Low Leverage Policy: a boon or bane for Indian Shareholders

1. Introduction

This paper studies, whether a low leverage policy can create incremental value for shareholders of Indian firms. We do this by looking at the relative performance of all Indian firms that followed an almost-zero-leverage (AZL henceforth) policy during the period from 1998- 2014, vis-à-vis their leveraged peers from the same industry. We specifically try and answer the following questions: Do Indian managers create incremental value for their shareholders by following a low leverage policy, regarding enhanced stock market performance? If yes, what could be the possible reasons for such superior performance? Is it merely due to positive investor perception about potential benefits of a debt-free balance sheet, or are there other plausible reasons? Are these visible patterns in firm performance post being AZL, if any, contingent on factors like nature of the industry or market swings?

Finance theory highlights that debt can have both positive and negative impacts on the prospects of a firm. There are potential benefits of debt, like interest-tax-shield and enhancement of return-on-equity (ROE) (Modigliani Miller, 1958, 1963: MM henceforth). External debt financing also serves as a disciplining device for managers because if a firm fails in servicing debt properly, the debt holders may force it to liquidation (Harris and Raviv, 1990). Hence following a very conservative debt policy can sometimes be detrimental to shareholder's interest. However, beyond a certain level, fixed interest and principal commitments of debt can hurt the ability of a firm to operate freely and effectively. Debt beyond an optimal level can cause a default on interest or principal payments, leading to financial distress or even bankruptcy. It may cause a 'debt overhang' problem (Myers, 1977) or limit the ability of a firm to take up new investment

projects with positive NPV. It may reduce the ability of a firm to pay dividends as most of the surplus cash is utilized to servicing debt. Debt also implies increased volatility of net cash flows to shareholders. From a signaling perspective, low debt in the balance sheet typically implies that the firm is expecting to generate a lot of surplus cash internally to maintain its growth prospects, thus commanding enhanced financial flexibility and increased debt capacity. Given both positive and negative perceptions about debt as mentioned above, some finance theories generally advocate usage of an 'optimum' amount of debt (MM, 1963) while others oppose that concept (Myers, 1977;[1] Myers & Majluf, 1984[2]).

The issue addressed in this study is however not to explore the reasons why firms might choose to follow a low-leverage policy in the Indian context. We explore, whether a sizeable number of Indian firms, which do follow an AZL policy, actually create incremental value for their shareholders. The question is particularly interesting in current Indian context because of the following reasons: First, the cost of debt in India is pretty high compared to developed nations, though it is somewhat comparable to the rates prevailing in some of the other BRICS and emerging countries. (See Appendix 1). At the same time, corporate tax rate in India is one of the highest among Asian countries and also much higher compared to the world average (See Appendix 2). This implies that a significant interest-tax-shield can be exploited by Indian firms for their shareholders, particularly for profitable firms. Following an AZL policy seems to be suboptimal in this context and should be manifested through a negative impact on stock market

[1]Myres (1977) posit that issue of risky debt is inversely related to the present market value of a firm. Considering growth opportunity as a real option, the value of discretionary future investments depend on such real option. Issuance of debt attempts a suboptimal investment strategy for growth firms.

[2]Myers &Majluf (1984), propose the famous 'Pecking Order Theory' which hypothesizes preferential ranking of internal funds over external financing sources like debt and equity, due to information asymmetry between managers and investors.

performance of such firms. Second, shareholding pattern in India is marked by the presence of a large number of family-owned firms[3] having a few large promoter shareholders. These large insider shareholders typically are involved in operating and strategic decision making by the firm. So what prompts them to adopt an AZL policy, despite the presence of a lucrative tax-shield, and whether such a policy is successful in the long run, becomes a relevant question. The question becomes even more interesting because research in other Asian countries in recent times show that majority of firms in Asian countries are also family controlled (Claessens et. al.,2000). However extant research (Yasser and Mamun, 2015, for Pakistan for example) shows no significant association between ownership concentration and firm performance.

India is one of the largest and fastest growing economies in Asia, inferences from Indian market on this issue should provide interesting and relevant insights for most stakeholders in Asian and emerging markets in general. Third, most banks in India, are currently sitting on an enormous amount of deployable fund and are desperately looking forward to lending opportunities. What factors influence some Indian firms to adopt an AZL policy, and to what extent that strategy is successful, can be of particular interest for them.

We believe the relevance of findings of this study shall not remain limited to India only. Gupta et.al., (2012) identify 10 cultural clusters across 61 nations using data collected on cultural values and beliefs. In their paper, they highlight two broad clusters into which most Asian nations can be included: Confucian Asia (including Taiwan, Singapore, Hong Kong, South Korea, China and Japan) and Southern Asia (including India, Indonesia, Philippines, Malaysia, Thailand, Iran). The basis of this clustering is mostly intercultural similarities and differences. In

[3] India has one of the highest percentage of family owned firms (about two-third) (source: http://www.bi-me.com/main.php?id=55153&t=1)

the similar line Tung, (2014) shows that there is a tremendous cultural diversity across Asian countries and also significant variations of culture within a given country. The point we try to highlight here is that, though our study is based on Indian data, the findings of this study should also be relevant to a broad array of other Asian markets, given their researched similarities in cultural values, market microstructure, regulatory environment, tax-structure, investor perception and awareness.

As mentioned before, adopting an AZL policy in Indian context could be suboptimal given a lucrative tax-shield along with the availability of large deployable funds with the banking sector. However, contrary to this expectation, we find opposite evidence, in this study. With a sample of 289 Indian firms which adopted an AZL policy during various years between 1998 to 2014, we show, that an AZL policy, typically translates into significantly superior equity market performance vis-à-vis their leveraged peers from the same industry. This is particularly true for firms which initiate an AZL policy during market downturns. We also find that this superior equity market performance is not merely due to a positive investor perception about potential benefits of a robust debt free balance sheet. Our results indicate that AZL firms also exhibit marginally higher business risk and significantly superior operating performance post being low leverage vis-à-vis their leveraged counterparts. Based on these results we conclude that the managers in the AZL firms, take full advantage of increased financial flexibility available with them, venture into riskier but more rewarding investment avenues, and create incremental value for their shareholders.

Our principal findings are both similar and contrary to some previous works in this context. Our results are in line with Lee and Moon (2011) who also report superior long-term performance of zero-leverage firms. However, are findings are contrasting to findings by Davos et al (2012),

Dang (2012), Byoun and Xu (2013), who show that the zero-leverage firms tend to be smaller and exhibit low book-to-market ratios. Bessler et al. (2013) find that most of the zero leverage firms are financially constrained, relatively younger, less profitable and riskier as compared to their leveraged counterparts, whereas we find that most of the AZL firms are relatively older as compared to a set of their peer group of leveraged firms. Lambrecht and Pawlina (2013), show that the zero-leverage phenomenon is typically associated with the industries where human capital is intensively used, whereas we find no such evidence in this study.

The principal contributions of the study can be identified as follows:

i) Most previous studies (Jensen and Meckling, 1976; Bhandari,1988; Baysinger and Hoskinsson,1989; Penman et al,2007, Zaher, 2010; Lee and Moon,2011) restrict the scope of their works to studying only the performance of firms post being low leverage. We augment that premise and try and explore possible reasons causing particular patterns in the performance of the low leverage firms.

ii) A majority of the previous research (Zaher, 2010; and Lee and Moon,2011) restrict measuring only equity market performance of low leverage firms. We extend that by looking not only at equity market performance but also at operating performance of these firms and explore such performances during an extended window of +/- 2 years around the year of adoption of an AZL policy, to identify the impact of the policy in the long run.

iii) We bring in a new dimension to the issue, by exploring whether the visible performance patterns are similar across time or whether such patterns vary across different market cycles. We do this by repeating our full sample analysis over sub-samples of AZL firms based on

their point of adoption of the strategy during different market swings of boom and bear periods.

iv) While the sample of low leverage firms in most previous studies (Strebulaev and Yang, 2006) consists of firms which are debt free in a given year, we consider firms which have been AZL for at least two consecutive years: the current and the previous year. This is to include firms for which low-leverage policy is a deliberate long-term policy and not a temporary diversion.

v) We explore possible reasons for superior/inferior equity market performance of low-leverage firms by looking at changes in their business risk levels measured by asset-beta post adoption of a low leverage strategy.

vi) We substantiate our findings, by a series of robustness tests.

To the best of our knowledge such detailed work has been yet being done on this important issue in Indian context where a combination of high cost of debt with high corporate-tax-rate apparently demands a judicious mix of debt in capital structure We believe, our findings can have significant implications for all stakeholders in equity markets for India in particular and emerging markets in general. The remaining portion of the paper is organized as follows. Section 2 discusses relevant literature, Section 3 talks about the data used for the study, Section 4 discusses the methodology adopted, Section 5 presents the results and inferences while Section 6 concludes the study, followed by references and tables.

2: Literature review

2.1. Debt ratio across time:

The issue of 'how much debt financing is appropriate or optimal for firms' puzzled researchers since the legendary work of MM (1958,1963). MM highlight the tax shield advantage of debt financing and argue that the value of a firm is supposed to increase with debt financing up to an optimal level of debt. Historically, some empirical studies, particularly in US context show increase of leverage ratio over time. Graham et.al (2015) show that this ratio is low and stable during 1920 to 1945, but increases three folds between 1945 to 1970. DeAngelo and Roll (2015), also show an increase in leverage and decrease in the proportion of conservatively levered firms in the post-1950s. In recent times, however, most empirical evidence show that firms choose relatively lower leverage ratios as compared to what is suggested to be 'optimal' in theory (Graham, 2000). Goldstein et al. (2001) explain this by considering plausible economic forces that would drive the optimal leverage ratio down.

Strebulaev and Yang (2013), Custodio et al. (2013) further substantiate this and show that the proportion of debt-free firms is steadily increasing in recent years across all industries. Taking a very large dataset from 73 countries between 1990 to 2010, Ghoul et al. (2017) show that following a zero-debt policy is a global phenomenon and the trend is increasing. They also show that national culture has a role to play in deciding the debt level of a firm. Bessler et al. (2013), on the other hand, show that only small proportion of firms around the world deliberately maintains the zero-debt policy primarily in the short run with the objective of acquiring enhanced financial flexibility.

2.2 **Explaining low debt puzzle**:

Kraus& Litzenberger (1973), posit that firms tend to prefer low levels of debt to minimize potential costs of financial distress and bankruptcy. These financial distress concerns are likely to be most relevant to firms with poor performance who find difficulty in servicing debt. Also, firms with low debt - tax - shields (Graham, 2000) and high non-debt- tax - shields (DeAngelo & Masulis, 1980) should have little incentive to lever up. Pecking-order theory (Myers, 1984; Myers & Majluf, 1984) offers another potential explanation for the low-leverage phenomenon. It posits that retained earnings are preferred by firms over debt financing and equity is typically the last resort of financing for most firms. Hence, profitable firms with large cash flows do not need to raise debt as they can use their internal funds to finance new investment opportunities and remain debt free. Myers (1984) also suggest a 'modified' version of the pecking order theory which argues that firms exceeding their debt capacity may prefer equity to debt due to the cost of financial distress. Devos et.al (2012), proposes the 'financial constraint' explanation for a low leverage policy. This hypothesis argues that the amount of debt in a firm's capital structure is determined to a great extent by the firm's size, age and ability to access the debt markets and raise money without significant transaction cost and frictions. Empirical studies indeed show that firms with limited access to public bond markets tend to have less debt in their capital structure (Faulkender and Petersen, 2006). Some firms are just too risky or too small to obtain a bank loan or issue bonds and they must turn to equity financing by compulsion (Bolton & Feixas, 2000). Hence, the zero debt or almost zero debt capital structure is a consequence of constrained firms facing debt rationing from lenders. Korajczyk & Levy (2003) propose the 'macroeconomic condition hypothesis' and posit that firms may use debt financing conservatively under macroeconomic conditions that are not conducive to borrowing. The reason for this is that, in an

economic downturn, firms use little debt, as its net worth and collateral value drops (Bernanke & Gertler, 1989).

2.3 Impact of the proportion of debt on firm performance:

A large group of studies explores a different issue: the impact of leverage on firm performance. Ross (1977) posit that leverage should have a non-neutral impact on firm performance because a firm with better prospects can issue more debt than one with lower prospects because the issue of debt by the latter should be having a higher probability of default and bankruptcy. Jensen and Meckling (1976) argue that in a scenario where an entrepreneur has limited resources; given a choice between debt and equity, he would choose debt only if the prospects are superior as that would enhance the incentive of the entrepreneur. Therefore, firms with relatively more leverage should be more profitable in general. Grossman and Hart (1986), Jensen (1986), suggest that debt has an important monitoring role to play and higher levels of debt should have a direct association with higher performance level. A series of counter arguments are also prevalent in extant literature, which posits that higher leverage is associated with declines in long-term performance. Smith and Warner (1979), argue that debt holders are typically more risk averse and they would force managers to abandon risky projects and cut back on R & D expenditures. There is, in fact, evidence in the literature that suggests a negative relationship between R & D investment and long-term debt (Baysinger and Hoskinsson,1989). Leverage can, therefore, be associated with a decline in a firm's innovativeness resulting in worsening of long-term performance. Only a handful of studies so far have looked into the market performance of low leverage firms exclusively. Zaher (2010) reports superior performance of a portfolio of debt free firms compared to a portfolio of leverage counterparts. Lee and Moon (2011) also report that debt free firms perform better over a long run based on Fama French–three factor and Carhart

four factor models. Penman et al (2007) also find that there is a negative relation between returns and leverage i.e returns increase with reduction in leverage. Bhandari (1988), on the contrary, finds that stock returns are positively related to leverage.

2.4. **Studies in India and other emerging markets:**

Ahsan et al (2016), using data on a sample of firms from Pakistan, show that in a slowly developing economy coupled with bank-based, limited financing options and erratic economic conditions, firms use low debt during the growth and decline stage of their life cycle and use relatively higher debt in between. Lee and Song (2010) reveal that after the Asian financial crisis, Asian firms have increased their level of cash holding and decreased their level of leverage. In a study on Malaysian firms, Wasiuzzaman (2014) shows that there is a significant difference in the level of cash holding across time. The agency theory expects that managers prefer to hold more cash when the firm is less levered (Ferreira and Vilela, 2004). We come across very few studies in Indian context on this very important issue. Majumdar and Chibber (1999), working with a sample of Indian firms, report that the relationship of performance with the amount of debt in the capital structure is negative. Ghosh (2008), examines the association between corporate leverage and profitability. Using firm-level data on only the manufacturing sector in India for1995–2004, the findings indicate that corporate profitability and cash flows decline as leverage rises. However, they do not examine the impact of a low leverage policy on firm performance. Deb and Banerjee (2015), study the relative equity market performance of zero debt Indian firms between 2000 and 2007 using some simple risk-adjusted performance measures and report a negative association between leverage and firm performance.

We extend these studies in many ways and the specific contributions of this study are already highlighted in the previous section.

3: Data and Methodology

3.1. Sample construction:

Our sample consists of all non-financial listed firms in both National Stock Exchange (NSE) and Bombay Stock Exchange (BSE) which follow an AZL policy between 1998 and 2014.The relevant data for all variables required to determine the proportion of debt for each firm (detailed in the methodology section) are collected from Centre for Monitoring Indian Economy (CMIE) Prowess database. In line with Strebulev & Yang (2013), we define AZL as those firms which have total borrowings amounting to less than or equal to 5 percent of the book value of total assets. However, we modify their approach slightly by considering firms in the sample if they are AZL for at least two consecutive years. Our sample is thus more likely to include firms for which low-leverage policy is a deliberate long-term policy and not a temporary diversion. Following this approach, our final sample consists of 289 AZLs spread across 17 years, the details of which are shown in Table 1a. From the table 1a, it is evident that the number of AZLs was small during 1998 to 2002, increased during 2003 to 2011 period and then again tapered off. We also report their average size (million rupees) in terms of book value of assets, and average age as the number of years since inception till the year under consideration. The table 1a also shows average size, and age of the control firms. Table 1b represents the list of industries from where the sample and control firms are drawn. The mechanism by which the control firms are selected

is discussed below. It is evident that typically older firms with the average age of 30 years or more have tendency to become debt free[4].

[Table 1a and 1b over here]

3.2: Finding the AZLs and the peer group or control firms:

We follow the methodology of Strebulev & Yang (2013) to define AZL firms with slight modification as mentioned before. We define a 'book leverage ratio' (BL) of firm *i* for year *t* by using the following formula

$$BL_{it} = \frac{LTD + STD}{LTD + STD + BVTA - BVTL + BVPF}$$

Where,

LTD = the amount of long-term debt exceeding maturity of one year,

STD = the short term debt with maturity of less than one year,

LTD + *STD* = sum of the terms related to borrowings.

$BVTA_i$ = the book value of total assets,

BVTL = the book value of total liabilities and

BVPF = the book value of preferred stocks[5].

We find out firms for which the BL has remained less than 5% for at least two consecutive years

[4]We also estimate the industry-wide distribution of AZL firms, though we do not report it separately. We find that the AZLs represent 40 different industries; including old economy firms and new economy firms, manufacturing and services sectors, capital intensive industries and non-capital intensive industries. The industries with top 3 proportions of AZLs are engineering, cosmetics and computer software respectively, although the maximum percentage (4.5%) in engineering is quite small compared to 20% observed in the US (Strebulaev and Yang , 2013).

[5]This book leverage ratio is followed by many researchers in the recent past in their capital structure articles (Lemmon et al, 2008, Lemmon and Zender 2010, Graham and Larry 2011).

during the study period and consider them as AZL firms. The starting year when the BL became less than 5% includes the AZL firm in our sample in that year. We collect the data for all these variables from CMIE Prowess database.

We next create a control sample of leveraged peers of AZLs from the set of firms which are listed on BSE and NSE, which have a BL ratio of more than 5% for the current and the previous year and which were 'comparable' in nature. By 'comparable' we imply that they belong to the same industry and are similar in size and age to the AZL firms. The size of a firm (both AZL and its peers) is measured by their book value of assets, while age is measured by the number of years since inception till the point of analysis. For mapping the nature of business of the firms we match the two digit National Industrial Classification (NIC) code of the firms provided in Prowess. We use a 'propensity score matching' technique[6] to create the leveraged peer group.

3.3. Hypothesis formulation:

Jensen and Meckling (1976) argue that under resource constraints and better future prospects the firm with relatively more leverage should be more profitable in general. Only limited number of studies so far has looked into the market performance of low leverage firms exclusively. Zaher (2010) reports superior performance of a portfolio of debt-free firms compared to a portfolio of leverage counterparts. Penman et al (2007) also find that there is a negative relation between returns and leverage which is supported by Lee and Moon (2011). Ghosh (2008), examines the association between corporate leverage and profitability. Using firm-level data on only the manufacturing sector in India for1995–2004, the findings indicate that corporate profitability and cash flows decline as leverage rises. However, they do not examine the impact of a low leverage policy on firm performance. Deb and Banerjee (2015), study the relative equity market

[6] See Dehejia & Wahba (2002), Tucker (2010) and Titus (2007).

performance of zero debt Indian firms between 2000 and 2007 using some simple risk-adjusted performance measures and report a negative association between leverage and firm performance. Based on these above-mentioned studies we expect that there should be some incentives for firms of being debt free hence, we formulate the following three hypotheses:

Hypothesis 1: Indian firms adopting an AZL policy show superior equity market performance and enhance shareholder value in the subsequent years.

Hypothesis 2: Superior equity market performance of AZL firms are accompanied by superior operating performance in the subsequent years.

Hypothesis 3: Firms following an AZL policy exhibit an increasing equity and asset beta in the subsequent years[7].

Strebulaev and Yang (2013), Custodio et al. (2013) show that the proportion of debt-free firms are steadily increasing in recent years across all industries. Taking the data of 60 years from 1950 to 2010, DeAngelo and Roll (2015), show an increase in leverage and decrease in the proportion of conservatively levered firms. In a cross-country study, using a very large dataset from 73 countries between 1990 to 2010, Ghoul et al. (2017) show that following a zero-debt policy is a global phenomenon and the trend is increasing. Therefore we formulate the following two directional hypotheses:

Hypothesis 4: Performance patterns of AZL firms are not typical of any industries

Hypothesis 5: Performance patterns of AZL firms are not typical of any sub-periods.

[7] hypothesis 2 and 3 are formed as possible follow up of hypothesis 1.

3.4: Measuring equity performance of AZLs and peer group:

We define MR as the monthly return (sum of dividend-yield and capital-gains-yield) from the first trading date to the last trading date of a month adjusted for stock dividends and stock splits. We then find mean of MRs for each AZL firm each year and that of the corresponding control group and call it 'monthly average return (MAR). Relative MAR (RMAR) for each AZL firm is then measured as the excess MAR of the AZL over its peer group obtained as above.

$$RMAR_i = (MAR_i - AMAR_{ci})$$

where MAR_i the monthly-average-return of the AZL firm i and $AMAR_{ci}$ is the cross-sectional average of MARs of all identified peer firms[8]. The monthly RMAR of each AZL firm is then measured over 12 and 24 months, after the '0'year (beginning of April [9] of the year in which the AZL is first included in the sample). We then take a cross-sectional average of these firm level RMARs and test their statistical significance. RMAR is used as a proxy for short-term equity performance of AZLs.

3.4.2: Relative Buy and Hold Return (RBAHR):

The long term equity performance of companies is measured by the annualized buy-and-hold-return (BAHR) of AZLs and the peer group companies over various periods as follows:

$$BAHR_{i,t} = \left[\prod_{t=1}^{N}(1+MR_{i,t})\right]^{\frac{12}{N}} - 1$$

where $MR_{i,t}$ is the monthly return of the firm 'i' for the month 't'.

[8] As RMAR represents relative returns of AZLs w.r.t their peer groups having similar size, age and industry affiliation it is indirectly adjusted for risk factors arising out of these sources although it is specifically not adjusted for standard measures of risk like beta. We avoid adjusting for beta at this stage as we separately look at variation of beta of firms post adopting an AZL policy as explained in the subsequent sections.

[9] In India financial year is from 1st of April to 31st March.

Relative-BAHR (RBAHR) is then measured as excess BAHR of AZLs over cross sectional average BAHR of peer firms($ABAHR_{ci}$) over the same period

$$RBAHR_i = (BAHR_i - ABAHR_{ci})$$

N is again chosen as 12 and 24 months after the '0'year. Like RMARs these numbers are then pooled across the overall period and the bull and bear periods separately and tested for statistical significance.

3.5: Exploring the performance of sample and control firms in sub-periods:

It is possible that the visible patterns, if any, in performance of AZLs could be varying across different market swings. To explore that possibility, we repeat the analysis within time partitions based on market swings. We consider average annualized 91-day T-Bill yields collected from Reserve Bank of India (RBI)[10] website, as proxy for risk free rate (rf) during a year. We estimate the market returns (Rm) from adjusted closing values of NIFTY[11] Total Return Index[12] collected from CMIE Prowess. We classify our overall study period into bull (bear) years when Rm is greater (less) than Rf [13].

3.6. Looking at possible explanations: Operating Performance and risk of the AZLs and control firms:

3.6.1. Operating Performance:

[10] RBI is the central bank of India

[11] National Stock Exchange Fifty is a leading index of the national stock exchange of India.

[12]Total Returns Index reflects the returns on the index arising from (a) constituent stock price movements and (b) dividend receipts from constituent index stocks.

[13] Based on this criteria, the years 1998,2000,2001,2002,2008,20011 and 2013 are bear years while the remaining years are bull years.

One natural conclusion to superior (inferior) equity market performance of AZLs is positive (negative) investor perception without any significant change in true performance of the firm. It is also possible that firms utilize the enhanced flexibility available with them arising out of an AZL policy constructively and become successful in enhancing their operating performance which subsequently is appreciated by the market resulting in enhanced equity market performance. To check that we also look at the actual operating performance of AZLs, on an absolute as well as industry-adjusted-basis, before and after implementing the AZL policy. We use the $\frac{OCF}{BVTA}$ ratio as the proxy of operating performance.

where ,

BVTA = Book value of Total Assets

OCF = Operating Cash Flow

Relevant data (OCF, and BVTA) are collected from CMIE Prowess database. Year-wise values of the ratio are pooled cross sectionally and across different periods and estimated over a range of 5 years (-2, -1,0, +1 and +2) around the '0' year. Industry adjusted implies excess AZL performance over the mean peer group performance.

3.6.2. Business risk levels during pre-and post AZL periods

A natural fallout of adopting an AZL policy can be reduction in their perceived risk level which should reduce equity and /or operating performance of the firms. On the contrary, it is also possible that with monitoring role of debt holders gone, managers in AZLs venture into riskier avenues utilizing the enhanced flexibility available with them, which can lead to superior equity performance. To check for such possibilities, we also look at differences in business risk of the

firms during the pre-and post AZL periods. We use asset beta[14] of AZLs as proxy for their business risk and estimate it on an absolute as well as industry-adjusted-basis between +/- 2 years around the '0' year. We get the yearly equity beta estimates of the firms by regressing excess firm returns over excess market returns every year. We then use these estimates and the D/E ratio to work out the asset betas of the firms. Data for D/E ratio is again collected from CMIE Prowess database.

3.6.3. **Regression models:**

To further substantiate our hunch as mentioned above, we run the following regression models:

$$\Delta RMAR_{i,0,j} = \alpha + \gamma\Delta\beta_{i,0,j} + b_L L_{i,0,j} + b_{LQ} LQ_{i,0,j} + b_{MS} MS_{i,0,j} + \varepsilon \quad (1)$$

$$\Delta RMAR_{i,0,j} = \alpha + \gamma\Delta\left[\frac{OCF}{BVTA}\right]_{i,0,j} + b_L L_{i,0,j} + b_{LQ} LQ_{i,0,j} + b_{MS} MS_{i,0,j} + \varepsilon \quad (2)$$

$$\Delta RBAHR_{i,0,j} = \alpha + \gamma\Delta\beta_{i,0,j} + b_L L_{i,0,j} + b_{LQ} LQ_{i,0,j} + b_{MS} MS_{i,0,j} + \varepsilon \quad (3)$$

$$\Delta RBAHR_{i,0,j} = \alpha + \gamma\Delta\left[\frac{OCF}{BVTA}\right]_{i,0,j} + b_L L_{i,0,j} + b_{LQ} LQ_{i,0,j} + b_{MS} MS_{i,0,j} + \varepsilon \quad (4)$$

Where, $\Delta RMAR_{i,0,k}$ and $\Delta RBAHR$ are the measures for equity market performance of AZL firm 'i' as discussed before between years 0 and j (j=1,2) while $\Delta\beta$ and Δ(OCF/BVTA) are changes in asset betas and operating performance measures of firm 'i', post being AZL over the same period respectively. Leverage(L) measured by last reported D/E ratio at the point of analysis), Liquidity(LQ) average daily traded volume during previous quarter, and market-share(MS) measured by sales of the firm as a proportion of sum of sales of all firms from the same industry are used as control variables. We do not use industry affiliation, size and age as additional control variables as that is already factored in while estimating RMAR and RBAHR as relative

[14]As the AZL firms' leverage level is almost negligible hence we look at asset beta and not equity beta of the firms.

performance measures more than "peer firms". If coefficient γ comes out to be positive and significant in these models, the inference would be that changes in equity market performance of AZLs are positively associated with changes in their business risk levels and operating performance.

3.7. Robustness tests:

We carry out a series of robustness tests to validate the results that we obtain in the main analysis.

3.7.1. Robustness test 1: using alternate measures of performance: To check robustness of the results from the above approaches we use three alternative measures of performance of AZLs, (all peer adjusted), namely: Carhart (1997)- 4-factor alpha, return- on- asset (ROA) and return-on-equity(ROE).

i) **Four-Factor Alpha:**

We estimate Carhart 4-factor-alpha (FFA henceforth) to find out risk-adjusted performance of AZLs and their peers before and after the '0' year, net of market risk, size, style, and momentum related factors which are sometimes identified to be erroneously indicating true equity performance. The model estimated is as follows:

$$(\mathrm{RP} - \mathrm{Rf})_t = \alpha + \beta_1(\mathrm{Rm} - \mathrm{Rf})_t + \beta_2(\mathrm{SMB})_t + \beta_3(\mathrm{HML})_t + \beta_4(\mathrm{WML})_t + \varepsilon_t$$

We collect monthly data on factors SMB, HML and WML which are respectively: small-minus-big(size), high-minus-low(value) and winners-minus-losers(momentum) factors, from Agarwalla et.al (2013)[15] and estimate the model above[16]. This is done for the pooled time series

[15] http://www.iimahd.ernet.in/~iffm/Indian-Fama-French-Momentum/.

data for all AZLs and their peer groups, during the chosen pre and post-issue windows of -2 to + 2 years. The process is repeated for the full sample and the sub-samples (bull-bear period based) mentioned before.

ii) **ROA and ROE:**

For sample AZLs and their peers we also estimate the following alternate measures of performance for the same 5 years (-2 to +2) in and around the year of issue and re-run the analysis. Relevant data are collected from CMIE Prowess database.

$$\text{Return on Equity, } ROE = \frac{Net\ Income}{Equity}$$

$$\text{Return on Asset, } ROA = \frac{Net\ Income}{Book\ Value\ of\ Asset}$$

3.7.2. Robustness test 2: re-estimating the models after removing the outliers:

It is possible that our results are driven by a small number of very high or very low performances and the overall patterns visible may not reflect the generic trend. To control for that, we sort the AZLs based on their post debt-free performance and drop all sample AZL firms within the top 10% or bottom 10% of the entire range based on post-AZL equity market performance, and then repeat all the analysis as above.

4. Results & Inferences

4.1: Equity market performance of AZLs and peer group:

[16] Before running the models, the standard checks w.r.t. to standard OLS assumptions are conducted and no problems are noticed.

Table 2 shows the mean one year and two years RMAR and RBAHRs for the AZLs. We find that the differential mean monthly returns of the AZLs (RMAR) and their control group over the next one year (after the '0' year) is positive and statistically significant. This is true for the overall period as well as clubbing the bull years and the bear years separately. However, when the time horizon increases to 2 years after the starting point, the strength of the pattern weakens, although it is still positive and significant for bear years. Looking at one year and two year RBAHRs also, we get similar impressions. Over the next one year, the RBAHR is positive for the overall period as well as bull and bear years. However, over the next two years, the pattern slightly weakens, although it is still strong in bear years. Overall we find that the AZL firms tend to exhibit superior equity performance at least over a short horizon of next one year. Prima facie it seems that firms which have become debt free are perceived by the market as potential strong performers with increased flexibility and less possibility of getting into financial distress and this perception gets translated into enhanced equity market performance for these firms. This is particularly true for firms which become debt free during market downturns when the return uncertainties are higher. However, we explore further into the possible reasons which might be causing such superior equity market performance.

[Table 2 over here]

4.3: What causes the superior performance of AZLs?

4.3.1. Is there a beta explanation?

One possible explanation of superior equity performance can be enhanced asset betas commanding higher risk premiums. We focus on asset beta, as in an AZL scenario, the principle equity risk component will arise from business risk. Our hypothesis is that the asset betas of the firm increase post adopting the AZL policy as the managers engage in risker ventures to exploit

the enhanced financial flexibility available to them. We thus estimate the asset betas of the AZL firms between +/- 2 years around the year of adoption of the AZL policy (t=0 year). We do find a beta explanation for the superior performance of AZLs. Table 3 reports the results. Panel A reports the asset betas of AZLs on an absolute as well as industry adjusted basis whereas Panel B reports the changes in asset betas (absolute and industry-adjusted) during the pre and post 'AZL' years.

[Table 3 over here]

We find that the asset beta of the AZLs increases significantly in the post AZL years, which implies the zero-leverage firms are getting into riskier ventures post being AZL as compared to their industry peers. It seems that the managers of the AZL firms do take full advantage of the incremental flexibility of not having to worry about debt servicing and are venturing into riskier avenues. The increased beta can be a possible explanation of superior equity performance. But does this strategy translate into superior operating performance also?

4.3.2. Evidence from operating performance:

Table 4 shows the operating performance of the AZL firms vis-à-vis their leveraged peers from the industry, the proxy for performance being the $\frac{OCF}{BVTA}$ ratio. Panel A and B shows respectively the absolute and industry adjusted ratios during the years (-2, -1,0, +1 and +2) while Panels C and D shows the changes in the ratios across these years. We do observe a significant improvement in operating performance of AZL firms post the 't=0' year as evident from statistically significant higher differences between years 0 to 1 and 0 to + 2, and insignificant /lower numbers between -1 to 0 and -2 to 0. Hence, the difference in equity market performance between the AZL firms and control firms does not arise due to 'positive investor perception'

only but due to actual superior operating performance, along with simultaneous evidence of marginal enhancement of business risk. We thus conclude that the managers in the AZL firms are apparently venturing into riskier but more rewarding investment avenues with the increased flexibility available to them due to low debt and are creating incremental value for their shareholders.

[Table 4 over here]

4.3.3. Further substantiation from regression models:

Table 5 shows the results of the regression models. The table cells provide regression coefficients under various combinations of time horizon and model number. We find that the slope coefficients for most models are positive and some of them are positive and significant. This provides some evidence that the enhanced equity market performance of sample firms is arising out of enhanced flexibility from reduced debt, whereby they are venturing into riskier avenues and generating enhanced operating performance.

[Table 5 over here]

4.3.4. Findings from Robustness test:

Table 6 shows the results of the robustness test. Panel A indicates the change in peer-adjusted mean FFAs around year '0', while panels B, C and D present similar changes for ROA, ROE and RBAHRs without outliers respectively. It is pretty much evident from all these alternative measures that performance of AZLs has improved in the years subsequent to following an AZL policy. These findings strongly substantiate our overall results mentioned before.

[Table 6 over here]

5.Conclusion

This paper examines whether following a low-leverage policy generates incremental value for shareholders of Indian firms by looking at the relative performance of firms that follow an almost zero leverage (AZL) policy vis-a-vis their leveraged peers from the same industry. Given the very high cost of debt but globally comparable corporate tax rate, one would expect that most profitable Indian firms would try to have at least an optimal amount of debt in the capital structure to take the advantage of the lucrative interest tax shield. Shareholders should realize and factor that in the stock price and thus one can expect a negative impact of following an AZL policy on equity market performance of Indian firms. However, contrary to this expectation, we find opposite evidence, in our study. With a sample of 289 Indian firms which adopted an AZL policy between 1998 to 2014, we show, that following an AZL policy, translates into a significantly superior equity market performance vis-à-vis their leveraged peers from the same industry. This is particularly true for, firms which initiate an AZL policy during market downturns. One explanation of this superior equity market performance can be a positive investor perception about potential benefits of a debt free balance sheet superseding the impact of tax-shield gains. However, on exploring further into the possible reasons we get evidence of alternate explanations. Two possible candidates for such explanations are i) enhanced risk and ii) superior operating performance. We find evidence of both. Our results show that there is significant increase in the business risk of the low leverage firms in the period subsequent to becoming low leverage. We also find that the operating performance of these firms, measured by the operating cash flow scaled by the total assets, is significantly higher on an absolute as well as industry-adjusted-basis in the period subsequent to becoming low leverage. We affirm the robustness of our results by using a series of robustness tests including using a number of alternate performance measures like Carhart's 4 factor alpha, ROA and ROE. We also test

whether our principal results hold after removing top and bottom 10% outliers from the sample. These robustness tests strongly support our principal finding that AZL firms' performance has truly improved across time after adopting the AZL policy.

We conclude that Indian managers, in low leverage firms, take full advantage of increased financial flexibility available with them, venture into riskier but more rewarding investment avenues, and actually create incremental value for their shareholders. To the best of our knowledge, not much work has been done in the emerging economies, especially India to address this important issue and our findings can have significant implications for many stakeholders including common investors in equity markets, for India in particular and emerging markets in general.

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Appendix 1: Prevailing interest rates in some of the major economies globally.

Country	Current Rate (%)	Country	Current Rate (%)
United States of America	0.50	India	6.25
Australia	1.50	Russia	10.00
South Korea	1.25	Brazil	14.00
Great Britain	0.25	China	4.35
Canada	0.50	South Africa	7.00
Europe (ECB)	0.00	Indonesia	6.50
Japan	0.00	Mexico	4.75
New Zealand	1.75	Turkey	7.50
Israeli	1.00	Chile	3.50

Source: http://www.global-rates.com/interest-rates/central-banks/central-banks.aspx (accessed on November 14th, 2016)

Appendix 2: Prevailing corporate tax rates for Asian countries during 2015-16

Country	Corporate Tax Rate (%)	Country	Corporate Tax Rate (%)
Bangladesh	25%	Malaysia	24%
Cambodia	20%	Myanmar	25%
China	25%	Philippines	30%
Hong Kong	16.5%	Pakistan	32%
India	34.6%	Singapore	17%
Indonesia	25%	Sri Lanka	28%
Japan	30.86%	Thailand	20%
S. Korea	22%	Vietnam	22%
Asian Average 21.92%			
Global Average 23.62%			

Source: https://home.kpmg.com/xx/en/home/services/tax/tax-tools-and-resources/tax-rates-online/corporate-tax-rates-table.html (accessed on December 14th, 2016)

Table 1a: Year-wise sample distribution

This table shows the year wise breakup of the entire sample firms for which we have data to calculate the performance of almost zero leverage firms (AZL) and their control counterparts from year 1998 to 2014. The size of the sample firms is measured by average book value of assets, while the age is measured by the number of years since inception of the firm till the point of analysis.

	Sample firms				Control Firms			
Year	**No of firms**	**No. of Industries (2 digit NIC Code)**	**Size (million Rs)**	**Average Age**	**No of firms**	**No. of Industries (2 digit NIC Code)**	**Size (million Rs)**	**Average Age**
1998	2	2	1455.85	28	15	2	1245.47	24
1999	7	7	14775.21	27	33	7	14030.51	26
2000	9	9	12343.8	19	44	9	11510.45	14
2001	10	9	3320.76	32	41	9	2556.80	23
2002	14	12	6021.42	27	70	12	4378.59	18
2003	20	16	10840.19	37	100	16	9922.87	23
2004	18	13	4627.02	28	83	13	4077.14	15
2005	20	16	11268.12	35	96	16	9639.81	31
2006	21	18	10096.12	38	97	18	8896.28	26
2007	25	20	5121.94	32	114	20	4557.06	18
2008	24	16	8638.79	26	103	16	7464.33	8
2009	27	17	21006.6	27	132	17	18510.14	21
2010	26	17	17997.9	31	127	17	15705.03	24
2011	37	22	7885.37	30	167	22	6678.43	22
2012	11	8	29154.5	30	48	8	25639.85	26
2013	9	7	30729.83	34	45	7	22740.14	31
2014	9	7	4721.85	31	45	7	3534.57	17
Total	**289**	**216**	**11765.02**	**30.13**	**1360**	**216**	**10063.97**	**21.59**

Table 1b: List of industries from where the sample and control firms were drawn for the analysis.

This table shows the name of the industries considered for our sample as well as for control group based on 2-digit NIC Code.

Sl No.	Industry group	Two digit NIC Code
1	Processed foods	10
2	Beer & alcohol	11
3	Tobacco products	12
4	Diversified cotton textile	13
5	Readymade garments	14
6	Paper products	17
7	Lubricants, etc.	19
8	Cosmetics, toiletries, soaps & detergents, Other Chemicals	20
9	Drugs & pharmaceuticals	21
10	Plastic films & flexible packaging, tube, pipes	22
11	Cement	23
12	Glass & glassware	23
13	Aluminum products, Casting & forgings, Steel & copper, Ferro alloys, Sponge iron	24
14	Metal products	25
15	Computers, peripherals & storage devices	26
16	Misc. electrical machinery, Wires & cables	27
17	Diversified machinery, equipments & tools	28
18	Two & three wheelers	30
19	Gems & jewellery	32
20	Diversified	34
21	Electricity generation	35
22	Housing construction	41
23	Industrial construction	42
24	Trading	46
25	Retail trading	47
26	Transport logistics services	49
27	Air transport services	51
28	LNG storage & distribution	52
29	Hotels & restaurants	55
30	Production & distribution of films	59
31	Telecommunication services	61
32	Computer software	62
33	ITES	63
34	Securities broking	66
35	Commercial complexes	68
36	Business consultancy	70
37	Granite	81
38	Education	85
39	Health services	86
40	Animation content provider	93

Table 2: RMAR and RBAHR of Almost Zero Leverage, zero-leverage and Control firms

The numbers in the cells indicate the differential mean one year and two year RMAR and RBAHRs for the AZLs vis-à-vis their control groups . The numbers in the parenthesis indicate the differential mean one year and two year RMAR and RBAHRs for the ZLs vis-à-vis their control groups. The firm level RMARs and RBAHRs are found and then pooled mean over all the years included in the respective periods mentioned are taken. The t stats with ** indicates significance at 5% and below and * indicates significance at 10%.

	RMAR-1YR	RMAR-2YRS	RBAHR-1YR	RBAHR-2YRS
Overall Period	1.34%*	-0.45%	1.29%*	1.04%*
	(1.19%)*	(-0.38%)	(1.14%)*	(0.92%)*
BULL years	1.11%*	-0.83%	1.76%*	-0.76%
	(1.06%)*	(-0.92%)	(1.81)*	(-0.63%)
BEAR Years	1.67%*	0.11%*	0.63%*	0.99%*
	1.58%*	0.08%	0.60%*	0.92%*

Table 3: Asset-beta of AZL firms

This table presents the asset betas of the AZL firms on an absolute as well as industry adjusted basis for the 5 years (- 2 to +2) around the year '0' when it became AZL. ****** indicates statistical significance at 5% or less while * indicates statistical significance at 10%

Panel A: Asset-beta of AZLs in and around the '0 year (absolute values)

	Year (-2)	Year (-1)	Year (0)	Mean Pre AZLyears	Year (+1)	Year (+2)	Mean Post AZLyears
Asset Beta-absolute	0.743	0.762	0.776	0.753	0.811*	0.805*	0.808*
Asset Beta-industry adjusted	0.136	0.141	0.155	0.139	0.238*	0.192**	0.215*

Panel B: Change in asset-beta of AZLs in and around the '0 year (absolute values)

	Year (-2 to 0)	Year (-1 to 0)	Year (0)	Mean Pre AZLyears	Year (0 to+1)	Year (0 to +2)	Mean Post AZLyears
Asset Beta-absolute	0.033	0.014	0.776	0.024	0.035*	0.029**	0.032*
Asset Beta-industry adjusted	0.274	0.266	0.255	0.270	0.083**	0.037**	0.600*

Table 4: Operating Performance(absolute) of AZL firms and Control firms

This table presents the statistics for the operating performance of the AZL firms in terms of the ratio of the operating cash flows to book value of assets for the 5 years (- 2 to +2) around the year '0' when it became AZL.** indicates statistical significance at 5% or less while * indicates statistical significance at 10%

Panel A: Operating Performance of AZLs in and around the '0 year (absolute values)

	Year (-2)	Year (-1)	Year (0)	Mean Pre AZL years	Year (+1)	Year (+2)	Mean post AZL years
OCF/BVTA-Overall	0.035*	0.031	0.073	0.033	0.080*	0.372**	0.226
OCF/BVTA-Bull periods	0.043	0.039	0.075	0.041	0.065**	0.552**	0.308
OCF/BVTA-Bear Periods	0.083	0.053	0.069	0.068	0.105	0.066*	0.085

Panel B : Operating Performance of AZLs in and around the '0 year (industry adjusted values)

	Year (-2)	Year (-1)	Year (0)	Mean pre AZL years	Year (+1)	Year (+2)	Mean Post AZL years
OCF/BVTA-Overall	0.011	0.015	0.012	-0.013	0.029**	0.281**	0.155
OCF/BVTA-Bull periods	0.027*	0.001	0.041	-0.014	0.005	0.443**	0.224
OCF/BVTA-Bear Periods	0.022*	0.001	0.055	0.012	0.065*	0.004	0.035

Panel C: Change in Operating Performance of AZLs in and around the '0 year (absolute values)

	Year (-2 to 0)	Year (-1 to 0)	Year (0)	Mean Pre AZL years	Year (0 to +1)	Year (0 to +2)	Mean Post AZL years
OCF/BVTA-Overall	0.014	0.010	0.073	0.012	0.299**	0.007	0.153
OCF/BVTA-Bull periods	0.011*	0.082**	0.075	0.047	0.011*	0.477**	0.233
OCF/BVTA-Bear Periods	0.024*	0.002	0.069	0.013	0.036**	0.004*	0.016

Panel D: Change in Operating Performance of AZLs in and around the '0 year (industry adjusted values)

	Year (-2 to 0)	Year (-1 to 0)	Year(0)	Mean Pre AZL years	Year (0 to +1)	Year (0 to +2)	Mean Post AZL years
OCF/BVTA-Overall	0.023	0.027*	0.012	0.025	0.033*	0.285**	0.159
OCF/BVTA-Bull periods	0.031*	0.387**	0.041	0.209	0.046*	0.484**	0.265
OCF/BVTA-Bear Periods	0.027	0.009	0.055	0.018	0.010	0.051**	0.020

Table 5: Results of the regression models

This table shows the results of the estimated OLS regression models where change in the RMAR and RBAHR is the dependent variable and change in asset beta and change in operating performance are the independent variables respectively. The slope coefficients of the independent variables are reported in the table. ** implies significant at 5% or less while * indicates significant at 10% or less.

Dependent Variable	$\Delta RMAR_{i,0,k}$		$\Delta RBAHR_{i,0,j}$	
Model	**[1]**	**[2]**	**[3]**	**[4]**
Change Asset Betas from 0 to +1 year	0.15		0.34*	
Change Asset Betas from 0 to +2 year	0.13		0.27*	
Change Operating Performances from 0 to +1 year		0.27*		0.38**
Change Operating Performances from 0 to +2 year		0.15		0.33*

Table 6: Robustness test Results

This table presents the results from the robustness tests. Panel A indicates the change in peer-adjusted mean FFA around year '0', panels B, C and D present similar changes for ROA, ROE and RBAHRs without outliers respectively. ** indicates statistical significance at 5% or less while * indicates statistical significance at 10%

	(-2 to 0)	(-1 to 0)	0 to 1	0 to 2
Panel A: Change in FFA of AZLs in and around the '0 year				
FFA-Full sample	0.35%*	0.39%	0.06%*	2.78%*
FFA-Bull periods	0.15%*	0.19%*	0.09%*	5.33%**
FFA-Bear periods	-0.05%	0.06%	0.14%*	0.09%*
Panel B: Change in ROA of AZLs in and around the '0 year				
ROA-Full sample	0.26%*	0.09%	0.05%	1.59%**
ROA-Bull periods	0.12%	0.15%*	0.07%	2.26%**
ROA-Bear periods	-0.03%	0.04%	0.18%*	1.15%*
Panel C: Change in ROE of AZLs in and around the '0 year				
ROE-Full sample	0.46%	0.51%	0.08%	1.65%*
ROE-Bull periods	0.15%	0.19%	0.09%	1.37%**
ROE-Bear periods	0.06%	0.07%	0.16%*	2.11%*
Panel D: Change in RBAHR of AZLs in and around the '0 year after excluding the outliers				
RBAHR-Full sample	0.46%	0.51%	0.08%	3.65%*
RBAHR-Bull periods	0.15%	0.19%	0.09%	1.37%**
RBAHR-Bear periods	0.06%	0.07%	0.16%	4.18%*