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## Market leverage of real estate firms in India: empirical study

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Abstract

Growing urbanization, increasing population and increased per capita income have boosted the demand for housing in India. This empirical study gives us an explanation of how the market leverage of the real state firms in India are affected by firm specific attributes and external market or macroeconomic factors. Property financing is known as infrastructure financing where there exists the problems of longer gestation period, less predictable cash flows and challenge of accessing capital. This paper compares the property firms from other firms to differentiate their financial characteristics. It analyses the determinants of the market leverage for a sample of 40 Indian listed property companies for 8 year period from 2005 to 2012 and shows that current market leverage is positively and significantly impacted by previous leverage and also fewer firm characteristics that include contemporaneous operational efficiency, growth option, and change in working capital, cost of funds, etc. We conclude that transparency in property markets and accuracy in financial disclosure can help property firms' access capital and maintain their leverage. We also emphasize that the recent guidelines of SEBI on the introduction of REITs (Real Estate Investment Trusts) and real estate funds (REFs) are policy initiatives to channelize funds for this sector.

Key Words: Leverage Ratio, Profitability, Growth, Exchange Rate

## 1. INTRODUCTION

An ever growing middle class population and rising income levels, combined with the demographic change of increasingly smaller households have boosted demand for modern housing in India. Further there are popular perceptions on providing affordable low cost and mass housing for the lower and bottom middle class population. Meanwhile, increasing consumer spending power has also encouraged growth in organized retailing contributing to the spread of 'mall culture' and the popularity of other large-scale retail property developments. In the commercial property segment, strong growth in the services sector — particularly in the IT and ITES and hospitality sectors and the corporates' growing scale of operations have led to greater demand for commercial space, including modern offices, warehouses, amenities, etc. Lastly, NRI's (Non Resident Indians) from abroad have also desired to own a house in India and obtain higher returns on their investments from India's real estate sector. Recently, the Govt's open door policy of FDI (Foreign Direct Investment) in real estate has vitalized the demand for commercial real estate in the country. Many property developers have invested in large residential property and commercial establishment for lease or resale. They have also diversified into Tier II and Tier III cities and type of properties which have boosted their firms' market value while reducing operating risks. Property financing is also known as infrastructure financing which are projects of longer gestation period, less predictable cash flows and the challenges of accessing capital. When real estate firms raise debt through mortgage, it puts an upper limit on their borrowing capacity and agency problem do exist. The methods of financing are less flexible and are a challenge unlike other sectors such as manufacturing, trading, services or other firms. Reserve Bank of India (RBI) has increased risk weights for lending banks' real estate exposure, which has served to curtail direct lending to this sector. Similarly, the FDI (Foreign Direct Investment) in Real Estate has been curtailed by the fact that legal hurdles on land ownership to foreigner remain. Recently, the Govt. has permitted 51% investment in multi-brand retail and 100% in single brand retail, which will definitely open up the opportunities for commercial real estate in India. Real estate has traditionally been under the private sector and there are not many public companies (CREDAI<sup>1</sup>). Financing of

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<sup>1</sup> CREDAI (2012) has over 5000 members but only 60 (0.1%) of them are registered public companies.

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real estate has been largely through conventional mortgages and the opportunity for developers to access the capital market could be limited. This could be due to high transaction costs, may be disclosure costs and impediments in the legal framework. Unlike many countries abroad, industry data on transaction volumes, deal structures and market prices are also largely unavailable in India<sup>2</sup>. All of this could mean reduced access of genuine developers to the market for funds due to information asymmetry. This paper compares the property firms from other firms to differentiate their investment behavior and investigates the capital structure of listed Indian property companies to examine the factors impacting their observed market leverage. The demand for real estate can be segregated into two categories; commercial and residential segments. Over the recent period with the conservative growth of GDP, the Indian real estate market has shown moderate growth with correction in market valuation of these firms. The returns to a property investment includes the cost of the real estate, physical characteristics of the property, ownership rights, time and horizon of holding the property, geographical area. Demand stems rising employment, rising per capita income, migration into urban areas and growth in commercial activity. For example, newer industries coming up in an around an industrial cluster can boost the demand for both commercial and residential real estate. The real estate market in India has seen remarkable changes in the past few years. The rapid expansions of information technology, especially BPOs, spurt in the middle class income have been the drivers in this market. Previously, the Govt. has permitted 100% FDI in housing, hotels, resorts, commercial premises, educational institutions, recreational facilities, hospitals and integrated townships. Real estate sector in India grew at a very high rate during the period from 2001 to 2008. Home loans were easily available and affordable and Banks were excited to venture into this ever promising sector. Combined with such investments in residential properties thus created the demand for commercial space were created. However, post the year 2008 after reaching a peak the valuation, there has been adjustments in valuation which could be due to macro-economic or market factors. Of late the banking sector has been selective to sanction debt for the sector due to greater risk perception on such assets and is considered extremely risky (e.g., residential retail and commercial real estate, BCBS, 2006). Securitization of real estate assets is not popular in India and access to finance is a concern. Due to the heterogeneous, complex and illiquid nature, such assets requires diligent monitoring and knowledge of both project financing arrangements and Banks may not have the appraisal skills. The first stage of land aggregation is purely capital driven by promoters' capital or private capital. Banks sanction loans for land acquisition for manufacturing projects such as Steel & Power, Cement, Automobiles Projects, etc, but not for the real estate sector. Since, the property developers cannot access debt for land acquisition they have to finance the land acquisition themselves or partnering with the land owner. Opportunities for access to private equity do exist and it is not easy for the venture capitalist to exit a venture after 5 years. Private equity is not viable alternative except for few commercial ventures. During the initial stages of development, the cash flow is absent and it commences during or later during the development and completion phase. In this context, it is worthwhile to behold the market leverage of Indian real estate firms. How does the RE firms balance their capital structure? They are less active both in the debt and equity market in India than other firms. Among all the issuers in the NSE WDM<sup>3</sup> segment since 2003, there are very few debt issues by RE firms. Hence, the risk perceptions of RE firms are different. This study evaluates how does the debt to equity ratio of real estate firms in India vary with firm, market fundamental and macroeconomic characteristics. The author explains the choice of market leverage by regressing on firm characteristics such as the firm's market to book ratio, the ratio of property, plant, and equipment to total assets, the earnings to assets, depreciation to asset ratio, R&D to assets ratio, and firm size (see for example Baker and Wurgler, 2002, Fama and French, 2002, and Johnson, 2003). Based on a sample of 40 firms and 8 years (2005 to 2012), this paper shows that current market leverage is positively and significantly impacted by previous leverage and also fewer firm characteristics that include contemporaneous operational efficiency, growth option, and change in working capital, cost of funds, etc. We find that RE firms are characterized by higher current ratio, asset turnover ratio, interest coverage ratio and lower debt equity ratio as compared to their non RE firms in our sample. Unlike previously documented findings where tangible asset, larger firm size, profitability, secured debt, age of firm, have been significant determinants of leverage for firms we do not find them significant for RE firms. Alternatively, for RE firms we find previous, market leverage, operating margin, and change in current assets, average cost of borrowing and market to book ratio are significant. This paper is organized as follows. Section 2 provides a brief review of literature and describes the methodology of this study, Section 3 describes the construction of the data and variables and provides

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<sup>2</sup> NHB (2007) has started compiling RESIDEX for residential property prices for major Indian cities.

<sup>3</sup> NSE WDM Archives

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some summary statistics and also provides the main results on regressions. Section 4 concludes the paper. The next section, a review of literature and methodology of estimation is presented.

## 2. REVIEW & METHODOLOGY

Theory of Capital structure have been investigated by various authors, viz., Myers (1977, 1984), Jaffee (1991), Shyam-Sunder and Myers (1999), Baker and Wurgler (2002), Barclay, Smith and Morellec (2006), Brown and Marble (2009), Shyam-Sunder and Myers (1999), Fama and French (2002) Barclay, Smith & Morellec (2006), Titman and Wessels (1988), Feng, Ghosh and Sirmans (2007), Brown and Riddiough (2003), Rajan and Zingales (1995). Other studies include Maris and Elayan (1990), Jaffee (1991), Fama and French (2002), Baker and Wurgler (2002), Barclay, Smith and Morellec (2006), Smith and Morellec (2006), Brown and Riddiough (2003), etc. Studies have found positive relationship between tangibility and firm leverage. Further, Myers (1977) find that leverage could be negative related with high-growth firms. Baker and Wurgler (2002) argued that firms were tempted to issue stock during periods of high market-to-book ratio. Feng, Ghosh and Sirmans (2007) find real estate firms with high market-to-book ratios had higher leverage ratios and real estate firms funded expansions with debt rather than equity. With respect to firm size, Brown and Riddiough (2003) found larger debt offerings were less costly and the future cash flows of larger firms were stable and could support a larger debt. Rajan and Zingales (1995) noted that the firm size could be a proxy for reduced bankruptcy costs (too big to fail) and hence the trade-off theory would predict a positive relationship between size and leverage. Oscan (2001) provided evidence that UK firms do have target debt ratios and adjust to their target ratio relatively quickly. Leary and Roberts (2005) confirmed that firms actively rebalance their leverage to stay within an optimal range. Fischer et al. (1989) developed a model of optimal capital structure choice in the presence of recapitalization costs. Fama and French (2002) noted that regressions of firms' debt ratios show reliable evidence that leverage are mean-reverting. Rajan and Zingales (1995), Bontempi (2002) on his study of Italian firms suggested that there existed two broad approaches of capital structure, one based on trade off theory and the other based on pecking order theory and it is not easy to find a 'one size fits all' kind of model for all firms. Gaud et al. (2007) argue that an increase in ROA (Return on Assets) raises the need for financing. Jensen (1986) argued that, if the market for corporate control is strong, good firms must commit to paying out their cash flows (thereby mitigating agency costs) by leveraging up. Conversely, if the market for corporate control is weak or ineffective, Baker and Wurgler (2002) find that a firm's capital structure is largely the result of past profitability and the opportunity to finance growth via retained earnings. Smith and Watts (1992), Bradley et al. (1984), etc, documented a negative relation between market leverage and market-to-book-value ratio. Specifically, the literature on the capital structure of real estate firms have been examined by Feng et al (1997), Ooii (1999), Boudry et al (2010), Livingston et al (2007), Mccue and Kling (1994), Molina (2005), Maris and Elayan (1990), McCue and Kling (1994), Ghosh, Nag, and Sirmans (1997), Ooi (1999), Feng, Ghosh, and Sirmans (2007), Livingston, Naranjo, and Zhou (2007), and Boudry, Kallberg, and Liu (2010), etc. Ghosh, Nag and Sirmans (1997) show that leverage increased (decreased) when the underlying property market performed poorly (well) and when interest rates were higher, firms would be reluctant to issue bonds. Boudry, Kallberg and Liu (2010) cogently argue that increasing the default spread should decrease the leverage. Ooi (1999) had empirical results consistent with the traditional notion that property firms measure their long-term debt issues based on their expectation of future interest rate movements and on the prevailing property market conditions. McCue and Kling (1994) confirmed that macroeconomic factors explained the variation in the real estate prices. Molina (2005) found strong effect of that the leverage's effect of leverage on ratings of property firms. The capital structure for Indian firms has been examined by, namely, Khanobis and Bhaduri (2002), Nagaishi (2005) and few others. Khanobis and Bhaduri (2002) in a panel data study suggested that the speed of adjustment towards target capital structure is dependent on firm-specific attributes. Nagaishi (2005) on his empirical evidence of regulated firms in India found that their leverage was increasing with ROE and also investment size of the firms. The author could not locate any empirical study on the leverage of Indian RE firms at all.

We revisit the nested model for market leverage owing to Bontempi & Golinelli (2012), which provides for leverage as ;

$$Leverage_{i,t} = \alpha + \pi Leverage_{i,t-1} + \beta_1 Asset\ Tangibility + \beta_2 Growth\ Options + \beta_3 Firm\ Size\ Change + \beta_4 Profitability + \beta_5 Net\ Working\ Capital\ Change + \beta_6 Market\ Borrowing\ Rate + \varepsilon_{i,t} \quad \text{Equation 1.0}$$

Where, *Leverage* is the market leverage (ratio of total debt to the sum of total debt and market value of equity) in previous period, *Firm Size* (market value of assets), *Profitability* (Operating Profit Margin), *Lagged Leverage* (market leverage ratio in the previous period), *Growth Options* (Ratio of Market to Book Value), *Current Assets*

*Change* is the change in current assets over the previous period, *Market Borrowing Rate* (e.g., Bank Rate or Repo rate or Libor rate, etc).

Since the data for measures such as quality of Debt (debt with long-term issuer credit rating) and Term Structure of Debt is not available we do not include it in our study. Bontempi & Golinelli (2012) justifies a dynamic model of market leverage to measure the speed of adjustment towards target leverage. We specify the current market leverage is being derived in presence of previous market leverage (one year lag ) and other contemporary firm level factors. This is because when RE firms raise debt through mortgage, it impacts their subsequent borrowing capacity.

Obviously, dynamic specification of leverage for firms across time will pose few challenges and we address the same in our estimation from capital structure regressions (See Petersen, 2009). The effects of heterogeneity, endogeneity and or the presence of random effects may render bias in errors. The next section presents the data and results of regression.

#### 4. DATA AND RESULTS

The data for this empirical study is obtained from BSE which comprises annual audited results of 40 property companies from 2005 to 2012 for a total of 8 years. For comparison against other firms (non RE firms) it includes randomly drawn 14 firms obtained from BSE which comprises annual audited results from 2005 to 2012 for a total of 8 years. It includes the published and reported data from Balance Sheet, Income Statement, Financial ratios. The descriptive statistics of the sample are presented in Table 1 (a) and 1(b).

Table 1 (a). Data Description Real Estate Firms (Cross Section)

Company /Variable	Asset Turnover		Market Leverage		Interest Cover		Operating Profit Margin		Return on Assets	
	$\mu$	$\sigma$	$\mu$	$\sigma$	$\mu$	$\sigma$	$\mu$	$\sigma$	$\mu$	$\sigma$
Anant Raj	0.1	0.2	0.2	0.2	20.7	47.1	28.8	24.2	82.0	47.4
Ansal Properties	2.6	2.6	0.6	0.3	2.8	1.1	26.3	9.2	101.8	64.8
Ansal Housing	4.3	5.1	0.7	0.2	4.9	4.6	17.4	6.3	83.2	53.9
Arihant	3.4	3.4	0.5	0.2	4.6	4.3	14.6	16.2	144.3	86.2
Atlanta	0.5	0.1	0.7	0.2	3.2	1.4	36.2	8.7	72.0	37.8
B L Kashyap	3.2	2.8	0.6	0.2	13.8	11.3	10.6	3.3	159.9	110.8
Brigade	1.3	1.8	0.3	0.2	7.8	13.9	31.3	9.1	72.2	40.8
Dif	2.5	3.1	0.3	0.2	3.7	2.0	49.1	16.8	49.1	37.9
Dsk	3.8	4.4	0.6	0.3	9.3	6.8	50.2	51.1	124.1	76.0
Era Infra	2.0	1.1	0.6	0.2	3.6	1.8	18.2	3.7	88.1	67.7
Gammon	2.0	0.6	0.4	0.3	2.7	1.1	9.2	2.3	112.0	49.2
Ganesh	5.3	7.0	0.2	0.1	34.5	45.0	62.3	16.1	121.4	61.7
Gmr	15.9	21.1	0.2	0.1	2.5	1.6	65.4	29.7	21.7	15.1
Godrej Prop	9.9	14.1	0.1	0.1	26.3	17.2	29.1	12.1	152.7	50.1
Hcc	1.6	0.7	0.6	0.2	2.0	0.8	12.3	1.0	27.3	16.5
Hdi	23.2	29.1	0.3	0.2	7.0	5.3	54.6	35.8	131.5	96.7
Ivrcl	68.4	164.8	0.7	0.1	2.1	8.5	14.9	8.2	80.9	79.0
Jaiprakash	0.6	0.2	0.6	0.2	2.8	0.8	25.9	3.3	44.1	35.3
JMC Project	3.2	0.8	0.3	0.2	3.5	1.8	6.8	2.6	91.1	47.9
Madhucon	1.4	0.5	0.4	0.2	5.3	2.6	13.3	2.9	118.6	37.8
Mahindra	1.4	1.3	0.0	0.0	333.8	408.6	21.2	5.3	172.4	108.1
Marg	1.1	0.6	0.6	0.2	4.5	2.7	19.2	6.7	108.0	70.3
Ncc	1.6	0.5	0.4	0.2	5.5	3.6	11.0	1.6	94.9	45.9
Oberoi	1.5	1.8	0.2	0.2	582.0	572.2	51.0	10.5	1579.1	1635.1
Omaxe	14.6	16.7	0.3	0.2	5.3	5.7	20.6	9.1	53.3	35.5
Orbit	12.6	17.5	0.3	0.3	8.9	17.4	35.6	10.1	83.1	57.2
PBA Infra	1.1	0.3	0.7	0.2	2.3	0.8	13.6	2.5	61.6	19.8

Parsvnath Developers	6.7	7.1	0.4	0.2	61.7	110.9	34.2	10.5	66.8	39.1
Patel	1.2	0.6	0.3	0.3	3.0	1.3	16.4	2.7	133.3	67.9
Peninsula land	4.6	4.7	0.4	0.2	1.5	16.1	42.7	11.9	41.2	26.7
Pratibha ind	5.5	4.6	0.6	0.2	3.3	0.7	13.4	1.3	80.2	51.8
Purvankara	5.9	6.2	0.3	0.1	7.8	9.7	44.6	10.9	44.3	28.3
SPML	2.2	0.9	0.3	0.2	3.3	2.1	10.3	1.3	76.9	42.1
SRS	5.5	6.4	0.1	0.1	3.9	2.6	12.7	12.4	19.8	19.8
Sadbhav	2.2	0.7	0.5	0.3	4.5	1.7	11.8	1.0	139.5	116.9
Simplex	3.3	1.3	0.5	0.2	2.8	0.6	9.1	0.9	165.3	91.1
Sobha	3.2	3.1	0.3	0.2	5.1	1.7	22.8	5.7	122.5	76.6
Unitech	7.7	9.6	0.5	0.3	3.9	2.3	33.7	19.4	19.2	14.2
Vijay Shanthi Builders	5.7	4.0	0.5	0.2	37.2	40.7	23.1	17.7	29.0	14.2
Vipul	24.1	26.3	0.6	0.2	11.6	11.7	14.5	10.0	36.9	24.4
All Firms	6.7	28.2	0.4	0.3	31.4	147.7	26.0	20.8	125.1	343.4

Table 1 (b). Data Description Real Estate Firms (Time Period)

Year	Variable	Return on Assets	Interest Cover	Asset Turnover	Earning Retention	Networth	Total Assets	Market Value of Assets	Market Leverage
2005	$\mu$	94.3	18.3	9.2	85.7	134.5	345.0	554.1	0.5
2005	$\sigma$	455.5	57.2	12.7	18.3	216.1	697.7	833.0	0.3
2006	$\mu$	107.5	15.1	8.8	95.4	276.1	649.3	1483.3	0.3
2006	$\sigma$	455.1	29.9	14.0	42.0	459.2	1207.0	1860.7	0.2
2007	$\mu$	164.3	15.5	21.2	85.8	567.1	1276.8	5254.9	0.3
2007	$\sigma$	502.2	33.5	74.6	27.6	584.2	1782.3	15007.4	0.2
2008	$\mu$	185.3	34.9	9.2	86.3	1308.4	2454.8	8856.7	0.3
2008	$\sigma$	521.8	133.3	13.8	24.7	2022.2	3866.2	22016.2	0.2
2009	$\mu$	112.3	34.3	2.0	87.1	1505.7	2943.4	4693.3	0.6
2009	$\sigma$	63.0	132.9	5.8	30.8	2298.0	4708.8	9010.4	0.3
2010	$\mu$	121.1	56.7	1.4	82.5	1904.5	3605.6	8301.1	0.4
2010	$\sigma$	68.2	235.5	3.2	18.4	2751.8	5867.7	15754.7	0.3
2011	$\mu$	105.6	39.5	0.8	82.9	2194.8	4235.1	7957.9	0.4
2011	$\sigma$	66.3	201.0	0.7	14.3	3132.1	6793.3	14260.4	0.2
2012	$\mu$	110.6	36.6	0.8	83.8	2364.3	4016.5	6982.8	0.4
2012	$\sigma$	70.3	200.6	0.7	18.6	3421.9	6187.8	11952.9	0.2
All Years	$\mu$	125.1	31.4	6.7	86.2	1281.9	2440.8	5510.5	0.4
All Years	$\sigma$	343.4	147.7	28.2	25.8	2331.9	4662.2	13360.8	0.3

Table 2 (a). Data Description Other Firms (Cross Section)

Company/Variab le	Asset Turnover		Earning Retention		Interest Cover		Operating Profit Margin		Return on Assets		Debt Equity Ratio	
	$\mu$	$\sigma$	$\mu$	$\sigma$	$\mu$	$\sigma$	$\mu$	$\sigma$	$\mu$	$\sigma$	$\mu$	$\sigma$
Bhilwara Spinners	14.7	30.7			3.5	0.9	0.7	5.1	0.3	41.5	6.2	7.7

Godrej Appliances	1.7	0.8	69.5	74.1	0.7	0.3	34.2	13.5	14.5	7.8	0.8	0.2
Grasim	1.4	0.5	18.3	2.9	0.3	0.2	767.2	210.5	20.2	5.7	0.9	0.2
Hpcl	6.3	1.6	34.3	11.1	1.5	0.7	292.7	41.9	10.3	4.4	0.8	0.1

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Infy	6.6	0.4	95.2	3.8	4.0	1.0	308.9	118.0			37.9	2.6
Ipcl	1.6	0.3	80.8	2.5	10.4	2.5	19.5	2.0	120.8	98.0	0.5	0.1
Kpit	4.5	1.5	11.6	3.6	0.4	0.2	52.3	23.2	21.0	7.7	1.3	0.4
Rcf	2.1	0.4	60.9	15.8	5.9	1.7	6.6	0.8	33.5	4.6	0.6	0.2
Rel Ind Inf	1.3	0.4	67.7	4.7	0.8	0.5	63.9	24.8	16.1	1.7	3.6	1.2
Ril	1.2	0.2	84.9	1.4	11.9	2.9	16.3	2.8	455.2	141.1	0.5	0.1
Rel Comm	0.5	0.0	28.9	18.2	0.6	0.1	156.8	106.3	2.4	4.7	1.1	0.3
Tata Motors	2.1	0.7	46.5	18.7	5.1	2.6	9.8	1.7	189.0	82.8	0.8	0.2
Zuari Agro Chem	4.3	2.1	85.5	6.0	5.2	4.6	4.0	1.4	230.5	155.3	1.1	0.5
All	3.8	8.4	57.5	35.7	3.9	4.2	137.7	226.7	96.5	152.5	4.5	10.3

Table 2 (b). Data Description Other Firms (Time Period)

Years	Statistics	Operating Profit Margin	Return on Assets	Interest Cover	Asset Turnover Ratio	Earning Retention Ratio
2005	$\mu$	118.4	48.6	3.3	3.8	55.3
2005	$\sigma$	135.7	78.2	4.1	2.6	27.4
2006	$\mu$	113.1	54.0	3.7	3.3	55.4
2006	$\sigma$	161.7	104.4	4.1	2.5	28.4
2007	$\mu$	104.5	107.1	3.6	3.2	56.7
2007	$\sigma$	194.4	144.6	4.0	2.5	27.0
2008	$\mu$	130.7	117.4	4.0	3.0	51.9
2008	$\sigma$	242.4	168.9	4.8	2.1	33.5
2009	$\mu$	158.5	132.8	3.4	2.7	74.3
2009	$\sigma$	283.3	222.9	3.5	2.1	64.6
2010	$\mu$	147.8	98.4	4.7	2.5	55.6
2010	$\sigma$	227.7	149.2	5.3	1.8	30.8
2011	$\mu$	161.7	122.3	4.5	2.5	55.6
2011	$\sigma$	256.9	177.4	4.7	1.9	30.9
2012	$\mu$	167.7	86.1	4.5	9.2	54.5
2012	$\sigma$	325.8	148.7	4.3	22.7	30.2
All Years	$\mu$	131.7	83.6	4.2	3.8	57.3
All Years	$\sigma$	214.7	145.6	5.6	7.6	34.1

The mean market leverage of RE firms is 0.4 with a deviation of 0.3 which also includes Firms such as Mahindra which have no leverage at all. The firm characteristics also present unique variation across cross section for few of the major performance attributes such as Asset Turnover Ratio at 6.7 and deviation 28.2, Interest Cover 31.4 and deviation 147.7, Operating Profit Margin 26.0 and deviation 20.8, Return on Assets 125.1 with deviation 343.4, etc. The variation across time against the sample attributes depict interesting trend, where the mean leverage for few years have remained lower or higher than other years. To contrast with the other firms, cross sectionally, we find Asset Turnover at 3.8 and deviation 8.4, Earning Retention 57.5 and deviation at 35.7, Interest Cover 3.9 and deviation at 4.2, Operating Profit Margin 137.7 and deviation at 226.7, Return on Assets 96.5 and deviation at 152.5, and finally Debt Equity Ratio at 4.5 with a deviation of 10.3. Over time other firms reflect much difference in their characteristics where we find Operating Profit Margin at 131.7 and deviation 83.6, Return on Assets at 4.2 and deviation 3.8, Interest Cover at 57.3 and deviation 214.7, Asset Turnover Ratio at 145.6 and deviation 5.6, and finally Earning Retention Ratio at 7.6 and deviation 34.1. Other firms are characterized by lower current ratio, lower asset turnover ratio, and lower interest coverage ratio as compared to their non RE firms in our sample. This justifies the need for estimating the market leverage regression for RE firms separately.

The procedure of estimation proceeds with the fact that with a time effect. The method of estimations also proceeds with the knowledge of the fact that the residuals of a given firm may be correlated across years (time series)



dependence) for a given firm. Of the most common approaches used in the literature and examined in this paper



only clustered standard errors are unbiased as they account for the residual dependence created by the firm effect. An alternative way to estimate the regression coefficients and standard errors when the residuals are not independent is the Fama-MacBeth approach (Fama and MacBeth, 1973). In this approach, the author runs T cross sectional regressions and reports the average of the T estimates. Since the Fama-MacBeth procedure is designed to address a time effect, the Fama-MacBeth standard errors are unbiased also.

The relative importance of the firm effect and the time effect can be seen by comparing the standard errors across multiple model specifications. The standard errors clustered by year alone are lower than the standard errors clustered by just firm.

Table 3(a). Market Leverage Linear Regressions

Dependent variable	Market Leverage ( $\frac{\text{Debt}}{\text{Debt} + \text{Market Value of Equity}}$ )						
	Pooled S without time Dummies	OL S with time Dummies	OLS m Clustered Standard Errors	Firm	OLS Time Clustered	Fama-Macbeth	Newey West
Intercept	0.26 (<.0001)	0.22 (<.0001)	0.26 (<.0001)	0.26 (0.004)	0.257 (0.003)	0.257 (<.0001)	0.257 (<.0001)
$\pi$ (dynamics)	0.55 (<.0001)	0.68 (<.0001)	0.55 (<.0001)	0.55 (<.0001)	0.643 (<.0001)	0.643 (<.0001)	0.643 (<.0001)
$\beta_1$ (Operating Profit Margin)	-1.96E-03 (.0004)	-1.55E-03 (<.0001)	-1.96E-03 (<.0001)	-1.96E-03 (0.002)	-	0.001 (0.019)	0.001 (0.001)
$\beta_2$ (Market to Book Ratio)	-0.01 (<.0001)	-0.01 (<.0001)	-0.01 (0.002)	-	0.010 (.018)	-0.033 (0.040)	-0.033 (0.067)
B3 (Current Assets Change)	5.19E-05 (0.0259)	5.11E-05 (0.01)	5.19E-05 (0.004)	5.19E-05 (0.057)	3.59E-05 (0.225)	3.59E-05 (0.015)	3.59E-05 (0.015)
B4 (Average Borrowing Cost)	-2.04E-03 (0.2984)	-3.29E-03 (0.04)	-2.04E-03 (0.299)	-2.04E-03 (.334)	-	0.005 (0.020)	0.005 (0.005)
Y2006		-0.183 (<.0001)					
Y2008		-0.093 (.001)					

Y2009		0.244 ( $<.0001$ )				
Y2010		$-\frac{0.14}{6}$ ( $<.0001$ )				
NT (Total Observation)	320	320	320	320	320	320
N (Firms)	40	40	40	40	40	40
T = NT/N	8	8	8	8	8	8

SS	12.23	7.9	-	-		
E	0.04	0.0	0.2	0.2		
MS	0.45	0.6	0.5	0		
E				0.45		
R-Square						
Godfrey test for Auto Correlation						
AR (1)	38.6 (<.0001)	0.75 ( 0.39)				
AR (2)	46.5 (<.0001)					
AR (3)	60.9 (<.0001)					
() Indicates significance P values						

Table 3 (b). Market Leverage Panel Regressions

Dependent Variable	Market Leverage ( $\frac{\text{Debt}}{\text{Debt} + \text{Market Value of Equity}}$ )		
	Dasilva	Fuller	Parks
Intercept	0.18 (<.0001)	0.22 (<.0001)	0.23 (<.0001)
$\pi$ (dynamics)	0.70 (<.0001)	0.65 (<.0001)	0.59 (<.0001)
$\beta_1$ (Operating Profit Margin )	-1.32E-03 (0.003)	-1.59E-03 (.001)	-1.58E-03 (<.0001)
$\beta_2$ (Market to Book Ratio)	-0.01 (<.0001)	-0.01 (.001)	-0.01 (<.0001)
$\beta_3$ (Current Assets Change)	4.50E-05 (0.016)	5.10E-05 (.011)	5.00E-05 (<.0001)
$\beta_4$ (Average Borrowing Cost)	-3.60E-03 (0.023)	-3.56E-03 (.04)	-1.60E-04 (.107)
NT (Total Observation)	320	320	320
N (Firms)	40	40	40
T = NT/N	8	8	8

Hausman Test for Random Effects		29.72 (<.0001)	
SS	348.8	7.87	59.17
E	1.1	0.03	0.19
MS	0.60	0.53	0.94
E			
R-Square			
( ) Indicates significance P values			

Petersen (2008) argues that standard errors produced by fixed effects are unbiased only when the firm effect is permanent. If the firm effect decays over time, standard errors are no longer unbiased and it is still important to estimate clustered standard errors. Thus, we report panel-robust standard errors adjusted for clustering at the firm level. In the presence of a firm effect standard errors are biased when estimated by OLS, Newey-West (modified for panel data sets), Fama-MacBeth. Our panel data sets has more firms than years we include dummy variables for each time period (to absorb the time effect) and then cluster by firm. Subsequently, we report the pooled OLS using the time effect and the test for autocorrelation separately. The autocorrelation is eliminated after incorporating the time effect. We find the estimation reported out COL2 is the most promising model results. The panel methods of Dasilva, Parks and Fuller are presented in Table 3(b) respectively. The tests for heterogeneity and other effects confirmed from the Panel regressions in Table 3(b), were used to estimate the pooled regressions in 3(a). To conclude we find model Col (2) superior to all other results reported here in this study. Commenting on the significant parameters, we find previous leverage, Growth options, operating margin, market to book ratio, average cost of borrowing are the drivers of market leverage. From the regression we find the results are consistent with Myers (1977), Auerbach, 1985, Frank and Goyal 2008, Bontempi, 2012, etc). We also find that companies use more debt when the interest rates are low. Pecking order theory of finance proposed by Myers (1984) prescribes a negative relationship between debt and profitability on the basis that successful companies do not need to depend so much on external funding. Continuing with our analysis of the results on leverage factors, we note that the market-to-book ratio negatively affects both debt issues. It is common to find a negative relation between the market-to-book ratio and leverage. The market-to-book ratio is commonly considered as a proxy for growth opportunities. Growth firms are expected to finance with relatively more equity to avoid debt-related agency conflicts (Myers, 1977).

#### 4. CONCLUSIONS

The study shows that the capital structure of real estate firms in India are significantly affected by firm specific attributes. The author investigates the features of the capital structure decisions in Indian real estate companies that are unique and different from the conventional findings offered in the existing literature and the determinants that are related to the institutional characteristics. A higher market-to-book ratio is associated with lower leverage. RE firms are typically more levered compared to others because of the apparent discrimination faced by them in accessing capital market? The coefficients on change in current assets are positive and so does other attributes, which implies that the rising net working capital needs of the firms make them raise debt. It has been shown that firm level factors like previous leverage, Growth options, operating margin, market to book ratio, average cost of borrowing are the main contributors to the leverage of the firms. The empirical evidence also highlights the significance of financial risks considerations in the debt policies of the property companies. Apart from the commonality between the capital structure of real estate firms and other firms, we also find few dissimilar dimensions which also seem to influence them. It may not be easy to demonstrate leverage is positively related with property pieces. The loan in the case real estate projects can be considered as long term debt so that the borrower finances both the land and the development. We find real estate capital structure to be driven by few of the same factors which also seem to influence the non-real estate corporate borrowing. Higher levels of existing debt also influence firm leverage. India is deprived of and needs a stronger capital market base for property financing. Taken together, these results provide unique additional insight into the under examined determinants of capital choices. The recent guidelines of SEBI on the introduction of REITs (Real Estate Investment Trusts) and real estate funds (REFs) are policy initiatives to channelize funds for this sector. The introduction of REITs will also give international investors in particular, a familiar investment vehicle to deal with.

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