

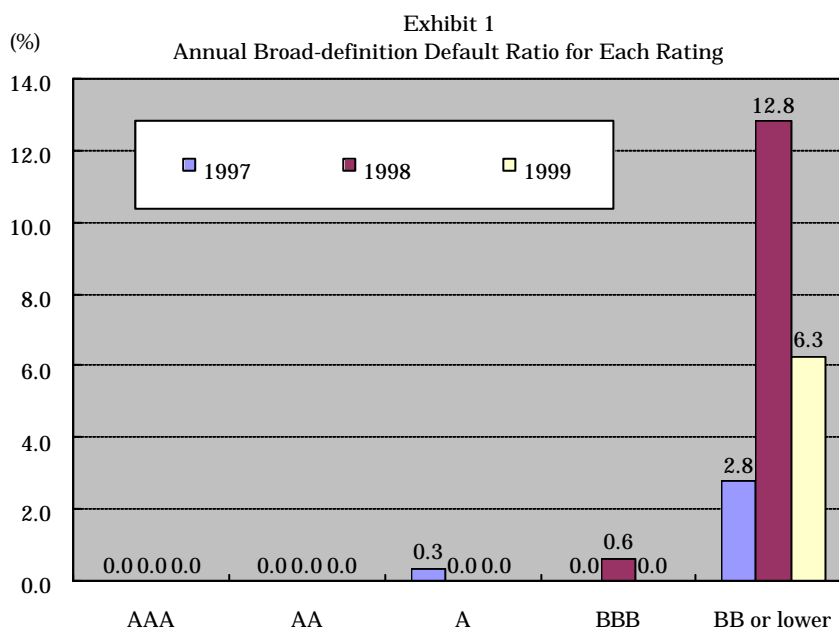
Jun 7, 2000

## **R&I's Broad-Definition Default Ratio**

Until recently, the Japanese bond market experienced only an extremely limited incidence of bond defaults. In particular, there have been to date only three such incidents for bonds rated by Japan Rating and Investment Information, Inc. (R&I), and for this reason, no default ratios for different ratings have ever existed. However, during the economic crisis of 1997 to 1999, if abandonment of claims to non-bond obligations (such as for major general contractors and trading companies) are included, there was an increasing incidence of defaults. R&I has developed a new broad-definition default ratio for each rating as an alternative index to a bond default ratio in order to take into account these forms of non-bond obligations with a broader definition than simply bond defaults.

The broad-definition default ratio indicates the probability that an issuer that has been given a publicly released rating will fall into default within a given period of time. Exhibit 1 below gives the percentage of issuers whose debts were rated as of April 1, 1997, 1998 and 1999, and who subsequently fell into default according to the new, broader definition, within a one-year period. For example, 6.3% of issuers whose debt had a rating of BB or lower as of April 1, 1999, subsequently fell into default by the new definition. In the same way, the broad-definition default ratio for issuers with ratings of AA or above is zero for both 1997 and 1998, but for issuers rated BB or lower it is 2.8% for 1997 and 12.8% for 1998. In other words, there is a clear correlation between R&I ratings and the broad-definition default ratio, and the lower the rating, the higher the broad-definition default ratio becomes.

Further, there is significance in the fact that there is no assumption of statistical models, but only actual data is used. This is the only statistical default index based on publicly announced ratings for the Japanese bond market. R&I will continue to make public updates to the broad-definition default ratio in the future.



For further details, please contact Akira Ishiwata at R&I's Structured Finance Division.

## 1. Methodology

### 1.1 The data used

The ratings used are senior long-term debt ratings and do not include ratings for municipal bonds, insurance claims paying ability ratings, or ratings for asset backed securities. In addition, ratings for bonds backed by guarantees by parent companies, banks or financial guarantee companies are not included. For the period before April 1998, the ratings issued by the Japan Bond Research Institute (JBRI) and Nippon Investors Services (NIS) -- the two companies whose merger created R&I -- have been used. In the event that there were ratings from both companies, the lower of the two has been used.

The issuing companies covered include all of the Japanese domiciled issuers to have had an R&I long-term debt rating, and companies that have only had a short-term debt rating are excluded.

The survey covers the period from April 1, 1978, to March 31, 2000, for a total of 22 years. This long-term data is managed in R&I's "Bond Rating Data Base."

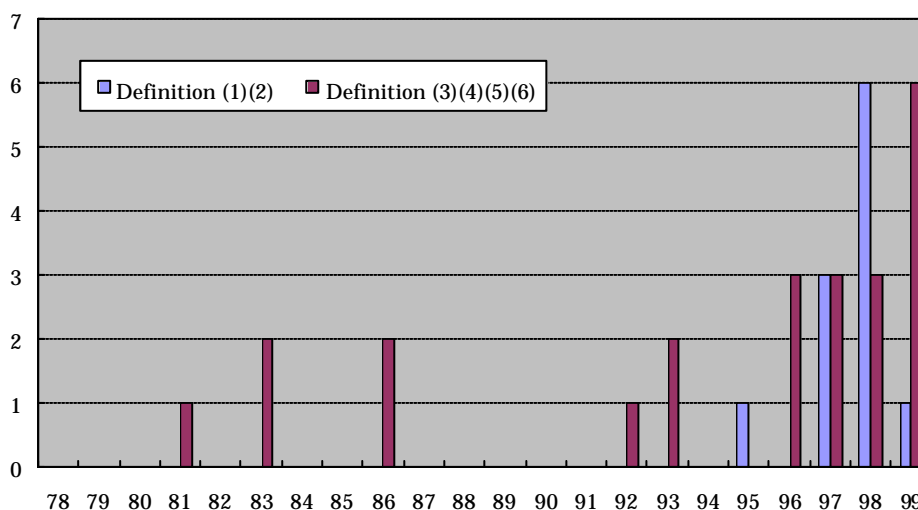
### 1.2 The definition of the broad-definition default ratio

The definition of the broad-definition default ratio has been set in such a way as to make it closer to the ratio of actual bond default. To clarify the definition, the following indicators have been used:

#### Definition of the broad-definition default ratio

- (1) Bond default
- (2) Legal bankruptcy
  - a) Court application for bankruptcy
  - b) Court application to come under the protection of the Stock Company Reorganization and Rehabilitation Act
  - c) Court application to come under the protection of the Composition Act
  - d) Court application for special liquidation measures to commence
  - e) Court application for liquidation procedures under commercial law to commence
  - f) Discretionary liquidation after a first nonpayment
  - g) Receipt of an order terminating bank dealings following a second nonpayment
  - h) Internal liquidation even without nonpayment (i.e., when a company representative acknowledges a state of bankruptcy)
  - i) Being brought under state control
  - j) Voluntary termination of business
- (3) Abandonment of claims
- (4) Emergency merger or transfer of key operating assets (where the assets are valueless)
- (5) A third-party capitalization (in the event it is aimed to eliminate a state of liabilities in excess of assets)
- (6) A state of liabilities in excess of assets (in the event that this is followed by the receipt of financial assistance to avoid bankruptcy)

Exhibit 2  
Incidence of Broad-definition Default



The first definition, of course, is actual default of bonds. There have historically been only three cases of default of bonds rated by R&I. (One of these, the default by Eidai Sangyou, took place in February 1978 and is thus outside the scope of the calculation.) The next criterion is legal bankruptcy of the issuer, since in most cases this constitutes an event of default. The definition of legal bankruptcy includes special cases such as financial institutions being brought under state control and voluntary termination of business. A total of eleven cases would fit the definition so far.

In addition to the above criteria, abandonment of claims by a company's banks or creditors, an emergency merger or transfer of key operating assets, a third-party capitalization, and financial assistance received after the company has fallen into a state of liabilities in excess of assets are also included in the definition of broad-definition default. Nevertheless, an emergency merger or transfer of key operating assets are considered to mean that the company's assets or the operating assets transferred are effectively valueless but are taken over by a third party in view of the effects on society. Third-party capitalizations, meanwhile, are only included in the event that this is done to avoid falling into a state of liabilities in excess of assets. By including these factors in the definition, a total of 34 cases would count as broad-definition default. Exhibit 2 below presents the incidence of broad-definition default.

The common factor in these additional criteria is that they all involve an application for financial assistance from a third party. In other words, the definition of broad-definition default includes the sense that there is no prospect of surviving without calling for financial assistance from a third party. The third party may be a bank, the company's parent body, or the state, but insofar as this constitutes the bondholder it effectively means default of the bonds. As a result, the broad-definition default ratio is an indicator that is very close to the reality of the situation.

It is possible that a single issuer could fall under more than one of these definitions. In particular, if the same issuer falls under two different criteria but at different times this would be a problem. In this event, the issuer is counted as being in a state of broad-definition default on the first such occasion. It is possible that the rating will survive even after that time but that it is registered under the name of a different issuer. In the event that bankruptcy procedures aimed at reestablishing the company are employed, for example under the Stock Company Reorganization and Rehabilitation Act, it is entirely possible that there will be a second default after the company has been reestablished, so this method could be described as rational.

Unless otherwise stated, the term "default" will be used in this report to denote broad-definition default as defined above.

### **1.3 The calculation of the default ratio**

The first step is to decide the starting date of the survey. The next step is to count how many issuers who held a given rating at the start of the survey period fell into default within the first year. The proportion between the total number of issuers who held a given rating at the start of the survey period and the number who fell into default is the annual default ratio. The same procedures can be used for each subsequent year and also to calculate the cumulative default ratio.

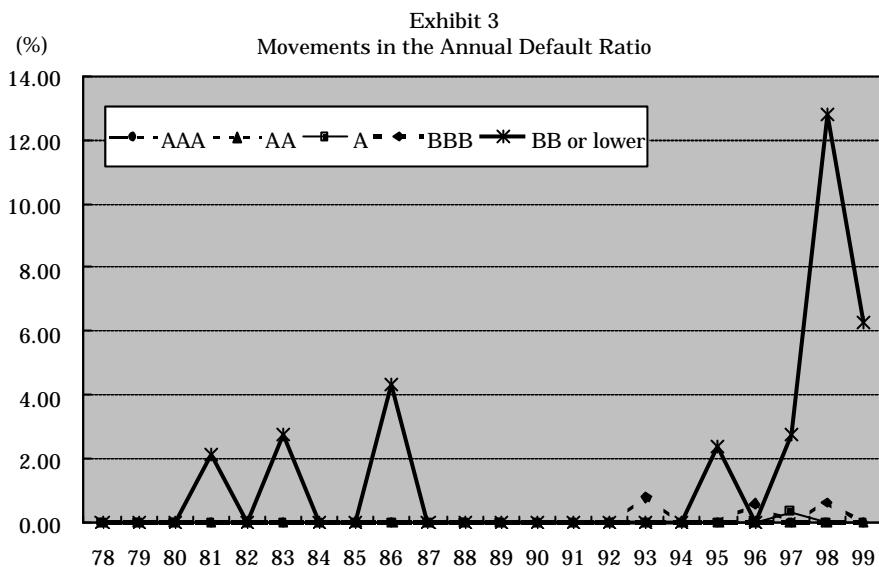
The survey starts on April 1 of each year from 1978 to 1999, giving a total of 22 survey results. Exhibit 1 shows the annual default ratios for the surveys starting on April 1 in 1997, 1998 and 1999. For the remainder of this report, surveys will be referred to as groups, so the survey starting on April 1, 1999, will be referred to as the 1999 group, and so on.

For details of the calculation results, please refer to R&I's homepage, <http://www.r-i.co.jp>.

## **2. Results of the Calculation**

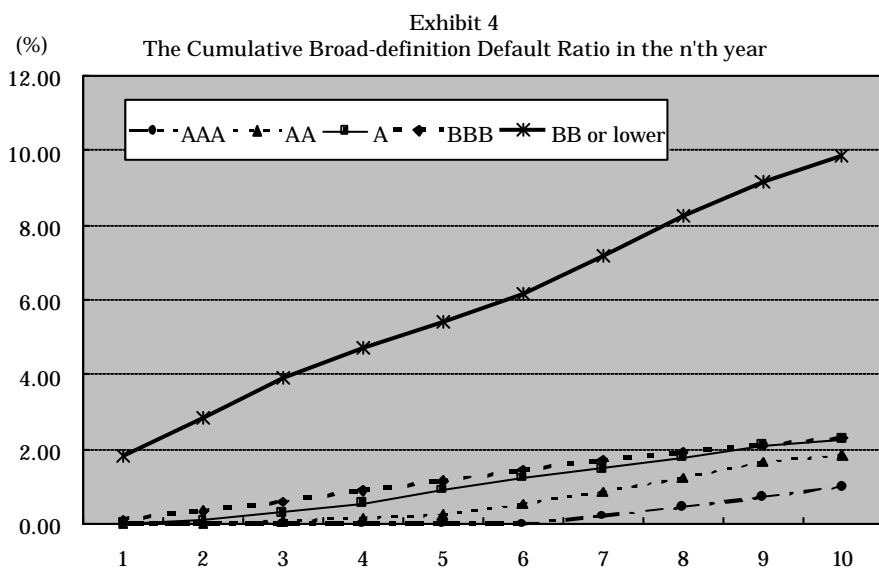
As was stated above, there is a clear correlation between bond ratings and the default ratio, a fact that deserves closer examination.

Exhibit 3 shows movements in the annual default ratio. The Exhibit shows that the issuers liable to fall into default -- as has been seen in the financial crisis of recent years and also around the middle of the 1980s -- tend to be issuers rated BBB or BB and lower.



On the occasions when an actual default ratio emerges, there is often a tendency for it to reach relatively high values. This is because the factors that cause default are likely to be shared throughout the sector to which an issuer belongs rather than being specific to a single issuer. For example, there were cases in the 1980s when several oil wholesalers and marine transportation firms defaulted in the same financial year, and the same was true of banks, securities companies, general contractors and trading companies in the late 1990s. For further details about movements in rating levels by sector, please see the "R&I Rating Data Monthly" for June 2000 (Japanese only).

So far, we have looked at the annual default ratio, i.e., the ratio of defaults within a one-year period from the starting date of the calculation. The data for the ratio covers twenty-two years, however, and Exhibit 4 shows the ratio over a longer period using this data. Exhibit 4 shows the default ratio for each rating after each year for ten years. This average of the data again clearly demonstrates that the lower the rating the higher the default ratio will be.



The long-term accumulated data shown in Exhibit 4 has been calculated as follows. First, the data shown in Exhibit 5 has been compiled. Exhibit 5 shows data for the 1997 group. In Exhibit 5, for ratings of BB or lower, there is a figure 3 in the column for two years later. This means that of the 36 companies rated BB or lower as of April 1, 1997, three defaulted in the second year after that date. It is important to bear in mind that this is not the accumulated figure for the first two years, but the figure for the second year alone. Exhibit 6 shows the percentage of issuers to default in each year based on the data in Exhibit 5. Thus the percentage of issuers rated BB or lower to default in the second year is 8.3% ( $3/36 \times 100$ ). This calculation shows the default ratio for each year (the default ratio in the n'th year). Aggregating these ratios for each year between  $n = 1$  and  $n = 10$  gives the 10-year cumulative broad-definition default ratio, as is clear from the definition of the broad-definition default ratio in the n'th year. The default ratio in the n'th year as shown in Exhibit 6 is then calculated for each annual group. Depending on the annual group, there may be limits to the number of years for which this can be done: for example, the 1997 group can only be calculated up to the third year.

### Exhibit 5

Number of Defaulting Issuers in each year for the 1997 group

Years	1	2	3	Population
AAA	0	0	0	30
AA	0	0	0	120
A	1	1	1	288
BBB	0	4	3	347
BB or lower	1	3	1	36

### Exhibit 6

Default Ratio (%) in each year for the 1997 group

Years	1	2	3
AAA	0.0	0.0	0.0
AA	0.0	0.0	0.0
A	0.3	0.3	0.3
BBB	0.0	1.2	0.9
BB or lower	2.8	8.3	2.8

Next, the average of the default ratio in the n'th year for all the annual groups is calculated. There is an  $n = 1$  figure for all 22 groups, but there is only an  $n = 2$  figure for 21 groups. In this way the number of groups declines as the value of  $n$  increases. In addition, the average must be weighted to take account of the different size of the sample groups. The results of this process are shown in Exhibit 7, the average annual default ratio in the n'th year. From this, it is possible to calculate, for example, the average 10-year cumulative broad-definition default ratio by taking the broad-definition default ratio for each year from the first to the tenth. Exhibit 8 shows the results of this calculation.

### Exhibit 7

Average Annual Default Ratio (%) in then'th year

Years	1	2	3
AAA	0.0	0.0	0.0
AA	0.0	0.0	0.1
A	0.0	0.1	0.2
BBB	0.1	0.2	0.2
BB or lower	1.8	1.0	1.1

### Exhibit 8

Cumulative Average Annual Default Ratio (%) in the n'th year

Years	1	2	3
AAA	0.0	0.0	0.0
AA	0.0	0.0	0.1
A	0.0	0.1	0.3
BBB	0.1	0.3	0.6
BB or lower	1.8	2.8	3.9

The reason for using these methods is that there would be greater loss of information in the data if the average of all the groups was used after the cumulative default ratio has been calculated for each annual group. For example, the 1997 group is made up of the results of three years' worth of rating surveys and this data takes account, to some extent, of the prospects for default in the fourth or fifth years. In other words, there is the information that the ratings have survived for at least three years and that as the cumulative default ratio by the third year was 1% the cumulative default ratio for the fourth year will definitely be no less than 1%. However, the average value of all the four-year cumulative default ratio of each group does not reflect the information for the 1997 group. On the other hand, by using the data for default in the n'th year for each group, and then taking an average from this for every group, and taking a cumulative

figure from this average, the information for default in the third year of the 1997 group can be used in establishing the cumulative data for default in the fourth and subsequent years.

### **3. The Differences Between the Broad-Definition Default Ratio and the Credit Risk Ratio**

R&I has hitherto calculated the Credit Risk Ratio as an alternative indicator of default for each rating. In the Japanese bond market, where the incidence of actual default is quite small, the credit risk ratio is a quantitative analysis of credit risk using various processes. It shows a clear correlation between R&I ratings and corporate creditworthiness. The credit risk ratio, by definition, would have considerably higher values than the actual default ratio, but it can be used in areas where conservative forecasts will need to be used in the future, such as for collateralized bond obligations (CBOs). On the other hand, improvements in the techniques for quantifying credit risk have resulted in a need for a default ratio calculation that comes close to actuality, and the Credit Risk Ratio is no longer such an effective measure for credit risk management in terms of costs. This could also be said to be true of CBOs. If there is adequate data regarding the default ratio of the assets that back CBOs, it will be possible to use a lower default ratio for future projected default ratio calculations. As a tool for future default ratio projections, the broad-definition default ratio still perhaps suffers from a shortage of data. It will therefore probably be necessary to continue to use both the broad-definition default ratio and the credit risk ratio in tandem for the time being. As a result, it will be necessary to have a clear understanding of the differences between them.

The differences between the credit risk ratio and the broad-definition default ratio are shown in Exhibit 9. One of the biggest differences is in the pool of companies covered. The credit risk ratio uses a rating estimation model based on financial data, and excludes those sectors that cannot be estimated using this model, such as financial institutions, trading companies, electric power & gas companies and private railway companies. As a result, the bankruptcies of financial institutions and trading companies over recent years are not reflected in the figures. In contrast, the broad-definition default ratio uses all companies with publicly announced R&I ratings, so there is no bias resulting from business sector. On the other hand, the sample of companies in the credit risk ratio is around 2,000, so there is little margin of error resulting from the size of the sample, whereas the broad-definition default ratio has a sample of only around 700 so there is an unavoidable instability about the figures, especially for ratings of AA and above and BB and below, due to a shortage of sample numbers.

The next major difference is a problem about how up-to-date the data is. The credit risk ratio is based on a 10-year calculation, so the newest data is for the period from fiscal 1989 to fiscal 1999. This means that it does not include information about what happened to ratings after 1989 and therefore does not reflect the recent rating behavior. The broad-definition default ratio, meanwhile, represents an improvement regarding this point, and includes the most recent behavior. For further data about the calculation of the credit risk ratio, please refer to R&I's News Release "R&I's Credit Risk Ratio" dated May 30, 2000.

In addition, for the broad-definition default ratio, the concept of default has been redefined and new survey methods have been introduced. This is a completely different approach from the concept of bankruptcy as contained in the credit risk ratio. Given also that the denominator of the number of companies in the survey is also completely different, there is no sense in trying to compare the ratio as used in the two indicators.

In short, the credit risk ratio is very stable in terms of statistics, but there is little recent data that can be derived from it, while the broad-definition default ratio is the exact reverse.



# NEWS RELEASE

## Exhibit 9: The Differences Between the Credit Risk Ratio and the Broad-Definition Default Ratio

	<b>Credit Risk Ratio</b>	<b>Broad-Definition Default Ratio</b>
<b>Companies covered</b>	Listed and OTC companies (excluding financial, institutions, trading companies, electric power & gas companies and private railway companies)	All companies with publicly announced R&I ratings
<b>Ratings</b>	Includes ratings estimated from financial data	Only publicly announced R&I ratings
<b>Most recent starting point</b>	April 1, 1989	April 1, 1999
<b>Procedures</b>	No. of companies in management difficulty (1) Bankruptcy (legal bankruptcy and merger) (2) Liabilities in excess of assets  (3) 3 years of consolidated operating losses (4) 3 years of consolidated deficits in the balance of current income to current expenditure  [although cases 3) and 4) are given a weighting of 0.5]	No. of cases judged as being actual bond default (1) Bond default (2) Legal bankruptcy (including nationalization of banks and voluntary termination of business) (3) Abandonment of claims (4) Emergency merger or transfer of key operating assets (where the assets are valueless) (5) A third-party capitalization (in the event it is aimed to eliminate a state of liabilities in excess of assets) (6) A state of liabilities in excess of assets (in the event that this is followed by the receipt of financial assistance to avoid bankruptcy)

## 4. Rating Transition Matrix

### 4.1 Calculation of the Rating Transition Matrix

The rating transition matrix is a model for projecting the probable rating an issuer will hold after a certain period of time has elapsed, and the probability for each rating. Specific projections are shown in Exhibit 10. Exhibit 10 shows the probability that an issuer with a given rating on April 1, 1999, will hold a specified rating one year later, on April 1, 2000. The left-hand column shows the rating held on April 1, 1999, and the top line shows the rating as of April 1, 2000. For example, 7.04% of issuers rated A on April 1, 1999, are likely to be rated BBB by April 1, 2000. The data used in this rating transition matrix also has a survey starting date, so Exhibit 10 could be called the annual rating transition matrix for the 1999 group.

### Exhibit 10

#### The Rating Transition Matrix for the period from April 1, 1999, to April 1, 2000

	AAA	AA	A	BBB	BB	B	CCC	CC	C	Default	NR
AAA	75.00	25.00									
AA		89.77	10.23								
A		0.74	88.89	7.04							3.33
BBB			0.33	82.45	10.26						6.95
BB				1.79	73.21	7.14					17.86
B					12.50	87.50					
CCC											
CC											

In the past, the rating transition matrix has been announced at the same time as the credit risk ratio. However, the data used in the rating transition matrix and the broad-definition default ratio are similar in numerous areas, for example as they both use data for all publicly announced R&I

ratings, so the data used in the rating transition matrix has now been changed to bring it completely into line with the broad-definition default ratio.

One of the columns in the rating transition matrix is "NR." This refers to cases where there is no longer an R&I rating because, for example, all the bonds rated have been redeemed so in terms of the database there is no longer a rating for that issuer. There is also another version of the rating transition matrix which does not contain this NR column. When a rating is removed, R&I stops following up the creditworthiness of the issuer. As a result, it could be argued that the version without the NR column shows a more accurate picture. Where a lot of ratings have been removed, the number of issuers being analyzed decreases, so errors in the transition matrix multiply. As a result, it is advisable to first refer to the version containing the NR column to establish how many ratings have been removed and then, if the proportion is relatively small, to base the analysis on the version without the NR column. In practice, for issuers with low ratings, refinancing through bond issuance is difficult so the number of removed ratings will tend to increase.

There is also a "default" column. This shows the proportion of issuers to default based on the broad-definition default ratio. Broad-definition default is, however, not the same as actual default, so there will be numerous cases where an issuer considered to be in default in the broad-definition has not actually defaulted and the rating therefore survives. As a result, there are two versions of the rating transition matrix depending on how the default column is treated. One version gives priority to actual ratings, and only includes in the default column cases where there is no longer an actual rating and the issuer fits the broad-definition of default. The other version completely disregards actual ratings and includes in the default column all cases that fit the broad-definition of default. Exhibit 10 is of the former type. Although there are cases of broad-definition default in the 1999 group, the figures in the default column are zero. In other words, all the issuers in the 1999 group fitting the broad-definition of default still held actual ratings as of April 1, 2000. When using the rating transition matrix to forecast portfolio values, this former type is probably preferable.

In other words, depending on the way the NR and default columns are treated, there are four versions of the rating transition matrix, and the version used should be chosen based on the purpose of the analysis. All four versions can be downloaded from R&I's homepage.



# NEWS RELEASE

## Appendix Broad-definition Default Ratio for Each Rating (percent)

### A.1 The Cumulative Average Annual Broad-definition Default Ratio in the n'th year

Years	1	2	3	4	5	6	7	8	9	10
AAA	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.45	0.71	1.00
AA	0.00	0.00	0.07	0.15	0.24	0.53	0.86	1.23	1.66	1.83
A	0.03	0.12	0.31	0.56	0.92	1.23	1.48	1.77	2.10	2.26
BBB	0.12	0.35	0.60	0.89	1.15	1.45	1.70	1.91	2.10	2.31
BB or lower	1.84	2.84	3.90	4.70	5.40	6.15	7.15	8.23	9.14	9.87

### A.2 The Cumulative Broad-definition Default Ratio for Each Group

#### 1978 Group

Years	1	2	3	4	5	6	7	8	9	10	Population
AAA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13
AA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19
A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48
BBB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	96
BB or lower	0.0	0.0	0.0	0.0	0.0	2.7	2.7	2.7	5.4	5.4	37

#### 1979 Group

Years	1	2	3	4	5	6	7	8	9	10	Population
AAA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15
AA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19
A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45
BBB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	96
BB or lower	0.0	0.0	0.0	0.0	2.8	2.8	2.8	5.6	5.6	5.6	36

#### 1980 Group

Years	1	2	3	4	5	6	7	8	9	10	Population
AAA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14
AA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22
A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44
BBB	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	95
BB or lower	0.0	0.0	0.0	5.1	5.1	5.1	7.7	7.7	7.7	7.7	39

#### 1981 Group

Years	1	2	3	4	5	6	7	8	9	10	Population
AAA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25
AA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31
A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	73
BBB	0.0	0.0	0.0	0.0	0.0	0.7	0.7	0.7	0.7	0.7	136
BB or lower	2.1	2.1	4.3	4.3	4.3	6.4	6.4	6.4	6.4	6.4	47

#### 1982 Group

Years	1	2	3	4	5	6	7	8	9	10	Population
AAA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25
AA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32
A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	76
BBB	0.0	0.0	0.0	0.0	0.7	0.7	0.7	0.7	0.7	0.7	148
BB or lower	0.0	2.2	2.2	2.2	4.3	4.3	4.3	4.3	4.3	4.3	46



# NEWS RELEASE

## 1983 Group

Years	1	2	3	4	5	6	7	8	9	10	Population
AAA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
AA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31
A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	74
BBB	0.0	0.0	0.0	0.6	0.6	0.6	0.6	0.6	0.6	0.6	155
BB or lower	2.8	2.8	2.8	5.6	5.6	5.6	5.6	5.6	5.6	5.6	36

## 1984 Group

Years	1	2	3	4	5	6	7	8	9	10	Population
AAA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29
AA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28
A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	78
BBB	0.0	0.0	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	168
BB or lower	0.0	0.0	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	27

## 1985 Group

Years	1	2	3	4	5	6	7	8	9	10	Population
AAA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31
AA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37
A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	92
BBB	0.0	0.5	0.5	0.5	0.5	0.5	0.5	1.0	1.0	1.0	197
BB or lower	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14

## 1986 Group

Years	1	2	3	4	5	6	7	8	9	10	Population
AAA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29
AA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	46
A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	96
BBB	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	230
BB or lower	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	23

## 1987 Group

Years	1	2	3	4	5	6	7	8	9	10	Population
AAA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29
AA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52
A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	117
BBB	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.4	271
BB or lower	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	28

## 1988 Group

Years	1	2	3	4	5	6	7	8	9	10	Population
AAA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30
AA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	68
A	0.0	0.0	0.0	0.0	0.0	1.3	1.3	2.0	3.3	3.3	153
BBB	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.7	296
BB or lower	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	7.4	27

## 1989 Group

Years	1	2	3	4	5	6	7	8	9	10	Population
AAA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	39
AA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	2.3	88
A	0.0	0.0	0.0	0.0	1.2	1.2	1.8	1.8	1.8	1.8	170
BBB	0.0	0.0	0.0	0.4	0.4	0.4	0.4	1.1	1.5	2.5	275
BB or lower	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	7.4	7.4	27

## 1990 Group

Years	1	2	3	4	5	6	7	8	9	10	Population
AAA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	4.4	4.4	45
AA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.9	1.9	108
A	0.0	0.0	0.0	1.0	1.0	1.5	1.5	1.5	2.0	2.5	198
BBB	0.0	0.0	0.4	0.4	0.4	0.4	1.2	1.2	2.5	2.9	244
BB or lower	0.0	0.0	0.0	0.0	0.0	0.0	4.2	8.3	8.3	12.5	24

## 1991 Group

Years	1	2	3	4	5	6	7	8	9	10	Population
AAA	0.0	0.0	0.0	0.0	0.0	0.0	2.4	2.4	2.4	-	42
AA	0.0	0.0	0.0	0.0	0.0	0.0	0.9	2.7	2.7	-	110
A	0.0	0.0	0.9	0.9	1.3	1.3	1.3	2.2	3.1	-	225
BBB	0.0	0.0	0.0	0.0	0.0	0.9	0.9	1.8	2.2	-	224
BB or lower	0.0	0.0	0.0	0.0	0.0	3.7	7.4	11.1	14.8	-	27

## 1992 Group

Years	1	2	3	4	5	6	7	8	9	10	Population
AAA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	35
AA	0.0	0.0	0.0	0.0	0.0	1.7	3.4	3.4	-	-	119
A	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.6	-	-	247
BBB	0.0	0.9	0.9	1.3	2.2	2.2	3.4	3.9	-	-	232
BB or lower	0.0	0.0	0.0	0.0	3.7	3.7	7.4	11.1	-	-	27

## 1993 Group

Years	1	2	3	4	5	6	7	8	9	10	Population
AAA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-	31
AA	0.0	0.0	0.0	0.0	0.0	0.9	0.9	-	-	-	112
A	0.0	0.0	0.0	0.0	0.8	2.0	2.8	-	-	-	253
BBB	0.8	0.8	0.8	1.6	1.6	2.8	3.2	-	-	-	249
BB or lower	0.0	0.0	3.1	3.1	3.1	3.1	6.3	-	-	-	32

## 1994 Group

Years	1	2	3	4	5	6	7	8	9	10	Population
AAA	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-	-	29
AA	0.0	0.0	0.0	0.0	0.9	0.9	-	-	-	-	110
A	0.0	0.0	0.0	0.8	1.9	2.3	-	-	-	-	259
BBB	0.0	0.0	0.7	0.7	1.7	2.7	-	-	-	-	301
BB or lower	0.0	2.7	2.7	5.4	5.4	8.1	-	-	-	-	37



# NEWS RELEASE

## 1995 Group

Years	1	2	3	4	5	6	7	8	9	10	Population
AAA	0.0	0.0	0.0	0.0	0.0	-	-	-	-	-	31
AA	0.0	0.0	0.0	1.0	1.0	-	-	-	-	-	101
A	0.0	0.0	0.4	0.7	1.1	-	-	-	-	-	271
BBB	0.0	0.6	0.9	2.0	2.9	-	-	-	-	-	347
BB or lower	2.4	2.4	4.8	4.8	7.1	-	-	-	-	-	42

## 1996 Group

Years	1	2	3	4	5	6	7	8	9	10	Population
AAA	0.0	0.0	0.0	0.0	-	-	-	-	-	-	29
AA	0.0	0.0	0.9	0.9	-	-	-	-	-	-	110
A	0.0	0.4	1.1	1.8	-	-	-	-	-	-	285
BBB	0.6	0.9	1.7	2.6	-	-	-	-	-	-	345
BB or lower	0.0	0.0	4.3	6.4	-	-	-	-	-	-	47

## 1997 Group

Years	1	2	3	4	5	6	7	8	9	10	Population
AAA	0.0	0.0	0.0	-	-	-	-	-	-	-	30
AA	0.0	0.0	0.0	-	-	-	-	-	-	-	120
A	0.3	0.7	1.0	-	-	-	-	-	-	-	288
BBB	0.0	1.2	2.0	-	-	-	-	-	-	-	347
BB or lower	2.8	11.1	13.9	-	-	-	-	-	-	-	36

## 1998 Group

Years	1	2	3	4	5	6	7	8	9	10	Population
AAA	0.0	0.0	-	-	-	-	-	-	-	-	29
AA	0.0	0.0	-	-	-	-	-	-	-	-	117
A	0.0	0.3	-	-	-	-	-	-	-	-	301
BBB	0.6	0.9	-	-	-	-	-	-	-	-	320
BB or lower	12.8	17.9	-	-	-	-	-	-	-	-	39

## 1999 Group

Years	1	2	3	4	5	6	7	8	9	10	Population
AAA	0.0	-	-	-	-	-	-	-	-	-	24
AA	0.0	-	-	-	-	-	-	-	-	-	88
A	0.0	-	-	-	-	-	-	-	-	-	270
BBB	0.0	-	-	-	-	-	-	-	-	-	302
BB or lower	6.3	-	-	-	-	-	-	-	-	-	64