



# Moody's Credit Risk Calculator: User Manual

By Ozgur B. Kan

Moody's Credit Risk Calculator (CRC) is a web-based report writer that allows for the generation of customized Default Rate and Rating Migration Analysis broken down by Letter and Alpha Numeric rating level, geography, industry sector and timeframe.

This manual will supplement the CRC User Guide (CRCUserGuide.pdf) available under Rating Analytics on Moodys.com and is intended to serve as a practical manual for users of CRC.

## Introduction

Moody's Annual Default Study provides aggregate historical default and migration rates. However, a variety of users, (i.e., investors, credit officers, fixed income and credit researchers, risk managers, portfolio managers, structured finance structurers, hedge fund managers and academics) might need more detailed and customized information based on their selected ratings level, time frame, geography and industry.

CRC provides an easy to use tool for the customized need of such users.

## Creating and Running Reports:

In order to create and run reports in Moody's Credit Risk Calculator, place your mouse over Rating Analytics on Moodys.com page and click on Credit Risk Calculator. This will bring you to the Credit Risk Calculator homepage.

**RATINGS ANALYTICS**

**Credit Risk Calculator**

The Credit Risk Calculator is the same tool used by our own analysts to produce default rate and rating migration research. This flexible, easy-to-use program allows clients to create customized default rate and rating migration analyses based on rating level, industry sector, geography and timeframe.

Moody's Senior Ratings Algorithm

- User Guide
- Sample Default Report
- Sample Rating Migration Report

**Your Custom Reports**

Use this area to create, manage, and share your reports with other Credit Risk Calculator users.

Default Rate Analysis Report(s)	create	share	all ?						
2006_Annual_Sample				edit	copy	rename	detail	delete	share
Cumulative_Def_Rate_2004				edit	copy	rename	detail	delete	share
Marginal_Def_Rates_2002				edit	copy	rename	detail	delete	share

  

Rating Migration Report(s)	create	share	all ?						
1970_2005_MigrationMatrix				edit	copy	rename	detail	delete	share
Corporate-Migration				edit	copy	rename	detail	delete	share
CRC User Manual				edit	copy	rename	detail	delete	share

**Ratings Analytics**

- Default Research
  - Default Risk Service Corporate
  - Recovery Service Corporate
  - Default Risk Service Structured
  - Credit Risk Calculator
  - Market Implied Ratings
- Guide to Default Research
  - Methodology
  - MDR Service
    - Monthly Default Reports
    - Quarterly Rating Activity & Reviews
  - Corporate Bond Research
    - Default Studies
    - Rating Transitions
    - Recovery Studies
    - Ratings Performance
  - Bank Loan Research
  - Structured Finance Research
    - Default and Loss Studies
    - Rating Transitions
    - Rating Performance
  - Municipal Bond Research
  - Sovereign Bond Research
  - Commercial Paper Research
  - Other Studies
  - Events
  - Key Contacts
  - Multi-Asset Port



On this page, you can access Moody's research to complement your analyses, create, edit and run your own reports as well as those of other users who share their reports, set-up contacts, set e-mail notifications to learn about data updates and product enhancements.

**RATINGS ANALYTICS**

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**Default Rate Analysis Report(s)** create share all ?

CRC User Manual	edit	copy	rename	detail	delete	share
Cumulative_Def_Rate_2004	edit	copy	rename	detail	delete	share
Marginal_Def_Rates_2002	edit	copy	rename	detail	delete	share

**Rating Migration Report(s)** create share all ?

1970_2005_MigrationMatrix	edit	copy	rename	detail	delete	share
Corporate-Migration	edit	copy	rename	detail	delete	share
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- ▶ Commercial Paper Research
- ▶ Other Studies
- ▶ Events
- ▶ Key Contacts
- ▶ Notifications Email

## Credit Risk Calculator – Default Rate Analysis Report(s)

In order to create a new reports click on “Create” after the Default Rate Analysis Report(s) header. This will take you to the Input screen where you can enter a report name in the “Enter Report Name” box. You can also enter a brief description of your report in the “Report Description” box.

**Moody's.com** search by Issuer Name for [ ] go Ozgur Kan is currently logged in Your Profile Log out

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**RATINGS ANALYTICS**

**Credit Risk Calculator**

Edit Default Rate Analysis Report

Help

Enter Report Name

Report Description

750 characters only

**Ratings Analytics**

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  - Default Risk Service Corporate
  - Recovery Service Corporate
  - Default Risk Service Structured
  - ▶ **Credit Risk Calculator**
  - Market Implied Ratings
- ▶ Guide to Default Research
- ▶ Methodology
- ▶ MDR Service
  - Monthly Default Reports
  - Quarterly Rating Activity & Reviews
- ▶ Corporate Bond Research

## Regions:

Determine the country or countries to be included in your analysis. Typically, this refers to legal domicile, but for defaulters it refers to effective domicile. Select a Region from the drop-down box to display all the available countries in that region. Highlight one country or multi-countries by pressing the CTRL key and use the single arrow to move the effective countries to be included in the report. You can use the double arrow to move all shown countries in the selected region. You may select among and across all available regions and countries (for example, parts of Asia plus Argentina and Brazil).

**Select the effective countries to be included in the report: ?**

Please Select the Region Please Select the Region All Countries Africa Asia Australia & New Zealand Europe Middle East North America & Carribean South America Southeast Asia	>> > < <<	<b>Selected Countries</b> Austria Finland Germany France Denmark Italy Turkey United States Trinidad & Tobago
---	--------------------	--

## Select Industries:

Determine the industries to be included in your analysis. First, decide which industry categorization you would like to use and use the drop down box to select the industry or industries to be included in your analysis. All issuers in the data set are coded with the Moody's 12 (the classifications used in CRC Version 1.0) and Moody's Broad and Specific Codes. A subset of the issuers are coded with Standard Industrial Classification (SIC) and Moody's 33 (CDO Diversity) Codes.

**Select the Industries to be included in the report: ?**

Moody's 12 Please Select the Industry Categorization Broad - Specific Broad Industry Broad SIC Code Moody's 12 Moody's 33 Specific - Broad Specific SIC Code	>> > < <<	<b>Selected Industries</b> M12-Banking M12-Consumer Products M12-Energy M12-Financial (Non-Bank) M12-Hotel, Gaming, & Leisure M12-Industrial M12-Miscellaneous M12-Retail M12-Technology M12-Transportation
--	--------------------	---

**You may select within or across these categories:**

<b>Broad - Specific</b>	<ul style="list-style-type: none"> <li>■ Includes Moody's own industry assignments.</li> <li>■ Covers <i>All</i> issuers.</li> <li>■ Consists of approximately 300 combinations with one of the 13 Broad Industry classifications expanded by a specific Industry segment definition.</li> </ul>
<b>Broad Industry</b>	<ul style="list-style-type: none"> <li>■ Includes Moody's own industry assignments.</li> <li>■ Covers <i>All</i> issuers with 13 Broad Industry classification options:               <ol style="list-style-type: none"> <li>1. Banking,</li> <li>2. Finance</li> <li>3. Industrial</li> <li>4. Insurance</li> <li>5. Other Non-Bank</li> <li>6. Pooled Investment Vehicles</li> <li>7. Public Utility</li> <li>8. Real Estate Finance</li> <li>9. Securities</li> <li>10. Sovereign</li> <li>11. Structured Finance</li> <li>12. Thrifts</li> <li>13. Transportation</li> </ol> </li> </ul>
<b>Broad SIC Code</b>	<ul style="list-style-type: none"> <li>■ Industry description based on the 2-digit SIC code of the issuer.</li> <li>■ Covers a <i>Subset</i> of issuers with 80 options.</li> </ul>
<b>Moody's 12</b>	<ul style="list-style-type: none"> <li>■ Includes Moody's own industry assignments.</li> <li>■ Covers <i>All</i> issuers with 13 options; 12 Industry classifications plus Sovereign.               <ol style="list-style-type: none"> <li>1. Banking</li> <li>2. Consumer Products</li> <li>3. Energy</li> <li>4. Financial (Non-Bank)</li> <li>5. Hotel, Gaming and Leisure</li> <li>6. Industrial,</li> <li>7. Media</li> <li>8. Miscellaneous</li> <li>9. Retail</li> <li>10. Sovereign</li> <li>11. Technology</li> <li>12. Transportation</li> <li>13. Utilities</li> </ol> </li> </ul>
<b>Moody's 33</b>	<ul style="list-style-type: none"> <li>■ Includes Moody's diversity scoring code used by CDO group.</li> <li>■ Covers a <i>Subset</i> of issuers with 33 options.</li> <li>■ Recommended only for structured finance issuers.</li> </ul>
<b>Specific - Broad</b>	<ul style="list-style-type: none"> <li>■ Includes Moody's own industry assignment based on Specific definition of an</li> <li>■ Covers <i>All</i> issuers with approximately 300 combinations.</li> </ul>
<b>Specific SIC Code</b>	<ul style="list-style-type: none"> <li>■ Industry description based on the 4-digit (more detailed) SIC code of the issuer.</li> <li>■ Covers a <i>Subset</i> of issuers with approximately 600 options.</li> </ul>

Appendix A provides some tips on the selection of industries for analysis.

## Time Period: Cohort Dates & Spacing - Default Report

Determine First Cohort Date using the drop down box. The First Cohort Date is the date at which the first set of issuers will be formed to be included in the analysis.

Determine Last Cohort Date using drop down box. The Last Cohort Date is defined similar to the First Cohort Date. The Last Cohort Date is the latest date a cohort can be defined given the time span covered by the data set and the specified Accumulation Periodicity.

Select Cohort Spacing from the drop down box. Cohort Spacing is the amount of time desired between the creation of each cohort. (i.e., How often do you want to form a new pool of issuers?) The currently available options are Yearly, Quarterly and Monthly. Currently, Cohort Spacing must be Greater Than or Equal to Accumulation Periodicity.

Select Accumulation Periodicity from the drop down box. Accumulation Periodicity is the desired length of time for which a default rate is to be calculated. (i.e., How often do you want to check for defaults?) The currently available options are Year(s), Quarter(s), Month(s) and Week(s).

**Select the Industries to be included in the report: ?**

Moody's 12

- M12-Media
- M12-Sovereign

**Selected Industries**

- M12-Banking
- M12-Consumer Products
- M12-Energy
- M12-Financial (Non-Bank)
- M12-Hotel, Gaming, & Leisure
- M12-Industrial
- M12-Miscellaneous
- M12-Retail
- M12-Technology
- M12-Transportation

**Cohort Dates & Spacing**

First Cohort Date    ?  
calendar

Accumulation Periodicity ?

Last Cohort Date     
calendar

Cohort Spacing  ?

## How to create year-to-date default rates:

Set the First Cohort Date to January 1 of this year; set Accumulation Periodicity and Cohort Spacing to monthly. The cumulative default rate for the January 1 cohort will be the year-to-date default rate.

Once you enter the specification of your report click on Save button. This will bring you back to the CRC homepage.

## Viewing the Results: Credit Risk Calculator – Default Reports

You can easily Edit, Copy, Rename, See Details, Delete or Share reports with other CRC users.

Click on the name of the report you would like to run. When your report is ready, you will automatically be brought to the results. The first screen you see will feature the details of your report. The Report Definition tab restates the exact report specifications, including: Name, Time Period, Cohort, Accumulation Period, Countries and Industries.

Report Definition	Numerators	Denominators	Marginal Default Rates	Cumulative Default Rates	Wtd. Avg. Cumulative Default Rates	Default Rate Time Series
<b>Default Rate Analysis Report</b> <b>CRC User Manual</b> <b>Date as of: 8/24/2007</b> <span style="float: right;">Download to Excel</span>						
Report Name	CRC User Manual					
Report Period	From 1/1/1970 to 1/1/2006					
Cohort Spacing	Yearly					
Accumulation Period	Year(s)					
Report Definition Last Updated	8/24/2007					
Countries	Austria, Finland, Germany, France, Denmark, Italy, Turkey, United States, Trinidad & Tobago					
Industries	M12-Banking, M12-Consumer Products, M12-Energy, M12-Financial (Non-Bank), M12-Hotel, Gaming, & Leisure, M12-Industrial, M12-Miscellaneous, M12-Retail, M12-Technology, M12-Transportation, M12-Utilities					

All Default Rate Analysis Report pages can be exported to Excel.

### Default Reports include:

#### Numerators

Numerators report shows the number of issuers that defaulted over the specified period; total period and each accumulation period as defined on the report definition tab of the default reports. The screen can be viewed based on either the Letter or Alpha Numeric Ratings.

The title "Number of Defaults by Issuers in Year X after Being Rated Y" refers to the cohort formation as of the beginning of the first accumulation period. If the rating of an issuer changes over time (i.e. if the original rating was Aa3 on the cohort formation date and it changed from Aa3 to Baa2 after two years), an ultimate default will still be recorded under Aa3, which was the rating held by issuer as of the cohort formation date.

The second column, Total, reports the total number of defaults over the specified period beginning as of the cohort formation date until the end of the last accumulation period. Starting from third column on, the numerator is the number of defaults over the accumulation period which starts on the date given by the column heading. As an example, 1/1/1970 refers to the accumulation period (calendar year) that starts on January 1st, 1970 and ends on December 31st, 1970.

You have to scroll "RIGHT" on the results to see the numbers in the later years and you have to scroll "DOWN" on the page to see the results of the cohorts formed in the later years.



**Default Rate Analysis Report**  
**CRC User Manual**  
 Date as of: 8/24/2007 Download to Excel

Report Definition	Numerators	Denominators	Marginal Default Rates	Cumulative Default Rates	Wtd. Avg. Cumulative Default Rates	Default Rate Time Series		
Letter Alpha Numeric								
<b>Cohort Formed 1/1/1970</b>								
Number of Defaults by Issuers in Year X After Being Rated Y								
Ratings	Total	1/1/1970	1/1/1971	1/1/1972	1/1/1973	1/1/1974	1/1/1975	1/1/1976
Aaa	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aa	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A	14.0	0.0	0.0	0.0	1.0	0.0	1.0	0.0
Baa	35.0	2.0	0.0	0.0	2.0	1.0	0.0	0.0
Ba	44.0	10.0	2.0	1.0	1.0	2.0	1.0	0.0
B	10.0	7.0	0.0	1.0	0.0	0.0	0.0	0.0
Caa-C	14.0	8.0	1.0	3.0	1.0	0.0	0.0	0.0
Investment-Grade	54.0	2.0	0.0	0.0	3.0	1.0	1.0	1.0
Speculative-Grade	68.0	25.0	3.0	5.0	2.0	2.0	1.0	1.0
All Corporates	122.0	27.0	3.0	5.0	5.0	3.0	2.0	2.0
<b>Cohort Formed 1/1/1971</b>								
Number of Defaults by Issuers in Year X After Being Rated Y								
Ratings	Total	1/1/1971	1/1/1972	1/1/1973	1/1/1974	1/1/1975	1/1/1976	1/1/1977
Aaa	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aa	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A	16.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0
Baa	33.0	0.0	0.0	2.0	1.0	0.0	1.0	0.0
Ba	37.0	2.0	1.0	1.0	2.0	2.0	1.0	0.0
B	2.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Caa-C	6.0	1.0	3.0	1.0	0.0	0.0	0.0	0.0
Investment-Grade	53.0	0.0	0.0	3.0	1.0	1.0	1.0	1.0
Speculative-Grade	45.0	3.0	5.0	2.0	2.0	2.0	1.0	1.0
All Corporates	98.0	3.0	5.0	5.0	3.0	3.0	2.0	2.0

## Denominators

Denominators report shows the total number of issuers available to default and “effective denominators”. Total column represents the total number of issuers at the beginning of each cohort and includes the withdrawn (WR) ratings.

Withdrawn ratings are used for issuers that exit the pool for non-credit related reasons, i.e., maturing bonds, merger, etc. In these cases, it is assumed that issuers exit the pool half-way through the accumulation period.

“Effective Denominators” do not include WR ratings. Current year’s Effective Denominator is calculated by removing (1) all the past defaults, (2) all withdrawals in the years from the formation of the cohort until the end of the last year, and (3) half of the WR issuers in the current year from the pool of issuers in the original cohort.

For a more detailed discussion of Rating Withdrawals and Default Rate Calculations, see Moody’s Special Comment “Measuring Corporate Default Rates” by Hamilton and Cantor (2006).

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### RATINGS ANALYTICS

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Corporate-Migration	edit copy rename detail delete share
CRC User Manual	edit copy rename detail delete share

## Issuer Drill-Down Capabilities

The drill-down feature allows users to click on any non-zero number to see the issuers that make up that number on either the Numerators or the Denominators tabs. When users click on the number, they are taken to new screen which will show the Report Name, Sub Report Type, Rating Type and Rating, Cohort of the selected number and Accumulation period. The bottom of the screen reports the full list of the issuers that comprise of the selected number. Furthermore, two drop down boxes allow users to narrow the list of issuers based on Industries and / or Countries.

When users click on the "+" sign next to the name of the issuer, a summary of the issuer's rating history is provided. When users click on the name of a certain issuer, they are taken to a screen which provides a summary of the issuer.

**Default Rate Analysis Report**  
 Report Name : CRC User Manual  
 Sub Report Type : Numerators  
 Rating Type / Rating : AlphaNumeric / A1  
 Cohort : 1/1/1983  
 Accumulation : Total  
 Date as of : 08/24/2007

Industries:

Countries:

Results: 1 - 4 of 4    Prev | 1 | Next

**Issuer List: All Issuers**

All	#	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
+ Furniture Brands International, Inc.																											
- Smith International, Inc.																											
	04/26/1979	A																									
	04/26/1982	A1																									
	06/11/1984	A3																									
	05/21/1985	Baa3																									
	02/06/1986	B1																									
	02/20/1986	Caa-C																									
	03/11/1986	Caa-C																									
	12/17/1987	B1																									
	09/08/1997	Baa2																									
	01/20/1998	Baa1																									
+ Southwest Bancshares, Inc.																											
+ Texas American Bancshares, Inc.																											

**Marginal Default Rates** report represents the default rate for a given time period for each cohort, ignoring what happened in the previous period. Marginal default rate is Numerator divided by Effective Denominator for a given period "t". As Effective Denominators are adjusted for Rating Withdrawals (WRs), Marginal Default Rates are adjusted for Rating Withdrawals.

Should the users desire to obtain Marginal Default Rates unadjusted for Rating Withdrawals, they can obtain them by dividing the Numerators by total number of issuers in each rating group as of the cohort formation date. This can be obtained from the first column, Total, on the Denominators tab.

**Default Rate Analysis Report**  
**CRC User Manual**  
 Date as of: 8/24/2007

Report Definition	Numerators	Denominators	Marginal Default Rates	Cumulative Default Rates	Wtd. Avg. Cumula Rates
▶ Letter ▶ Alpha Numeric					
Cohort Formed 1/1/1983					
Ratings	1/1/1983	1/1/1984	1/1/1985	1/1/1986	1/1/1987
Aaa	0.00%	0.00%	0.00%	0.00%	2.90%
Aa1	0.00%	0.00%	0.00%	0.00%	0.00%
Aa2	0.00%	0.00%	0.00%	0.00%	1.40%
Aa3	0.00%	0.00%	0.00%	0.00%	0.00%
A1	0.00%	0.00%	0.00%	1.06%	0.00%
A2	0.00%	0.00%	0.00%	0.00%	0.00%
A3	0.00%	0.00%	0.00%	0.00%	0.00%
Baa1	0.00%	0.00%	1.42%	0.00%	0.00%
Baa2	0.00%	0.00%	0.00%	1.34%	1.47%
Baa3	0.00%	3.35%	0.00%	2.56%	0.00%
Ba1	0.00%	0.00%	1.39%	3.15%	0.00%
Ba2	0.00%	2.25%	4.94%	13.89%	0.00%
Ba3	2.70%	2.96%	3.23%	11.32%	7.79%
B1	0.00%	7.75%	6.22%	0.62%	4.48%



**Cumulative Default Rates** report incorporates the probability of survival from one period to the next. Cumulative default rates are built from marginal default rates, taking into account survival probability.

$$\text{Cumulative Default Rate } D(t) = 1 - S(t)$$

where :

$$\text{Survival Probability } S(t) = (1-P_1) * (1-P_2) * \dots * (1-P_t), \text{ and}$$

$P_t$  = Marginal Probability of Default

As expected, cumulative default rates are non-decreasing functions of time as more defaults take place in subsequent years.

**Default Rate Analysis Report**  
CRC User Manual  
Date as of: 8/24/2007 Download to Excel

Report Definition	Numerators	Denominators	Marginal Default Rates	Cumulative Default Rates	Wtd. Avg. Cumulative Default Rates	Default Rate Time Series
Letter Alpha Numeric						
Cohort Formed 1/1/1983						
Ratings	1/1/1983	1/1/1984	1/1/1985	1/1/1986	1/1/1987	1/1/1988
Aaa	0.00%	0.00%	0.00%	0.00%	2.90%	2.90%
Aa1	0.00%	0.00%	0.00%	0.00%	0.00%	3.33%
Aa2	0.00%	0.00%	0.00%	0.00%	1.40%	1.40%
Aa3	0.00%	0.00%	0.00%	0.00%	0.00%	2.42%
A1	0.00%	0.00%	0.00%	1.06%	1.06%	3.29%
A2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A3	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Baa1	0.00%	0.00%	1.42%	1.42%	1.42%	1.42%
Baa2	0.00%	0.00%	0.00%	1.34%	2.79%	2.79%
Baa3	0.00%	3.35%	3.35%	5.83%	5.83%	7.32%
Ba1	0.00%	0.00%	1.39%	4.49%	4.49%	8.94%
Ba2	0.00%	2.25%	7.07%	19.98%	19.98%	30.72%
Ba3	2.70%	5.59%	8.63%	18.97%	25.29%	30.03%
B1	0.00%	7.75%	12.58%	20.97%	24.45%	26.33%
B2	10.00%	10.00%	30.00%	30.00%	30.00%	30.00%
B3	17.91%	17.91%	24.61%	32.15%	36.39%	36.39%
Caa-C	40.00%	64.00%	64.00%	64.00%	76.00%	76.00%
Investment-Grade	0.00%	0.33%	0.44%	0.90%	1.40%	2.18%
Speculative-Grade	3.96%	7.22%	11.37%	18.93%	21.88%	24.22%
All Corporates	1.02%	2.08%	3.18%	5.31%	6.36%	7.47%

## Weighted Average Marginal and Cumulative Default Rates

**Weighted Average Cumulative Default Rates** are built from **Weighted Average Marginal Default Rates**. Each row for each cohort is weighted so that years with larger numbers in the denominators have more weight than years with smaller numbers in the denominators. Marginal default rates, and consequently cumulative default rates, are calculated as before, this time only with weighted numerators and denominators.

**Default Rate Analysis Report**  
CRC User Manual  
Date as of: 8/24/2007 Download to Excel

Report Definition	Numerators	Denominators	Marginal Default Rates	Cumulative Default Rates	Wtd. Avg. Cumulative Default Rates	Default Rate Time Series
Letter Alpha Numeric						
Weighted Average Letter Rating Marginal Default Rates						
Ratings	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Aaa	0.00%	0.00%	0.00%	0.05%	0.10%	0.11%
Aa	0.00%	0.00%	0.04%	0.11%	0.11%	0.12%
A	0.03%	0.07%	0.16%	0.16%	0.18%	0.18%
Baa	0.19%	0.34%	0.41%	0.54%	0.53%	0.58%
Ba	1.26%	2.24%	2.82%	2.83%	2.73%	2.53%
B	5.58%	6.87%	6.91%	6.64%	6.32%	6.00%
Caa-C	18.72%	13.79%	13.12%	12.50%	12.69%	12.34%
Investment-Grade	0.08%	0.15%	0.21%	0.27%	0.27%	0.28%
Speculative-Grade	4.63%	4.93%	4.84%	4.49%	4.24%	3.83%
All Corporates	1.58%	1.61%	1.51%	1.35%	1.18%	1.03%
Weighted Average Letter Rating Cumulative Default Rates						
Ratings	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Aaa	0.00%	0.00%	0.00%	0.05%	0.15%	0.25%
Aa	0.00%	0.00%	0.04%	0.16%	0.26%	0.38%
A	0.03%	0.10%	0.25%	0.41%	0.57%	0.76%
Baa	0.19%	0.53%	0.94%	1.48%	2.00%	2.53%
Ba	1.26%	3.47%	6.00%	8.47%	10.97%	13.22%
B	5.58%	12.08%	18.15%	23.58%	29.41%	32.71%
Caa-C	18.72%	29.93%	39.12%	46.73%	53.49%	59.23%
Investment-Grade	0.08%	0.22%	0.44%	0.71%	0.98%	1.26%
Speculative-Grade	4.63%	9.33%	13.72%	17.59%	21.09%	24.11%
All Corporates	1.58%	3.17%	4.63%	5.92%	7.03%	7.98%

**Default Rate Time Series** summarizes data from the cumulative default rate report. Default rate time series takes the first column of each cohort from the cumulative default rate report and summarizes the data on a single page for Letter and Alpha Numeric ratings.

**Default Rate Analysis Report**  
CRC User Manual  
Date as of: 8/24/2007 Download to Excel

Report Definition	Numerators	Denominators	Marginal Default Rates	Cumulative Default Rates	Wtd. Avg. Cumulative Default Rates	Default Rate Time Series
<b>Letter Default Rate Time Series</b>						
Ratings	1/1/1970	1/1/1971	1/1/1972	1/1/1973	1/1/1974	1/1/1975
Aaa	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%
A	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Baa	0.56%	0.00%	0.00%	0.47%	0.00%	0.00%
Ba	4.44%	0.90%	0.00%	0.00%	0.00%	1.07%
B	21.54%	0.00%	8.33%	4.44%	11.54%	3.51%
Caa-C	53.33%	14.29%	40.00%	44.44%	0.00%	0.00%
Investment-Grade	0.28%	0.00%	0.00%	0.24%	0.00%	0.00%
Speculative-Grade	9.17%	1.20%	2.05%	1.36%	1.42%	1.38%
All Corporates	2.74%	0.30%	0.47%	0.47%	0.29%	0.28%
<b>Alpha Numeric Default Rate Time Series</b>						
Ratings	1/1/1983	1/1/1984	1/1/1985	1/1/1986	1/1/1987	1/1/1988
Aaa	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Aa1	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Aa2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Aa3	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A1	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
A3	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Baa1	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Baa2	0.00%	0.00%	0.00%	0.00%	0.00%	0.87%
Baa3	0.00%	1.14%	0.00%	5.00%	0.00%	1.08%
Ba1	0.00%	1.25%	0.00%	0.90%	3.80%	0.83%
Ba2	0.00%	1.72%	1.80%	0.00%	1.10%	2.08%
Ba3	2.70%	0.00%	3.03%	3.72%	3.17%	4.17%
B1	0.00%	5.93%	4.44%	7.87%	4.55%	5.12%
B2	10.00%	20.00%	8.33%	19.23%	4.94%	8.08%
B3	17.91%	2.99%	14.14%	16.36%	10.53%	9.86%
Caa-C	40.00%	100.00%	0.00%	26.67%	22.22%	31.58%
Investment-Grade	0.00%	0.10%	0.00%	0.35%	0.00%	0.17%
Speculative-Grade	3.96%	3.49%	3.91%	5.86%	4.40%	3.74%
All Corporates	1.02%	0.99%	1.09%	2.03%	1.62%	2.30%

## Credit Risk Calculator – Rating Migration Reports

Click on “Create” after the Rating Migration Report(s) header. This will take you to the Input screen where you can enter a report name in the “Enter Report Name” box. You can also enter a brief description of your report in the “Report Description” box.

**Credit Risk Calculator**

[Edit Rating Migration Report](#)

**Help**

Enter Report Name:

Report Description:

250 characters only

**RATINGS ANALYTICS**

**Ratings Analytics**

- Default Research
- Default Risk Service Corporate
- Recovery Service Corporate
- Default Risk Service Structure
- Credit Risk Calculator**
- Market Implied Ratings

[Guide to Default Research](#)  
[Methodology](#)  
[MDR Service](#)  
[Monthly Default Reports](#)  
[Quarterly Rating Activity & Rev](#)  
[Corporate Bond Research](#)

### Regions:

The determination and input of the country or countries to be included in Migration Report(s) analysis is the same as in the Default Rate Analysis Report(s)

### Select Industries:

The determination and input of the industries to be included in Migration Report(s) analysis is the same as in the Default Rate Analysis Report(s).

## Time Period: Cohort Dates & Spacing – Rating Migration Report

The determination of First Cohort Date, Last Cohort Date and Cohort Spacing in Migration Report(s) analysis is the same as in the Default Rate Analysis Report(s).

The Transition Interval is the length of time over which the rating migrations will be measured. For example, selecting a Time Unit in Year(s) and Number of Units as 4 (four) will result in a report that includes a four-year rating transition matrix.

As a caution, the last cohort date must be chosen to be less than or equal to the last available cohort date based on selected time unit and number of units. For example, if cohort spacing is selected as Yearly with time units selected in Year(s) and number of units selected as 4 (four), then the last cohort date beginning January 1 would be from year **2003, not 2006**, as of September 2007 when this manual was being compiled with the most recent complete annual data being from 2006.

**Define Rating Migration Cohorts:**

**Cohort Dates & Spacing**

First Cohort Date January 01 1970 ?  
calendar

Last Cohort Date January 01 2002 ?  
calendar

Cohort Spacing Yearly ?

**Transition Interval ?**

Select Time Unit  
Year(s)

Enter Number of Units

Once the inputs are entered click on Save button. This will bring you back to the CRC homepage.

## Viewing the Results: Credit Risk Calculator – Rating Migration Reports

You can easily **Edit, Copy, Rename, See Details, Delete** or **Share** reports with other CRC users.

Click on the name of the report you would like to run. When your report is ready, you will automatically be brought to the results. The first screen you see will feature the details of your report. The Report Definition tab restates the exact report specifications, including: Name, Time Period, Cohort, Transition Periodicity, Countries and Industries.

Report Definition	Migration (Incl. Withdrawn Ratings)	Migration (Excl. Withdrawn Ratings)	Summary (Incl. Withdrawn Ratings)	Summary (Excl. Withdrawn Ratings)	Create CreditManager 2.0 Compatible Text File
<a href="#">Download to Excel</a>					
<b>Rating Migration Report</b>					
<b>CRC User Manual</b>					
<b>Date as of: 8/24/2007</b>					
Report Name	CRC User Manual				
Report Period	From 1/1/1970 to 1/1/2002				
Cohort Spacing	Yearly				
Transition Periodicity	Year(s)				
Transition Unit	4				
Report Definition Last Updated	8/24/2007				
Countries	Argentina, Aruba, Australia, Austria, Bahamas, Bahamas - Off Shore, Bahrain - Off Shore, Barbados, Belgium, Belize, Bermuda, Bolivia, Brazil, British Virgin Islands, Bulgaria, Canada, Cayman Islands, Cayman Islands - Off Shore, Channel Islands, Chile, China, Colombia, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Fiji, Finland, France, Germany, Greece, Guatemala, Guernsey, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Iran, Ireland, Isle of Man, Israel, Italy, Jamaica, Japan, Jersey, Jordan, Kazakhstan, Korea, Kuwait, Latvia, Lebanon, Liberia, Liechtenstein, Lithuania, Luxembourg, Malaysia, Malta, Mauritius, Mexico, Micronesia, Moldova, Morocco, Netherlands, Netherlands Antilles, New Zealand, Nicaragua, Norway, Oman, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Puerto Rico, Qatar, Romania, Russia, Saudi Arabia, Singapore, Slovak Republic, Slovenia, South Africa, Spain, Supranational, Sweden, Switzerland, Taiwan, Thailand, Trinidad & Tobago, Tunisia, Turkey, Ukraine, United Arab Emirates, United Kingdom, United States, Uruguay, Venezuela				
Industries	M12-Banking, M12-Consumer Products, M12-Energy, M12-Financial (Non-Bank), M12-Hotel, Gaming, & Leisure, M12-Industrial, M12-Media, M12-Miscellaneous, M12-Retail, M12-Technology, M12-Transportation, M12-Utilities				

All Rating Migration Report pages can be exported to Excel.

## Migration (Incl. Withdrawn Ratings):

**Migration Count** tab shows how many issuers moved from the **row** rating to the **column** rating over the time period chosen for each cohort. You can view the results for both Letter and Alpha Numeric ratings (which started in 1983).

In the last two columns of the report, Default and Ratings Withdrawn (WR) are treated as separate and mutually exclusive exhaustive columns. It should be noted that the Default column in the Rating Migration report should be equal to the numerator column from a Default Rate Analysis report with the same specifications.

**Rating Migration Report**  
CRC User Manual  
Date as of: 8/24/2007 Download to Excel

Report Definition: Letter Alpha Numeric

Migration Rate Migration Count

4 - Year(s) Rating Migrations for the Cohort Formed 01/01/83

Rating From:	Rating To:						
	Aaa	Aa1	Aa2	Aa3	A1	A2	A3
Aaa	50	13	4	11	0	3	0
Aa1	2	14	4	2	8	3	1
Aa2	1	11	33	10	8	7	4
Aa3	0	6	12	35	16	10	6
A1	1	0	3	21	43	8	4
A2	0	1	0	9	29	67	19
A3	0	0	0	8	12	18	33
Baa1	0	0	1	0	4	11	9
Baa2	0	0	0	0	4	10	10
Baa3	0	0	0	0	2	7	7
Ba1	0	0	0	0	0	2	2
Ba2	0	0	0	0	0	0	0
Ba3	0	0	0	0	0	0	1
B1	0	0	0	0	0	0	0
B2	0	0	0	0	0	0	0
B3	0	0	0	0	0	0	0
Caa-C	0	0	0	0	0	0	0

**Migration Rate** tab shows migration rates calculated based on the migration counts. Migration rates are calculated as the migration count for one cell divided by the sum of migration counts for the whole row. This calculation does not count for survivorship as the migration report includes Rating Withdrawals, WRs.

**Rating Migration Report**  
CRC User Manual  
Date as of: 8/24/2007 Download to Excel

Report Definition: Letter Alpha Numeric

Migration Rate Migration Count

4 - Year(s) Rating Migrations for the Cohort Formed 01/01/70

Rating From:	Rating To:						
	Aaa	Aa	A	Baa	Ba	B	Caa-C
Aaa	89.74%	10.26%	0.00%	0.00%	0.00%	0.00%	0.00%
Aa	5.19%	72.73%	20.78%	1.30%	0.00%	0.00%	0.00%
A	0.00%	1.97%	85.04%	7.48%	0.39%	0.00%	0.00%
Baa	0.27%	0.00%	3.51%	81.62%	4.86%	0.81%	0.00%
Ba	0.00%	0.00%	0.84%	15.90%	61.92%	2.51%	0.42%
B	0.00%	0.00%	0.00%	0.00%	19.44%	52.78%	0.00%
Caa-C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.67%

4 - Year(s) Rating Migrations for the Cohort Formed 01/01/71

Rating From:	Rating To:						
	Aaa	Aa	A	Baa	Ba	B	Caa-C
Aaa	87.18%	10.26%	0.00%	0.00%	0.00%	0.00%	0.00%
Aa	6.76%	71.62%	12.16%	2.70%	2.70%	0.00%	0.00%
A	0.00%	4.61%	79.08%	9.93%	1.42%	0.35%	0.00%
Baa	0.00%	0.00%	7.32%	76.01%	7.58%	0.51%	0.00%
Ba	0.00%	0.00%	0.43%	14.66%	65.09%	4.31%	0.43%
B	0.00%	0.00%	0.00%	4.00%	4.00%	72.00%	0.00%
Caa-C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	14.29%

4 - Year(s) Rating Migrations for the Cohort Formed 01/01/72

Migration (Excl. Withdrawn Ratings) reports are similar to the Migration (Incl. WR) reports but do not include withdrawn ratings (WR) columns in the calculation. The exclusion of the WRs indicates that they will be deducted from the denominators in the computation of Migration Rates. Therefore, the migration rates for Migration (Excl. Withdrawn Ratings) reports will be higher than those of Migration (Incl. Withdrawn Ratings) reports.

**Rating Migration Report**  
CRC User Manual  
Date as of: 8/24/2007 Download to Excel

Report Definition | Migration (Incl. Withdrawn Ratings) | Migration (Excl. Withdrawn Ratings) | Summary (Incl. Withdrawn Ratings) | Summary (Excl. Withdrawn Ratings) | Create CreditManager 2.0 Compatible Text File

Letter | Alpha Numeric

Migration Rate | Migration Count

**4 - Year(s) Rating Migrations for the Cohort Formed 01/01/83**

Rating From:	Rating To:						
	Aaa	Aa1	Aa2	Aa3	A1	A2	A3
Aaa	58.14%	15.12%	4.65%	12.79%	0.00%	3.49%	0.00%
Aa1	5.26%	36.84%	10.53%	5.26%	21.05%	7.89%	2.63%
Aa2	1.27%	13.92%	41.77%	12.66%	10.13%	8.86%	5.06%
Aa3	0.00%	6.38%	12.77%	37.23%	17.02%	10.64%	6.38%
A1	1.03%	0.00%	3.09%	21.65%	44.33%	8.25%	4.12%
A2	0.00%	0.62%	0.00%	5.59%	18.01%	41.61%	11.80%
A3	0.00%	0.00%	0.00%	6.96%	10.43%	15.65%	28.70%
Baa1	0.00%	0.00%	1.49%	0.00%	5.97%	16.42%	13.43%
Baa2	0.00%	0.00%	0.00%	0.00%	5.26%	13.16%	13.16%
Baa3	0.00%	0.00%	0.00%	0.00%	2.44%	8.54%	8.54%
Ba1	0.00%	0.00%	0.00%	0.00%	0.00%	3.17%	3.17%
Ba2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Ba3	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.79%
B1	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B3	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Caa-C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

## Issuer Drill-Down Capabilities

The drill-down feature allows users to click on any non-zero number to see the issuers that make up that number on Migration Count (Incl. WRs and Excl. WRs) tabs. When users click on the number, they are taken to a new screen which will show the Report Name, Sub Report Type, Rating Type, Cohort Date and the Rating Migration (i.e., rating as of the cohort formation date and the rating migrated to) of the selected number. The bottom of the screen reports the full list of the issuers that comprise of the selected number. Furthermore, two drop down boxes allow users to narrow the list of issuers based on Industries and / or Countries.

When users click on the "+" sign next to the name of the issuer, a summary of the issuer's rating history is provided. When users click on the name of a certain issuer, they are taken to a screen which provides a summary of the issuer.

**Rating Migration Report**  
Report Name : CRC User Manual  
Sub Report Type : Migration (Excl. Withdrawn Ratings)  
Rating Type : AlphaNumeric  
Cohort Date (Rating From / Rating To) : 01/01/83 (A3 / Ba1)  
Date as of: 08/24/2007

Industries: All  
Countries: All

View Issuers

Results: 1 - 4 of 4 Prev | 1 | Next

**Issuer List: All Issuers**

All	#	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	
+ ANR Pipeline Company																												
+ Colorado Interstate Gas Company																												
- Illinois Central Gulf Railroad Co.																												
	08/31/1972		A																									
	10/10/1974		Baa																									
	03/27/1978		A																									
	04/26/1982		A3																									
	09/15/1986		Ba1																									
	08/15/1989		Ba3																									
	10/28/1991		Ba1																									
	12/17/1991		WR																									
+ SeaFirst Corporation																												

**Summary (Incl. Withdrawn Ratings)** report provides the summary statistics of the cells from all of the individual (cohort-based) migration rate tables provided on the Migration (Incl. WR) tab over the chosen time period for each Letter or Alpha Numeric rating. Average Rating Migration is the weighted average migration rate, weighted by the number of issuers in each cohort. In addition, the report provides descriptive statistics for Maximum, Median, Minimum and Standard Deviation of the cells. For a certain cohort, if the number of issuers in a certain rating migration cell is zero, then this cell is not taken into consideration during the computation of the summary statistics.

**Rating Migration Report**  
**CRC User Manual**  
 Date as of: 8/24/2007 Download to Excel

Report Definition	Migration (Incl. Withdrawn Ratings)	Migration (Excl. Withdrawn Ratings)	Summary (Incl. Withdrawn Ratings)	Summary (Excl. Withdrawn Ratings)	Creates CreditManager 2.0 Compatible Text File		
Letter Alpha Numeric							
<b>Average 4 - Year(s) Rating Migrations Rates for 01/01/70 - 01/01/02</b>							
Rating From:	Rating To:						
Aaa	Aaa	Aa	A	Baa	Ba	B	Caa-C
Aaa	65.20%	20.55%	3.60%	0.14%	0.38%	0.04%	0.00%
Aa	3.85%	60.74%	20.41%	2.54%	0.64%	0.18%	0.03%
A	0.19%	7.37%	63.48%	12.87%	2.38%	0.62%	0.14%
Baa	0.19%	1.11%	14.15%	53.29%	9.35%	2.60%	0.47%
Ba	0.06%	0.17%	2.24%	12.00%	39.75%	11.63%	1.17%
B	0.03%	0.08%	0.28%	2.24%	12.57%	37.53%	2.99%
Caa-C	0.00%	0.00%	0.00%	2.26%	4.34%	7.43%	21.34%
<b>Maximum 4 - Year(s) Rating Migrations Rates for 01/01/70 - 01/01/02</b>							
Rating From:	Rating To:						
Aaa	Aaa	Aa	A	Baa	Ba	B	Caa-C
Aaa	95.45%	50.00%	17.05%	2.63%	6.38%	1.27%	0.00%
Aa	9.57%	82.41%	35.17%	6.27%	4.12%	1.79%	0.41%
A	0.80%	17.90%	85.04%	18.02%	4.84%	1.96%	0.54%
Baa	0.59%	3.56%	31.38%	81.62%	17.46%	6.16%	2.25%
Ba	0.53%	1.43%	6.58%	18.66%	65.85%	21.40%	6.23%
B	0.39%	0.60%	2.32%	7.69%	30.30%	72.00%	11.22%
Caa-C	0.00%	0.00%	0.00%	33.33%	33.33%	33.33%	100.00%
<b>Median 4 - Year(s) Rating Migrations Rates for 01/01/70 - 01/01/02</b>							
Rating From:	Rating To:						
Aaa	Aaa	Aa	A	Baa	Ba	B	Caa-C
Aaa	62.99%	21.97%	1.49%	0.00%	0.00%	0.00%	0.00%
Aa	3.29%	61.22%	19.37%	2.04%	0.00%	0.00%	0.00%
A	0.17%	6.21%	59.35%	13.23%	2.44%	0.49%	0.00%
Baa	0.14%	0.72%	11.90%	53.62%	9.11%	2.37%	0.30%
Ba	0.00%	0.00%	1.84%	11.68%	33.01%	11.31%	0.51%
B	0.00%	0.00%	0.00%	1.89%	9.14%	35.56%	1.54%
Caa-C	0.00%	0.00%	0.00%	0.00%	0.00%	6.14%	14.29%

**Summary (Excl. Withdrawn Ratings)** report provides the similar average and other key descriptive statistics by excluding WRs from the analysis.

## Create Credit Manager 2.0 Compatible Text File:

Credit Manager 2.0 is a JP Morgan Credit metrics report used for Value-At-Risk Analysis. This function allows users to export data directly into Credit Manager. Key model inputs include Moody's migration rates excluding WRs.

**Rating Migration Report**  
**CRC User Manual**  
 Date as of: 8/24/2007 Download to Excel

Report Definition	Migration (Incl. Withdrawn Ratings)	Migration (Excl. Withdrawn Ratings)	Summary (Incl. Withdrawn Ratings)	Summary (Excl. Withdrawn Ratings)	Creates CreditManager 2.0 Compatible Text File
<input checked="" type="radio"/> Letter Rating <input type="radio"/> Alpha Numeric Scale Optional: Enter Matrix Name (50 Chars max) <input type="text" value="Credit Risk Calculator User Manual"/> Note : The CreditMetrics text file is created from the respective Letter/Alpha Numeric summary average matrix excluding withdrawal rating <input type="button" value="Create"/> <input type="button" value="Clear"/>					



## References:

Hamilton D.T., Cantor, R., 2006, "Measuring Corporate Default Rates," Moody's Global Credit Research, November. (Report Number 100779)

## Appendix A. Tips on Industry Selection:

In order to replicate the Moody's Annual Default Study, the user should choose all of Moody's 12 industry classification except "Sovereign".

The users are recommended to use the Industry Categories that cover All issuers (Broad-Specific, Broad, Moody's 12, Specific-Broad) to get more complete results from their analyses, unless they have a specific reason to choose from other Industry Categories that cover only a Subset of issuers (Broad SIC code, Moody's 33, Specific SIC code).

The choice of industries depends on the user's specific needs. For example:

- For an issuer like a Banking Corporation,
  1. One way to determine the industry might be to select "Banking" as the "Broad" industry classification.
  2. However, if the issuer operates solely in the U.S., a (1)Broad-(2)Specific industry selection of "(1)Banking – (2)U.S. Bank" or "(1)Banking-(2)U.S. Bank Holding" might be more appropriate,
  3. Similarly, if the user knows the issuer is a U.S. Bank, then a selection of (1)Specific – (2)Broad industry choice of "(1)U.S. Bank-(2)Banking" or "(1)U.S. Bank Holding-(2)Banking" might be more appropriate.
- For a Leasing company, the first alternative that a user might come across is the (1)Broad-(2)Specific industry classification of "(1)Finance-(2)Leasing".

However, when the user examines the (1)Specific-(2)Broad industry classifications, there are 4 (four) types of Leasing issuers:

- Leasing - Finance
- Leasing – Industrial
- Leasing – Public Utility
- Leasing – Transportation

Therefore, the user can choose the more appropriate classification based on the characteristics of the issuers.

To learn more about Moody's **Risk Management Services**, please contact your sales representative or call Moody's at one of the locations listed:

<b>Americas</b>	Norman Stewart:	+1.212.553.4877	norman.stewart@moodys.com
<b>Europe</b>	Taranpreet Kaur:	+44.20.7772.8714	taranpreet.kaur@moodys.com
<b>Asia</b>	Client Services Desk:	+852.2916.1121	mdyasiainfo@moodys.com
<b>Japan</b>	Client Services Desk:	+81.3.5408.4100	mdytokinfo@moodys.com

