

# Z-Score Watch

December 2017

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# Executive Summary

- In FY17, we noted the following:
  - The average Z-Score for BSE-500 companies remained constant at 5.0
  - The % of Distressed companies decreased to 17.9%
  - Sector differentiation reduced – cyclicals saw increase in Z-Score and defensives decline
  - Telecom, Basic Materials and Real Estate saw the largest increase in average Z-Score
  - Tails of the Z-Score distribution remained stable in FY17. The % of companies with Z-Score<2 and Z-Scores > 20 was little changed.
- Credit quality of India Inc. had bottomed out in the second half of FY15 and has been improving since then. In March 15 end, the % of distressed companies was 22.4% which has now improved to 17.9% as of Mar-17. The debt held by distressed companies has fallen in line with the reduction in the % of distressed companies.
- Mirroring the improvements in Z-score, Crisil's ratings portfolio saw 1,335 upgrades and 1,092 downgrades. That is, the credit ratio has remained above one coming in at 1.22 in line with 1.29 observed in FY16. Given changes in Z-scores precede improvement in Credit ratios by around 2 quarters we expect the credit ratio to be stable at these levels.
- In FY17, the average Z-Score remained at 5.0 and there was no deterioration in the distribution. Tails of Z-Score distribution remained stable, though increase in companies with Z-Score >20 was more pronounced.
- Certain investment linked sectors such as iron and steel saw significant improvement as companies continued to move from the distress/ grey zone to the safe zone in FY17. For example the % of distressed companies in iron and steel decreased from 57% to 50% while the percentage of safe increased from 14% to 25% from Sept 16 to March 17.
- However banking sector exposure of Gross NPAs + Restructured coming in at 12% as of March 17 has not seen a similar improvement as the banking sector struggles reduce non-performing assets. We expect slowdown in fresh additions to NPAs, asset sales, increased equity fundraising, government refinancing and the bankruptcy code will drive the improvement in the banking sector exposure.

# THE MODEL

# Edward Altman Z-Score model

- Z-score model was the first of its kind multivariate discriminant model to predict corporate delinquency. It was created by Edward Altman, Professor at NYU Stern in 1968.
- Which key Questions did the Z-Score Model answer?
  - Which ratios are most important in detecting bankruptcy failure? [Variables … X1, X2, …, XN]
  - What weights should be attached to those ratios? [Coefficients… β1, β 2, …, βN]
  - And how should the weights be established? [through Multivariate Disciminant Analysis]

**Z-Score Model**

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5$$

- $X_1$ = working capital/total assets,
- $X_2$ = retained earnings/total assets,
- $X_3$ = EBIT/total assets,
- $X_4$ = MVE/book value of liabilities
- $X_5$ = sales/total assets

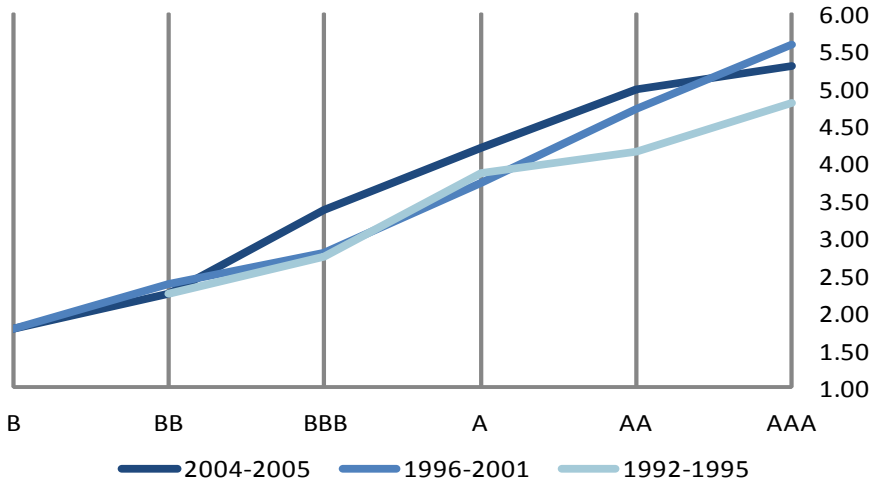
**Zones of Discrimination:**

Z > 2.99 - "Safe" Zones

1.81 < Z < 2.99 - "Grey" Zones

Z < 1.81 - "Distress" Zones

**Changes in Average Z-Scores over time**




- Z-Score was most effective in classifying delinquent companies up to 2 years prior to failure.
- We also note a clear correlation between credit ratings and Z-Scores i.e. consistently companies with higher ratings have had higher Z-Scores.

Source: Altman, 2000; Altman, 2008, Trust Research

# INDIA INC. Z-SCORES

Disclaimer: The Z-Scores have been computed based on variables and coefficients calculated by Edward Altman using U.S. data. We have made no modifications for India nor have we tested the significance of these coefficients in predicting delinquencies in India. This is due to lack of coefficients applicable to India and of efficient bankruptcy procedures in India.

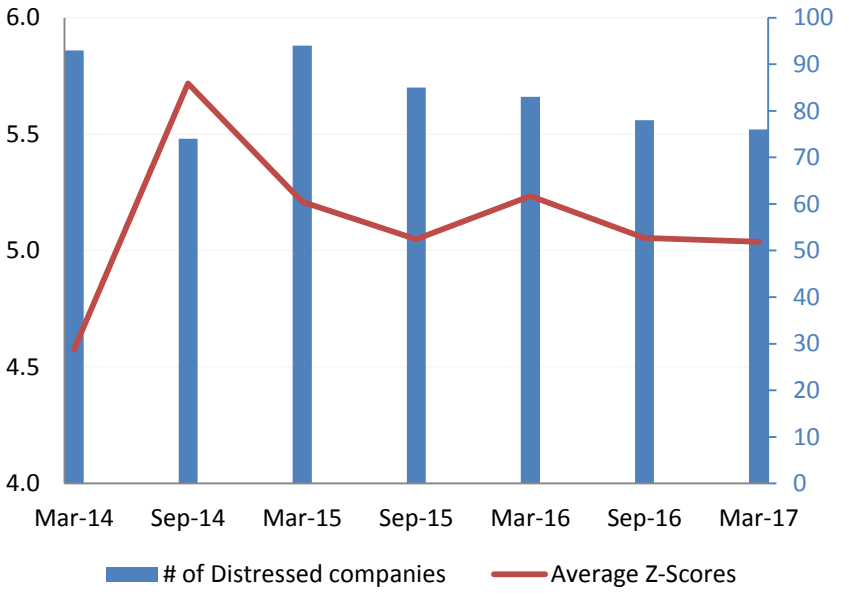
# BSE-500 Z-Scores

**Z-Scores**

| | Mar-14 | Mar-15 | Mar-16 | Mar-17 |
|---|---|---|---|---|
| # of Distressed companies | 93 | 74 | 94 | 76 |
| # of Grey companies | 70 | 69 | 57 | 70 |
| # of Safe companies | 236 | 260 | 269 | 278 |
| | 399 | 403 | 420 | 424 |
| % Distressed companies (RHS) | **23.3%** | **18.4%** | **22.4%** | **17.9%** |
| Average Z-Scores | 4.6 | 5.7 | 5.2 | 5.0 |
| Total Debt of Distressed co. (B) | 13,576 | 14,109 | 18,553 | 16,792 |
| Avg. Debt of Distressed co. (B) | 146 | 191 | 197 | 221 |
| Net NPA | 2.20% | 2.50% | 4.60% | 5.50% |
| Gross NPA | 4.00% | 4.60% | 7.60% | 9.60% |
| Resturctured assets | 5.80% | 6.50% | 3.90% | 2.40% |
| CRISL Credit Ratio | 0.79 | 1.68 | 0.76 | 1.27 |

*Source: Company Reports, RBI, CRISIL, Trust Research*

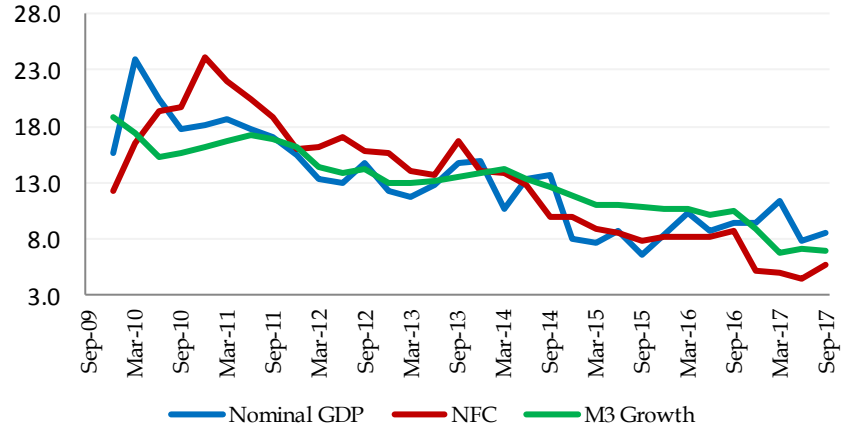
**Z-Scores and % of Distressed companies**



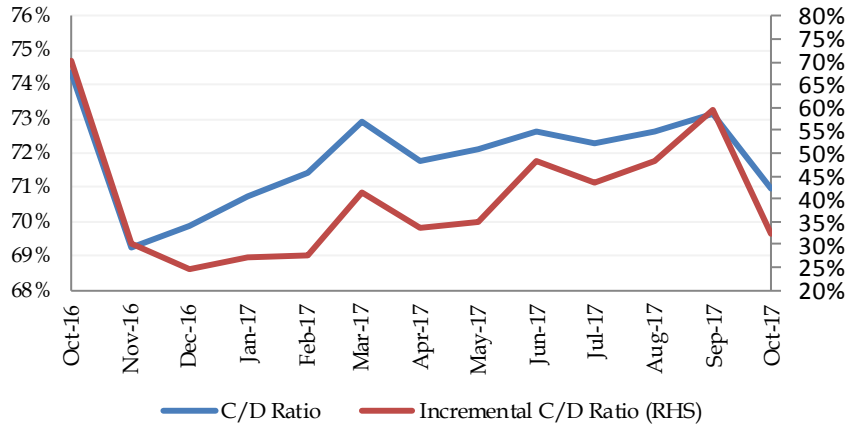

- BSE-500 Index is a broad based Index constituting 500 companies and represents approximately 90% of the total BSE market cap.
- We removed all Banks, NBFCs, Stock Broking and Investment companies from the BSE-500 to arrive at 428companies in the sample (some company reports were not available at time of respective reports).

# Credit Picture

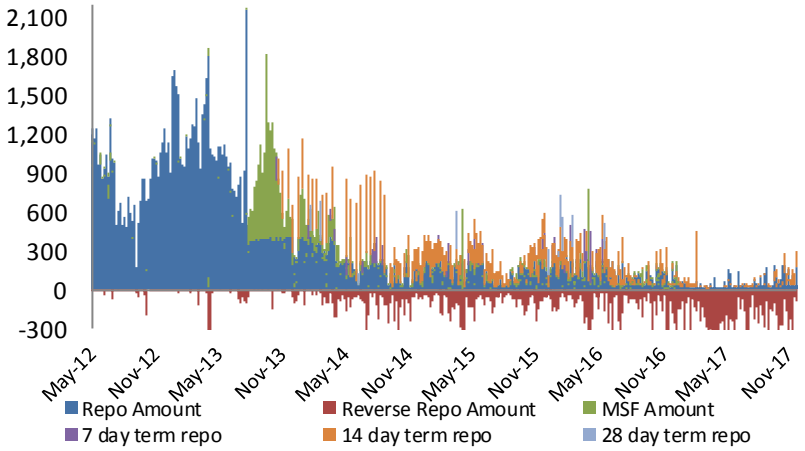
**Non-food Credit Growth**




**Credit Deposit Ratio**




**Liquidity Adjustment Facility**

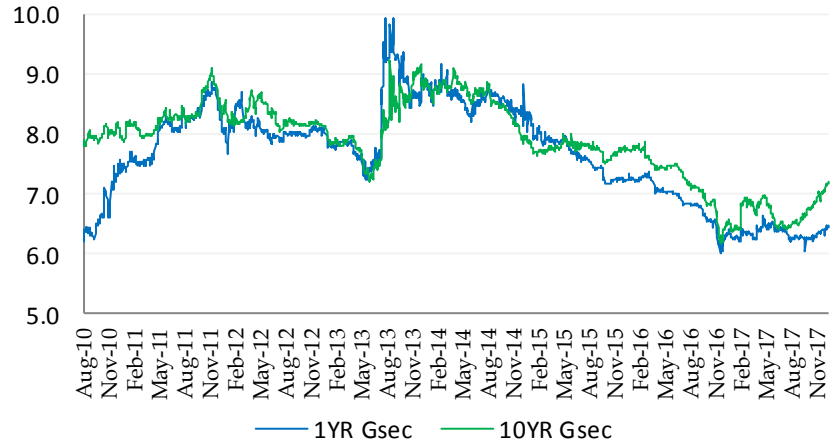



- Non-food credit growth has remained muted reflecting the challenging environment that banks are facing.
- Fortunately, while nominal credit growth has remained subdued, there is adequate credit availability to most sectors once the numbers are adjusted for inflation and increased borrowing from the bond market, and other non-bank sources.
- A recent spurt of capital raising, including tier 1 bonds, equity issuances and government recapitalization has significantly improved the capital position of banks.
- We believe a combination of these factors will lead t to a sustained period of credit growth.

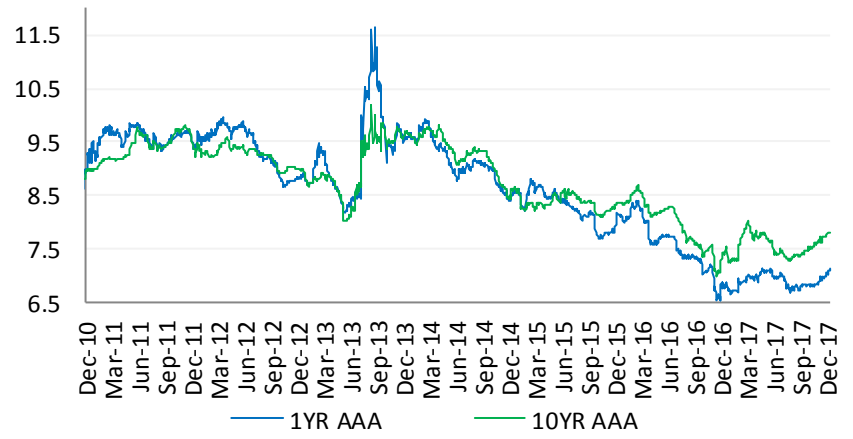
Source: RBI, Trust Research

# Credit Picture

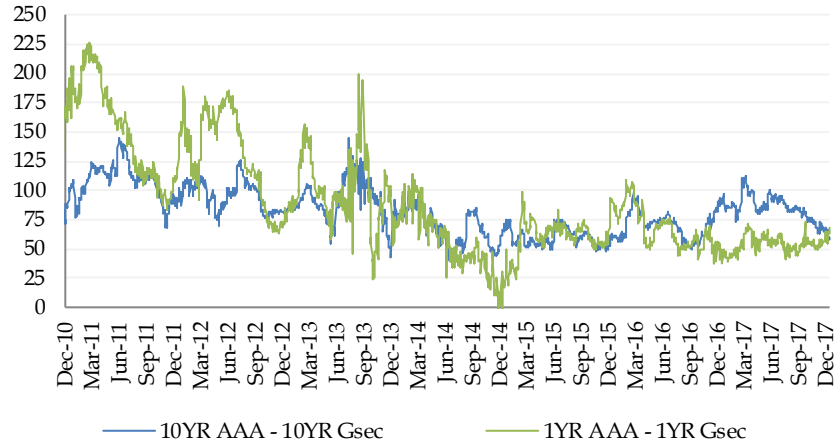
**G-sec Yield (%)**




**Corp AAA yield (%)**




**10 Yr and 1 Yr Corp AAA spreads (bps)**

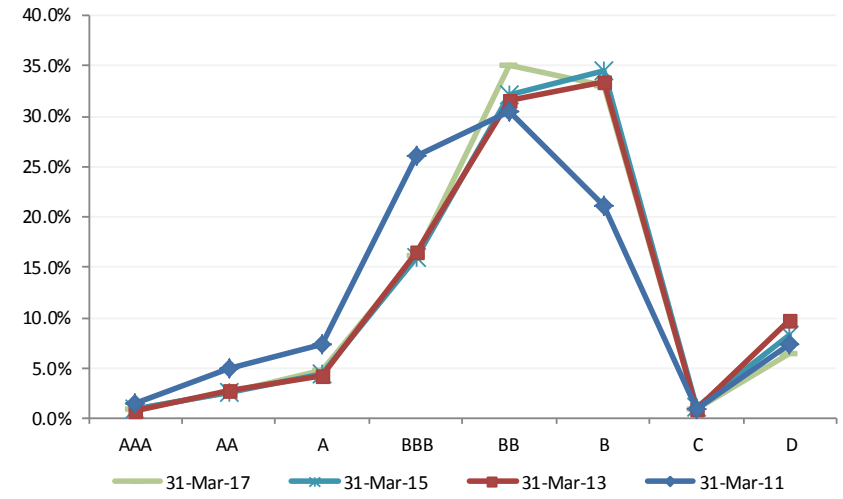



- Given the benign liquidity conditions and lower headline CPI, both long term G-Sec and AAA yields until June, however as CPI inflation started picking up and worries about fiscal deficit set in, yields have moved higher from their lows.
- The corporate yield curve has mainly mirrored the move in the Gsec curve however the corporate yields did not move as sharply as Gsec yields as inflation started moving up. Moreover better liquidity conditions and the worst of the NPA situation being behind have helped narrow spreads.
- Consequently 10 year corporate spreads have moved down from in 108bps in June to 70bps in December.

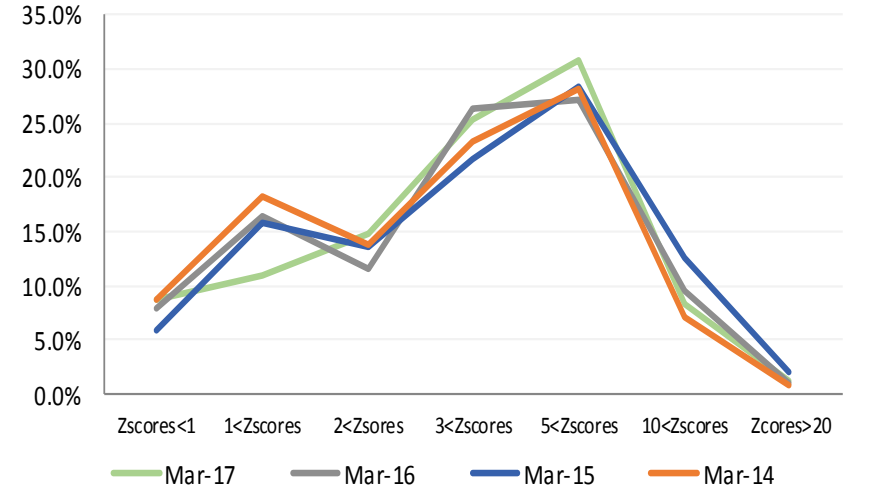
Source: RBI, Trust Research

# Distribution of Z-Scores and Ratings

**CRISIL Ratings Distribution**




**Distribution of Z-Scores**

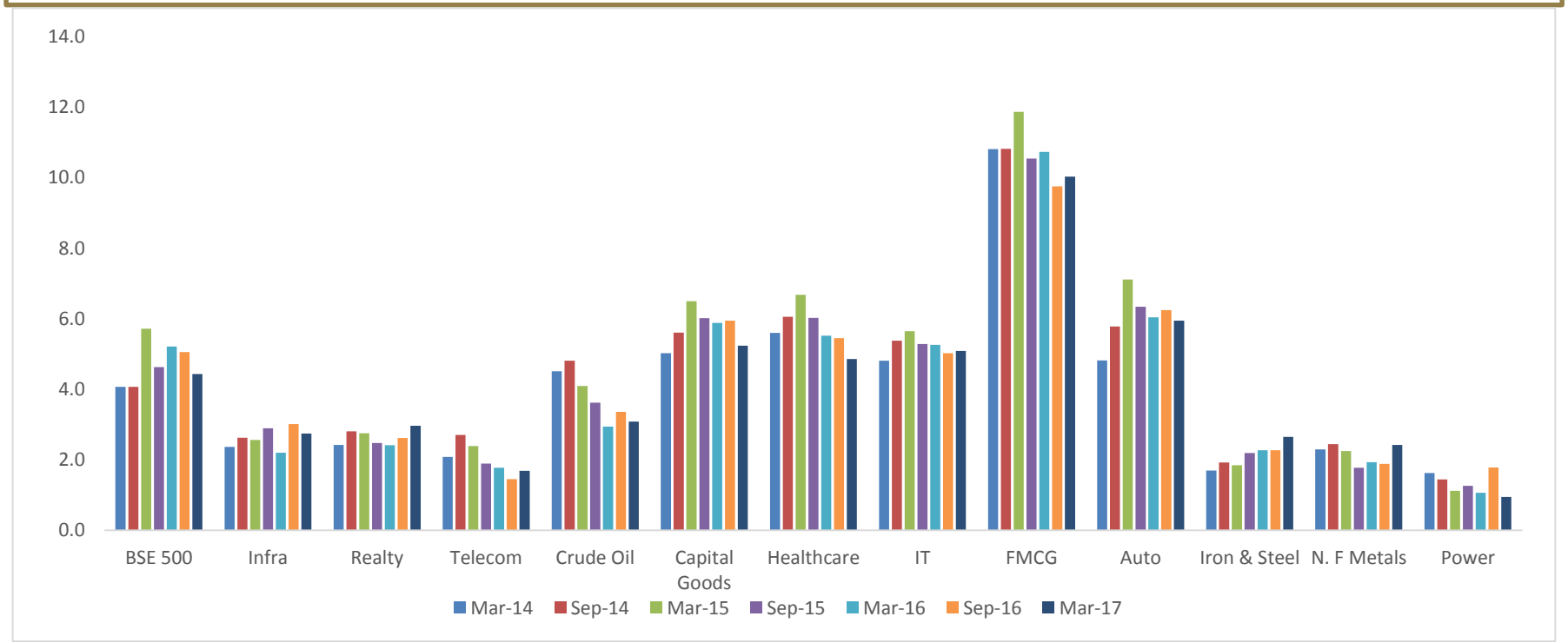



- Over the past four years the median rating of Crisil's rated universe has been BB versus AA as of March 2011 lot of new lower rated companies (incl. bank loan ratings) have become rated.
- Crisil's rating portfolio has stabilized around 14,000 ratings with about three fourths in the BB or below category
- The mean Z-score has remained around 5. Tails of the Z-Score distribution remained stable in FY17. The % of companies with Z-Score<2 at 34% similar to the levels in Sept 2016.

Source: Company Reports, CRISIL, Trust Research

# Recovery across sectors, trend expected to continue

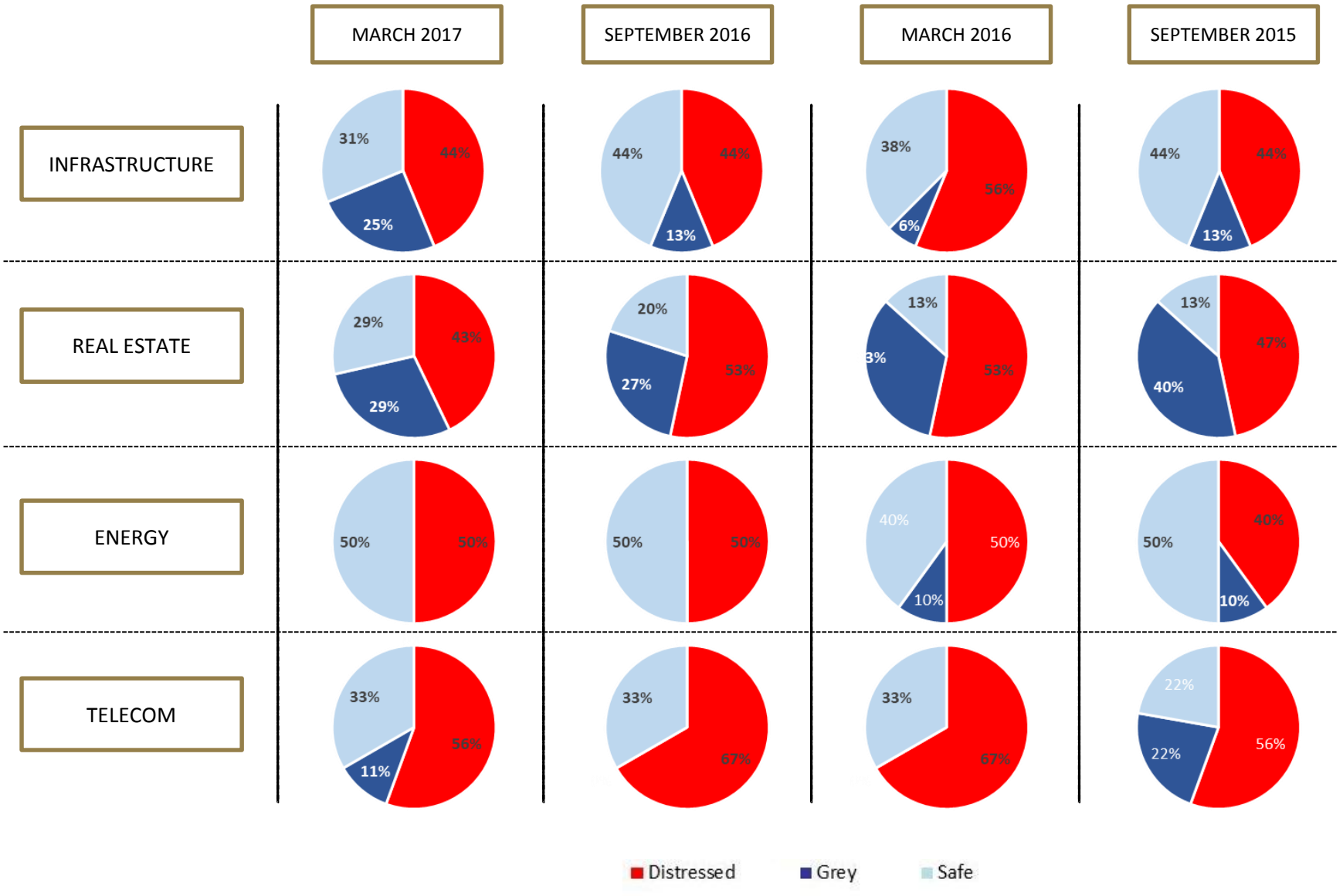
**Sector Wise Average Z-Scores**




- Big Take away is that improvement is seen across sectors with just an exception of power.
- Distressed Companies in Infrastructure have come down to 44% from 56% last year, moving itself to the grey zone. But with time they should/will shift from grey to the safe zone.
- Similarly in Real estate, distressed Companies from its worst of 53% last year have come down to 43%, a trend which is expected to continue in the short to medium term.
- Other sectors like Telecom and auto too confirm the same trend with distressed Companies coming down from 67% to 56% in Telecom while no Companies under stress in Auto & Auto ancillary sector.

Source: CRISIL, Bloomberg, CSO, Trust Research

# Sector Analysis (BSE-500 Sample)




Source: Company Reports, Trust Research

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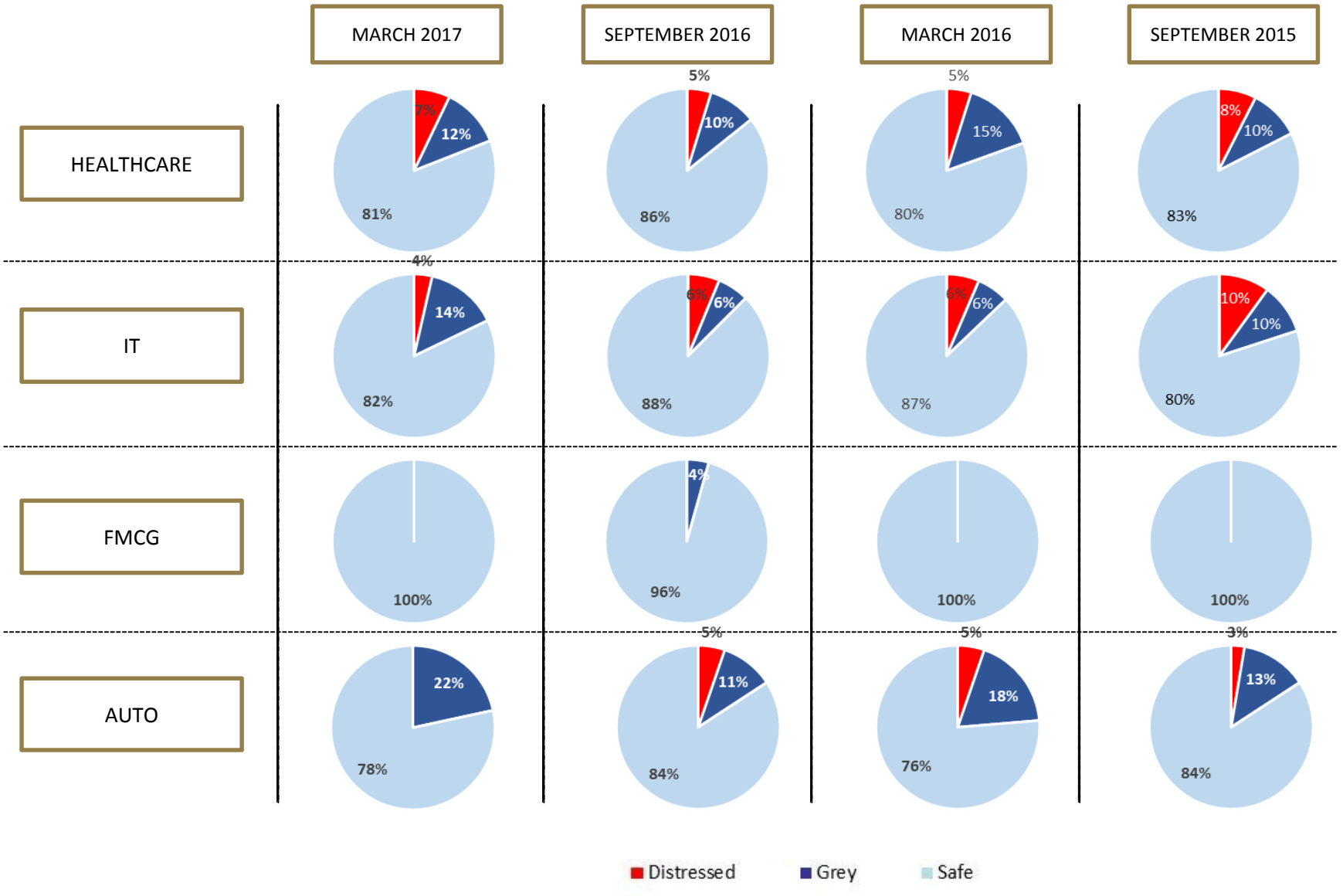


Source: Company Reports, Trust Research

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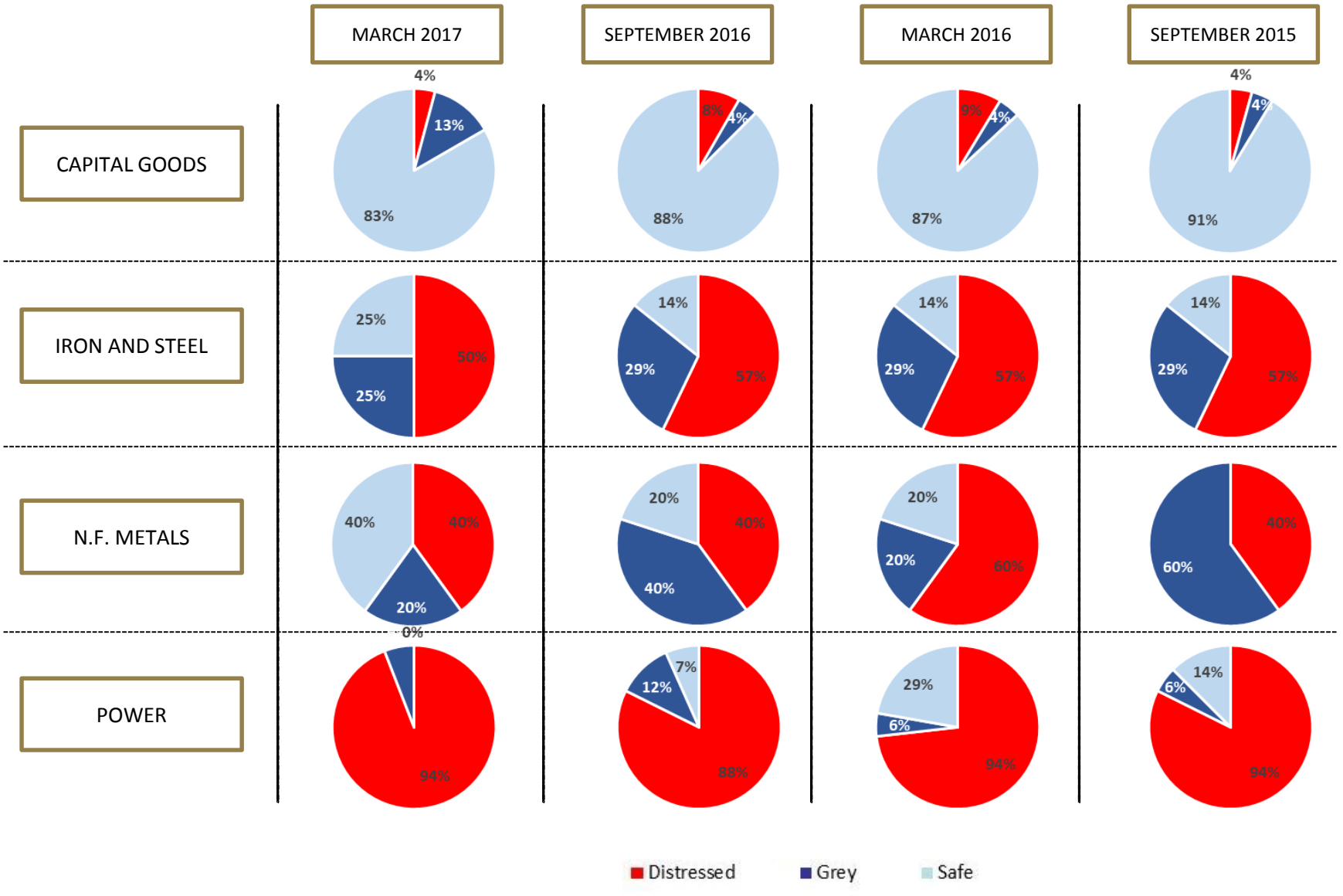
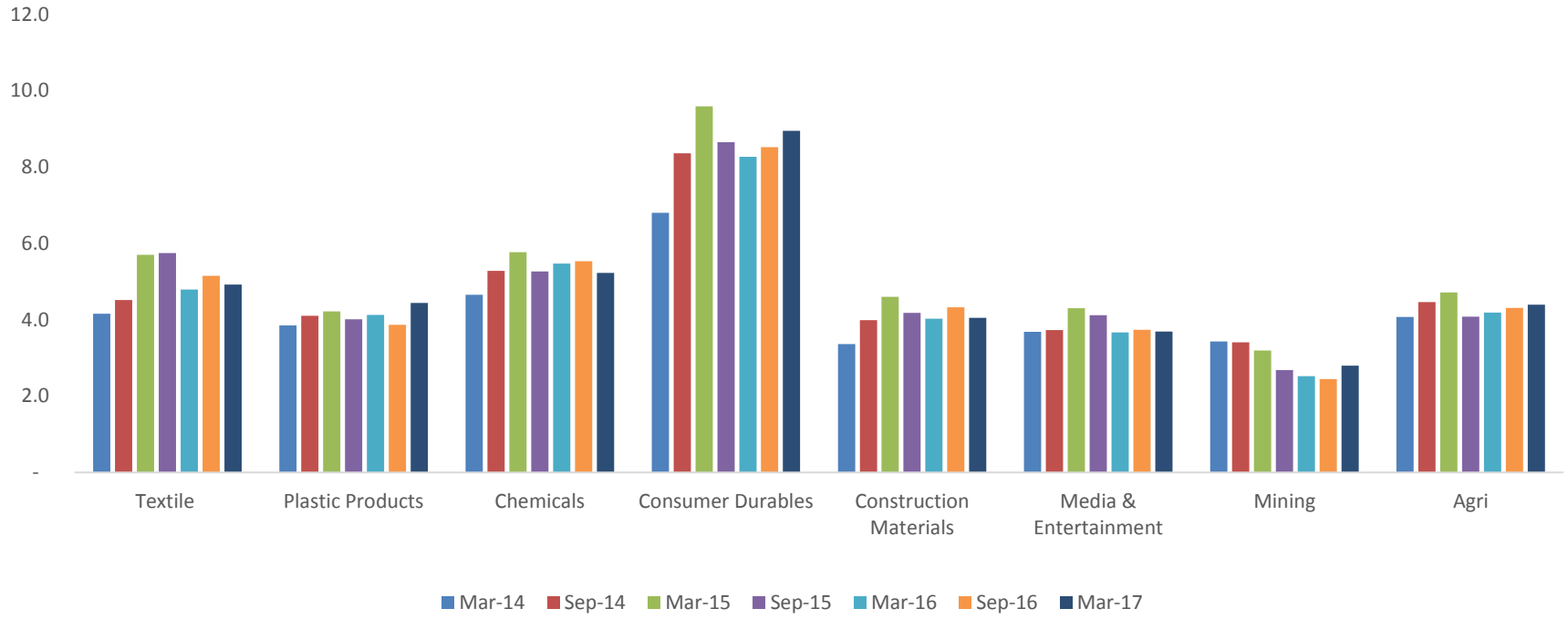



Source: Company Reports, Trust Research

# Subsectors continue to maintain good financial health

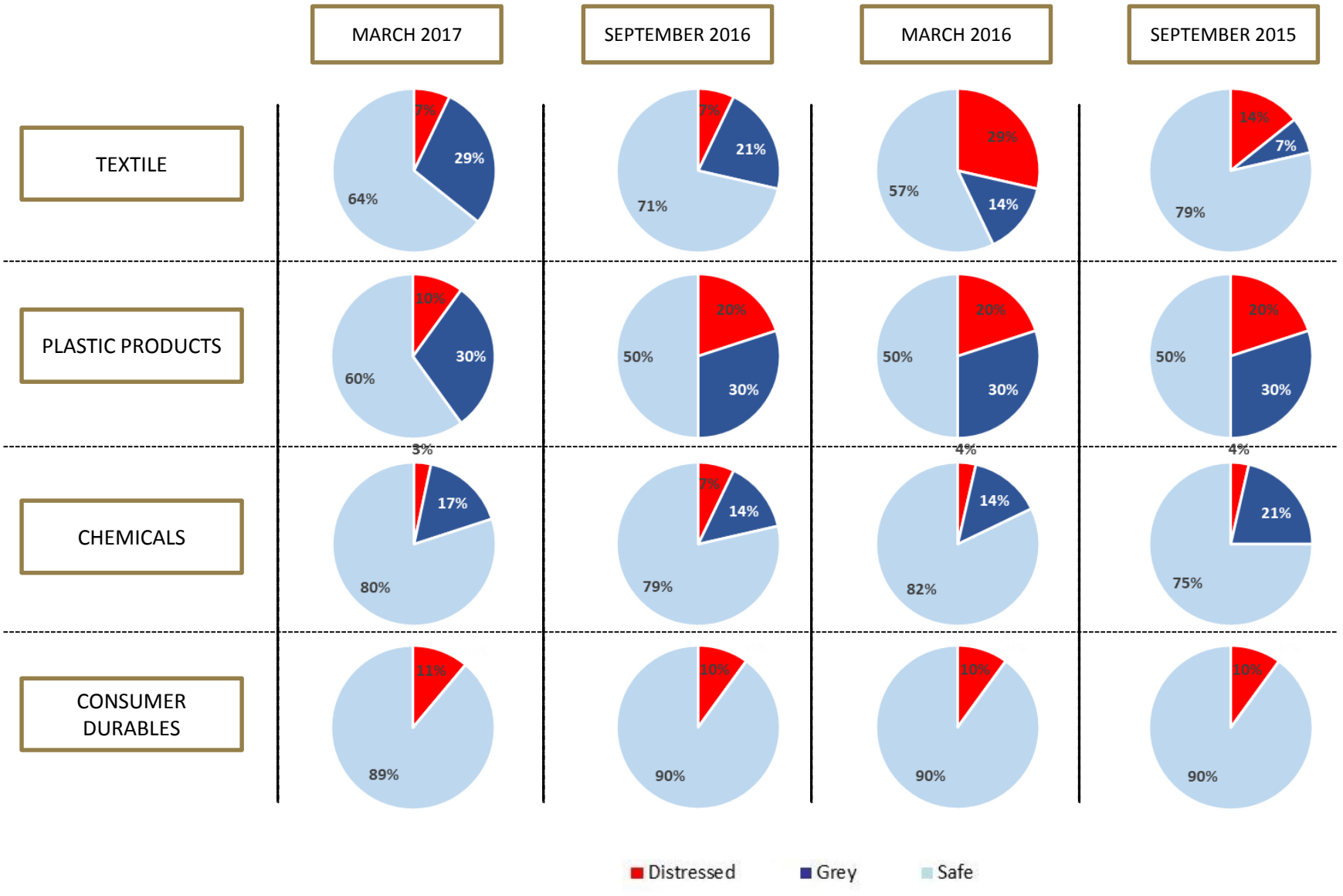
**Sub-Sector Wise Average Z-Scores**




- Most of the subsectors with their lean and focused operations, witness good financial health with exception of Mining due to lower and volatile metal prices
- With cotton prices increasing, rupee appreciating and demand facing near term risks, Textile is expected to witness stress times leading to lower Z scores in coming quarters, start of which is already been seen.
- Increasing crude prices may put pressure on plastics and chemical businesses but with their Z scores already in safe Zone, should not lead to alarming levels yet.

Source: CRISIL, Bloomberg, CSO, Trust Research

# Sub-Sector Analysis (BSE-500 Sample)




Source: Company Reports, Trust Research

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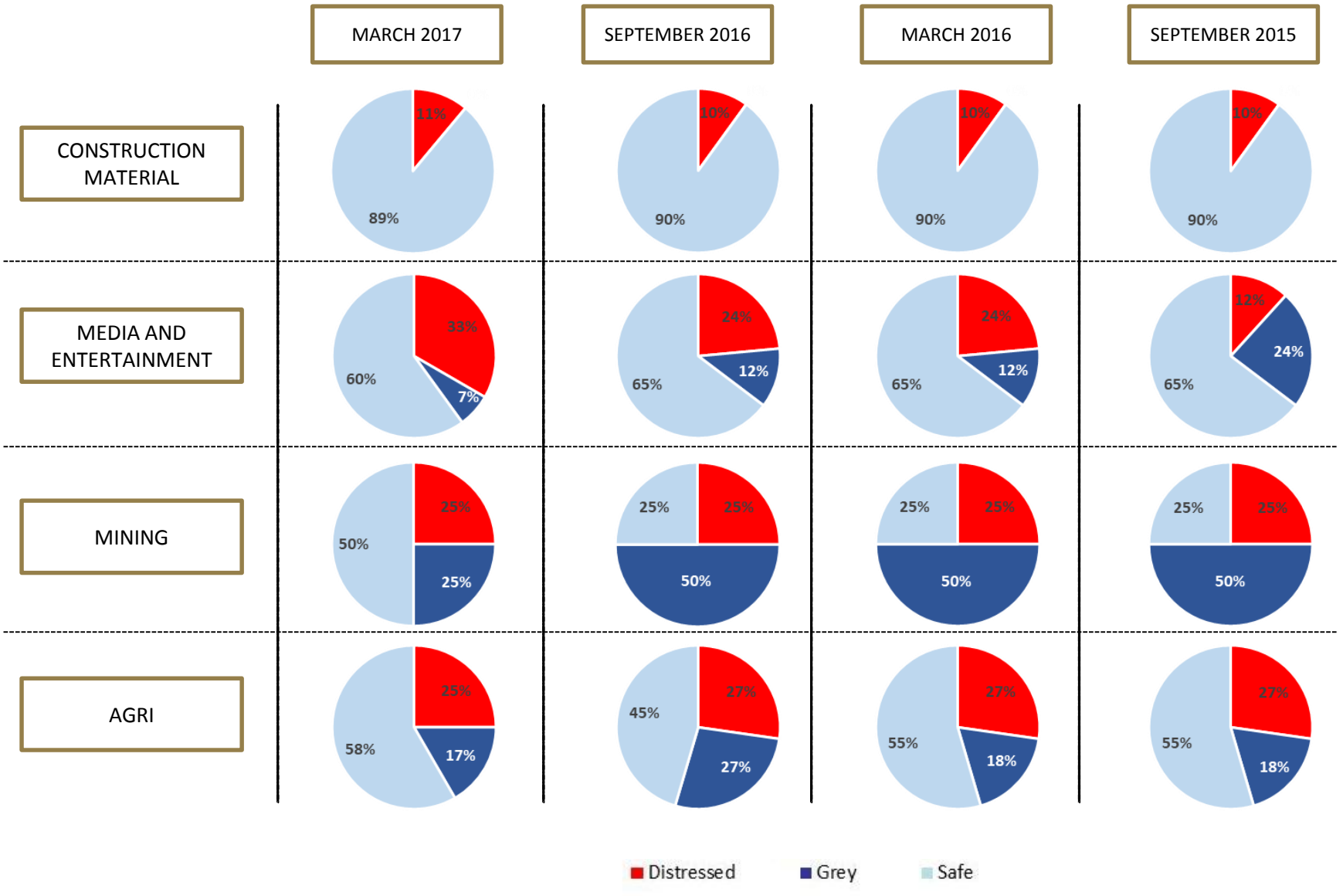
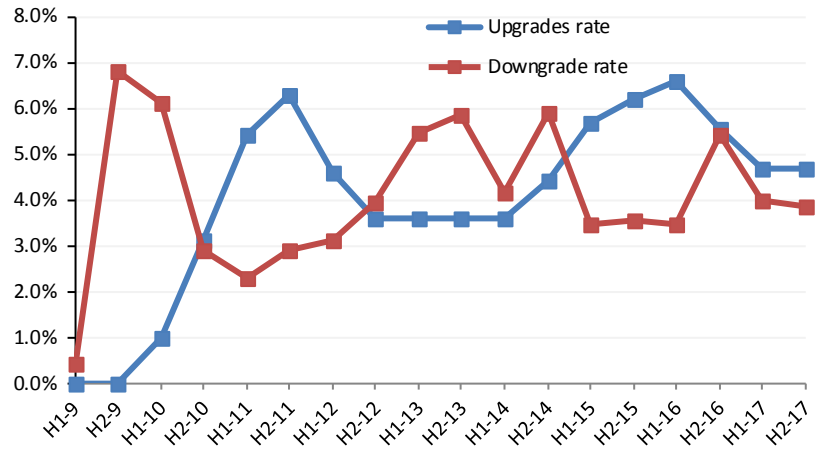


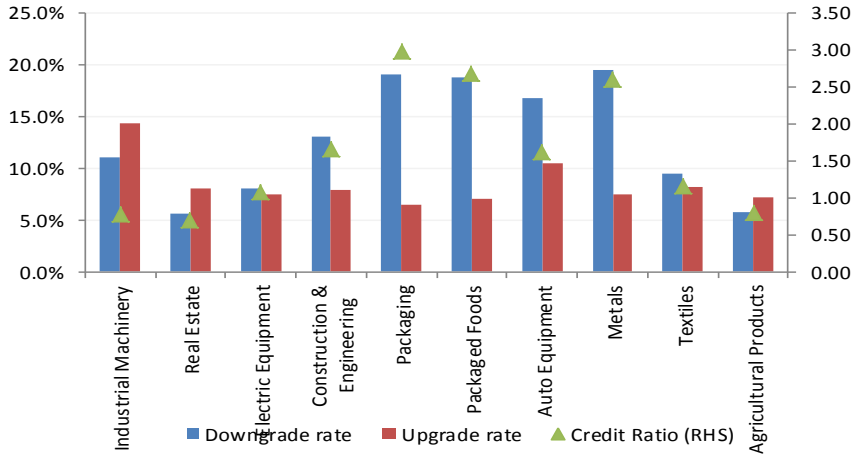

Source: Company Reports, Trust Research

# Improvement limited to non-investment linked sectors

**Trends in Ratings Action**




**Rating actions of Top 10 Industries- H2 FY17**




- CRISIL upgraded 1,35 ratings while downgraded 1,092 ratings in FY17. Therefore the credit ratio came in at 1.22 similar to the 1.29 in FY16. Increasing Upgrades and a credit ratio>1.0x is indicative of improving economic fundamentals.
- In FY17, upgrades were driven by consumption led sectors such as auto ancillaries, packaging and agricultural products.
- While investment linked industries (Real Estate, metals, construction machinery, etc.) continued to dominate downgrades

Source: CRISIL, Bloomberg, CSO, Trust Research

# The Insolvency and Bankruptcy Code will transform bankruptcy process

| Feature | Description |
|---|---|
| **Signficant Shift** | • A shift from current Debtor in possession to a creditor in control regime |
| **Consolidated** | • Consolidates all existing bankruptcy related laws as well as amending existing legislation<br>• The code would have an overriding effect on all other laws relating to Insolvency & Bankruptcy |
| **Time Bound** | • The code aims to resolve insolvencies in a strict time-bound manner - the evaluation and viability determination must be completed within 180 days.<br>• Moratorium period of 180 days (extendable upto 270 days) for the Company. |
| **Clearly Defined** | • Clearly defined order of priority or the waterfall mechanism.<br>• The waterfall to render government dues junior to most others |
| **Creditor Protection** | • Antecedent tranactions can be investigated and in case of any illegal diversion ofassets personal contribution can be ordered by court.<br>• Introduce a qualified insolvency professional (IP) as intermediaries to oversee the process |
| **Bankruptcy Board** | • Establishment of Insolvency and Bankruptcy board as an independent body for the administration and governance of Insolvency & bankruptcy Law; and Information Utilities as a depository of financial information. |

**Currently the bulk of assets going through the insolvency process are in the referal stage awaiting resolution. As more assets go through the IBC, we believe the IBC will have a dramatic positive impact on reducing time to resolve insolvency, and ultimatly address the NPA situation decisively and further devleop the credit markets.**

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109/110, 1st Floor, Balarama, Bandra Kurla Complex, Bandra (E), Mumbai -400 051, Maharashtra.

Ph: +91 22 4084 5000 • Fax: +91 22 4084 5052 • www.trustgroup.co.in