

Credit Pricing in India and Opportunities for Credit Arbitrage

This paper by Scient Capital summarizes the observations regarding credit risk pricing in India and highlights a few credit price arbitrage possibilities. The Indian debt capital markets are highly skewed in terms of volume towards Government debt and AAA rated papers. The rest of the debt securities trade thinly on the exchange and are more commonly traded in an OTC market. This market is not entirely efficient at pricing the credit risk of securities with rating below AAA. This inefficient pricing creates several arbitrage opportunities.

The summary of cumulative default risk of various ratings

CRISIL, is a global analytical company providing ratings, research, and risk and policy advisory services (CRISIL's majority shareholder is Standard & Poor's.) It publishes a 'Default Report' every year. This report summarizes the defaults – both in the bank loans (which, since 2007, require a credit rating in India) and the debt securities – over last 15 years. The summary of the observations in the report is as follows.

One, Two & Three Year Cumulative Default Rates between 1988 & 2015				
Rating	Issuer - Months	One-Year	Two-Year	Three-Year
CRISIL AAA	16,565	0.00%	0.00%	0.00%
CRISIL AA	36,605	0.03%	0.27%	0.77%
CRISIL A	47,606	0.56%	2.31%	4.79%
CRISIL BBB	101,414	1.09%	2.98%	5.72%
CRISIL BB	149,114	4.17%	8.64%	13.07%
CRISIL B	131,122	7.95%	15.85%	21.82%
CRISIL C	7,034	20.06%	32.84%	40.42%
Total	489,460			

Source: CRISIL Ratings

Following observations stand out.

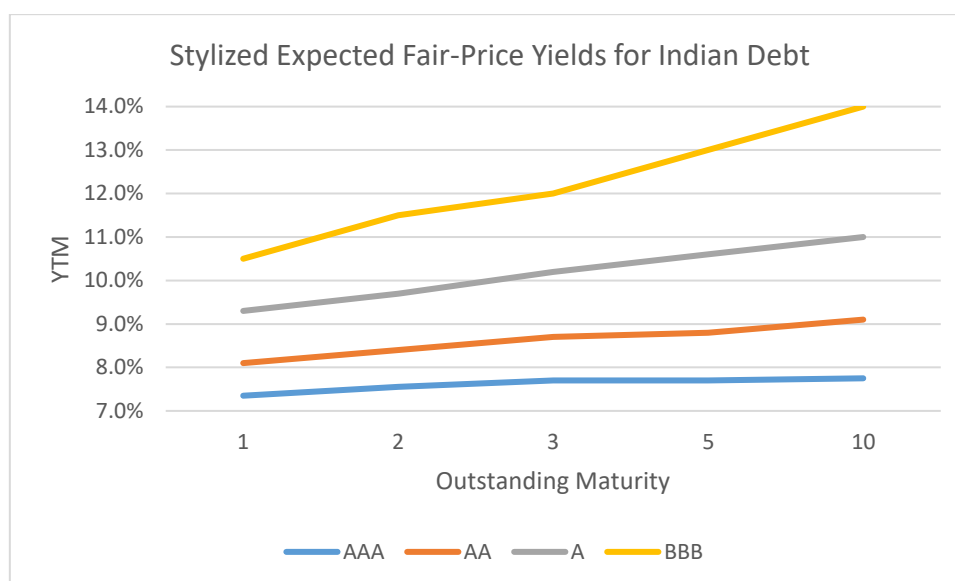
1. The default rate ramps up faster over time for lower rated papers than higher rated papers. In other words, for a AA rated papers, the default rate difference between three year and one year is 0.74% - which is much smaller than the difference between three year and one year rate for BB rated papers (9.1%)
2. The cross-sectional default rate indicates that for lower tenors, the increase in defaults with reduced credit rating is quite slow. In other words, for one year holding, the default rate goes up from 0.03% for AA rated papers to only ~8% for B rated papers, while the jump is much larger in three-year case for the same papers – from 0.77% to ~22%.

Combined, these observations imply the following.

The lower rated papers do not add considerable credit risk at lower tenors. It is only when the tenors go up that their risk goes up sharply.

Given this inference, fair pricing of credit risk would result in steep term structure for lower rated papers and relatively flatter term structures for higher rated papers. In other words, the yields on lower rated papers should differ quite sharply across tenors and should rise rapidly with time. The

following stylized graph suggests the fair-price shape of term structure for yields on papers of various ratings.



However, the actual yields in debt market in India do not follow the above trend. The observed pricing of debt securities in Indian markets is not as clearly dependent on balance maturity as one would expect from the above inference. To some extent, at the time of issuance, there is some dependence on overall tenor of the security (i.e. longer term securities have higher yields) but that is limited to the yield distinction between so-called short term (below 1 year) and the rest.

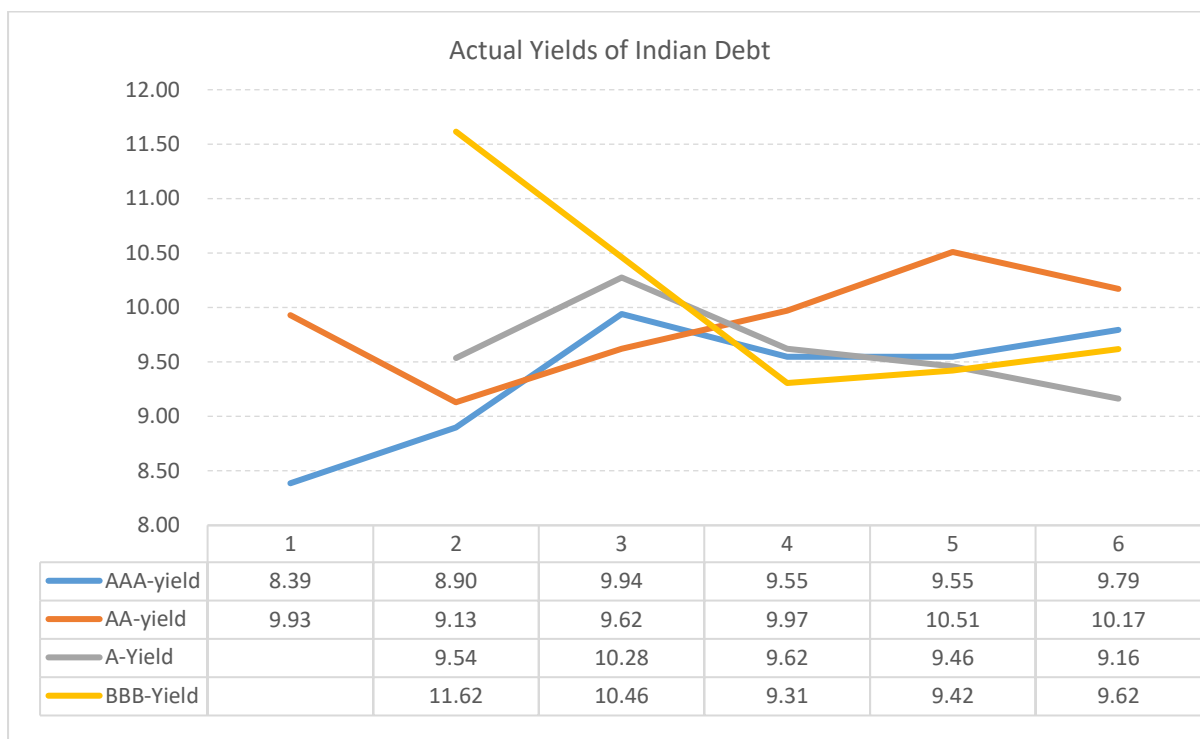
The behaviour of yields on non-AAA debt securities through the life of the security is highly puzzling. In general, each security should be priced with yields taken from term structure matching with the balance maturity of that security. In other words, in normal times, as the time to maturity reduces with time, the yield on debt securities should naturally tend to fall (assuming no default in the interim). Also, given the reduced default rates for shorter tenors, one would expect this fall to be substantial. However, the market price of these securities barely reflects such a change. There is very little, if any, reduction in yields as time passes.

There is variation in yield on account of changes in perception of credit risk, liquidity and also of the interest rate movements. However, these variations are orthogonal to those in general fall of default risk over time.

The above observations point to following mis-pricing in the Indian debt capital markets. These are open to being arbitrated away.

1. Primary issue or close to primary issue:
 - a. Short-tenor lower-rated credits are under-priced i.e. their yields are higher than those warranted by the credit risk.
 - b. Long-tenor lower-rated credits are over-priced i.e. their yields are lower than those warranted by the credit risk.
2. With passage of time i.e. much later after the primary issue: lower-rated credits continue to be under-priced i.e. their yields are too high.

Following graph shows the quoted rates for actual yields across multiple balance maturities:



Source: FIMMDA (AAA – LIC Housing Finance, AA – Srei Infrastructure Finance, A – West Bengal Infra Development, BBB – Meghalaya State Electricity)

Sector dependence of credit risk

The following table summarizes the defaults across sectors over a long period of time as per the default report.

Industry wise and chronological break-up of defaults on long term instruments over the past 28 years												
Industry	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Sum
Textiles- Approval and luxury goods				3	8	12	26	50	45	53	46	255
Metals and Mining					2	6	28	34	31	23	35	175
Distributors					1	3	6	31	35	45	54	175
Food products					3	6	7	23	30	44	43	163
Construction and engineering					3	4	4	16	21	28	20	98
Machinery					3	3	6	17	19	18	20	91
Real estate development					1	2	4	7	14	35	25	90
Diversified consumer services					1	1	8	10	22	11	16	69
Hotels, Restaurants and leisure					2	5	7	16	10	8	4	53
Pharmaceuticals					4	2	5	7	4	13	7	47
Construction materials					2	1	3	8	12	5	3	41
Containers and Packaging					1	3	1	13	10	6	12	49
Electrical equipment						2	7	6	11	9	7	44
Auto components					1	1	2	11	9	6	5	39
Specialty retail							2	8	11	13	13	47
Independent power products and energy traders				1	1	3	4	7	10	6	5	38
Paper and forest products				1	1	5	4	4	6	4	6	34
Chemicals						1	1	6	3	4	7	34
Household durables					3		1	5	2	4	5	26
Non-banking financial company							2					20
Electronic equipment's instruments and components					1		4	1	2	8	3	20
Road and rail							5	4	3	4	2	19
Beverages						1	4	5	3	3	2	18
Building and products				1			2	9	1	3	8	24
Commercial service and supplies					3		1	5	2	4	7	23
Transportation infrastructure					1	2		4	5	4	2	18
Healthcare providers and services						1	2	4	4	2	6	19
Media							1	5	2	4	4	17
Oil gas and consumable fuels						1		6	2			9
Others					1	3	14	19	17	11	28	107
Total Defaults	0	0	0	6	43	68	161	341	346	378	395	1862
Outstanding ratings at year ending Dec 31st	230	226	231	943	3002	5178	7525	10588	11699	12500	13695	
Overall annual default rate	0.0%	0.0%	0.0%	0.5%	3.2%	2.3%	3.5%	5.3%	4.4%	4.4%	4.1%	

This highlights a significant variation in default rates across sectors. There is time-dependence in the default rates too. One can infer from above that certain sectors are more prone to default than others. Clearly, this inference can be refined by using research in the influence of macro factors on default risk. Several studies suggest that economic growth strongly affects overall default rates. There are studies indicating varied influence of macro factors on default rates across industries. In summary, there should be variation in credit risk pricing across sector, which takes into account these variations.

The observed yields in the Indian context across sectors within a given rating level are summarized in the table below.

Company	Rating	Indicative Yield in Nov-16
Sector – Housing Finance		
LIC Housing Finance	AAA	7.82%
Indiabulls Housing Finance	AAA	8.96%
Dewan Housing Finance Corporation	AAA	9.33%
Repco Home Finance	AA	8.55%
Aspire Home Finance	AA-	10.25%
Edelweiss Housing Finance	A+	9.55%
LIC Housing Finance	AAA	7.82%
Sector – NBFC		
M&M Finance	AAA	8.54%
Bajaj Finance	AAA	7.86%
HDFC	AAA	7.59%
TATA Capital	AA+	8.79%
Aditya Birla Finance	AA+	8.20%
L&T Infrastructure Finance	AA+	8.10%
Cholamandalam Finance	AA	8.30%
Sector – Metals & Mining		
Hindalco	AA+	8.29%
Sterlite	AA+	8.18%
Sector – Power		
TATA Power	AA	7.89%
Nabha Power	AAA	7.70%
Reliance Utilities & Power	AAA	8.15%
Sector – Steel		
SAIL	AAA	7.95%
TATA Steel	AA+	8.20%

While there is variation across sectors within a rating level, it is far from fully reflective of the variation in default rates observed above.

The mis-pricing can be summarized as below.

Some sectors like NBFCs, healthcare, transportation infrastructure are under-priced in terms of credit risk while others like textiles, food processing, construction and metals & mining are over-priced in terms of credit risk.

These are open to being arbitrated away as follows.

1. In general, prefer sectors with lower historical default rate than those with higher default rate.
2. Track changes in overall defaults across sectors and switch away from increasing-defaults sectors and to decreasing-defaults sectors.

Asset Based Securities pricing

Asset backed securities are relatively uncommon in Indian debt markets. The cumulative default rates of these securities are summarized in the below table.

One, Two & Three Year CDRs between 1993 & 2015				
Rating	Issuer – Years	One-Year	Two-Year	Three-Year
CRISIL AAA (SO)	3250	0.03%	0.13%	0.20%
CRISIL AA (SO)	762	0.13%	0.34%	0.65%
CRISIL AA (SO)	769	1.04%	3.18%	5.90%
CRISIL BBB (SO)	413	0.24%	1.89%	2.78%
CRISIL BB (SO)	68	19.12%	25.34%	25.34%
Total	5262			

Source: CRISIL Ratings

More interesting is the rating variation over time in ABS. The following tables summarize rating variation in general and that in ABS.

Average One Year Transition Rates between 1993 & 2015									
Rating	Issue - Years	CRISIL AAA (SO)	CRISIL AA (SO)	CRISIL A (SO)	CRISIL BBB (SO)	CRISIL BB (SO)	CRISIL B (SO)	CRISIL C (SO)	CRISIL D (SO)
CRISIL AAA (SO)	3250	98.31%	1.48%	0.15%	0.00%	0.00%	0.00%	0.03%	0.03%
CRISIL AA (SO)	762	5.25%	91.08%	3.41%	0.13%	0.00%	0.00%	0.00%	0.13%
CRISIL AA (SO)	769	1.04%	4.55%	88.69%	1.69%	2.86%	0.13%	0.00%	1.04%
CRISIL BBB (SO)	413	2.91%	2.18%	11.86%	81.84%	0.48%	0.24%	0.24%	0.24%
CRISIL BB (SO)	57	3.51%	3.51%	7.02%	17.54%	52.63%	0.00%	0.00%	15.79%
CRISIL B (SO)	9	0.00%	0.00%	0.00%	0.00%	0.00%	77.78%	0.00%	22.22%
CRISIL C (SO)	2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%

Source: CRISIL Ratings

It can be noted that the upgrades are a common feature of ABS across ratings. However, for the overall market, upgrades are common only in lower rated papers and the higher rated papers in fact see a fairly large number of downgrades.

This points to a possibly conservative rating of ABS to start with. Also, given the relatively low default rates in comparison with overall market, fair pricing of ABS would indicate yield somewhat lower than corporate debt of similar rating and tenor. In reality, the ABS yields are significantly higher than those of corporate debt.

One can infer that ABS are generally under-priced, possibly owing to the lack of liquidity and the relatively novel features of the products.

This is open to being arbitrated away as follows: prefer ABS to corporate debt for a given rating and tenor.

Implications for investors

For investors entering at this point, the arbitrage available will result in an absolute capital gains opportunity, irrespective of macro trends, over a period. The excessive spread between AAA rated credits and lower rated credits is reflective of the 'perception' of credit quality (versus actual as reflected by default rates), and liquidity. Liquidity is set to substantially increase in these credits for the following reasons:

- Banks have been pushed by RBI to get out of loans, and more into securities over a period.
- There has been a tremendous increase in the volume, frequency, and transparency of credit data, prompting some institutional investor comfort to shift to lower credits.
- Tenor mispricing has been mainly due to the 'preferred habitat', and 'regulatory habitat' behaviour of investors (PF mandates et al). As regulations open further, more liquidity will flow to the mispriced parts of the yield curve.

In other words, for investors, there is a credit arbitrage spread of 3%-4% p.a. based on the mispricing in the credit markets in India.

Conclusions:

Market pricing of credit risk in India has significant inefficiencies. These allow considerable opportunities for credit arbitrage. The following inefficiencies stand out.

1. Shorter-tenor lower-rated credits are under-priced (i.e. offer too high a yield for their credit risk).
2. Higher-rated credits with long tenors at the time of issuance but short balance maturity now are under-priced (i.e. the yields do not fall sufficiently over time and remain high).
3. Sectors like NBFCs, healthcare, transportation infrastructure are under-priced in terms of credit risk (i.e. offer too high a yield) while others like textiles, food processing, construction and metals & mining are over-priced in terms of credit risk (i.e. offer too low a yield).
4. Asset backed securities are under-priced in terms of credit risk (i.e. offer too high a yield).