IOPP Tier Scoring Methodology

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Relative Tier Methodology

METRIC SCORES

Prior to the tier calculation, the individual metric score is calculated for each issuer in a given peer group.

- In this example, we will consider Issuer X and its tier ranking for the Compliance Review Metric.

- The Compliance Review metric is calculated as 50% of an Issuer's total findings, plus 30% of an Issuer's "High" findings, plus 20% of an Issuer's repeat findings for a given month in its most recent field review. Issuer X has a metric value of 3.6.

Issuer Number	Issuer Name	High Findings	Total Findings	Repeat Findings	Compliance Review Metric Value
1234	Issuer X	2	6	0	3.6
1111	Issuer A	3	8	0	4.9
2222	Issuer B	2	7	0	4.1
3333	Issuer C	4	10	0	6.2
4444	Issuer D	0	9	1	4.7
5555	Issuer E	3	8	4	5.7
6666	Issuer F	1	5	3	3.4
7777	Issuer G	2	9	5	6.1
8888	Issuer H	2	8	1	4.8
9999	Issuer I	2	6	0	3.6
1010	Issuer J	0	0	0	0
1212	Issuer K	3	8	3	5.5

Note: all values in this example are hypothetical

OPERATIONAL METRIC RELATIVE TIER CALCULATION: PEER GROUP

Following the metric score calculation, tiers are calculated within a peer group.

- An Issuer's relative tier ranking is determined by its relative performance within its peer group.
- Issuers in the same peer group are sorted by metric value, from worst metric value to best metric value.

Issuer Number	Issuer Name	Compliance Review Metric Value
3333	IssuerC	6.2
7777	IssuerG	6.1
5555	IssuerE	5.7
1212	IssuerK	5.5
1111	IssuerA	4.9
8888	IssuerH	4.8
4444	IssuerD	4.7
2222	IssuerB	4.1
1234	IssuerX	3.6
9999	IssuerI	3.6
6666	IssuerF	3.4
1010	IssuerJ	0

Note: all values in this example are hypothetical

TIER ASSIGNMENT

Next, the peer group is bucketed into 4 tiers, with 25% of the peer group in each tier.

- Since there are 12 Issuers in the peer group, each tier initially contains 3 Issuers.

- The 3 Issuers with the worst metric values are placed into tier 4, the next 3 Issuers into tier 3, and so on.

- Issuer X is initially placed into tier 2.

Issuer Number	Issuer Name	Compliance Review Metric Value	Tier
3333	IssuerC	6.2	4
7777	IssuerG	6.1	4
5555	IssuerE	5.7	4
1212	IssuerK	5.5	3
1111	IssuerA	4.9	3
8888	IssuerH	4.8	3
4444	IssuerD	4.7	2
2222	IssuerB	4.1	2
1234	IssuerX	3.6	2
9999	IssuerI	3.6	1
6666	IssuerF	3.4	1
1010	IssuerJ	0	1

Note: all values in this example are hypothetical

DISPLAYED TIER

If any Issuer has the same metric value as an Issuer in a higher tier, then that Issuer is moved to the higher tier.

- Issuer X has the same metric value as Issuer I, so it is moved from tier 2 to tier 1.
- The "IOPP Displayed Tier" column shows the tiers for the Compliance Review Metric that would be displayed on the IOPP tool.

Issuer Number	Issuer Name	Compliance Review Metric Value	Tier	IOPP Displayed Tier
3333	IssuerC	6.2	4	4
7777	IssuerG	6.1	4	4
5555	IssuerE	5.7	4	4
1212	IssuerK	5.5	3	3
1111	IssuerA	4.9	3	3
8888	IssuerH	4.8	3	3
4444	IssuerD	4.7	2	2
2222	IssuerB	4.1	2	2
1234	IssuerX	3.6	2	1
9999	IssuerI	3.6	1	1
6666	IssuerF	3.4	1	1
1010	IssuerJ	0	1	1

Note: all values in this example are hypothetical

Issuers with a null metric value are initially assigned an N/A tier.

- Null metric tiers are excluded from Overall Metric Score calculations.

- In this example, we will consider Issuer X and its tier ranking for the Early Pool Termination metric.

  – Issuer X has a null metric value for Early Pool Terminations and is assigned an N/A tier accordingly.

  – The rest of the Issuers are bucketed and tiered against each other as per usual relative tier treatment.

Issuer Number	Issuer Name	Early Pool Termination Metric Value	Tier	IOPP Displayed Tier
8888	IssuerH	4	4	4
1111	IssuerA	3	3	3
2222	IssuerB	2	2	2
9999	IssuerI	1	1	1
1234	IssuerX	Null	N/A	N/A

Note: all values in this example are hypothetical

Default metrics tier calculations rank based on a Controlled Metric Value rather than the Issuer's metric value.

- The Controlled Metric Value is calculated using the controlled peer group average, which buckets loans by cohort, state/region and loan purpose.

- This allows the default metrics to compare loans with similar characteristics to each other.

- First, we will calculate the controlled peer group average for Issuer X for the % of Loans in Foreclosure metric. Below is a sample of buckets for Issuer X.

Bucket			Issuer's Loan Counts in a Bucket	Total Issuer's Loan Counts	Issuer's % of Loans [A]	% of Loans in Foreclosure of Peerrss' Loans in Same Buckets [B]	[A] x [B]
State	Cohort	Purpose					
VA	2012	Purchase	190	237,109	0.08%	1.1%	0.001%
VA	2012	Refinance	142	237,109	0.06%	3.7%	0.002%
VA	2012	Modification	1399	237,109	0.59%	1.2%	0.007%
o					o		o
o					o		o
Total – All Buckets					100%		34.2%

Note: all values in this example are hypothetical

To calculate the controlled peer group average, calculate the below values.

- Issuer's % of Loans [A]
    - % of loans in each bucket for Issuer X, the sum of which is 100%.

- % of Loans in Foreclosure of Peers' Loans in Same Bucket [B]
    - % of Loans in Foreclosure of all Large Loans that are in each bucket, EXCEPT for Issuer X's Loan.

- [A] x [B]
    - Weighted average % of Loans in Foreclosure of Peer Group, excluding Issuer X, where the weighting is based on Issuer X's distribution of loans across buckets.

- Sum of [A] x [B]
    - Equals Controlled Peer Group Average of % of Loans in Foreclosure.

Bucket			Issuer's Loan Counts in a Bucket	Total Issuer's Loan Counts	Issuer's % of Loans [A]	% of Loans in Foreclosure of Peerss' Loans in Same Buckets [B]	[A] x [B]
State	Cohort	Purpose					
VA	2012	Purchase	190	237,109	0.08%	1.1%	0.001%
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o					o		o
o					o		o
Total – All Buckets					100%		34.2%

Note: all values in this example are hypothetical

DEFAULT RELATIVE TIER CALCULATION:
CONTROLLED METRIC VALUE

The Controlled Metric Value is calculated using the Issuer's Metric Value and the Controlled Peer Group Average Controlled Peer Group Average.

- The Controlled Peer Group Average represents a Peer Group average that is adjusted for each Issuer's unique distribution of loans across the buckets.

- The Controlled Metric Value is the ratio of the Issuer's actual % of Loans in Foreclosure Ratio to its Controlled Peer Group Average of % of Loans in Foreclosure ([C]/[D]).

Issuer Name	Loans	Number of Buckets	Issuer's % of Loans in Foreclosure [C]	Peer Group Average % of Loans in Foreclosure	Controlled Peer Group Average % of Loans in Foreclosure [D]	Controlled Metric Value [C] /[D]	Issuer's Loans included in Calculation	Issuer's Buckets included in Calculation
IssuerX	341,782	1,018	4.13%	1.78%	1.69%	244.38%	100%	100%
IssuerA	179,134	1,036	1.05%	1.78%	1.86%	56.45%	100%	100%
IssuerB	237,109	1,063	2.14%	1.78%	1.77%	120.90%	100%	100%

Note: all values in this example are hypothetical

RANK THE CONTROLLED METRIC VALUES

Tier calculation for default metrics utilizes the Controlled Metric Value.

- First, sort the issuers from worst Controlled Metric Value to best Controlled Metric Value and divide into four quartiles.

- Finally, if any Issuer has the same Controlled Metric Value as an Issuer in a higher tier, then that issuer is moved to the higher tier. This does not apply in this example.

Issuer Number	Issuer Name	% of Loans in Foreclosure Metric Value	Controlled Peer Group Average	Controlled Metric Value	Tier	IOPP Displayed Tier
5555	Issuer E	4.18%	1.52%	275.96%	4	4
1234	Issuer X	4.13%	1.69%	244.86%	4	4
6666	Issuer F	3.26%	1.59%	204.80%	4	4
7777	Issuer G	3.23%	1.72%	187.76%	3	3
2222	Issuer B	2.14%	1.77%	121.06%	3	3
4444	Issuer D	1.77%	1.78%	99.03%	3	3
1212	Issuer K	1.55%	1.80%	86.09%	2	2
8888	Issuer H	1.16%	1.94%	60.08%	2	2
1111	Issuer A	1.05%	1.86%	56.60%	2	2
1010	Issuer J	0.60%	1.93%	31.15%	1	1
9999	Issuer I	0.32%	1.89%	17.87%	1	1
3333	Issuer C	0.35%	1.94%	17.07%	1	1

Note: all values in this example are hypothetical

Absolute Tier Methodology

ABSOLUTE TIER CALCULATIONS

Metric absolute tiers are assigned by predetermined metric value thresholds.

- Absolute tiers are determined entirely from metric values and regardless of Issuer peer group.

Metric	Formula	Applicable Programs	Tier 1/2 Cutoff	Tier 2/3 Cutoff	Tier 3/4 Cutoff
Number of DK's	Number of DKs in Past 12 Months / Number of Pools Issued in Past 12 Months	SF, MF, HMBS	0.0225	0.04515	0.0903

Issuer Number	Issuer Name	Number of DK's	Absolute Tier
5555	IssuerE	0.0346	2
1234	IssuerX	0.0198	1
6666	IssuerF	0.0000	1
7777	IssuerG	0.1584	4
2222	IssuerB	0.0789	3
4444	IssuerD	0.0988	4

Note: all values in this example are hypothetical

ABSOLUTE TIER THRESHOLDS

Metric	Tier 1-2 Cutoff	Tier 2-3 Cutoff	Tier 3-4 Cutoff
Failure to Report	Binary: If > 0 observations in 6 months, Tier 4, else Tier1		
RPB Corrections	Binary: If > 0 observation in 3 months, Tier 4, else Tier1		
RFS Exceptions	0.0133	0.0302	0.0782
HRA Exceptions	0.180004696	0.190002348	0.2
% of Pools not Certified	1.00%	7.50%	15.00%
Disclosure Edits	1	2	3
New Pool Errors	1	2	3
Compliance Review Metric	2	3	4
Insurance Matching	99.85%	99.50%	99.00%
Failure to Purchase Participations when Mandatory Event Occurs	Binary: If > 0 observation in 12 months, Tier 4, else Tier1		

Note: all values in this example are hypothetical

ABSOLUTE TIER THRESHOLDS

Metric	Tier 1-2 Cutoff	Tier 2-3 Cutoff	Tier 3-4 Cutoff
Commitment Authority Shortage/Surplus	Binary: If < 20% of 4 month commitment authority usage remaining, Tier 4, else Tier 1		
Number of DKs	0.0225	0.04515	0.0903
Insufficient Commitment Authority	1	2	3
Early Pool Terminations	0.02005	0.0251	0.0868
Manual Deletions	Binary: If > 0 observation in 3 months, Tier 4, else Tier 1		
Single Family Prepayment Rate	IOPP currently does not have absolute tier cutoffs for Single Family Prepayment Rate		
Early Buyouts	IOPP currently does not have absolute tier cutoffs for Early Buyouts		
New Issuance Data Quality	IOPP currently does not have absolute tier cutoffs for New Issuance Data Quality		

Note: all values in this example are hypothetical

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