Aspects of sensitivity analysis on NAV valuation in Real Estate sector – A case on Prajay Engineers Syndicate

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Abstract: Valuation of property prices has become challenging for many real estate companies in India. Many companies have just entered to market and hence lack proven track records, their land banks and Net Asset values NAVs are not mature and carry regulatory and disclosure risks. NAVs are used as standard valuation benchmark for at least the near term. The present study in the paper is an attempt to create a valuation model for a real estate company. Sensitivity analysis of increase in cost of property prices and construction cost on the valuation has also been achieved to see the impact on the NAVs

Keywords: NPV, NAV, Kruskal-Wallis

Introduction

The real estate action is no longer limited to the large metropolises of India but has now permeated to the burgeoning smaller towns and cities. These emerging centres of growth are lending sparkle to India's booming economy. The upswing of the Indian real estate sector has been an outcome of a number of positive micro and macro factors. Consistent and sustaining GDP growth, expanding service sector, rising purchasing power and affluence, proactive and changing government policies have all lent momentum to this rapidly growing sector. Positive economic growth has also translated in rising disposable incomes and growing aspiration levels across India. Accounting for almost 80% of the total office space absorption, the Indian IT/ITES sector has been the primary demand driver. India's low cost-high quality and productivity model has given it a leadership position in the outsourcing arena. Rising consumerism has created a demand for new retailing and entertainment avenues. Realising that consumers across cities have similar needs, albeit the scale may vary, new age retailers are vying to cash in on the first mover

advantage and are expanding into hitherto unexplored smaller cities. Advent of organised retailing has also translated into real estate growth in these emerging locations. Growth of the Indian 'Rich' (annual income>USD 4,700) and 'Consuming' (annual income USD 1,000-4,700) class coupled with falling interest rates and other fiscal incentives on home loans has increased the affordability and the risk appetite of the average Indian consumer thereby leading to a substantial rise in demand for housing. This has been further fueled by the increase in the size of 25-55 age group of earning population and the emergence of double income, nuclear families. Over the last decade the average age of Indian home loan borrower has reduced by 10 years. Major real estate destinations of the country and some other emerging towns can be classified into three broad categories depending upon the stage of real estate development that each one of them is undergoing.

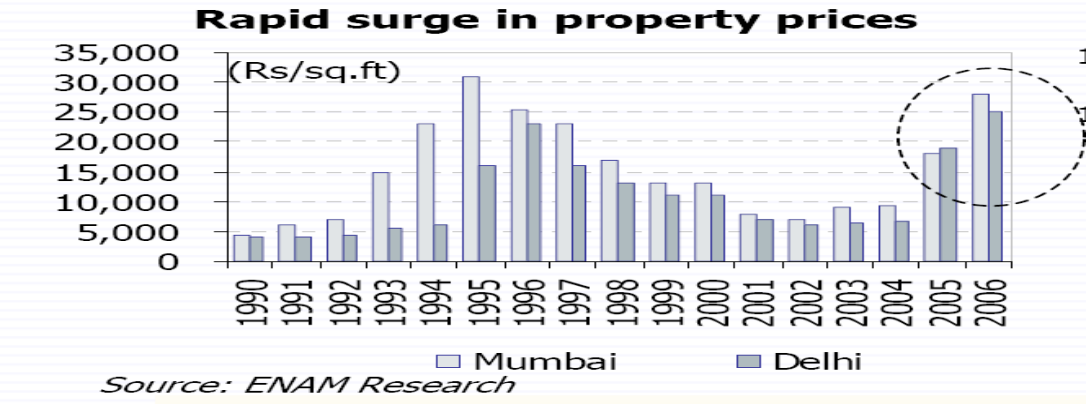
Category	Cities	Characteristics
Tier I	Bangalore, Mumbai and NCR	Fairly well established real estate market Demand drivers quite pronounced
Tier II	Hyderabad, Chennai, Pune and Kolkata	Growing real estate markets Experiencing heightened demand and investments
Tier III	Chandigarh, Ludhiana, Lucknow, Guwahati, Bhubaneswar, Jaipur, Ahmedabad, Surat, Nagpur, Indore, Goa, Visakapatinam, Mysore, Coimbatore, Kochi, Vijaywada, Mangalore, Trivandrum and Baroda	Real estate markets yet to establish Perceived to have substantial potential demand

As the Indian real estate sector moves higher on the growth curve, a number of state capitals and smaller cities which have relatively better infrastructure and are able to support higher economic growth have come into limelight. These emerging growth centers are characterized by low real estate costs, availability of land for development, untapped manpower pool and rising quality of life. Many of these towns have industrial and tourism driven economic base that can be leveraged for growth. Anticipating the latent demand in these markets, a number of real estate developers and retailers have chalked out expansive plans to harness the opportunity.

In the last several years, real estate has found a growing place in investment portfolios because returns on such investments have been higher than on stocks and bonds. Real estate is attracting more dollars because transactions are simpler to understand, and there are fewer economic surprises in real estate markets. As more and more dollars flow into real estate, analysis is

becoming more sophisticated. Professional practice standards are being developed, as are data tools that allow return forecasts to be more accurate.

Market Analysis for Real Estate is an essential text that introduces a six-step process for market analysis that includes analysis of property productivity, market definition, demand analysis, supply analysis, comparison of supply and demand, and development of a subject capture estimate. Property prices throughout India have been surging, particularly in the metros. For example, Mumbai saw a sharp rise in real estate prices (20% in central region and 30-40% in western and southern region) during 2005. Real Estate is however cyclical, which could imply a fall in the future. The previous high in the industry was seen around the mid-1990s, which ended due to unsustainable speculation. After that the real estate prices were moving in a narrow range. Now the prices are moving up. There can be turn back if the prices move up so much that the consumers can not afford or consumers finds difficulty in raising funds due to increased interest rates. The following graph shows the enormous Price rise is in the range of 200 to 400% in Delhi and NCR in the last four years. In most cyclical industries, supply comes in just after the market has been booming & then we have the reverse situation of over-supply. Unlike other cyclical (like commodities, for instance); for real estate the situation gets exacerbated as not only do the prices fall; but the property inventory becomes illiquid for a long, long time.



Once the property has been properly defined, it is necessary to consider the complicating issue surrounding a determination of the appropriate method for computing the value of the property. Key factors that affect the value of real property include: demographic changes in the surrounding neighborhoods, the rate of inflation, the strength of the local economy, and the amount of money and effort the owner has expended to maintain the property.

The valuation of real property can never be an exact science due to the inherent subjectivity involved in the valuation of real property. To determine the market value of a subject property, a valuation must consider the application of each method and select the approach or approaches most suitable to determine the market value of the subject property. The need for competent, unbiased, real estate valuation experts is greater than ever.

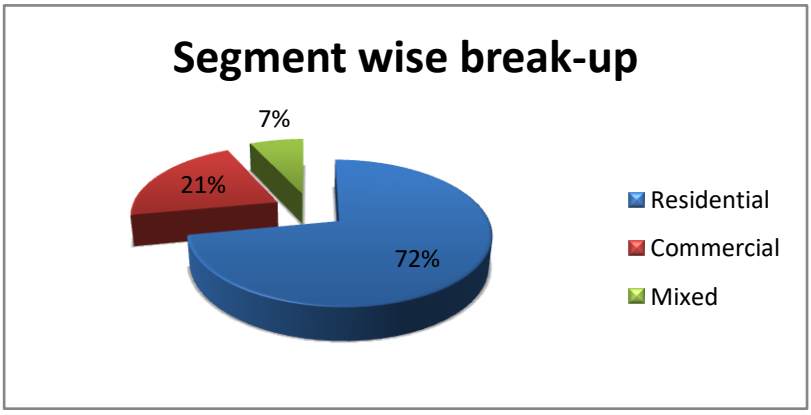
Valuation of real estate is difficult due to Level of disclosures, industry is at a nascent stage, lack of clarity on land ownership, nominal payments or buying 'options' on large land banks, limited track record of companies. Valuing India's property companies at this stage is a challenge – many are relatively new and thus lack proven track records, their land banks and NAVs are not mature and carry regulatory and disclosure risks, and rapid rises in earnings are in part accounted for by historical gains on old land. Nor is this challenge likely to get much easier. We expect NAV to be the standard valuation benchmark for at least the near term, with P/E multiples used more as a secondary methodology. Value effects for real estate sector with implications of 69 domestic and cross-border merger and acquisition was studied by Kirchhoff, Schiereck and Mentz (2006). Hiang(2001) provides some support related to the property as a factor of corporate valuation and examines the implications for portfolio and corporate management.

NAV of projects is based on assumptions of realizable sales price, operating margins (dependent on construction cost) and estimated development timelines. However, globally, NAVs are calculated for projects under construction and not for projects that are planned for future development. The net present value (NPV) based on the sum of the net asset value (NAV) of a company's discounted post tax project cash flows. It does not include the return on excess cash generated as the projects get executed.

The biggest fallacy while valuing real estate companies is to look for common parameters to value these companies. Each company has a different business model and its own core competencies and skill set. Each company should be valued independently to ascertain the value of the assets and overall competency of the business model. For a study on the sensitivity analysis of NAVs, a case on Paranjay Engineering syndicate is discussed in the present paper. The objective of the paper is to see the impact of Increase in property prices and the construction costs on valuation parameters of the company. Finally, Kruskal-Wallis Rank test is used to study the significance among the different changes in the property prices.

Prajay Engineers Syndicate is the largest real estate developer in Hyderabad and has over 20 years of experience in real estate and construction. It has well located land banks of 850 acres acquired in the past 10-15 years. It has around 35 projects under various stages of development, with cumulative saleable area of 26mn sqft. The projects are expected to come on stream over the next 4-5 years. These include high-end residential apartments, villas, townships and retail and entertainment complexes. Out of the 26mn sqft saleable area, 72% is residential, 21% is commercial and the remaining 7% is a mix of commercial, retail and entertainment facilities.

Prajay has significant exposure to the hospitality sector, which will likely result in significant growth over the next 3-4 years The company is developing a holiday resort in Shamirpet consisting of luxury cottages, restaurants and leisure & entertainment facilities along with three five star hotels, one four star and one three star hotel and 18 hole PAGA championship class golf course. The segment wise break up the Paranjay syndicate is shown in the following pie-chart.



Kruskal-Wallis Rank Test- is a non-parametric test required to tests the equality of more than 2 population medians. The Assumptions of the test are:

- The samples are random and independent
- Variables have a continuous distribution
- The data can be ranked
- Populations have the same variability
- Populations have the same shape

Algorithm to conduct Kruskal-Wallis test

Step 1: Obtain relative rankings for each value-In event of tie, each of the tied values gets the average rank

Step 2: Sum the rankings for data from each of the c groups. Compute the H test statistic.

Step 3: Determine the Kruskal-Wallis H-test statistic: (with c – 1 degrees of freedom)

$$H = \left[\frac{12}{n(n+1)} \sum_{j=1}^{c} \frac{T_j^2}{n_j} \right] - 3(n+1)$$

where:

n = sum of sample sizes in all samples

c = Number of samples

T_j = Sum of ranks in the jth sample

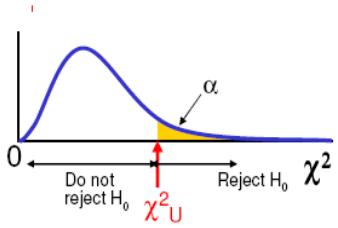
n_j = Number of values in the jth sample (j = 1, 2, … , c)

Step 4 Complete the test by comparing the calculated H value to a critical c2 value from the chi-square distribution with c – 1 degrees of freedom.

Step 5. Decision rule

Reject H_0 if test statistic H > c^2_U

Otherwise do not reject H_0



Methodology for NAV Valuation

1. Input Saleable area
2. Let X = Saleable area – (land cost + construction cost)
3. Determine Profit = $Profit = X(1-tax)(1-otherexpenses)$

   where Tax rates =34% (assumed value)

   Other expenses = 15% (assumed value)
4. Determine Discount per day
5. Determine NPV for each project = $\frac{Profit}{(1+discount)^{Z/2}}$

   where z =project completion in days
6. Determine $NAV = \frac{NPV}{(1+Y)^K}$ where K 'time to start the project' > 0

   $= NPV \frac{(Z+K)}{Z}$ Otherwise

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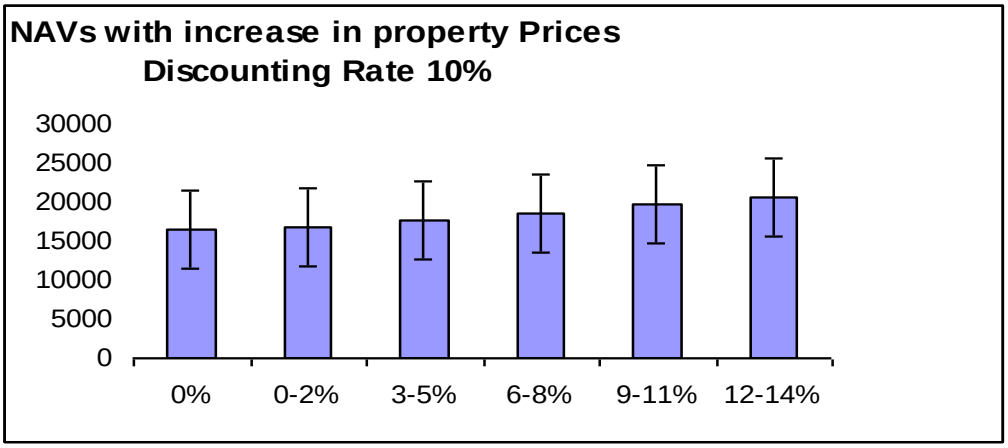
Result and Analysis

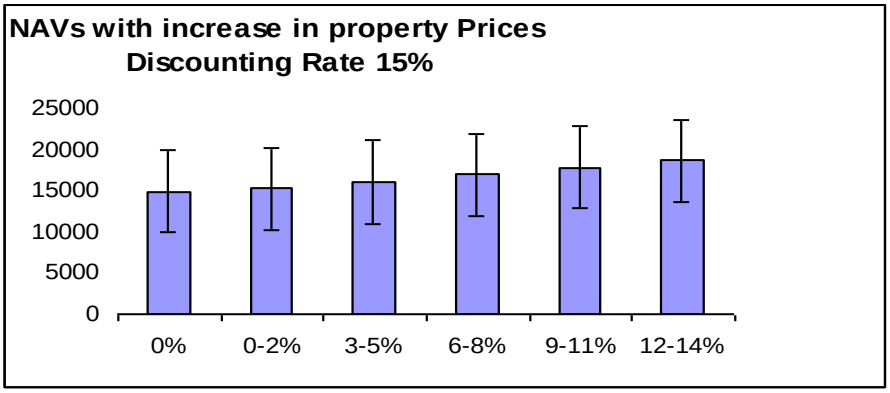
Discounting rate=10%

Increase in Construction Cost (%)	Increase in property prices (%)					
	0%	**0-2%**	**3-5%**	**6-8%**	**9-11%**	**12-14%**
0%	17,336	17653	18,605	19,557	20,509	21,461
3%	16,982	17,299	18,252	19,204	20,156	21,108
6%	16,628	16,946	17,898	18,850	19,802	20,754
9%	16,275	16592	17,544	18,496	19,448	20,400
12%	15,921	16,238	17,191	18,143	19,095	20,047
15%	15567	15885	16837	17789	18741	19693
Mean	**16452**	**16769**	**17721**	**18673**	**19625**	**20577**



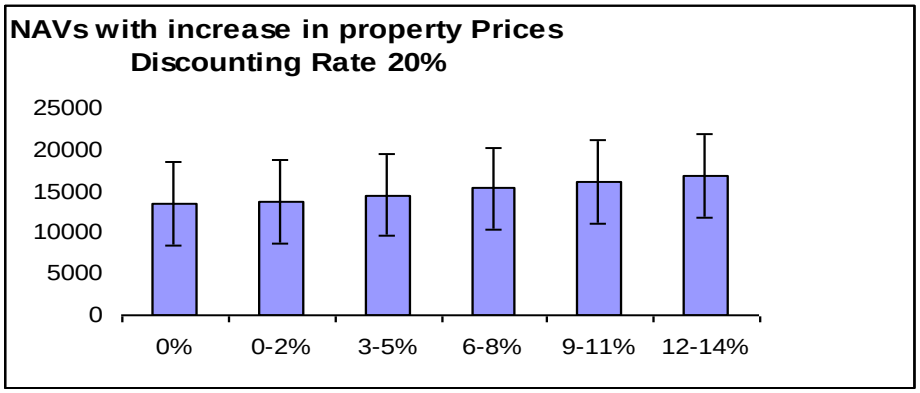
Discounting Rate=15%

Increase in Construction Cost (%)	Increase in property prices (%)					
	0%	**0-2%**	**3-5%**	**6-8%**	**9-11%**	**12-14%**
0%	15,686	15973	16,834	17,694	18,555	19,415
3%	15,367	15,654	16,514	17,375	18,235	19,096
6%	15,048	15,335	16,195	17,056	17,916	18,777
9%	14,729	15016	15,876	16,737	17,597	18,458
12%	14,410	14,697	15,557	16,418	17,278	18,139
15%	14091	14378	15238	16099	16959	17820
Mean	**14888**	**15175**	**16036**	**16896**	**17757**	**18617**



Discounting Rate=20%

Increase in Construction Cost (%)	Increase in property prices (%)					
	0%	**0-2%**	**3-5%**	**6-8%**	**9-11%**	**12-14%**
0%	14,201	14460	15,238	16,016	16,794	17,572
3%	13,913	14,172	14,950	15,728	16,506	17,284
6%	13,625	13,884	14,662	15,440	16,218	16,996
9%	13,337	13596	14,374	15,152	15,930	16,708
12%	13,049	13,308	14,086	14,864	15,642	16,420
15%	12761	13020	13798	14576	15354	16132
Mean	**13481**	**13740**	**14518**	**15296**	**16074**	**16852**



Conclusion and Interpretation

From the results, it is obtained that NAVs decreases with the increase in rate of discounting significantly and the percentage change in NAVs is higher in higher discount rate as compared to a lower discount rates. Further, It was found using Kruskal-Wallis test that the p-value 6.766E-45 (<-.05)) is highly significant with increase in property prices and has a significant impact on NAVs to a greater extent as compared to the increase in construction cost.

In general, most asset classes in India is found to have significant appreciation in stocks, real estate, gold etc during the last three years. Further, it has also been seen that the real estate sector have largely stagnated in the current calendar year, while stock markets have moved up sharply by 38% in Sensex and 43% in Nifty. The impact was found significant among investors, that they have switch their profits/capital from other sources to the real estate sectors. Real estate's growing place in investment portfolios demands that any professional dealing with real property be prepared to play on this new field.

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