



THE WORLD BANK

IBRD • IDA | WORLD BANK GROUP

DISCLAIMER

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The methodologies set out in this model reflect the World Bank's views on methods for the valuation of sovereign debt instruments that benefit from a partial guarantee issued by a multilateral development bank. The World Bank does not endorse or recommend any particular valuation method, nor does the World Bank represent that these are the only methods that may be used for valuing this type of instrument.

On October 7, 2015, after a hiatus of almost 15 years, the World Bank reentered the debt capital markets with a guarantee instrument that supported the issuance of a US\$1 billion bond by the Republic of Ghana. Pricing a partially guaranteed bond proved to be challenging for investors due to limited familiarity with the instrument. To help future investors familiarize with World Bank guarantees, the World Bank has prepared a research paper which presents four ways to assess the value of bonds benefiting from such guarantees. This model was developed in this context and should be used only after reading the paper "Pricing partially guaranteed bonds". The research paper is available on the World Bank Guarantees website (www.worldbank.org/guarantees).

Legend

Input	Cells that contain the inputs of the model
100	Hard coded numbers
100	Formulas

Macros should be enabled

1. Start by populating the Assumptions tab, make sure the yield curves are populated up to the maximum maturity you wish to simulate (*only modify cells with a yellow background color*).
2. To simulate a particular methodology, go to each of the 3 tabs (Weighted average, DCF and Recovery analysis), enter the required inputs and click on the buttons to generate the results:
 - Weighted average: solve the yield of the two methodologies by clicking on the "Solve yield" buttons.
 - DCF: Select 1 of the 4 proposed scenarios (you can select where the guaranteed cash flows are located) and click on "Solve yield", to run all 4 scenarios at once, click on the "Solve yield for all scenarios" button.
 - Recovery analysis: after entering the inputs in the required cells, click on the "Extract implied probability of default" button first, then click on the "Solve yield" scenario. To run a sensitivity on the implied liquidity premium, click on the "Run sensitivity to liquidity premium" button.

To make sure a methodology has been properly applied, you should see **Coupon ok**

3. To generate the results for all 4 methodologies, go to the Summary tab and click on the button

For any question related to this model, please contact Vincent Launay, vlaunay@worldbank.org

Assumptions

Assumptions		
Country	Emergistan	
Currency of issuance	USD	
Risk free country in USD	US	
Bond amount (in USD million)	1,000	<i>Bond face value</i>
Maturity	15 years	
Number of years of drawdowns	1	<i>Leave at 1 for bond modeling</i>
Start of principal repayment	Year 1	<i>Leave at 1 for bond modeling</i>
Repayment profile	Bullet	
Bullet only - number of repayments	3	<i>Number of annual amortization instal</i>
Loans only - Balloon (% of total principal)	0%	<i>Leave at 0 for bond modeling</i>
<i>In value</i>	0	
Guarantee amount (in USD million)	400	
Yield	4.55%	

Yield will be solved by macros for each of the methodologies

Current bond pricing methodology

None

Yield Curves

Maturity	US	IBRD		Emergistan Yield curve in USD
	US Yield curve in USD	IBRD Yield curve in USD	Spread vs US	
1 year	0.20%	0.50%	30 bps	7.20%
2 years	0.60%	0.85%	25 bps	7.51%
3 years	1.00%	1.20%	20 bps	7.82%
4 years	1.14%	1.34%	20 bps	8.13%
5 years	1.29%	1.49%	20 bps	8.44%
6 years	1.43%	1.63%	20 bps	8.76%
7 years	1.57%	1.77%	20 bps	9.07%
8 years	1.71%	1.91%	20 bps	9.38%
9 years	1.86%	2.06%	20 bps	9.69%
10 years	2.00%	2.20%	20 bps	10.00%
11 years	2.10%	2.30%	20 bps	10.20%
12 years	2.20%	2.40%	20 bps	10.40%
13 years	2.30%	2.50%	20 bps	10.60%
14 years	2.40%	2.60%	20 bps	10.80%
15 years	2.50%	2.70%	20 bps	11.00%
16 years	2.56%	2.76%	20 bps	11.13%
17 years	2.62%	2.82%	20 bps	11.26%
18 years	2.68%	2.88%	20 bps	11.39%

19 years	2.74%	2.94%
20 years	2.80%	3.00%
21 years	2.82%	3.02%
22 years	2.84%	3.04%
23 years	2.86%	3.06%
24 years	2.88%	3.08%
25 years	2.90%	3.10%
26 years	2.92%	3.12%
27 years	2.94%	3.14%
28 years	2.96%	3.16%
29 years	2.98%	3.18%
30 years	3.00%	3.20%

20 bps	11.52%
20 bps	11.65%
20 bps	11.78%
20 bps	11.91%
20 bps	12.05%
20 bps	12.18%
20 bps	12.32%
20 bps	12.45%
20 bps	12.59%
20 bps	12.73%
20 bps	12.86%
20 bps	13.00%

lments

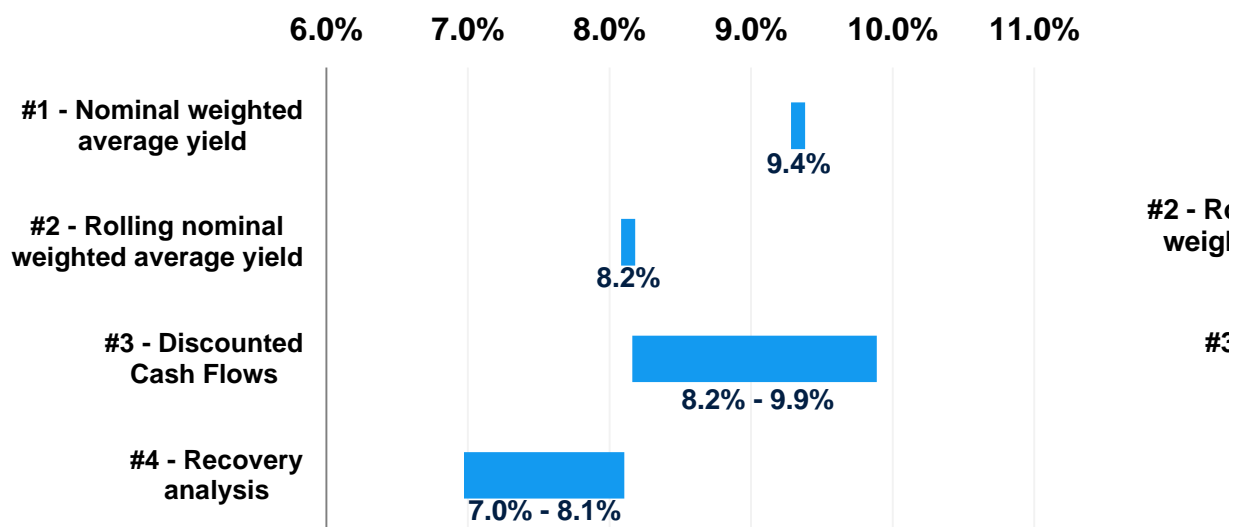
Emergistan	
Spread vs US	Spread vs IBRD
700 bps	670 bps
691 bps	666 bps
682 bps	662 bps
699 bps	679 bps
716 bps	696 bps
733 bps	713 bps
750 bps	730 bps
766 bps	746 bps
783 bps	763 bps
800 bps	780 bps
810 bps	790 bps
820 bps	800 bps
830 bps	810 bps
840 bps	820 bps
850 bps	830 bps
857 bps	837 bps
864 bps	844 bps
871 bps	851 bps

878 bps	858 bps
885 bps	865 bps
896 bps	876 bps
907 bps	887 bps
919 bps	899 bps
930 bps	910 bps
942 bps	922 bps
953 bps	933 bps
965 bps	945 bps
977 bps	957 bps
988 bps	968 bps
1,000 bps	980 bps

Summary

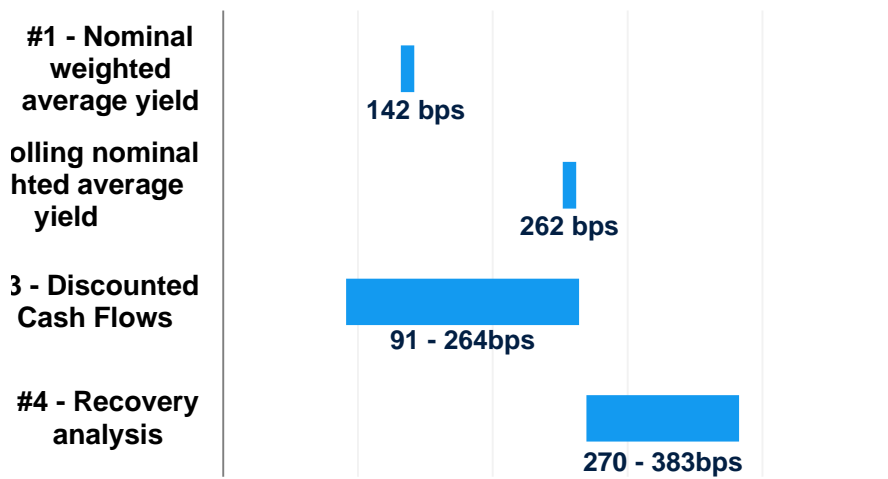
Results	Yield	Implied guarantee value
Uncovered yield	10.80%	-
Nominal weighted average yield	9.4%	142 bps
Rolling nominal weighted average yield	8.2%	262 bps
Discounted Cash Flow method	8.2% - 9.9%	91 - 264bps
Recovery analysis	7.0% - 8.1%	270 - 383bps

Summary of valuation methodologies



Implied World Bank guarantee value

0 bps 100 bps 200 bps 300 bps 400 bps 500 bps



Nominal weighted average yield

Blended yield

Total debt service (USD million)	1,636	
Guaranteed debt service	400	24.4%
Non-guaranteed debt service	1,236	75.6%
World Bank 14-year yield		2.60%
Emergistan 14-year yield		10.80%
Weighted average yield		8.80%
<i>Implied value of guarantee</i>		<i>200 bps</i>

Run Macro

Rolling nominal weighted average yield

Bond

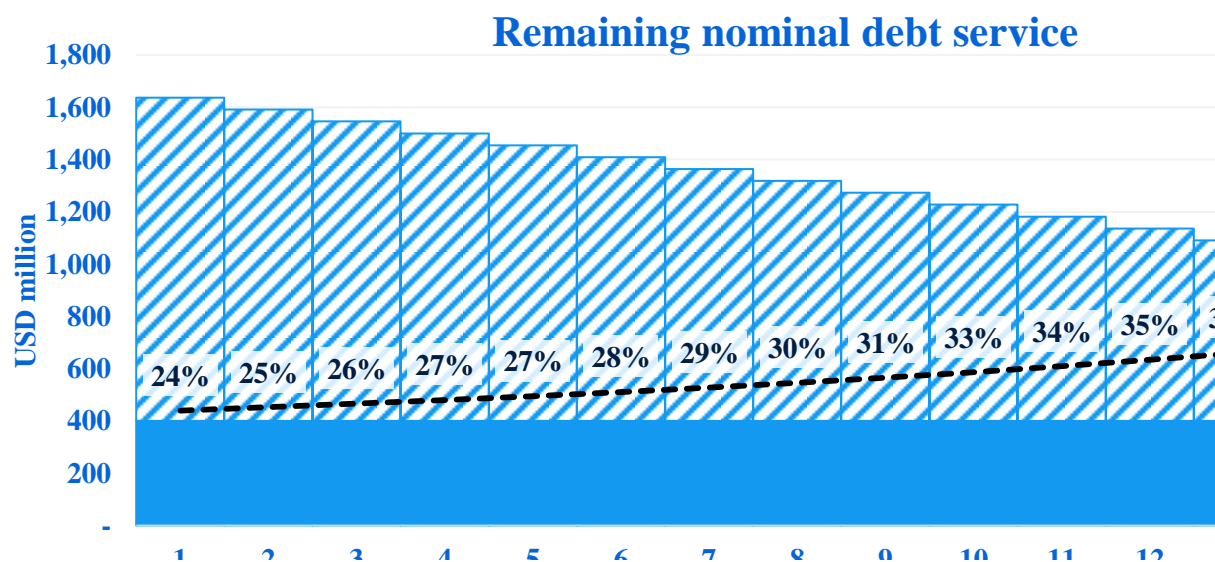
Average

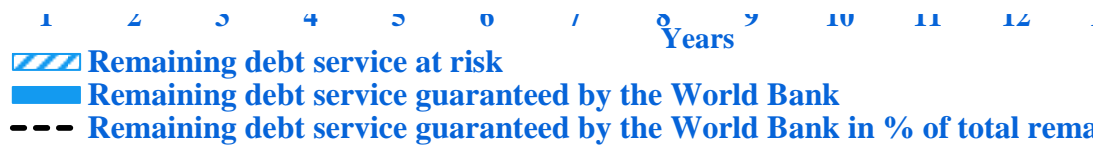
Remaining debt service - Beginning of period	
Remaining guaranteed debt service	
Remaining uncovered debt service	
Percentage of remaining guaranteed debt service	36.2%
Percentage of remaining uncovered debt service	63.8%
Blended yield	7.83%
<i>Average</i>	

Average blended yield 7.83%

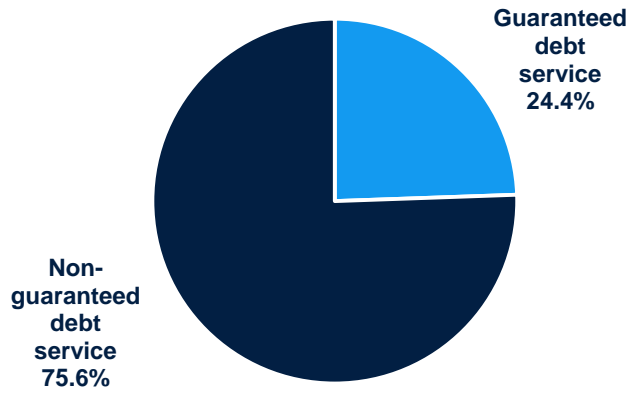
Implied value of guarantee 297 bps

Run Macro

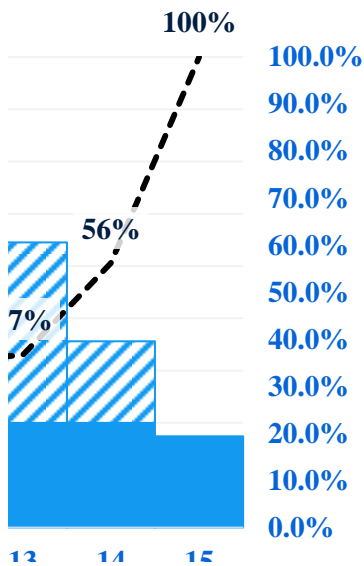




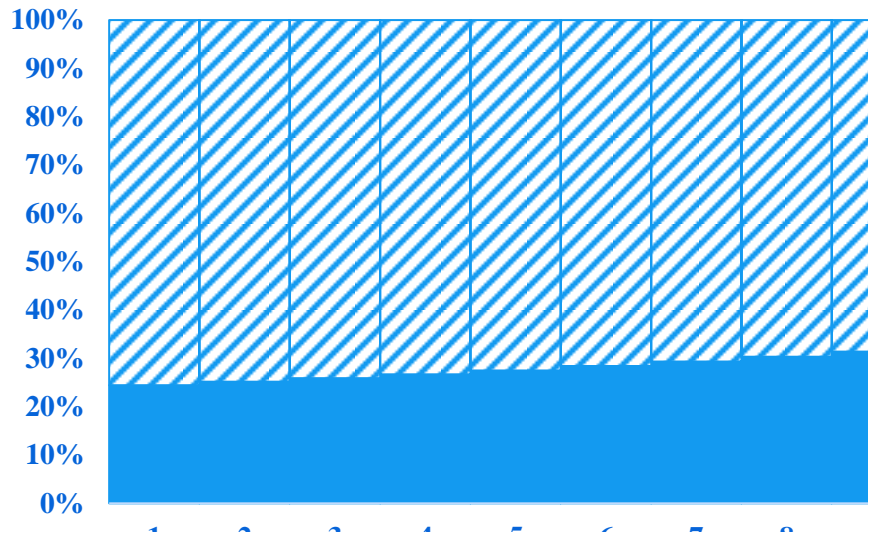
Nominal debt service



	1	2	3	4	5	6	7	8
	1,636	1,591	1,546	1,500	1,455	1,409	1,364	1,318
	400	400	400	400	400	400	400	400
	1,236	1,191	1,146	1,100	1,055	1,009	964	918
	24.4%	25.1%	25.9%	26.7%	27.5%	28.4%	29.3%	30.3%
	75.6%	74.9%	74.1%	73.3%	72.5%	71.6%	70.7%	69.7%
	8.8%	8.7%	8.7%	8.6%	8.5%	8.5%	8.4%	8.3%
	36.2%	36.2%	36.2%	36.2%	36.2%	36.2%	36.2%	36.2%



Breakdown of remaining nomi



13 14 15

1 2 3 4 5 6 7 8
Years

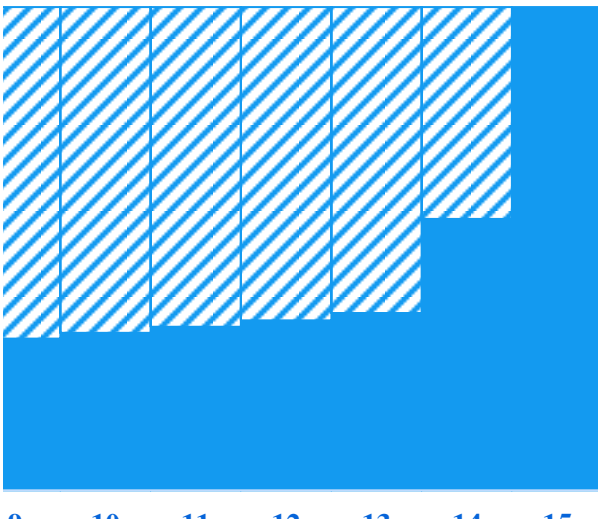
aining debt service

▣ Remaining debt service at risk in %

■ Remaining debt service guaranteed by the World Bank i

9	10	11	12	13	14	15	16	17
1,273	1,227	1,182	1,136	1,091	712	348	-	-
400	400	400	400	400	400	348	-	-
873	827	782	736	691	312	-	-	-
31.4%	32.6%	33.8%	35.2%	36.7%	56.2%	100.0%	0.0%	0.0%
68.6%	67.4%	66.2%	64.8%	63.3%	43.8%	0.0%	0.0%	0.0%
8.2%	8.1%	8.0%	7.9%	7.8%	6.2%	2.6%	0.0%	0.0%
36.2%	36.2%	36.2%	36.2%	36.2%	36.2%	36.2%	36.2%	36.2%

nal debt service



9 10 11 12 13 14 15

n % of total remaining debt service

27	28	29	30
-	-	-	-
-	-	-	-
-	-	-	-
0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%
36.2%	36.2%	36.2%	36.2%

Discounted Cash Flows

Yield	4.55%
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Scenario number	1
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Run Macro

Guarantee		Scenario 1	Scenario 2
Type	First loss/No default	First loss/No default	First loss debt service
Expected EoD/Guarantee demand notice (for first loss guarantee only)	Year 0	Year 0	Year 3

Key assumptions	
Financing amount	1,000
Guarantee amount	400
Repayment profile	Bullet
Total debt service	1,636
Percentage of total debt service guaranteed	24.4%

Scenario descriptions	
Scenario 1	Guarantee rolls
Scenario 2	Guarantee calle
Scenario 3	Guarantee calle
Scenario 4	Guarantee calle

Bond NPV		
PV of guaranteed debt service (at WB discount rate)	273	27%
PV of Uncovered debt service (at Emergistan discount rate)	472	47%
Total	745	75%

		Range	Scenario 1	Scenario 2
Yield	4.5%	8.2% - 9.9%	8.2%	8.5%
Implied value of guarantee	625 bps	91 - 264bps	264 bps	233 bps

Bond

<i>USD million</i>	Sum
Opening balance	
Additions	
Repayment	(1,000)
Closing balance	
<i>Interests/Coupons</i>	

Debt service

Remaining debt service - Beginning of period

Average life 14.0 years

Debt Cash Flows

YTM 4.55%

Guarantees

Selected guarantee: First loss/No default

Amount available at beginning of period

Guarantee used

Amount available at end of period

Debt service guaranteed

Debt service at risk

<i>Guaranteed Coupon</i>	15
<i>Guaranteed Principal</i>	385
<i>Coupon</i>	621
<i>Principal</i>	615

Discount rates

Yields

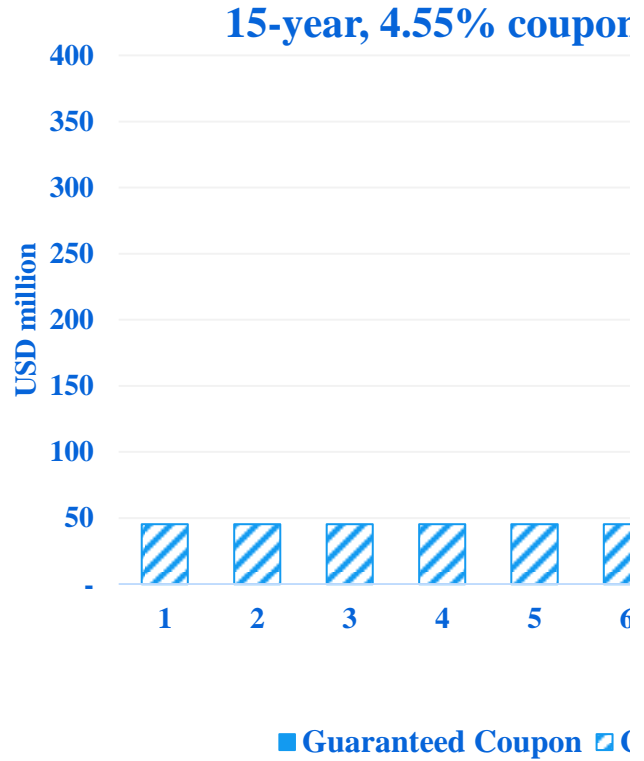
14-year World Bank yield	2.60%
14-year Emergistan yield	10.80%

Discount factors

World Bank
Emergistan

Scenario 3	Scenario 4
First loss debt service	First loss debt service
Year 5	Year 0

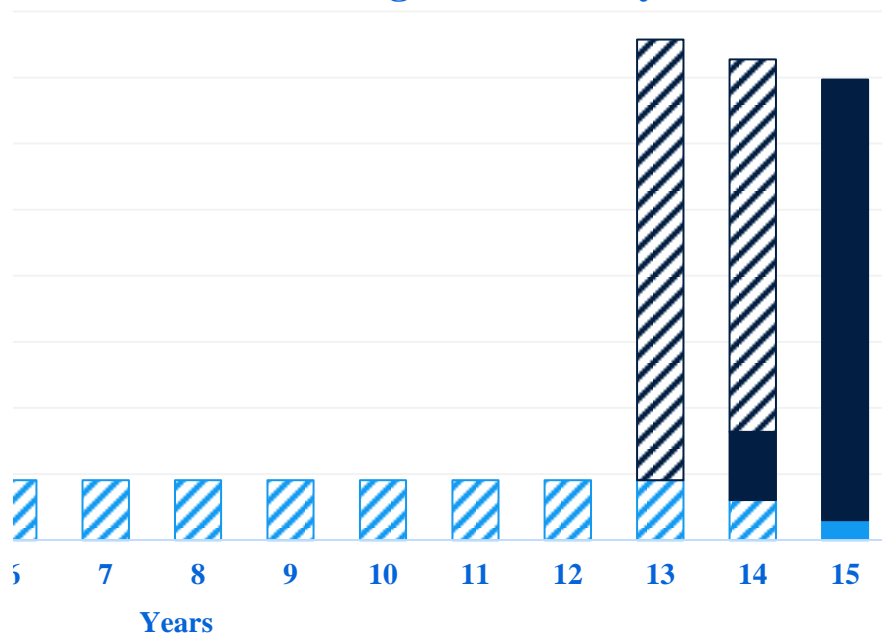
over until end of the bond's life
ed in Year 3
ed in Year 5
ed at first coupon payment



Scenario 3	Scenario 4
8.9%	9.9%
191 bps	91 bps

0	1	2	3	4	5	6
-	1,000	1,000	1,000	1,000	1,000	1,000
1,000	-	-	-	-	-	-
-	-	-	-	-	-	-
1,000	1,000	1,000	1,000	1,000	1,000	1,000
-	45	45	45	45	45	45

1 bond with an average life of 14.0 years



Coupon ■ Guaranteed Principal ▨ Principal

7	8	9	10	11	12	13
1,000	1,000	1,000	1,000	1,000	1,000	1,000
-	-	-	-	-	-	-
-	-	-	-	-	-	(333)
1,000	1,000	1,000	1,000	1,000	1,000	667
45	45	45	45	45	45	45

45	45	45	45	45	45	379
1,364	1,318	1,273	1,227	1,182	1,136	1,091

45	45	45	45	45	45	379
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7	8	9	10	11	12	13
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
45	45	45	45	45	45	379
-	-	-	-	-	-	-
-	-	-	-	-	-	-
45	45	45	45	45	45	45
-	-	-	-	-	-	333

7	8	9	10	11	12	13
2.60%	2.60%	2.60%	2.60%	2.60%	2.60%	2.60%
10.80%	10.80%	10.80%	10.80%	10.80%	10.80%	10.80%
0.84	0.81	0.79	0.77	0.75	0.73	0.72
0.49	0.44	0.40	0.36	0.32	0.29	0.26

14	15	16	17	18	19	20
667	333	-	-	-	-	-
-	-	-	-	-	-	-
(333)	(333)	-	-	-	-	-
333	-	-	-	-	-	-
30	15	-	-	-	-	-

364	348	-	-	-	-	-
712	348	-	-	-	-	-

364	348	-	-	-	-	-
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14	15	16	17	18	19	20
52	400	-	-	-	-	-
(52)	(348)	-	-	-	-	-
-	52	-	-	-	-	-
52	348	-	-	-	-	-
312	-	-	-	-	-	-
-	15	-	-	-	-	-
52	333	-	-	-	-	-
30	-	-	-	-	-	-
282	-	-	-	-	-	-

14	15	16	17	18	19	20
2.60%	2.60%	2.60%	2.60%	2.60%	2.60%	2.60%
10.80%	10.80%	10.80%	10.80%	10.80%	10.80%	10.80%
0.70	0.68	0.66	0.65	0.63	0.61	0.60
0.24	0.21	0.19	0.17	0.16	0.14	0.13

21	22	23	24	25	26	27
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

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21	22	23	24	25	26	27
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21	22	23	24	25	26	27
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2.60%	2.60%	2.60%	2.60%	2.60%	2.60%	2.60%
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10.80%	10.80%	10.80%	10.80%	10.80%	10.80%	10.80%
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0.58	0.57	0.55	0.54	0.53	0.51	0.50
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0.12	0.10	0.09	0.09	0.08	0.07	0.06
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28	29	30
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

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-	-	-

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28	29	30
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-	-	-
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28	29	30
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2.60%	2.60%	2.60%
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10.80%	10.80%	10.80%
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0.49	0.48	0.46
------	------	------

0.06	0.05	0.05
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Recovery analysis

Assumptions	
Issue size	1,000
Maturity	15 years
Average life	14 years
Recovery rate (non-guaranteed bonds)	25%
Recovery rate (guaranteed bonds)	25%
Years to get proceeds from recovery	0
Guarantee size	400
Emergistan yield	10.80%
Implied liquidity premium in current yield	100bps
UST yield	2.40%

Outputs
Partially guaranteed bond
Yield reduction vs naked

Sensitivity to implied li
Liquidity premium
Partially guaranteed bond
Yield reduction vs naked

Emergistan sovereign bond

Probability of default ok

Annual implied probability of default **8.6%**

Uncovered Emergistan bond cash flows for a 14-year bond

Scenario probability	Cumulative probability	Default year	1	2	3	4	Year 5
8.6%	8.6%	1	250.0	-	-	-	-
7.9%	16.5%	2	108.0	250.0	-	-	-
7.2%	23.7%	3	108.0	108.0	250.0	-	-
6.6%	30.3%	4	108.0	108.0	108.0	250.0	-
6.0%	36.3%	5	108.0	108.0	108.0	108.0	250.0
5.5%	41.8%	6	108.0	108.0	108.0	108.0	108.0
5.0%	46.8%	7	108.0	108.0	108.0	108.0	108.0
4.6%	51.4%	8	108.0	108.0	108.0	108.0	108.0
4.2%	55.6%	9	108.0	108.0	108.0	108.0	108.0
3.8%	59.4%	10	108.0	108.0	108.0	108.0	108.0
3.5%	62.9%	11	108.0	108.0	108.0	108.0	108.0
3.2%	66.1%	12	108.0	108.0	108.0	108.0	108.0
2.9%	69.0%	13	108.0	108.0	108.0	108.0	108.0
2.7%	71.7%	14	108.0	108.0	108.0	108.0	108.0
-	71.7%	15	-	-	-	-	-
28.3%	100.0%	No default	108.0	108.0	108.0	108.0	108.0

Probability weighted sc. 120.2 109.9 100.4 91.7 83.8

Probability weighted YTM 3.4%
Difference with UST + Liquidity premium 0 bps

Partially guaranteed bond

Bond Cash Flows Without Guarantee & Recovery

Scenario probability	Cumulative probability	Default year	1	2	3	4	Year 5
8.6%	8.6%	1	-	-	-	-	-
7.9%	16.5%	2	45.5	-	-	-	-
7.2%	23.7%	3	45.5	45.5	-	-	-
6.6%	30.3%	4	45.5	45.5	45.5	-	-
6.0%	36.3%	5	45.5	45.5	45.5	45.5	-
5.5%	41.8%	6	45.5	45.5	45.5	45.5	45.5
5.0%	46.8%	7	45.5	45.5	45.5	45.5	45.5
4.6%	51.4%	8	45.5	45.5	45.5	45.5	45.5
4.2%	55.6%	9	45.5	45.5	45.5	45.5	45.5
3.8%	59.4%	10	45.5	45.5	45.5	45.5	45.5
3.5%	62.9%	11	45.5	45.5	45.5	45.5	45.5
3.2%	66.1%	12	45.5	45.5	45.5	45.5	45.5
2.9%	69.0%	13	45.5	45.5	45.5	45.5	45.5
2.7%	71.7%	14	45.5	45.5	45.5	45.5	45.5
2.4%	74.2%	15	45.5	45.5	45.5	45.5	45.5
25.8%	100.0%	No default	45.5	45.5	45.5	45.5	45.5

Outstanding principal - beginning of period	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
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Guarantee Payout

Scenario probability	Cumulative probability	Default year	1	2	3	4	Year 5
8.6%	8.6%	1	45.5	45.5	45.5	45.5	45.5
7.9%	16.5%	2	-	45.5	45.5	45.5	45.5
7.2%	23.7%	3	-	-	45.5	45.5	45.5
6.6%	30.3%	4	-	-	-	45.5	45.5
6.0%	36.3%	5	-	-	-	-	45.5
5.5%	41.8%	6	-	-	-	-	-
5.0%	46.8%	7	-	-	-	-	-
4.6%	51.4%	8	-	-	-	-	-
4.2%	55.6%	9	-	-	-	-	-
3.8%	59.4%	10	-	-	-	-	-
3.5%	62.9%	11	-	-	-	-	-
3.2%	66.1%	12	-	-	-	-	-
2.9%	69.0%	13	-	-	-	-	-
2.7%	71.7%	14	-	-	-	-	-
2.4%	74.2%	15	-	-	-	-	-
25.8%	100.0%	No default	-	-	-	-	-

Cash Flows including guarantee proceeds

Scenario probability	Cumulative probability	Default year	1	2	3	4	Year 5
8.6%	8.6%	1	45.5	45.5	45.5	45.5	45.5
7.9%	16.5%	2	45.5	45.5	45.5	45.5	45.5
7.2%	23.7%	3	45.5	45.5	45.5	45.5	45.5
6.6%	30.3%	4	45.5	45.5	45.5	45.5	45.5
6.0%	36.3%	5	45.5	45.5	45.5	45.5	45.5
5.5%	41.8%	6	45.5	45.5	45.5	45.5	45.5
5.0%	46.8%	7	45.5	45.5	45.5	45.5	45.5
4.6%	51.4%	8	45.5	45.5	45.5	45.5	45.5
4.2%	55.6%	9	45.5	45.5	45.5	45.5	45.5
3.8%	59.4%	10	45.5	45.5	45.5	45.5	45.5
3.5%	62.9%	11	45.5	45.5	45.5	45.5	45.5
3.2%	66.1%	12	45.5	45.5	45.5	45.5	45.5
2.9%	69.0%	13	45.5	45.5	45.5	45.5	45.5
2.7%	71.7%	14	45.5	45.5	45.5	45.5	45.5
2.4%	74.2%	15	45.5	45.5	45.5	45.5	45.5
25.8%	100.0%	No default	45.5	45.5	45.5	45.5	45.5

Recovery amounts

Scenario probability	Cumulative probability	Default year	1	2	3	4	Year 5
8.6%	8.6%	1	-	-	-	-	-
7.9%	16.5%	2	-	-	-	-	-
7.2%	23.7%	3	-	-	-	-	-
6.6%	30.3%	4	-	-	-	-	-
6.0%	36.3%	5	-	-	-	-	-
5.5%	41.8%	6	-	-	-	-	-
5.0%	46.8%	7	-	-	-	-	-
4.6%	51.4%	8	-	-	-	-	-
4.2%	55.6%	9	-	-	-	-	-
3.8%	59.4%	10	-	-	-	-	-
3.5%	62.9%	11	-	-	-	-	-
3.2%	66.1%	12	-	-	-	-	-
2.9%	69.0%	13	-	-	-	-	-
2.7%	71.7%	14	-	-	-	-	-
2.4%	74.2%	15	-	-	-	-	-
25.8%	100.0%	No default	-	-	-	-	-

Cash Flows including guarantee & recovery proceeds

Scenario probability	Cumulative probability	Default year	1	2	3	4	Year 5
8.6%	8.6%	1	45.5	45.5	45.5	45.5	45.5
7.9%	16.5%	2	45.5	45.5	45.5	45.5	45.5
7.2%	23.7%	3	45.5	45.5	45.5	45.5	45.5

6.6%	30.3%	4	45.5	45.5	45.5	45.5	45.5
6.0%	36.3%	5	45.5	45.5	45.5	45.5	45.5
5.5%	41.8%	6	45.5	45.5	45.5	45.5	45.5
5.0%	46.8%	7	45.5	45.5	45.5	45.5	45.5
4.6%	51.4%	8	45.5	45.5	45.5	45.5	45.5
4.2%	55.6%	9	45.5	45.5	45.5	45.5	45.5
3.8%	59.4%	10	45.5	45.5	45.5	45.5	45.5
3.5%	62.9%	11	45.5	45.5	45.5	45.5	45.5
3.2%	66.1%	12	45.5	45.5	45.5	45.5	45.5
2.9%	69.0%	13	45.5	45.5	45.5	45.5	45.5
2.7%	71.7%	14	45.5	45.5	45.5	45.5	45.5
2.4%	74.2%	15	45.5	45.5	45.5	45.5	45.5
25.8%	100.0%	No default	45.5	45.5	45.5	45.5	45.5
Probability weighted cash flow			45.5	45.5	45.5	45.5	45.5

Probability weighted YTM	0.8%
<i>Difference with UST + Liquidity premium</i>	<i>-257 bps</i>

Guaranteed bond coupon	4.55%
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1 year yield	4.55%
10 year bond	-625 bps

Run Macro

Liquidity premium			
	0bps	100bps	200bps
1 year yield	6.97%	7.59%	8.10%
10 year bond	383bps	321bps	270bps

Yield range
Guarantee range

Years	6	7	8	9	10	11	12	13	14
	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-
	250.0	-	-	-	-	-	-	-	-
	108.0	250.0	-	-	-	-	-	-	-
	108.0	108.0	250.0	-	-	-	-	-	-
	108.0	108.0	108.0	250.0	-	-	-	-	-
	108.0	108.0	108.0	108.0	250.0	-	-	-	-
	108.0	108.0	108.0	108.0	108.0	250.0	-	-	-
	108.0	108.0	108.0	108.0	108.0	108.0	250.0	-	-
	108.0	108.0	108.0	108.0	108.0	108.0	108.0	250.0	-
	108.0	108.0	108.0	108.0	108.0	108.0	108.0	108.0	250.0
	-	-	-	-	-	-	-	-	-
	108.0	108.0	108.0	108.0	108.0	108.0	108.0	108.0	1,108.0
	76.6	70.0	64.0	58.4	53.4	48.8	44.6	40.7	320.1

ars

6	7	8	9	10	11	12	13	14
45.5	45.5	45.5	36.3	-	-	-	-	-
45.5	45.5	45.5	45.5	36.3	-	-	-	-
45.5	45.5	45.5	45.5	45.5	36.3	-	-	-
45.5	45.5	45.5	45.5	45.5	45.5	36.3	-	-
45.5	45.5	45.5	45.5	45.5	45.5	45.5	36.3	-
45.5	45.5	45.5	45.5	45.5	45.5	45.5	81.8	-
45.5	45.5	45.5	45.5	45.5	45.5	45.5	127.2	-
45.5	45.5	45.5	45.5	45.5	45.5	45.5	172.7	-
45.5	45.5	45.5	45.5	45.5	45.5	45.5	218.2	-
45.5	45.5	45.5	45.5	45.5	45.5	45.5	263.6	-
45.5	45.5	45.5	45.5	45.5	45.5	45.5	309.1	-
45.5	45.5	45.5	45.5	45.5	45.5	45.5	354.5	-
45.5	45.5	45.5	45.5	45.5	45.5	45.5	378.8	21.2
45.5	45.5	45.5	45.5	45.5	45.5	45.5	378.8	363.6
45.5	45.5	45.5	45.5	45.5	45.5	45.5	378.8	363.6
45.5	45.5	45.5	45.5	45.5	45.5	45.5	378.8	363.6

ars

6	7	8	9	10	11	12	13	14
-	-	-	250.0	-	-	-	-	-
-	-	-	-	250.0	-	-	-	-
-	-	-	-	-	250.0	-	-	-
-	-	-	-	-	-	250.0	-	-
-	-	-	-	-	-	-	250.0	-
-	-	-	-	-	-	-	240.9	-
-	-	-	-	-	-	-	229.6	-
-	-	-	-	-	-	-	218.2	-
-	-	-	-	-	-	-	206.8	-
-	-	-	-	-	-	-	195.5	-
-	-	-	-	-	-	-	184.1	-
-	-	-	-	-	-	-	172.7	-
-	-	-	-	-	-	-	-	166.7
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-

ars

6	7	8	9	10	11	12	13	14
45.5	45.5	45.5	286.3	-	-	-	-	-
45.5	45.5	45.5	45.5	286.3	-	-	-	-
45.5	45.5	45.5	45.5	45.5	286.3	-	-	-

45.5	45.5	45.5	45.5	45.5	45.5	286.3	-	-
45.5	45.5	45.5	45.5	45.5	45.5	45.5	286.3	-
45.5	45.5	45.5	45.5	45.5	45.5	45.5	322.7	-
45.5	45.5	45.5	45.5	45.5	45.5	45.5	356.8	-
45.5	45.5	45.5	45.5	45.5	45.5	45.5	390.9	-
45.5	45.5	45.5	45.5	45.5	45.5	45.5	425.0	-
45.5	45.5	45.5	45.5	45.5	45.5	45.5	459.1	-
45.5	45.5	45.5	45.5	45.5	45.5	45.5	493.2	-
45.5	45.5	45.5	45.5	45.5	45.5	45.5	527.3	-
45.5	45.5	45.5	45.5	45.5	45.5	45.5	378.8	187.9
45.5	45.5	45.5	45.5	45.5	45.5	45.5	378.8	363.6
45.5	45.5	45.5	45.5	45.5	45.5	45.5	378.8	363.6
45.5	45.5	45.5	45.5	45.5	45.5	45.5	378.8	363.6
45.5	45.5	45.5	66.2	60.5	55.3	50.5	268.6	118.1

-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
114.4	-	-	-	-	-	-	-	-	-
348.5	-	-	-	-	-	-	-	-	-
348.5	-	-	-	-	-	-	-	-	-
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101.6	-	-	-	-	-	-	-	-	-
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