.1%	57.1%	7.1%	
CCC+																									
CCC	5034	0.3%		0.7%	0.04%		3.6%	0.04%	0.04%	2.5%	0.1%	0.1%	2.9%		0.1%	1.3%	0.02%		2.0%		1.5%	3.9%	65.4%	7.9%	7.5%
CCC-	1																				100.0%				
CC	6797	0.1%	0.01%	0.1%	0.03%		0.8%			1.9%	0.03%	0.1%	2.0%	0.1%	0.03%	1.8%			2.1%		1.8%	6.2%	71.0%	3.8%	8.3%
C	8614							0.03%		0.1%		0.03%	0.2%	0.01%	0.01%	0.3%			0.4%		0.5%	2.7%	83.5%	1.4%	10.8%
TOTAL	43884																								

D(ii) Commercial mortgage backed securities ("CMBS") - 1-Year Transition and Default Rates

(December 31, 2018 through December 31, 2019)

Credit Ratings as of 12/31/2018		Credit ratings as of 12/31/2019 (%)																				Other Outcomes During 12/31/2018 - 12/31/2019 (%)			
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	2785	94.4%																						5.6%	
AA+	10	20.0%	80.0%																						
AA	118	11.0%	1.7%	78.8%																				8.5%	
AA-	457	0.4%		3.7%	94.1%		1.1%																	0.7%	
A+	16			6.3%		81.3%																		12.5%	
A	158	4.4%		3.8%			70.3%			0.6%														20.9%	
A-	446			0.7%			4.9%	92.4%		1.3%														0.7%	
BBB+	63						1.6%		93.7%	3.2%														1.6%	
BBB	152	1.3%					2.0%			88.8%														7.9%	
BBB-	592	0.8%					0.2%			0.7%	95.1%		1.2%			0.5%	0.2%							1.4%	
BB+	44											95.5%							2.3%					2.3%	
BB	179	1.1%					2.2%			0.6%			78.2%			5.0%	1.1%		3.4%					8.4%	
BB-	287													93.0%		2.4%	1.7%		0.3%					2.4%	
B+	3														100.0%										
B	168						0.6%			1.2%			1.2%			66.7%	2.4%		12.5%		0.6%			14.9%	
B-	236																94.1%		4.2%		0.4%			1.3%	
CCC+	1																	100.0%							
CCC	78	2.6%								2.6%			5.1%			2.6%			46.2%		19.2%	6.4%	5.1%	10.3%	
CCC-																									
CC	68									1.5%			2.9%			4.4%			1.5%		38.2%	30.9%	16.2%	4.4%	
C	174																		0.6%		1.1%	49.4%	40.8%	3.4%	
TOTAL	6035																							4.6%	

D(ii) Commercial mortgage backed securities ("CMBS") - 3-Year Transition and Default Rates

(December 31, 2016 through December 31, 2019)

Credit Ratings as of 12/31/2016		Credit ratings as of 12/31/2019 (%)																					Other Outcomes During 12/31/2016 - 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	2207	72.2%																						27.8%	
AA+	7	14.3%	28.6%																					57.1%	
AA	127	15.0%	2.4%	54.3%																				28.3%	
AA-	279	1.8%		7.5%	83.2%		1.4%	0.4%																5.4%	
A+	30	43.3%				30.0%																		26.7%	
A	285	7.7%		3.5%		0.4%	30.9%			1.1%														56.5%	
A-	335	0.3%	0.3%	0.9%	3.3%		9.0%	73.1%		1.8%	0.3%													7.5%	
BBB+	61						1.6%		57.4%	27.9%														13.1%	
BBB	139	4.3%	1.4%	2.2%			2.2%	0.7%		38.1%			0.7%					0.7%			0.7%		0.7%	48.2%	
BBB-	391	1.3%		0.5%	0.8%		1.3%	0.5%		1.5%	78.0%		2.3%	0.3%		1.5%	0.3%		0.3%					10.0%	
BB+	38						2.6%			15.8%	57.9%								5.3%					18.4%	
BB	237	3.0%					0.4%			2.5%			49.4%			3.4%	0.8%		3.4%		0.4%	0.4%	0.8%	35.0%	
BB-	174													77.0%		4.0%	4.0%		2.9%					12.1%	
B+	4														25.0%	25.0%							25.0%	25.0%	
B	201	3.0%					1.0%			0.5%			0.5%			45.3%	2.0%		9.5%		2.5%	2.0%	2.5%	31.3%	
B-	139																76.3%		7.2%		3.6%			12.9%	
CCC+	1																	100.0%							
CCC	190	1.6%					0.5%			2.1%			1.6%			2.6%			12.1%		10.0%	6.3%	16.3%	44.7%	
CCC-																								2.1%	
CC	173	0.6%					0.6%			1.2%			2.3%			2.3%			2.9%		6.9%	20.2%	38.2%	23.7%	
C	312									0.3%			1.0%			0.6%			1.0%		1.0%	18.9%	67.6%	4.5%	
TOTAL	5330																							5.1%	

D(ii) Commercial mortgage backed securities ("CMBS") - 10-Year Transition and Default Rates

(December 31, 2009 through December 31, 2019)

Credit Ratings as of 12/31/2009		Credit ratings as of 12/31/2019 (%)																				Other Outcomes During 12/31/2009 - 12/31/2019 (%)			
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	3153	0.9%					0.03%						0.03%			0.03%			0.03%		0.03%	0.1%	0.3%	77.8%	20.6%
AA+	129	2.3%	0.8%													0.8%					0.8%		2.3%	92.2%	0.8%
AA	366	0.5%	0.5%	6.0%		0.5%	0.5%			0.5%			0.5%			0.3%			0.8%			0.8%	4.6%	81.7%	2.5%
AA-	136	0.7%								2.2%											0.7%	0.7%	8.1%	86.0%	1.5%
A+	130	0.8%		0.8%		0.8%	0.8%			0.8%						1.5%			0.8%		0.8%	0.8%	2.3%	89.2%	0.8%
A	397	1.8%		0.3%			1.5%			0.8%			1.0%			1.3%			1.0%		1.8%	2.3%	12.6%	72.8%	3.0%
A-	174	0.6%					1.1%			0.6%	1.7%		1.1%						1.1%		1.7%		11.5%	78.7%	1.7%
BBB+	171	0.6%					0.6%			1.2%											1.2%	1.2%	15.8%	78.4%	1.2%
BBB	420	0.5%	0.5%	0.5%		0.2%	0.5%			3.1%			0.7%			1.0%			1.2%		1.2%	3.1%	23.8%	62.4%	1.4%
BBB-	318	1.3%				0.3%	0.6%			0.9%			0.3%			0.6%			1.3%		0.9%	5.0%	25.5%	60.4%	2.8%
BB+	154	1.9%					0.6%					0.6%	1.3%			0.6%					0.6%	1.9%	27.9%	62.3%	1.9%
BB	493	0.8%								0.6%			1.8%			0.2%			1.4%		0.8%	5.5%	48.1%	38.3%	2.4%
BB-	135	0.7%														0.7%			0.7%				55.6%	41.5%	0.7%
B+	117												0.9%		0.9%								59.8%	38.5%	
B	414	0.5%														0.2%			0.2%		1.2%	2.4%	55.6%	29.5%	10.4%
B-	725	0.1%								0.3%			0.1%			0.4%					0.1%	0.3%	90.8%	7.3%	0.6%
CCC+	1																	100.0%							
CCC	378																		0.8%			1.3%	82.5%	10.6%	4.8%
CCC-	2																						100.0%		
CC	187																					2.7%	90.4%	4.3%	2.7%
C	199																					4.0%	80.9%	6.0%	9.0%
TOTAL	8199																								

D(iii) Collateralized loan obligations ("CLOs") - 1-Year Transition and Default Rates

(December 31, 2018 through December 31, 2019)

Credit Ratings as of 12/31/2018		Credit ratings as of 12/31/2019 (%)																				Other Outcomes During 12/31/2018 - 12/31/2019 (%)			
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	1292	87.8%																						12.2%	
AA+	16		93.8%																					6.3%	
AA	311	0.6%	2.9%	91.0%																				5.5%	
AA-	1				100.0%																				
A+	8			25.0%		50.0%																		25.0%	
A	186	0.5%				4.3%	88.2%																	7.0%	
A-	12							91.7%																8.3%	
BBB+	2					50.0%																		50.0%	
BBB	123								5.7%	87.8%														6.5%	
BBB-	48										95.8%													4.2%	
BB+	4											75.0%												25.0%	
BB	133											1.5%	94.0%											4.5%	
BB-	28													100.0%											
B+																									
B	17														11.8%	88.2%									
B-	146													0.7%		2.1%	93.2%							4.1%	
CCC+																									
CCC																									
CCC-																									
CC																									
C																									
TOTAL	2327																								

D(iii) Collateralized loan obligations ("CLOs") - 3-Year Transition and Default Rates

(December 31, 2016 through December 31, 2019)

Credit Ratings as of 12/31/2016		Credit ratings as of 12/31/2019 (%)																					Other Outcomes During 12/31/2016 - 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	682	3.7%																						96.3%	
AA+	46																							100.0%	
AA	115	1.7%		4.3%																				93.9%	
AA-																									
A+	27			7.4%																				92.6%	
A	87						2.3%																	97.7%	
A-	8	12.5%						37.5%																37.5%	12.5%
BBB+	21					4.8%																		95.2%	
BBB	88									3.4%														96.6%	
BBB-	10										30.0%													70.0%	
BB+	16											18.8%												81.3%	
BB	92											2.2%	14.1%											83.7%	
BB-	2																							100.0%	
B+	8																							100.0%	
B	20														5.0%	20.0%								75.0%	
B-	67													1.5%		3.0%	19.4%							76.1%	
CCC+																									
CCC	1																							100.0%	
CCC-																									
CC	4																						100.0%		
C																									
TOTAL	1294																								

D(iii) Collateralized loan obligations ("CLOs") - 10-Year Transition and Default Rates

(December 31, 2009 through December 31, 2019)

Credit Ratings as of 12/31/2009		Credit ratings as of 12/31/2019 (%)																				Other Outcomes During 12/31/2009 - 12/31/2019 (%)			
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	128																							97.7%	2.3%
AA+	1																							100.0%	
AA	53																							100.0%	
AA-	2																							100.0%	
A+	1																							100.0%	
A	58																							93.1%	6.9%
A-	8																							87.5%	12.5%
BBB+	4																							75.0%	25.0%
BBB	59																							91.5%	8.5%
BBB-	8																							75.0%	25.0%
BB+	5																							100.0%	
BB	41																						12.2%	85.4%	2.4%
BB-	2																							100.0%	
B+	5																							100.0%	
B	58																						15.5%	75.9%	8.6%
B-	3																							100.0%	
CCC+																									
CCC	30																						33.3%	56.7%	10.0%
CCC-																									
CC	9																						44.4%	55.6%	
C	13																						100.0%		
TOTAL	488																								

D(iv) Collateralized debt obligations ("CDOs") - 1-Year Transition and Default Rates

(December 31, 2018 through December 31, 2019)

Credit Ratings as of 12/31/2018		Credit ratings as of 12/31/2019 (%)																					Other Outcomes During 12/31/2018 - 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	90	93.3%																						6.7%	
AA+	7		85.7%																					14.3%	
AA	45			80.0%																				20.0%	
AA-	19				89.5%																			10.5%	
A+	31				12.9%	71.0%																		12.9%	3.2%
A	100			7.0%		2.0%	72.0%	2.0%																12.0%	5.0%
A-	32					6.3%		68.8%																12.5%	12.5%
BBB+	27								92.6%															3.7%	3.7%
BBB	116						12.1%		1.7%	74.1%														11.2%	0.9%
BBB-	31					3.2%				3.2%	45.2%	3.2%	6.5%	3.2%										35.5%	
BB+	12											66.7%		8.3%										16.7%	8.3%
BB	60									21.7%			70.0%	5.0%										3.3%	
BB-	6													33.3%										66.7%	
B+	5													20.0%	60.0%									20.0%	
B	46												17.4%		2.2%	73.9%			4.3%					2.2%	
B-	1																							100.0%	
CCC+																									
CCC	66									1.5%			1.5%			4.5%			81.8%		3.0%			7.6%	
CCC-	1																								100.0%
CC	50											2.0%							12.0%		80.0%		2.0%	2.0%	2.0%
C	403	0.2%																	0.2%		3.2%	87.8%	7.2%	0.2%	1.0%
TOTAL	1148																								

D(iv) Collateralized debt obligations ("CDOs") - 3-Year Transition and Default Rates

(December 31, 2016 through December 31, 2019)

Credit Ratings as of 12/31/2016		Credit ratings as of 12/31/2019 (%)																				Other Outcomes During 12/31/2016 - 12/31/2019 (%)			
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	99	70.7%																						24.2%	5.1%
AA+	24		20.8%																					79.2%	
AA	39	7.7%		41.0%																				48.7%	2.6%
AA-	15			13.3%	66.7%																			20.0%	
A+	35	2.9%			11.4%	42.9%																		40.0%	2.9%
A	125			14.4%	0.8%		42.4%																	40.0%	2.4%
A-	32					3.1%		59.4%																18.8%	18.8%
BBB+	32			3.1%		3.1%			62.5%	15.6%														12.5%	3.1%
BBB	118			2.5%		0.8%	20.3%		1.7%	42.4%	0.8%													28.0%	3.4%
BBB-	40	2.5%				2.5%			2.5%	2.5%	22.5%	10.0%		7.5%										42.5%	7.5%
BB+	8					25.0%						25.0%	25.0%											12.5%	12.5%
BB	118			1.7%			5.9%			19.5%		0.8%	21.2%	2.5%										30.5%	17.8%
BB-	4								25.0%			25.0%		25.0%										25.0%	
B+	3														33.3%									66.7%	
B	94					1.1%	1.1%			8.5%			20.2%		1.1%	23.4%							1.1%	28.7%	14.9%
B-	17									11.8%			5.9%		5.9%									76.5%	
CCC+																									
CCC	100						1.0%			2.0%			5.0%	1.0%		11.0%			31.0%					35.0%	14.0%
CCC-																									
CC	102											1.0%	1.0%			3.9%			20.6%			28.4%		10.8%	19.6%
C	808	0.1%								0.1%									1.2%			3.1%	43.8%	10.4%	3.6%
TOTAL	1813																								

D(iv) Collateralized debt obligations ("CDOs") - 10-Year Transition and Default Rates

(December 31, 2009 through December 31, 2019)

Credit Ratings as of 12/31/2009		Credit ratings as of 12/31/2019 (%)																					Other Outcomes During 12/31/2009 - 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	327	14.7%		0.6%									1.2%			0.6%					0.6%		0.3%	76.1%	5.8%
AA+	26		19.2%																					80.8%	
AA	140			9.3%			6.4%																0.7%	80.0%	3.6%
AA-	49				12.2%																			71.4%	16.3%
A+	62					12.9%		1.6%																80.6%	4.8%
A	267	0.4%		5.6%			21.3%			3.0%													1.1%	64.0%	4.5%
A-	35							40.0%	2.9%	2.9%													2.9%	40.0%	11.4%
BBB+	51								7.8%	2.0%			3.9%						2.0%				5.9%	74.5%	3.9%
BBB	298			1.0%		0.3%	4.4%	0.7%		18.8%	0.7%		2.3%			0.7%						1.0%	6.7%	50.0%	13.4%
BBB-	84								9.5%		2.4%			1.2%								1.2%	4.8%	72.6%	8.3%
BB+	63						1.6%				3.2%	3.2%	1.6%	1.6%							1.6%	1.6%	22.2%	57.1%	6.3%
BB	290	0.3%		0.7%		0.3%	0.3%		0.3%	2.4%			9.7%			1.7%			1.7%			4.1%	12.1%	53.4%	12.8%
BB-	40																					12.5%	17.5%	52.5%	17.5%
B+	41	2.4%					2.4%			2.4%											4.9%	26.8%	24.4%	24.4%	12.2%
B	309						0.3%			1.9%			0.6%	0.3%		5.2%			1.9%			4.2%	14.9%	53.4%	17.2%
B-	60												1.7%									31.7%	31.7%	23.3%	11.7%
CCC+	2																								100.0%
CCC	538						0.2%			0.4%		0.2%	1.5%			1.9%			4.8%		0.7%	5.8%	32.2%	29.4%	23.0%
CCC-																									
CC	701									0.3%						0.3%			2.3%		4.6%	15.0%	45.5%	12.3%	19.8%
C	986																		0.7%		1.3%	15.5%	44.1%	4.8%	33.6%
TOTAL	4369																								

D(v) Asset-backed commercial paper ("ABCP") - 1-Year Transition and Default Rates

(December 31, 2018 through December 31, 2019)

Credit Ratings as of 12/31/2018		Credit ratings as of 12/31/2019 (%)						Other Outcomes During 12/31/2018 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	F1+	F1	F2	F3	B	C	Defaults	Paid Off	Withdrawn (other)
F1+	8	100.0%								
F1	30	3.3%	96.7%							
F2	3		66.7%	33.3%						
F3										
B										
C										
TOTAL	41									

D(v) Asset-backed commercial paper ("ABCP") - 3-Year Transition and Default Rates

(December 31, 2016 through December 31, 2019)

Credit Ratings as of 12/31/2016		Credit ratings as of 12/31/2019 (%)						Other Outcomes During 12/31/2016 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	F1+	F1	F2	F3	B	C	Defaults	Paid Off	Withdrawn (other)
F1+	5	80.0%							20.0%	
F1	28	3.6%	89.3%						3.6%	3.6%
F2	5		60.0%	20.0%					20.0%	
F3										
B										
C										
TOTAL	38									

D(v) Asset-backed commercial paper ("ABCP") - 10-Year Transition and Default Rates

(December 31, 2009 through December 31, 2019)

Credit Ratings as of 12/31/2009		Credit ratings as of 12/31/2019 (%)						Other Outcomes During 12/31/2009 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	F1+	F1	F2	F3	B	C	Defaults	Paid Off	Withdrawn (other)
F1+	33	9.1%	18.2%						60.6%	12.1%
F1	47	4.3%	27.7%						25.5%	42.6%
F2	1								100.0%	
F3										
B										
C										
TOTAL	81									

D(vi) Other asset-backed securities ("other ABS") - 1-Year Transition and Default Rates

(December 31, 2018 through December 31, 2019)

Credit Ratings as of 12/31/2018		Credit ratings as of 12/31/2019 (%)																					Other Outcomes During 12/31/2018 - 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	1737	74.6%		0.5%																				24.8%	0.1%
AA+	56	17.9%	39.3%																					42.9%	
AA	431	14.6%	0.5%	70.5%		0.2%	0.9%						0.2%											12.8%	0.2%
AA-	15	13.3%	13.3%	13.3%	53.3%																			6.7%	
A+	116	4.3%		10.3%	0.9%	66.4%				1.7%														15.5%	0.9%
A	598	0.7%	0.3%	4.5%	0.3%	0.2%	81.8%					0.3%												11.5%	0.3%
A-	60			1.7%		1.7%		60.0%																35.0%	
BBB+	74		1.4%	2.7%			2.7%		58.1%		5.4%													29.7%	
BBB	285			0.7%	0.4%	0.4%	9.1%		0.4%	74.4%	0.7%		0.4%			2.1%								11.6%	
BBB-	151			0.7%			0.7%		0.7%		13.2%	73.5%												10.6%	0.7%
BB+	31								3.2%			32.3%	16.1%											48.4%	
BB	86						1.2%		1.2%	7.0%			67.4%			11.6%								11.6%	
BB-	19												21.1%	52.6%										26.3%	
B+	5												20.0%		40.0%									40.0%	
B	84															83.3%		2.4%						13.1%	
B-	5												20.0%			40.0%								20.0%	
CCC+																									
CCC	20																	100.0%							
CCC-																									
CC	19																			94.7%		5.3%			
C	34																				100.0%				
TOTAL	3826																								

D(vi) Other asset-backed securities ("other ABS") - 3-Year Transition and Default Rates

(December 31, 2016 through December 31, 2019)

Credit Ratings as of 12/31/2016		Credit ratings as of 12/31/2019 (%)																					Other Outcomes During 12/31/2016 - 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	1724	38.7%		1.0%			0.2%			0.1%			0.3%			1.5%		0.2%						57.4%	0.6%
AA+	39	10.3%	2.6%	10.3%						2.6%						2.6%								69.2%	2.6%
AA	411	13.4%	0.7%	35.0%		0.7%	1.0%			0.5%			0.2%			0.2%								48.2%	
AA-	34	17.6%		5.9%	14.7%	2.9%		2.9%																55.9%	
A+	155	1.9%	4.5%	10.3%	0.6%	26.5%				5.2%						1.9%								49.0%	
A	642	3.6%	0.2%	3.4%	0.2%	1.1%	50.0%	0.3%	0.2%	2.6%						1.4%		0.2%						35.8%	1.1%
A-	148	0.7%	0.7%				4.1%	6.8%		0.7%		49.3%	0.7%											36.5%	0.7%
BBB+	53						5.7%	7.5%	17.0%	3.8%														66.0%	
BBB	257	3.1%		3.5%	0.4%	0.4%	3.9%	1.2%	2.3%	25.3%	0.4%		1.2%			1.6%		0.8%						54.1%	1.9%
BBB-	47								2.1%	2.1%	2.1%	6.4%												83.0%	4.3%
BB+	17									5.9%	5.9%	47.1%												41.2%	
BB	84			3.6%			7.1%		2.4%	7.1%	4.8%		13.1%	2.4%		11.9%								44.0%	3.6%
BB-	13	7.7%		7.7%									7.7%	15.4%										61.5%	
B+	6														16.7%									83.3%	
B	51	3.9%		2.0%						5.9%			3.9%	2.0%		39.2%		3.9%					2.0%	35.3%	2.0%
B-	12																16.7%		83.3%						
CCC+																									
CCC	16													18.8%					6.3%		25.0%		37.5%	6.3%	6.3%
CCC-																									
CC	20									5.0%			5.0%			10.0%					60.0%			10.0%	10.0%
C	49									8.2%									4.1%		4.1%	69.4%		10.2%	4.1%
TOTAL	3778																								

D(vi) Other asset-backed securities ("other ABS") - 10-Year Transition and Default Rates

(December 31, 2009 through December 31, 2019)

Credit Ratings as of 12/31/2009		Credit ratings as of 12/31/2019 (%)																					Other Outcomes During 12/31/2009 - 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	2568	10.2%		1.1%	0.04%	0.2%	1.3%	0.3%	0.04%	1.0%			0.3%			2.1%	0.1%		0.6%		0.1%	0.1%		81.0%	1.5%
AA+	34	2.9%				5.9%	35.3%			8.8%						5.9%					2.9%			38.2%	
AA	291			2.1%		0.7%	1.0%	0.7%	0.7%	1.7%											0.3%	2.7%		75.9%	14.1%
AA-	58				5.2%																			82.8%	12.1%
A+	178		3.9%	0.6%																		2.2%		92.7%	0.6%
A	440	2.0%		2.7%	0.2%	0.7%	4.8%		0.2%	2.5%	0.7%	0.5%	0.2%			0.9%			0.9%		1.6%	1.6%		75.2%	5.2%
A-	34			2.9%				2.9%		5.9%														85.3%	2.9%
BBB+	276																					1.4%		61.6%	37.0%
BBB	301			0.3%			0.3%			1.3%									0.7%			1.3%	0.3%	75.7%	19.9%
BBB-	64																							65.6%	34.4%
BB+	27							3.7%													3.7%	11.1%	3.7%	40.7%	37.0%
BB	111												1.8%			0.9%					2.7%			75.7%	18.9%
BB-	22		4.5%											4.5%										68.2%	22.7%
B+	7																							57.1%	42.9%
B	54																							48.1%	50.0%
B-	8																					1.9%		37.5%	50.0%
CCC+																									
CCC	29																						6.9%	44.8%	48.3%
CCC-																									
CC	32																				3.1%		34.4%	18.8%	43.8%
C	67																						20.9%		76.1%
TOTAL	4601																								

D(vii) Other Structured Finance Products ("other SFPs") - 1-Year Transition and Default Rates

(December 31, 2018 through December 31, 2019)

Credit Ratings as of 12/31/2018		Credit ratings as of 12/31/2019 (%)																					Other Outcomes During 12/31/2018 - 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	371	95.1%																						3.0%	1.9%
AA+	4		100.0%																						
AA	91			92.3%																				5.5%	2.2%
AA-	2				50.0%																				50.0%
A+	6					83.3%																		16.7%	
A	47					6.4%	78.7%																		
A-	6						33.3%	50.0%																	14.9%
BBB+	13						15.4%	30.8%	46.2%	7.7%															16.7%
BBB	3								33.3%	66.7%															
BBB-	1										100.0%														
BB+	1											100.0%													
BB	1												100.0%												
BB-																									
B+																									
B																									
B-																									
CCC+																									
CCC																									
CCC-																									
CC																									
C																									
TOTAL	546																								

*D(vii) Other Structured Finance Products ("other SFPs") Data includes structured finance other long term ratings not otherwise classified including covered bond programs and closed end fund ratings.

D(vii) Other Structured Finance Products ("other SFPs") - 3-Year Transition and Default Rates

(December 31, 2016 through December 31, 2019)

Credit Ratings as of 12/31/2016		Credit ratings as of 12/31/2019 (%)																					Other Outcomes During 12/31/2016 - 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	407	70.3%					0.2%		0.2%															19.4%	9.8%
AA+	6		33.3%	33.3%																					33.3%
AA	75			65.3%																				20.0%	14.7%
AA-	1																								100.0%
A+	2					50.0%																			50.0%
A	44				2.3%	6.8%	61.4%	2.3%																11.4%	15.9%
A-	1																								100.0%
BBB+	7						14.3%	14.3%	42.9%	14.3%															14.3%
BBB	2					50.0%			50.0%																
BBB-																									
BB+	2						50.0%																	50.0%	
BB																									
BB-																									
B+																									
B																									
B-	3										33.3%		33.3%												33.3%
CCC+	1																								100.0%
CCC																									
CCC-																									
CC																									
C																									
TOTAL	551																								

D(vii) Other Structured Finance Products ("other SFPs") - 10-Year Transition and Default Rates

(December 31, 2009 through December 31, 2019)

Credit Ratings as of 12/31/2009		Credit ratings as of 12/31/2019 (%)																					Other Outcomes During 12/31/2009 - 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	274	24.5%	0.4%	0.7%	0.4%	1.1%	0.7%	0.4%	0.7%	0.4%														38.3%	32.5%
AA+	5																								100.0%
AA	37			21.6%																				45.9%	32.4%
AA-	1																								100.0%
A+	47						38.3%																	48.9%	12.8%
A	6						33.3%																	50.0%	16.7%
A-																									
BBB+	1																								100.0%
BBB																									
BBB-																									
BB+																									
BB																									
BB-																									
B+																									
B																									
B-																									
CCC+																									
CCC																									
CCC-																									
CC																									
C																									
TOTAL	371																								

E(i) Sovereign issuers - 1-Year Transition and Default Rates

(December 31, 2018 through December 31, 2019)

Credit Ratings as of 12/31/2018		Credit ratings as of 12/31/2019 (%)																					Other Outcomes During 12/31/2018 - 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	27	100.0%																							
AA+	6		83.3%	16.7%																					
AA	9			100.0%																					
AA-	9				100.0%																				
A+	7					85.7%	14.3%																		
A	5						80.0%																	20.0%	
A-	6						16.7%	83.3%																	
BBB+	7								85.7%	14.3%															
BBB	11									100.0%															
BBB-	12									16.7%	83.3%														
BB+	8										12.5%	75.0%	12.5%												
BB	7											42.9%	28.6%	14.3%	14.3%										
BB-	10												20.0%	70.0%	10.0%										
B+	11													18.2%	72.7%	9.1%									
B	12														16.7%	75.0%						8.3%			
B-	9															11.1%	66.7%		11.1%		11.1%				
CCC+																									
CCC																									
CCC-																									
CC	1																		100.0%						
C																									
TOTAL	157																								

E(i) Sovereign issuers - 3-Year Transition and Default Rates

(December 31, 2016 through December 31, 2019)

Credit Ratings as of 12/31/2016		Credit ratings as of 12/31/2019 (%)																					Other Outcomes During 12/31/2016 - 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	26	100.0%																							
AA+	4		75.0%	25.0%																					
AA	10			80.0%	20.0%																				
AA-	7			14.3%	71.4%		14.3%																		
A+	7				28.6%	42.9%	14.3%																	14.3%	
A	5					60.0%	40.0%																		
A-	6						16.7%	66.7%	16.7%																
BBB+	7						14.3%	14.3%	42.9%	28.6%															
BBB	10								20.0%	60.0%	10.0%	10.0%													
BBB-	15									33.3%	46.7%	6.7%	6.7%	6.7%											
BB+	5									20.0%		40.0%		20.0%	20.0%										
BB	6										16.7%	50.0%	16.7%	16.7%											
BB-	10										10.0%	10.0%	30.0%	30.0%	20.0%										
B+	13													15.4%	38.5%	23.1%	15.4%						7.7%		
B	11														18.2%	45.5%	18.2%		9.1%				9.1%		
B-	5															60.0%	20.0%				20.0%				
CCC+																									
CCC	3												33.3%										66.7%		
CCC-																									
CC																									
C																									
TOTAL	150																								

E(i) Sovereign issuers - 10-Year Transition and Default Rates

(December 31, 2009 through December 31, 2019)

Credit Ratings as of 12/31/2009		Credit ratings as of 12/31/2019 (%)																				Other Outcomes During 12/31/2009 - 12/31/2019 (%)			
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	28	71.4%	10.7%	14.3%				3.6%																	
AA+	4	25.0%		25.0%	25.0%																			25.0%	
AA	6			50.0%			33.3%			16.7%															
AA-	6				33.3%	16.7%	16.7%			16.7%	16.7%														
A+	8			12.5%	50.0%	37.5%																			
A	5					20.0%	40.0%			20.0%			20.0%												
A-	4					25.0%		50.0%				25.0%													
BBB+	5				20.0%							20.0%											20.0%	40.0%	
BBB	9							11.1%	22.2%	33.3%	11.1%				11.1%									11.1%	
BBB-	10						10.0%		10.0%	20.0%	40.0%		10.0%	10.0%											
BB+	9							11.1%		22.2%	11.1%	22.2%	11.1%	11.1%	11.1%										
BB	4									50.0%					25.0%								25.0%		
BB-	8										12.5%	25.0%	12.5%	12.5%	12.5%	25.0%									
B+	7												14.3%		14.3%	42.9%						14.3%		14.3%	
B	8													12.5%	14.3%	25.0%	25.0%					12.5%		12.5%	
B-	4														25.0%						25.0%		25.0%		
CCC+																					25.0%				
CCC	2																50.0%					50.0%			
CCC-																									
CC																									
C																									
TOTAL	127																								

E(ii) U.S. Public Finance - 1-Year Transition and Default Rates

(December 31, 2018 through December 31, 2019)

Credit Ratings as of 12/31/2018		Credit ratings as of 12/31/2019 (%)																				Other Outcomes During 12/31/2018 - 12/31/2019 (%)			
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	483	98.6%	0.2%																						1.2%
AA+	551	0.7%	96.6%	0.2%																					2.5%
AA	659		2.3%	91.8%	1.2%	0.2%																			4.6%
AA-	592	0.2%	0.2%	4.6%	85.5%	3.0%	0.3%																		6.3%
A+	403			0.7%	9.2%	81.4%	1.5%		0.2%																6.9%
A	300				3.0%	6.3%	81.3%	3.3%	0.7%	0.7%	0.3%														4.3%
A-	249				0.4%	3.2%	11.6%	67.5%	5.2%	3.2%															8.8%
BBB+	139						0.7%	6.5%	79.9%	7.2%	0.7%	0.7%													4.3%
BBB	155							0.6%	2.6%	85.8%	3.2%	0.6%											0.6%		6.5%
BBB-	172								0.6%	9.9%	76.7%	2.3%	0.6%	1.2%	0.6%							3.5%			4.7%
BB+	59										8.5%	74.6%	3.4%	3.4%	1.7%	1.7%									6.8%
BB	46								2.2%		2.2%	73.9%	6.5%	4.3%									2.2%		6.5%
BB-	21										4.8%	9.5%	66.7%	4.8%			9.5%								4.8%
B+	9													77.8%	11.1%			11.1%							
B	13				7.7%								7.7%		7.7%	53.8%	7.7%	7.7%							7.7%
B-	9																100.0%								
CCC+	1																		100.0%						
CCC	9																		66.7%			11.1%		22.2%	
CCC-																									
CC	4																				100.0%				
C	5																				40.0%	60.0%			
TOTAL	3879																								

E(ii) U.S. Public Finance - 3-Year Transition and Default Rates

(December 31, 2016 through December 31, 2019)

Credit Ratings as of 12/31/2016		Credit ratings as of 12/31/2019 (%)																					Other Outcomes During 12/31/2016 - 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	431	86.8%	2.8%	0.5%	0.2%																				9.7%
AA+	512	4.5%	84.4%	2.1%	0.2%	0.2%	0.4%	0.4%																	7.8%
AA	639	1.6%	8.6%	73.1%	3.9%	0.9%	0.2%																		11.7%
AA-	621	1.3%	2.6%	14.2%	58.0%	5.2%	1.8%	0.5%	0.2%																16.4%
A+	453	0.2%	0.7%	3.1%	18.8%	54.5%	3.8%	2.0%	1.5%	0.4%	0.2%														14.8%
A	315	0.3%	0.6%	1.6%	7.3%	13.7%	51.4%	4.1%	1.9%	1.3%	0.3%														17.5%
A-	250			0.4%	2.8%	6.4%	16.4%	42.8%	8.0%	3.6%	0.4%	0.8%									0.4%			0.4%	17.6%
BBB+	171				1.2%	2.9%	8.8%	15.2%	38.0%	12.3%	1.8%	1.2%												1.2%	16.4%
BBB	158		0.6%				3.2%	3.2%	11.4%	51.9%	7.6%	1.9%		1.3%					0.6%				0.6%	0.6%	17.1%
BBB-	142							1.4%	2.1%	16.9%	53.5%	4.9%		1.4%	0.7%	0.7%					2.1%			0.7%	14.1%
BB+	64								3.1%	1.6%	20.3%	39.1%	6.3%	3.1%	1.6%		1.6%								23.4%
BB	35								2.9%		8.6%	2.9%	31.4%	2.9%			2.9%						2.9%	8.6%	37.1%
BB-	25											8.0%	16.0%	28.0%	8.0%		4.0%		4.0%				8.0%	8.0%	16.0%
B+	14												14.3%	7.1%	42.9%	7.1%			7.1%						14.3%
B	16												12.5%		12.5%	43.8%	6.3%		6.3%						18.8%
B-	12																50.0%		25.0%						25.0%
CCC+																									
CCC	1																					100.0%			
CCC-																									
CC	4																				50.0%	50.0%			
C	11																					27.3%	72.7%		
TOTAL	3874																								

E(ii) U.S. Public Finance - 10-Year Transition and Default Rates

(December 31, 2009 through December 31, 2019)

Credit Ratings as of 12/31/2009		Credit ratings as of 12/31/2019 (%)																				Other Outcomes During 12/31/2009 - 12/31/2019 (%)				
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)	
AAA	324	45.7%	3.1%	1.2%	0.9%	0.9%																		0.3%	47.8%	
AA+	221	39.4%	29.9%	2.7%	2.3%																				25.8%	
AA	487	9.0%	37.8%	16.8%	3.3%	1.0%	0.8%	1.2%	0.2%	0.2%	0.2%											0.2%	0.2%		29.0%	
AA-	582	2.4%	11.9%	29.4%	14.8%	6.7%	3.3%	0.3%	0.3%	0.2%	0.2%		0.2%		0.2%										30.2%	
A+	620	1.1%	3.4%	15.0%	20.0%	10.5%	3.9%	2.1%	0.8%	0.2%	0.3%		0.2%								0.2%	0.2%			42.3%	
A	490	0.8%	2.0%	6.5%	15.1%	12.4%	10.2%	3.5%	1.6%	2.0%	0.2%		0.2%								0.4%	0.2%	0.2%	0.2%	44.3%	
A-	401	0.2%	0.7%	2.0%	5.0%	10.7%	9.7%	7.7%	2.7%	2.5%	0.5%	0.5%	0.2%			0.2%	0.2%					0.2%	0.2%	0.2%	56.4%	
BBB+	183		1.1%	1.6%	6.0%	4.9%	8.7%	8.7%	9.8%	4.9%	1.6%	1.1%	0.5%	0.5%								0.5%	0.5%	0.5%	48.6%	
BBB	166			2.4%	3.0%	3.6%	6.6%	5.4%	1.8%	4.8%	5.4%	1.8%	1.2%		1.2%				0.6%			0.6%	1.8%	2.4%	57.2%	
BBB-	144				2.1%		1.4%		6.3%	6.3%	7.6%	2.8%	1.4%	2.1%					1.4%			3.5%	0.7%	2.1%	4.2%	58.3%
BB+	33							3.0%		6.1%	9.1%	12.1%	3.0%	3.0%	3.0%										60.6%	
BB	29						3.4%				3.4%	3.4%		3.4%	3.4%				3.4%				6.9%		69.0%	
BB-	16											6.3%		3.4%	3.4%		6.3%								62.5%	
B+	4																						25.0%		50.0%	
B	4								25.0%					25.0%								25.0%			25.0%	
B-	7																						14.3%		85.7%	
CCC+																										
CCC	7														14.3%										71.4%	
CCC-																										
CC	1																					100.0%				
C	4																						25.0%	50.0%	25.0%	
TOTAL	3723																									

E(iii) International Public Finance - 1-Year Transition and Default Rates

(December 31, 2018 through December 31, 2019)

Credit Ratings as of 12/31/2018		Credit ratings as of 12/31/2019 (%)																					Other Outcomes During 12/31/2018 - 12/31/2019 (%)		
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	25	100.0%																							
AA+	1			100.0%																					
AA	34			94.1%																				5.9%	
AA-	21			9.5%	85.7%																			4.8%	
A+	30				3.3%	96.7%																			
A	39						89.7%	7.7%																2.6%	
A-	56						5.4%	89.3%	1.8%															3.6%	
BBB+	35							5.7%	82.9%	11.4%															
BBB	69								2.9%	88.4%	1.4%													7.2%	
BBB-	55									25.5%	65.5%	1.8%	3.6%											3.6%	
BB+	45									2.2%	6.7%	62.2%	2.2%		2.2%									24.4%	
BB	24											4.2%	66.7%	20.8%										8.3%	
BB-	25												4.0%	68.0%	4.0%									24.0%	
B+	8													25.0%	62.5%	12.5%									
B	14															21.4%			64.3%		7.1%			7.1%	
B-	7															85.7%								14.3%	
CCC+																									
CCC																									
CCC-																									
CC																									
C	1													100.0%											
TOTAL	489																								

E(iii) International Public Finance - 3-Year Transition and Default Rates

(December 31, 2016 through December 31, 2019)

Credit Ratings as of 12/31/2016		Credit ratings as of 12/31/2019 (%)																				Other Outcomes During 12/31/2016 - 12/31/2019 (%)			
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	24	100.0%																							
AA+	2			50.0%																				50.0%	
AA	36			75.0%	8.3%	2.8%																		13.9%	
AA-	21			14.3%	71.4%																			14.3%	
A+	17					82.4%	5.9%																	11.8%	
A	33				3.0%	15.2%	57.6%	21.2%																3.0%	
A-	25							84.0%	12.0%															4.0%	
BBB+	32							31.3%	25.0%	40.6%														3.1%	
BBB	45								20.0%	51.1%	11.1%		2.2%											15.6%	
BBB-	43									37.2%	37.2%	7.0%	2.3%	4.7%	2.3%									7.0%	
BB+	26									7.7%	15.4%	23.1%	7.7%	19.2%		3.8%								23.1%	
BB	26											11.5%	26.9%	23.1%	3.8%									34.6%	
BB-	16												6.3%	31.3%										62.5%	
B+	9													11.1%	22.2%									66.7%	
B	13															15.4%			61.5%		7.7%			15.4%	
B-	3															66.7%								33.3%	
CCC+																									
CCC	1															100.0%									
CCC-																									
CC																									
C	1													100.0%											
TOTAL	373																								

E(iii) International Public Finance - 10-Year Transition and Default Rates

(December 31, 2009 through December 31, 2019)

Credit Ratings as of 12/31/2009		Credit ratings as of 12/31/2019 (%)																				Other Outcomes During 12/31/2009 - 12/31/2019 (%)			
Credit Rating	# of Ratings Outstanding	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-	CC	C	Default	Paid Off	Withdrawn (other)
AAA	44	13.6%		27.3%		6.8%		11.4%																40.9%	
AA+	14			35.7%	7.1%	7.1%		21.4%																28.6%	
AA	29			10.3%	13.8%	3.4%		3.4%	3.4%	10.3%	6.9%													48.3%	
AA-	35			2.9%	8.6%			2.9%	2.9%	8.6%	5.7%													68.6%	
A+	16				12.5%		6.3%		6.3%	12.5%	6.3%		6.3%											50.0%	
A	14									14.3%			7.1%											78.6%	
A-	10							40.0%		10.0%		10.0%												40.0%	
BBB+	7							28.6%	14.3%															57.1%	
BBB	8							25.0%	12.5%	50.0%														12.5%	
BBB-	10									20.0%	50.0%	10.0%												20.0%	
BB+	13									7.7%	23.1%	7.7%		7.7%										53.8%	
BB	9										33.3%	11.1%												55.6%	
BB-	9												11.1%	22.2%	11.1%									55.6%	
B+	8													12.5%										87.5%	
B	2																		50.0%					50.0%	
B-	3															33.3%						33.3%		33.3%	
CCC+																									
CCC	1																							100.0%	
CCC-																									
CC																									
C																									
TOTAL	232																								

Fitch calculates the "Default" classification to incorporate its definitions of both "D – Default" and "Restricted Default," where both such definitions were applicable to a particular asset class. For the purposes of these performance and measurement statistics, a credit rating is classified as a Default if any of the following conditions are met:

- The obligor failed to timely pay principal or interest due according to the terms of an obligation during the applicable period or the issuer of the security or money market instrument failed to timely pay principal or interest due according to the terms of the security or money market instrument during the applicable period;
- The security or money market instrument was subject to a write-down, applied loss, or other realized deficiency of the outstanding principal amount during the applicable period.

Definitions and Symbols

International Credit Rating Scales

The Primary Credit Rating Scales (those featuring the symbols 'AAA'–'D' and 'F1'–'D') are used for debt and financial strength ratings. This page describes their use for issuers and obligations in corporate, public, structured and infrastructure and project finance debt markets.

Within rating categories, Fitch may use modifiers. The modifiers "+" or "-" may be appended to a rating to denote relative status within major rating categories.

For example, the rating category 'AA' has three notch-specific rating levels ('AA+', 'AA', 'AA–'; each a rating level). Such suffixes are not added to 'AAA' ratings and ratings below the 'CCC' category. For the short-term rating category of 'F1', a '+' may be appended. For Viability Ratings, the modifiers '+' or '-' may be appended to a rating to denote relative status within categories from 'aa' to 'ccc'. For Derivative Counterparty Ratings the modifiers '+' or '-' may be appended to the ratings within 'AA(dcr)' to 'CCC(dcr)' categories.

International credit ratings relate to either foreign currency or local currency commitments and, in both cases, assess the capacity to meet these commitments using a globally applicable scale. As such, both foreign currency and local currency international ratings are internationally comparable assessments.

The Local Currency International Rating measures the likelihood of repayment in the currency of the jurisdiction in which the issuer is domiciled and hence does not take account of the risk that it will not be possible to convert local currency into foreign currency or make transfers between sovereign jurisdictions (transfer and convertibility [T&C] risk).

A Local Currency International Rating will be assigned in cases where an issuance's original terms and conditions allow for repayment of foreign currency investors in local currency equivalent at the prevailing exchange rate at the time of repayment.

Foreign Currency Ratings additionally consider the profile of the issuer or note after taking into account T&C risk. This risk is usually communicated for different countries by the Country Ceiling, which caps the foreign currency ratings of most, though not all, issuers within a given country.

Besides T&C risks, there can be rating distinctions between an issuer's Local Currency and Foreign Currency Ratings, when there is considered to be a risk of selective default on Local Currency obligations versus Foreign Currency obligations, or vice versa.

A Foreign Currency Rating will be assigned in cases where an issuance is denominated in local currency or local currency equivalent, but repayment of principal and/or interest is required to be made in foreign currency at the prevailing exchange rate at the time of repayment.

Where the rating is not explicitly described in the relevant Rating Action Commentary as local or foreign currency, the reader should assume that the rating is a Foreign Currency Rating (i.e. the rating is applicable for all convertible currencies of obligation).

Issuer Default Ratings

Rated entities in a number of sectors, including financial and non-financial corporations, sovereigns, insurance companies and certain sectors within public finance, are generally assigned Issuer Default Ratings (IDRs). IDRs are also assigned to certain entities or enterprises in global infrastructure, project finance and public finance. IDRs opine on an entity's relative vulnerability to default (including by way of a

distressed debt exchange) on financial obligations. The threshold default risk addressed by the IDR is generally that of the financial obligations whose non-payment would best reflect the uncured failure of that entity. As such, IDRs also address relative vulnerability to bankruptcy, administrative receivership or similar concepts.

In aggregate, IDRs provide an ordinal ranking of issuers based on the agency's view of their relative vulnerability to default, rather than a prediction of a specific percentage likelihood of default.

AAA: Highest credit quality.

'AAA' ratings denote the lowest expectation of default risk. They are assigned only in cases of exceptionally strong capacity for payment of financial commitments. This capacity is highly unlikely to be adversely affected by foreseeable events.

AA: Very high credit quality.

'AA' ratings denote expectations of very low default risk. They indicate very strong capacity for payment of financial commitments. This capacity is not significantly vulnerable to foreseeable events.

A: High credit quality.

'A' ratings denote expectations of low default risk. The capacity for payment of financial commitments is considered strong. This capacity may, nevertheless, be more vulnerable to adverse business or economic conditions than is the case for higher ratings.

BBB: Good credit quality.

'BBB' ratings indicate that expectations of default risk are currently low. The capacity for payment of financial commitments is considered adequate, but adverse business or economic conditions are more likely to impair this capacity.

BB: Speculative.

'BB' ratings indicate an elevated vulnerability to default risk, particularly in the event of adverse changes in business or economic conditions over time; however, business or financial flexibility exists that supports the servicing of financial commitments.

B: Highly speculative.

'B' ratings indicate that material default risk is present, but a limited margin of safety remains. Financial commitments are currently being met; however, capacity for continued payment is vulnerable to deterioration in the business and economic environment.

CCC: Substantial credit risk.

Default is a real possibility.

CC: Very high levels of credit risk.

Default of some kind appears probable.

C: Near default

A default or default-like process has begun, or the issuer is in standstill, or for a closed funding vehicle, payment capacity is irrevocably impaired. Conditions that are indicative of a 'C' category rating for an issuer include:

- a. the issuer has entered into a grace or cure period following non-payment of a material financial obligation;
- b. the issuer has entered into a temporary negotiated waiver or standstill agreement following a payment default on a material financial obligation;
- c. the formal announcement by the issuer or their agent of a distressed debt exchange;

- d. a closed financing vehicle where payment capacity is irrevocably impaired such that it is not expected to pay interest and/or principal in full during the life of the transaction, but where no payment default is imminent

RD: Restricted default.

'RD' ratings indicate an issuer that in Fitch's opinion has experienced:

- a. an uncured payment default or distressed debt exchange on a bond, loan or other material financial obligation, but
- b. has not entered into bankruptcy filings, administration, receivership, liquidation, or other formal winding-up procedure, and
- c. has not otherwise ceased operating.

This would include:

- i. the selective payment default on a specific class or currency of debt;
- ii. the uncured expiry of any applicable grace period, cure period or default forbearance period following a payment default on a bank loan, capital markets security or other material financial obligation;
- iii. the extension of multiple waivers or forbearance periods upon a payment default on one or more material financial obligations, either in series or in parallel; ordinary execution of a distressed debt exchange on one or more material financial obligations.

D: Default.

'D' ratings indicate an issuer that in Fitch's opinion has entered into bankruptcy filings, administration, receivership, liquidation or other formal winding-up procedure or that has otherwise ceased business.

Default ratings are not assigned prospectively to entities or their obligations; within this context, non-payment on an instrument that contains a deferral feature or grace period will generally not be considered a default until after the expiration of the deferral or grace period, unless a default is otherwise driven by bankruptcy or other similar circumstance, or by a distressed debt exchange.

In all cases, the assignment of a default rating reflects the agency's opinion as to the most appropriate rating category consistent with the rest of its universe of ratings and may differ from the definition of default under the terms of an issuer's financial obligations or local commercial practice.

Structured Finance

Ratings of structured finance obligations on the long-term scale consider the obligations' relative vulnerability to default. These ratings are typically assigned to an individual security or tranche in a transaction and not to an issuer.

AAA: Highest Credit Quality.

'AAA' ratings denote the lowest expectation of default risk. They are assigned only in cases of exceptionally strong capacity for payment of financial commitments. This capacity is highly unlikely to be adversely affected by foreseeable events.

AA: Very High Credit Quality.

'AA' ratings denote expectations of very low default risk. They indicate very strong capacity for payment of financial commitments. This capacity is not significantly vulnerable to foreseeable events.

A: High Credit Quality.

'A' ratings denote expectations of low default risk. The capacity for payment of financial commitments is considered strong. This capacity may, nevertheless, be more vulnerable to adverse business or economic conditions than is the case for higher ratings.

BBB: Good Credit Quality.

'BBB' ratings indicate that expectations of default risk are currently low. The capacity for payment of financial commitments is considered adequate, but adverse business or economic conditions are more likely to impair this capacity.

BB: Speculative.

'BB' ratings indicate an elevated vulnerability to default risk, particularly in the event of adverse changes in business or economic conditions over time.

B: Highly Speculative.

'B' ratings indicate that material default risk is present, but a limited margin of safety remains. Financial commitments are currently being met; however, capacity for continued payment is vulnerable to deterioration in the business and economic environment.

CCC: Substantial Credit Risk.

Default is a real possibility.

CC: Very High Levels of Credit Risk.

Default of some kind appears probable.

C: Exceptionally High Levels of Credit Risk.

Default appears imminent or inevitable.

D: Default.

Indicates a default. Default generally is defined as one of the following:

- a. Failure to make payment of principal and/or interest under the contractual terms of the rated obligation;
- b. bankruptcy filings, administration, receivership, liquidation or other winding-up or cessation of the business of an issuer/obligor; or
- c. distressed exchange of an obligation, where creditors were offered securities with diminished structural or economic terms compared with the existing obligation to avoid a probable payment default.

Structured Finance Defaults

Imminent default, categorized under 'C', typically refers to the occasion where a payment default has been intimated by the issuer and is all but inevitable. This may, for example, be where an issuer has missed a scheduled payment but (as is typical) has a grace period during which it may cure the payment default. Another alternative would be where an issuer has formally announced a distressed debt exchange, but the date of the exchange still lies several days or weeks in the immediate future.

Additionally, in structured finance transactions, where analysis indicates that an instrument is irrevocably impaired such that it is not expected to pay interest and/or principal in full in accordance with the terms of the obligation's documentation during the life of the transaction, but where no payment default in accordance with the terms of the documentation is imminent, the obligation will typically be rated in the 'C' category.

Structured Finance Write-downs

Where an instrument has experienced an involuntary and, in the agency's opinion, irreversible write-down of principal (i.e. other than through amortization, and resulting in a loss to the investor), a credit rating of 'D' will be assigned to the instrument. Where the agency believes the write-down may prove to be temporary (and the loss may be written up again in future if and when performance improves), then a credit rating of 'C' will typically be assigned. Should the write-down then later be reversed, the credit rating will be raised to an appropriate level for that instrument. Should the write-down later be deemed as irreversible, the credit rating will be lowered to 'D'.

Notes:

In the case of structured finance, while the ratings do not address the loss severity given default of the rated liability, loss severity assumptions on the underlying assets are nonetheless typically included as part of the analysis. Loss severity assumptions are used to derive pool cash flows available to service the rated liability.

The suffix 'sf' denotes an issue that is a structured finance transaction.

Enhanced Equipment Trust Certificates (EETCs) are corporate-structured hybrid debt securities that airlines typically use to finance aircraft equipment. Due to the hybrid characteristics of these bonds, Fitch's rating approach incorporates elements of both the structured finance and corporate rating methodologies. Although rated as asset-backed securities, unlike other structured finance ratings, EETC ratings involve a measure of recovery given default akin to ratings of financial obligations in corporate finance, as described above.

Short-Term Ratings Assigned to Issuers and Obligations

A short-term issuer or obligation rating is based in all cases on the short-term vulnerability to default of the rated entity and relates to the capacity to meet financial obligations in accordance with the documentation governing the relevant obligation. Short-term deposit ratings may be adjusted for loss severity. Short-Term Ratings are assigned to obligations whose initial maturity is viewed as "short term" based on market convention. Typically, this means up to 13 months for corporate, sovereign, and structured obligations and up to 36 months for obligations in U.S. public finance markets.

F1: Highest Short-Term Credit Quality.

Indicates the strongest intrinsic capacity for timely payment of financial commitments; may have an added "+" to denote any exceptionally strong credit feature.

F2: Good Short-Term Credit Quality.

Good intrinsic capacity for timely payment of financial commitments.

F3: Fair Short-Term Credit Quality.

The intrinsic capacity for timely payment of financial commitments is adequate.

B: Speculative Short-Term Credit Quality.

Minimal capacity for timely payment of financial commitments, plus heightened vulnerability to near term adverse changes in financial and economic conditions.

C: High Short-Term Default risk.

Default is a real possibility.

RD: Restricted Default.

Indicates an entity that has defaulted on one or more of its financial commitments, although it continues to meet other financial obligations. Typically applicable to entity ratings only.

D: Default

Indicates a broad-based default event for an entity, or the default of a short-term obligation.

Relationship between Short-Term and Long-Term Ratings

The credit risks that drive the long-term rating and the short-term rating are linked but distinct. Some issuers may have a significantly stronger short-term credit profile than implied by the long-term rating. Some long-term factors such as strategy are unlikely to have an immediate impact on defaults. Conversely, factors such as liquidity can have a significant impact on short-term performance and will therefore gain more weight in the short-term rating.

The table below shows typical relationships between the long-term rating and the short-term rating. The two are linked, but at certain long-term rating levels ('A+' to 'BBB') more than one short-term rating are possible. The lower of the two short-term ratings indicated by the table is the base-line. Whether an issuer achieves the higher of two possible short-term ratings is determined by the analytical groups with reference to sector specific factors (such as Liquidity for example). Details are contained in the relevant criteria.

The table below is a guide only. Actual ratings assigned can differ from this correspondence consistent with the criteria employed by individual rating groups, where analytically merited.

Rating Correspondence Table

Long-Term Rating	Short-Term Rating
AAA	F1+
AA+	F1+
AA	F1+
AA–	F1+
A+	F1 or F1+
A	F1 or F1+
A–	F2 or F1
BBB+	F2 or F1
BBB	F3 or F2
BBB–	F3
BB+	B
BB	B
BB–	B
B+	B
B	B
B–	B
CCC+/ CCC/ CCC–	C
CC	C
C	C
RD/D	RD/D

Ratings Definitions

Additional information regarding Ratings Definitions can also be found via the web link below under the heading: "Ratings Definitions", <https://www.fitchratings.com/site/definitions>.

17 CFR 17g-7(b) Disclosure of Credit Rating Histories

Information pursuant to 17 CFR 17g-7(b) Disclosure of Credit Rating Histories, can be found at the web address: <https://www.fitchratings.com/site/ratings-history-disclosure>.