



Rating Performance of Corporate Finance and Financial Institutions - Summary of 2015 and Aggregated

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Preface

The purpose of this report is to present the performance of ratings by Midroog, in 2015 and in total since the company began to issue ratings. The report encompasses the rate of rating transitions (transition matrices) at the annual level and cumulative annual level, change in the distribution of ratings and rating outlook, and defaults among the issuers that Midroog rates. The report also presents a measure to test the accuracy of ratings, reflecting the average position of defaults along the rating scale¹ (average positions range from 0 to 1). This measure reflects the ordinal power of ratings and measures the position of ratings that defaulted in the distribution of ratings relative to credits that are not in default.

Midroog collates and publishes changes in ratings and accuracy measures in order to create transparency regarding the performance of its ratings. In this context, note that the sample in some of the rating groups and sample of defaults is relatively limited, and therefore, few observations may skew the results. The figures presented below relate to all issuers in the area of corporate finance, financial institutions and government related issuers.

In this report, the number of issuers is defined as the number of active issuers that Midroog was rating at the end of the calendar year. Rated issuers include both public and private ratings. Midroog also rates structured finance transactions and projects finance that are not included in the statistics presented in this report². The ratings taken for the purpose of calculating the distribution of ratings are issuer ratings (or issuer rating estimates), or deposit ratings in bank issuer ratings, or financial strength ratings in insurance issuer ratings (hereinafter: "the **issuer rating**").

Distribution of ratings

As of year-end 2015, Midroog was rating about 146 issuers³. The median rating of the rated issuers at Midroog is A2.il, as in previous years. More than 90% of the ratings range from the Aa.il group to the Baa.il group. The following charts show a breakdown of issuers by rating. The right-hand chart compares the distribution of issuer ratings at year-end 2015 compared to year-end 2014. All the issuer rating distributions are compared with year-end 2014,

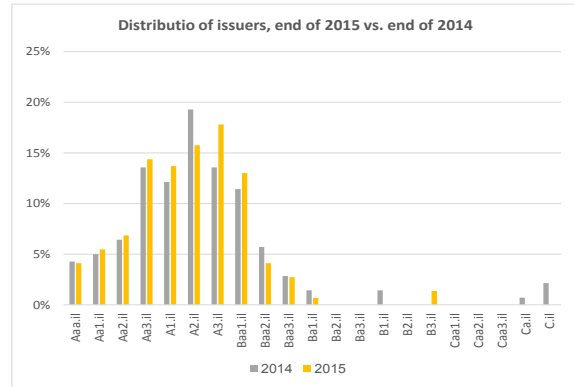
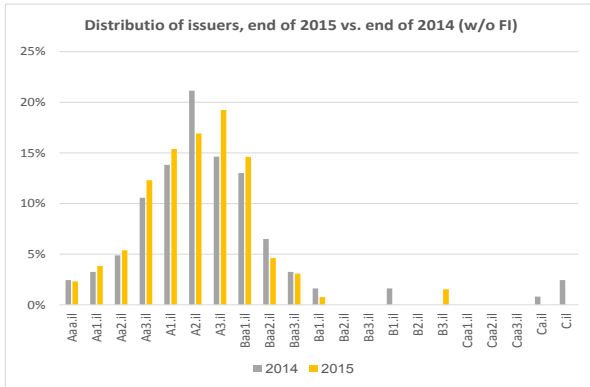
¹ The calculation of the accuracy measure is shown in Appendix 3.

² For the purpose of preparing the data shown in this report, the database was updated as follows: 1) Two ratings of Whole Business Securitizations that had been included in the Corporate Finance ratings performance report were transferred to the Structured Finance ratings performance report. 2) The database was updated with two more rating withdrawals in 2014, which were counted as active as of year-end 2014. 3) The database was updated with a loan rating that had not been considered active as of year-end 2014.

³ Excluding ratings for projects, structured finance and financial instruments.



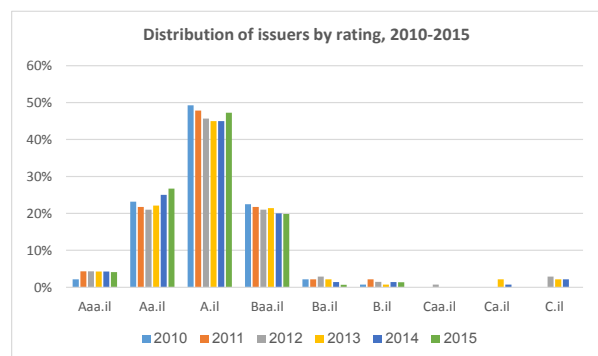
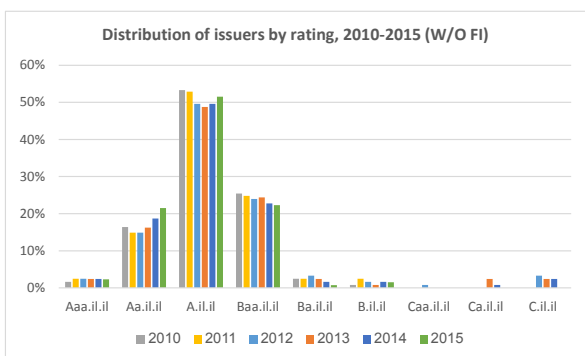
following the database updates described above. The left-hand chart shows the distribution of issuer ratings in these years, excluding financial institutions.



As of December 2015, the proportion of issuers rated Aaa.il was about 4% of all issuers rated by Midroog at that time, unchanged from December 2014 (excluding financial institutions: about 2.3%-2.4%). The proportion of issuers in the Aa.il group rose from about 25% at year-end 2014 to about 27% at the end of 2015 (excluding financial institutions: from about 19% to about 22% respectively). The proportion of issuers in the A.il group rose from about 45% at year-end 2014 to about 47% at the end of 2015 (excluding financial institutions: from about 50% to about 52% respectively). The proportion of issuers in the Baa.il group at year-end 2015 was about 20%, unchanged from year-end 2014 (excluding financial institutions: it dropped from about 23% to about 22% respectively). The proportion of issuers rated Ba.il and lower fell from about 6% in December 2014 to about 2% in December 2015 (excluding financial institutions: from about 7% to about 2% respectively).

The following charts describe the distribution of ratings by rating groups. The right-hand chart shows the distribution of issuer ratings in 2010 to 2015. The left-hand chart shows the distribution of issuer ratings in these years excluding financial institutions.

Breakdown of ratings by rating group





The development of the ratings over time shows that the distribution of issuers by rating group has been relatively steady over time. The proportion of ratings in the Aa.il group rose as of 2013, in contrast to the downtrend in this proportion in 2010-2012. The decline in the proportion of ratings in the A.il group between 2009-2011 slowed in the years 2012-2014, and the proportion even began to rise anew in the last year. The proportion of ratings in the Baa.il-Ba.il group has been trending down since 2012. The proportion of ratings in the B.il group has been steady in the last two years. Note that as of year-end 2015, the Corporates and Financial Institutions had no ratings in the Caa.il-C.il group (issuers with these ratings underwent a default). Details of rating transitions between the categories are presented in Midroog's transitions tables, below.

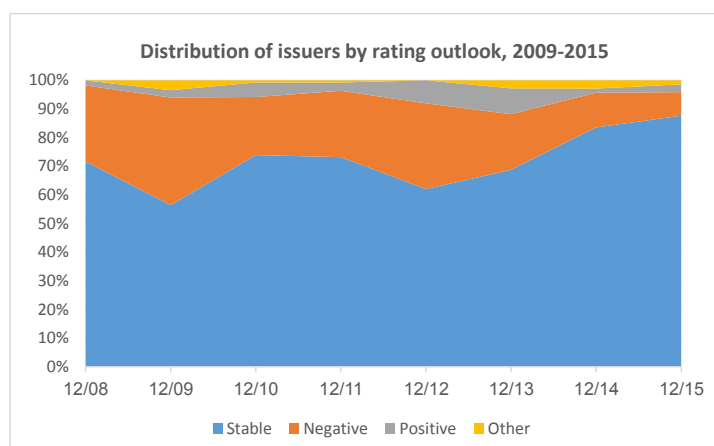
Distribution of Rating Outlooks and Credit Reviews

A rating outlook is Midroog's assessment of the expected direction of a rating in the medium term. The rating outlook is divided into four categories: positive, stable, negative or developing. A stable rating outlook reflects low expectation of a change in rating in the medium term. A positive, negative or developing outlook reflects a higher probability of a rating change in the medium term.

When a rating is placed under Credit Review (CR), it means that the possibility that the rating will change in the medium term is undergoing examination. The CR may be placed on review for upgrade, a downgrade or in some cases, with direction uncertain. The review may end in an upgrade, a downgrade or confirmation of the rating. Ratings under CR are sometimes referred to as being on a "Watch List".

The following shows the distribution of rating outlooks of issuers from 2009 to 2015. A negative rating outlook includes both negative outlook and CR with negative implications, and the "Other" category includes developing outlook and CR with direction uncertain.

Breakdown of issuers by direction of rating outlook (period end)





The figures show that the rate of issuers with stable rating outlooks increased from about 84% at year-end 2014 to about 88% at year-end 2015. Also, the rate of issuers with negative outlooks dropped from about 12% at year-end 2014 to about 8% at year-end 2015. The rate of issuers with positive outlooks rose from about 1% at year-end 2014 to about 8% at year-end 2015.

The following table shows the breakdown of issuer rating changes, according to the direction of the outlook in the range of one year:

Rating Transitions 2014 to 2015					
Outlook or credit review position, end of 2014	Upgrade	Downgrade	No Change	Withdrawn	Fully Paid
Stable	8%	6%	77%	3%	6%
Negative	0%	22%	33%	44%	0%
Positive	100%	0%	0%	0%	0%
Credit Review, Possible Downgrade	0%	63%	13%	13%	13%
Credit Review, Direction Uncertain	50%	0%	0%	0%	50%
Developing	0%	0%	50%	0%	50%

The table shows that the ratings of about 77% of issuers with stable outlook as of December 2014 remained unchanged as of December 2015.

Among the issuers whose ratings were under negative outlook as of December 2014, the ratings of about 33% remained unchanged, about 44% were withdrawn, and about 22% (0%) of the issuers were downgraded (upgraded). The rating changes compare December 2015 with the rating in December 2014.

The ratings of all the issuers given positive outlook in December 2014 had been upgraded as of December 2015.

Among the issuers which, as of December 2014, were under CR with negative implications, the ratings of about 63% were downgraded, about 13% remained unchanged and about 26% repaid and/or were withdrawn as of December 2015.

Among the issuers which, as of December 2014, were under CR with uncertain implications, the ratings of about 50% were upgraded and about 50% had repaid as of December 2015.

Among the issuers which, as of December 2014, were under developing outlook, the ratings of about 50% remained unchanged and about 50% had repaid as of December 2015.

Note that the number of issuers under CR with uncertain direction, developing outlook, and positive outlook at year-end 2014 was relatively small, about six.



Transition Tables⁴

Midroog collects information on rating changes between the years 2004 to 2015, based on the database it built up over its years of activity. All issuers are included in the database, according to the number of years they have been rated. For instance, an issuer rated from 2004 to 2015 would be counted 11 times in the database. For each calendar year, the database includes the issuer's last rating. If the rating changed a number of times during a single year, the database will have only the last observation, representing the cross-section of the end of the calendar year. The total number of observations in all the rating groups at the relevant cross-section points (year-ends 2005 to 2014) is about 1,107. Adding rating withdrawals, defaults and the ratings at year-end 2015, the total number of observations serving in the calculation of the data (including rating withdrawals and defaults) at the end of the years 2004-2015 was about 1,341⁵.

Each of the issuers was given an issuer rating in the database (total solvency). In cases where no issuer rating exists, the issuer was given an estimated rating based on an existing rating for the issuer's rated debt instruments. For the financial institutions, the data in the transition tables include the rating of senior debt, meaning deposits and bonds, and do not include the ratings of other debt instruments. For insurance companies, the transition tables include IFSR ratings.

⁴ The transition tables calculation were updated as follows versus the calculation in previous years: 1) The default dates of two ratings were revised as set forth in the Defaults section below, such that the year of default is an earlier year in respect to the previous definition in the database, according to Midroog's definitions of default. 2) An additional default was added to 2012, which had not been taken into account in previous rating performance reports. 3) The Default column is calculated in relation to the cross-section date of the remaining rating transitions (the end of the calendar year). For more details, please see the Default Column section below. 4) Ratings are returned to the sample in the calendar year following the default, insofar as a rating exists, and not simultaneously as has been done until now. For more details, please see the Default Column section below. 5) Updates to the database, as elaborated in the Ratings Distribution section.

⁵ Note that in contrast to performance reports in previous years, the count of observations excludes the simultaneous return of ratings that are in default to the sample (only returns at the year after default are counted). Also, rating withdrawals, repayments and defaults are counted only at the first cross-section following these events. Therefore, the number of observations presented in this document is lower than in the previous report.



Transition Tables, Corporate Financing and Financial Institutions, 2004-2015

Annual Aggregated Transition Table, 2004-2015

	Aaa.il	Aa1.il	Aa2.il	Aa3.il	A1.il	A2.il	A3.il	Baa1.il	Baa2.il	Baa3.il	Ba1.il	Ba2.il	Ba3.il	B1.il	B2.il	B3.il	Caa1.il	Caa2.il	Caa3.il	Ca.il	C.il	WR	Default
Aaa.il	97%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa1.il	1%	94%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa2.il	0%	1%	87%	6%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	0%
Aa3.il	0%	0%	2%	86%	7%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%
A1.il	0%	0%	0%	5%	71%	11%	6%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%
A2.il	0%	0%	0%	0%	7%	71%	11%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	0%
A3.il	0%	0%	0%	0%	1%	10%	66%	12%	2%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	2%
Baa1.il	0%	0%	0%	0%	0%	0%	12%	62%	11%	5%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	2%
Baa2.il	0%	0%	0%	0%	0%	0%	17%	62%	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	5%
Baa3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	58%	8%	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	17%	8%
Ba1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	18%	9%	9%	0%	0%	0%	0%	0%	0%	0%	0%	18%	45%
Ba2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	0%	0%	0%	0%	25%	0%	0%	0%	0%	0%	0%	50%
Ba3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%
B1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%
B2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
B3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Caa1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Caa2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Caa3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ca.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%	0%	67%
C.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%	67%	0%

Annual Transition Table, 2015

	Aaa.il	Aa1.il	Aa2.il	Aa3.il	A1.il	A2.il	A3.il	Baa1.il	Baa2.il	Baa3.il	Ba1.il	Ba2.il	Ba3.il	B1.il	B2.il	B3.il	Caa1.il	Caa2.il	Caa3.il	Ca.il	C.il	WR	Default
Aaa.il	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa1.il	0%	86%	14%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa2.il	0%	11%	78%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	11%	0%
Aa3.il	0%	0%	0%	95%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%
A1.il	0%	0%	0%	0%	88%	0%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	0%
A2.il	0%	0%	0%	0%	15%	59%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	11%	0%
A3.il	0%	0%	0%	0%	0%	5%	63%	11%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	16%	5%
Baa1.il	0%	0%	0%	0%	0%	0%	19%	56%	13%	0%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	0%
Baa2.il	0%	0%	0%	0%	0%	0%	38%	38%	13%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13%	0%
Baa3.il	0%	0%	0%	0%	0%	0%	0%	0%	75%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	0%
Ba1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%
Ba2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ba3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
B1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
B2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
B3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Caa1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Caa2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Caa3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ca.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%
C.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%

To illustrate the point, the meaning of the data in the cumulative transition table is that about 86% of Aa3.il ratings remained unchanged in the range of a year, the ratings of about 2% were upgraded to Aa2.il, the ratings of about 7% were downgraded to A1.il, the ratings of about 2% were downgraded to A2.il, and so on. The equation for calculating the rate of transitions is shown in Appendix 1 to this report.

The Withdrawn (WR) Column

The WR column represents the issuers for which monitoring terminated after their rating. The main circumstances for monitoring termination are: complete repayment of the entire rated bond series, a debt/insolvency arrangement by the issuer, insufficiency/deficiency of information rendering efficient assessment of creditworthiness is impossible, or a request by the issuer to stop rating its liabilities. Note that the sample of ratings at the low end of the rating scale is small, and reflects mainly rating transitions by companies in default which have



yet to complete debt arrangements, liquidation, and so forth, as well as a high rate of rating withdrawals, due to cessation of rating following the termination of a debt arrangement.

The Default Column

Like the annual estimate of transition rates, the Default column represents the proportion of issuers that defaulted during the relevant estimate period, out of all issuers with the given rating at the end of the previous calendar year, not necessarily relative to the last existing rating before the default. In the transition tables for 2014, the Default rate was estimated in comparison with the rating 12 months before the default date.

In our opinion, rating transitions (including to a state of default) relative to a cross-section of ratings at a uniform time (the end of a given period), more clearly reflects the default rate in a given rating group at that point in time.

Cases in which the rated entity asks Midroog to stop the rating, based on inability to meet liabilities, are measured as defaults and are cited in the Default column.

Also, other rating transitions or rating withdrawals the issuer experienced upon default and afterwards have not been factored into the transition tables, but will apply in the year following the default date, insofar as a rating exists (in contrast to the manner of presentation in the transition tables Midroog published in the past).

In our opinion, returning a rating to the sample only in the following year enables a clearer understanding of the Default column. In this context, note that the return is done in order to test the overall performance of active ratings (in contrast to returning the rating to the sample, insofar as it exists, only after the company completes its debt arrangement, an approach Midroog does not apply, and did not in the past).

Note that the Default sample is relatively small and therefore, few observations may skew the results. Also note that the ratings sample at the low end of the rating scale is small, and reflects mainly rating transitions by companies in default which have yet to complete debt arrangements, liquidation, and so forth.

Appendix 2 below presents the cumulative annual transition tables for the years 2004-2015 and the year 2015, before the changes listed in the Default Column section. Note that these transition tables, presented in the appendix to illustrate the update, are based on the updated data in the database, as detailed above.



Defaults^{6,7}

During 2015, there was one default among the issuers rated by Midroog, according to Midroog's definitions of default. The extent of the issuer's rated debt stood at about ILS 385 million⁸. Since Midroog began operating in 2003 and as of December 2015, there were 19 defaults, totaling about ILS 16.5 billion. The average rating of the defaulting issuers 12 months before default was Baa2.il. The ratings of about 68% of issuers in default was in negative outlook or CR with negative implications, 12 months before the default.

The following table provides information about issuers, rated by Midroog from its establishment, as a credit risk rater in Israel, and classified under Default:

Issuer	Initial rating year	Year of default according to Midroog's definition		Industry	Amount of rated debt (NISm)*	Rating 12 months before default	
		Initial rating year	Year of default according to Midroog's definition			Initial rating	Rating before default
Leadcom Integrated Solutions Ltd	2006	2009	Trade and services		120	A3.il	A3.il
Profit Building Industries Ltd.	2007	2009	Real estate and construction		205	Baa1.il	Baa1.il
Africa Israel Investments Ltd.	2005	2009	Real estate and construction		7,000	Aa2.il	Aa2.il
Malrag Engineering & Construction Ltd.	2008	2010	Real estate and construction		95	A3.il	Baa2.il
Agrexco Agricultural Export Company Lt	2007	2011	Trade and services		144	A2.il	A2.il
Olimpia Real Estate Holdings Ltd.	2008	2011	Real estate and construction		220	A3.il	Baa2.il
Polar Investments Ltd.	2007	2011	Real estate and construction		88	A3.il	Ba1.il
Ampal American Israel Corporation	2006	2011	Holdings		959	A3.il	A3.il
Suny Electronics Ltd.	2010	2012	Holdings		303	Baa2.il	Baa2.il
Scailex Corporation Ltd.	2009	2012	Holdings		1,800	A3.il	A3.il
Central European Estates NV	2007	2012	Real estate and construction		106	Baa1.il	Ba2.il
A.Levy Investments and Construction Lt	2005	2012	Real estate and construction		160	A3.il	Baa2.il
BSR Europe Ltd.	2005	2012	Real estate and construction		134	A3.il	Ba2.il
Israel Amlat Investments (1993) Ltd.	2007	2012	Holdings		57	A2.il	Ba1.il
Elbit Imaging Ltd.	2006	2013	Real estate and construction		2,306	A2.il	Baa1.il
Israel Petrochemical Enterprises Ltd.	2005	2013	Holdings		1,486	Aa3.il	Baa2.il
Unpublished**	2007	2014	Investment houses		66	A3.il	Baa3.il
Mirland Development Corporation Plc	2008	2014	Real estate and construction		979	A3.il	Baa1.il
Alon Blue Square Israel Ltd.	2010	2015	Retail		385	A1.il	A3.il

*Around the default date. The amounts were updated according to the changes in default dates, described above.

**This default has fully recovered.

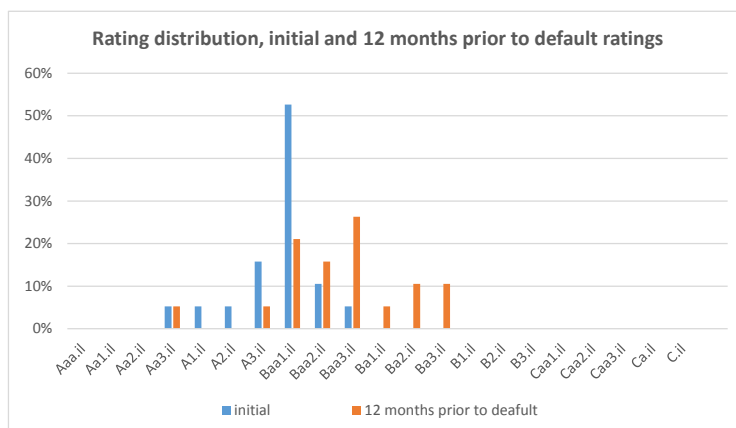
⁶ Midroog definition of default is published in "Midroog Rating Scales and Definitions", on the Midroog website.

⁷ The following changes have been made to the default database. The changes are also detailed in previous sections of the report. 1) The default dates of two ratings were updated such that the year of default is an earlier year relative to the previous definition in the database, according to Midroog's definitions of default. 2) An additional default was added to 2012, which had not been taken into account in previous rating performance reports.

⁸ As published in the rating report at the time of the default.



The following chart shows the breakdown of the ratings of issuers in default 12 months before the default date, and the initial rating of the issuers:



Accuracy Measure⁹

The ordinal power of the rating means the ratings positioned on an ordinal scale, along which higher ratings of credits should reflect better creditworthiness than lower ratings of credits. Midroog uses an Average Position measure as the main measure when testing the accuracy of the rating. The measure tests the average location of defaults along the rating scale (AP ranges from 0 to 1), and answers the question: what is the location of issuers that experienced defaults, according to rating, relative to the remainder of the issuers.

A perfect rating system would achieve AP approaching 100%, which would mean the issuers that defaulted had all been rated in the lowest percentile of the ratings distribution at least one year before the default date, which would attest to a perfect correlation between the rating and the default probability. A random rating system would produce AP of around 50%, while a rating system with a strong negative correlation to defaults would produce AP approaching 0%. The following table shows the accuracy measure based on the rating 12 months before the default. We also show the accuracy measure adjusted for outlook - adjusted for negative rating outlooks or CRs with negative implications 12 months before default. As said, about 63% of the ratings of issuers in default had a negative outlook or were in CR with negative implications 12 months before default (and also at the end of the calendar year before default year), and therefore, the adjusted accuracy measure is higher. It can be seen that the ordinal power of Midroog's ratings is relatively good, as reflected by the accuracy measure in recent years. Note that the small number of defaults may skew the accuracy measure.

⁹ The methodology for calculating the accuracy measure is shown in Appendix 3.



The following table presents the accuracy measure, the adjusted accuracy measure, and the default rate in the years 2009 to 2015:

Year	2009	2010	2011	2012	2013	2014	2015
Average Position	60%	94%	81%	91%	82%	85%	68%
Average Position (Outlook Adjusted)	68%	99%	84%	91%	89%	86%	68%
Default Rate (%)	2.7%	0.9%	2.9%	4.3%	1.4%	1.4%	0.7%

*The default rate is defined as the ratio between the number of issuers that experienced a default, as defined by Midroog, during the year, and the number of rated issuers at the beginning of the period.

**Note that the beginning of all issuers is the breakdown at the end of the period prior to the default (meaning the start of each calendar year).

***The calculation of accuracy measures is affected by the changes in default dates, described in the Default section above.

Related Reports

For [summaries of ratings performance for the years 2009-2014](#), see Midroog's website.

For the [Midroog Rating Scales and Definitions](#), see Midroog's website.



Appendix 1 – Methodology for calculating transition tables

Midroog groups issuers in rating groups according to their last rating and the relevant time period (T)¹⁰. The marginal migration rate is the probability that an issuer that "survived" at a certain rating level up to the start of the period T, will move to another rating level (up or down) by the end of that period. The cumulative rate of transitions is the probability of migration between rating levels from the time the groups were formed until the end of the period T. Mathematically, the marginal transitions rate of a rating group created at point in time y and with a rating of z for the period of time T is defined as the proportion between the number of companies x(t) that migrated from a certain rating group to another during the period of time T divided by the total number of issuers in that rating group at the start of the period of time n(t). Thus:

$$\text{Marginal migration rate from } z(t) = \frac{Xy(t)}{ny(t)}$$

¹⁰ The relevant period of time is a year, as set forth in this document.



Appendix 2 – Transition tables before updating the Default column

The following tables are provided in order to demonstrate the update described in the section defining the Default Column above in this document, and are based on the updated data in the database as set forth above in this document.

Annual Aggregated Transition Table, 2004-2015

	Aaa.il	Aa1.il	Aa2.il	Aa3.il	A1.il	A2.il	A3.il	Baa1.il	Baa2.il	Baa3.il	Ba1.il	Ba2.il	Ba3.il	B1.il	B2.il	B3.il	Caa1.il	Caa2.il	Caa3.il	Ca.il	C.il	WR	Default
Aaa.il	97%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa1.il	1%	94%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa2.il	0%	1%	86%	6%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	1%
Aa3.il	0%	0%	2%	86%	7%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%
A1.il	0%	0%	0%	5%	71%	11%	6%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%
A2.il	0%	0%	0%	0%	7%	71%	11%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%	0%
A3.il	0%	0%	0%	0%	0%	9%	65%	11%	2%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	8%	2%
Baa1.il	0%	0%	0%	0%	0%	0%	11%	61%	10%	5%	3%	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%	5%	3%
Baa2.il	0%	0%	0%	0%	0%	0%	0%	15%	59%	5%	5%	0%	0%	2%	0%	0%	0%	0%	0%	0%	2%	6%	8%
Baa3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	58%	8%	8%	0%	4%	0%	0%	0%	0%	0%	4%	0%	15%	4%
Ba1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	15%	8%	8%	8%	0%	0%	0%	0%	0%	0%	15%	31%	15%
Ba2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14%	14%	0%	0%	29%	14%	0%	0%	0%	0%	0%	0%	29%
Ba3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%
B1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	0%	20%	0%	0%	0%	0%	0%	60%	0%
B2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%	50%	0%
B3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%
Caa1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Caa2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Caa3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%
Ca.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	0%	75%	0%
C.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	50%	0%

Annual Transition Table, 2015

	Aaa.il	Aa1.il	Aa2.il	Aa3.il	A1.il	A2.il	A3.il	Baa1.il	Baa2.il	Baa3.il	Ba1.il	Ba2.il	Ba3.il	B1.il	B2.il	B3.il	Caa1.il	Caa2.il	Caa3.il	Ca.il	C.il	WR	Default
Aaa.il	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa1.il	0%	86%	14%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa2.il	0%	11%	78%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	11%	0%
Aa3.il	0%	0%	0%	95%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%
A1.il	0%	0%	0%	0%	88%	0%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	0%
A2.il	0%	0%	0%	0%	15%	59%	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	11%	0%
A3.il	0%	0%	0%	0%	0%	5%	60%	10%	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	15%	5%
Baa1.il	0%	0%	0%	0%	0%	0%	19%	56%	13%	0%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	0%
Baa2.il	0%	0%	0%	0%	0%	0%	0%	38%	38%	13%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13%	0%
Baa3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	75%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	0%
Ba1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%
Ba2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ba3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
B1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%	0%	0%	0%	0%	50%	0%
B2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
B3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Caa1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Caa2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Caa3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ca.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%
C.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%

Appendix 3 – Calculating the accuracy measure

Average Position (AP)

The position of a rating (that did or did not experience default) in a ratings group¹¹ is the same as the rate of ratings in the ratings group with a higher rating than itself, plus half the area of the rating category in which it is located.

For example, if 5% of the ratings were Aaa.il, 6% were Aa1.il and 7% were Aa2.il, then:

1. The position of the Aaa.il rating would be $5\%/2=2.5\%$.
2. The position of the Aa1.il rating would be $5\%+(6\%/2)=8\%$.
3. The position of the Aa2.il rating would be $5\%+6\%+(7\%/2)=14.5\%$.

The AP is the calculation of the average positions of the ratings that experienced default/impaired debt at a given point in time before the default/impaired debt (12 months before default date or impairment of debt, as applies). This measure reflects the ordinal power of the rating.

A strong rating system would achieve AP approaching 100%, which would mean the issuers that defaulted had all been rated in the lowest percentile of the ratings distribution at least one year before the default date, which would attest to a perfect correlation between the rating and the default probability. A random rating system would produce AP of around 50%, while a rating system with a strong negative correlation to defaults would produce AP approaching 0%. Note that it is impossible to achieve AP of 100%, or 0%, because of the part (their area in the distribution) of defaults in the distribution, which requires the AP to be adjusted for them. For example, let us assume that D represents the rate of ratings that experienced default in the distribution.

- The maximal possible AP is $100\%-D/2$, which would result if all the ratings that experienced default had been rated at the same rating, and all the ratings that did not experience default had been rated above that rating.
- Similarly, the minimal possible AP is $D/2$, which would result if all the ratings that experienced default had been rated at the same rating, which is higher than all the remaining ratings, which did not experience default.

In order to adjust the AP, we define adjusted AP* (above and hereinafter: the "**accuracy measure**" or "**Average Position-AP**"), as follows:

$$AP^* = (AP - 50\%) / (100\% - D) + 50\%$$

¹¹ According to the definition of the rating for the purpose of the calculation: issuer, bond series, and so forth.



This adjustment enables AP* to receive values of 0% or 100%.

We also note that the information in a positive/negative outlook and in creditreview with positive/negative implications can be incorporated, creating an AP measure adjusted accordingly. Note that neither the AP measure, nor any other single measure, can by itself reveal the degree of accuracy inherent in different rating systems at a certain cross-section point. Also, the small number of default and/or observations in a certain rating group may skew the results.



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