

Rating Performance in Structured Finance – Summary of 2016 and Aggregated Special Report I March 2017

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Rating Performance of Structured Finance –

Summary of 2016 and Aggregated

Preface

The objective of this report is to present the performance of Midroog's rating in the structured finance in 2016 and cumulatively, since beginning its activity as a rating company. The report includes the rate of rating transitions (transition matrix) at the annual basis and cumulative on an annual basis, the change in the distribution of ratings and the rating outlooks, as well as the events of default/impaired debts¹ in the series that Midroog rates. In addition, a rating accuracy measure is presented, reflecting the average position of the default events along the rating scale² (Average Position - in the range between 0 and 1). This measure reflects the ordinal power of the rating and measures the location of the impaired debt ratings in the distribution of the ratings relative to non-impaired debts.

Midroog collects and publishes the rating changes and the accuracy measure in order to create transparency with regard to rating performance. In this context, it should be noted that the sample from some of the rating groups, as well as the sample of defaults, is relatively limited and therefore individual observations may skew the results. The data presented below relate to all the structured finance series. In order to present certain data, additional classifications were made in the series.

In this report, the number of series is defined as the number of active series that Midroog rates at the end of the calendar year. The rated series include public and private ratings. Corporate debt ratings, financial institutions and infrastructure and project financing are not included in the data presented in this report³.

¹ According to Midroog's definition of default and impaired debt in "Rating Scales and Definitions" on the Midroog web site.

² Calculation methodology accuracy measure is presented in Appendix 2.

³ Rating performance reports for corporates, financial institutions and ratings performance for project finance can be viewed on Midroog's website.

Rating Distribution

As of the end of 2016, Midroog rated about 35 series of issuers in the field of structured finance and financial instruments. The median rating of the structured finance series is Aa2.il (without Managed Index Linked Certificates (or **MILC's** and deposit notes A1.il).

For the purpose of presenting the data in this report, the assets are classified as follows:

- ABS⁴ - A bond backed by assets (such as securitization of leasing incomes). For the purpose of the report below, this type of asset includes transactions backed by residential mortgages, transactions backed by income from commercial real estate assets CMBS⁵ such as Housing and shopping malls, as well as corporate bonds (Whole Business Securitization).
- CDOs - Collateralized Debt Obligations (such as a bonds portfolio).
- Financial instruments of the following types: deposit notes, Managed Index Linked Certificates and Notes. The Notes ratings included in this category refer to ratings marked with the letters ILC (Index Linked Certificate). Debt back to back bonds are rated according to the credit risk of the underlying debt, classified in the database as structured instruments. As of the end of December 2016, there are no Notes ratings by Midroog.
- Structured Instruments - CLN⁶ instruments, Funded CDS⁷, debt back to back securities ratings are rated according to the credit risk of the underlying debt.

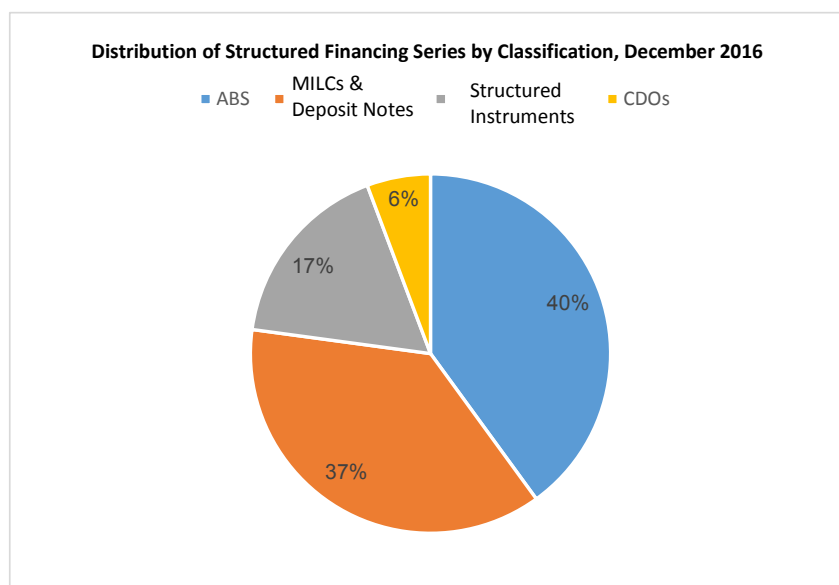
⁴ Asset Backed Securities.

⁵ Commercial Mortgage Backed Securities.

⁶ Credit Linked Notes.

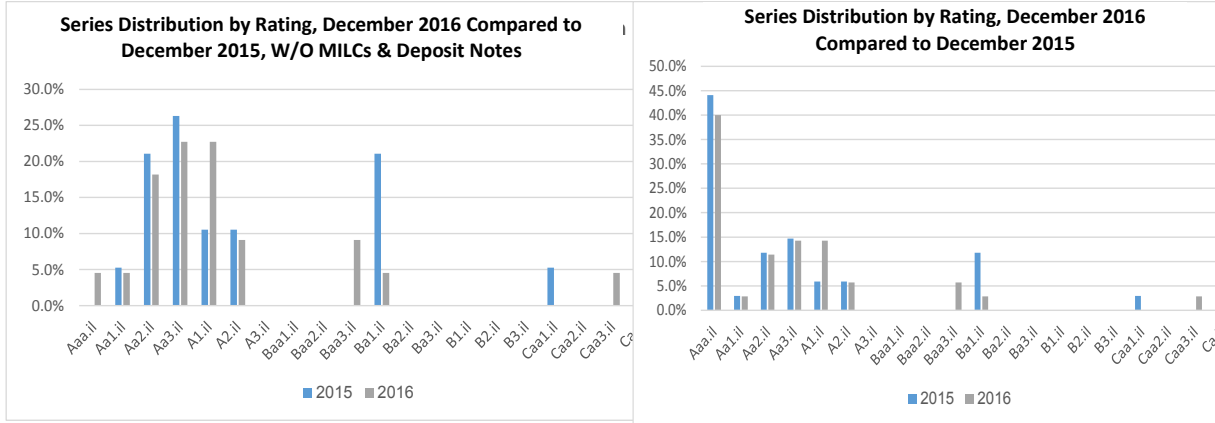
⁷ Funded Credit Default Swap.

The following chart shows the distribution of rated series in the structured finance sector, according to their classification, at the end of 2016:



The chart shows that most of the structured financing series are in the area of asset backed bonds (ABS) 40%; MILCs and deposit notes, making up 37% of the series, while 17% are structured instruments and 6% are CDOs.

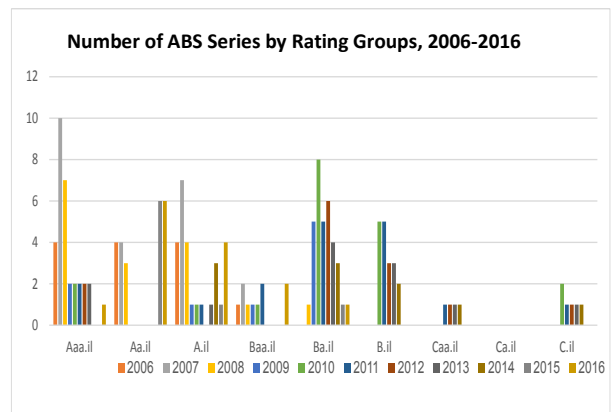
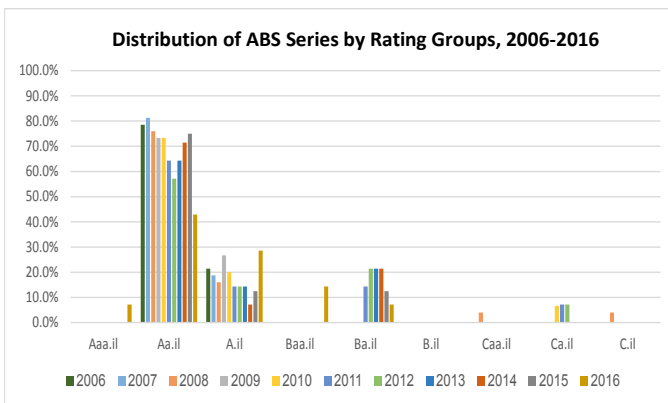
The following diagrams describe the distribution of series ratings in the structured finance sector. On the right-hand chart, the distribution of series ratings for the end of 2016 is compared to the end of 2015. Distribution of the series' ratings in the structured finance sector during these years, excluding MILCs and deposit notes is found in the left-hand chart:



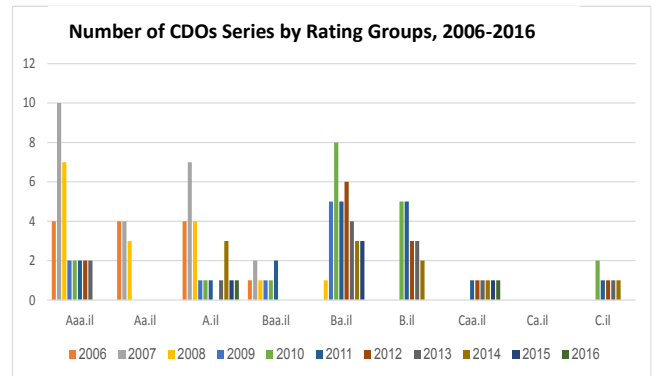
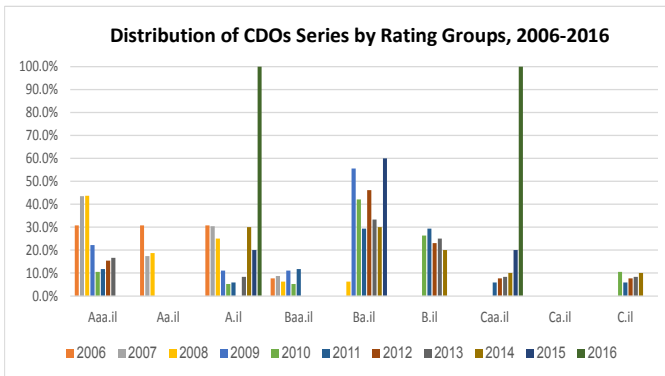
The right-hand chart shows that the rate of the series rated Aaa.il decreased in 2016 in relation to the end of 2015; this is due to the withdrawals of rating of MILCs and deposit notes (some due to early redemption). The decrease in the Ba1.il ratings is also due to the withdrawals of ratings. The increase in the A1.il rating is the result of new ratings added. A single rating transition was recorded in 2016 in the structured finance ratings. To summarize the rating transitions, the transition matrixes are presented later on in this report.

The charts below describe the distribution of ratings by rating groups, by classification and the number of series rated in each sub-sector. It should be noted that the growth trend in the structured finance ratings up to the crisis and the drastic decline in the number of this type of rating at the beginning of the crisis are similar to those prevailing in the world.

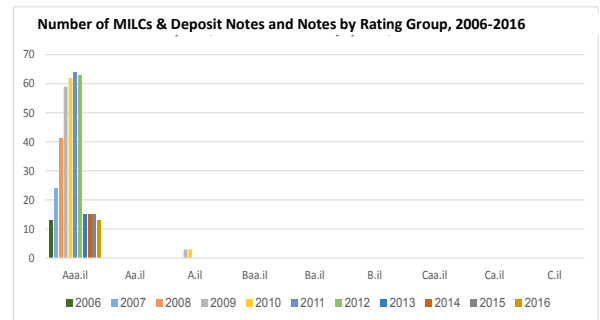
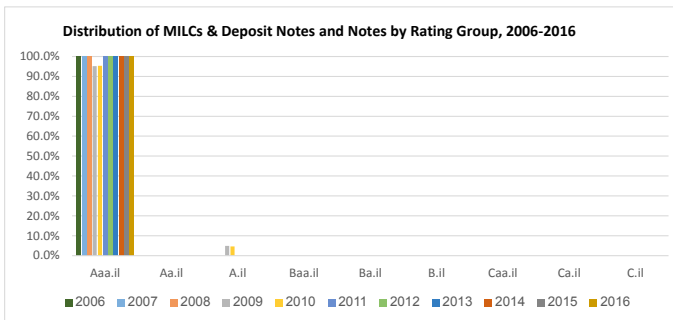
ABS



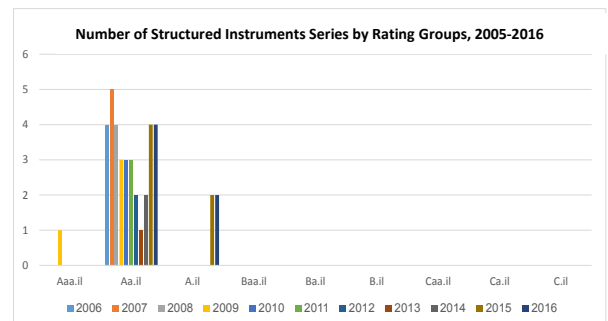
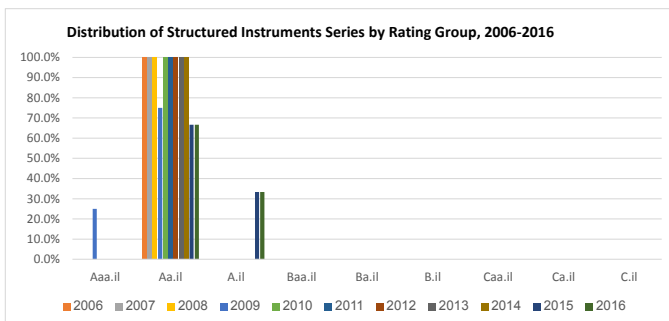
CDOs



MILCs, Deposit Notes and Notes



Structured Instruments



Details of the rating transitions between the categories are presented in Midroog's transition matrix later on in this report.

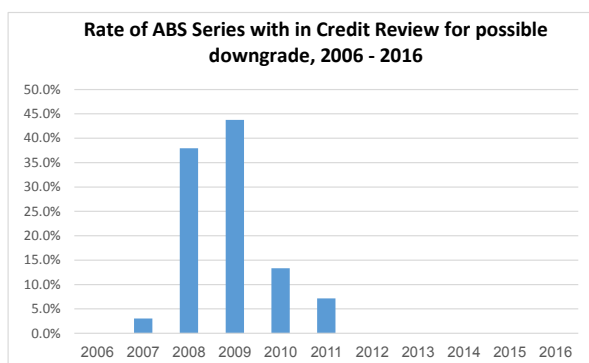
Distribution of Rating Outlook and Credit Reviews

Rating outlook is Midroog's assessment of the expected direction of the rating in the medium term. The rating outlook is divided into four categories: positive, stable, negative or developing. Stable outlook reflects low expectation of a rating change in the medium term. A positive, negative or developing outlook reflects higher expectation of change in the medium term. When a rating is placed under Credit Review (**CR**), it means that a possibility of changing the rating in the short term is evaluated. The rating may be placed on review for upgrade, downgrade and in some cases direction uncertain. The conclusion of the rating review may result in rating upgrade, rating downgrade, or confirmation of the rating. Ratings under CR are sometimes referred to as being on a "watch list".

In general, a rating outlook is not assigned in the structured finance ratings unless it is a financial instrument whose outlook is derived from the rating outlook of the underlying asset (for instance: credit risk of a reference entity in the CLN). If necessary, a structured finance rating may be placed in Credit Review.

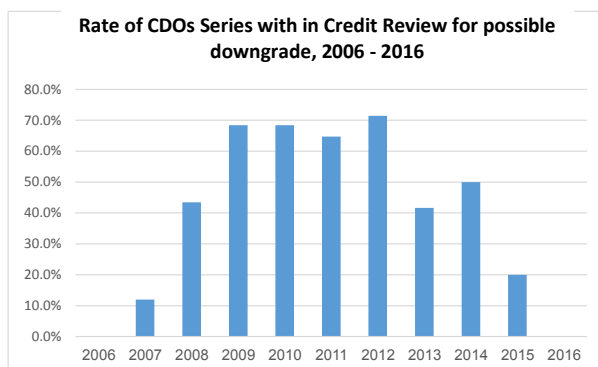
The rate of the series that were transferred to the CR for possible downgrade between 2006 and 2016 can be seen below. The data are for the end of each of the years. In these years, no structured finance series was placed in CR for possible upgrade or with direction uncertain. As of the end of 2016, there are no structured finance ratings under Credit Review.

ABS



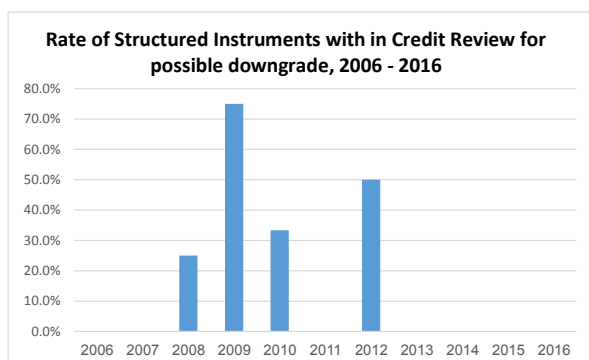
No ABS series were placed on CR between 2012 and 2016. In 2008-2009, a relatively high rate of the series were placed on review, due to decrease in residual value in the leasing market, as well as the Dorent securitization that were transferred to a CR due to the condition of the service provider of the transaction, who entered the status of "chapter 11".

CDOs



In 2008 and 2009, the rate of CDOs placed in CR rose significantly, due to the deterioration in the quality of the underlying assets backing the transactions, which were also expressed in rating downgrades these series. Rating transitions of the CDOs are presented in the transitions matrix later on in this report. Of the CDOs whose ratings were reviewed as of December 2015 (one series), their rating was downgraded as of the end of December 2016.

Structured Instruments



The rate of structured instruments in CR is relatively high and volatile. It should be noted that the number of structured instruments that were placed in CR is relatively small and is between 1-3 series in different years.

MILCs, Deposit Notes and Notes

No series of MILCs or deposit notes were placed in CR between 2006 and 2016 and there were no rating changes in these series.

Transition Matrixes

Midroog collates information on changes in rating of the years 2004-2016, based on a database that has been accumulated gradually during its years of operations. Each issuer is included in the database according to the number of years it was rated. For example, an issuer rated from 2004 to 2016 is counted in the database 12 times. The issuer's last rating for each calendar year is included in the database. If the rating has been changed several times over a single year, only the last observation at the end of the calendar year will be added to the database.

The total number of observations for all the rating groups in structured finance up to the relevant end-year points (for the years 2005-2015) is about 768. With the addition of withdrawals and impaired debt up to the end of 2016, the total number of observations used to calculate the data (including rating withdrawals) for the years 2004-2016 was 971.

In the sector of MILCs, deposit notes and structured instruments rated at ILC there were about 390 observations of all rating groups to the relevant cross-section points (at the ends of the years 2005-2015) and about 477 observations that were used to calculate the data (including rating withdrawals) for the ends of the years 2004-2016.

In the ABS sector there were about 197 observations in all rating groups to the relevant points (for the ends of the years 2005-2015) and approximately 261 observations that were used to calculate the data (including rating withdrawals and impaired debts) for the ends of the years 2004-2016.

In the CDOs sector - about 148 observations in all rating groups to the relevant points (for the ends of the years 2005-2015) and about 199 observations used to calculate the data (including rating withdrawals and impaired debts) for the ends of the years 2004-2016.

In the sector of structured instruments there were about 37 observations in all rating groups to the relevant points (for the ends of the years 2005-2015) and 48 observations that were used to calculate the data (including rating withdrawals and impaired debts) for the ends of the years 2004-2016.

It should be noted that in some of the structured finance series there are relatively few observations and that up to the end of 2012, there is a dominance of the MILCs series in the structured finance sector that did not record any rating changes, therefore the transition matrix is also presented without

MILCs and deposit notes. In addition, in order to estimate the performance and stability of the rating, by classification, separate transition matrixes are presented for ABS, CDOs, MILCs, certificates of deposit notes and ILC rated instruments, as well as structured instruments.

To illustrate, the meaning of the data appearing in the cumulative transition table that approximately 81% of the ratings of the series rated Aa3.il remained unchanged in the range of a year, the rating of about 6% of the series downgraded and the rating of about 13% of the series was withdrawn. The formula for calculating the transition rate is presented in Appendix 1 of this report.

Withdrawn (WR) Column

The WR column represents issuers for which monitoring terminated after their rating. Principal circumstances for termination are: complete repayment of all the rated debt, debt arrangement/bankruptcy of the issuer, insufficiency/deficiency of information that does not allow effective evaluation of the credit worthiness, or a request from the issuer to withdraw the rating of its obligations. It should be noted that the rating sample at the low end of the rating scale is small and primarily reflects the rating transitions of companies in default and have not yet completed the debt settlement, liquidation, etc., so that high rate of rating withdrawals results from the withdraw of rating due to the end of the debt arrangement.

Impaired Column

Similar to estimation of the annual rate of transitions, the Impaired column shows the proportion of the series that became impaired debt series during the estimation period, out of the total number of series at the rating level given at the end of the previous calendar year and not necessarily with respect to the last rating prior to the impairment event.

Cases in which the rated entity asks that Midroog withdraw the rating due to an inability to meet its obligations were measured as impairment event and are indicated in the Impaired column.

In addition, other rating transitions or rating withdrawals that occurred to the impaired series on impairment event and afterwards are not taken into account in the transitions matrix, but only from the year following the impairment date, as long as that rating exists.

It should be noted that in some years the Impaired sample is relatively small, so that individual observations may skew the results. In addition, in some of the impairment events, the impairment occurred less than one year from the date of the initial rating (usually new rating of a series that has been impaired in the past), so that there is no relevant cut off point to examine the transition of the annual rating for calculation of the transition matrix. However, events of this type are presented in the list of impaired debts and are used to calculate the rate of the impaired debt as specified in the Accuracy Measure section later on in this report.

It should also be noted that the sample of the series in the various rating groups is small and therefore individual observations may have a significant effect on the performance of the rating. Specifically, the sample of the series at the low end of the rating scale is also small and mainly reflects the rating transitions of series that were classified as impaired.

Transition Matrixes: Structured Finance, 2004-2016

Annual aggregated transition table (2004-2016)-structured finance																							
	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	Impaired
Aaa.il	83%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	15%	1%
Aa1.il	2%	72%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	15%	7%
Aa2.il	0%	1%	74%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	19%	4%
Aa3.il	0%	0%	0%	81%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13%	0%
A1.il	0%	0%	0%	0%	38%	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	46%	8%
A2.il	0%	0%	0%	0%	2%	72%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	9%	13%
A3.il	0%	0%	0%	0%	0%	11%	33%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%	22%
Baa1.il	0%	0%	0%	0%	0%	0%	0%	0%	33%	33%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%
Baa2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa3.il	0%	0%	0%	0%	0%	0%	0%	0%	50%	17%	33%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ba1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	78%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	18%	3%
Ba2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%
Ba3.il	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	0%	0%	40%	0%	20%	0%	0%	0%	0%	0%	0%	20%	0%
B1.il	0%	0%	0%	0%	0%	7%	0%	0%	0%	0%	0%	7%	57%	7%	0%	0%	0%	0%	0%	0%	0%	21%	0%
B2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%	33%	0%	33%	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%	100%	0%	0%	0%	0%	0%
Caa1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	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%	100%
Caa3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	75%	0%	0%	25%	0%
Ca.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
C.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	57%	43%	0%

Annual transition table (2016) -structured finance																							
	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	Impaired
Aaa.il	87%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13%	0%
Aa1.il	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa2.il	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa3.il	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A1.il	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A2.il	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ba1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	75%	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%	100%	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%	0%	0%
C.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Transition Matrixes for the Structured Finance, 2004-2016 - Without MILCs and Deposit

Notes

Annual aggregated transition table (2004-2016)-structured finance w/o MILCs and Deposit Notes

	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	Impaired
Aaa.il	63%	4%	0%	0%	0%	0%	0%	0%	0%	0%	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	18%	6%
Aa1.il	2%	72%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	15%	7%
Aa2.il	0%	1%	74%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	19%	4%
Aa3.il	0%	0%	0%	81%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13%	0%
A1.il	0%	0%	0%	0%	38%	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	46%	8%
A2.il	0%	0%	0%	0%	2%	72%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	9%	13%
A3.il	0%	0%	0%	0%	0%	11%	33%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%	22%
Baa1.il	0%	0%	0%	0%	0%	0%	0%	0%	33%	33%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%
Baa2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	17%	33%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ba1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	78%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	18%	3%
Ba2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%	0%	0%	0%	0%	0%	0%	50%	0%
Ba3.il	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	0%	0%	40%	0%	20%	0%	0%	0%	0%	0%	0%	20%	0%
B1.il	0%	0%	0%	0%	0%	0%	7%	0%	0%	0%	0%	0%	7%	57%	7%	0%	0%	0%	0%	0%	0%	21%	0%
B2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%	33%	0%	33%	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%	100%	0%	0%	0%	0%	0%
Caa1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	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%	100%
Caa3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	75%	0%	0%	25%	0%
Ca.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
C.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	57%	43%	0%

Annual transition table (2016)-structured finance w/o MILCs and Deposit Notes

	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	Impaired
Aaa.il	0%	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%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa2.il	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa3.il	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A1.il	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A2.il	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ba1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	75%	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%	100%	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%	0%	0%
C.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Transition Matrixes for the Structured Finance- CDOs, 2004-2016

Annual aggregated transition table (2004-2016)-CDOs																							
	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	Impaired
Aaa.il	71%	3%	0%	0%	0%	0%	0%	0%	0%	0%	11%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	9%
Aa1.il	0%	0%	40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	60%
Aa2.il	0%	14%	43%	0%	14%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	29%
Aa3.il	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A1.il	0%	0%	0%	0%	0%	33%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%	33%
A2.il	0%	0%	0%	0%	6%	59%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	29%
A3.il	0%	0%	0%	0%	0%	17%	17%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%	33%
Baa1.il	0%	0%	0%	0%	0%	0%	0%	0%	33%	33%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%
Baa2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	17%	33%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ba1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	75%	0%	0%	4%	0%	0%	0%	0%	0%	0%	0%	18%	4%
Ba2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%
Ba3.il	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	0%	0%	40%	0%	20%	0%	0%	0%	0%	0%	0%	20%	0%
B1.il	0%	0%	0%	0%	0%	7%	0%	0%	0%	0%	0%	7%	57%	7%	0%	0%	0%	0%	0%	0%	0%	21%	0%
B2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%	33%	0%	33%	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%	100%	0%	0%	0%	0%	0%
Caa1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	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%	75%	0%	0%	25%	0%
Ca.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
C.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	67%	33%	0%
Annual transition table (2016) -CDOs																							
	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	Impaired
Aaa.il	0%	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A2.il	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	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%	100%	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%	0%	0%
C.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Transition Matrixes for MILCs, Deposit Notes and Notes, 2004-2016

Annual aggregated transition table (2004-2016)-MILCs, Deposit Notes and Notes																								
	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	Impaired	
Aaa.il	84%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	16%	0%	
Aa1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa2.il	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa3.il	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A1.il	0%	0%	0%	0%	43%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	57%	0%	
A2.il	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ba1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	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%	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%	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%	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%	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%	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%	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%	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%	0%
Ca.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
C.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Annual transition table (2016) -MILCs, Deposit Notes and Notes																								
	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	Impaired	
Aaa.il	87%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	13%	0%	
Aa1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa2.il	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa3.il	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A1.il	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A2.il	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ba1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	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%	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%	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%	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%	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%	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%	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%	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%	0%
Ca.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
C.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Transition Matrixes for Structured Instruments, 2004-2016

Annual aggregated transition table (2004-2016)-structured instruments																							
	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	Impaired
Aaa.il	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa1.il	6%	78%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	17%	0%
Aa2.il	0%	0%	93%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%	0%
Aa3.il	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A1.il	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A2.il	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ba1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	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%	0%	0%
C.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Annual transition table (2016) -structured instruments																							
	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	Impaired
Aaa.il	0%	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%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa2.il	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Aa3.il	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A1.il	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A2.il	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
A3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa2.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Baa3.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ba1.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	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%	0%	0%
C.il	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Default Events/Impaired Debt⁸

A default of an underlying asset is usually not a default of a structured finance instrument, but may impair the cash flow for debt service of the rated debt, so it is therefore defined as impaired debt. Since the beginning of Midroog's activity and as of December 2016, 31 impaired debts have been recorded in the structured finance, totaling about NIS 4.5 billion and about \$115 million. 25 of these are CDOs, following a default in the bond(s) that comprise(d) the portfolio of underlying assets. The other debts are ABS - Asset-backed securities, including the bonds of Dorent Leasing 5 Ltd., Dorent Leasing 4 Ltd., Dorent Leasing 3 Ltd., Dorent Leasing 2 Ltd., for which the servicer was under "Chapter 11", and as a result, caused delays in payments to bondholders. According to publications, the bonds were fully repaid after about three years.

Issuer/Issue*	Initial rating year	Year of impairment according to Midroog's definition	Sector	Amount of rated debt (NISm)**	Initial rating	Rating 12 months before impairment	Impairment Reason
Sapir 1 Financial Instruments Ltd	2006	2007	CDO	18	Aa1.il	Aa1.il	Underlying asset default
Sapir 2 Finance aand Issue Ltd	2006	2007	CDO	17	Aa1.il	Aa1.il	Underlying asset default
Dorent Leasing 5 Ltd	2008	2008	ABS	73	Aa2.il	Aa2.il	Servicer in Chapter 11
Dorent Leasing 4 Ltd	2007	2008	ABS	56	Aa2.il	Aa2.il	Servicer in Chapter 11
Dorent Leasing 3 Ltd	2006	2008	ABS	24	Aa2.il	Aa2.il	Servicer in Chapter 11
Dorent Leasing 2 Ltd	2005	2008	ABS	10	Aa2.il	Aa2.il	Servicer in Chapter 11
Katzir Investment Ltd.	2005	2008	CDO	18	Aaa.il	Aaa.il	Underlying asset default
Carmel Financial Ltd.	2005	2008	CDO	22	Aaa.il	Aaa.il	Underlying asset default
Adar (M.P.) Financial Instruments Ltd	2006	2008	CDO	15	Aa2.il	Aa2.il	Underlying asset default
Fix A2 Ltd - Series A	2006	2008	CDO	69	A2.il	A2.il	Underlying asset default, Lehman Brothers
Fix A2 Ltd - Series A	2008	2008	CDO	92	A2.il	A2.il	Underlying asset default, Washington Mutual
Fix A2 Ltd - Series B	2006	2008	CDO	67	A2.il	A2.il	Underlying asset default, Lehman Brothers
Fix A2 Ltd - Series B	2008	2008	CDO	90	A2.il	A2.il	Underlying asset default, Washington Mutual
Fix A2 Ltd - Series C	2006	2008	CDO	20	A2.il	A2.il	Underlying asset default, Lehman Brothers
Fix A2 Ltd - Series C	2008	2008	CDO	81	A2.il	A2.il	Underlying asset default, Washington Mutual
Fix A2 Euro Ltd - Series A	2007	2008	CDO	53	A2.il	A2.il	Underlying asset default, Lehman Brothers
Fix A2 Euro Ltd - Series A	2008	2008	CDO	40	A2.il	A2.il	Underlying asset default, Glitnir
Global Finance GR8 Ltd - Series A	2007	2009	CDO	791	Aa1.il	Aa2.il	Underlying asset default
Global Finance GR8 Ltd - Series B	2007	2009	CDO	258	Aa3.il	A1.il	Underlying asset default
Global Finance GR8 Ltd - Series C	2007	2009	CDO	236	A2.il	A3.il	Underlying asset default
Global Finance GR8 Ltd - Series D	2007	2009	CDO	1,136	Aaa.il	Aaa.il	Underlying asset default, Africa Israel Investments Ltd and Zim Integrated Shipping services Ltd
Global Finance GR8 Ltd - Series E	2007	2009	CDO	37	Baa3.il	Ba1.il	Underlying asset default
Galil Mor Financial Products Ltd - Serie	2008	2009	CDO	688	Aaa.il	Aaa.il	Underlying asset default
Galil Mor Financial Products Ltd - Serie	2008	2009	CDO	17	A3.il	A3.il	Underlying asset default
Fix A2 Ltd - Series A	2008	2009	CDO	39	A2.il	A2.il	Underlying asset default, CIT Group
Fix A2 Ltd - Series B	2008	2009	CDO	36	A2.il	A3.il	Underlying asset default, CIT Group
Fix A2 Ltd - Series C	2008	2009	CDO	33	A2.il	Baa1.il	Underlying asset default, CIT Group
Fix A2 Euro Ltd - Series B	2008	2009	CDO	40	A2.il	A2.il	Underlying asset default, CIT Group
Las Vegas One (Series A) Ltd	2006	2007	ABS	25	A2.il	A2.il	Ca Rating (downgrade in 2007) and Payment default due to materialization of sales risk in the project (2009)
Unpublished	2006	2009	ABS	71	A2.il	Caa2.il	Payment default due to materialization of sales risk in the project
Global Finance GR8 Ltd - Series D	2011	2012	CDO	450	Baa1.il	Baa1.il	Underlying asset default, IDB Holding Company

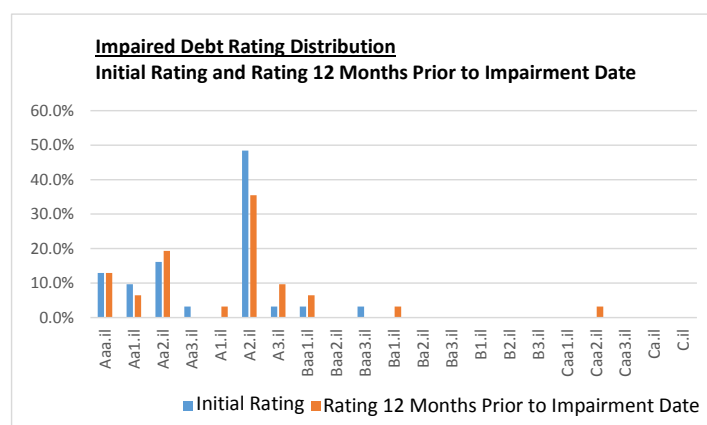
*The bonds of Fix A2 Ltd., Fix A2 Euro Ltd. and Global Finance GR8 Ltd, were included in the impairment events of CDOs several times, since after the default of the underlying assets, the debenture was split so that the bond

⁸ As per the Midroog definition of Repayment Default/Impaired Debt in the document "Rating Scales and Definitions" on the Midroog web site.

with the non-defaulted underlying assets were re-rated. If there have been a number of impairment events and the bonds have not yet been re-rated following the split, only the first impairment is shown.

**At the time of impairment. Some of the series are denominated in US dollars and the aggregate amounts for each currency are shown above.

The chart below shows the distribution of the ratings for impaired series, 12 months prior to impairment date, as well as the initial rating of the series.



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 table below presents the accuracy measure based on the rating 12 months prior to the impairment date. In addition, we

⁹ Calculation methodology for the Accuracy Index is presented in Appendix 2

present the Accuracy Measure, adjusted for outlook, which also weighs a negative outlook or a rating in CR for possible downgrade 12 months before default.

The structured finance accuracy measure is calculated with regard to the ratings without MILCs and deposit notes, in order not to create an upward skewing of the measure. No defaults /impairments were recorded for MILCs and deposit notes. Most impairments in structured finance outstanding debt occurred in 2008 and 2009, in which the accuracy measures were 66% and 69%, respectively. In this context, it should be noted that the accuracy measure does not examine the recovery rate. The recovery rate in structured finance transactions is an important parameter, since the loss in the event of a debt becoming impaired can cover a relatively wide range, depending on the distribution of the underlying assets as well as depending on the "waterfall" of the financial instrument.

It can be seen that the ordinal power of the Midroog ratings in 2008 and 2009 is relatively good, as reflected in the accuracy measures of those years. Note that the small number of impairment events may skew the accuracy measure. In 2007 and 2012, the calculation of the accuracy measure was based on 3 and 1 impaired debts, respectively, which were rated¹⁰ high relatively to the distribution of the other ratings, so that the accuracy measure for these years is relatively low.

The table below shows the accuracy measure, the adjusted accuracy measure and the impairment rate between 2007 and 2016:

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Average Position	42%	66%	69%	--	--	50%	--	--	--	--
Average Position (Outlook Adjusted)	42%	66%	71%	--	--	52%	--	--	--	--
Impairment Rate	6.5%	22.4%	20.0%	0.0%	0.0%	3.0%	0.0%	0.0%	0.0%	0.0%

* The impairment rate is defined as the ratio between the number of series that became impaired according to the Midroog definitions during the year and the number of series rated at the beginning of the period (excluding MILCs and deposit notes).

** It should be noted that the distribution of all the series is the distribution for the end of the prior period to impairment (that is, for the beginning of each calendar year).

¹⁰ 12 months prior to impairment date.

Related Reports

- [For summaries of rating performance for the years 2009-2015, you are invited to view the Midroog website](#)
- [For Midroog's rating scales and definitions, you are invited to view the Midroog website.](#)

The reports are published on the Midroog Website www.midroog.co.il

Report Date: 30.03.2017

Appendix 1 – Calculating Transition Matrixes

Midroog groups the issuers to rating groups according to their rating and the relevant time period (T).¹¹ The marginal transition rate is the probability that the issuer “who survived” at a certain rating level up to the T period will change to another rating (upgrade or downgrade) by the end of that period. The cumulative transition rate is the probability of a transition between the rating level at the time the group was formed up to the end of period T. From the mathematical aspect, the marginal transition rate of period T for a rating group that was created at time y in rating Z is defined as the proportion between the number of companies x(t) that transitioned from a particular group to another group during the time range T divided by the total of issuers in that rating group at the beginning of the time period n(t).

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

¹¹ The relevant time period is a year as published in this report.

Appendix 2 – Calculating the accuracy measure

Average Position (AP)

The position of a rating (that defaulted or did not) in a rating group¹², is as a percentage of the ratings in the rating group with ratings higher than it, plus half of the area in the rating category where it is located.

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

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

The average position is the calculation of the average position of ratings that have experienced default/impairment for a given point of time before default/ impairment (12 months before default/ impairment, as the case may be).

A strong rating system will present an AP of close to 100%, which means that the rating in which a default event was recorded have all been rated at the bottom percentile of the ratings distribution at least 12 months before default date, indicating a very strong correlation between the rating and the default. A random rating system will show an AP in the area of 50% and a rating system with a strong negative correlation will show an AP close to 0%. It should be noted that an AP of 100% or of 0% cannot be obtained, due to their share (distribution area) of the default events in the distribution so that the AP must be standardized for them. For example, suppose that D – represents the rate of ratings that experienced a default event in distribution.

- The maximum AP possible is $100\% - D / 2$, which will be achieved when all ratings with a default are rated the same and all ratings in which no default event has been recorded are rated above this rating.

¹² In accordance with the definition for calculation purposes: issuer, series, etc.

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- In a similar manner, the minimum AP possible is D/2, where all the ratings in which a default event has been recorded are the same and that it is higher than all the ratings that did not experience a default.

In order to standardize the AP, we define AP* adjusted (above and below: "Accuracy Measure" or "Average Position-AP") as follows: $AP^* = (AP - 50\%) / (100\% - D) + 50\%$

This adjustment allows AP* to achieve values of 0% or 100%.

In addition, it should be noted that the information provided can be embodied in a positive/negative outlook and credit reviews for upgrade/downgrade and we present an adjusted AP measure for them. It is important to note that the AP measure or any other single measure alone does not explain the accuracy embodied in different rating systems at a given cutoff point. In addition, a small number of defaults and/or a low number of observations in a particular rating group may skew the results.

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