

Global Structured Finance 2019 Transition and Default Study

Pre-Pandemic Economy: Global economic activity remained strong through 2019, broadly on the shoulders of the U.S. economy, which grew at a moderate 2.3%, in line with the 2.4% five-year average. Global economic growth was comparable at 2.7% in 2019. See the most recent [Global Economic Outlook: June 2020 - Coronavirus Disruption Easing](#).

Positive Activity Persists in 2019: Across global public structured finance (GSF) upgrades exceeded downgrades for the sixth consecutive year. The share of the GSF portfolio upgraded reached 14% compared with 11% from 2018, whereas downgrades affected 3% of the GSF portfolio compared with 4% downgraded in 2018. The majority of broad GSF sectors recorded upgrades exceeding downgrades in 2019. The absolute degree of change for the GSF portfolio was 5.4% for 2019 increasing from 1.2% in 2018.

GSF Impairment Rate: GSF recorded 131 impairments in 2019, a 17% decline from the 158 impairments registered a year earlier. The resulting GSF 2019 impairment rate was 0.64%, below 0.82% recorded in 2018. The 2019 impairment rate was the lowest impairment rate recorded in the last 10 years.

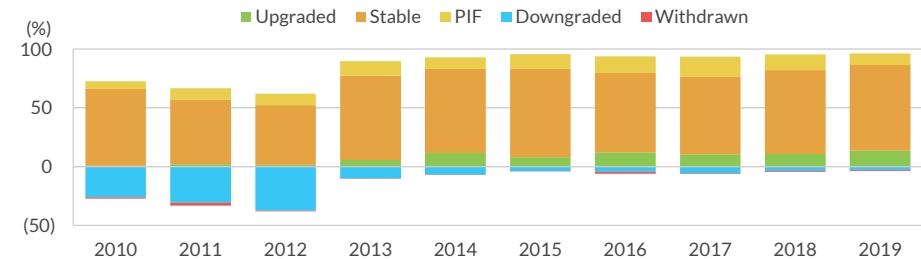
Asset-Backed Securities (ABS): ABS rating activity remained net positive in 2019 as downgrades trailed upgrades by a modest 0.8 to 1 ratio, aligning with 0.7 to 1 a year earlier. The ABS annual stability rate including PIF (paid in full), increased slightly to 90% from 89% recorded in 2018.

Commercial Mortgage-Backed Securities (CMBS): Rating activity was subdued in 2019, with only 2% of CMBS ratings affected by downgrades and 2% affected by upgrades. Thus, the resulting CMBS stability rate (plus PIF) remained solid at 96%, marginally ahead of the 95% seen a year earlier.

Residential Mortgage-Backed Securities (RMBS): The bulk of upgrades occurred within the largest sector, RMBS. The share of RMBS ratings upgraded reached 25% in 2019, an increase yoy of 45% from the 17% upgrade rate recorded in 2018. Ratings downgraded were modest by comparison – 3.5% in 2019 and largely aligned with 4.5% recorded in 2018. The resulting RMBS stability rate was 70%, on the heels of the upgrade rate.

Structured Credit (SC): Rating activity was largely stable for the SC portfolio in 2019. The SC stability rate accounted for 97% of ratings (including 10% PIF), compared with 95% recorded a year earlier. The modest level of SC ratings upgraded – 2.8% – far exceeded SC ratings downgraded of 0.3%, both contributing to the overall stability rate in 2019.

Global Structured Finance Rating Changes



PIF – Paid in full.

Source: Fitch Ratings.

Global Structured Finance Rating Activity

By Region	2018				2019			
	UG	Stable/PIF	DG	Impaired	UG	Stable/PIF	DG	Impaired
Global SF	10.9	84.6	3.6	0.8	13.5	82.9	2.9	0.6
APAC SF	8.7	90.3	1.0	–	7.7	91.2	–	–
EMEA SF	19.9	73.6	6.4	0.2	16.1	77.0	6.7	0.04
NA SF	9.9	85.5	3.3	1.0	14.2	82.3	2.7	0.8
<hr/>								
By Sector								
ABS	6.5	88.6	4.8	0.03	5.2	90.3	4.3	–
CMBS	2.9	95.4	1.7	0.6	2.0	96.0	2.0	0.4
RMBS	17.2	76.4	4.5	1.3	25.0	70.2	3.5	1.2
SC	4.5	94.9	0.3	0.1	2.8	96.7	0.3	–

UG – Upgrade. PIF – Paid in full. DG – Downgrade. SF – Structured finance. NA – North America. SC – Structured credit. Note: Downgrade figures include impairments.

Source: Fitch Ratings.

Global Structured Finance

Regional Activity, Net Positive: Rating activity by region was uniformly positive. North America (NA) and EMEA recorded upgrade rates of 14.2% and 16.1%, respectively. NA and EMEA downgrade rates (2.7% and 6.7%) were lower by comparison. APAC registered an upgrade rate of 7.7%, while recording no downgrades on the year. Of note, Latin American SF currently accounts for less than 1% of all GSF public ratings.

Stability rates across regions – including PIF – remained elevated – NA (82%), EMEA, (77%) and APAC (91%) coinciding with the sizable upgrade rates within each respective portfolio.

GSF Ratings Distribution: The 2019 GSF portfolio, comparable to that of 2018, had an average year-end rating of 'A'.

GSF Impairment Rates: GSF impairments in 2019 (131) mirrored 2018 (158), in that all ratings were speculative grade at the beginning of the year prior to becoming impaired. The chart to the right shows the significant decline in impairments over the last 10 years.

The GSF impairment rate for 2019 was 0.64%, with an investment-grade rate of zero and a speculative-grade rate of 2.6%.

By region, impairments were led by NA, which accounted for all but a single EMEA CMBS impairment. The NA 2019 impairment rate reached 0.79%, while the impairment rate for EMEA was 0.04%.

Historical Impairment Rates: Over the long-term period, 1990–2019, the average annual GSF impairment rate was 4.6%, while the average annual investment- and speculative-grade rates were 1.7% and 18.6%, respectively. For the full impairment time series see page 9.

Global Structured Finance One-Year Transition Matrix: 2019 Cohort

(%)	AAA	AA	A	BBB	BB	B	CCC	CC and Below	WD	PIF
AAA	85.32	0.21	0.04	—	—	—	—	—	0.13	14.30
AA	18.20	70.70	0.82	0.10	0.05	—	—	—	0.24	9.89
A	2.17	9.40	74.93	1.15	0.48	0.06	0.03	—	0.83	10.96
BBB	0.50	1.22	13.05	69.63	7.38	0.69	0.08	—	0.96	6.50
BB	0.07	0.21	2.00	21.44	67.78	1.89	0.57	0.39	1.36	4.28
B	—	0.12	0.75	2.56	21.65	63.57	4.30	1.31	1.37	4.37
CCC	0.16	—	—	1.46	6.98	18.18	53.25	16.07	1.46	2.44

WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

Global Structured Finance Rating Activity: 2019

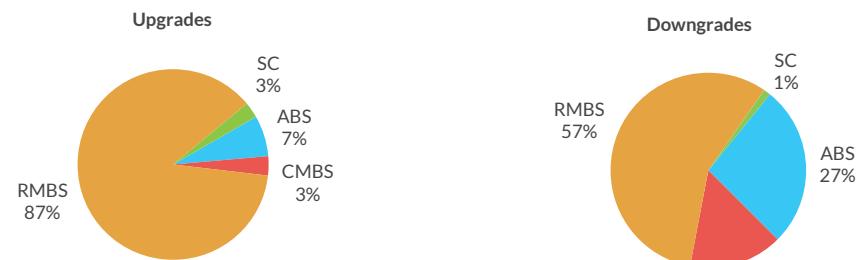
(%)	Global SF		ABS		CMBS		RMBS		SC	
	UG	DG	UG	DG	UG	DG	UG	DG	UG	DG
AAA	N.A.	0.2	N.A.	0.5	N.A.	—	N.A.	0.4	N.A.	—
AA	18.2	1.0	15.4	1.2	3.6	0.7	35.3	1.4	0.5	—
A	11.6	1.7	7.0	0.5	2.6	0.9	18.4	2.9	3.5	—
BBB	14.8	8.1	7.6	24.3	1.6	1.6	26.1	6.6	5.3	1.1
BB	23.7	2.9	6.3	7.8	1.7	6.0	31.0	2.2	4.0	—
B	25.1	5.6	3.3	2.2	0.6	8.6	39.0	5.9	1.7	—
CCC	26.8	16.1	—	—	8.3	37.5	29.5	14.8	—	—

SF – Structured finance. SC – Structured credit. UG – Upgrade. DG – Downgrade. N.A. – Not available.

Note: Changes by rating category

Source: Fitch Ratings.

Global Structured Finance Rating Activity By Sector: 2019

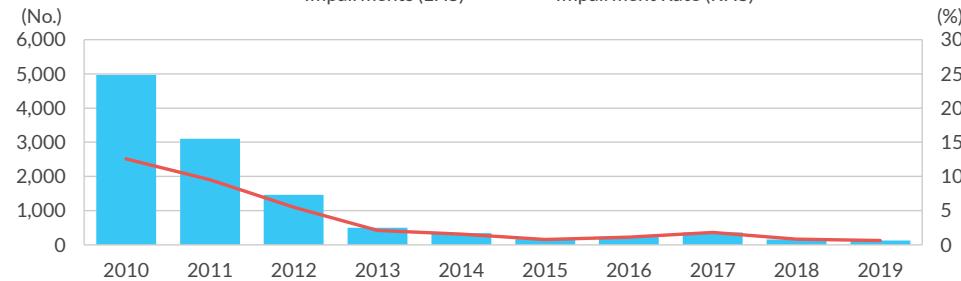


Note: Percentages represent the proportion of total upgrades or total downgrades.

Source: Fitch Ratings.

Global Structured Finance Impairments: 2010–2019

■ Impairments (LHS) ■ Impairment Rate (RHS)



Source: Fitch Ratings.

Asset-Backed Securities

ABS Rating Activity: The share of the global ABS portfolio affected by rating downgrades in 2019 was 4.3%, outpaced by the share upgraded, 5.2%. ABS recorded a stability rate over 90% (including PIF) in 2019. ABS maintained its average rating of 'AA-' year over year.

By Asset Type: ABS ratings affected by upgrades were largely NA auto-related assets. Whereas Turkish diversified payment rights (DPR) ratings accounted for nearly 70% of ABS downgrades. The DPR downgrades followed Turkey's sovereign and banking-related downgrades.

ABS Regional Activity: NA accounted for 76% of ABS upgrades with the majority via auto-related and student loans ABS. APAC contributed auto loan and lease upgrades and no downgrades.

EMEA represented nearly 76% of ABS downgrades, which were mostly Turkish DPRs, representing rating downgrades to 'BB+' from 'BBB-'.

ABS Registered No 2019 Impairments: No ABS impairments were recorded in 2019, down from a single impairment in 2018. The last time ABS registered no impairments was prior to 2000.

Historically, the average annual ABS impairment rate across the period 1990–2019 was 0.5%. ABS investment- and speculative-grade average annual impairment rates were 0.08%, and 7.9%, respectively.

For the impairment time series by asset class see page 10.

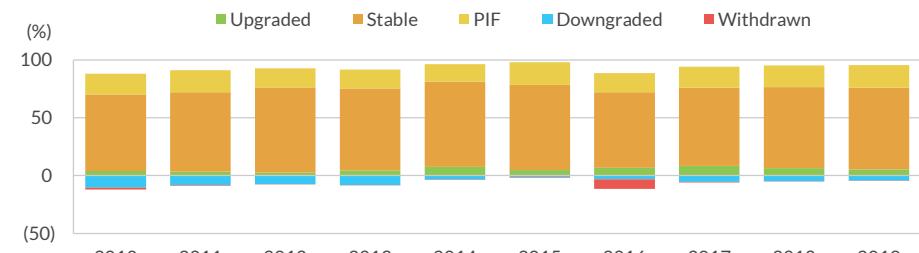
Global ABS One-Year Transition Matrix: 2019 Cohort

(%)	AAA	AA	A	BBB	BB	B	CCC	CC and Below	WD	PIF
AAA	74.23	0.52	—	—	—	—	—	—	0.12	25.13
AA	15.43	66.67	1.03	—	0.21	—	—	—	0.21	16.46
A	1.06	5.95	78.17	0.26	0.26	—	—	—	0.40	13.89
BBB	—	1.44	6.17	54.32	23.05	1.23	—	—	—	13.79
BB	—	—	0.78	5.47	64.06	7.81	—	—	—	21.88
B	—	—	—	1.09	2.17	79.35	2.17	—	—	15.22
CCC	—	—	—	—	—	—	100.00	—	—	—

WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

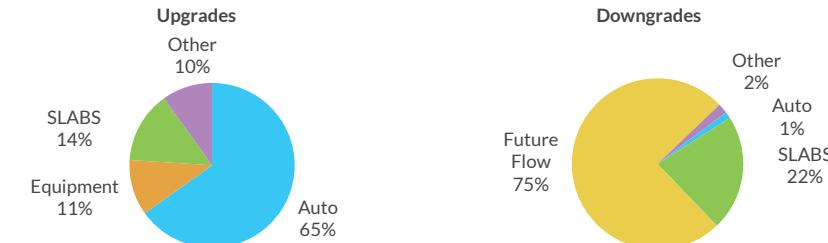
Global ABS Rating Changes



PIF – Paid in full.

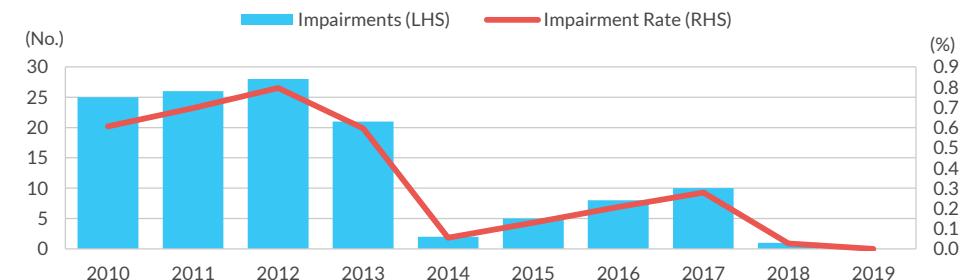
Source: Fitch Ratings.

Global ABS Rating Activity By Asset Category: 2019



Note: Percentages represent the proportion of total upgrades or total downgrades,
Source: Fitch Ratings.

Global ABS Impairments: 2010–2019



Source: Fitch Ratings.

Commercial Mortgage-Backed Securities

CMBS Rating Activity: CMBS rating activity remained benign in 2019. The share of the CMBS portfolio affected by downgrades (2%) and upgrades (2%) resulted in a 1 to 1 downgrade to upgrade ratio. The 2019 CMBS absolute degree of change was a modest 0.3%, which translated into the 2019 stability rate of 96% (including PIF). The CMBS portfolio average rating in 2019 remained 'A+'.

Activity by Asset Type: Overall global CMBS downgrades and upgrades were relatively moderate. CMBS downgrades were primarily recorded within the multiborrower portfolio in 2019. Upgraded CMBS activity was mixed across asset classes – multiborrower, single borrower and U.S. Agency.

Regionally, NA represented the majority of both upgrade and downgrade activity in 2019. EMEA and APAC combined to account for a modest 4% of 2019 CMBS actions.

CMBS Impairments: CMBS impairments totaled 20 in 2019, below the 27 recorded in 2018. By asset type, impairments were distributed among multiborrower CMBS (19) and a single commercial real estate collateralized debt obligation (CREL CDO) impairment.

Regionally, NA accounted for 19 impairments, while EMEA represented a single impairment. The respective regional impairment rates were NA (0.4%) and EMEA (0.9%). As mentioned, all impairments were rated speculative grade at the beginning of the year prior to impairment, resulting in an average CMBS impairment rating of 'CCC'. The 2019 impairment rate for global CMBS was 0.4%.

Historical Impairment Rates: On a historical basis, the CMBS average annual impairment rate capturing the historical period 1991–2019 was 2.9%. The average annual impairment rate across investment grade was 0.3% and for speculative grade 11% for the same long-term period. See the regional impairment historical time series in the Appendix beginning on page 11.

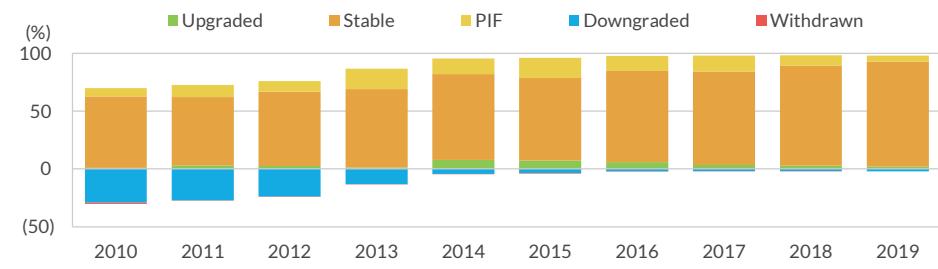
Global CMBS One-Year Transition Matrix: 2019 Cohort

(%)	AAA	AA	A	BBB	BB	B	CCC	CC and Below	WD	PIF
AAA	93.61	—	—	—	—	—	—	—	—	6.39
AA	3.64	92.48	0.73	—	—	—	—	—	—	3.16
A	0.92	1.66	90.79	0.92	—	—	—	—	—	5.71
BBB	0.81	—	0.81	94.15	0.98	0.65	—	—	—	2.60
BB	0.50	—	0.99	0.25	88.59	3.97	1.99	—	—	3.72
B	—	—	—	0.62	—	85.54	8.00	0.62	—	5.23
CCC	2.08	—	—	—	4.17	2.08	52.08	37.50	—	2.08

WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

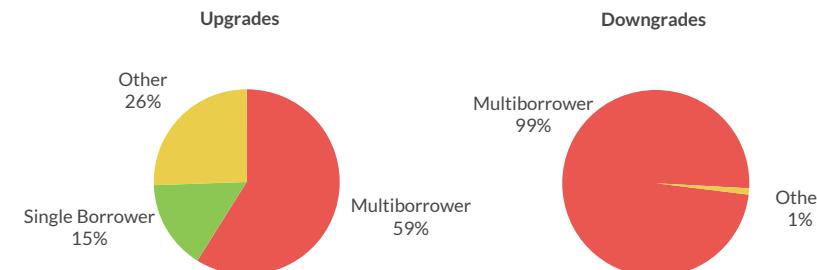
Global CMBS Rating Changes



PIF – Paid in full.

Source: Fitch Ratings.

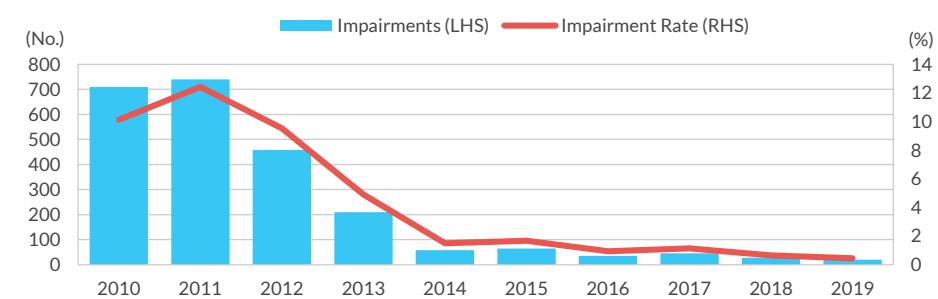
Global CMBS Rating Activity By Asset Category: 2019



Note: Percentages represent the proportion of total upgrades or total downgrades

Source: Fitch Ratings.

Global CMBS Impairments: 2010–2019



Source: Fitch Ratings.

Residential Mortgage-Backed Securities

RMBS Rating Activity: RMBS rating activity remained net positive – for the sixth consecutive year. For 2019, downgrades trailed upgrades, with the share of the RMBS portfolio affected by downgrades (3.5%) and upgrades (25%). Upgrades affected a quarter of RMBS ratings in 2019 – increasing from a 17% upgrade rate in 2018 and the largest upgrade rate recorded by Fitch. As a result, the RMBS stability rate declined to 70%, from 76% a year earlier. The RMBS average rating recorded at year-end 2019 was 'A-' from 'BBB+' at the end of 2018.

Activity by Asset Type: RMBS asset types leading the share of 2019 upgrades were credit risk transfer (24%) subprime/home equity (HE) (22%) and prime RMBS (19%). To a lesser extent, 2019 downgrades were led by prime RMBS (50%), followed by subprime/HE (16%).

Regionally, NA represented the bulk of rating actions – both upgrades and downgrades – followed by EMEA and APAC.

RMBS Impairment Rates: Impairments declined yoy to 111 from 128. Similar to the previous year, all 2019 impairments were rated speculative grade at the beginning of the year prior to becoming impaired. Thus, the RMBS average rating prior to impairment was 'B-'.

NA accounted for all 2019 impairment rates – led by prime RMBS (38) and a mix of asset types, including AltA RMBS and subprime/HE. The NA RMBS 2019 impairment rate was 1.4%, down from 1.7% recorded in 2018.

Historical Impairment Rates: Across the historical period – 1990–2019 – the RMBS average annual impairment rate was 5.4%. Further, average annual investment- and speculative-grade impairment rates over the same timeframe were 2.2% and 21.5%, respectively.

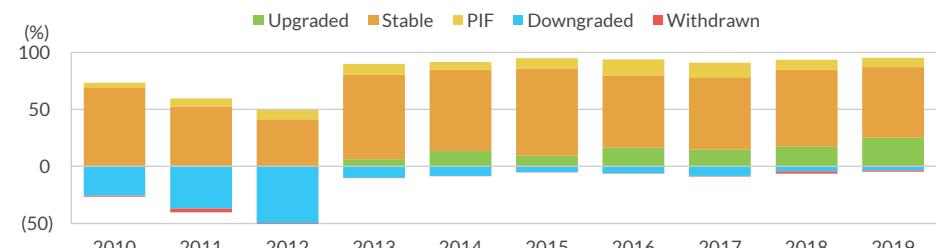
Global RMBS One-Year Transition Matrix: 2019 Cohort

(%)	AAA	AA	A	BBB	BB	B	CCC	CC and Below	WD	PIF
AAA	84.25	0.29	0.13	—	—	—	—	—	0.34	14.99
AA	35.26	52.33	1.11	0.25	—	—	—	—	0.49	10.57
A	3.48	14.94	66.32	1.87	0.84	0.13	0.06	—	1.03	11.33
BBB	0.64	2.00	23.42	60.55	5.77	0.64	0.16	—	2.00	4.81
BB	—	0.29	2.46	28.25	61.66	1.30	0.39	0.53	1.83	3.28
B	—	0.20	1.19	3.76	33.86	49.80	4.06	1.88	2.18	3.07
CCC	—	—	—	1.65	7.51	20.33	51.65	14.84	1.65	2.38

WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

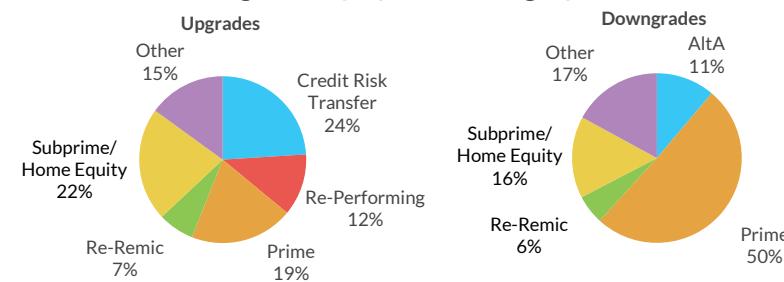
Global RMBS Rating Changes



PIF – Paid in full.

Source: Fitch Ratings.

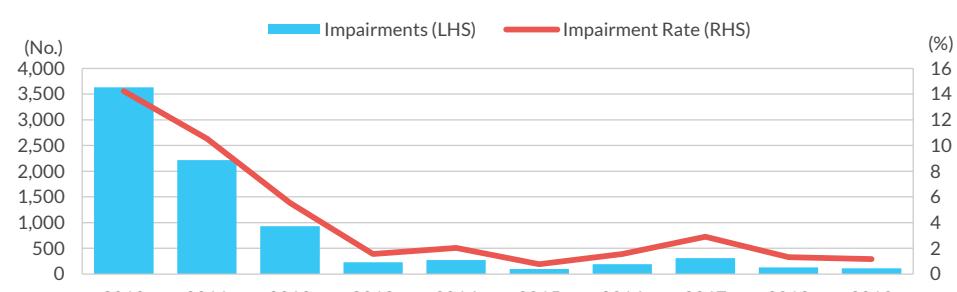
Global RMBS Rating Activity By Asset Category: 2019



Note: Percentages represent the proportion of total upgrades or total downgrades.

Source: Fitch Ratings.

Global RMBS Impairments: 2010–2019



Source: Fitch Ratings.

Structured Credit and Covered Bonds

Structured Credit Rating Activity: Global structured credit (SC) rating actions for 2019 aligned with year-earlier activity. Since 2013, upgrades have exceeded SC downgrades. The share of downgrades recorded in 2019 was a modest 0.3% compared with the share upgraded of 2.8%. The overall stability rating, including PIF, was 97%. The average SC rating at YE 2019 was 'A+'.

Structured Credit Registered No Impairments: SC recorded no 2019 impairments, this compared with two impairments recorded in 2018.

Over the long-term period, 1994–2019, the structured credit average annual impairment rate was 6.2%. As for investment and speculative grade, average annual impairment rates across the same period were 2.7% and 18.1%, respectively.

Covered Bonds: Covered bond program rating activity recorded a 2019 upgrade rate of 6.7%, compared with 7.3% in 2018. While 0.7% of covered bond program ratings were affected by downgrades in 2019, matching the 2018 downgrade rate. Ratings stability for covered bond programs was 84%. The share of withdrawn ratings for covered bond programs was shy of 9%.

No impairments for covered bond programs were recorded in 2019 or historically over the 2005–2019 long-term period.

See covered bonds transition matrices in the Appendix on page 34.

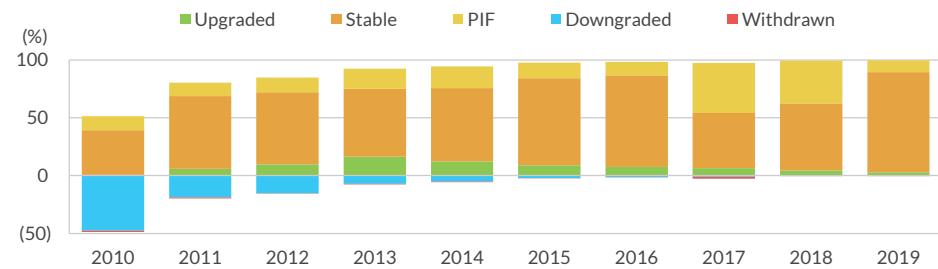
Global Structured Credit One-Year Transition Matrix: 2019 Cohort

(%)	AAA	AA	A	BBB	BB	B	CCC	CC and Below	WD	PIF
AAA	87.92	—	—	—	—	—	—	—	—	12.08
AA	0.54	92.16	—	—	—	—	—	—	—	7.30
A	0.35	3.14	82.93	—	—	—	—	—	2.44	11.15
BBB	—	—	5.26	83.46	1.13	—	—	—	—	10.15
BB	—	—	—	3.98	91.54	—	—	—	—	4.48
B	—	—	—	—	1.70	93.75	—	—	—	4.55
CCC	—	—	—	—	—	—	75.00	—	—	25.00

WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

Global Structured Credit Rating Changes



PIF – Paid in Full.

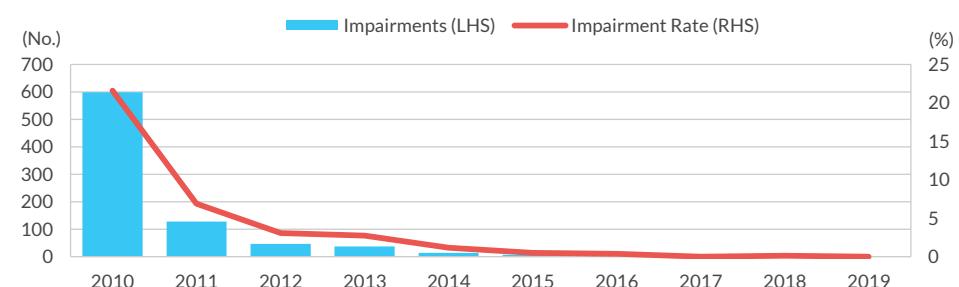
Source: Fitch Ratings.

Global Structured Credit Rating Activity By Asset Category: 2019



Note: Percentages represent the proportion of total upgrades or total downgrades.
Source: Fitch Ratings.

Global Structured Credit Impairments: 2010–2019



Source: Fitch Ratings.

Methodology

All Fitch public global structured finance (ABS, CMBS, RMBS and structured credit [SC]) long-term, international-scale debt ratings from 1990 to the present are included in this study – including securities with and those without the 'sf' suffix to their ratings. Private ratings are excluded from the study. Insured issues, in which the rating is dependent upon a third-party credit enhancement provider and interest-only bonds, are excluded so that the study highlights the main drivers behind rating performance of the underlying asset classes.

Fitch's continuing data enhancement efforts and methodology changes may result in slightly different statistics than in previously published studies. Therefore, this most recent study supersedes all prior versions.

Covered bond programs rating transition data are included in this study, but displayed separately.

Of note, Fitch employed a change in methodology in the 2012 study regarding the transition data and matrices. In prior studies, public, private and 144a ratings were included and similarly rated tranches from the same deal at issuance were treated as one observation. Private ratings are now being excluded and similarly rated tranches from the same deal at issuance are no longer being collapsed into one observation. The decision to count these similarly rated tranches as separate discrete observations allows more meaningful comparisons with the inclusion of rating migrations to withdrawn and paid in full (PIF).

It is important to observe that the rating transitions outlined in this study represent a distinct historical period and might not represent future rating migration patterns. Transition rates are influenced by a number of factors, including credit enhancement levels, macroeconomic variables, state of the financial markets, size of subsectors and ratings portfolio, and credit conditions generally.

To calculate transition rates, cohorts were created for each year from 1990 to 2019. A cohort is defined as a fixed pool representing the number of outstanding ratings at the beginning of a respective year. For example, the 2019 cohort may include ratings from 1996, 1997, 1998 and so on if these ratings were outstanding at the beginning of 2019. However, if a new rating was issued in the middle of 2019, that rating movement would be included in a future study in the 2020 cohort.

Respective multiple intra-year rating movements during the year were only counted once. Furthermore, for the purposes of calculating average one-and two-year transition rates, the transition rates for each year were weighted by the number of tranches outstanding for each rating category at the beginning of the year or cohort. This was done to give a fair evaluation of rating performance, since the number of structured finance tranches rated by Fitch grew substantially over the period.

In all, Fitch's global structured finance transition and impairment data contain 30 cohorts for 1990–2019, allowing for 30 unique one-year transitions.

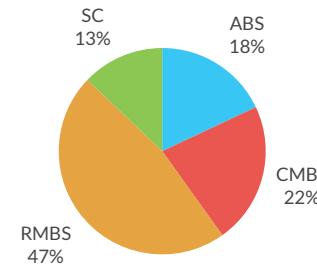
Throughout most of the study, an examination of 2019 one-year rating migration data at the major rating categories pinpoints the movement of ratings both up and down the rating scale from 'A' to 'BBB' (page 2), as opposed to the notch level, which counts each notch change from 'A' to 'A-' (see the *Global Structured Finance Transition Matrices* at the modifier level in the Appendix commencing on page 14).

The vertical left-hand column identifies ratings outstanding at the beginning of 2019, while the horizontal axis offers information on the migration pattern for those ratings by year's end. The table reads from the top left-hand corner, beginning with 'AAA' and following the diagonal to the right in order to examine the stability of each consecutive rating category.

For corporate finance transactions, defaults are fairly easy to identify, either through a missed payment, distressed exchange or bankruptcy filing. Furthermore, they are typically strongly linked to recoverable losses. By comparison, defining defaults within structured finance is a more challenging task, since payment shortfalls can be both temporary or allowed under the terms of bond indentures. Some structured bonds have features that allow notes to defer interest or payments-in-kind. Some structured securities can experience temporary interest shortfalls, which are inconsequential to deal performance and are cured relatively quickly.

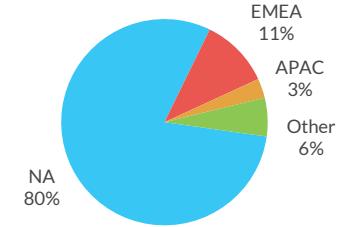
Lastly, structured bonds may also suffer write-downs to the original face value but continue to be active for extended periods of time. For the purposes of this study, Fitch tracks impairments, or defaults and near defaults, which include bonds downgraded to 'CC' or below. This includes not only bonds in payment default but also bonds where a default of some kind appears probable. The possibility exists some defaults identified in this study will be subsequently cured.

Global Structured Finance Rating Distribution By Sector: YE 2019



Source: Fitch Ratings.

Global Structured Finance Rating Distribution By Region: YE 2019



Source: Fitch Ratings.

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Related Research

Report Data – Excel File



The Fitch 2019 Transition and Default Study data is available in Excel format. Click [here](#) to download.

Related Reports

[Global Infrastructure and Project Finance 2019 Transition and Default Study \(July 2020\)](#)

[Global Corporate Finance 2019 Transition and Default Study \(July 2020\)](#)

[Global Economic Outlook: June 2020 - Coronavirus Disruption Easing \(June 2020\)](#)

[Sovereign 2019 Transition and Default Study \(April 2020\)](#)

Appendix: Global Structured Finance Average Cumulative Impairment Rates by Sector

Global Structured Finance Average Cumulative Impairment Rates: 1990–2019

(%)	Year One	Year Two	Year Three	Year Four	Year Five	Year Ten
AAA	0.85	2.84	4.71	5.99	6.87	9.26
AA+	1.40	5.93	9.84	11.94	13.34	17.84
AA	1.21	4.18	6.86	9.17	11.02	17.92
AA-	2.13	7.76	12.55	16.90	19.99	29.22
A+	2.22	7.69	12.35	16.31	19.26	26.73
A	2.06	5.83	9.37	12.89	15.94	27.23
A-	4.83	14.30	23.30	31.20	37.88	48.67
BBB+	5.18	14.50	23.45	30.50	35.92	47.59
BBB	4.35	10.78	16.02	20.32	24.00	35.12
BBB-	7.23	17.29	26.27	33.11	38.22	48.88
BB+	10.25	22.21	30.99	36.88	40.86	51.22
BB	9.81	17.19	23.18	28.01	32.30	47.96
BB-	9.73	18.92	27.63	34.43	39.86	54.61
B+	14.48	23.46	33.17	41.49	48.01	65.30
B	15.44	24.51	30.50	35.31	39.78	57.15
B-	19.49	37.60	48.08	55.64	62.08	76.14
CCC	38.04	49.75	54.98	58.30	61.87	88.73
Investment Grade	1.71	5.03	8.01	10.32	12.07	16.79
Speculative Grade	18.62	28.48	34.98	39.90	44.24	59.82
All Structured Finance	4.57	8.94	12.44	15.07	17.09	21.98

^aIncludes asset-backed, commercial mortgage-backed, residential mortgage-backed and structured credit securities.

Source: Fitch Ratings.

Three-Year Impairment Statistics^a

Ten-Year Average of Three-Year Cumulative Impairment Rates (CDRs)

(%)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-
2008–2017	10.74	12.30	10.57	16.48	18.78	11.84	30.54	27.68	20.57	30.35	40.92	27.95	44.19	53.97	35.73	61.84

^aIncludes asset-backed, commercial mortgage-backed, residential mortgage-backed and structured credit securities

Source: Fitch Ratings.

Most Recent Three-Year Cumulative Impairment Rates (CDRs)

(%)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-
2017	—	—	—	—	—	0.25	—	—	1.51	—	—	3.21	—	1.89	8.95	1.39
2016	—	—	—	—	—	0.29	—	—	1.80	0.53	—	2.98	—	—	7.15	6.83

Source: Fitch Ratings.

Appendix: Global Structured Finance Average Cumulative Impairment Rates by Sector

ABS

(1990–2019)

(%)	Year One	Year Two	Year Three	Year Four	Year Five	(%)	Year One	Year Two	Year Three	Year Four	Year Five
AAA	0.004	0.02	0.06	0.14	0.28	AAA	0.01	0.05	0.11	0.25	0.47
AA	0.01	0.15	0.62	1.21	1.72	AA	0.12	0.43	0.99	2.33	4.07
A	0.11	0.37	0.74	1.24	1.74	A	0.29	1.15	2.87	5.43	7.86
BBB	0.33	1.20	2.19	2.98	3.55	BBB	0.86	3.33	7.70	12.26	15.66
BB	2.49	6.66	9.53	11.35	12.61	BB	2.74	8.22	15.75	22.52	27.67
B	8.52	15.16	20.06	23.57	27.09	B	10.94	24.58	35.00	42.95	49.67
CCC	36.71	52.47	62.39	66.23	68.50	CCC	32.69	46.00	51.91	56.09	59.73
Investment Grade	0.08	0.28	0.57	0.90	1.21	Investment Grade	0.25	0.99	2.35	4.09	5.67
Speculative Grade	7.93	14.10	18.45	21.07	23.21	Speculative Grade	10.99	21.16	29.66	36.47	41.94
All ABS	0.52	1.06	1.58	2.03	2.44	All CMBS	2.94	6.12	9.38	12.51	15.16

Source: Fitch Ratings.

CMBS

(1991–2019)

Source: Fitch Ratings.

RMBS

(1990–2019)

(%)	Year One	Year Two	Year Three	Year Four	Year Five	(%)	Year One	Year Two	Year Three	Year Four	Year Five
AAA	1.10	3.62	5.88	7.30	8.21	AAA	0.53	2.35	5.34	8.92	11.98
AA	1.75	6.21	9.87	12.55	14.50	AA	1.83	7.21	12.82	17.55	20.77
A	3.55	10.58	16.63	22.22	26.97	A	4.70	12.18	19.81	25.52	29.52
BBB	7.32	17.77	25.86	32.17	37.51	BBB	5.08	12.92	20.53	26.27	30.54
BB	12.82	22.07	28.91	34.20	38.95	BB	8.69	17.66	23.83	28.06	31.25
B	17.88	27.15	33.00	37.84	42.31	B	17.16	27.11	32.61	36.67	40.32
CCC	38.69	50.04	55.27	58.57	62.41	CCC	41.39	53.09	55.95	57.83	59.02
Investment Grade	2.18	6.34	9.80	12.29	14.08	Investment Grade	2.66	7.80	13.46	18.34	22.01
Speculative Grade	21.47	31.45	37.66	42.35	46.70	Speculative Grade	18.07	28.11	33.51	37.32	40.34
All RMBS	5.40	10.42	14.20	16.87	18.85	All Structured Credit	6.22	12.59	18.26	22.90	26.42

Source: Fitch Ratings.

Structured Credit

(1994–2019)

Source: Fitch Ratings.

Appendix: North America Structured Finance

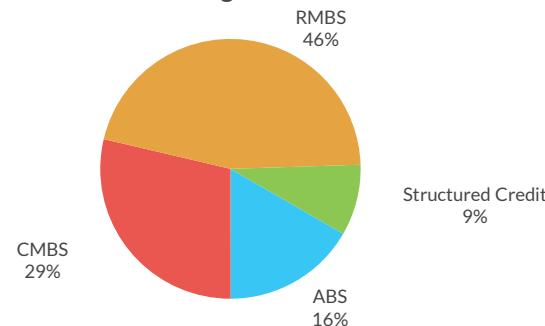
North America Structured Finance One-Year Transition Matrix: 2019 Cohort

(%)	AAA	AA	A	BBB	BB	B	CCC	CC and Below	WD	PIF
AAA	86.13	0.19	0.05	—	—	—	—	—	0.11	13.52
AA	21.95	68.28	1.17	0.15	0.07	—	—	—	0.22	8.15
A	2.27	10.69	74.25	1.14	0.63	—	0.04	—	0.93	10.05
BBB	0.55	0.95	14.74	71.81	3.98	0.90	0.10	—	1.20	5.78
BB	0.08	0.25	2.10	23.36	66.54	2.02	0.66	0.45	1.52	3.01
B	—	0.15	0.67	2.75	25.17	59.32	4.97	1.56	1.63	3.79
CCC	0.18	—	—	0.91	7.48	17.52	52.19	17.88	1.64	2.19

WD – Withdrawn. PIF – Paid in full.

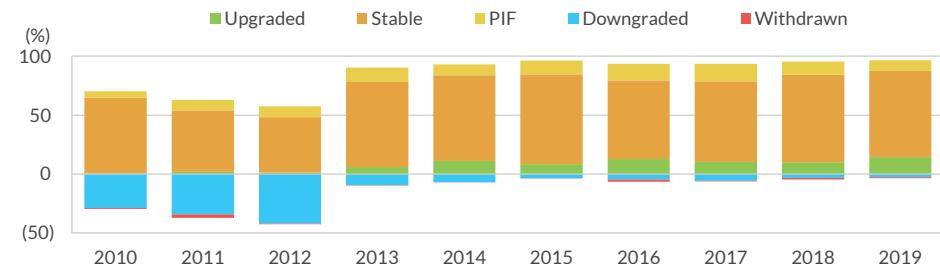
Source: Fitch Ratings.

North America Structured Finance Rating Distribution: YE 2019



Source: Fitch Ratings.

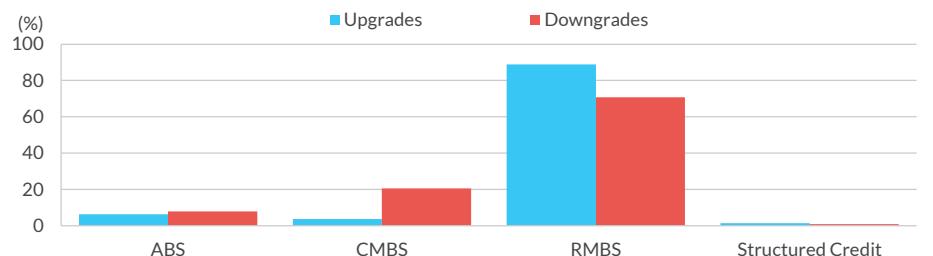
North America Structured Finance Rating Changes



PIF – Paid in full.

Source: Fitch Ratings.

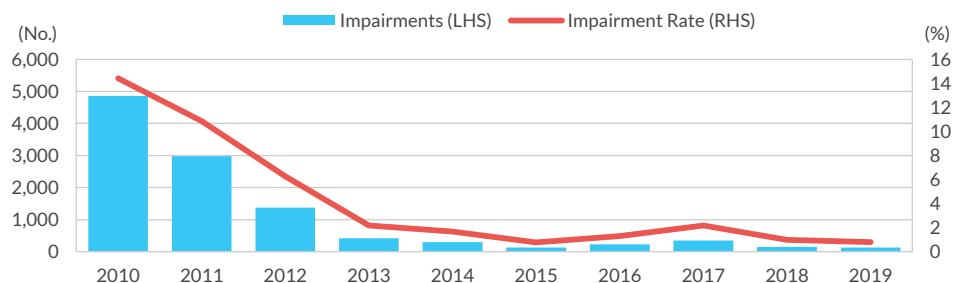
North America Structured Finance Rating Activity By Sector: 2019



Note: Percentages represent the proportion of total upgrades or total downgrades

Source: Fitch Ratings.

North America Structured Finance Impairments: 2010–2019



Source: Fitch Ratings.

Appendix: EMEA Structured Finance

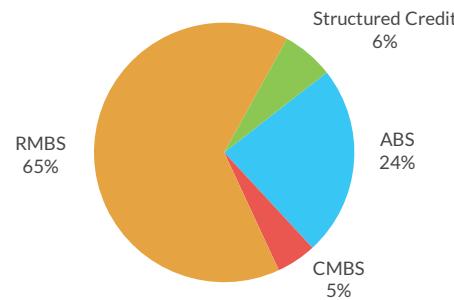
EMEA Structured Finance One-Year Transition Matrix: 2019 Cohort

(%)	AAA	AA	A	BBB	BB	B	CCC	CC and Below	WD	PIF
AAA	77.27	0.64	—	—	—	—	—	—	—	22.10
AA	18.72	64.17	0.27	—	—	—	—	—	0.27	16.58
A	2.73	6.63	73.29	1.75	—	0.39	—	—	0.58	14.62
BBB	0.55	3.29	11.23	45.75	30.96	—	—	—	—	8.22
BB	—	—	2.16	16.76	60.54	2.16	—	—	—	18.38
B	—	—	3.00	2.00	6.00	74.00	2.00	—	—	13.00
CCC	—	—	—	5.97	2.99	23.88	61.19	1.49	—	4.48

WD – Withdrawn. PIF – Paid in full.

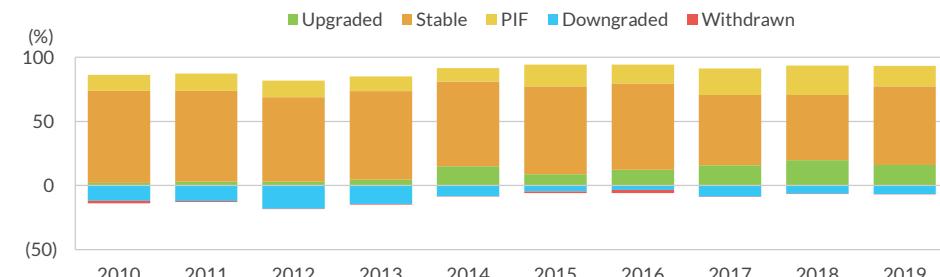
Source: Fitch Ratings.

EMEA Structured Finance Rating Distribution: YE 2019

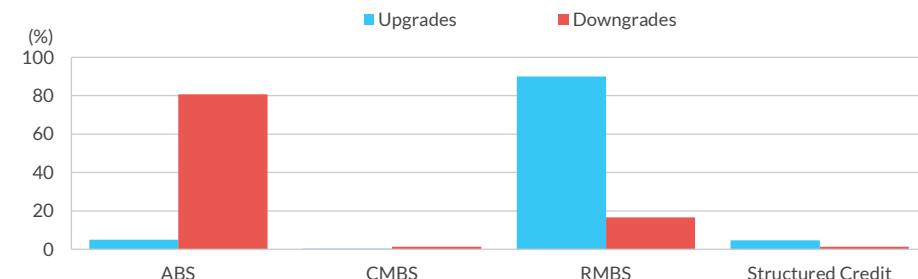


Source: Fitch Ratings.

EMEA Structured Finance Rating Changes

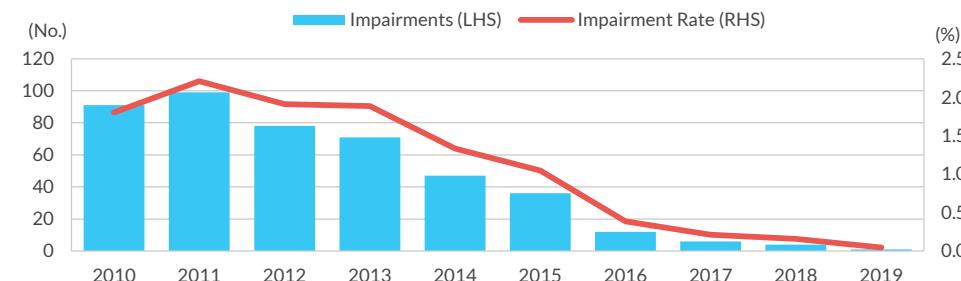


EMEA Structured Finance Rating Activity By Sector: 2019



Source: Fitch Ratings.

EMEA Structured Finance Impairments: 2009–2018



Source: Fitch Ratings.

Appendix: Asia Pacific Structured Finance

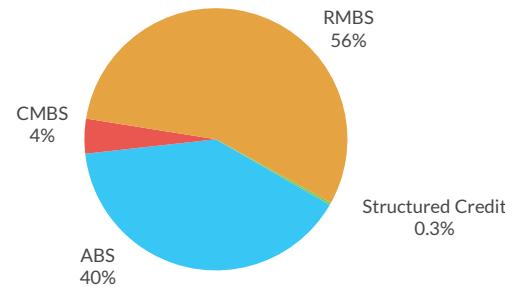
APAC Structured Finance One-Year Transition Matrix: 2019 Cohort

(%)	AAA	AA	A	BBB	BB	B	CCC	CC and Below	WD	PIF
AAA	82.22	—	—	—	—	—	—	—	0.74	17.04
AA	13.51	56.76	—	—	—	—	—	—	1.35	28.38
A	—	13.73	54.90	—	—	—	—	—	1.96	29.41
BBB	—	1.96	7.84	60.78	—	—	—	—	1.96	27.45
BB	—	—	3.13	9.38	62.50	—	—	—	3.13	21.88
B	—	—	—	16.67	16.67	58.33	—	—	—	8.33
CCC	—	—	—	—	—	—	—	—	—	—

WD – Withdrawn. PIF – Paid in full.

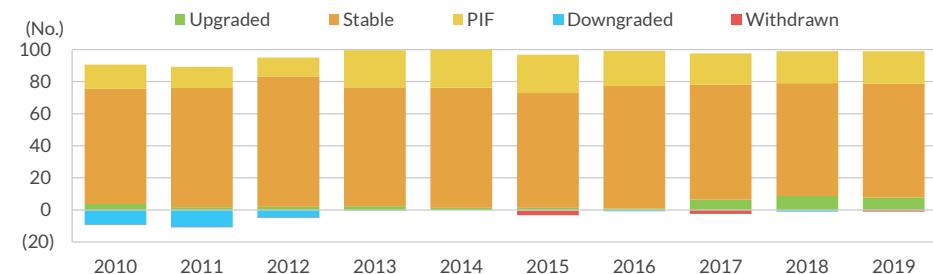
Source: Fitch Ratings.

APAC Structured Finance Rating Distribution: YE 2019



Source: Fitch Ratings.

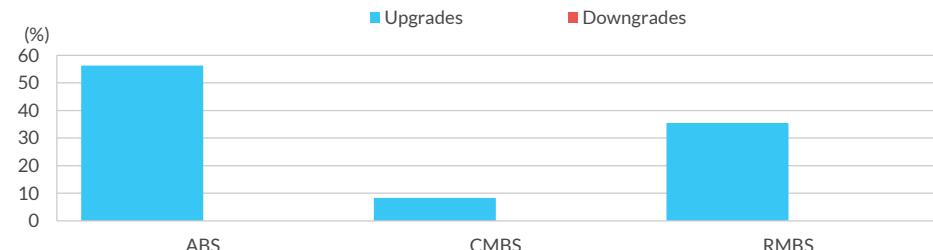
APAC Structured Finance Rating Changes



PIF – Paid in full.

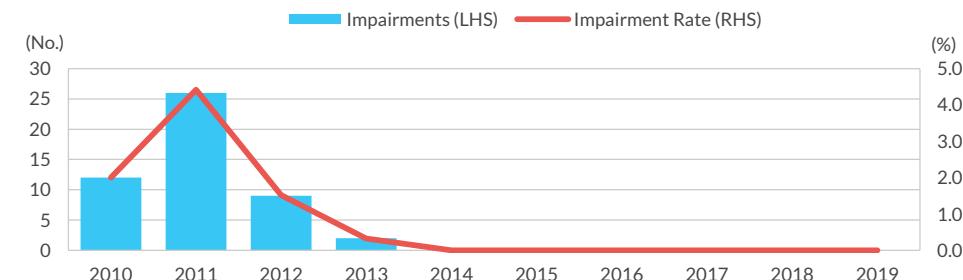
Source: Fitch Ratings.

APAC Structured Finance Rating Activity By Sector: 2019



Note: Percentages represent the proportion of total upgrades or total downgrades
Source: Fitch Ratings.

APAC Structured Finance Impairments: 2010–2019



Source: Fitch Ratings.

Appendix: Global Structured Finance^a Transition Matrices

Average Annual Transition Matrix: 1990–2019

(%)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC and Below	WD	PIF	
AAA	79.73	0.08	1.03	0.09	0.04	0.92	0.02	0.02	0.88	0.04	0.01	0.57	0.01	0.002	0.50	0.003	0.98	0.85	0.39	13.86
AA+	10.94	62.72	2.36	0.45	0.41	2.68	0.15	0.08	2.30	0.24	0.03	1.94	0.07	0.03	1.18	0.02	1.37	1.40	0.57	11.08
AA	7.67	2.25	68.28	0.50	0.33	3.85	0.17	0.10	2.63	0.19	0.09	1.54	0.04	0.04	1.00	0.03	0.88	1.21	0.58	8.63
AA-	3.89	2.64	3.78	64.50	1.28	2.53	0.87	0.23	2.27	0.65	0.08	1.74	0.11	0.03	1.58	0.12	2.10	2.13	0.70	8.78
A+	2.29	1.60	4.33	2.51	63.55	2.10	0.80	0.66	2.90	0.46	0.13	1.69	0.07	0.05	1.41	0.11	1.66	2.22	0.51	10.93
A	2.06	0.64	4.07	0.66	1.85	69.24	0.59	0.45	3.96	0.38	0.10	2.23	0.06	0.04	1.62	0.11	1.33	2.06	0.39	8.15
A-	1.19	0.53	1.00	0.75	1.77	3.67	65.79	2.39	2.50	1.97	0.63	2.14	0.23	0.11	1.61	0.55	2.12	4.83	0.28	5.91
BBB+	0.70	0.30	0.80	0.42	1.56	2.42	2.47	61.66	2.42	1.96	1.28	2.60	0.35	0.22	2.75	0.65	2.19	5.18	1.41	8.65
BBB	0.47	0.21	0.89	0.31	0.64	4.04	0.60	2.08	64.90	0.84	0.46	4.59	0.27	0.15	3.56	0.32	3.12	4.35	0.67	7.52
BBB-	0.33	0.06	0.21	0.20	0.35	0.94	0.86	1.24	2.98	63.19	2.05	3.58	1.72	0.57	2.83	1.40	2.23	7.23	0.51	7.51
BB+	0.22	0.03	0.42	0.09	0.52	0.98	0.70	2.48	3.21	3.53	55.87	2.54	1.16	1.27	3.86	1.80	2.80	10.25	0.75	7.52
BB	0.15	0.03	0.24	0.07	0.17	1.45	0.25	0.46	5.01	0.88	1.42	61.54	0.35	0.39	6.00	0.71	4.64	9.81	0.80	5.63
BB-	0.08	—	0.10	0.02	0.08	0.16	0.21	0.16	0.76	2.78	3.09	3.73	62.08	1.53	4.08	3.09	3.36	9.73	0.47	4.51
B+	0.22	—	0.03	0.03	0.22	0.16	0.13	0.19	0.53	0.69	1.98	4.52	3.71	54.71	4.08	3.96	4.30	14.48	0.69	5.37
B	0.05	0.01	0.04	0.003	0.04	0.27	0.04	0.09	1.31	0.22	0.51	7.06	0.53	1.16	57.60	0.95	9.28	15.44	0.75	4.63
B-	0.07	—	0.02	0.02	—	0.03	0.02	—	0.10	—	0.17	0.84	0.31	0.82	1.84	60.75	11.40	19.49	0.87	3.24
CCC	0.04	—	—	—	—	0.06	—	—	0.17	0.01	0.03	1.47	0.03	0.04	4.80	0.16	52.33	38.04	0.47	2.37

^aIncludes asset-backed, commercial mortgage-backed, residential mortgage-backed and structured credit securities. WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

Appendix: Global Structured Finance^a Transition Matrices (Continued)

One-Year Transition Matrix: 2019 Cohort^a

(%)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC and Below	WD	PIF	
AAA	85.32	0.01	0.20	—	—	0.04	—	—	—	—	—	—	—	—	—	—	—	0.13	14.30	
AA+	28.50	55.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16.50	
AA	20.14	1.64	65.88	—	0.07	0.85	—	—	0.13	—	—	0.07	—	—	—	—	—	0.33	10.89	
AA-	4.19	3.35	5.03	84.64	—	0.84	—	—	—	—	—	—	—	—	—	—	—	—	1.96	
A+	3.30	3.02	4.40	2.47	70.05	0.27	0.55	0.55	0.55	—	—	—	—	0.27	0.27	—	—	0.55	13.74	
A	2.52	0.49	9.93	0.36	1.80	70.34	0.13	0.04	0.99	—	—	0.67	—	—	—	0.04	—	0.99	11.69	
A-	—	—	2.73	0.73	3.09	6.73	78.55	0.73	0.91	—	—	—	—	—	—	—	—	0.36	6.18	
BBB+	0.83	0.83	2.07	1.24	11.20	2.90	2.90	61.83	0.83	1.66	—	—	—	—	—	—	—	—	13.69	
BBB	0.48	0.06	0.90	0.24	0.84	14.98	0.24	1.56	67.47	0.12	0.06	4.31	—	—	0.84	—	0.12	—	1.50	6.29
BBB-	0.43	—	0.14	0.14	0.14	0.71	3.69	0.99	2.41	69.18	15.77	1.14	0.14	—	0.43	0.14	—	—	4.55	
BB+	—	—	—	—	—	0.49	1.48	25.12	5.91	4.43	44.34	2.46	0.49	—	—	0.49	—	—	14.78	
BB	0.09	—	0.28	—	—	2.38	0.05	0.42	19.16	1.68	1.64	65.42	0.09	—	2.06	0.05	0.65	0.51	1.78	3.74
BB-	—	—	—	—	—	—	—	—	0.22	15.87	13.26	6.52	60.00	—	1.09	0.65	0.22	—	—	2.17
B+	—	—	—	—	—	—	3.33	—	—	1.67	—	43.33	8.33	35.00	—	—	—	—	8.33	
B	—	—	0.17	—	0.08	0.76	—	—	3.36	—	—	22.18	4.03	5.55	50.34	0.25	5.21	1.68	1.85	4.54
B-	—	—	—	—	—	—	—	—	—	0.28	0.57	0.28	0.28	0.28	4.25	88.95	1.98	0.28	—	3.12
CCC	0.16	—	—	—	—	—	—	—	1.14	0.32	0.16	6.66	0.16	0.49	17.37	0.32	53.25	16.07	1.46	2.44

^aIncludes asset-backed, commercial mortgage-backed, residential mortgage-backed and structured credit securities. WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

Appendix: Global Structured Finance^a Transition Matrices (Continued)

Three-Year Transition Matrix: 2017 Cohort^a

(%)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC and Below	WD	PIF
AAA	49.11	0.02	0.43	0.02	0.13	0.17	0.02	—	0.03	—	—	0.08	—	—	0.48	—	0.07	—	0.13 49.31
AA+	17.00	5.00	12.33	—	1.67	0.33	—	0.33	0.33	—	—	—	—	—	0.67	—	—	—	0.33 62.00
AA	17.53	0.70	23.28	—	0.77	2.88	0.07	—	3.02	—	—	0.28	—	—	0.07	—	—	—	1.40 50.00
AA-	8.53	2.39	7.51	56.31	0.68	1.71	0.68	—	—	—	—	—	—	—	0.68	—	—	—	21.50
A+	5.67	3.28	7.46	1.19	24.78	0.90	—	0.30	2.69	—	—	—	—	—	0.90	—	—	—	0.30 52.54
A	8.65	0.35	5.56	0.28	1.69	32.31	0.11	0.07	4.47	—	—	1.30	—	0.04	0.46	—	0.07	0.25	1.83 42.58
A-	1.67	0.56	0.74	0.37	2.78	7.42	45.83	0.19	1.11	0.37	13.73	0.19	—	—	0.56	—	—	—	0.93 23.56
BBB+	1.36	0.45	0.45	1.81	8.60	3.62	2.26	31.22	9.05	0.91	—	—	—	—	0.45	—	—	—	0.45 39.37
BBB	4.84	0.16	5.10	0.21	1.30	10.04	0.36	0.99	27.46	0.05	0.05	7.12	—	—	0.94	—	0.42	1.51	5.04 34.43
BBB-	5.09	3.32	0.66	0.44	3.32	1.11	1.33	1.11	2.21	51.55	0.89	2.88	0.66	—	1.77	0.22	0.44	—	0.66 22.35
BB+	2.03	—	3.38	2.03	12.16	2.70	6.08	4.05	1.35	6.08	25.00	2.03	—	—	1.35	—	2.03	—	0.68 29.05
BB	1.53	0.16	1.81	0.08	0.44	7.03	0.24	0.88	13.33	0.32	0.32	37.55	0.12	0.08	2.09	0.04	0.96	3.21	5.58 24.22
BB-	0.61	—	0.61	—	0.61	—	1.84	1.23	3.07	0.61	2.45	1.84	58.90	—	2.45	3.07	1.84	—	0.61 20.25
B+	—	—	—	—	3.77	—	1.89	16.98	11.32	3.77	11.32	3.77	—	7.55	1.89	—	—	1.89	— 35.85
B	0.76	—	0.95	0.13	0.44	5.14	0.38	0.25	9.78	0.76	0.51	21.84	0.19	0.51	21.21	0.19	5.21	8.95	4.32 18.48
B-	—	—	—	—	—	—	—	0.46	0.93	1.85	1.39	1.85	1.39	1.39	1.85	43.52	8.33	1.39	— 35.65
CCC	0.46	—	0.28	—	0.18	1.56	—	0.09	1.83	0.18	0.18	5.96	0.55	0.37	12.02	0.28	24.13	36.06	3.85 12.02

^aIncludes asset-backed, commercial mortgage-backed, residential mortgage-backed and structured credit securities. WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

Appendix: Global Structured Finance^a Transition Matrices (Continued)

Ten-Year Transition Matrix: 2010 Cohort^a

(%)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC and Below	WD	PIF	
AAA	3.43	0.07	1.22	0.02	0.29	3.03	0.06	0.01	3.60	0.01	0.01	3.53	—	0.02	1.17	0.01	0.37	2.22	6.97	73.96
AA+	2.61	0.15	1.53	—	1.07	5.06	—	—	7.36	—	—	3.83	0.15	—	3.37	—	1.99	4.14	5.67	63.04
AA	2.38	0.29	1.96	0.08	0.58	2.54	0.21	0.21	5.38	0.13	—	9.59	—	—	2.34	—	2.04	10.72	5.42	56.13
AA-	0.98	—	0.49	0.49	0.98	3.41	0.73	0.24	3.90	—	0.24	0.49	—	—	1.22	—	0.73	8.78	8.54	68.78
A+	1.11	1.66	1.29	—	1.66	2.03	0.92	0.18	0.92	—	—	1.11	—	0.18	0.92	—	0.37	7.76	2.22	77.63
A	1.72	0.18	2.08	0.33	0.77	3.62	0.11	0.26	3.51	0.15	0.15	7.38	0.04	0.04	2.08	—	1.72	14.73	3.62	57.53
A-	1.17	0.58	1.17	0.58	1.75	1.75	0.87	0.58	1.46	0.87	0.29	1.75	0.29	—	1.17	—	1.17	15.45	3.79	65.31
BBB+	0.16	0.16	0.79	—	1.42	0.47	0.32	1.10	1.10	—	0.32	0.32	—	—	0.47	—	0.16	15.30	17.19	60.73
BBB	0.40	0.09	0.77	0.03	0.59	2.47	0.25	0.25	3.05	0.09	0.18	6.32	0.06	0.09	2.22	—	2.56	33.65	4.38	42.56
BBB-	0.86	0.17	0.34	0.17	0.51	0.69	0.34	1.54	0.34	0.34	0.34	0.34	0.17	—	0.51	0.17	1.89	32.25	6.35	52.66
BB+	0.99	—	2.63	—	0.33	0.99	—	0.66	0.33	0.66	0.66	0.66	0.33	0.66	0.99	—	—	40.79	5.92	43.42
BB	0.64	0.05	0.05	0.14	0.18	1.69	0.05	0.55	2.10	—	—	2.28	0.09	—	1.28	0.05	2.10	53.93	4.43	30.41
BB-	0.40	—	0.40	—	—	—	—	0.79	0.40	—	—	—	—	0.40	0.40	—	1.59	58.33	2.78	34.52
B+	—	—	—	—	—	2.54	—	—	0.51	—	—	0.51	—	—	—	—	0.51	65.48	4.57	25.89
B	0.40	—	0.52	—	0.08	1.71	—	0.28	0.87	0.08	0.16	1.94	0.08	0.04	1.19	—	0.79	69.92	4.09	17.86
B-	0.25	—	—	—	—	0.12	—	—	0.25	0.12	—	0.25	—	—	0.12	—	—	91.17	0.50	7.21
CCC	0.26	—	0.46	0.04	—	2.30	0.04	0.04	0.59	0.11	0.07	1.03	—	0.06	0.26	0.02	0.44	88.09	0.81	5.38

^aIncludes asset-backed, commercial mortgage-backed, residential mortgage-backed and structured credit securities. WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

Appendix: Global ABS Transition Matrices

Average Annual Transition Matrix: 1990–2019

(%)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC and Below	WD	PIF	
AAA	80.69	0.09	0.38	0.14	0.04	0.23	0.03	0.02	0.37	0.05	0.01	0.11	—	—	0.06	0.01	0.02	0.004	0.71	17.03
AA+	18.62	52.14	4.41	0.69	0.14	0.28	0.28	0.41	0.83	0.55	0.14	1.10	—	—	0.41	—	—	—	0.41	19.59
AA	10.57	1.24	68.93	1.47	0.72	0.86	0.32	0.02	0.76	0.25	0.11	0.27	0.11	0.02	0.11	—	0.02	—	0.82	13.39
AA-	2.71	1.59	2.95	63.96	1.28	2.07	0.72	0.08	0.88	0.72	0.16	0.08	—	—	0.16	0.08	0.08	0.08	0.48	21.93
A+	0.49	0.98	3.65	1.00	72.46	1.87	0.15	0.17	4.06	0.40	0.04	0.11	—	0.02	0.17	—	0.08	0.04	0.87	13.44
A	1.28	0.20	3.73	0.37	1.32	77.83	0.74	0.34	1.11	0.16	0.05	0.54	0.09	0.02	0.59	0.03	0.09	0.15	0.44	10.91
A-	0.58	0.16	0.66	0.25	0.82	5.26	63.60	6.33	2.79	5.67	0.33	0.74	0.41	0.08	0.16	0.16	0.25	—	0.49	11.26
BBB+	0.19	0.04	0.50	0.04	0.69	1.95	2.18	66.11	2.26	2.98	0.61	0.57	0.42	0.08	0.34	—	0.38	0.19	6.27	14.19
BBB	0.16	0.01	0.36	0.09	0.25	2.59	0.31	3.90	72.01	1.02	0.62	1.12	0.39	0.10	0.74	0.37	0.30	0.30	1.52	13.83
BBB-	0.22	—	0.15	—	—	1.61	—	0.51	3.07	57.06	10.75	3.58	1.46	0.59	3.07	0.29	1.10	0.80	1.68	14.05
BB+	—	—	0.56	—	0.38	1.13	—	2.26	4.33	2.07	54.05	7.34	2.26	2.64	2.26	0.38	1.69	1.13	1.88	15.63
BB	—	—	—	—	0.05	1.81	0.10	0.10	4.04	0.98	1.30	62.88	1.19	1.76	5.70	0.67	2.44	2.49	1.19	13.27
BB-	—	—	—	—	—	0.26	—	—	1.04	0.26	2.33	4.92	54.40	7.25	8.29	0.52	2.07	4.40	2.85	11.40
B+	—	—	—	—	—	—	—	—	1.06	1.06	—	1.59	3.17	35.45	31.75	2.65	8.99	4.23	3.70	6.35
B	0.27	—	0.09	—	—	—	—	0.09	1.17	0.27	0.27	1.71	0.36	0.72	59.15	4.51	5.23	8.39	5.95	11.81
B-	—	—	—	—	—	—	—	—	0.34	—	—	0.34	—	0.67	0.34	57.05	9.73	11.74	13.76	6.04
CCC	—	—	—	—	—	—	—	—	—	—	—	0.40	0.60	0.40	0.60	—	52.98	36.71	2.78	5.56

WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

Appendix: Global ABS Transition Matrices (Continued)

One-Year Transition Matrix: 2019 Cohort

(%)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC and Below	WD	PIF	
AAA	74.23	—	0.52	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.12	25.13	
AA+	18.18	38.18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	43.64	
AA	15.00	0.48	69.76	—	0.24	0.95	—	—	—	—	—	0.24	—	—	—	—	—	0.24	13.10	
AA-	18.18	18.18	18.18	36.36	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9.09	
A+	3.48	—	10.43	0.87	66.96	—	—	—	1.74	—	—	—	—	—	—	—	—	—	0.87	15.65
A	0.68	0.34	4.61	0.34	0.17	81.74	—	—	—	—	—	0.34	—	—	—	—	—	—	0.34	11.43
A-	—	—	1.82	—	1.82	1.82	58.18	—	—	—	—	—	—	—	—	—	—	—	36.36	
BBB+	—	1.37	2.74	—	—	2.74	—	57.53	—	5.48	—	—	—	—	—	—	—	—	30.14	
BBB	—	—	0.75	0.38	0.38	9.77	—	0.38	74.06	0.75	—	0.38	—	—	2.26	—	—	—	10.90	
BBB-	—	—	0.68	—	—	0.68	—	0.68	—	11.56	75.51	—	—	—	—	—	—	—	10.88	
BB+	—	—	—	—	—	—	—	3.23	—	—	32.26	16.13	—	—	—	—	—	—	48.39	
BB	—	—	—	—	—	1.22	—	1.22	6.10	—	—	67.07	—	—	12.20	—	—	—	12.20	
BB-	—	—	—	—	—	—	—	—	—	—	—	26.67	53.33	—	—	—	—	—	20.00	
B+	—	—	—	—	—	—	—	—	—	—	—	20.00	—	40.00	—	—	—	—	40.00	
B	—	—	—	—	—	—	—	—	1.22	—	—	—	—	82.93	—	2.44	—	—	13.41	
B-	—	—	—	—	—	—	—	—	—	—	—	20.00	—	—	40.00	—	—	—	20.00	
CCC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	100.00	—	—	—	

WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

Appendix: Global ABS Transition Matrices (Continued)

Three-Year Transition Matrix: 2017 Cohort

(%)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC and Below	WD	PIF	
AAA	38.24	—	1.06	—	—	0.24	—	—	0.06	—	—	0.30	—	—	1.48	—	0.24	—	0.06	58.33
AA+	10.26	2.56	10.26	—	—	—	—	—	2.56	—	—	—	—	—	2.56	—	—	—	2.56	69.23
AA	13.72	0.75	33.42	—	0.75	1.00	—	—	0.50	—	—	0.25	—	—	0.25	—	—	—	—	49.38
AA-	20.00	—	6.67	3.33	3.33	—	3.33	—	—	—	—	—	—	—	—	—	—	—	—	63.33
A+	1.94	4.52	10.32	0.65	26.45	—	—	—	5.16	—	—	—	—	—	1.94	—	—	—	—	49.03
A	3.50	0.16	3.50	0.16	1.11	50.00	0.32	0.16	2.71	—	—	—	—	—	1.43	—	0.16	—	0.96	35.83
A-	0.69	0.69	—	—	—	4.14	4.83	—	0.69	—	50.34	0.69	—	—	—	—	—	—	0.69	37.24
BBB+	—	—	—	—	—	4.17	8.33	16.67	—	4.17	—	—	—	—	—	—	—	—	—	66.67
BBB	3.46	—	3.90	0.43	0.43	4.33	1.30	2.60	25.11	0.43	—	1.30	—	—	1.73	—	0.87	—	1.73	52.38
BBB-	—	—	—	—	—	—	—	2.27	—	2.27	2.27	6.82	—	—	—	—	—	—	—	86.36
BB+	—	—	—	—	—	—	—	—	5.88	5.88	47.06	—	—	—	—	—	—	—	—	41.18
BB	—	—	3.70	—	—	7.41	—	2.47	7.41	4.94	—	11.11	1.23	—	12.35	—	—	—	3.70	45.68
BB-	9.09	—	9.09	—	—	—	—	—	—	—	—	9.09	9.09	—	—	—	—	—	—	63.64
B+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16.67	—	—	—	—	83.33
B	4.17	—	2.08	—	—	—	—	—	4.17	—	—	4.17	2.08	—	41.67	—	4.17	2.08	—	35.42
B-	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16.67	83.33	—	—	—
CCC	—	—	—	—	—	—	—	—	—	—	—	—	14.29	—	—	—	7.14	71.43	7.14	—

WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

Appendix: Global ABS Transition Matrices (Continued)

Ten-Year Transition Matrix: 2010 Cohort

(%)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC and Below	WD	PIF	
AAA	10.27	—	1.14	0.04	0.20	1.39	0.33	0.04	0.86	—	—	0.29	—	—	2.16	0.08	0.53	0.98	0.86	80.85
AA+	2.94	—	—	—	5.88	35.29	—	—	8.82	—	—	—	—	—	—	—	—	2.94	—	38.24
AA	—	—	—	—	1.38	2.07	1.38	1.38	2.76	—	—	—	—	—	—	—	—	11.03	9.66	70.34
AA-	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.25	93.75
A+	—	4.02	0.57	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.30	0.57	92.53
A	2.16	—	2.88	0.24	0.72	4.09	—	0.24	2.64	0.72	0.48	0.24	—	—	0.96	—	0.96	3.61	3.85	76.20
A-	—	—	3.23	—	—	—	—	—	—	6.45	—	—	—	—	—	—	—	—	3.23	87.10
BBB+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.95	36.53	60.52
BBB	—	—	0.36	—	—	0.36	—	—	0.36	—	—	—	—	—	—	—	0.72	2.87	19.71	75.63
BBB-	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.82	38.18	60.00
BB+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	24.00	36.00	40.00
BB	—	—	—	—	—	—	—	—	—	—	—	0.96	—	—	0.96	—	—	9.62	14.42	74.04
BB-	—	—	10.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20.00	10.00	60.00
B+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	28.57	42.86	28.57
B	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11.54	38.46	50.00
B-	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	37.50	25.00	37.50
CCC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	50.00	10.00	40.00

WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

Appendix: Global CMBS Transition Matrices

Average Annual Transition Matrix: 1991–2019

(%)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC and Below	WD	PIF	
AAA	84.08	0.06	0.59	0.05	0.03	0.51	0.02	0.003	0.20	0.13	—	0.16	—	—	0.02	0.01	0.01	0.01	0.49	13.64
AA+	25.70	55.74	1.74	0.29	0.35	1.68	0.06	0.12	0.75	0.58	—	1.39	—	—	0.17	0.12	—	0.12	0.99	10.21
AA	10.05	4.44	68.84	0.36	0.25	3.03	0.13	0.09	1.33	0.45	0.06	1.19	0.02	—	0.47	0.06	0.19	0.11	0.58	8.35
AA-	6.05	2.34	5.22	73.23	0.42	1.97	0.30	0.08	1.17	0.68	0.04	1.63	0.08	—	0.64	0.23	0.23	0.15	0.38	5.18
A+	9.33	3.15	7.39	5.94	54.69	2.60	0.48	0.24	1.33	0.55	0.24	2.12	—	0.06	1.51	0.48	0.61	0.42	0.36	8.48
A	3.86	0.64	3.55	1.25	3.72	67.61	0.44	0.26	2.82	0.88	0.10	1.92	0.04	0.04	1.06	0.64	0.41	0.26	0.48	10.02
A-	2.20	0.66	1.23	1.02	1.76	5.18	77.07	0.66	1.25	0.97	0.03	1.66	0.08	0.05	0.69	1.20	0.38	0.31	0.18	3.42
BBB+	2.19	0.82	1.34	0.93	1.67	3.23	4.68	65.00	2.26	1.26	0.56	2.19	0.19	0.11	2.00	2.12	1.52	0.67	0.33	6.94
BBB	1.44	0.25	0.64	0.30	0.61	3.62	1.26	3.62	67.77	1.72	0.30	3.83	0.18	0.07	1.84	1.37	1.42	0.79	0.37	8.61
BBB-	0.65	0.10	0.25	0.18	0.43	1.00	0.60	1.38	3.87	73.67	0.81	2.99	0.98	0.03	1.58	2.16	1.78	1.03	0.43	6.05
BB+	0.61	0.09	0.61	0.04	0.39	1.23	0.83	1.62	2.72	5.13	67.88	2.24	1.01	0.48	1.62	4.26	1.89	2.15	0.61	4.56
BB	0.64	—	0.27	0.02	—	0.99	0.10	0.30	2.66	1.63	2.92	67.22	0.57	0.44	5.01	3.02	5.01	2.43	0.40	6.37
BB-	0.08	—	0.04	0.04	—	0.08	0.16	0.08	0.61	1.14	1.84	3.35	75.70	1.10	2.69	4.21	2.29	4.04	0.16	2.37
B+	0.27	—	—	0.07	0.20	0.07	—	0.07	0.13	0.33	1.67	2.73	3.27	70.93	2.33	6.40	4.00	5.33	0.40	1.80
B	0.24	—	0.02	—	—	0.37	—	0.04	0.60	0.04	0.29	3.00	0.31	1.85	67.28	3.86	10.45	6.35	0.37	4.92
B-	0.05	—	—	—	—	0.05	—	—	0.05	—	0.16	0.68	0.03	0.31	1.49	63.41	13.71	18.60	0.08	1.39
CCC	0.25	—	—	—	—	0.39	—	—	0.25	—	0.05	1.13	0.05	0.05	2.84	0.64	56.79	32.69	0.61	4.27

WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

Appendix: Global CMBS Transition Matrices (Continued)

One-Year Transition Matrix: 2019 Cohort

(%)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC and Below	WD	PIF
AAA	93.61	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.39
AA+	25.00	75.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
AA	10.48	1.90	78.10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9.52
AA-	0.67	—	3.68	93.65	—	1.00	—	—	—	—	—	—	—	—	—	—	—	—	1.00
A+	—	—	9.09	—	72.73	—	—	—	—	—	—	—	—	—	—	—	—	—	18.18
A	3.57	—	4.29	—	—	73.57	—	—	—	—	—	—	—	—	—	—	—	—	18.57
A-	—	—	0.51	—	—	5.36	92.09	—	1.28	—	—	—	—	—	—	—	—	—	0.77
BBB+	—	—	—	—	—	1.64	—	93.44	3.28	—	—	—	—	—	—	—	—	—	1.64
BBB	1.56	—	—	—	—	2.34	—	—	89.84	—	—	—	—	—	—	—	—	—	6.25
BBB-	0.70	—	—	—	—	0.23	—	—	0.94	94.13	—	1.41	—	—	0.70	0.23	—	—	1.64
BB+	—	—	—	—	—	—	—	—	—	95.12	—	—	—	—	—	—	2.44	—	2.44
BB	1.29	—	—	—	—	2.58	—	—	0.65	—	78.71	—	—	5.16	0.65	3.87	—	—	7.10
BB-	—	—	—	—	—	—	—	—	—	—	—	94.69	—	1.93	1.45	0.48	—	—	1.45
B+	—	—	—	—	—	—	—	—	—	—	—	—	100.00	—	—	—	—	—	—
B	—	—	—	—	—	—	—	—	1.44	—	—	—	—	71.94	2.16	13.67	0.72	—	10.07
B-	—	—	—	—	—	—	—	—	—	—	—	—	—	—	94.05	3.78	0.54	—	1.62
CCC	2.08	—	—	—	—	—	—	—	—	—	4.17	—	—	2.08	—	52.08	37.50	—	2.08

WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

Appendix: Global CMBS Transition Matrices (Continued)

Three-Year Transition Matrix: 2017 Cohort

(%)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC and Below	WD	PIF	
AAA	67.89	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	32.11		
AA+	16.67	16.67	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	66.67		
AA	14.91	2.63	53.51	—	—	—	—	—	—	—	—	—	—	—	—	—	—	28.95		
AA-	1.55	—	7.77	81.35	—	1.55	—	—	—	—	—	—	—	—	—	—	—	7.77		
A+	38.89	—	—	—	22.22	—	—	—	—	—	—	—	—	—	—	—	—	38.89		
A	6.08	—	3.42	—	0.38	31.56	—	—	0.76	—	—	—	—	—	—	—	—	57.79		
A-	—	—	0.69	—	—	9.38	79.51	—	1.74	0.35	—	—	—	—	—	—	—	8.33		
BBB+	—	—	—	—	—	1.79	—	62.50	23.21	—	—	—	—	—	—	—	—	12.50		
BBB	3.82	1.53	2.29	—	—	2.29	0.76	—	37.40	—	—	0.76	—	—	—	0.76	2.29	—	48.09	
BBB-	1.03	—	—	—	—	1.38	—	—	2.07	78.28	—	2.76	0.34	—	2.07	0.34	0.34	—	11.38	
BB+	—	—	—	—	—	2.86	—	—	—	14.29	57.14	—	—	—	—	5.71	—	—	20.00	
BB	2.87	—	—	—	—	0.48	—	—	2.39	—	—	48.33	—	—	3.35	0.48	3.35	1.91	0.48	36.36
BB-	—	—	—	—	—	—	—	—	—	—	—	77.69	—	3.31	3.31	2.48	—	—	13.22	
B+	—	—	—	—	—	—	—	—	—	—	—	—	33.33	—	—	33.33	—	—	33.33	
B	2.82	—	—	—	—	1.13	—	—	0.57	—	—	0.57	—	—	46.89	1.69	10.17	7.91	—	28.25
B-	—	—	—	—	—	—	—	—	—	—	—	—	—	75.96	7.69	2.88	—	—	13.46	
CCC	1.29	—	—	—	—	0.65	—	—	1.94	—	—	1.29	—	—	1.94	—	12.26	43.23	1.94	35.48

WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

Appendix: Global CMBS Transition Matrices (Continued)

Ten-Year Transition Matrix: 2010 Cohort

(%)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CC and Below	WD	PIF	
AAA	1.09	—	—	—	—	0.04	—	—	—	—	—	0.04	—	—	0.04	—	0.04	0.77	2.70	95.28
AA+	1.56	—	—	—	—	—	—	—	—	—	—	—	—	—	0.78	—	—	4.69	0.78	92.19
AA	0.57	0.57	4.83	—	—	0.57	—	—	0.57	—	—	0.57	—	—	0.28	—	0.85	7.10	1.70	82.39
AA-	0.76	—	—	—	—	—	—	—	1.53	—	—	—	—	—	—	—	—	12.21	—	85.50
A+	0.79	—	0.79	—	—	0.79	—	—	—	—	—	—	—	—	1.59	—	0.79	5.56	0.79	88.89
A	1.82	—	0.26	—	—	1.30	—	—	0.78	—	—	0.78	—	—	1.04	—	1.04	21.35	1.82	69.79
A-	0.59	—	—	—	—	1.18	—	—	0.59	1.18	—	0.59	—	—	—	—	1.18	16.47	0.59	77.65
BBB+	0.61	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	24.24	0.61	74.55
BBB	0.50	0.50	0.50	—	—	0.50	—	—	2.49	—	—	0.25	—	—	0.75	—	0.50	33.58	1.49	58.96
BBB-	0.97	—	—	—	—	0.65	—	—	0.32	—	—	0.32	—	—	0.32	—	0.97	40.32	1.94	54.19
BB+	2.04	—	—	—	—	0.68	—	—	—	—	—	—	—	—	—	—	—	43.54	0.68	53.06
BB	0.41	—	—	—	—	—	—	—	0.21	—	—	0.83	—	—	—	—	0.83	63.02	2.07	32.64
BB-	0.76	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	67.42	—	31.82
B+	—	—	—	—	—	—	—	—	—	—	—	0.88	—	—	—	—	—	71.93	—	27.19
B	0.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.25	77.22	4.30	17.97
B-	0.14	—	—	—	—	—	—	—	0.28	—	—	0.14	—	—	0.14	—	—	94.44	0.14	4.72
CCC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	92.37	0.82	6.81	

WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

Appendix: Global RMBS Transition Matrices

Average Annual Transition Matrix: 1990-2019

(%)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC and Below	WD	PIF	
AAA	79.31	0.05	1.16	0.06	0.01	1.04	0.01	0.004	1.01	0.005	—	0.68	0.001	—	0.62	—	1.27	1.10	0.30	13.35
AA+	7.57	66.23	2.09	0.29	0.45	3.24	0.11	—	2.73	0.05	0.02	2.14	0.02	0.02	1.57	—	1.77	1.79	0.37	9.53
AA	7.21	1.92	68.44	0.32	0.26	4.62	0.13	0.09	3.17	0.09	0.01	1.77	0.01	0.02	1.15	0.003	1.06	1.50	0.46	7.76
AA-	3.43	2.80	3.33	61.99	1.63	2.80	1.11	0.24	3.13	0.46	—	2.26	0.14	0.06	2.28	0.02	3.59	3.55	0.63	6.55
A+	1.98	1.53	3.92	2.73	60.74	2.06	1.24	1.16	2.58	0.44	0.12	2.60	0.05	0.05	2.36	0.03	3.22	4.11	0.18	8.90
A	2.12	0.83	4.42	0.65	1.62	67.22	0.59	0.51	5.22	0.33	0.06	2.73	0.02	0.02	2.09	0.03	1.87	2.78	0.28	6.60
A-	0.79	0.65	1.06	0.70	1.76	2.59	58.55	3.09	3.49	2.09	1.08	2.50	0.18	0.11	2.45	0.09	3.87	8.22	0.16	6.58
BBB+	0.34	0.25	0.76	0.42	1.81	2.28	1.69	58.86	2.73	2.02	1.93	3.21	0.37	0.24	3.93	0.30	2.95	9.02	0.09	6.77
BBB	0.40	0.27	1.16	0.39	0.79	4.46	0.52	1.32	62.88	0.62	0.41	5.64	0.22	0.13	4.60	0.06	4.03	5.79	0.41	5.89
BBB-	0.07	0.05	0.13	0.31	0.41	0.86	1.45	1.32	2.04	54.76	1.45	4.19	2.60	0.97	3.83	0.69	2.40	14.95	0.13	7.39
BB+	0.03	—	0.26	0.16	0.62	0.95	0.85	3.46	3.40	2.65	48.04	2.06	1.11	1.67	5.46	0.29	3.04	17.39	0.65	7.91
BB	0.08	0.04	0.26	0.08	0.23	1.58	0.32	0.55	5.63	0.74	1.07	60.57	0.20	0.29	6.14	0.19	4.68	12.01	0.86	4.51
BB-	0.07	—	0.27	—	0.20	0.20	0.47	0.27	1.14	7.36	6.09	5.15	41.94	0.74	4.95	2.07	3.81	19.93	0.33	5.02
B+	0.27	—	0.09	—	0.09	0.36	0.36	0.45	0.91	1.27	3.18	7.99	4.99	39.29	2.09	0.45	3.09	27.04	0.27	7.80
B	0.01	0.01	0.04	0.004	0.05	0.25	0.05	0.10	1.46	0.26	0.60	8.16	0.60	1.02	56.39	0.23	9.12	17.29	0.54	3.81
B-	0.15	—	0.15	0.15	—	—	0.15	—	0.30	—	0.15	2.25	2.10	3.60	5.10	46.93	9.15	26.24	0.15	3.45
CCC	—	—	—	—	—	0.01	—	—	0.14	0.01	0.02	1.61	0.01	0.02	5.27	0.05	52.29	38.69	0.36	1.53

WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

Appendix: Global RMBS Transition Matrices (Continued)

One-Year Transition Matrix: 2019 Cohort

(%)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CC and Below	WD	PIF	
AAA	84.25	0.04	0.25	—	—	0.13	—	—	—	—	—	—	—	—	—	—	0.34	14.99		
AA+	37.82	56.30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.88		
AA	35.43	1.84	48.62	—	—	1.38	—	—	0.31	—	—	—	—	—	—	—	0.61	11.81		
AA-	25.58	23.26	11.63	34.88	—	—	—	—	—	—	—	—	—	—	—	—	—	4.65		
A+	3.69	5.07	0.46	2.77	73.73	0.46	0.92	0.92	—	—	—	—	—	0.46	0.46	—	—	11.06		
A	3.67	0.72	14.58	0.48	2.31	62.39	0.08	0.08	1.75	—	—	1.04	—	—	—	0.08	—	1.27	11.55	
A-	—	—	14.81	4.94	17.28	18.52	30.86	4.94	—	—	—	—	—	—	—	—	—	8.64		
BBB+	2.33	1.16	3.49	3.49	30.23	4.65	8.14	37.21	—	—	—	—	—	—	—	—	—	9.30		
BBB	0.55	0.09	1.19	0.28	1.19	19.10	0.37	1.56	61.16	—	0.09	6.52	—	—	0.73	—	0.18	—	2.30	4.68
BBB-	—	—	—	1.39	1.39	4.17	36.11	8.33	18.06	29.17	—	—	—	—	—	—	—	—	1.39	
BB+	—	—	—	—	—	0.85	2.56	42.74	10.26	7.69	26.50	—	—	—	—	—	—	—	9.40	
BB	—	—	0.34	—	—	2.64	0.06	0.46	22.69	2.06	1.89	62.01	0.06	—	1.49	—	0.46	0.63	2.18	3.04
BB-	—	—	—	—	—	—	—	—	0.48	34.93	29.19	12.44	20.57	—	0.48	—	—	—	1.91	
B+	—	—	—	—	—	—	4.08	—	—	2.04	—	51.02	8.16	30.61	—	—	—	—	4.08	
B	—	—	0.21	—	0.11	0.95	—	—	3.92	—	—	27.83	5.08	6.67	43.49	—	4.34	2.01	2.33	3.07
B-	—	—	—	—	—	—	—	—	—	—	6.25	6.25	—	6.25	68.75	12.50	—	—	—	—
CCC	—	—	—	—	—	—	—	—	1.28	0.37	0.18	7.14	0.18	0.55	19.41	0.37	51.65	14.84	1.65	2.38

WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

Appendix: Global RMBS Transition Matrices (Continued)

Three-Year Transition Matrix: 2017 Cohort

(%)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC and Below	WD	PIF
AAA	57.77	0.06	0.46	0.06	0.46	0.34	0.06	—	0.06	—	—	—	—	—	0.23	—	—	—	0.11 40.40
AA+	24.21	6.84	17.37	—	2.63	0.53	—	0.53	—	—	—	—	—	—	0.53	—	—	—	— 47.37
AA	22.88	0.52	15.95	—	1.05	4.84	0.13	—	5.36	—	—	0.39	—	—	—	—	—	—	— 2.48 46.41
AA-	24.62	10.77	6.15	7.69	1.54	3.08	1.54	—	—	—	—	—	—	—	3.08	—	—	—	— 41.54
A+	6.78	3.39	5.93	1.69	30.51	2.54	—	0.85	0.85	—	—	—	—	—	—	—	—	—	— 47.46
A	11.67	0.50	6.11	0.34	2.24	28.15	0.06	0.06	6.06	—	—	2.08	—	0.06	0.22	—	0.06	0.39	2.52 39.48
A-	8.24	2.35	2.35	2.35	16.47	8.24	5.88	1.18	—	1.18	1.18	—	—	—	3.53	—	—	—	— 47.06
BBB+	4.29	1.43	—	5.71	24.29	7.14	1.43	17.14	2.86	—	—	—	—	—	1.43	—	—	—	— 34.29
BBB	5.71	0.07	5.93	0.21	1.64	11.21	0.21	0.79	28.93	—	0.07	9.50	—	—	1.00	—	0.36	1.86	6.43 26.07
BBB-	20.43	16.13	3.23	2.15	16.13	1.08	6.45	3.23	4.30	—	—	2.15	—	—	2.15	—	1.08	—	— 21.51
BB+	4.11	—	6.85	4.11	21.92	4.11	12.33	8.22	1.37	4.11	6.85	1.37	—	—	2.74	—	1.37	—	— 20.55
BB	1.57	0.20	2.06	0.10	0.54	7.91	0.29	0.98	14.88	0.20	0.25	39.64	0.05	0.10	1.72	—	0.84	3.73	6.09 18.86
BB-	—	—	—	—	4.00	—	12.00	4.00	20.00	4.00	12.00	—	—	—	4.00	—	—	4.00	— 28.00
B+	—	—	—	—	5.88	—	2.94	26.47	17.65	5.88	17.65	5.88	—	5.88	—	—	—	—	— 11.76
B	0.39	—	1.09	0.16	0.47	6.06	0.47	0.31	11.49	0.93	0.62	25.78	0.16	0.47	17.39	—	4.81	9.71	4.66 15.06
B-	—	—	—	—	—	—	—	5.00	—	20.00	15.00	15.00	10.00	10.00	10.00	—	—	—	— 15.00
CCC	0.33	—	0.33	—	0.22	1.79	—	0.11	1.90	0.22	0.22	6.81	0.33	0.45	14.06	0.33	26.90	35.16	3.91 6.92

WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

Appendix: Global RMBS Transition Matrices (Continued)

Ten-Year Transition Matrix: 2010 Cohort

(%)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC and Below	WD	PIF	
AAA	2.53	0.10	1.53	0.02	0.39	4.19	0.01	0.01	5.17	0.02	0.02	5.18	—	0.03	1.25	—	0.42	2.90	9.43	66.82
AA+	2.99	0.21	2.14	—	1.07	4.49	—	—	9.62	—	—	5.34	0.21	—	4.06	—	2.78	4.27	7.69	55.13
AA	3.21	0.29	1.34	0.12	0.70	2.74	0.17	0.17	7.17	0.17	—	13.29	—	—	3.21	—	2.68	12.53	6.18	46.04
AA-	1.55	—	1.04	1.04	2.07	7.25	1.55	0.52	7.25	—	0.52	1.04	—	—	2.59	—	1.55	10.36	13.47	48.19
A+	2.62	1.05	2.62	—	4.19	5.24	2.09	0.52	2.62	—	—	3.14	—	0.52	1.57	—	0.52	15.71	5.24	52.36
A	1.80	0.30	1.74	0.48	1.08	3.25	0.18	0.36	4.45	0.06	0.12	11.91	0.06	0.06	2.95	—	2.35	18.04	4.15	46.66
A-	2.54	1.69	2.54	1.69	5.08	3.39	2.54	0.85	1.69	0.85	0.85	4.24	0.85	—	3.39	—	1.69	20.34	6.78	38.98
BBB+	—	0.65	3.27	—	5.88	1.96	1.31	3.92	3.92	—	1.31	1.31	—	—	1.96	—	0.65	26.80	5.23	41.83
BBB	0.48	0.04	0.84	0.04	0.79	2.86	0.26	0.35	3.13	0.13	0.26	8.71	0.09	0.13	3.04	—	3.48	39.88	2.86	32.61
BBB-	1.47	0.74	1.47	0.74	2.21	1.47	1.47	0.74	0.74	1.47	1.47	0.74	—	—	1.47	0.74	5.88	34.56	3.68	38.97
BB+	—	—	11.43	—	1.43	1.43	—	2.86	1.43	—	2.86	1.43	—	2.86	4.29	—	—	34.29	11.43	24.29
BB	0.85	0.08	0.08	0.23	0.23	2.77	0.08	0.85	3.00	—	—	2.93	0.15	—	1.92	0.08	3.23	59.51	4.31	19.71
BB-	—	—	—	—	—	—	—	2.90	1.45	—	—	—	—	1.45	1.45	—	5.80	49.28	5.80	31.88
B+	—	—	—	—	—	15.63	—	—	—	—	—	—	—	—	—	—	3.13	50.00	6.25	25.00
B	0.52	—	0.75	—	0.11	2.41	—	0.40	1.26	0.11	0.23	2.70	0.06	0.06	1.72	—	1.03	75.86	2.93	9.83
B-	7.14	—	—	—	—	7.14	—	—	—	7.14	—	—	—	—	—	—	—	21.43	7.14	50.00
CCC	0.31	—	0.56	0.04	—	2.75	0.04	0.04	0.67	0.13	0.09	1.20	—	0.07	0.24	0.02	0.53	89.27	0.67	3.35

WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

Appendix: Global Structured Credit Transition Matrices

Average Annual Transition Matrix: 1994–2019

(%)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC and Below	WD	PIF	
AAA	74.39	0.55	1.66	0.55	0.48	1.57	0.26	0.29	1.44	0.40	0.13	0.86	0.13	0.06	0.68	0.04	0.59	0.53	0.86	14.53
AA+	8.04	55.52	3.81	1.54	0.41	1.79	0.49	0.32	2.52	0.81	0.08	1.87	0.49	0.08	0.41	—	1.46	1.46	1.38	17.53
AA	4.73	2.98	65.51	1.08	0.61	2.10	0.37	0.35	2.16	0.58	0.71	1.69	0.15	0.26	1.49	0.22	1.38	1.73	1.30	10.61
AA-	1.58	4.25	3.16	52.67	1.94	3.40	1.46	0.85	2.67	1.58	0.61	1.46	0.24	—	2.43	0.49	2.06	2.91	2.43	13.83
A+	1.12	2.42	4.84	2.70	53.67	2.60	1.67	0.65	2.05	0.74	0.37	2.98	0.56	0.19	1.40	0.47	1.58	4.00	1.02	14.98
A	0.96	0.20	2.87	0.63	2.30	65.81	0.47	0.51	2.91	0.65	0.45	2.97	0.37	0.29	1.39	0.24	1.51	3.83	0.98	10.66
A-	0.62	0.11	0.57	0.62	2.49	2.60	65.10	1.30	1.98	1.30	0.79	3.05	0.62	0.28	2.04	0.85	1.75	7.52	0.74	5.66
BBB+	0.42	—	0.51	0.08	1.85	2.44	2.44	60.07	1.43	0.93	0.76	4.55	0.42	0.67	3.12	0.76	3.37	4.80	0.59	10.78
BBB	0.21	0.11	0.19	0.11	0.26	3.77	0.71	2.75	64.92	0.97	0.74	3.35	0.55	0.48	2.70	0.72	3.03	4.73	1.52	8.18
BBB-	0.20	—	0.46	—	0.07	0.46	0.33	1.06	3.10	60.96	1.52	3.43	1.39	1.06	3.57	2.18	4.36	6.61	1.32	7.93
BB+	—	—	0.36	—	0.60	0.36	0.24	1.32	3.11	3.35	52.93	2.04	1.08	1.08	5.15	1.56	5.15	11.98	0.72	8.98
BB	0.03	—	0.14	0.09	0.06	0.89	0.03	0.14	4.18	0.66	1.99	59.56	0.86	0.43	6.69	1.35	4.90	7.44	0.72	9.83
BB-	0.12	—	—	—	0.12	0.24	—	0.24	0.37	0.49	1.71	1.71	61.74	1.59	4.65	2.81	6.36	10.64	0.49	6.72
B+	—	—	—	—	0.76	—	—	—	0.76	0.25	0.76	3.05	2.04	45.29	3.05	5.09	6.62	19.08	1.53	11.70
B	0.09	—	0.09	—	—	0.43	0.04	0.04	1.03	—	0.04	4.86	0.26	1.64	51.89	1.89	10.89	15.23	1.38	10.20
B-	0.09	—	—	—	—	—	—	—	0.09	—	0.28	0.65	0.28	0.93	1.50	60.93	5.05	20.65	0.56	8.97
CCC	0.09	—	—	—	—	—	—	—	0.32	—	0.09	0.91	—	0.14	4.35	0.45	44.38	41.39	0.82	7.07

WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

Appendix: Global Structured Credit Transition Matrices (Continued)

One-Year Transition Matrix: 2019 Cohort

(%)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC and Below	WD	PIF
AAA	87.92	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.08	
AA+	—	88.89	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11.11	
AA	0.58	2.59	89.91	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.92	
AA-	—	—	—	80.00	—	—	—	—	—	—	—	—	—	—	—	—	—	20.00	
A+	—	—	9.52	9.52	47.62	—	—	—	—	—	—	—	—	—	—	—	—	4.76 28.57	
A	0.41	—	2.05	—	4.10	81.97	0.82	—	—	—	—	—	—	—	—	—	—	1.64 9.02	
A-	—	—	—	—	9.09	—	63.64	—	—	—	—	—	—	—	—	—	—	9.09 18.18	
BBB+	—	—	—	—	4.76	—	—	85.71	—	—	—	—	—	—	—	—	—	9.52	
BBB	—	—	—	—	—	6.99	—	4.30	79.57	—	—	—	—	—	—	—	—	9.14	
BBB-	—	—	—	—	—	—	—	—	—	81.36	—	3.39	1.69	—	—	—	—	13.56	
BB+	—	—	—	—	—	—	—	—	—	—	71.43	—	7.14	—	—	—	—	21.43	
BB	—	—	—	—	—	—	—	—	5.06	—	1.27	89.24	0.63	—	—	—	—	3.80	
BB-	—	—	—	—	—	—	—	—	—	—	—	—	100.00	—	—	—	—	—	
B+	—	—	—	—	—	—	—	—	—	—	—	—	20.00	60.00	—	—	—	20.00	
B	—	—	—	—	—	—	—	—	—	—	—	4.17	—	12.50	83.33	—	—	—	
B-	—	—	—	—	—	—	—	—	—	—	—	—	0.68	—	2.04	92.52	—	—	
CCC	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	75.00	—	—	
																		25.00	

WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

Appendix: Global Structured Credit Transition Matrices (Continued)

Three-Year Transition Matrix: 2017 Cohort

(%)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC and Below	WD	PIF	
AAA	6.82	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.68	92.50		
AA+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	100.00	
AA	2.05	—	10.27	—	—	—	—	—	—	—	—	—	—	—	—	—	0.68	86.99		
AA-	—	—	20.00	40.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	40.00	
A+	2.27	—	4.55	2.27	4.55	—	—	—	—	—	—	—	—	—	—	—	—	2.27	84.09	
A	—	—	10.59	0.59	—	11.76	—	—	—	—	—	—	—	—	—	—	—	0.59	76.47	
A-	4.76	—	v	—	4.76	—	28.57	—	—	—	—	—	—	—	—	—	—	19.05	42.86	
BBB+	—	—	2.13	—	4.26	—	—	29.79	10.64	—	—	—	—	—	—	—	—	2.13	51.06	
BBB	—	—	1.86	—	0.62	14.29	—	1.24	9.94	—	—	—	—	—	—	—	—	1.86	70.19	
BBB-	4.00	—	—	—	—	—	—	4.00	—	20.00	12.00	—	8.00	—	—	—	—	12.00	40.00	
BB+	—	—	—	—	8.70	—	—	—	—	—	17.39	8.70	—	—	—	—	—	4.35	60.87	
BB	—	—	—	—	—	4.27	—	—	10.98	—	1.83	10.98	0.61	—	—	—	—	6.71	64.63	
BB-	—	—	—	—	—	—	—	16.67	—	—	16.67	—	16.67	—	—	—	—	—	50.00	
B+	—	—	—	—	—	—	—	—	—	—	—	—	—	10.00	—	—	—	—	90.00	
B	—	—	—	—	1.61	1.61	—	—	4.84	—	—	14.52	—	3.23	11.29	—	—	1.61	12.90	48.39
B-	—	—	—	—	—	—	—	—	2.50	—	—	1.25	1.25	1.25	2.50	16.25	—	—	—	75.00
CCC	—	—	—	—	—	—	—	—	—	—	8.00	4.00	—	8.00	—	8.00	4.00	12.00	56.00	

WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

Appendix: Global Structured Credit Transition Matrices (Continued)

Ten-Year Transition Matrix: 2010 Cohort

(%)	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CC and Below	WD	PIF
AAA	0.26	—	0.52	—	—	—	—	—	—	—	—	—	—	—	—	—	0.26	3.94	95.01
AA+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	100.00
AA	—	—	3.78	—	—	4.86	—	—	—	—	—	—	—	—	—	—	0.54	2.16	88.65
AA-	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15.79	84.21
A+	—	—	—	—	2.00	—	2.00	—	—	—	—	—	—	—	—	—	2.00	—	94.00
A	0.37	—	5.49	—	—	8.42	—	—	2.93	—	—	—	—	—	—	—	2.20	2.56	78.02
A-	—	—	—	—	—	—	—	—	4.17	—	—	—	—	—	—	—	4.17	12.50	79.17
BBB+	—	—	—	—	—	—	—	2.22	2.22	—	—	—	—	—	—	—	17.78	2.22	75.56
BBB	—	—	1.03	—	0.34	4.11	0.68	—	5.82	—	—	2.05	—	—	—	—	14.73	5.48	65.75
BBB-	—	—	—	—	—	—	—	9.76	—	—	—	—	1.22	—	—	—	18.29	6.10	64.63
BB+	—	—	—	—	—	1.61	—	—	—	3.23	—	1.61	1.61	—	—	—	48.39	—	43.55
BB	0.33	—	—	—	0.33	0.33	—	0.33	1.98	—	—	2.31	—	—	0.66	—	30.69	5.28	57.76
BB-	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	53.66	4.88	41.46
B+	—	—	—	—	—	—	—	—	2.27	—	—	—	—	—	—	—	65.91	9.09	22.73
B	—	—	—	—	—	0.30	—	—	—	—	—	0.60	0.30	—	—	0.30	39.34	4.50	54.65
B-	—	—	—	—	—	—	—	—	—	—	—	1.61	—	—	—	—	75.81	—	22.58
CCC	—	—	—	—	—	0.19	—	—	0.37	—	—	0.37	—	—	0.56	—	76.68	1.68	20.15

WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

Appendix: Covered Bond Transition Matrices

Global Covered Bonds One-Year Transition Matrix: 2019 Cohort

(%)	AAA	AA	A	BBB	BB	B	CCC	CC and Below	WD	PIF
AAA	94.05	—	—	—	—	—	—	—	5.95	—
AA	—	84.62	—	—	—	—	—	—	15.38	—
A	—	—	75.00	—	—	—	—	—	25.00	—
BBB	—	—	40.00	60.00	—	—	—	—	—	—
BB	—	—	—	—	100.00	—	—	—	—	—
B	—	—	—	—	—	—	—	—	—	—
CCC	—	—	—	—	—	—	—	—	—	—

WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

Global Covered Bonds Average Annual Transition Matrix: 2005–2019

(%)	AAA	AA	A	BBB	BB	B	CCC	CC and Below	WD	PIF
AAA	89.66	3.79	0.74	0.37	—	—	—	—	4.99	0.45
AA	6.15	65.13	5.13	7.69	—	—	—	—	15.38	0.51
A	—	7.63	68.64	6.78	0.85	—	—	—	15.25	0.85
BBB	—	—	13.71	68.55	4.84	—	3.23	—	5.65	4.03
BB	—	—	5.56	5.56	38.89	16.67	—	—	22.22	11.11
B	—	—	—	4.76	14.29	52.38	14.29	—	14.29	—
CCC	—	—	—	—	—	75.00	12.50	—	12.50	—

WD – Withdrawn. PIF – Paid in full.

Source: Fitch Ratings.

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