

Industry Study

*2009 DBRS Corporate Rating
Transition and Default Study*

MARCH 2010



Insight beyond the rating.

CONTACT INFORMATION

Peter Schroeder

Manager Director – Rating Committee
+1 212 806 3284
ps@dbrs.com

Kent Wideman, CFA

Chief Credit Officer
+1 416 597 7535
kwideman@dbrs.com

Mary Keogh, CA

Managing Director – Regulatory Affairs
+1 416 597 3614
mkeogh@dbrs.com

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2009 DBRS Corporate Rating Transition and Default Study

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Introduction

DBRS's fourth corporate rating transition and sixth default study captures the history of DBRS corporate ratings assigned from inception in 1976 through December 31, 2009.

By demonstrating a positive relationship between the quality and stability of the credit ratings, the transition rates portray the stability of each DBRS credit rating category. Transition rates are provided for one-, three- and ten-year time horizons. In terms of rating actions, as expected, higher-rated credits ("A" and higher rating categories) are more stable and subject to fewer rating changes compared with lower grades (BBB and non-investment grade), which are more volatile, with more frequent rating actions occurring.

On a global corporate basis, the one-, three- and ten-year transition rates were 91.30%, 71.35% and 17.78%, respectively. The more meaningful one- and three-year rates exemplified stable ratings performance.

From a default perspective, there were nine defaults in 2009. The mix in 2009 was weighted toward industrials credits, a change from 2008 when more than half of defaults came from the financial services sector. Listed below in chronological order are the nine entities to which DBRS assigned a D rating in 2009.

DBRS 2009 D Ratings Assigned, Chronologically from January 2009

Entity Name	Date	Sector
Nortel Networks Limited	January 2009	Industrials
Smurfit-Stone Container Corporation	January 2009	Industrials
Abitibi-Consolidated Inc.	March 2009	Industrials
Bowater Canadian Forest Products Inc.	April 2009	Industrials
Chrysler LLC	April 2009	Industrials
General Motors Corporation	June 2009	Industrials
Colonial BancGroup, Inc.	August 2009	Financial Services
CanWest Media Inc.	September, 2009	Industrials
CIT Group Inc.	November 2009	Financial Services

The body of this report includes an overview of rating transitions for 2009, a default history, cumulative default statistics and the underlying methodology. To summarize the findings, cumulative default curves stratified by rating category are presented, further illustrating the rank-order effect of ratings versus default experience over time. The appendix outlines transition rates for one-, three- and ten-year time periods for Canada and the United States, and for the industrial, financial services, public finance, insurance and sovereigns sectors.



2009 Rating Changes

In general, over the long term, downgrades outpace upgrades for two reasons:

(1) Many companies have a target credit rating that they believe provides optimal efficiency in balancing credit costs and credit availability with shareholder returns and there is often little incentive to achieve a higher rating. In other cases, credit ratings are limited by industry considerations, typically when the industry is highly cyclical, such that positive steps taken by an individual company may not be rewarded with a rating upgrade. These factors limit the overall upward migration of ratings in general.

(2) On the downside, corporate objectives may cause a company to take some risky actions that sometimes fail because of a variety of factors, including poor economies, planning or execution. When recessions occur, some credits suffer. In some cases, leveraged buyout actions dramatically add to the debt levels of an entity and cause rating downgrades. These factors create an inherent downward bias over the entire rating universe.

In 2009, rating downgrades outpaced rating upgrades. Measured to include multiple rating actions on single entities during the year, there were 97 downgrades and 19 upgrades during 2009. As was also the case in 2008, the financial services sector in particular was hard hit and represented nearly 60% of all downgrades. As such, while the overall ratio of downgrades to upgrades increased to a high 5:1, the ratio is a much more moderate 2:1 if U.S. and European financial institutions are excluded. DBRS expects the overall downgrade-to-upgrade ratio to improve to the 2:1 range in 2010.

For further information on 2009 upgrades and downgrades and the DBRS outlook for 2010, see *DBRS Corporate 2009 Year in Review and 2010 Outlook*, published in February 2010.

Transition Rates

DBRS credit ratings are opinions based on quantitative and qualitative indicators that reflect an issuer's ability and willingness to make timely payments on outstanding obligations (whether principal, interest, dividend or distributions) with respect to the terms of an obligation. While DBRS takes a longer-term "through the cycle" view of issuers when assessing their credit profiles, ratings will be pressured by recessionary conditions. More typically, ratings will fluctuate over time in response to unexpected positive or negative structural developments, which may be internally or externally driven. The tables on the following page summarize the historical migration experience of DBRS global corporate credit ratings over a one-, three- and ten-year horizon. Each table shows how rated issuers within each broad rating category (vertical axis) tend to migrate across the rating spectrum (horizontal axis) over a one-, three- and ten-year period.

DBRS corporate ratings demonstrate a positive relationship between the quality of a credit profile and its stability over time. This characteristic is particularly apparent among investment-grade ratings, while non-investment-grade ratings tend to exhibit a greater propensity to migrate across a wider range of rating categories. Furthermore, the difference in stability between higher and lower ratings seems to widen as the time period analyzed gets longer. When subject to rating actions, however, higher-rated credits ("A" and AA categories) have more chances of moving down than up the rating scale.



Global Corporate Aggregate Transition by Whole Rating Categories

One-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	91.30%	8.47%	0.23%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.50%	93.11%	6.04%	0.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.10%
A	0.05%	1.55%	93.40%	4.69%	0.10%	0.02%	0.00%	0.00%	0.00%	0.19%
BBB	0.04%	0.18%	4.03%	91.76%	3.01%	0.44%	0.18%	0.00%	0.00%	0.36%
BB	0.00%	0.00%	0.16%	8.41%	85.28%	3.72%	1.62%	0.00%	0.00%	0.81%
B	0.00%	0.00%	1.13%	0.00%	7.91%	78.53%	5.65%	0.56%	1.69%	4.52%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	7.32%	58.54%	2.44%	4.88%	26.83%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	25.00%	25.00%	0.00%	50.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	62.50%	37.50%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Three-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	71.35%	25.95%	2.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	1.42%	80.88%	15.90%	1.30%	0.12%	0.06%	0.00%	0.00%	0.00%	0.31%
A	0.18%	4.64%	81.04%	12.68%	0.89%	0.27%	0.00%	0.00%	0.00%	0.30%
BBB	0.15%	0.64%	13.49%	76.19%	7.16%	1.28%	0.49%	0.00%	0.15%	0.44%
BB	0.00%	0.00%	2.23%	22.52%	62.38%	5.94%	3.96%	0.00%	0.50%	2.48%
B	0.00%	0.00%	1.04%	4.17%	19.79%	55.21%	8.33%	1.04%	0.00%	10.42%
CCC	0.00%	0.00%	15.38%	0.00%	15.38%	15.38%	46.15%	0.00%	0.00%	7.69%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Ten-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	17.78%	55.00%	26.11%	1.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	2.78%	53.55%	39.08%	4.17%	0.28%	0.14%	0.00%	0.00%	0.00%	0.00%
A	0.07%	12.30%	58.80%	23.68%	2.79%	1.36%	0.50%	0.07%	0.00%	0.43%
BBB	0.84%	3.38%	38.18%	46.28%	8.95%	0.34%	1.18%	0.00%	0.17%	0.68%
BB	0.00%	1.32%	10.53%	52.63%	28.95%	1.32%	1.32%	0.00%	0.00%	3.95%
B	0.00%	0.00%	14.29%	28.57%	42.86%	14.29%	0.00%	0.00%	0.00%	0.00%
CCC	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Note: See appendix section for further breakdown. Includes private ratings and sovereigns ratings.

Default History

DBRS corporate default experience since 1976 has been limited to 49 cases (see Definition of Default in the Methodology section on page 11). The table below outlines each example by name and the year in which the default occurred.

DBRS Corporate Defaults

Company	Inception Rating	Year Rating First Assigned	Rating at Beginning of Default Year	Default Year
Daon Development Corporation	BB	1978	BB	1982
Carma Ltd.	BB (low)	1978	CCC	1983
Nu-west Group Limited	BB (high)	1978	CCC	1984
Canadian Commercial Bank	A (low)	1982	CC	1985
Northland Bank	BBB (low)	1985	BBB (low)	1985
Versatile Corporation	BB	1978	CC	1986
Campeau Corporation	BBB (low)	1985	B	1990
Algoma Steel Corporation, Limited, The	BBB	1976	CC	1991
Central Guaranty Trustco Limited	BBB	1985	A	1991
Central Capital Corporation	A (low)	1987	BBB	1991
Maxwell Communications Finance Canada Ltd.	A	1988	A (low)	1991
Olympia & York 240 Sparks Street Limited*	AA (high)	1988	AA	1992
Trizec Corporation Ltd.	BBB	1978	CC	1993
Bramalea Ltd.	BBB	1985	A	1993
General Trustco of Canada Inc.	A (low)	1987	BBB (low)	1993
Cadillac Fairview Corporation Ltd.	BBB	1983	BBB	1994
Confederation Treasury Services Limited	AA (low)	1989	A (high)	1994
Bramalea City Centre	A	1988	BBB (high)	1995
The Loewen Group Inc.	BBB (low)	1997	BB (high)	1999
Laidlaw Inc.	BBB (high)	1996	BBB (high)	2000
Canadian Airlines Corporation	CCC	1998	CC	2000
Algoma Steel Inc.	B (high)	1999	B	2001
Teleglobe Inc.	A	1998	BBB (low)	2002
Microcell Telecommunications Inc.	B	1999	B	2002
AT & T Canada/Allstream Inc.	BBB	2000	BB (high)	2002
Saskatchewan Wheat Pool Inc.	BBB	1977	C	2003
Stelco Inc.	AA	1976	B (high)	2004
Air Canada	BB	1997	C	2004
Hollinger Inc.	B	1997	C	2005
Dana Corporation	BB (high)	2005	B (high)	2006
Pope & Talbot, Inc.	BB (low)	2004	CCC	2007
New Century Financial Corporation	BB	2006	BB	2007
Tembec Inc.	BB (high)	1998	CCC	2008
Quebecor World Inc.	A (low)	1999	CCC	2008

* This rating reflected very high real estate security that was caught up in the parent company's bankruptcy filing (Olympia & York). DBRS did not rate the parent company.



DBRS Corporate Defaults

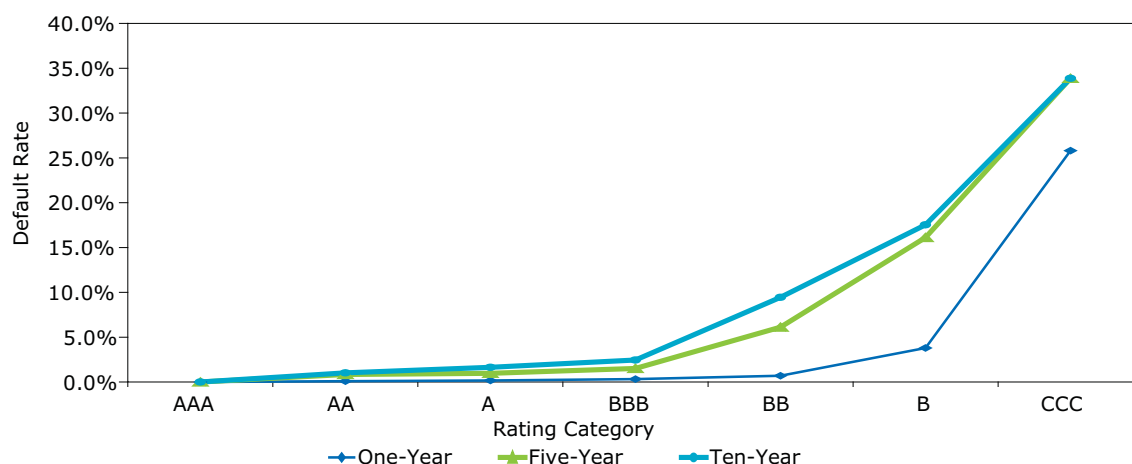
Company	Inception Rating	Year Rating First Assigned	Rating at Beginning of Default Year	Default Year
Tribune Company	A	2004	B	2008
Lehman Brothers Inc.	AA (low)	2005	AA	2008
International Securities Trading Corporation plc	BBB	2006	CCC	2008
Fremont General Corporation	BB (low)	2006	CCC (low)	2008
Washington Mutual Bank	A (high)	2006	A (high)	2008
Education Resources Institute, Inc., The	A	2007	A	2008
Nortel Networks Limited	AA	1977	CCC	2009
Smurfit-Stone Container Corporation	B (high)	2004	B (high)	2009
Abitibi-Consolidated Inc.	BBB	1997	CCC (high)	2009
Bowater Canadian Forest Products Inc.	A	1989	CCC	2009
Chrysler LLC	B (high)	2007	CCC	2009
General Motors Corporation	A	1997	CC	2009
Colonial BancGroup, Inc.	BBB	2005	BBB	2009
Canwest Media Inc.	BB	2000	B (high)	2009
CIT Group Inc.	A (high)	1999	A (low)	2009

Within the universe of DBRS-rated issuers, two Canadian banks were among the first issuers to default on their DBRS-rated debt in the mid-1980s, with the next wave of defaults occurring in the early to mid-1990s. Companies that experienced defaults in this period included financial services companies, a large number of real estate companies, Confederation Life Insurance Company and Algoma Steel Inc. The next wave of defaults, circa the late 1990s through 2002, saw the impact of the global telecom decline as it affected Canadian players in this sector. AT & T Canada/Allstream Inc. and Teleglobe Inc. deteriorated as they came under pressure from challenging business conditions.

Next was the restructuring of Air Canada and the circumstances surrounding Hollinger Inc. and its subsequent investigation, which resulted in a default on its senior secured notes. It is important to note that Hollinger Inc. was officially downgraded to D in April 2005 but is cited as a default in 2004 as a result of its failure to pay an interest payment in March 2004. No DBRS-rated corporate issuers defaulted during 2005, with 2005 being the first year since 1998 to show no public corporate defaults. In 2006, there was only one default, which was due to difficult market conditions for auto-part suppliers. In 2007, there were two defaults – Pope & Talbot, Inc. in the forestry sector and New Century Financial Corporation in the financial services sector – as a result of subprime mortgage exposure. In 2008, there were a record number of defaults, dominated by financial services companies. The most notable default in 2008 was the collapse of Lehman Brothers Inc., which was a leading contributor to one of the greatest economic meltdowns since the Great Depression. The nine defaults recorded in 2009 represent the highest number of defaults of DBRS-rated issuers in one calendar year, narrowly beating out the 2008 record of eight defaults. The number of defaults in 2009 was not surprising given the economic climate. Defaults in 2009 were concentrated in the industrials sector (forestry, auto and print and media) and financial services. These industries were particularly hard hit by the continuance of the economic crisis into in 2009.

Default patterns generally follow economic cycles. During strong economic periods, default activity is minimal as the vast majority of sectors prosper. History bears out the fact that strong economic cycles are ultimately followed by down cycles, and within this more challenging environment, more defaults occur. Where the defaults observed between 1991 and 1994 can largely be attributed to a weak real estate market, the defaults that occurred between 1999 and 2004 were generally less concentrated by industry. During those years, defaults were generally spread throughout several sectors. Defaults over the more recent 2008–2009 period included a relatively high proportion of financial institutions.

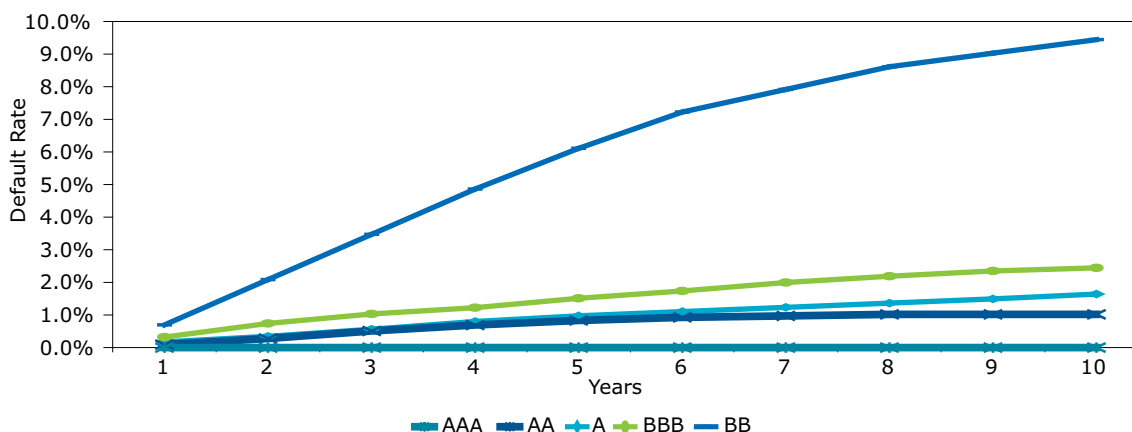
Effectiveness of DBRS Ratings as Default Predictors



Note: Aggregate ratings include private ratings and Sovereign ratings. CCC category consists of entities rated CCC, CC and C.
Source: DBRS.

The graph above illustrates the actual default probability measuring one-, five- and ten-year default rates. In DBRS's 34-year history, there have been a total of 49 defaults out of 1,197 issuers. The relatively low 4% default rate partly reflects the high proportion of initial investment-grade ratings through much of DBRS history.

Default Cumulative Rates by Rating Category



Note: Aggregate ratings include private ratings and sovereigns ratings.
Source: DBRS.

The graph above illustrates the cumulative default rate for the "A," BBB and BB categories. As expected, this sample set of "A"-rated entities has the lowest cumulative probability of default, followed by BBB and BB. The significant gap between the performance of the BBB and BB universes is also expected as the difference between investment-grade and non-investment-grade ratings is meaningful.



Cumulative Default Statistics

The table below illustrates the correlation between ratings and defaults over a ten-year time span, based on the full history of DBRS global corporate ratings. While ratio granularity in the lower rating categories suffers to some degree from the reality of small sample sizes, the table clearly exhibits that higher ratings have lower frequencies of default and vice versa.

Global Corporate Average Cumulative Default Rates (1976–2009) by Whole Rating Categories

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
AAA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.09%	0.28%	0.51%	0.69%	0.83%	0.93%	0.97%	1.02%	1.02%	1.02%
A	0.17%	0.35%	0.56%	0.80%	0.97%	1.10%	1.23%	1.36%	1.49%	1.65%
BBB	0.32%	0.74%	1.02%	1.22%	1.50%	1.73%	1.98%	2.18%	2.34%	2.43%
BB	0.68%	2.05%	3.42%	4.79%	6.02%	7.11%	7.80%	8.48%	8.89%	9.30%
B	3.81%	8.10%	12.86%	15.24%	16.19%	17.14%	17.62%	17.62%	17.62%	17.62%
CCC/CC/C	24.24%	30.30%	31.82%	31.82%	31.82%	31.82%	31.82%	31.82%	31.82%	31.82%

Methodology

This study is based on information obtained from DBRS's proprietary database of ratings and defaults. As of December 31, 2009, this database comprised 1,197 families of issuers, of which a total of 49 defaults occurred since 1976.

DATA SET

The data consists of the following categories of issuers: industrials, financial services, government securities and insurance. Government securities are further broken down into sovereigns and public finance. DBRS did not rate U.S. or international public finance issuers. Within these categories, the study is limited to long-term (greater than one year) public ratings, Rule 144a private placement ratings and private ratings. Over DBRS's 34-year history, no private ratings have defaulted. Commercial paper and preferred shares were also excluded from the data set.

Rating transitions and defaults were tracked at the issuer level. Therefore, multiple debt lines were consolidated so that one rating was used per issuer. As a proxy for the issuer rating, DBRS selected the senior unsecured long-term rating or the corporate rating of the issuer. Where a senior unsecured rating or corporate rating did not exist, a rating based on the highest-rated security line was used. Affiliate obligations were included in the data set. The DBRS corporate rating universe includes approximately 1,197 families of issuers from 1976 up to and including December 31, 2009.

MULTIPLE ISSUERS

Issuing subsidiaries and affiliates (together referred to as related entities) were removed from the data set in cases where there is a direct relationship to the rating of the parent. This can be the result of (1) a legal guarantee from the parent in support of the debt obligations of the related entities or (2) an essential business relationship between the parent and the related entities that exists such that the ratings of the latter are predicated on the concept of implied support. The objective of the aforementioned adjustment is to eliminate the impact of the migration of a series of ratings that are ultimately reliant on one entity.



TRANSITION RATE CALCULATION

Transition rates for each given period were calculated by comparing the number of issuers that held a specific rating at the beginning of the relevant period with the distribution of the ratings of these same issuers at the end of the period. The transition rates represent a quotient where the numerator is the subset of issuers that held a specific beginning-of-period rating and that now hold a specific end-of-period rating, and the denominator is the number of issuers that held that specific beginning-of-period rating.

DEFINITION OF DEFAULT

A security rated D implies the issuer has either not met a legally scheduled payment, the issuer has made it clear that it will miss such a payment in the near future or, in certain cases, there has been a distressed exchange. In some cases, DBRS may not assign a D rating under a bankruptcy announcement scenario as allowances for grace periods may exist in the underlying legal documentation. Once assigned, the D rating will continue as long as the missed payment continues to be in arrears and until such time as the rating is discontinued or reinstated by DBRS. Please refer to Rating Definitions under Rating Policies on www.dbrs.com for further information.

CUMULATIVE DEFAULT RATE CALCULATION

Cumulative default rate calculations for this study were based on static analysis, commencing with the assignment of the initial rating. The DBRS cumulative default percentages are computed based on a compilation of annual cohorts. Each cohort comprises all issues with ratings extant as of the cohort amalgamation date. Specifically, pools of issuer ratings were established as of December 31 of each year. The issues assigned to each respective cohort remain constant over time. For all years for which there exists historical data, each cohort is reviewed to determine the then-current rating of each of its component issues without regard to defaults. The aggregation of rating counts over all cohorts is equivalent to collecting the numbers of each rating extant over each year of the reference period. The same analysis is then performed taking only the ratings that eventually default. Average cumulative default probabilities are determined by computing the relevant quotients.

COMMENTS REGARDING THE APPENDIX

When reviewing the Appendix data, the following should be noted: Reflective of the growth in ratings over time and the reality that discontinuations do occur, the tenor of many corporate ratings will be less than ten years. As such, there is often limited rating data available for a meaningful calculation of ten-year transition rates, a fact that is amplified when viewing transition rates by area, where the sample size may already be relatively small. Given these facts, data for some of the ten-year transition tables may appear unusual and will be less useful as a base in reaching conclusions.



Appendix: Transition and Cumulative Default Tables

TRANSITION RATES BY NOTCHED RATING CATEGORIES

Global	13
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AGGREGATE TRANSITION RATES BY WHOLE RATING CATEGORIES

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Public Finance	42
Sovereigns	43

CUMULATIVE DEFAULT RATES BY NOTCHED RATING CATEGORIES

Global Corporate	44
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Global Transition Rates by Notched Rating Categories

One-Year	AAA	AA (high)	AA (low)	AA	AA (high)	A	A (low)	BBB (high)	BBB (low)	BBB	BB (high)	BB	BB (low)	B (high)	B	B (low)	CCC (high)	CCC (low)	CC (high)	CC (low)	C (high)	C	C (low)	D
AAAA	91.30%	5.26%	2.97%	0.23%	0.23%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AAA (high)	2.36%	82.77%	10.81%	2.70%	0.68%	0.00%	0.34%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.34%	
AAA	0.34%	2.17%	86.30%	5.82%	3.08%	1.71%	0.11%	0.34%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.11%	
AAA (low)	0.00%	0.00%	6.14%	84.58%	6.02%	2.53%	0.48%	0.00%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
A (high)	0.11%	0.00%	0.06%	3.97%	84.46%	7.61%	2.57%	0.21%	0.11%	0.00%	0.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.21%	
A	0.00%	0.06%	0.36%	0.79%	3.50%	85.93%	5.31%	1.87%	1.57%	0.18%	0.12%	0.00%	0.00%	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.24%	
A (low)	0.06%	0.00%	0.06%	0.06%	0.56%	4.84%	85.90%	5.78%	1.99%	0.56%	0.00%	0.00%	0.00%	0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.12%	
BBB (high)	0.00%	0.09%	0.09%	0.00%	0.00%	0.80%	5.45%	84.73%	5.98%	1.70%	0.27%	0.36%	0.09%	0.09%	0.00%	0.09%	0.00%	0.09%	0.00%	0.00%	0.00%	0.00%	0.18%	
BBB	0.09%	0.00%	0.00%	0.00%	0.09%	0.09%	2.23%	5.00%	83.94%	4.19%	0.98%	1.52%	0.27%	0.18%	0.27%	0.00%	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.36%	
BBB (low)	0.00%	0.00%	0.19%	0.19%	0.19%	0.39%	0.97%	1.55%	7.38%	78.45%	6.80%	1.36%	0.39%	0.19%	0.78%	0.00%	0.19%	0.00%	0.00%	0.00%	0.00%	0.00%	0.78%	
BBB (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.46%	0.00%	0.92%	12.39%	71.56%	7.34%	1.83%	1.83%	0.46%	0.00%	0.46%	0.92%	0.00%	0.00%	0.00%	0.00%	0.00%	0.92%	
BBB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.36%	1.79%	5.36%	5.00%	77.86%	3.93%	1.43%	2.14%	0.00%	1.07%	0.00%	0.00%	0.00%	0.00%	0.00%	1.07%	
BBB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.50%	6.67%	80.83%	4.17%	1.67%	0.83%	1.67%	0.83%	0.00%	0.00%	0.00%	0.00%	0.00%	
B (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.27%	0.00%	0.00%	0.00%	3.80%	1.27%	5.06%	70.89%	5.06%	2.53%	0.00%	1.27%	0.00%	0.00%	0.00%	0.00%	5.06%	
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.52%	0.00%	0.00%	0.00%	1.52%	4.55%	0.00%	6.06%	65.15%	7.58%	0.00%	6.06%	0.00%	0.00%	0.00%	0.00%	6.06%	
B (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.13%	3.13%	0.00%	3.13%	9.38%	65.63%	0.00%	15.63%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	25.00%	0.00%	0.00%	0.00%	0.00%	25.00%	
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	58.33%	0.00%	0.00%	0.00%	0.00%	0.00%	25.00%	
CCC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
CC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	25.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	
CC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	37.50%	
C (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	

[illegible]



Global Transition Rates by Notched Rating Categories

Ten-Year	AAA	AA (high)	AA	AA (low)	A (high)	A	A (low)	BBB (high)	BBB	BBB (low)	BB (high)	BB	BB (low)	B (high)	B	B (low)	CCC (high)	CCC	CCC (low)	CC (high)	C	C (low)	D
AAAA	17.78%	22.78%	18.33%	13.89%	17.78%	3.89%	4.44%	1.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AAA (high)	9.76%	14.63%	34.15%	17.89%	5.69%	8.94%	7.32%	1.63%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AAA	1.95%	3.62%	22.28%	26.46%	20.61%	11.98%	7.52%	3.90%	0.56%	0.28%	0.28%	0.28%	0.00%	0.28%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AA (low)	0.42%	2.95%	16.46%	29.11%	14.35%	21.94%	10.13%	0.84%	3.80%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
A (high)	0.30%	1.48%	6.82%	9.50%	23.74%	23.74%	15.43%	6.53%	5.64%	1.48%	1.48%	0.00%	0.00%	0.30%	1.19%	1.19%	0.00%	0.59%	0.00%	0.00%	0.00%	0.59%	
A	0.00%	0.32%	5.97%	9.52%	12.50%	29.35%	15.16%	6.29%	12.26%	3.23%	0.65%	1.61%	0.00%	0.32%	0.81%	0.16%	0.32%	0.48%	0.00%	0.00%	0.00%	0.48%	
A (low)	0.00%	0.00%	1.36%	1.81%	8.62%	20.18%	28.80%	17.91%	14.29%	1.81%	3.63%	0.23%	0.68%	0.45%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.23%	
BBB (high)	0.00%	0.00%	0.00%	0.93%	3.27%	3.74%	11.68%	30.37%	26.17%	6.54%	3.74%	3.74%	0.00%	0.47%	0.47%	0.00%	1.40%	0.00%	0.00%	0.00%	0.47%	0.47%	
BBB	1.67%	0.00%	2.34%	0.67%	6.02%	10.70%	16.39%	20.40%	19.06%	12.71%	3.68%	4.01%	1.00%	0.00%	0.00%	0.00%	0.33%	0.00%	0.00%	0.00%	0.00%	1.00%	
BBB (low)	0.00%	0.00%	0.00%	1.27%	2.53%	11.39%	22.78%	12.66%	13.92%	16.46%	2.53%	6.33%	5.06%	0.00%	0.00%	0.00%	3.80%	0.00%	0.00%	0.00%	0.00%	0.00%	
BBB (high)	0.00%	0.00%	0.00%	0.00%	5.56%	0.00%	5.56%	0.00%	5.56%	38.89%	5.56%	11.11%	11.11%	0.00%	0.00%	0.00%	5.56%	0.00%	0.00%	0.00%	0.00%	5.56%	
BBB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.82%	15.91%	18.18%	20.45%	6.82%	25.00%	0.00%	0.00%	2.27%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.55%	
BBB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	7.14%	14.29%	0.00%	42.86%	14.29%	7.14%	14.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
B (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	20.00%	0.00%	40.00%	20.00%	0.00%	20.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
B (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	



Canada Transition Rates by Notched Rating Categories

One-Year	AAA	AA (high)	AA (low)	AA	A (high)	A	A (low)	BBB (high)	BBB	BBB (low)	BB (high)	BB	BB (low)	B (high)	B	B (low)	CCC (high)	CCC	CCC (low)	CC (high)	CC	CC (low)	C (high)	C	C (low)	D
AAA	90.73%	5.51%	12.10%	3.26%	0.25%	0.81%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AA (high)	2.82%	81.85%	12.10%	1.61%	0.25%	0.81%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AA	0.42%	1.95%	85.50%	6.42%	3.63%	1.67%	0.14%	0.28%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AA (low)	0.00%	0.00%	5.54%	5.85%	2.77%	0.46%	0.00%	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
A (high)	0.14%	0.00%	0.68%	4.34%	83.60%	8.13%	2.44%	0.27%	0.14%	0.00%	0.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.14%	
A	0.00%	0.07%	0.43%	0.72%	3.69%	85.54%	5.21%	2.02%	1.81%	0.22%	0.07%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.22%	
A (low)	0.08%	0.00%	0.08%	0.08%	0.72%	5.25%	85.51%	5.57%	2.07%	0.48%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.08%	
BBB (high)	0.00%	0.00%	0.13%	0.00%	0.00%	1.01%	6.34%	83.52%	5.96%	1.90%	0.25%	0.38%	0.13%	0.00%	0.00%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.25%	
BBB	0.11%	0.00%	0.00%	0.11%	0.11%	0.80%	2.76%	5.28%	82.89%	4.25%	0.92%	1.84%	0.23%	0.00%	0.23%	0.00%	0.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.34%	
BBB (low)	0.00%	0.00%	0.00%	0.26%	0.26%	0.53%	1.32%	1.85%	8.20%	74.87%	8.20%	1.85%	0.26%	0.26%	0.79%	0.00%	0.26%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.79%	
BB (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.59%	0.00%	1.18%	13.02%	72.78%	7.69%	1.78%	1.18%	2.62%	0.00%	0.59%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.18%	
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.18%	5.68%	4.80%	77.73%	3.06%	1.75%	2.62%	0.00%	1.31%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.87%	
BB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.67%	10.67%	77.33%	4.00%	1.33%	1.33%	1.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
B (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.22%	0.00%	0.00%	0.00%	2.22%	2.22%	8.89%	66.67%	4.44%	4.44%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.44%	
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.33%	6.98%	0.00%	9.30%	60.47%	6.98%	6.98%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.98%	
B (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.26%	5.26%	0.00%	5.26%	10.53%	57.89%	15.79%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.70%	3.70%	0.00%	66.67%	0.00%	0.00%	0.00%	3.70%	0.00%	0.00%	0.00%	22.22%	
CCC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	33.33%	0.00%	0.00%	0.00%	0.00%	33.33%	
C (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	33.33%	
C (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	



Canada Transition Rates by Notched Rating Categories

Three-Year	AAA	AA (high)	AA (low)	AA	AA (high)	A	A (low)	BBB (high)	BBB (low)	BBB (high)	BB (high)	BB (low)	BB (high)	B	B (low)	CCC (high)	CCC (low)	CC (high)	CC (low)	C (high)	C (low)	D
AAA	69.88%	14.04%	11.70%	1.46%	2.34%	0.00%	0.58%	0.94%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA (high)	7.98%	53.52%	22.07%	6.57%	5.63%	1.88%	0.94%	0.94%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.47%
AA	0.65%	5.23%	61.60%	14.71%	9.31%	6.54%	0.98%	0.49%	0.00%	0.33%	0.00%	0.00%	0.00%	0.00%	0.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA (low)	0.36%	1.08%	13.64%	61.40%	11.13%	7.00%	2.15%	0.72%	1.08%	0.54%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.54%
A (high)	0.47%	0.00%	3.79%	8.68%	57.57%	17.19%	7.57%	2.05%	2.05%	0.00%	0.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A	0.00%	0.25%	1.17%	3.60%	9.45%	61.20%	11.71%	4.93%	5.10%	0.75%	0.42%	0.84%	0.00%	0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.42%
A (low)	0.29%	0.00%	0.10%	0.39%	1.47%	13.32%	62.78%	12.54%	5.78%	2.25%	0.49%	0.10%	0.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.20%
BBB (high)	0.00%	0.00%	0.48%	0.16%	0.48%	4.01%	15.71%	60.74%	11.38%	2.24%	2.08%	0.96%	0.32%	0.32%	0.48%	0.00%	0.00%	0.00%	0.00%	0.00%	0.16%	0.32%
BBB	0.43%	0.00%	0.00%	0.43%	0.72%	4.17%	8.78%	12.66%	54.10%	8.78%	3.88%	3.74%	0.58%	0.14%	1.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.29%
BBB (low)	0.00%	0.00%	0.72%	0.72%	1.80%	2.52%	2.88%	5.04%	16.19%	47.12%	9.71%	6.83%	2.16%	0.36%	1.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.08%
BB (high)	0.00%	0.00%	0.00%	0.00%	0.00%	1.82%	1.82%	0.91%	7.27%	24.55%	42.73%	10.00%	4.55%	0.00%	0.91%	1.82%	0.00%	0.00%	0.00%	0.00%	0.00%	1.82%
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.40%	1.80%	7.19%	12.57%	6.59%	52.69%	4.19%	1.80%	1.80%	0.60%	0.00%	0.00%	0.00%	0.00%	0.60%	2.40%
BB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	2.13%	0.00%	0.00%	0.00%	10.64%	4.26%	27.66%	36.17%	8.51%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.26%
B (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.85%	0.00%	0.00%	15.38%	0.00%	7.69%	15.38%	30.77%	3.85%	15.38%	0.00%	0.00%	0.00%	0.00%	0.00%	7.69%
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.69%	3.85%	11.54%	30.77%	3.85%	15.38%	0.00%	0.00%	0.00%	0.00%	0.00%	7.69%
B (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	23.08%	7.69%	0.00%	7.69%	15.38%	15.38%	0.00%	0.00%	0.00%	0.00%	15.38%	
CCC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	20.00%	0.00%	0.00%	0.00%	0.00%	20.00%	0.00%	0.00%	10.00%	0.00%	40.00%	0.00%	0.00%	0.00%	10.00%	
CCC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
C (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	



Canada Transition Rates by Notched Rating Categories

Ten-Year	AAA	AA (high)	AA (low)	AA	A (high)	A	A (low)	BBB (high)	BBB (low)	BBB	BB (high)	BB (low)	BB	B (high)	B	B (low)	CCC (high)	CCC (low)	CC (high)	CC (low)	C (high)	C (low)	D
AAAA	17.42%	22.47%	18.54%	14.04%	17.98%	3.93%	4.49%	1.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AAA (high)	9.92%	14.05%	34.71%	17.36%	5.79%	9.09%	7.44%	1.65%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AAA	2.02%	3.18%	22.54%	25.43%	20.81%	12.43%	7.80%	4.05%	0.58%	0.29%	0.29%	0.29%	0.29%	0.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AA (low)	0.43%	2.58%	16.74%	29.18%	14.16%	21.89%	10.30%	0.86%	3.86%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
A (high)	0.31%	1.54%	7.08%	9.85%	24.00%	24.62%	14.77%	6.46%	4.92%	1.54%	1.54%	0.00%	0.00%	0.31%	1.23%	0.00%	0.31%	0.00%	0.00%	0.00%	0.00%	0.31%	
A	0.00%	0.34%	6.31%	10.07%	13.48%	29.69%	15.02%	6.48%	11.26%	3.24%	0.68%	1.71%	0.00%	0.34%	0.51%	0.17%	0.00%	0.34%	0.00%	0.00%	0.00%	0.34%	
A (low)	0.00%	0.00%	1.46%	1.95%	9.02%	21.22%	27.32%	18.54%	13.41%	1.95%	3.41%	0.24%	0.73%	0.49%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.24%	
BBB (high)	0.00%	0.00%	0.94%	3.30%	3.77%	11.79%	29.72%	26.42%	6.60%	3.77%	3.77%	3.77%	3.77%	0.00%	0.47%	0.00%	1.42%	0.00%	0.00%	0.00%	0.47%	0.47%	
BBB	1.71%	0.00%	2.39%	0.68%	6.14%	10.92%	16.72%	19.45%	18.77%	12.97%	3.75%	4.10%	1.02%	0.00%	0.00%	0.00%	0.34%	0.00%	0.00%	0.00%	0.00%	1.02%	
BBB (low)	0.00%	0.00%	1.27%	2.53%	11.39%	22.78%	12.66%	13.92%	16.46%	2.53%	6.33%	5.06%	0.00%	0.00%	0.00%	0.00%	3.80%	0.00%	0.00%	0.00%	0.00%	0.00%	
BB (high)	0.00%	0.00%	0.00%	0.00%	5.56%	0.00%	5.56%	0.00%	5.56%	38.89%	5.56%	11.11%	11.11%	0.00%	0.00%	0.00%	0.00%	5.56%	0.00%	0.00%	0.00%	5.56%	
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.82%	15.91%	18.18%	20.45%	6.82%	25.00%	0.00%	0.00%	2.27%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.55%	
BB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.14%	14.29%	0.00%	42.86%	14.29%	7.14%	14.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
B (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	20.00%	0.00%	40.00%	20.00%	0.00%	20.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
B (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	

[illegible]



United States Transition Rates by Notched Rating Categories

Three-Year	AAA	AA (high)	AA (low)	AA	BBB (high)	BBB (low)	BBB	BB (high)	BB	BB (low)	B (high)	B	B (low)	CCC (high)	CCC (low)	CC (high)	CC	CC (low)	C (high)	C	C (low)	D
AAA	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA (high)	0.00%	71.43%	0.00%	14.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.00%	14.29%	0.00%	8.16%	0.00%	0.00%	2.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA (low)	0.00%	0.00%	0.00%	14.81%	0.00%	0.00%	12.35%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A (high)	0.00%	0.00%	0.00%	2.86%	0.00%	0.00%	60.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.23%
A	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.63%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.43%
A (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	64.89%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.53%
BBB (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.44%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.42%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.73%
BB (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.33%
B (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	18.18%
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	25.00%
B (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

[illegible]



Financial Services Transition Rates by Notched Rating Categories

One-Year	AAA	AA (high)	AA (low)	AA	A (high)	A	A (low)	BBB (high)	BBB (low)	BBB	BB (high)	BB (low)	BB	B (high)	B	B (low)	CCC (high)	CCC (low)	CCC	CC (high)	CC (low)	C (high)	C	C (low)	D
AAAA	89.52%	6.55%	3.49%	0.44%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AAA (high)	3.79%	72.73%	18.94%	4.55%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AAA	0.22%	3.04%	83.04%	7.39%	4.13%	1.52%	0.00%	0.43%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.22%	
AA (low)	0.00%	0.00%	9.24%	82.91%	4.62%	2.77%	0.00%	0.00%	0.23%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
A (high)	0.00%	0.00%	0.69%	6.57%	80.28%	6.92%	4.50%	0.35%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.35%	
A	0.00%	0.00%	1.10%	1.37%	4.93%	84.38%	3.56%	1.64%	2.19%	0.27%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.55%	
A (low)	0.44%	0.00%	0.44%	0.44%	3.08%	5.73%	81.06%	4.41%	2.20%	1.76%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.44%	
BBB (high)	0.00%	0.88%	0.88%	0.00%	0.00%	4.42%	6.19%	75.22%	7.08%	3.54%	0.00%	0.88%	0.00%	0.00%	0.00%	0.00%	0.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
BBB	0.00%	0.00%	0.00%	0.83%	0.00%	0.83%	4.17%	8.33%	73.33%	2.50%	0.83%	3.33%	0.83%	1.67%	0.00%	0.00%	0.83%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.50%	
BBB (low)	0.00%	0.00%	0.00%	1.85%	0.00%	1.85%	3.70%	0.00%	5.56%	0.00%	0.00%	1.85%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.70%	
BB (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	9.52%	0.00%	0.00%	9.52%	0.00%	0.00%	0.00%	0.00%	9.52%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	80.77%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.85%	
BB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
B (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
B (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	33.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	60.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	20.00%	
CC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	



Financial Services Transition Rates by Notched Rating Categories

	Three-Year	AAA	AA (high)	AA (low)	AA	A (high)	A	A (low)	BBB (high)	BBB (low)	BB (high)	BB (low)	B (high)	B	B (low)	CCC (high)	CCC (low)	CC (high)	CC (low)	C (high)	C	C (low)	D
AAAA	66.34%	13.37%	13.86%	2.48%	3.96%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
	10.78%	31.37%	28.43%	14.71%	9.80%	2.94%	0.00%	1.96%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AAA	0.30%	9.20%	55.49%	17.51%	8.31%	7.12%	0.89%	0.59%	0.00%	0.59%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AA (low)	0.00%	1.45%	25.14%	56.94%	7.23%	3.76%	1.45%	1.16%	0.87%	0.29%	0.00%	0.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.29%	
A (high)	0.00%	0.00%	7.41%	12.96%	49.54%	15.74%	10.19%	1.85%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.46%	
A	0.00%	0.00%	2.33%	7.33%	11.67%	60.00%	7.00%	4.33%	1.33%	0.00%	1.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	
A (low)	1.88%	0.00%	0.63%	2.50%	5.00%	12.50%	56.25%	6.88%	6.25%	0.00%	0.63%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.25%	
BBB (high)	0.00%	2.99%	4.48%	1.49%	4.48%	20.90%	10.45%	38.81%	8.96%	0.00%	1.49%	0.00%	1.49%	2.99%	0.00%	1.49%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
BBB	0.00%	0.00%	0.00%	2.27%	3.41%	5.68%	15.91%	13.64%	36.36%	6.82%	1.14%	6.82%	0.00%	1.14%	2.27%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.27%	
BBB (low)	0.00%	0.00%	0.00%	0.00%	8.33%	11.11%	5.56%	2.78%	5.56%	33.33%	8.33%	5.56%	0.00%	0.00%	2.78%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
BB (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	57.14%	0.00%	0.00%	0.00%	7.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.33%	75.00%	0.00%	0.00%	8.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
BB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
B (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
B (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	



Financial Services Transition Rates by Notched Rating Categories

Ten-Year	AAA	AA (high)	AA (low)	AA	A (high)	A	A (low)	BBB (low)	BBB (high)	BB (low)	BB (high)	BB	BB (low)	B (high)	B	B (low)	CCC (high)	CCC (low)	CC (high)	CC (low)	C (high)	C (low)	D
AAAA	15.18%	13.39%	15.18%	15.18%	28.57%	4.46%	6.25%	1.79%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AAA (high)	6.35%	1.59%	22.22%	31.75%	7.94%	15.87%	14.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AAA	0.00%	2.27%	28.03%	34.09%	9.85%	17.42%	2.27%	4.55%	0.76%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AAA (low)	0.00%	6.38%	27.66%	30.85%	11.70%	11.70%	6.38%	0.00%	5.32%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
A (high)	0.00%	7.14%	12.86%	22.86%	22.86%	15.71%	4.29%	5.71%	2.86%	1.43%	0.00%	0.00%	0.00%	0.00%	2.86%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.43%	
A	0.00%	1.55%	16.28%	20.93%	16.28%	22.48%	6.98%	3.88%	6.20%	1.55%	0.78%	0.00%	0.00%	0.00%	0.78%	0.00%	1.55%	0.00%	0.00%	0.00%	0.00%	0.00%	
A (low)	0.00%	0.00%	10.00%	2.50%	17.50%	35.00%	32.50%	2.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
BBB (high)	0.00%	0.00%	16.67%	25.00%	8.33%	33.33%	8.33%	0.00%	8.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
BBB	0.00%	0.00%	16.67%	2.78%	16.67%	22.22%	13.89%	0.00%	0.00%	27.78%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
BBB (low)	0.00%	0.00%	14.29%	0.00%	0.00%	0.00%	28.57%	0.00%	0.00%	14.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	28.57%	0.00%	0.00%	0.00%	0.00%	0.00%	
BB (high)	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
BB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
B (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
B (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	



Industrials Transition Rates by Notched Rating Categories

One-Year	AAA	AA (high)	AA (low)	AA	A (high)	A	A (low)	BBB (high)	BBB (low)	BBB (low)	BB (high)	BB (low)	B (high)	B	B (low)	CCC (high)	CCC (low)	CC (high)	CC (low)	C (high)	C	C (low)	D
AAA	93.01%	2.80%	3.50%	3.19%	2.13%	2.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AA (high)	0.00%	90.43%	0.64%	88.78%	4.49%	2.56%	0.32%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.06%	
AA	0.64%	0.00%	2.28%	85.02%	8.47%	2.93%	1.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AA (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
A (high)	0.18%	0.00%	0.71%	2.48%	85.66%	8.85%	1.77%	0.18%	0.00%	0.00%	0.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
A	0.00%	0.08%	0.17%	0.68%	2.96%	85.80%	6.17%	2.03%	1.52%	0.17%	0.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.17%	
A (low)	0.00%	0.00%	0.00%	0.00%	0.15%	4.47%	86.83%	5.98%	2.04%	0.38%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.08%	
BBB (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.41%	5.04%	86.01%	5.97%	1.44%	0.31%	0.10%	0.10%	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.21%	
BBB	0.10%	0.00%	0.00%	0.00%	0.10%	0.62%	2.07%	4.45%	85.21%	4.34%	1.03%	0.31%	0.00%	0.31%	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.10%	
BBB (low)	0.00%	0.00%	0.00%	0.00%	0.22%	0.00%	0.67%	1.79%	7.62%	79.60%	6.73%	1.35%	0.45%	0.00%	0.45%	0.22%	0.00%	0.00%	0.00%	0.00%	0.00%	0.45%	
BB (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.54%	0.00%	1.08%	1.08%	11.83%	71.51%	7.53%	2.15%	0.54%	0.00%	0.54%	0.00%	0.00%	0.00%	0.00%	0.00%	1.08%	
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.40%	1.98%	5.16%	5.16%	77.78%	4.37%	1.59%	0.00%	1.19%	0.00%	0.00%	0.00%	0.00%	0.00%	0.79%	
BB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.59%	6.90%	81.03%	4.31%	1.72%	0.86%	1.72%	0.00%	0.00%	0.00%	0.00%	0.00%	
B (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.28%	0.00%	0.00%	0.00%	3.85%	1.28%	71.79%	5.13%	2.56%	0.00%	1.28%	0.00%	0.00%	0.00%	0.00%	5.13%	
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.61%	0.00%	0.00%	0.00%	1.61%	4.84%	66.13%	4.84%	0.00%	6.45%	0.00%	0.00%	0.00%	0.00%	0.00%	6.45%	
B (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.85%	3.85%	7.69%	65.38%	0.00%	15.38%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	25.00%	0.00%	0.00%	0.00%	0.00%	25.00%	
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.23%	3.23%	3.23%	58.06%	0.00%	0.00%	0.00%	0.00%	0.00%	25.81%	
CCC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	25.00%	0.00%	25.00%	0.00%	0.00%	0.00%	50.00%	
C (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	42.86%	
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	



Industrials Transition Rates by Notched Rating Categories

Three-Year	AAA	AA (high)	AA (low)	AA	A (high)	A	A (low)	BBB (high)	BBB (low)	BB (high)	BB (low)	B (high)	B	B (low)	CCC (high)	CCC (low)	CC (high)	CC (low)	C (high)	C	C (low)	D
AAA	76.99%	10.62%	10.62%	15.19%	2.53%	3.80%	2.53%	1.77%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AA (high)	0.00%	72.15%	15.19%	11.66%	10.60%	6.71%	1.06%	0.35%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AA	1.06%	2.12%	66.08%	5.00%	63.08%	15.38%	10.77%	3.46%	0.77%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AA (low)	0.77%	0.00%	5.00%	63.08%	15.38%	10.77%	3.46%	0.00%	0.77%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.77%	
A (high)	0.63%	0.00%	1.90%	5.29%	61.52%	18.82%	7.40%	1.69%	1.90%	0.21%	0.00%	0.42%	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
A	0.00%	0.30%	0.71%	2.24%	7.83%	60.47%	14.63%	5.28%	5.69%	0.61%	0.71%	0.20%	0.30%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.41%	
A (low)	0.00%	0.00%	0.00%	0.00%	0.88%	11.77%	65.37%	13.52%	5.64%	0.58%	0.10%	0.29%	0.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
BBB (high)	0.00%	0.00%	0.00%	0.00%	0.00%	2.35%	14.23%	63.40%	12.57%	1.66%	0.83%	0.55%	0.28%	0.28%	0.00%	0.14%	0.00%	0.00%	0.00%	0.14%	0.28%	
BBB	0.41%	0.00%	0.00%	0.14%	0.27%	3.68%	6.00%	13.23%	57.98%	3.82%	2.86%	1.09%	0.00%	0.95%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.27%	
BBB (low)	0.00%	0.00%	0.00%	0.65%	0.97%	1.95%	1.95%	4.87%	17.86%	8.44%	5.84%	2.27%	0.32%	1.30%	0.00%	0.32%	0.00%	0.00%	0.00%	0.00%	0.97%	
BB (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.87%	1.74%	1.74%	7.83%	20.87%	40.00%	13.91%	4.35%	2.61%	0.87%	2.61%	0.00%	0.00%	0.00%	0.00%	1.74%	
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.19%	1.64%	7.65%	12.57%	49.73%	8.20%	1.64%	1.64%	0.00%	4.92%	0.00%	0.00%	0.05%	0.00%	2.19%	
BB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.43%	0.00%	2.86%	0.00%	7.14%	2.86%	18.57%	41.43%	14.29%	1.43%	4.29%	0.00%	0.00%	0.00%	4.29%	
B (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.44%	0.00%	9.76%	7.32%	4.88%	9.76%	36.59%	7.32%	9.76%	0.00%	0.00%	2.44%	0.00%	0.00%	9.76%	
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.88%	2.94%	8.82%	23.53%	20.59%	14.71%	0.00%	0.00%	0.00%	0.00%	0.00%	11.76%	
B (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	18.75%	6.25%	0.00%	6.25%	25.00%	25.00%	0.00%	0.00%	0.00%	0.00%	0.00%	12.50%	
CCC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%		
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	16.67%	0.00%	0.00%	0.00%	0.00%	0.00%	8.33%	8.33%	0.00%	41.67%	0.00%	0.00%	0.00%	0.00%	8.33%	
CCC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		
CC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
C (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	



Industrials Transition Rates by Notched Rating Categories

Ten-Year	AAA	AA (high)	AA (low)	AA	A (high)	A	A (low)	BBB (high)	BBB (low)	BBB	BB (high)	BB	B (high)	B	B (low)	CCC (high)	CCC (low)	CC (high)	CC (low)	C (high)	C	C (low)	D
AAAA	17.14%	22.86%	28.57%	22.86%	0.00%	5.71%	2.86%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AAA (high)	0.00%	32.50%	50.00%	5.00%	5.00%	2.50%	0.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AAA	0.00%	1.52%	19.70%	21.21%	29.29%	10.10%	12.12%	4.04%	0.51%	0.00%	0.00%	0.51%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AAA (low)	0.76%	0.00%	6.06%	26.52%	17.42%	31.06%	13.64%	1.52%	3.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
A (high)	0.41%	0.00%	3.27%	5.31%	25.31%	26.94%	17.14%	6.94%	1.63%	2.04%	1.63%	2.04%	0.00%	0.41%	0.82%	1.63%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
A	0.00%	0.00%	3.48%	6.96%	10.00%	29.35%	18.48%	7.39%	14.78%	3.91%	0.65%	2.17%	0.00%	0.43%	0.87%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.65%	
A (low)	0.00%	0.00%	0.27%	1.35%	6.47%	19.41%	29.65%	18.06%	16.98%	1.62%	4.31%	0.27%	0.81%	0.54%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.27%	
BBB (high)	0.00%	0.00%	0.00%	0.00%	3.31%	8.29%	30.39%	30.94%	7.18%	7.73%	2.21%	4.42%	0.00%	0.55%	0.00%	0.00%	1.66%	0.00%	0.00%	0.00%	0.55%	0.00%	
BBB	2.00%	0.00%	0.40%	0.40%	4.80%	8.00%	17.60%	24.40%	20.80%	10.40%	3.60%	4.80%	1.20%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.20%	
BBB (low)	0.00%	0.00%	0.00%	0.00%	2.99%	13.43%	20.90%	13.43%	13.43%	17.91%	2.99%	7.46%	5.97%	0.00%	0.00%	0.00%	1.49%	0.00%	0.00%	0.00%	0.00%	0.00%	
BBB (high)	0.00%	0.00%	0.00%	0.00%	0.00%	5.88%	5.88%	0.00%	5.88%	41.18%	5.88%	11.76%	11.76%	0.00%	0.00%	0.00%	5.88%	0.00%	0.00%	0.00%	0.00%	5.88%	
BBB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.82%	15.91%	18.18%	20.45%	6.82%	25.00%	0.00%	0.00%	2.27%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.55%	
BBB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	7.14%	14.29%	0.00%	42.86%	14.29%	7.14%	14.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
B (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	20.00%	0.00%	40.00%	20.00%	0.00%	20.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
B (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	



Insurance Transition Rates by Notched Rating Categories

One-Year	AAA	AA (high)	AA (low)	AA	A (high)	A	A (low)	BBB (high)	BBB (low)	BB (high)	BB (low)	B (high)	B (low)	CCC (high)	CCC (low)	CC (high)	CC (low)	C (high)	C (low)	D
AAAA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AAA (high)	0.00%	0.00%	85.71%	0.00%	0.00%	0.00%	0.00%	14.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AAA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AAA (low)	0.00%	0.00%	94.74%	0.00%	5.26%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A (high)	0.00%	0.00%	20.00%	70.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	10.00%
A	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A (low)	0.00%	0.00%	0.00%	0.00%	0.00%	83.33%	16.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB (high)	0.00%	0.00%	0.00%	0.00%	0.00%	20.00%	60.00%	0.00%	20.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.14%	0.00%	85.71%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	33.33%	0.00%	33.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	83.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%



Insurance Transition Rates by Notched Rating Categories

Three-Year	AAA	AA (high)	AA (low)	AA	AA (high)	A	A (low)	BBB (high)	BBB (low)	BBB (high)	BB (high)	BB (low)	B (high)	B (low)	CCC (high)	CCC (low)	CC (high)	CC (low)	C (high)	C (low)	D
AAA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.00%	0.00%	0.00%	66.67%	0.00%	0.00%	0.00%	33.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA (low)	0.00%	0.00%	0.00%	82.76%	13.79%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.45%
A (high)	0.00%	0.00%	0.00%	66.67%	33.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A (low)	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	40.00%	0.00%	25.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	40.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	18.18%	9.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	40.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

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Public Finance Transition Rates by Notched Rating Categories

Three-Year	AAA	AA (high)	AA (low)	AA	AA (high)	A	A (low)	BBB (high)	BBB (low)	BBB (high)	BB (high)	BB (low)	B (high)	B (low)	CCC (high)	CCC (low)	CC (high)	CC (low)	C (high)	C (low)	D
AAA	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA (high)	0.00%	66.67%	33.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA (low)	0.00%	0.00%	0.00%	85.00%	15.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A (high)	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A	0.00%	0.00%	0.00%	0.00%	9.38%	81.25%	0.00%	9.38%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A (low)	0.00%	0.00%	0.00%	0.00%	0.00%	21.43%	78.57%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

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Sovereigns Transition Rates by Notched Rating Categories

One-Year	AAA	AA (high)	AA (low)	AA	AA (high)	A	A (low)	BBB (high)	BBB (low)	BBB (high)	BB (high)	BB (low)	B (high)	B (low)	CCC (high)	CCC (low)	CC (high)	CC (low)	C (high)	C (low)	D
AAA	93.55%	6.45%	91.53%	5.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA (high)	3.39%	4.76%	90.48%	15.38%	80.77%	3.85%	92.31%	1.92%	3.85%	78.95%	76.19%	4.76%	85.00%	5.00%	91.67%	40.00%	60.00%	50.00%	100.00%	100.00%	100.00%
AA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%



Sovereigns Transition Rates by Notched Rating Categories

Three-Year	AAA	AA (high)	AA (low)	AA	A (high)	A	A (low)	BBB (high)	BBB (low)	BBB	BB (high)	BB	BB (low)	B (high)	B	B (low)	CCC (high)	CCC (low)	CC (high)	CC (low)	C (high)	C (low)	D
AAAA	77.78%	22.22%	73.47%	14.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AAA (high)	12.24%	73.47%	72.73%	14.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AAA	0.00%	14.55%	72.73%	10.91%	1.82%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
AAA (low)	0.00%	4.55%	36.36%	50.00%	9.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
A (high)	0.00%	0.00%	2.50%	7.50%	75.00%	7.50%	2.50%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
A	0.00%	0.00%	0.00%	4.08%	20.41%	69.39%	6.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
A (low)	0.00%	0.00%	0.00%	0.00%	0.00%	31.43%	48.57%	17.14%	2.86%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
BBB (high)	0.00%	0.00%	0.00%	0.00%	0.00%	4.76%	38.10%	52.38%	4.76%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
BBB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	16.67%	55.56%	16.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
BBB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	42.86%	57.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
BBB (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
BBB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
BBB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
B (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
B (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CCC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
CC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
C (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	



Sovereigns Transition Rates by Notched Rating Categories

Ten-Year	AAA	AA (high)	AA (low)	AA	A (high)	A	A (low)	BBB (high)	BBB (low)	BB (high)	BB (low)	B (high)	B	B (low)	CCC (high)	CCC (low)	CC (high)	CC (low)	C (high)	C (low)	D
AAAA	27.27%	54.55%	18.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AAA (high)	40.00%	20.00%	40.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AAA	24.14%	24.14%	13.79%	27.59%	10.34%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AAA (low)	0.00%	12.50%	62.50%	25.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A (high)	0.00%	0.00%	31.58%	0.00%	10.53%	15.79%	36.84%	5.26%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A	0.00%	0.00%	0.00%	0.00%	43.33%	56.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A (low)	0.00%	0.00%	4.17%	8.33%	16.67%	8.33%	16.67%	45.83%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB (high)	0.00%	0.00%	0.00%	0.00%	5.88%	35.29%	52.94%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	36.36%	0.00%	18.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	40.00%	20.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C (high)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C (low)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%



Canada Aggregate Transition Rates by Whole Rating Categories

One-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	90.73%	9.02%	0.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.62%	92.76%	6.32%	0.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.06%
A	0.06%	1.66%	93.28%	4.77%	0.09%	0.00%	0.00%	0.00%	0.00%	0.15%
BBB	0.05%	0.20%	4.81%	90.63%	3.48%	0.34%	0.10%	0.00%	0.00%	0.39%
BB	0.00%	0.00%	0.21%	8.88%	85.20%	3.59%	1.27%	0.00%	0.00%	0.85%
B	0.00%	0.00%	0.93%	0.00%	11.21%	75.70%	5.61%	0.00%	1.87%	4.67%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	7.14%	64.29%	3.57%	0.00%	25.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	33.33%	33.33%	0.00%	33.33%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	66.67%	33.33%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Three-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	69.88%	27.19%	2.92%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	1.66%	79.38%	17.00%	1.45%	0.14%	0.07%	0.00%	0.00%	0.00%	0.29%
A	0.21%	5.05%	80.64%	12.80%	0.91%	0.14%	0.00%	0.00%	0.00%	0.25%
BBB	0.19%	0.69%	15.09%	73.83%	8.14%	1.25%	0.31%	0.00%	0.06%	0.44%
BB	0.00%	0.00%	2.78%	23.77%	62.04%	4.32%	4.32%	0.00%	0.31%	2.47%
B	0.00%	0.00%	1.54%	6.15%	24.62%	47.69%	10.77%	0.00%	0.00%	9.23%
CCC	0.00%	0.00%	20.00%	0.00%	20.00%	10.00%	40.00%	0.00%	0.00%	10.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Ten-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	17.42%	55.06%	26.40%	1.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	2.86%	52.86%	39.57%	4.29%	0.29%	0.14%	0.00%	0.00%	0.00%	0.00%
A	0.08%	13.02%	59.27%	23.01%	2.80%	1.29%	0.23%	0.00%	0.00%	0.30%
BBB	0.86%	3.42%	38.36%	45.89%	9.08%	0.34%	1.20%	0.00%	0.17%	0.68%
BB	0.00%	1.32%	10.53%	52.63%	28.95%	1.32%	1.32%	0.00%	0.00%	3.95%
B	0.00%	0.00%	14.29%	28.57%	42.86%	14.29%	0.00%	0.00%	0.00%	0.00%
CCC	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%



United States Aggregate Transition Rates by Whole Rating Categories

One-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.00%	92.38%	6.67%	0.48%	0.00%	0.00%	0.00%	0.00%	0.00%	0.48%
A	0.00%	1.59%	93.27%	4.25%	0.18%	0.18%	0.00%	0.00%	0.00%	0.53%
BBB	0.00%	0.17%	1.20%	95.03%	2.05%	0.86%	0.34%	0.00%	0.00%	0.34%
BB	0.00%	0.00%	0.00%	5.43%	86.05%	4.65%	3.10%	0.00%	0.00%	0.78%
B	0.00%	0.00%	1.96%	0.00%	3.92%	76.47%	7.84%	1.96%	1.96%	5.88%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	8.33%	50.00%	0.00%	16.67%	25.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	50.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Three-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.00%	86.13%	12.41%	0.73%	0.00%	0.00%	0.00%	0.00%	0.00%	0.73%
A	0.00%	3.38%	81.69%	11.55%	1.13%	1.41%	0.00%	0.00%	0.00%	0.85%
BBB	0.00%	0.55%	4.99%	86.43%	4.16%	1.66%	1.39%	0.00%	0.55%	0.28%
BB	0.00%	0.00%	0.00%	12.50%	66.67%	13.89%	2.78%	0.00%	1.39%	2.78%
B	0.00%	0.00%	0.00%	0.00%	12.50%	62.50%	4.17%	4.17%	0.00%	16.67%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	33.33%	66.67%	0.00%	0.00%	0.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Ten-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.00%	76.47%	23.53%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A	0.00%	0.00%	21.74%	54.35%	4.35%	4.35%	8.70%	2.17%	0.00%	4.35%
BBB	0.00%	0.00%	25.00%	75.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%



Financial Services Aggregate Transition Rates by Whole Rating Categories

One-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	89.52%	10.48%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.59%	93.27%	5.66%	0.39%	0.00%	0.00%	0.00%	0.00%	0.00%	0.10%
A	0.11%	3.63%	91.71%	4.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.45%
BBB	0.00%	1.39%	7.67%	82.93%	4.18%	1.39%	0.70%	0.00%	0.00%	1.74%
BB	0.00%	0.00%	0.00%	8.16%	79.59%	4.08%	6.12%	0.00%	0.00%	2.04%
B	0.00%	0.00%	0.00%	0.00%	0.00%	75.00%	12.50%	0.00%	12.50%	0.00%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	16.67%	33.33%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Three-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	66.34%	29.70%	3.96%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	1.53%	81.78%	14.14%	2.17%	0.25%	0.00%	0.00%	0.00%	0.00%	0.13%
A	0.44%	11.54%	76.48%	10.06%	0.59%	0.00%	0.00%	0.00%	0.00%	0.89%
BBB	0.00%	5.24%	28.80%	50.79%	6.81%	4.71%	1.57%	0.00%	1.05%	1.05%
BB	0.00%	0.00%	3.70%	14.81%	66.67%	7.41%	0.00%	0.00%	3.70%	3.70%
B	0.00%	0.00%	0.00%	0.00%	0.00%	25.00%	75.00%	0.00%	0.00%	0.00%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Ten-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	15.18%	43.75%	39.29%	1.79%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	1.38%	62.63%	31.49%	4.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A	0.00%	35.56%	51.46%	9.62%	0.42%	1.67%	0.84%	0.00%	0.00%	0.42%
BBB	0.00%	25.45%	49.09%	21.82%	0.00%	0.00%	3.64%	0.00%	0.00%	0.00%
BB	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%



Industrials Aggregate Transition Rates by Whole Rating Categories

One-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	93.01%	6.29%	0.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.28%	91.30%	8.27%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.14%
A	0.03%	0.94%	93.68%	5.08%	0.13%	0.03%	0.00%	0.00%	0.00%	0.10%
BBB	0.04%	0.04%	3.52%	92.83%	2.94%	0.29%	0.13%	0.00%	0.00%	0.21%
BB	0.00%	0.00%	0.18%	8.12%	85.92%	3.79%	1.26%	0.00%	0.00%	0.72%
B	0.00%	0.00%	1.20%	0.00%	8.43%	78.31%	5.42%	0.60%	1.20%	4.82%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	8.57%	60.00%	2.86%	2.86%	25.71%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	25.00%	25.00%	0.00%	50.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	57.14%	42.86%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Three-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	76.99%	21.24%	1.77%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.80%	76.21%	21.86%	0.48%	0.00%	0.16%	0.00%	0.00%	0.00%	0.48%
A	0.12%	2.66%	81.81%	13.88%	1.01%	0.36%	0.00%	0.00%	0.00%	0.16%
BBB	0.17%	0.17%	11.56%	78.98%	7.37%	0.91%	0.40%	0.00%	0.06%	0.40%
BB	0.00%	0.00%	2.17%	22.28%	62.50%	5.98%	4.35%	0.00%	0.27%	2.45%
B	0.00%	0.00%	1.10%	4.40%	20.88%	56.04%	5.49%	1.10%	0.00%	10.99%
CCC	0.00%	0.00%	15.38%	0.00%	15.38%	15.38%	46.15%	0.00%	0.00%	7.69%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Ten-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	17.14%	74.29%	8.57%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.27%	43.78%	50.54%	4.59%	0.54%	0.27%	0.00%	0.00%	0.00%	0.00%
A	0.09%	6.97%	59.67%	27.32%	3.53%	1.39%	0.46%	0.09%	0.00%	0.46%
BBB	1.00%	1.00%	35.54%	50.60%	9.44%	0.40%	1.00%	0.00%	0.20%	0.80%
BB	0.00%	0.00%	10.67%	53.33%	29.33%	1.33%	1.33%	0.00%	0.00%	4.00%
B	0.00%	0.00%	14.29%	28.57%	42.86%	14.29%	0.00%	0.00%	0.00%	0.00%
CCC	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%



Insurance Aggregate Transition Rates by Whole Rating Categories

One-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.00%	93.33%	4.44%	2.22%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A	0.00%	7.41%	85.19%	3.70%	0.00%	0.00%	0.00%	0.00%	0.00%	3.70%
BBB	0.00%	0.00%	4.55%	86.36%	4.55%	4.55%	0.00%	0.00%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	16.67%	83.33%	0.00%	0.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Three-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.00%	81.25%	12.50%	3.13%	0.00%	0.00%	0.00%	0.00%	0.00%	3.13%
A	0.00%	28.57%	61.90%	4.76%	4.76%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB	0.00%	0.00%	11.76%	70.59%	11.76%	5.88%	0.00%	0.00%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	40.00%	60.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Ten-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A	0.00%	50.00%	16.67%	33.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%



Public Finance Aggregate Transition Rates by Whole Rating Categories

One-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.00%	98.59%	1.41%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A	0.00%	0.00%	98.75%	1.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Three-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.00%	94.12%	5.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A	0.00%	0.00%	94.34%	5.66%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Ten-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%



Sovereigns Aggregate Transition Rates by Whole Rating Categories

One-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	93.55%	6.45%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	1.35%	97.97%	0.68%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A	0.00%	1.41%	96.48%	2.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB	0.00%	0.00%	7.55%	92.45%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	22.22%	77.78%	0.00%	0.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Three-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	77.78%	22.22%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	4.76%	92.86%	2.38%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A	0.00%	4.84%	87.90%	7.26%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB	0.00%	0.00%	26.09%	73.91%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	75.00%	25.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Ten-Year	Rating at Period End (Percentage)									
	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
AAA	27.27%	72.73%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	26.32%	68.42%	5.26%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A	0.00%	12.33%	71.23%	16.44%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB	0.00%	3.03%	66.67%	30.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CCC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
D	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%



Cumulative Default Rates by Notched Rating Categories – Global Corporate

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
AAA	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA (high)	0.32%	0.64%	0.96%	1.27%	1.59%	1.91%	2.23%	2.55%	2.55%	2.55%
AA	0.11%	0.11%	0.11%	0.21%	0.21%	0.21%	0.21%	0.21%	0.21%	0.21%
AA (low)	0.00%	0.33%	0.78%	1.00%	1.23%	1.34%	1.34%	1.34%	1.34%	1.34%
A (high)	0.19%	0.29%	0.39%	0.48%	0.48%	0.58%	0.58%	0.68%	0.87%	1.06%
A	0.22%	0.61%	1.00%	1.33%	1.61%	1.77%	2.05%	2.27%	2.49%	2.72%
A (low)	0.11%	0.11%	0.22%	0.45%	0.62%	0.73%	0.79%	0.84%	0.84%	0.90%
BBB (high)	0.16%	0.32%	0.47%	0.63%	0.95%	1.18%	1.42%	1.58%	1.74%	1.82%
BBB	0.32%	0.79%	1.11%	1.19%	1.35%	1.58%	1.82%	1.98%	2.06%	2.22%
BBB (low)	0.67%	1.51%	2.01%	2.52%	3.02%	3.19%	3.52%	3.86%	4.19%	4.19%
BB (high)	0.78%	1.55%	2.33%	2.71%	3.49%	5.04%	5.81%	6.59%	6.98%	7.36%
BB	0.92%	2.15%	3.38%	4.92%	6.77%	7.69%	8.62%	9.54%	10.15%	10.77%
BB (low)	0.00%	2.70%	5.41%	8.11%	8.78%	9.46%	9.46%	9.46%	9.46%	9.46%
B (high)	4.30%	9.68%	13.98%	16.13%	17.20%	19.35%	20.43%	20.43%	20.43%	20.43%
B	4.94%	8.64%	13.58%	17.28%	18.52%	18.52%	18.52%	18.52%	18.52%	18.52%
B (low)	0.00%	2.78%	8.33%	8.33%	8.33%	8.33%	8.33%	8.33%	8.33%	8.33%
CCC/CC/C	24.24%	30.30%	31.82%	31.82%	31.82%	31.82%	31.82%	31.82%	31.82%	31.82%

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www.dbrs.com

Corporate Headquarters

DBRS Tower
181 University Avenue
Suite 700
Toronto, ON M5H 3M7
TEL +1 416 593 5577