

DART Report

Bond Pricing Agency Malaysia Research Series

Default and Rating Transition Report For Period Ending 31st March 2015

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TABLE OF CONTENTS

DEFINITION AND KEY VARIABLES	2
INTRODUCTION	3
ISSUANCES AND RATING DISTRIBUTION	4
DEFAULT PROFILE FOR PERIOD ENDING 31ST MARCH 2015	6
RATING TRANSITION PROFILE FOR PERIOD ENDING 31ST MARCH 2015	9
METHODOLOGY	12
STATIC POOL	12
MARGINAL DEFAULT RATE	12
CUMULATIVE DEFAULT RATE.....	13
RATING MIGRATION METHODOLOGY	14
APPENDIX.....	15
APPENDIX 1: 1-YEAR TRANSITION RATES (NON-NR ADJUSTED)	15
APPENDIX 2: 1-YEAR TRANSITION RATES (NR ADJUSTED)	17
APPENDIX 3: LIST OF DEFAULTED FACILITIES FROM 1 ST JANUARY 2005 –31 ST MARCH 2015 (EXCLUDES POST DEFAULT RECOVERED FACILITIES).....	19

Definition and Key Variables

- **Data pool**

BPAM's default and rating transition report comprises of all standalone rated facility by local rating agencies with the exception of short term ratings, credit supported debt (guaranteed facilities) and asset backed facilities. Information regarding instrument categorization such as guaranteed / asset backed facilities are obtained from Fully Automated System and Tendering's webpage (FAST).
- **Classification of default**

A Default occurs when a local rating agency downgrades an existing facility's rating to 'D'. Reasons for a downgrade to default includes:

 - Missed payments of interest or principal
 - Bankruptcy filings or legal insolvency of an issuer
 - Distress exchange of rated instruments where the offered instruments were inferior to the existing distress debt.

Post default recoveries will not be reintroduced into its existing rating pool.
- **Methodology**

BPAM's default study uses a withdrawal adjusted static pool methodology which is in line with majority of other international studies. The cumulative default rates presented throughout this report is derived from the marginal default rates which is explained further in the Methodology section of this report.
- **Local rating agencies**

Local rating agencies includes Malaysian Rating Corporation Berhad and RAM Rating Services Berhad.

Introduction

Credit risk has and will remain a primary concern for financial markets. Yet, financial market participants are still required to identify and control this risk to the best of their ability. Moreover, with more stringent regulations in place, adequate capital is required to be put forth to compensate for the credit risk taken. Reliable default and transition rates are often key inputs to credit risk models which could facilitate investors in managing their credit risk exposure.

BPAM's default and rating transition report is conducted based on facility ratings that are published by local rating agencies. This edition of BPAM's report includes all eligible ratings from the period 1st April 2005 to 31st March 2015. The report is divided into 3 main sections that will discuss the following: Issuances and rating distributions, default rates, and rating transitions.

Default and transition rates are determined using the market convention static pool methodology. Throughout the period under review, we have gathered and studied a total of 813 facilities, of which 48 have defaulted. The results from our transition study suggest that the probability of default for higher rated facilities are smaller compared to lower rated facilities. Furthermore, it can also be observed that rating stability increases with better credit ratings.

In an attempt to provide timely yet accurate information, this report will be generated quarterly as opposed to the conventional yearly default study. Furthermore, the increased reporting frequency improves the ability to capture rating changes that occurs throughout the year.

Issuances and Rating Distribution

Uncertainties within both our local and international markets remained as the primary factor for sluggish growth in bond issuances. As shown in Exhibit 1, the year 2014 have seen a dip in both PDS issuances and liquidity in the bond market. PDS issuances demonstrated a negative issuance trend in recent years which peaked in 2012 at RM120bil and slid towards the RM 92bil mark in 2014 while MGS/GII issuances remained fairly flat at RM 102bil. The liquidity for PDS and MGS/GII, as measured by the turnover ratio, both exhibited a similar downward trend, with PDS contracting to 0.27 for the year 2014 (drop from its previous year of 0.35) and MGS/GII to 0.99 (drop from its previous year of 1.32). Furthermore, the turnover ratio for both MGS/GII and PDS settled well below its long term average of 1.34 and 0.36 respectively.

Exhibit 1: Overall issuance and turnover trend

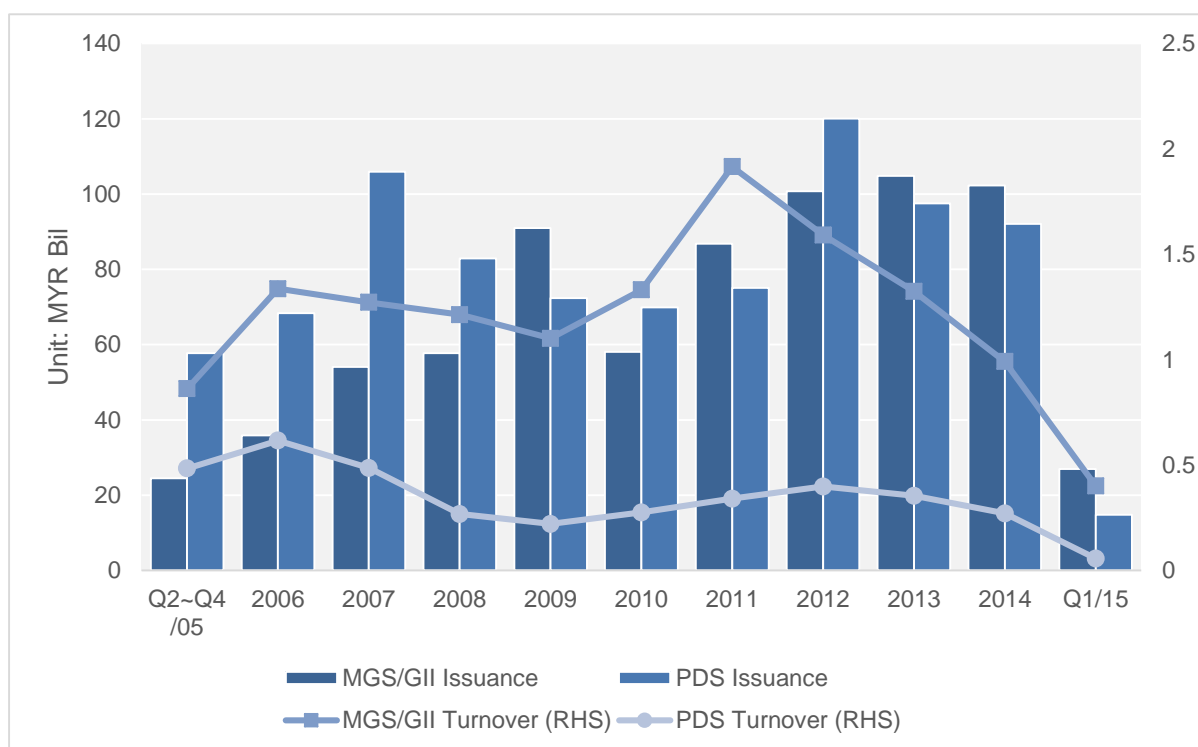


Exhibit 2: Turnover ratio

	2013	2014	Long Term Average
MGS/GII	1.32	0.99	1.34
PDS	0.35	0.27	0.36

The growth in the Malaysian bond market has been accompanied by a shift in the overall rating distribution. Based on the data in Exhibit 3, there have been a migration in rating distribution to higher rated categories, indicating that the Malaysian corporate bond market is moving towards a better credit environment. Noticeably, the percentage of 'AA' facilities have increased steadily from 28.43% to 61.41% between 1st April 2005 and 1st April 2015 while the number of 'A' rated facilities have decreased from 44.12% to a mere 8.39%.

Exhibit 3: Rating distribution by number of facilities

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
AAA	19.28%	20.64%	20.05%	21.98%	22.99%	27.51%	29.38%	30.24%	29.41%	27.54%	26.85%
AA	28.43%	30.56%	30.66%	34.51%	38.39%	39.07%	39.35%	44.01%	50.33%	60.00%	61.41%
A	44.12%	42.90%	44.10%	38.68%	33.56%	29.31%	25.61%	20.36%	14.71%	9.84%	8.39%
BBB	3.59%	2.41%	2.36%	2.20%	1.84%	1.54%	2.16%	1.50%	1.63%	0.98%	1.34%
BB	0.00%	0.27%	0.24%	0.44%	0.69%	0.00%	0.27%	1.80%	1.31%	0.66%	0.67%
B	1.63%	1.07%	0.94%	1.10%	0.92%	1.29%	2.43%	1.20%	1.31%	0.66%	1.01%
C	2.94%	2.14%	1.65%	1.10%	1.61%	1.29%	0.81%	0.90%	1.31%	0.33%	0.34%

Default Profile for Period Ending 31st March 2015

Exhibit 4 displays the yearly default statistics. As this report is produced quarterly, the number of outstanding facilities is determined as of 1st April each year. For example, the 1.96% default rate for the year beginning 2005 indicates that the default occur between 1st April 2005 and 31st March 2006. As a result of improvements in the overall credit environment as indicated in Exhibit 3, BPAM's default study witnessed no default incident for the year ending 31st March 2015; the lowest default rate ever recorded for the period under review. This figure outperformed both the 10-year weighted average annual default rate of 1.30% and the 0.98% default rate for the year ending 31st March 2014.

Exhibit 4: Default statistics by year

Year Beginning 31 st March	Outstanding Facility	Default Count	Default Rate
2005	306	6	1.96%
2006	373	2	0.54%
2007	424	10	2.36%
2008	455	5	1.10%
2009	435	11	2.53%
2010	389	3	0.77%
2011	371	6	1.62%
2012	334	2	0.60%
2013	306	3	0.98%
2014	305	0	0.00%

Exhibit 5: List of defaulted facilities for the year ending 31st March 2015

None	-
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Exhibit 6 illustrates the weighted average cumulative default rate for each rating band from a 1 to 10 year time horizon. The data collected to compute the default rates spans from 1st April 2005 through 31st March 2015. As shown in the results, highly rated facilities has a smaller chance of default. The near 0% cumulative default rate for 'AAA' rating band indicates that if a facility is rated 'AAA' in a static pool, it has an extremely low probability of defaulting throughout the life of the facility. Furthermore, as 10 years of historical data is sufficient to capture the business cycle, it can be seen that facilities with the highest credit rating is resistant to negative market impact. Nevertheless, default rates for ratings 'BBB' to 'C' did not exhibit the similar relationship (higher rating, lower default rate) as investment grade facilities due to its small sample size which resulted in a biased result. It is also worth noting that each edition of the default study only captures yearly rating transitions, and hence any facility rating actions during the year will not be considered. To illustrate, consider a 'AA' rated facility that was issued a month after the formation of a static pool and subsequently defaulted within 1 year of the issuance date. Given this scenario, the default for that facility will not be captured in the study because it was never part of any static pool.

Exhibit 6: Weighted average cumulative default rate by rating band (April 1st 2005 – 31st March 2015)

Rating Band	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
AAA	0.00%	0.00%	0.00%	0.23%	0.56%	0.56%	0.56%	0.56%	0.56%	0.56%
AA	0.00%	0.27%	0.76%	1.45%	2.44%	3.25%	3.95%	3.95%	3.95%	3.95%
A	1.56%	4.24%	7.73%	10.83%	14.10%	17.19%	22.24%	24.92%	24.92%	24.92%
BBB	8.00%	18.00%	20.93%	20.93%	20.93%	20.93%	20.93%	20.93%	20.93%	20.93%
BB	20.00%	28.89%	43.11%	62.07%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
B	17.39%	25.39%	32.49%	49.37%	62.03%	62.03%	62.03%	62.03%	62.03%	62.03%
C	23.08%	32.40%	41.22%	44.68%	48.93%	48.93%	48.93%	48.93%	48.93%	48.93%

In addition to Exhibit 6, Exhibit 7 displays the cumulative default rates for yearly static pool. The years presented on the left hand column represents the beginning of the static pool. For example, the 2013 static pool studies the default cases for the period 1st April 2013 to 31st March 2015. The lower part of the table displays the weighted average marginal default rates which is then used to calculate the cumulative average default rate. Details on the calculation of default rates are presented in the Methodology section of this report.

Exhibit 7: Average cumulative default rate by year (1st April 2005 – 31st March 2015)

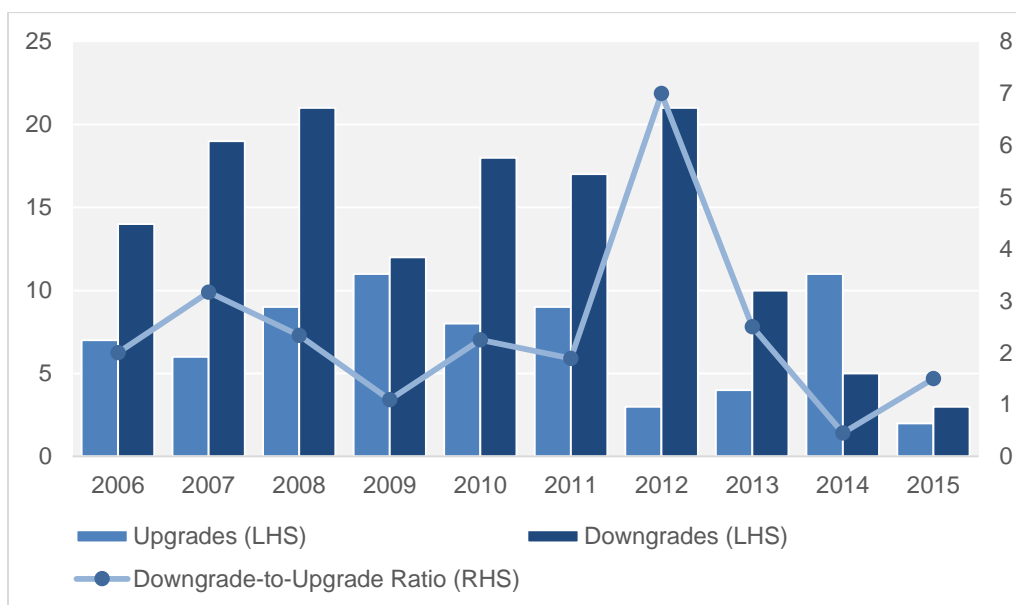
Static Pool (On 1 st April of the Year)	Time Horizon (Years)									
	1	2	3	4	5	6	7	8	9	10
2005	1.96%	2.31%	5.41%	7.29%	12.74%	13.58%	15.57%	16.98%	16.98%	16.98%
2006	0.54%	3.39%	5.04%	9.08%	10.62%	11.90%	12.80%	12.80%	12.80%	
2007	2.36%	3.70%	7.21%	8.38%	9.32%	10.67%	14.06%	14.06%		
2008	1.10%	3.89%	4.79%	6.20%	7.13%	9.32%	9.32%			
2009	2.53%	3.33%	4.56%	5.35%	7.08%	7.08%				
2010	0.77%	2.53%	3.29%	4.90%	4.90%					
2011	1.62%	2.30%	3.69%	3.69%						
2012	0.60%	1.76%	1.76%							
2013	0.98%	0.98%								
2014	0.00%									
Marginal Average	1.42%	1.56%	1.85%	1.90%	2.13%	1.58%	2.28%	1.67%	0.00%	0.00%
Cumulative Average	1.42%	2.95%	4.75%	6.56%	8.55%	10.00%	12.05%	12.05%	12.05%	12.05%
Standard Deviation	0.84%	0.97%	1.61%	1.94%	2.82%	2.48%	2.66%	2.14%	2.95%	0.00%
Median	1.04%	2.53%	4.67%	6.20%	8.22%	10.67%	13.43%	14.06%	14.89%	16.98%
Min	0.00%	0.98%	1.76%	3.69%	4.90%	7.08%	9.32%	12.80%	12.80%	16.98%
Max	2.53%	3.89%	7.21%	9.08%	12.74%	13.58%	15.57%	16.98%	16.98%	16.98%

Rating Transition Profile for Period Ending 31st March 2015

While default rates are critical at assessing credit risks, rating transitions provides supporting information on the creditworthiness of a facility. Credit transition matrix specifies changes in credit quality of a particular facility. Similar to the default study, transition rates are computed using a static pool method, which is described in detail within the Methodology section of this report.

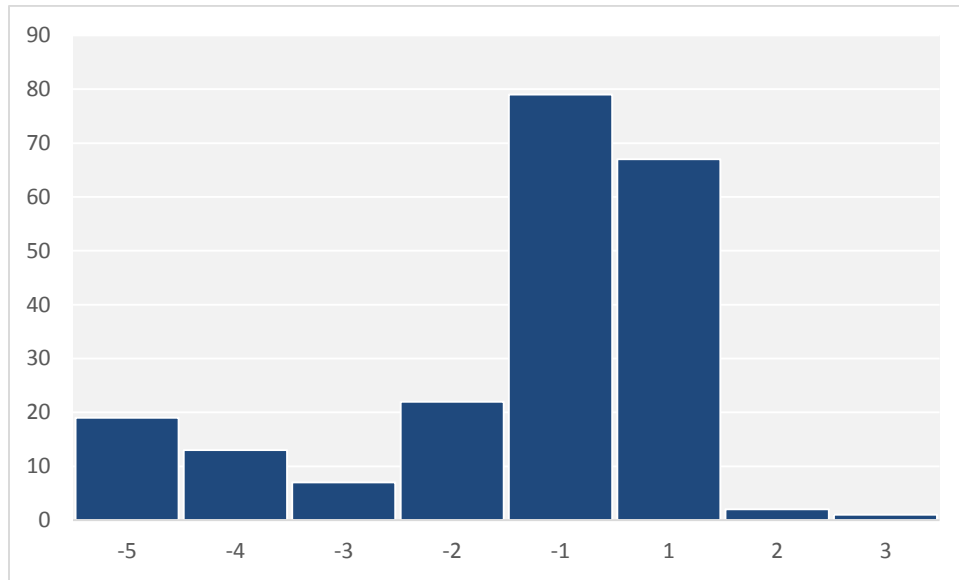
The number of upgrades and downgrades for the period 1st April 2005 to 31st March 2015 as presented in Exhibit 8 showed a negative rating drift. Number of downgrades surpassed upgrades by approximately a ratio of 2:1. The number of downgrades for the year ending 31st March 2015 was less than its previous year but the downgrade-to-upgrade ratio increased significantly from 0.45 to 1.5. Throughout the 10 years under review, there has been a total of 140 downgrades and 70 upgrades. Furthermore, upgrades surpassed downgrades in only 1 of the past 10 years.

Exhibit 8: Upgrades and downgrades count by year



It is also apparent from Exhibit 9 that the dispersion for negative ratings, ranging from -1 to -5 notches, was greater than positive ratings. This indicates that in addition to the odds of a rating downgrade being higher, the degree of a facility downgrade is also larger. However, despite the fact that the transition study showed a negative rating drift, the overall credit quality environment have seen some improvement, notably with the increase in the 'AA' rated category.

Exhibit 9: Rating transition notches



(Rating notch of -1 indicates a downgrade of 1 notch: AAA → AA)

Exhibit 10 and 11 displays the 1 year weighted average transition matrix for the period between 1st April 2005 and 31st March 2015. The horizontal axis on the top row represents the rating at end date while the vertical axis on the left shows the rating at start date. The non-rated inclusive transition matrix illustrates that on average, 88.60% of facilities rated as 'AAA' will remain as 'AAA' over the course of 1 year, while 0.33% will be downgraded to 'AA'.

By adjusting for non-rated facilities, the figure climbs to 99.63% for the similar 'AAA' rating. Furthermore, the results indicate that higher rated facilities has a better rating stability which means that facilities with better ratings have a higher tendency to maintain their initial rating compared to lower rated facilities. On average, facilities rated 'A' or better maintains a rating stability level above 74%. Similar with default rates, the small sample size for speculative grade facilities have caused the transition rates to be biased; showing a greater stability for lower rated facilities. One year transition behavior for the past 10 years are provided in Appendix 1 and 2.

Exhibit 10: 1 year WA transition rates with NR –1st April 2005 to 31st March 2015

	AAA	AA	A	BBB	BB	B	C	D	NR
AAA	88.60%	0.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.07%
AA	1.04%	83.99%	2.37%	0.28%	0.07%	0.00%	0.07%	0.00%	12.18%
A	0.00%	4.06%	74.50%	1.82%	0.61%	0.17%	0.61%	1.56%	16.68%
BBB	0.00%	1.33%	4.00%	50.67%	5.33%	4.00%	0.00%	8.00%	26.67%
BB	0.00%	0.00%	0.00%	5.00%	35.00%	15.00%	0.00%	20.00%	25.00%
B	0.00%	0.00%	0.00%	0.00%	2.17%	65.22%	4.35%	17.39%	10.87%
C	0.00%	0.00%	0.00%	1.92%	1.92%	0.00%	61.54%	23.08%	11.54%

Exhibit 11: 1 year WA transition rates (NR adjusted) –1st April 2005 to 31st March 2015

	AAA	AA	A	BBB	BB	B	C	D
AAA	99.63%	0.37%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	1.19%	95.64%	2.69%	0.32%	0.08%	0.00%	0.08%	0.00%
A	0.00%	4.88%	89.42%	2.18%	0.73%	0.21%	0.73%	1.87%
BBB	0.00%	1.82%	5.45%	69.09%	7.27%	5.45%	0.00%	10.91%
BB	0.00%	0.00%	0.00%	6.67%	46.67%	20.00%	0.00%	26.67%
B	0.00%	0.00%	0.00%	0.00%	2.44%	73.17%	4.88%	19.51%
C	0.00%	0.00%	0.00%	2.17%	2.17%	0.00%	69.57%	26.09%

Methodology

Static Pool

A static pool is broadly defined as a group or pool of facilities that does not change through time. Static pool for a given date comprises of all eligible outstanding facility ratings as of that date. BPAM's default and rating transition study forms yearly static pools at every quarter.

The constituents for each static pool will be tracked yearly up to a horizon of 10 years. For a facility to be included in an n^{th} year horizon static pool, it is required to have a non-default rating for the past n years. As this study does not include post-default recoveries, any facility that defaulted and subsequently recovered will no longer be reintroduced into its original static pool. To illustrate, a facility is rated 'AA' as of 1st January 2006. On December 2007, the facility defaulted and was consequently recovered on January 2008 and remained active until 2010. Although the facility has an outstanding non default rating as of 1st April 2009, it will no longer be recognized as an active facility in the 1st January 2006 static pool. However, it is included in the static pool formed on 1st January 2009.

Marginal Default Rate

BPAM's DaRT report presents its default statistics through weighted average cumulative default rate. Weighted average cumulative default rates are obtained by calculating the marginal default rates. An n^{th} year marginal default rate is the probability that a facility will default on the n^{th} year after surviving through $(n - 1)$ years. Firstly, the marginal default rates for each time horizon (1 year to 10 years) is computed. All marginal default rates for the same time horizon are then weight averaged by the number of outstanding facilities to arrive at the weighted average marginal default rate for a given time horizon. The marginal default rate calculation is computed using the following equation:

$$n^{\text{th}} \text{ year Marginal Default Rate} = \frac{\text{Number of defaulted facilities on } n^{\text{th}} \text{ year}}{\text{Number of active facilities at the start of static pool} - \text{Number of defaults prior to } n^{\text{th}} \text{ year} - \text{Number of withdrawn ratings prior to } n^{\text{th}} \text{ year}} \text{ ----(1)}$$

To compute the 2-year marginal default rate, let us consider a hypothetical static pool formed on 1st January 2005 with 129 outstanding facilities. Among the 129 facilities, there were 20 withdrawals and 5 defaults within year 2005. The 1 year marginal default rate for the 2005 static pool is then calculated as (5/129). Moving forward 1 year, given that there was no facility default or withdrawal within the second year, the 2 year marginal is computed as 0/(129-20-5).

Referring to Exhibit 12, to obtain the Year 1 'A' rated default rate, we would first compute the marginal default rates for each 1 year horizon static pool (Apr 2005 to Mar 2006, Apr 2006 to Mar 2007, ..., Apr 2014 to Mar 2015). We would then weight average all the individual 1-year marginal rates by the number of outstanding facilities to arrive at the weighted average marginal default rate. This process is repeated for all rating categories and marginal default rates to produce weighted average marginal default rates for each rating category given each time horizon.

Cumulative Default Rate

Cumulative default rate can be defined as the probability of default from the time of static pool formation up to the nth year time horizon. The cumulative default rates for each time horizon is computed by taking 1 minus the multiplicative sum of the survival rate. To illustrate a 4 year weighted average cumulative default rate for a 'A' facility, and given the weighted average marginal default rate for Year 1 to Year 4 time horizon is 1.56%, 2.72%, 3.65% and 3.36% respectively, the weighted average cumulative default rate is calculated as follow: $1 - [(100\% - 1.56\%)*(100\% - 2.72\%)*(100\% - 3.65\%)*(100\% - 3.36\%)]$.

The general equation for cumulative default rate is:

$$\text{Cumulative Default Rate} = 1 - \prod_{t=1}^T (1 - \text{Marginal Default Rate}_t) \text{ ----- (2)}$$

Exhibit 12: Weighted average cumulative default rate by rating band (1st April 2005 – 31st March 2015)

Rating Band	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
AAA	0.00%	0.00%	0.00%	0.23%	0.56%	0.56%	0.56%	0.56%	0.56%	0.56%
AA	0.00%	0.27%	0.76%	1.45%	2.44%	3.25%	3.95%	3.95%	3.95%	3.95%
A	1.56%	4.24%	7.73%	10.83%	14.10%	17.19%	22.24%	24.92%	24.92%	24.92%
BBB	8.00%	18.00%	20.93%	20.93%	20.93%	20.93%	20.93%	20.93%	20.93%	20.93%
BB	20.00%	28.89%	43.11%	62.07%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
B	17.39%	25.39%	32.49%	49.37%	62.03%	62.03%	62.03%	62.03%	62.03%	62.03%
C	23.08%	32.40%	41.22%	44.68%	48.93%	48.93%	48.93%	48.93%	48.93%	48.93%

The cumulative default rate for Exhibit 13 is calculated in a similar manner. To obtain the 2005 static pool cumulative default rates, we would first compute the marginal default rates for each time horizon (Apr 2005 – Mar 2006, Apr 2005 – Mar 2007, ..., Apr 2005 – Mar 2015). The cumulative default rate is then computed using the calculated marginal default rates by applying equation (2).

Exhibit 13: Average cumulative default rate by year

Static Pool (On 1 st April of the Year)	Time Horizon (Years)									
	1	2	3	4	5	6	7	8	9	10
2005	1.96%	2.31%	5.41%	7.29%	12.74%	13.58%	15.57%	16.98%	16.98%	16.98%
2006	0.54%	3.39%	5.04%	9.08%	10.62%	11.90%	12.80%	12.80%	12.80%	
2007	2.36%	3.70%	7.21%	8.38%	9.32%	10.67%	14.06%	14.06%		
2008	1.10%	3.89%	4.79%	6.20%	7.13%	9.32%	9.32%			
2009	2.53%	3.33%	4.56%	5.35%	7.08%	7.08%				
2010	0.77%	2.53%	3.29%	4.90%	4.90%					
2011	1.62%	2.30%	3.69%	3.69%						
2012	0.60%	1.76%	1.76%							
2013	0.98%	0.98%								
2014	0.00%									
Marginal Average	1.42%	1.56%	1.85%	1.90%	2.13%	1.58%	2.28%	1.67%	0.00%	0.00%
Cumulative Average	1.42%	2.95%	4.75%	6.56%	8.55%	10.00%	12.05%	12.05%	12.05%	12.05%
Standard Deviation	0.84%	0.97%	1.61%	1.94%	2.82%	2.48%	2.66%	2.14%	2.95%	0.00%
Median	1.04%	2.53%	4.67%	6.20%	8.22%	10.67%	13.43%	14.06%	14.89%	16.98%
Min	0.00%	0.98%	1.76%	3.69%	4.90%	7.08%	9.32%	12.80%	12.80%	16.98%
Max	2.53%	3.89%	7.21%	9.08%	12.74%	13.58%	15.57%	16.98%	16.98%	16.98%

Rating Migration Methodology

The rating transition table compares facility rating between 2 different times. Similar to the default study, any rating changes in between the time period will not be captured in the study. For example, given a 1 year transition matrix, if a facility is downgraded from 'AA' to 'A' and subsequently upgraded to 'AA' within a year of the beginning date, there will be no changes recorded in the transition matrix for that facility. Lastly, the NR column consists of all redeemed or matured facilities.

Appendix

Appendix 1: 1-year transition rates (Non-NR adjusted)

Note: Year on the transition matrices indicates the beginning year (Example: 2014 indicates transition period between 1st April 2014 and 31st March 2015)

2014	AAA	AA	A	BBB	BB	B	C	D	NR
AAA	85.71%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	14.29%
AA	0.00%	86.89%	0.00%	0.55%	0.00%	0.00%	0.00%	0.00%	12.57%
A	0.00%	6.67%	76.67%	0.00%	0.00%	0.00%	0.00%	0.00%	16.67%
BBB	0.00%	0.00%	0.00%	66.67%	33.33%	0.00%	0.00%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%

2013	AAA	AA	A	BBB	BB	B	C	D	NR
AAA	84.44%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	15.56%
AA	0.00%	88.31%	0.65%	0.00%	0.00%	0.00%	0.00%	0.00%	11.04%
A	0.00%	13.33%	53.33%	0.00%	0.00%	0.00%	0.00%	6.67%	26.67%
BBB	0.00%	0.00%	20.00%	20.00%	0.00%	0.00%	0.00%	0.00%	60.00%
BB	0.00%	0.00%	0.00%	25.00%	0.00%	0.00%	0.00%	0.00%	75.00%
B	0.00%	0.00%	0.00%	0.00%	25.00%	50.00%	25.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	25.00%	25.00%	0.00%	0.00%	0.00%	50.00%

2012	AAA	AA	A	BBB	BB	B	C	D	NR
AAA	78.22%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	21.78%
AA	0.00%	78.23%	1.36%	0.00%	0.00%	0.00%	0.68%	0.00%	19.73%
A	0.00%	5.88%	58.82%	4.41%	1.47%	0.00%	1.47%	0.00%	27.94%
BBB	0.00%	0.00%	0.00%	40.00%	0.00%	0.00%	0.00%	0.00%	60.00%
BB	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	0.00%	16.67%	33.33%
B	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	66.67%	33.33%	0.00%

2011	AAA	AA	A	BBB	BB	B	C	D	NR
AAA	85.32%	0.92%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	13.76%
AA	0.68%	76.03%	4.11%	0.00%	0.00%	0.00%	0.00%	0.00%	19.18%
A	0.00%	2.11%	60.00%	1.05%	3.16%	0.00%	1.05%	1.05%	31.58%
BBB	0.00%	0.00%	0.00%	50.00%	25.00%	12.50%	0.00%	0.00%	12.50%
BB	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	33.33%	0.00%	55.56%	11.11%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	66.67%	0.00%	33.33%

2010	AAA	AA	A	BBB	BB	B	C	D	NR
AAA	88.79%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	11.21%
AA	2.63%	84.21%	4.61%	1.32%	0.00%	0.00%	0.00%	0.00%	7.24%
A	0.00%	3.51%	72.81%	1.75%	0.00%	1.75%	0.00%	0.88%	19.30%
BBB	0.00%	16.67%	0.00%	50.00%	0.00%	16.67%	0.00%	0.00%	16.67%
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	20.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	60.00%	40.00%	0.00%

2009	AAA	AA	A	BBB	BB	B	C	D	NR
AAA	93.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.00%
AA	2.99%	83.23%	1.20%	0.00%	0.00%	0.00%	0.00%	0.00%	12.57%
A	0.00%	2.05%	73.97%	1.37%	0.00%	0.00%	1.37%	2.74%	18.49%
BBB	0.00%	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	12.50%	37.50%
BB	0.00%	0.00%	0.00%	0.00%	0.00%	33.33%	0.00%	66.67%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	0.00%	50.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	42.86%	57.14%	0.00%

2008	AAA	AA	A	BBB	BB	B	C	D	NR
AAA	95.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%
AA	0.64%	84.08%	0.00%	0.64%	0.00%	0.00%	0.00%	0.00%	14.65%
A	0.00%	5.68%	74.43%	1.14%	0.57%	0.00%	1.14%	0.57%	16.48%
BBB	0.00%	0.00%	0.00%	50.00%	10.00%	0.00%	0.00%	20.00%	20.00%
BB	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	0.00%	50.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	80.00%	0.00%	20.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%

2007	AAA	AA	A	BBB	BB	B	C	D	NR
AAA	87.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	12.94%
AA	1.54%	84.62%	3.08%	0.00%	0.77%	0.00%	0.00%	0.00%	10.00%
A	0.00%	3.72%	79.26%	2.66%	0.00%	0.00%	0.00%	2.13%	12.23%
BBB	0.00%	0.00%	0.00%	50.00%	0.00%	10.00%	0.00%	30.00%	10.00%
BB	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	25.00%	25.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	71.43%	28.57%	0.00%

2006	AAA	AA	A	BBB	BB	B	C	D	NR
AAA	94.81%	2.60%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.60%
AA	0.88%	86.84%	7.02%	0.00%	0.00%	0.00%	0.00%	0.00%	5.26%
A	0.00%	2.50%	86.88%	1.88%	0.63%	0.00%	0.63%	0.00%	7.50%
BBB	0.00%	0.00%	11.11%	77.78%	0.00%	0.00%	0.00%	0.00%	11.11%
BB	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	75.00%	25.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	62.50%	25.00%	12.50%

2005	AAA	AA	A	BBB	BB	B	C	D	NR
AAA	98.31%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.69%
AA	1.15%	89.66%	4.60%	0.00%	0.00%	0.00%	0.00%	0.00%	4.60%
A	0.00%	3.70%	80.00%	2.22%	0.74%	0.00%	0.00%	2.96%	10.37%
BBB	0.00%	0.00%	9.09%	45.45%	0.00%	0.00%	0.00%	0.00%	45.45%
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	80.00%	0.00%	20.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	66.67%	11.11%	22.22%

Appendix 2: 1-year transition rates (NR adjusted)

Note: Year on the transition matrices indicates the beginning year (Example: 2014 indicates transition period between 1st April 2014 and 31st March 2015)

2014	AAA	AA	A	BBB	BB	B	C	D
AAA	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.00%	99.38%	0.00%	0.63%	0.00%	0.00%	0.00%	0.00%
A	0.00%	8.00%	92.00%	0.00%	0.00%	0.00%	0.00%	0.00%
BBB	0.00%	0.00%	0.00%	66.67%	33.33%	0.00%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%

2013	AAA	AA	A	BBB	BB	B	C	D
AAA	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.00%	99.27%	0.73%	0.00%	0.00%	0.00%	0.00%	0.00%
A	0.00%	18.18%	72.73%	0.00%	0.00%	0.00%	0.00%	9.09%
BBB	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	25.00%	50.00%	25.00%	0.00%
C	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%	0.00%

2012	AAA	AA	A	BBB	BB	B	C	D
AAA	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.00%	97.46%	1.69%	0.00%	0.00%	0.00%	0.85%	0.00%
A	0.00%	8.16%	81.63%	6.12%	2.04%	0.00%	2.04%	0.00%
BBB	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	0.00%	75.00%	0.00%	0.00%	25.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	66.67%	33.33%

2011	AAA	AA	A	BBB	BB	B	C	D
AAA	98.94%	1.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.85%	94.07%	5.08%	0.00%	0.00%	0.00%	0.00%	0.00%
A	0.00%	3.08%	87.69%	1.54%	4.62%	0.00%	1.54%	1.54%
BBB	0.00%	0.00%	0.00%	57.14%	28.57%	14.29%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	37.50%	0.00%	62.50%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%

2010	AAA	AA	A	BBB	BB	B	C	D
AAA	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	2.84%	90.78%	4.96%	1.42%	0.00%	0.00%	0.00%	0.00%
A	0.00%	4.35%	90.22%	2.17%	0.00%	2.17%	0.00%	1.09%
BBB	0.00%	20.00%	0.00%	60.00%	0.00%	20.00%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	60.00%	40.00%

2009	AAA	AA	A	BBB	BB	B	C	D
AAA	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	3.42%	95.21%	1.37%	0.00%	0.00%	0.00%	0.00%	0.00%
A	0.00%	2.52%	90.76%	1.68%	0.00%	0.00%	1.68%	3.36%
BBB	0.00%	0.00%	0.00%	80.00%	0.00%	0.00%	0.00%	20.00%
BB	0.00%	0.00%	0.00%	0.00%	0.00%	33.33%	0.00%	66.67%
B	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	42.86%	57.14%

2008	AAA	AA	A	BBB	BB	B	C	D
AAA	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.75%	98.51%	0.00%	0.75%	0.00%	0.00%	0.00%	0.00%
A	0.00%	6.80%	89.12%	1.36%	0.68%	0.00%	1.36%	0.68%
BBB	0.00%	0.00%	0.00%	62.50%	12.50%	0.00%	0.00%	25.00%
BB	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	0.00%	50.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	80.00%	0.00%	20.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%

2007	AAA	AA	A	BBB	BB	B	C	D
AAA	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	1.71%	94.02%	3.42%	0.00%	0.85%	0.00%	0.00%	0.00%
A	0.00%	4.24%	90.30%	3.03%	0.00%	0.00%	0.00%	2.42%
BBB	0.00%	0.00%	0.00%	55.56%	0.00%	11.11%	0.00%	33.33%
BB	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	66.67%	0.00%	33.33%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	71.43%	28.57%

2006	AAA	AA	A	BBB	BB	B	C	D
AAA	97.33%	2.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	0.93%	91.67%	7.41%	0.00%	0.00%	0.00%	0.00%	0.00%
A	0.00%	2.70%	93.92%	2.03%	0.68%	0.00%	0.68%	0.00%
BBB	0.00%	0.00%	12.50%	87.50%	0.00%	0.00%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	75.00%	25.00%	0.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	71.43%	28.57%

2005	AAA	AA	A	BBB	BB	B	C	D
AAA	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AA	1.20%	93.98%	4.82%	0.00%	0.00%	0.00%	0.00%	0.00%
A	0.00%	4.13%	89.26%	2.48%	0.83%	0.00%	0.00%	3.31%
BBB	0.00%	0.00%	16.67%	83.33%	0.00%	0.00%	0.00%	0.00%
BB	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
B	0.00%	0.00%	0.00%	0.00%	0.00%	80.00%	0.00%	20.00%
C	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	85.71%	14.29%

Appendix 3: List of defaulted facilities from 1st January 2005 –31st March 2015 (Excludes post default recovered facilities)

Facility Name	Facility Code	Default Date
P HIONG KONG RM120M CP/MTN	200200038	03/02/2005
SHRSB RM60M 3-YR RSB	200200014	01/03/2005
SHRSB RM90M 5-YR RSB	200200015	01/03/2005
FACB RM420M 4-YR SEC. BONDS	200100025	12/04/2005
ABI RM80M 5-YR BAIDS	200300051	24/08/2005
PESAKA RM140M ABBA BONDS	200400035	30/09/2005
PESAKA RM200M CP/MTN	200400075	30/09/2005
COMSA RM50M 5%/5YR RUB	200000058	27/02/2006
MAXISEGAR RM250M ABBA BONDS	200400012	09/03/2006
PARK MAY RM120M 5-YR CP/MTN	200200006	24/01/2007
PEREMBA RM200M MUNIF/MMTN	200500002	16/04/2007
GULA PERAK RM288.8M RCS NOTES	200300042	24/04/2007
MTSB RM320M Bai Bithaman Ajil Bonds	200500097	07/06/2007
PARADYM RM40M ICP/IMTN	200400074	13/06/2007
ROYAL MINT RM55M MMONI	200400116	26/06/2007
SILK RM2.01BN ABBA IDS	200100052	22/08/2007
ACE PMERS RM 70 M BAIDS	200400088	14/09/2007
PECD RM200M SERIAL FIXED BOND	200500053	31/12/2007
INTELBEST RM20M BAIDS	200500015	29/02/2008
INTELBEST RM110M BAIDS	200500016	29/02/2008
BSA RM150.0M MURABAHAH CP/MTN	200400105	28/05/2008
TRANSMILE AIR 150M CP/MTN	200300103	02/09/2008
EVERMASTER RM50.0M BAIDS	200300149	31/12/2008
TRACOMA RM100 M BAIDS	200500004	29/01/2009
ENGLOTECHS RM50M 7YRS MMTNs	200500085	27/03/2009
HARTAPLUS RM40.0M CP	200400007	06/04/2009
HARTAPLUS RM80.0M MTN	200400008	06/04/2009
OXBRIDGE RM104M IMTN	200500029	06/04/2009
INGRESS RM160M SUKUK AL-IJARAH	200400070	13/07/2009
OILCORP RM70.0M MUNIF/IMTN	200400101	07/10/2009
MITP RM240.0MIL BAI BITHAMAN AJIL ISLAMIC SECURITIES FACILITY	200700042	18/11/2009
PSSB SHIP RM40M BAIDS	200400121	15/12/2009
ALDWICH RM246M SR BONDS "A"	200300094	11/03/2010
ALDWICH RM47M SR BONDS "B"	200300095	11/03/2010
ALDWICH RM248M JR BONDS "C"	200300096	11/03/2010
ALDWICH RM336M JR BONDS "D"	200300097	11/03/2010
MMM RM120M 7YR BAIDS	200300137	02/04/2010
NAM FATT RM250M ICP/IMTN	200600003	06/04/2010
VASTALUX CAPITAL RM100.0M SUKUK MUSYARAKAH	200500126	24/12/2010

DAWAMA RM20.0M JUNIOR SUKUK MUSYARAKAH MTN PROGRAMME	200900022	29/04/2011
DAWAMA RM120.0M SENIOR SUKUK MUSYARAKAH MTN PROGRAMME	200900023	03/10/2011
LEKAS RM50.0M RULS	200700079	23/12/2011
LEKAS RM240M RCULS	200700080	23/12/2011
AMZONE RM25M SUKUK BOND B	200500007	03/02/2012
AMZONE RM75M SUKUK BOND C	200500008	03/02/2012
SBGB RM30M CP/MTN	200500026	05/04/2012
MAXTRAL RM20.0MIL MUNIF/MMTN FACILITY	200700020	25/04/2012
KINSTEEL RM100 MILLION MURABAHAH CP/MTN	200600072	06/09/2013
PERWAJASTEEL RM400.0M MURABAHAH MTN PROGRAMME	200600079	27/09/2013
KINSTEEL RM100 MILLION MURABAHAH MTN PROGRAMME	200600076	11/03/2014

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