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# Private equity investment and real estate development

## Evidence from residential projects in India

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### Abstract

**Purpose** – The purpose of this paper is to understand the trends and contribution of private equity (PE) investors in real estate development in India because the real estate sector in India had witnessed significant investments from PE firms in recent years.

**Design/methodology/approach** – The study focused on residential segment of real estate development, as it is the largest among all the segments. Two types of analyses have been done in this paper: first was to compare residential projects with PE investment with those that did not have any PE investment. The results were based on an analysis of 453 residential projects. The second was an analysis of only those projects that had PE investment. This paper studied if there were differences in investment patterns between domestic and foreign PE investors, and dedicated and diversified PE investors.

**Findings** – Projects with PE investment were larger, as compared to projects that did not have any PE investment. The results of this paper also showed that PE firms preferred to invest with developers who had significant experience in undertaking larger-sized projects. PE investments significantly happened in projects that were located in metro cities. While PE firms as a whole preferred to invest in project mode, domestic investors were more inclined to invest in a project structure as compared to foreign PE firms. Though foreign PE firms invested more amounts per deal on average, there was a negative relationship between foreign PE firms and the extent of their shareholding in the investment.

**Practical implications** – Encouraging PE investment in real estate projects would contribute toward to increasing the transparency in the sector. Strengthening the domestic PE industry would increase investment flow for real estate projects. PE investors who are able to add value to their investments are able to obtain higher shareholding.

**Originality/value** – Empirical research on Indian real estate industry is scarce because of the lack of transparency and availability of reliable data. This is one of the initial studies on the Indian real estate sector based on a robust dataset.



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**Keywords** India, Real estate, Developer experience, Floor space index, Private equity, Special purpose vehicle

**Paper type** Technical Paper

## 1. Real estate sector in India

The real estate sector forms an integral component in India's economy. In addition to housing the country's one billion people and providing location facilities for all businesses, this sector supported around 7.6 million jobs directly. Estimated to grow at a rate of 20 per cent per annum (FICCI, 2012), the sector was expected to earn revenues of \$180 billion by 2020 (IBEF, 2013). This phenomenal growth can be attributed to favorable demographics, increasing purchasing power of the urban population, professionalism in real estate and the reforms initiated by the government to attract global investors. The Indian real estate sector was ranked 20th among the top global markets for real estate investment in 2012, with investments worth Rs. 190 billion (\$3.46 billion) during 2012 (Cushman and Wakefield, 2013).

### 1.1 Residential real estate

Real estate sector can be broadly categorized into five segments:

- (1) residential;
- (2) retail;
- (3) hospitality;
- (4) commercial; and
- (5) industrial.

The residential sector formed the core of the real estate sector in India, which contributed to about 5.9 per cent of India's gross domestic product (GDP) (Ernst and Young, 2013a). The demand for residential properties in India has increased over the past few years, given the rapid urbanization of the population, increasing personal incomes, simplified banking procedures and setting up of financial institutions that provided mortgages for purchases of residential properties. Further, India's emergence as an attractive off-shoring destination to captive units of major Fortune 500 companies and the entry of professional real estate companies with strong expertise in real estate development had catalyzed the industry growth in recent years.

In 2012, the urban and rural housing shortage was estimated at 18.8 and 47.4 million, respectively (IBEF, 2013). A key challenge for real estate developers in meeting this demand was to raise the required capital needed for developing various projects.

### 1.2 Financing real estate projects

Real estate developers were faced with substantial constraints in mobilizing their capital requirements because of regulatory and other characteristics of the industry in India. Broadly, the capital requirements for residential real estate projects can be classified into four categories:

- (1) land acquisition;
- (2) project development;

- (3) construction; and
- (4) sales and marketing.

Land acquisition and construction would account for the bulk of the capital needs. Regulatory restrictions prevented domestic banks or external commercial borrowings to fund land acquisition costs. Even construction costs were not fully provided for by the banks. Therefore, real estate developers had to rely on equity capital, high cost funding from informal sources and customer advances to meet their capital requirements. With increasing project size, developers found it difficult to provide the necessary equity from own sources. While larger developers resorted to the stock market to raise capital through initial public offerings (IPOs) during 2007-2008, the poor performance of these stocks in the secondary market made it difficult for other developers to come with IPO's (Thillai Rajan and Doshi, 2012). Funding from informal sources is very expensive and financing from customer advances is time consuming.

The real estate developers keen on obtaining alternate sources of capital, found that investment from private equity (PE) investors can be a key source of funding. The growth of the real estate industry in India and the potential for obtaining attractive financial returns also attracted the PE investors. To facilitate foreign capital investment from PE and other investors, the government issued a press note in 2005, which permitted foreign direct investment (FDI) in real estate projects (Department of Industrial Policy and Promotion, 2005). The results of liberalizing the real estate sector for FDI were quickly evident as substantial PE investment in the form of FDI started happening in real estate projects.

### *1.3 PE in real estate*

PE is a form of capital that uses equity and equity-related instruments (such as preference shares, preference shares compulsorily convertible to equity shares and debentures fully and compulsorily convertible into equity shares) to invest in various projects. Originally used as venture capital to finance innovative hi-tech companies, the success of the PE financing model resulted in the use of PE investment approaches in other sectors such as manufacturing, infrastructure and real estate (Lorenzo, 1996). PE also represented an alternative method of raising funds and is ideal for situations where the project characteristics such as uncertainty, investment horizon, and quantum of funding make it difficult to raise funding from conventional sources such as banks and primary capital markets. In recent years, PE investors had shown increasing interest to invest in real estate projects. In 2013, the total value of real estate PE funds that were closed worldwide was \$31.4 billion (PERE, 2013). In India, about \$17 billion estimated to have been invested in 290 real estate projects till 2010 (Thillairajan and Doshi, 2012). Venture Intelligence (2014) estimated that there were 337 PE deals in real estate in India during January 2010-June 2014. Of the above, 291 deals had details on the investment amount and the total investment in these 291 deals was \$11.18 billion.

### *1.4 Structure of the paper*

The remaining part of the paper is structured as follows. Section 2 presents a brief literature review of PE investments and investment drivers in real estate. Section 3 provides the objective of the paper. Section 4 describes the study data and methodology.

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Section 5 presents the results, and Section 6 discusses the findings of the study. Implications of the results and conclusion are provided in Section 7.

## 2. Literature review

PE is often known as risk capital provided in a variety of situations, ranging from finance provided to business start-ups, mezzanine finance and to the purchase of large mature quoted companies (Gillian and Wright, 2008). PE firms obtain capital from various fund providers (called limited partners) and manage the capital in fiduciary capacity by investing in identified opportunities. Other than seeking higher returns, the limited partners who invest in PE funds, also aim to achieve portfolio diversification or spread their risk. PE funds are set-up as close-ended funds with a with a fixed-term horizon, at the end of which the capital and returns are repatriated to the limited partners. The PE firms that are responsible for identifying the investment opportunities and managing the day-to-day operations of the fund are called general partners. A single PE firm will typically have several funds, with each fund having its own set of general partners.

PE, as a financial intermediary, is known to operate in situations where informational asymmetry is particularly prevalent (Gompers and Lerner, 1999). Because real estate is not directly traded on a central exchange, the physical real estate market is characterized by relative lack of liquidity, large lot size and high transaction costs with properties that are locationally fixed and heterogeneous. The low transparency of the real estate market also results in potential asymmetric information (Georgiev, 2002). Ippolito (2007) has highlighted some of the other challenges for PE investment in countries like India. He has said that there could be difficulties in conducting proper due diligence and challenges regarding government limitations on foreign ownership in some sectors. Post investment, it may be difficult to find properly qualified managers capable of improving operations, and to exit the investment because of the limited depth of capital markets.

From the PE firm's point of view, the real estate sector has emerged as a viable alternative to achieve balance in the portfolio (Adair *et al.*, 1999), the traditional view being that property is a long-term low-risk investment with potential for diversification (Rydin *et al.*, 1990). In real estate, PE investment strategies fall under the following three categories (Lin, 2008):

- (1) *Core plus*: This is a moderate risk/moderate return strategy. The funds usually invest in projects that need mid-high value addition. This kind of investment strategy is very rare in real estate segment.
- (2) *Value added*: This is a medium-to-high risk/medium-to-high return strategy. The funds acquire properties, add-value to them and sell them at a time when the property market is booming.
- (3) *Opportunistic*: This is a high risk/high return strategy. The properties will require a high degree of enhancement or complete development. This strategy may also involve investments in development, raw land and niche property sectors. These types of investments are highly tactical and involve a good amount of diligence from the investor. This is also the most common type of investment that the PE investors undertake.

Most real estate PE funds that pursue opportunistic investments typically seek compounded returns in excess of 18 per cent per year and have the highest risk-return profile (Haas, 2006). Kaplan (2011) summarized the typical investment strategies by PE funds in real estate as follows:

- co-investment or joint ventures with other equity funds in target assets;
- structured finance or leveraged buy-outs, characterized by the use of debt and equity to acquire higher quality assets;
- acquisition of or investment in distressed assets, which may include the purchase of distressed loan portfolios; and
- development, where the fund itself intends to undertake a development project.

PE investors seek a high rate of financial return on their investments as compared to other investors. However, unlike the creditors to the project, the PE investors are not guaranteed a return on their investment. In addition, the equity nature of their capital meant that they are present at the bottom-bucket of the cash-flow waterfall (Page *et al.*, 2008) and will receive returns only after the debt investors have been paid. This leads them to do extensive due diligence while making investments. The success of a PE firm depends on making the right bets and ensuring good returns for the investors who invest in the fund.

We also briefly reviewed the literature on prices and investment drivers in real estate. The real estate prices and returns are affected by the economic environment. Ling and Naranjo (2012) analyzed the impact of various economic parameters on the real estate returns. After developing a multi-factor asset pricing model, the authors show that 90 per cent of the variation in the returns is explained by domestic consumption, interest rates (T-Bills) and inflation rates. Lieser and Groh, 2011 identify and analyze the factors that determine the level of investment in real estate markets. Using a unique data set of 47 countries worldwide, covering the period 2000-2009, the authors explore how socioeconomic, demographic and institutional characteristics affect commercial real estate investment. They conclude that economic growth, rapid urbanization and compelling demographics attract real estate investment, and a lack of transparency in the framework, administrative burdens of real estate business, sociocultural challenges and political stabilities reduce international real estate allocations.

The economic growth of a country is an important factor in determining the overall investment across real estate projects. A high GDP growth, low unemployment, larger size of economy (Chen and Hobbs, 2003) and better technology spurs real estate investment. In addition to economic growth, the demographic attributes of the country are an important determinant of the real estate investments. It is shown that accessibility to the property, urbanization and connectivity of the region are important determinants of the returns on the investment for any investor. As a corollary, an investor usually looks for investment in regions of rapid urbanization, regions with good connectivity and accessibility as these are likely to increase the valuations of the property in future. Lynn (2007) shows that rapid urbanization leads to an upward shift in demand of real estate due to migration and hence makes the investment more attractive.

Depth and sophistication level of capital markets also play a role in attracting real estate investments. Adlington *et al.* (2008) and Adair *et al.* (1999) showed that a deep

financial market, stable banking and financing systems are important for attracting real estate investments. Easier access to capital markets (Worzala and Newell, 1997) through sources such as Real Estate Investment Trusts (REITs) and favorable exit routes are important considerations for an investor while investing (Connor and Liang, 2000). The social, cultural and political environment also plays an important role in real estate. Lee (2001) showed that the level of perceived crime and corruption can prove to be a significant impediment to real estate investments in a country. Besides this, La Porta *et al.* (1997, 1998) showed that the legal environment of any country strongly influences the extent and size of capital investment in projects.

Worzala (1994) studied the motives, outlook and investing strategies of investors who held property investments. The study was based on a survey of 43 funds across Britain and Germany. The sample consisted of pension funds, financial institutions and publicly traded companies. The author argued that diversification was the primary motive of investment for the overseas investors. However, the investors did not pay too much attention to currency risk and transaction costs. This was attributed to the manager being an expert in local property markets and the ability of specialized people in handling currency risk. This result indicates that when domestic funds are compared to funds of foreign origin, there should not be a significant difference in their investment strategy. A globalized market has ensured that overseas property investors have dedicated teams and personnel to handle such idiosyncratic risks.

### 3. Objective

The purpose of this paper has the following main objectives. The first objective was to address the limited research on real estate investments in India. Despite the importance of real estate sector and the recent growth in the industry, academic research pertaining to financing of real estate projects has been limited. The main problem has been the availability of data because of the opacity associated with financial transactions in real estate (FICCI, 2012). However, with greater professionalization of the industry and the participation of outside investors and increasing size of the developers, more data on projects have started becoming available. While existing research on real estate investments had focused primarily on country level and investor level characteristics in understanding the investment rationale, our study uses various micro-level factors to a more granular insight into the underlying trends.

The second objective was to understand the contribution of PE investment in the real estate sector in a developing country like India. PE as a source of financing real estate projects has increased not just in India, but in many developing countries (Ernst and Young, 2013b). As a source of financing, PE investors contribute a lot more to their investments rather than just capital. It is well-known that the value addition and the monitoring activities of the PE investors contribute significantly to the success of their investments. By comparing projects with and without PE investment, this paper aims to get an exploratory understanding of the role of PE investors in real estate development.

The third objective was to understand the differences in investment patterns between different types of PE investors. In this study, we have classified PE investors on two dimensions: based on their origin (domestic or foreign) and based on the fund focus (dedicated real estate funds that invest only in real estate projects or diversified funds that are sector agnostic). While PE has emerged as an importance source of finance, it is also important that the investment is obtained from the right type of PE fund. For

policy-makers and real estate developers, comparing the investment patterns between domestic and foreign funds and dedicated and diversified funds help get insights into the investment preferences of different types of PE funds.

The fourth objective was to understand the factors that influence PE decision-making in real estate projects. For the real estate developer who is looking to obtain PE investment for his project, an appreciation of the various factors that are considered by PE, while arriving at their investment decision can be very helpful.

#### 4. Data and methodology

##### 4.1 Data sample

Data on residential real estate projects developed between 2005 and 2012 formed the sample for the study. The above period was chosen for the following reasons:

- there was virtually no PE investment in real estate in the country before 2005. Growth in PE investment was witnessed only after 2005; and
- overall, data availability on real estate projects was very limited before 2005.

Rapid growth accompanied with professionalization of the real estate developers was seen only in the second half of the previous decade.

Because there was no single source that provided all the information used in the analysis, multiple sources of information were used. Data on the residential real estate projects were obtained from the following sources: emerging market information services (EMIS) database; CRISIL database; and Venture Intelligence Real Estate database. EMIS and CRISIL databases had details on the large real estate projects that were developed in India, while the Venture Intelligence Real Estate database specifically provided information on those projects that had PE investment. PE investment in real estate projects happened in two ways – either in the parent companies or directly in special purpose vehicles that were created for developing a specific project. A comprehensive dataset was created by aggregating the projects from these three sources, and removing the duplicates. In those instances where some of the project features were not available in the above sources, they were obtained from the websites of the respective developers.

To facilitate analysis, the projects were classified into three different categories as follows:

- (1) *Region*: Projects were classified into five categories, *viz.*, North, South, East, West and Central depending on the geographical location of the project.
- (2) *Type of city*: Projects were classified based on the type of city in which they were located. Cities were classified as either metro or non-metro cities, based on the cost of living and house rent allowance guidelines issued by the Government of India. In this study, the following cities were considered as metro cities: Bengaluru, Chennai, Mumbai, Kolkata, Delhi and Hyderabad. All other cities were considered as non-metro cities.
- (3) *Target segment*: Projects were classified as “luxury” or “non-luxury” based on the facilities available. Residential projects which included any one of the following amenities were considered as “luxury” projects: swimming pool, jogging track, ATM, gymnasium, restaurant, departmental store or healthcare facility. All other projects were termed “non-luxury” projects.

#### 4.2 Description of the data

Our sample consisted of two data sets: the first was the project data, consisting of a sample of 453 residential projects. Out of these, 179 projects had PE investment, and the remaining 274 were projects that did not have any PE investment. The second was the PE investment data, which had a sample of 347 PE investment deals in real estate, which included both project investment deals and corporate investment deals. Further, 256 deals in the sample were project deals, and the remaining 91 were entity deals. Table I presents the region-wise distribution of the sample projects. Because the information on construction area, land area and project cost information were not available for all the projects, only those projects for which the information were available were used in the appropriate analysis.

It can be seen that the Southern region accounted for the highest proportion of the projects in our sample (about 50 per cent). The large proportion of projects in the South could be explained by the fact three metro cities, *viz*, Chennai, Bengaluru and Hyderabad, are located in the region. This was followed by the Western region, which accounted for about 25 per cent of the projects. East and Central regions together accounted for only 5 per cent of the project sample. It is felt that the region-wise distribution of projects in the sample reflected the on ground trends – the level of developmental and economic activity was lower in East and Central regions. In terms of project size (land area), it was seen that, on an average, projects in the Northern region were larger than those seen in the other regions. Projects in the Central region, on an average, were smaller than those in the remaining regions.

The Floor Space Index (FSI), which represented the use of space, was calculated as a ratio of construction area by land area. Western India had the highest FSI with 4.26 followed by North India with an FSI of 2. South, East and Central India had residential projects which represented similar use of space with 1.96, 1.66 and 1.03, respectively. Projects being developed in congested areas or in areas where the land cost was very high would generally have a higher FSI so that the land costs could be apportioned on a larger construction area. Because availability of land was a major constraint in Mumbai (which is located in the Western region), it was natural that projects in that region were characterized by a higher FSI value.

In terms of average project cost, projects in Western India accounted for the highest project costs with a value of \$14,466.67 million. Western India houses Mumbai, the world's most expensive city and the world's 16th most expensive city for residential real

Region	Total no. of projects	Construction area (in 100,000 Sq ft) [N]	Land area (in 100,000 Sq ft) [N]	Floor space index [N]	Total project cost (in 10 million Indian Rupees) [N]
North	89	1048.54 [62]	1925.81 [66]	2.00 [51]	40379.42 [47]
South	226	2628.54 [147]	2805.57 [156]	1.96 [113]	66451.91 [114]
East	14	211.22 [10]	191.50 [9]	1.66 [7]	3405.00 [10]
West	115	1447.15 [58]	1237.31 [50]	4.26 [35]	86798.79 [43]
Central	9	40.34 [7]	58.31 [7]	1.13 [6]	2010.00 [6]
Total	453	5375.79 [284]	6218.50 [288]	2.32 [212]	199045.12 [220]

**Table I.**  
Distribution of project  
sample by region

**Source:** EMIS and venture intelligence, compiled and created by authors

estate. Knight Frank LLP, an international property consultancy firm, recorded that a prime residential property in Mumbai had a price tag of Rs. 57,000 per sq ft (USA\$ 950 per sq ft) (Rediff.com, 2012). Mumbai is also the financial capital of India and the heart of Bollywood, which housed one of world’s largest entertainment and movie industry.

Table II presents a summary of the data sample based on city type. As expected, projects in metro cities accounted for a significant proportion (68 per cent) of our sample. The reason is that our sample generally consisted of large development projects (average construction area of 1,892,000 sq ft) and most large real estate projects were located in metro cities. Another interesting trend that could be observed is that, while the average constructed area of projects in metro cities were larger than that of those in non-metro cities; it was the reverse in the case of project land area. Land area of projects in non-metro cities was higher than that of projects in metro cities. This trend is on expected lines – large land areas are not easily available in metro cities, and the high price of land forces developers to apportion the land cost over a larger constructed area to keep the overall prices of property attractive for the buyers. The higher FSI in metro projects also indicated that projects in metro cities had higher construction area per unit land area.

4.3 Study variables

The variables used for the analysis were broadly classified into four categories:

- (1) project variables;
- (2) investor variables (for projects that had PE investment);
- (3) developer variables; and
- (4) macroeconomic (city/state level) variables.

The variables used in the study and their descriptions are provided in Table III.

4.4 Analysis methods

Broadly, two types of analytical methods have been used for data analysis. First, was the comparison of variable means of project samples, and second was multivariate regression analysis. Comparison of means was done with the help of the non-parametric Mann–Whitney test. The Tobit regression was used to estimate the stake of PE investment in real estate projects. The Mann–Whitney U-test, used for comparative analysis, is a non-parametric test which can be used to compare sample distributions when the underlying distribution of the variable is not known or is not normal. Three different comparisons have been done in this study. First, projects with PE investment

Region	Total no. of projects	Construction area (in 100,000 Sq ft) [N]	Land area (in 100,000 Sq ft) [N]	Floor space index [N]	Total project cost (in 10 million Indian Rupees) [N]
Metro	309	4081.19 [195]	3341.94 [187]	2.57 [144]	134009.00 [129]
Non-metro	144	1294.60 [89]	2876.56 [101]	1.79 [68]	65036.12 [91]
Total	453	5375.79 [284]	6218.50 [288]	2.32 [212]	199045.12 [220]

**Table II.** Description of project sample based on city type

**Source:** EMIS and venture intelligence, compiled and created by authors

Type	Variable	Name	Description	Data source
Project-level variables	Region	PROJLOC	Geographical location of the project, North, South, Eastwest and Central	Project databases–EMIS, CRISIL and venture intelligence
	City type	METRO	Indicates if project is located in a metro city	Project databases–EMIS, CRISIL and venture intelligence
	Target segment	LUXURY	Indicates if the project is a luxury project	Project databases–EMIS, CRISIL, venture intelligence and project specifications from the Web sites of project developers
Investment and investor-level variables	Construction area	CONST	Construction area of the project, in 100,000 sq ft	Project databases–EMIS, CRISIL and project specifications from the Web sites of project developers
	Land area	LAND	Land area of the project, in 100,000 sq ft	Project databases - EMIS, CRISIL, and project specifications from the websites of project developers
	Project cost	COST	Cost of project, in 10 million Indian Rupees	Project databases–EMIS and project specifications from the Web sites of project developers
	Project cost by construction area	COSTBYCONST	Indicates the cost of constructing a unit area	Calculated
	Private equity investor	PE	Indicates the presence of PE financing in the project	Venture intelligence
Investor origin variables	Investor origin	ORIGIN	Investors were classified into two categories depending on their origin–domestic or foreign	Venture intelligence and investor Web sites
	Fund type	FUNDTYPE	Investors were classified into two types based on the type of fund–dedicated funds, which invest solely in real projects and diversified funds, where the funds invest in diverse sectors	Venture intelligence and investor Web sites

*(continued)*

Private equity investment

**Table III.**  
Variables used in the study

Table III.

Type	Variable	Name	Description	Data source
Developer-level variables	Promoter experience	PEXPYRS	Promoters' experience in development of real estate projects, in years	Developer Web sites
		PEXPPD	Promoter experience in development of real estate projects, by number of projects developed	Developer Web sites
		PEXPSQFT	Promoter experience, in terms of number of sq ft of property developed	Developer Web sites
Macroeconomic-level variables	CAGR-HPI	CAGRHPI	Compounded Annual Growth Rate in of HPI. The HPI of different cities were provided by National Housing Bank and has been used here to indicate the growth of real estate prices in the respective city. The five-year CAGR value of the index during 2007-2012 has been used in the analysis	National Housing Bank (2013)
	Growth in population	POFGROW	Growth in state population has been taken from Census India documents. The decadal growth in population during 2001-2011 has been used in the analysis	Census India (2011); States Census (2011)
	CPI	CPIGROW	Growth in CPI of the state calculated from the Labour Bureau statistics. The six-year CAGR during 2006-2012 has been taken for this study. The CPI was taken as a measure of the increase in prices in respective states	Labour Bureau (2014)
	Corruption perception index	CORR	Corruption perception index	Transparency International India (2005)
	Competitive index	COMP	Competitive index of states	Institute for Competitiveness (2011)

were compared to projects that did not have any PE investment. The second and third comparisons were restricted to projects with PE investment. In the second, projects that had foreign PE investment were compared to projects that had domestic PE investment. In the third, projects that had PE investment from dedicated real estate PE funds were compared to projects that had investment from diversified PE funds. Comparative analysis of projects helped in getting a good understanding of the sample data, and helped in the regression analysis.

**5. Results and analysis**

*5.1 Comparison of projects with and without PE funding*

Table IV presents the results of the comparative analysis of residential projects with PE funding against projects that did not have any PE funding. The analysis has been divided into project variables, developer variables and macroeconomic variables.

An examination of Table IV indicated that there were significant differences in residential projects that had PE investments when compared to projects that did not have PE investments. These differences appeared more marked at the project level. There were differences in both construction and land area, which indicated that PE firms invested in projects with larger land and construction areas. This was naturally reflected in the project cost as well. The difference in cost of the projects between projects with and without PE investment indicated that PE investment was associated with projects that involved larger capital outlays. Also, the median value of the cost by construction ratio was higher for projects with PE investments than for projects without PE investments, indicating that most projects that had PE investments were in the luxury category. An additional indicator of the luxury nature of the projects with PE investment is the UNITCONSCOST variable. Means analysis indicated that projects

Type	Variable	PE funded projects			Projects without PE funding			z-value
		N	Mean	Median	N	Mean	Median	
Project-level variables	CONST	105	25.95	13.00	180	14.75	5.15	-5.867**
	LAND	113	30.88	7.61	175	15.59	5.70	-3.197*
	COST	31	1206.81	650.00	189	855.21	300.00	-2.870*
	COSTBYCONSTR	31	48.49	40	94	80.43	34.17	-0.543
	FSI	79	1.91	1.08	133	2.56	1.46	0.069
	UNIT LAND COST	31	251.94	133.36	28	221.83	90.96	-1.260
Developer-level variables	UNIT CONS COST	31	151.38	107.61	28	92.91	71.21	-2.049**
	PEXPYRS	130	20.92	17.50	188	19.41	18.00	0.708
	PEXPPD	97	25.16	18.00	139	27.68	18.00	0.951
Macro-economic-level variables	PEXPSQFT	74	24.37	10.00	97	14.44	4.90	0.046*
	CAGRHPPI	144	0.10	0.14	180	0.11	0.14	0.044*
	POPGROW	179	16.62	16.11	276	15.41	16.14	0.718
	CPIGROW	179	0.39	0.42	275	0.38	0.41	0.041*
	CORR	177	3.31	3.30	225	3.32	3.30	0.777
	PPP	177	50.39	51.20	225	50.51	51.20	0.818
	COMP	170	62.74	61.30	184	61.78	61.80	0.572

Notes: \*\*\*significant at 99% CI; \*\*significant at 95% CI; \*significant at 90% CI

**Table IV.** Comparative analysis of projects with and without PE funding

with PE investment had higher unit construction costs, and the difference was statistically significant.

An examination of developer level variables such as years of experience and number of projects developed indicated that there was no significant difference between the two samples. However, in terms of sq ft developed, the difference between the two samples was significant at the 10 per cent level. This indicated that PE firms preferred to invest with developers who undertook larger projects.

Frequency count (not shown in [Table IV](#)) showed that for PE-funded projects, 79 per cent of the projects were in metro cities. The corresponding percentage for projects with no PE funding was 61 per cent. Chi-square analysis of category distribution resulted in a Pearson Chi-square statistic of 16.8696, which was significant at the 0.1 per cent level. These results indicated that there was a strong preference among PE investors to invest in metro cities.

When examining macro-economic characteristics, it was observed that regions with high growth in Housing Price Index (HPI) and Consumer Price Index (CPI) had more number of projects with PE investment. There was no significant difference in the growth of population or the level of corruption/competitiveness of the state. However, as median and mean values were extremely close, further analysis of the same would be required to make adequate conclusions.

An analysis of the differences between projects with and without PE investments indicated that project level characteristics had higher importance in PE decision-making. The tendency to choose developers who developed larger projects rather than developers who had more experience in terms of years or projects developed revealed PE firms' preferred to invest in larger projects. This result was consistent with the result obtained by [Gemson \*et al.\* \(2012\)](#) who found that infrastructure projects with PE investment were larger than that of projects without PE investment.

### *5.2 Comparison of foreign and domestic PE investors*

[Table V](#) provides a summary of the analysis between foreign and domestic PE investors in real estate projects. A total of 347 PE investment deals in real estate formed the sample. However, only those deals that had values for different variables were used for the analysis in [Table V](#). Out of the 347 investment deals, 217 pertained to domestic investors and 130 pertained to foreign investors. As indicated previously, PE investment can be classified into two categories based on the investment mode. If the investment was in the special purpose vehicle created for the project, then it was classified as a Project Mode investment. If the investment was in a corporate structure or holding structure, then it was classified as an Entity Mode investment. Frequency count indicated that 80 per cent of the deals made by domestic investors were Project Mode investments, whereas the corresponding figure for foreign investors was 63 per cent. Chi-square analysis of category distribution resulted in a Pearson Chi-square statistic of 12.2976, which was significant at the 0.1 per cent level. These results indicated that there was a strong preference among domestic PE investors to make Project Mode investments as compared to foreign PE investors.

The dataset showed that the total number of deals invested by domestic investors was 66 per cent as higher compared to that of the foreign investors. However, it can be seen that the average investment made by foreign investors was substantially higher than that of the domestic investors, in both project and entity investment modes. Higher

Description	Variable	Domestic		Foreign		z- value
		Mean	N	Mean	N	
Investment amount	Project Mode	47.3	141	84	65	-4.00***
	Entity Mode	38.0	40	110	47	3.33***
Geographical location	North	40.1	35	64.9	17	-0.92
	South	43.5	47	80.0	23	-2.05**
	East	18.1	4	110.7	1	
	West	60.4	49	88.7	21	-2.47**
Metro status	Central	14.7	2			
	Metro	42.5	91	79.3	36	-2.69***
	Non-metro	57.5	46	75.9	25	-2.7***
Project segment	Luxury	36.9	37	49.5	15	-1.34
	Mid-segment	50.6	52	99.1	21	-2.62***
	Low-budget	14.4	7	32.7	3	
Mean built up area of project (100,000 sqft)		118.60	147	98.10	77	-20.2***
Mean competitive score of city		61.90	209	61.10	113	0.42
Mean corruption perception index		3.30	186	3.30	97	0.07
Mean purchasing power of city		50.20	186	50.80	97	-0.24
Mean experience of developer (years)		26.80	217	24.60	130	-1.27

**Notes:** \*\*\*significant at 99% CI; \*\*significant at 95% CI

Private equity  
investment

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**Table V.**  
Summary of foreign and  
domestic PE investors in  
real estate projects

investments by foreign investors could also be seen when the investments were classified by region – in South and West, the investment amount between domestic and foreign investors was statistically significant. In the North and East, though the mean investment by foreign investors was higher, the difference was not statistically significant.

Analyzing the proportion of deals in the different regions, it can be seen that the trend is more or less similar for both domestic and foreign investors. Much of the deals by both the investors happened in the South and West. Chi-square analysis of category distribution did not show any significant difference in the distribution of projects in the five regions. Classifying the projects by type of city showed that a large proportion of the deals by both the investors (66 per cent for domestic and 63 per cent for foreign) were in metro cities. As expected, Chi-square analysis of category distribution did not show any significant difference in the distribution of projects metro and non-metro cities.

On the whole, foreign PE investors invested USD 4.75 billion across 61 deals, out of which, 40 per cent of the investment was in projects in non-metro cities, with the remaining made in metro cities. Domestic investors invested USD6.5 billion across 137 deals, with the proportion of investment in metro and non-metro cities being more or less being the same as that of foreign investors. In the metro cities, the mean investment size of foreign investors was 87 per cent higher than that of domestic investors. However, the difference was only 32 per cent when the investment size was compared for the non-metro cities.

We also classified the projects on the basis of the target segment, but the results did not show any significant difference in the distribution of projects between different segments for both the investors. Medium-budget projects accounted for the highest proportion of projects (about 54 per cent) for both domestic and foreign investors. Pearson Chi-square statistic from the Chi-square category distribution test was 2.0379, with a  $p$ -value of 0.361. This indicated that there was no significant difference in the preferences between the different project segments for both the investors. The average built-up area of various projects was compared for the foreign and domestic investors. It was seen that domestic investors had invested in larger projects as compared to the foreign investors. The built-up area of projects with domestic PE was about 20 per cent higher as compared to the projects that had foreign PE investment. Results on the macroeconomic variables showed that there was not any significant difference between the cities in which the investors invested. This showed that the risk appetite of both categories of investors was not significantly different.

### 5.3 Comparison of dedicated and diversified investors

Table VI provides a summary of the analysis when the PE investors were classified on the basis of the fund type, i.e. dedicated funds that only invest in real estate projects and diversified PE funds that invest across sectors including real estate. Analysis of the mode of investment between the two categories of investors indicated that 81 per cent of the deals made by dedicated investors are in project mode, whereas the corresponding percentage for diversified investors was 64 per cent. Dedicated PE investors seem to be

Description	Variable	Dedicated		Diversified		Z-score
		Mean	<i>N</i>	Mean	<i>N</i>	
Investment mode	Project Mode	57.2	118	61.6	87	-1.26
	Entity Mode	56.4	35	90.7	52	0.71
Geographical location	North	49.6	34	45.6	18	-0.3
	South	48.8	38	63.4	32	-0.94
	East	15.3	3	68.6	2	
	West	78.5	38	59.1	31	-0.01
	Central	14.7	2			
Metro status	Metro	53.4	74	53.0	52	-0.63
	Non-metro	62.0	40	66.6	31	-1.33
Project segment	Luxury	47.4	21	30.5	31	0.8
	Mid-segment	62.4	23	71.6	49	-0.83
	Low-budget	15.0	4	27.2	6	
Mean built up area of project (100,000 sq ft)		88.90	137	164.90	86	-18.5***
Mean competitive score of city		61.80	181	61.50	140	0.54
Mean corruption perception index		3.28	156	3.33	126	-0.74
Mean purchasing power of city		50.10	156	50.90	126	-0.23
Mean experience of developer (years)		24.30	188	26.90	158	-1.24

**Table VI.**  
Summary of investment  
by dedicated and  
diversified PE funds

**Notes:** \*\*\*99% CI; \*\*95% CI

favoring the project investment as a preferred investment structure more than that of diversified investors. Chi-square analysis of category distribution resulted in a Pearson Chi-square statistic of 12.5393, which was significant at the 0.1 per cent level. On the basis of investment amount, 77 per cent of the investment by dedicated PE investors was in project mode, whereas the corresponding figure for diversified investors was only 53 per cent.

In terms of amount of investment per deal, there is no significant difference between the two categories of investors. Though the average investment per deal was higher for diversified investors, it was not statistically significant. In fact, there was no difference in investment amount even when the projects were classified on other dimensions such as geographical region, type of city or project segment.

As seen in the case of foreign and domestic investors, South and West regions accounted for the highest number of investments, followed by North. Chi-square distribution analysis of geographical location as a category variable did not any significant difference (Pearson Chi-square statistic of 0.6173) in the regional preference between the two types of investors.

Dedicated investors invested a total of USD3.95 billion across 74 deals compared to the USD2.7 billion invested by diversified investors across 52 deals. The average deal size of both the type of investors is found to be comparable, around \$53 million across metro cities. In case of non-metro cities, dedicated investors invested USD2.4 billion across 40 deals, marginally more than the USD2.1 billion invested by diversified investors across 31 deals. The deal size of diversified investors was found to be about \$4 million more than that of the dedicated PE investors. However, the difference between investors was not statistically significant for both the types of cities. Chi-square test for distribution of projects between metro and non-metro cities for both the investors indicated that there was no significant difference between the dedicated and diversified investors on the preferences for investing in a particular type of city. Pearson Chi-square statistic was 0.8254, with a  $p$ -value of 0.364.

Analysis on the basis of project segment showed that both investors had invested the least amount in the low budget segment. Major proportion of the investment was in luxury and mid-budget segments. However, the investment size did not show any significant difference between both the investor types. Pearson Chi-square statistic from the Chi-square category distribution test was 2.3182, with a  $p$ -value of 0.314. This indicated that there was no significant difference in the preferences between the different project segments for both the investors. In terms of project built-up area, diversified investors invested in larger projects as compared to dedicated investors. The difference was significant at the 0.1 per cent level. The economic indicators were not significantly different for both the investor types, which indicated that the risk appetite in terms of project location was more or less similar for both the investor types.

#### *5.4 Factors influencing extent of PE investment in residential real estate projects*

Extent of shareholding in an investment is an indicator of various factors such as valuation and desire for control. To understand the factors that are associated with the extent of shareholding obtained by PE investors for their investment, a regression estimate was carried out. Because the shareholding would vary between 0 and 100 per cent, Tobit estimation was used for this analysis. Table VII presents the description of

**Table VII.**  
Description of the  
variables used in the  
Tobit regression

Variable	Description
LAND	Land area of the project, in acres
CONSLAND	Construction by land ratio or FSI
NORTH	Dummy variable. Takes the value of "1" if the project was located in North India, "0" otherwise
SOUTH	Dummy variable. Takes the value of "1" if the project was located in South India, "0" otherwise
WEST	Dummy variable. Takes the value of "1" if the project was located in West India, "0" otherwise
INVEST	Amount invested by the PE firm, in USD, million
FOREIGN	Dummy variable. Takes the value of "1" if the investor is a foreign PE firm, "0" otherwise
PEXPYRS	Promoter experience, in years
PEXPPD	Promoter experience, in number of projects developed
PEXPSQFT	Promoter experience, by number of sq ft developed

the variables used in the Tobit regression, whereas [Table VIII](#) presents the *Tobit* regression estimates. The variable EAST, indicating if the project was developed in East India, was removed from the analysis due to the low number of observations. Central region has been used as the base dummy variable for the region.

The Chi-square value indicates that overall regression estimates have been significant. The pseudo-R<sup>2</sup> values also indicate a reasonable fit of the regression estimate. An analysis of the estimations indicated that variables LAND and CONSLAND have opposing signs but are not significant. Variable SOUTH was positively significant at 95 per cent CI while variables NORTH and WEST are not significant. INVEST was also not significant. In terms of the developer variables, PEXPYRS was not significant. However, PEXPPD was negatively and strongly significant at 99 per cent CI, while PEXPSQFT was positively significant, but at 90 per cent CI. A discussion of these results is given in Section 6.4.

**Table VIII.**  
Regression estimates of  
the variables in the Tobit  
regression

<i>N</i>	98	
log likelihood	-50.513	
lr Chi-square	28	
Probability > Chi-square <sup>2</sup>	0.0018	
pseudo R <sup>2</sup>	0.217	
LAND	0.001	0.979
CONSLAND	-3.316	0.315
NORTH	1.877	0.833
SOUTH	26.395	0.026**
WEST	-9.334	0.397
INVEST	-0.493	0.163
FOREIGN	-22.435	0.008***
PEXPYRS	-0.332	0.491
PEXPPD	-0.884	0.007***
PEXPSQFT	0.843	0.055*

**Notes:** \*\*\*significant at 99%; \*\*significant at 95%; \*significant at 90%

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## 6. Discussion

### 6.1 *Projects with and without PE*

PE has emerged as an additional source of capital for financing real estate projects in India. Given the poor response to real estate stock offerings in public capital markets and the regulatory restrictions on bank funding to project developers, real estate promoters had to traditionally rely considerably on informal sources of funding for their capital requirements. The informal sources are expensive, limited in terms of quantity of capital that can be raised, and are often seen as channels of gray money. The emergence of PE has expanded the pool of institutional capital that real estate developers can get access to.

The growing trend of PE investment indicated that real estate sector provided attractive opportunities for PE investors. Unlike other investors, PE investors play an active role in monitoring their investments after investment. It is not without reason though. While lenders usually demand collaterals when advancing loans, PE investors do not have any such collateral. For the PE investors to get the returns on their investment, it is important that the project is completed successfully. Therefore, they actively monitor their investee companies after the investment has been made. During this monitoring phase, they also provide a lot of business and managerial inputs that can help the project. This association during the post investment phase substantially contributes to improve the corporate governance and professionalism in the sector. Having an external equity investor such as PE investors can, therefore, contribute to the overall development of sector in terms of transparency and governance.

In a real sense, the role of PE investors can begin even before they have invested. PE investors are known for their careful screening and selection criteria while evaluating various investment opportunities. To be successful raise capital from PE investors, promoters have to meet the stringent criteria practiced by them. The promoters should demonstrate superior corporate governance standards that would safeguard investors' equity capital. Investing in systems and processes to improve transparency can help to attract PE investment. Availability of PE capital, thus, creates an incentive for real developers to professionalize their organizations and improve their governance mechanisms, which, in turn, strengthens the sector as a whole.

Our results indicate that large projects that have luxury status are preferred by PE investors. The reasons behind this could be attributed to the need for PE investors to exit their investments in a defined period. Large projects, because of their higher value, provide greater opportunities for exit for the PE investor. Simultaneously, by supporting large projects with luxury facilities, PE investors support the creation of residential projects that offer top-of-the-line facilities catering to the affluent customers. Large projects also facilitate more planned development of urban localities. Thus apart from providing capital, PE investment, in a way, contributes to more planned development of cities. The average value of COSTBYCONSTR was significantly higher for projects without PE investment. This can be attributed to two reasons. First, the lower value of COSTBYCONSTR could be attributed to the economies of scale – PE investment was associated with significantly larger projects, which could have resulted in lower COSTBYCONSTR ratios. Second, the lower COSTBYCONSTR ratio could be due to active monitoring, forcing the developers to efficiently utilize their capital. Additional studies are needed to confirm the lower COSTBYCONSTR ratios seen in projects with PE investment.

Results on developer variables indicated that PE firms prefer to invest in those projects that are developed by experienced promoters. The experience that was considered valuable was not the years of project development experience or the number of projects developed, but the number of sq ft of project area developed. Project area is a better metric of the implementation capabilities of the promoter, as the compared to the number of projects or years of project experience. For example, it cannot be said that promoters who had developed several small projects would have developed the expertise needed to develop large projects, as PE investors prefer to invest in larger projects. Similarly, a promoter who has had several years of project experience does not necessarily mean that he has the experience of developing large projects. It can be, therefore, seen that PE investors assess the expertise of the developers very carefully before making their investment.

### *6.2 Foreign vs domestic investors*

A significant difference in PE investment in real estate as compared to other sectors is the significant role of domestic PE investors. The overall trend in PE in India has been that domestic investors invested in more number of deals, whereas foreign investors invested more capital, i.e. the average deal size by foreign investors are higher. While the average investment amount by foreign investors continues to be high even in real estate, in our sample, domestic PE firms invested not only in the most number of deals but also had the highest investment. The dominating role of domestic PE firms can be attributed to the reluctance in having foreign ownership in real estate among the regulatory agencies and policy-makers. Because the outlook for foreign investment in Indian real estate would continue to be cautious, increasing PE investment in real estate sector would require strengthening the domestic PE industry.

Domestic PE investors have a higher preference for project mode investment structure as compared to that of foreign investors. Because project mode investment involves setting up of ring-fenced entities for individual projects, it would facilitate monitoring and increase transparency levels within the sector. Thus, apart from providing a source of capital, PE investors also play an important role in institutional strengthening and development of the sector. Our results also provided indication on the level of value-addition by PE investors post investment. Domestic investors are investing in larger projects as compared to foreign investors. Because developing larger projects are more complex as compared to smaller projects because of various clearances and approvals that are needed from the local agencies and the government, investors who can help to manage such complexities can help to complete the project successfully. Because the average built-up area of projects invested by domestic investors is higher, we feel that this indicates the ability of the domestic investors to contribute to the development of large projects.

### *6.3 Dedicated vs diversified investors*

An examination of trends of dedicated and diversified funds showed that dedicated investors invested in more number of deals, as compared to diversified funds. However, the average investment size was not significantly different. The larger number of deals by dedicated investors is on expected lines because they would be more active in sourcing deals in real estate sector, as they are dedicated for real estate projects. Given the lack of portfolio diversification, dedicated funds are expected to have a higher level of risk as compared to diversified funds. To overcome this, such dedicated funds would develop sector specific

expertise, which will help them add more value and contribute to the development of the projects in which they have invested. Further, such expertise would also allow them to assess the investments more thoroughly as compared to diversified funds. The better insight and knowledge of the industry also allows them to focus on promising new ventures which have to potential for high returns. The preference for a project mode of investment by dedicated PE funds also suggests that dedicated funds prefer to invest in structures that increases transparency and facilitates monitoring.

#### *6.4 Factors influencing extent of PE shareholding*

The variables used in the regression analysis can be broadly divided into the following categories: project variables (comprising LAND and CONSLAND), location variables (comprising the region in which the project was developed), investor variables (comprising INVEST and FOREIGN) and developer variables (comprising PEXPYRS, PEXPPD and PEXPSQFT). The project variables did not turn out to be significantly affecting the extent of shareholding, indicating that they more or less served as a screening criterion for their investment decision-making. Only those project parameters that met the basic criteria were considered for investment. In terms of location variables, projects in SOUTH were associated with higher shareholding by PE investors as compared to the CENTRAL region. This indicated that investors preferred to invest in projects from South because of various reasons such as capability of promoters and market attractiveness.

Interestingly, the results indicated that the quantum of investment did not have any significance in determining the extent of shareholding. While it would have been normally expected that higher investment by PE investors would, ipso facto, lead to higher shareholding, it has not been the case. Other factors probably played a more dominating role in the extent of shareholding. The estimations showed that promoter experience played an important role in influencing shareholding obtained by PE investors. The coefficient of PEXPPD was negative, was significant at 99 per cent. This indicated that as the number of projects developed by promoters increased, the shareholding obtained by PE investors decreased. The inference here is that promoters with extensive substantial experience are able to attract investment at a premium, and the result was, after controlling for other factors, investors ended up acquiring a lower shareholding. The other promoter variable, PEXPSQFT, however, had a positive coefficient, and was significant at 90 per cent. A possible explanation for this result is that large projects, while providing better exit opportunities, also involve substantial financial risk. Though PE investors would be keen to investment in large projects because of the exit potential, they would also be keen to might be keen to monitor such investments more actively because of the financial risk involved. Acquiring higher shareholding helps to achieve that objective.

The coefficient of FOREIGN also had a negative coefficient, indicating that lower shareholding was associated with foreign PE investors. Because the average investment made by foreign investors are higher, the reason for the negative shareholding could be explained by the following: First, foreign PE investors might have less familiarity with the local conditions as compared to domestic PE investors. Therefore, given the substantial risks in real estate development foreign PE investors probably invested in projects developed by more established promoters, and projects developed by such established promoters have a higher valuation, resulting in a lower shareholding. Second, the foreign PE investors might be less familiar with the local conditions as

compared to that of domestic PE investors. Therefore, domestic PE investors would be better placed to add value to their investments as compared to the former. Thus, domestic PE investors are able to invest at a discount as compared to foreign PE investors, i.e. foreign PE investors get less shareholding as compared to domestic PE investors after controlling for other project and developer variables. Because the previous results (Table V) showed that the mean experience of developers' was not significantly different between domestic and foreign PE investment, we feel that the value-addition criterion plays a dominating role in the extent of shareholding.

## 7. Summary and conclusions

This paper presents an analysis of PE investments in residential real estate projects in India. The results of the analysis offer interesting insights which provide significant implications for policy-makers and practitioners. An important accomplishment of this study has been to put together a comprehensive dataset using information obtained from different databases and sources. Empirical research on real estate industry has been scarce, and this paper is a contribution in that direction.

PE is an alternate capital source which can be used to finance residential real estate projects in the country. PE is being increasingly used as a viable source of capital to fund non-conventional asset classes such as infrastructure (Gemson *et al.*, 2012) and real estate (Ernst and Young, 2013b). By favoring the project mode of investment, PE investors also play a role in enhancing the transparency in the sector. It is well known that PE investors provide significant managerial inputs to the companies in which they have invested. Previous studies have indicated that (Thillai, 2010) companies with PE performance have performed better than their peers. While this study has not been able to find evidence of superior performance of PE invested projects, this could be attributed to the early phase of PE investment in the industry. As the industry matures, it can be expected that PE investors would play a more active role in providing managerial inputs in addition to capital.

PE firms have predominantly invested in urban housing projects. They have capitalized on the economic boom in India and have concentrated on investing in luxury/mid-luxury segments primarily located in metro cities. However, India's rural housing demand and shortage far exceeds that of its urban counterparts. Further, low-cost housing in India's rural sector is still largely unorganized and lacking. Encouraging PE firms to invest in the same will bring dual advantages. In addition to providing capital to develop rural housing, harnessing managerial advantages of PE can also catalyze the growth of this segment.

Third, the analysis demonstrates increasing comfort of PE firms in the Indian real estate sector. This is evidenced by the sheer number of projects financed by PE firms and the larger investment sizes of foreign PE firms in deals. The regression analysis also shows evidence that PE firms prefer to invest larger stakes with promoters who develop larger projects. Prior promoter experience (in years or projects developed) is not conditional for PE firms to invest in larger-sized projects. Thus, promoters who find it difficult to raise capital to develop larger sized projects can look at PE as a viable capital source. The preference of PE firms toward larger-sized projects could perhaps be due to the ease of exits which such projects provide. One of the important criteria for PE firms when they invest in projects is the feasibility of exit. Large projects seem to provide more exit options for PE firms.

Domestic investors because of their familiarity with the local conditions are able to invest in lower valuations as compared to foreign PE investors. Another interesting feature seen in our research is the dominance of domestic investors, both in terms of deals and amount invested. In most other sectors in India, foreign PE firms have invested more than domestic PE firms. However, given the reservations in having foreign ownership in Indian real estate, domestic PE firms have played an important role in the growth of the sector. Setting-up of dedicated domestic PE funds can help to increase more investment in the sector.

There are also a number of opportunities for future research, which may also help address some limitations of this research study. First, this study focuses on residential real estate projects and the role of PE investments in them. Future research could include data from commercial, retail to hospitality real estate projects. Second, extending this study with surveys will help to validate these findings and provide interesting insights and open up new areas for research.

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