

Research and Policy Insights on Financial Markets and Economy

Real Estate Sector in India

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Overview

Far from being normal and formulaic, real estate markets have always been in motion. Real estate is a prominent asset class in household, institutional, government, and private company portfolios. In this policy brief, we examine the recent movements and trends in the real estate industry and the ancillary fields that are affected by it. Notable shifts include an increase in the rent-to-price ratio for residential real estate and an improvement in optimism among REIT analysts despite deteriorating fundamentals. Over the decade, the value of real estate has increased at a rate that has outpaced both GDP growth and gold's appreciation. The price-to-book ratios of commercial complexes and construction material firms have risen significantly, while those of the housing finance and construction firms have slowed. Foreign investors are showing more interest in private equity real estate projects. Mortgage REITs and listed residential mortgage-backed securities are the potential next big things.

The Research and Policy Insights on Financial Markets and Economy series aims to provide operationally relevant perspectives from research in a concise and cohesive manner. These notes provide an overview of research on contemporary issues, highlight international or India-specific experiences, and explore policy implications and directions for the future.

Real Estate Sector in India

1. Summary

Marylin Monroe said once: "Normal is boring." Indeed, real estate can never be boring, as it always remains in flux, far from normal, as ever. From households to institutional investors, from the government to private enterprises: All would consider real estate as an important asset class in their respective portfolios. A real estate asset must be developed, financed, consumed, and invested in. So, the sector maintains an inseparable and mutually critical relationship with consumers, investors, financiers, and producers.

In this policy brief on the real estate sector of India, we focus on trends in real estate, and other sectors that impact (or are impacted by) real estate. While we present long-horizon historical trends on several metrics, the idea is to put the recent developments in perspective. Much changed when the "new normal" became a buzzword, and much has changed since then.

Some changes are remarkable: the rent-price ratios in residential real estate have witnessed an uptick, and REIT analysts are bullish despite the decline in fundamentals. Over the recent decade, real estate prices have beaten GDP growth (and gold!) and kept up with inflation.

In the recent few quarters, real estate returns (private and public) witnessed significant ebband-flow that reflected in news sentiments and overall consumer sentiments. Commercial complexes and construction material firms have witnessed a significant uptick in their priceto-book ratios, but housing finance and construction firms have slowed down. Private equity real estate investments are gradually coming back to claim their front with a larger enthusiasm from foreign players.

There are talks about promoters considering new REITs to be launched. People in policy circles are giving serious thought to introducing mortgage REITs and listed residential mortgage-backed securities. The future may have much more to reveal itself. For the time being, take a look at what happened in recent years. Happy reading!

2. Macroeconomic Overview

2.1 Macroeconomic Trends

In the trailing decade (2012 Q1 - 2022 Q1), India's GDP grew at a compound annual growth rate (CAGR) of 5.6 per cent. Inflation (5.7 per cent) closely matches the GDP growth over this horizon. During these ten years, housing prices (RBI House Price Index) grew at an annual rate of 8.04 per cent, whereas gold appreciated at 6.5 per cent. However, the recent three years, marked by the COVID-19 crisis, have induced substantial aberration in the long-term trends. More recently, gold appreciated much faster at 14 per cent (2021Q1-2022Q1) compared to housing which appreciated at a sluggish rate of 1.8 per cent. Nevertheless, while the housing prices have been sluggish but relatively stable, gold prices have been quite volatile. Similarly, in recent years, while inflation has been relatively stable (around 7 per cent), the GDP has witnessed substantial ebb and flow.

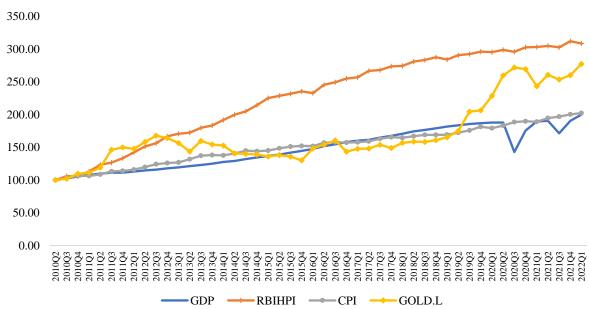


Figure 1. Macroeconomic Trends in India

Source: RBI, CMIE

2.2 Market Risk Perception & Outlook

Stock markets often undergo bullish and bearish movements influenced by both domestic and external factors. The usual forces that influence the markets include socioeconomic characteristics, corporate performances, geopolitical landscape, consumer sentiments, and monetary policy.

The NSE India Volatility Index (VIX) is a measure of anxiety among stock market investors and indicates the perception of the market's volatility in the near term. VIX, (also known as the "Fear Index") peaked substantially during the onset of the COVID-19 crisis and has stayed at a relatively higher level (12 -21 level) compared to the "calm" phase observed during 2017-2019 (11-17 level). Increased anxiety in the stock market is reflected in all segments of the capital markets (including real estate).

66.00 7.00 64.41 60.00 6.00 54.00 5.00 48.00 4.00 42.00 3.00 36.00 2.00 30.00 1.00 24.00 0.00 18.00 -1.00 12.00 -2.00 6.00 0.00 -3.00 201401 201404 201404 201501 201501 201501 201501 201704 20 TERM (R.H.S) VIX —— DEFAULT (R.H.S)

Figure 2. Risk Perception – India

Source: CMIE

The term spread (spread between long-term and short-term Treasury Securities) broadly reflects a market's future economic outlook. It is correlated with interest rates in long-term debt contracts. An upward-sloping yield curve (i.e., larger term spread) is reflective of an improving economic outlook. Default spread measures the risk premium demanded by investors in riskier bonds. A wider default spread curve is a concern, as it reflects an increased perception of risk in corporate bonds. During Q2-2022, both the yield spreads (Term and Default) showed signs of disciplining.

2.3 Consumer Confidence

Housing investment is an emotive decision for most households. Thus, the role of consumer sentiments is critical. Consumer sentiment witnessed a major jolt during the peak of the COVID-19 crisis. RBI's consumer confidence survey during the second wave suggested a somewhat surprising trend: while households' confidence in the "current situation" plummeted continually for several months, their future expectation either inched up or remained stable. The Index for consumer sentiments published by CMIE shows a consistently upward trend since Q2 2021. The improving sentiment is correlated with more activity in residential real estate markets in recent months.

In addition, Knight Frank and NAREDCO conduct a quarterly survey on the present and expected sentiment in the real estate markets. Both the current and future sentiment scores in the Q3 2022 report show that stakeholders are wary, but that the industry is resilient. Also,

¹ Respondents' opinions on the current situation compared to six months ago are reflected in the Current Sentiment Index, while their outlook for the next six months is reflected in the Future Sentiment Index.

confidence in the Indian economy persists despite the global slump. The same survey reported that in Q2 2021, despite widespread pessimism after the second wave, investors were more bullish on the market's long-term prospects than they had been following the first wave.²

Figure 3. Consumer Confidence Survey

Source: RBI Consumer Confidence Survey

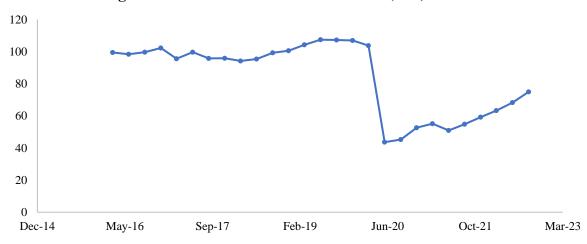


Figure 4. Index of Consumer Sentiments (ICS) All-India

Source: CMIE Economic Outlook, Consumer Pyramids Household Survey

Note: Base = 2015

3. Real Estate Public Equity

We observe contrasting performance between the broad stock market (NIFTY500) and listed companies in the real estate/allied sectors. NIFTY500 has generated a CAGR of over 13 per

² The sentiment scores for Q2, 2021 can be accessed here: https://content.knightfrank.com/research/2280/documents/en/real-estate-sentiment-index-q2-2021-8293.pdf

cent in the decade trailing 2022Q1. Realty stocks (REALTY.L³) have underperformed this benchmark by nearly 6 percentage points (CAGR 7.6 per cent). Listed housing finance institutions (HFI.L) and construction material (MAT.L) firms have performed consistently better than the benchmark (NIFTY500).

Figure 5. Stock Market Performance of NIFTY 500, Real Estate and Allied Sectors

Source: CMIE

Note: REALTY.L = Listed Realty, HFI.L = Listed Housing Finance Institutions, MAT.L = Listed Construction Materials Companies.

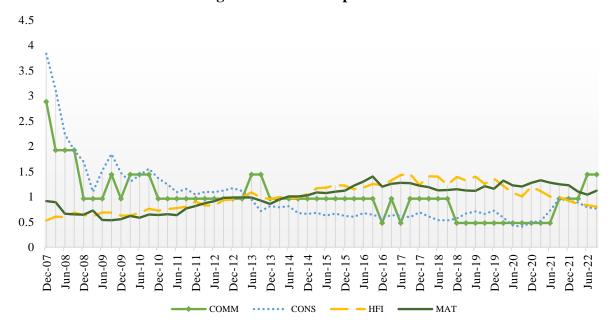
3.1 Market Capitalization Across Sectors

We compare the financials of four segments of listed companies related to real estate: commercial complexes (COMM), construction companies (CONS), housing finance institutions (HFI), and construction materials companies (MAT). The market capitalization of housing finance companies has been falling since the COVID-19 crisis but increasing for commercial complexes and construction firms.

The price-to-earnings ratio (P/E) is a useful metric for gauging not just the stock's market value but also its future growth potential. Expected earnings for commercial complex companies are positive for the first time in the second quarter of 2022, since COVID-19, although this is still susceptible to uncertainties as the economy gets a grip on the new normal. The P/E ratio for construction material companies and housing finance companies has remained relatively steady and is slightly above the benchmark.

³ Suffix ".L" implies index levels, not returns. NIFTY500 is plotted in levels too.

Figure 6. Market Capitalization

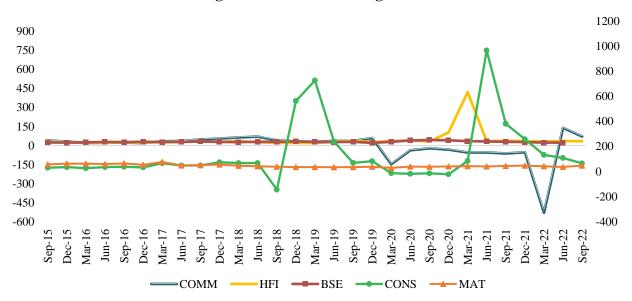


Source: CMIE

Note: COMM = Commercial Complexes, CONS = Construction Companies, HFI = Housing Finance Institutions,

MAT = Construction Materials Companies.

Figure 7. Price to Earnings Ratio



Source: CMIE

Note: CONS & MAT on RHS

COMM = Commercial Complexes, CONS = Construction Companies, HFI = Housing Finance Institutions,

MAT = Construction Materials Companies.

3.2 Price to Book Value

While the price-to-book ratio (P/B) of the stock market has improved in general during the first three quarters of 2022, the trend was particularly visible in commercial complexes and

construction material firms. However, growth in housing finance institutions and construction firms slowed during these months.

Sep-15
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Sep-22

Figure 8. Price to Book Value

Source: CMIE

Note: COMM = Commercial Complexes, CONS = Construction Companies, HFI = Housing Finance Institutions, MAT = Construction Materials Companies.

-CONS

3.3. Systematic Risk in Real Estate

Since the beginning of COVID-19, MAT's systemic risks have steadied at a lower level (from 1.08 in 2019 Q4 to 0.78 in 2022 Q2). The first wave of the pandemic experienced an uptick in betas at CONS and COMM firms. HFI broadly remained unaffected in terms of systematic risks. The COMM returns exhibit the lowest correlation with all other asset classes.

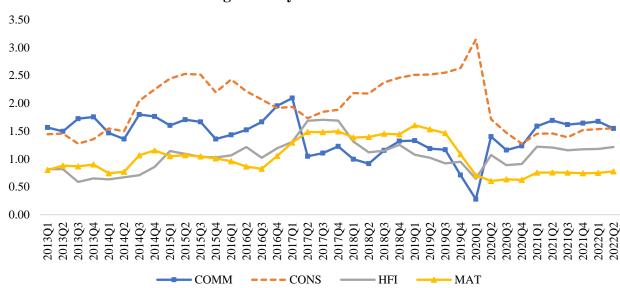


Figure 9. Systematic Risks

Source: CMIE

Note : COMM = Commercial complexes, CONS = Construction Companies, HFI = Housing Finance Institutions, MAT = Construction Materials Companies.

Table 1. Correlation Matrix – Returns

	COMM	CONS	HFI	MAT
CONS	0.62			
HFI	0.50	0.70		
MAT	0.49	0.75	0.70	
MKT	0.64	0.83	0.77	0.82

Source: Author's Calculations based on the CMIE database

Note: COMM = Commercial complexes, CONS = Construction Companies, HFI = Housing Finance Institutions,

MAT = Construction Materials Companies, MKT = NIFTY500

3.4 Tonality of News

The tonality (i.e., positive versus negative emotions) of news can be influential in shaping public sentiments about various segments. We collected news (TIDINGS) reports related to three segments of the real estate markets, viz commercial complexes, housing construction, and housing finance. The tone of the news was analyzed using natural language processing (NLP) algorithms4 to tag them with positive or negative emotion scores, and the scores were aggregated per month (for 2022) per segment. The net emotions have varied drastically across segments and months in 2022.

Figure 10. Net Tone | 2022 1.6 1.4 1.2 1 0.8 0.6 0.4 0.2 0 APril August June rily May -0.2 -0.4 Commerical complexes **■ Housing Construction ■ Housing Finance**

Source: Authors Calculations. Tonality based on the TIDINGS reports provided by CMIE.

⁴ We use Linguistic Inquiry and Word Count (LIWC), a text analysis tool widely employed by the scientific community for the purpose of doing sentiment analysis. To learn more about its usefulness, check out - https://www.cs.cmu.edu/~ylataus/files/TausczikPennebaker2010.pdf

4. Housing Market

The RBI's Financial Stability Report, 2022, notes that increasing mortgage rates and stricter lending conditions as a result of aggressive tightening of monetary policy by central banks worldwide might impact home values in 2023. Despite global challenges impacting the local economy, a new Reuters poll predicts a sustained increase in housing prices for India while a slip in most developed nations is expected, triggered by aggressive rate rises.

4.1 Housing Price

Figure 11. House Price Index 300 30.0 25.0 250 20.0 200 2010 = 100150 15.0 100 10.0 50 5.0 0.0 03.2015 ALL INDIA YoY

Source: RBI, Base = 2010; YoY (RHS)

The national-level house price index published by RBI (RBI-HPI) reflects substantial moderation in house price appreciation in recent years. Since 2012 Q2, the prices witnessed a Q-o-Q fall on several occasions. However, on a Y-o-Y basis, home price appreciation has been in the positive domain. From 15-20 per cent annual appreciation a decade ago, home prices have stabilized at around 5 per cent. In Q2 2022, the HPI recorded an annual growth of 4.5 per cent (YoY). Despite the drop in housing transactions during the first and second waves of Covid-19, the Economic Survey 2021-2022 found that home prices did not fall. From June 2020 to April 2021, housing sales rebounded quickly, surpassing pre-pandemic levels in all examined cities.⁵

4.2 Mortgage Rate

Mortgage interest rates have witnessed a secular fall in the recent decade, as reflected in Figure 12. Note that while the slope can be potentially generalized, the level of interest rates varies

⁵ The analysis in the Economic Survey 2021-2022 (Pg 188) is based on the National Housing Bank's data.

substantially across the lenders. The data for this exhibit is sourced from a major public sector bank known for lower interest rates.

10 9.5 9 8.5 8 7.5 7 6.5

Figure 12. Mortgage Rate

Source: IIM Ahmedabad, based on monthly data provided by a major public sector bank, India.

Table 2. Home Loan Lending Rates

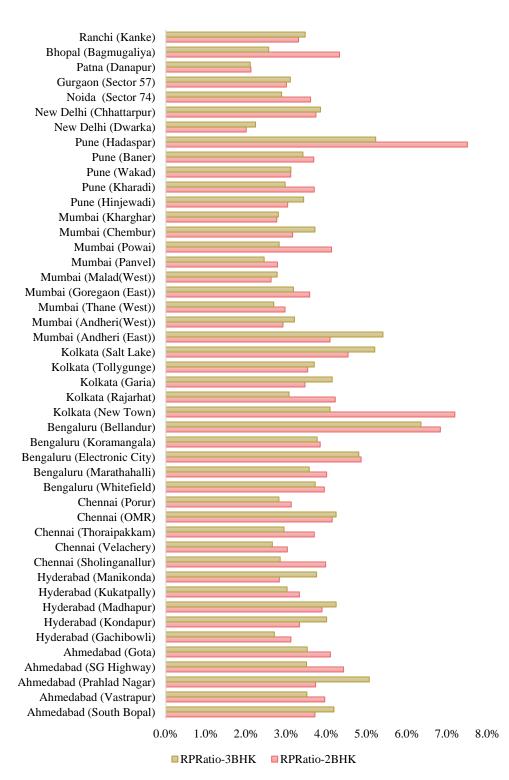
	8		
	April	October	April
	2016	2019	2021
Repo Rate	6.75	5.4	4
SBI (1 yr. MCLR)	9.2	8.15	7
ICICI Bank	9.2	8.45	7.3
(1 yr. MCLR)			
HDFC Ltd (RPLR)	16.3	16.85	16.05
LIC HF (RPLR)	14.2	14.7	14.7

Source: Indian Express

At the onset of the second wave of COVID-19, banks in India, flushed with liquidity, dropped interest rates by 5 to 10 basis points, to a range of 6.65 to 6.75 percent, to attract new customers. Data in Table 2 shows that customers of banks see the effects of repo rate drop sooner than those of HFCs, suggesting that banks have more efficient transmission of rate cuts. However, HFCs have easier lending requirements than banks.

4.3 Rent to Price Ratio





Source: Real Estate Search Portals⁶

⁶ Real Estate Search Portals include housing.com, 99acres, Magic Bricks, NoBroker, Makaan, Commonfloor, PropTiger etc.

India has been known for low rental yield in homes. The rent-to-Price ratio is a close proxy for income yields from investing in homes. We sampled randomly selected localities from some major metros in India. For a selected housing community, we collected rent and price information for units with identical specifications. The annual rent was divided by price to estimate rent-price ratios. The increase in the rent price ratio is a significant development observed in 2022. The high ratio could be characterized by discipline in housing prices and, perhaps, a simultaneous increase in rental rates. Cities known for Information Technology (IT) offices (e.g., Bengaluru, Pune, etc.) witnessed rent price ratios equaling 6-7 per cent.

5. REITS

So far, India has three real estate investment trusts (REIT): Embassy Office Park is the first REIT of India launched in 2019. Mindspace Business Parks and Brookfield India were set up in 2020 and 2021 respectively.

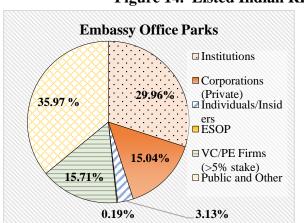
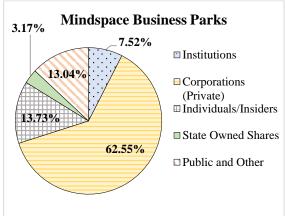
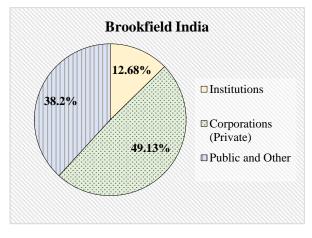


Figure 14. Listed Indian REITS Ownership Summary





As the stock market gains its experience with REITs, we should expect REITs to offer more stable returns in the coming years. Embassy REIT has the highest share of institutional owners, and Mindspace has the highest share of private (corporation) ownership.

Source: S&P Capital IQ Pro

In Figures 15 & 16, we analyze the financial performance of REITs based on their statements. As the REITs are relatively young, the ratios based on the financial statements should be close to reality. We focus on two fundamentals: Return on Average Asset (ROAA) and Return on Average Equity (ROAE).

Q2-2021 Q3-2021 Q4-2021 Q1-2022 Q2-2022 Q3-2022

Brookfield India Real Estate Trust Embassy Office Parks REIT Mindspace Business Parks REIT

Figure 15. Return on Average Assets (ROAA)

Source: S&P Capital IQ Pro

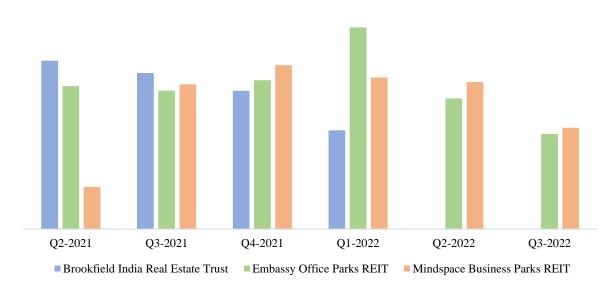


Figure 16. Return on Average Equity (ROAE)

Source: S&P Capital IQ Pro

While all REITs have experienced positive returns in recent quarters, the fundamentals have marginally declined recently. The fundamentals of Embassy and Mindspace REITs peaked in 2021 Q4-2022Q1 but have been moderating since then.

5.1 REIT Analysis

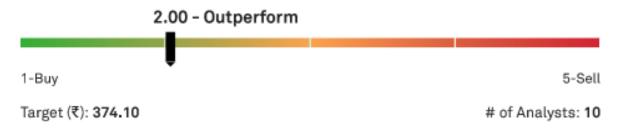
Despite volatile stock performance and declining fundamentals, analysts are enthusiastic about the future performance of REITs. Stock recommendations in December 2022 from S&P Market Intelligence for Embassy REIT was "Buy", reflecting a positive outlook. Both Mindspace and Mindspace REITs had an "outperform" recommendation. The analyst recommendations suggest that the outlook for Embassy REIT is more positive compared to the other two REITs.

Figure 17. REITS Analyst Sentiment

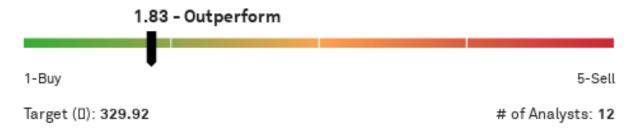
Embassy Office Parks



Mindspace Business Parks



Brookfield India



Source: S&P Capital IQ Pro

5.2 Private Equity Real Estate (PERE) Deals

Amount (US\$M) —Deals

Figure 18. PERE Investment

Source: Venture Intelligence (2019-22)

Private equity real estate (PERE) investments fell significantly during 2019-2021. From over USD 7 billion in 2017, they had fallen below USD 4 billion in 2021. However, 2022 experienced renewed enthusiasm with 69 percent more investment (worth over USD 6.3 billion) despite the overall number of deals falling by 25 percent. During the COVID crisis, interest from both foreign and India-dedicated funds bottomed out in 2020. Since then, the interest from foreign funds has been steadily increasing, although India-dedicated funds have still been sluggish.

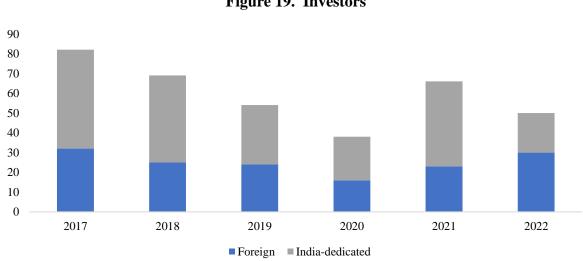


Figure 19. Investors

Source: Venture Intelligence (2019-22)

In the recent five years (2017-22), the government backed SWAMIH fund has been involved in the largest number of PERE deals. Reputed international funds such as Blackstone, KKR, and Brookfield have shown significant activity in the PERE deal space. Most of these PERE deals are focused on assets located in western or southern India. North, east, and central states combined claim nearly a third of the funds allocated to the western or southern states.

Table 3. India Region Wise PERE Deals

India	Amount (US\$M)		
Central	26		
East	170		
North	4,433		
South	13,977		
West	14,761		

Source: Venture Intelligence (2019-22)

Table 4. PERE Fund Deals

Investor	Deals
SWAMIH Fund	38
Motilal Oswal	26
Blackstone	20
HDFC Capital Advisors	20
ASK Group	15
Brookfield	13
GIC	13
Ascendas	12
Piramal Enterprises	12
Altico Capital	11
KKR	10
Piramal Fund	10

Source: Venture Intelligence (2019-22)

6. New Developments

6.1 RMBS

The National Housing Bank (NHB) is in the process of setting up a special purpose vehicle (SPV) for the creation and promotion of residential mortgage-backed securities in India. A committee has been set up (comprising senior NHB management and some academics) that regularly steers the process. A management consulting firm has been hired to set up a new company (the SPV) in which NHB will have a large stake. The SPV will sell pass-through securities that could trade in the secondary market. The SPV will also facilitate market-making in this regard.

6.2 Mortgage REIT

SEBI has constituted an expert committee for the development of mortgage REIT vehicles in India. This committee has been holding meetings with stakeholders. The committee will offer SEBI guidelines for mortgage REITs.

7. Challenges & Way Forward

7.1 RERA Implementation

The Real Estate (Regulation and Development) Act, 2016 (RERA) was a game-changer since it mandated more disclosure throughout the home-buying process. India is one of the top ten most-improved nations, and is on the verge of joining the "Transparent" category, according to the Global Real Estate Transparency Index, 2022 (GRETI), produced jointly by JLL and LaSalle. A new analysis of RERA's first five years, published by JLL, noted that more than a million conflicts have been resolved in that time, with UPRERA taking the lion's share (40 percent as of Jan. 2023).

RERA brought much-needed relief to homebuyers and structure as well as consistency to an otherwise fragmented market. However, the growing number of RERA cases and issues with executing the orders via traditional judiciary have become a hornet's nest. There are growing concerns about the non-exclusivity of the act in the real estate domain. Consumers face delays since RERA can only make rulings and issue orders (and does not hold any executive powers); to see them carried out, they must go via the local government. Another issue is that the act does not prevent other jurisdictions from enacting legislation pertaining to real estate, which weakens its position as a venue for dispute settlement.

The construction bans imposed by governments [e.g., National Green Tribunal (NGT), Commission for Air Quality Management in National Capital Region and Adjoining Areas (CAQM), or apex courts to control pollution, especially during winters] have caused indefinite delays in ongoing RERA-registered projects. Moreover, developers must pay the penalty since the RERA statute does not provide for a time extension due to a construction ban. Blanket bans to improve air quality only provide a short-term solution. Remobilization of resources to carry out the construction activities often gets tedious after a month-long prohibition; hence alternative long-term sustainable policies need to be considered.

7.2 Senior Housing

Ageing population is a visible worldwide trend. According to the MOSPI report "Elderly in India 2021," the population aged 60 and above is expected to increase to 13.1 per cent in 2031. Senior Living, a silver economy subcategory, has shown rising demand; nonetheless, this sector has received little government support. With the industry still in its infancy and increased demand for retirement communities, the time has come for the government to make significant legislative adjustments.

7.3 Reverse Mortgages

Reverse mortgages were first offered in India in 2007, but the nation has not seen significant interest in the product yet. This is likely owing to a general lack of understanding about the instrument or sentiment attached to the property. Some experts have shown concern for the taxability of accrued interest in the hand of the lenders. As the percentage of the ageing population is forecasted to grow by 2050, this globally popular retirement product is crucial, especially for the asset-rich ageing generation.

7.4 Model Tenancy Act, 2021

The Model Tenancy Act (MTA) was introduced in 2021 to regulate the rental housing market and protect the interests of landlords and tenants. While the MTA is a step in the right direction, it still needs improvement to completely transform the rental market. Default rental escalation rules tied to inflation could address disproportionate rent increases. Long-term rentals (LTRs)

⁷ RERA allows consumers to seek parallel remedies with other judicial forums. In some instances, consumers have filed cases simultaneously with two jurisdictions. Refer to Experion Developers Pvt. Ltd. v. State of Haryana, CWP No. 38144 (2018).

could pave the way for residential REITs and unlock liquidity for more meaningful investments. For MTA to be effective, it requires sufficient infrastructure to get the intended results.⁸

8. Conclusion

The real estate market in India has shown resilience and stability despite the impact of the COVID-19 pandemic. The stock market performance of NIFTY500 has been consistently better than realty stocks, but housing finance institutions and construction material firms have performed well. The stability of the P/E ratio and improvement in the P/B ratio are positive indicators for the industry. The sentiment of news reports about commercial complexes, housing construction, and housing finance has varied across segments and months in 2022. Home prices have stabilized with a rebound in housing sales and a decline in unsold inventories. The increase in rent price ratios in major metros also shows promising growth potential in the rental market. REITs have experienced positive returns, and there is renewed interest from foreign funds in private equity real estate investments in India. Overall, the future performance of the real estate market in India looks promising despite global uncertainties.

⁸ More on author's views on the Model Tenancy Act, 2021 can be accessed in detail here - https://realty.economictimes.indiatimes.com/realty-check/model-tenancy-act-still-a-long-way-to-go/4965

⁹ Economic Survey 2022-2023

References

Das, P. (2021, June 9). Model tenancy act: Still a long way to go -. *Economic Times*. https://realty.economictimes.indiatimes.com/realty-check/model-tenancy-act-still-a-long-way-to-go/4965

Das, S., & Sharma, R. (2022). *India Excerpts and Perspectives: Global Real Estate Transparency Index*. JLL Research. https://www.jll.co.in/en/trends-and-insights/research/india-excerpts-and-perspectives-global-real-estate-transparency-index

Economic Survey 2021-22. (2021). Government of India, Ministry of Finance, Department of Economic Affairs.

https://www.indiabudget.gov.in/economicsurvey/ebook_es2022/index.html

Economic Survey 2022-23. (2023). Government of India, Ministry of Finance, Department of Economic Affairs. https://www.indiabudget.gov.in/economicsurvey/doc/echapter.pdf

India VIX computation methodology. (n.d.). National Stock Exchange. Retrieved February 21, 2023, from https://www1.nseindia.com/content/indices/India_VIX_comp_meth.pdf.

Kakkar, S., Udeshi, B., & Karlekar, J. (2023). 5 years of RERA progress The journey of increasing trust. JLL Research. https://www.jll.co.in/content/dam/jll-com/documents/pdf/research/apac/india/jll-latest-report-5-years-of-rera-progress-the-journey-of-increasing-trust.pdf

Kumar, H. (2022, October 17). Amid Pollution Concern, Here's How a Construction Ban Will Impact Housing Projects In Delhi-NCR. *Outlook India*. https://www.outlookindia.com/business/amid-pollution-concern-here-s-how-a-construction-ban-will-impact-housing-projects-in-delhi-ncr--news-230419

Kurup, E. J. (2022, May 4). Sort out legacy issues to make realty plinth strong. *Money Control*. https://www.moneycontrol.com/news/opinion/sort-out-legacy-issues-to-make-realty-plinth-strong-8452831.html

Kurup, E. J. (2023, January 27). RERA starts unravelling as key fixes in law are neglected. *Moneycontrol*. https://www.moneycontrol.com/news/opinion/rera-starts-unravelling-as-key-fixes-in-law-are-neglected-9949121.html

Livemint. (2022, October 7). A one-month ban on construction delays a project by 3-4 months: Anarock. *LiveMint*. https://www.livemint.com/news/india/a-one-month-ban-on-construction-delays-a-project-by-3-4-months-anarock-11665149733045.html

Masaldan, A. (2022, March 7). India's ageing population offers housing sector tremendous growth opportunity. *Financial Express*. https://www.financialexpress.com/money/indiasageing-population-offers-housing-sector-tremendous-growth-opportunity/2453307/

NSO (2021), Elderly in India, National Statistical Office, Ministry of Statistics & Programme Implementation, Government of India, New Delhi.

Purohit, M., & Ghosh, I. (2022, December 5). India's housing market to remain resilient, defying global downtrend: Reuters poll. *Reuters*. https://www.reuters.com/world/india/indias-housing-market-remain-resilient-defying-global-downtrend-2022-12-05/

Real Estate Sentiment Index Q3 2022.pdf (34th Edition). (2022). KnightFrank-NAREDCO. https://www.naredco.in/sites/default/files/2022-

10/Industry%20reports/34th%20Knight%20Frank%20NAREDCO%20Real%20Estate%20Sentiment%20Index%20Q3%202022.pdf

Rebello, J. (2021, March 3). HDFC follows SBI, Kotak, cuts home loan rate. *The Economic Times*. https://economictimes.indiatimes.com/industry/banking/finance/banking/hdfc-follows-sbi-kotak-cuts-home-loan-rate/articleshow/81314368.cms

Reserve Bank of India. (2022). *Financial Stability Report* (Issue 26). Reserve Bank of India. https://rbidocs.rbi.org.in/rdocs//PublicationReport/Pdfs/0FSRDECEMBER2022F93A2

Singh, S., & Verma, S. (2021, May 14). Bank v HFC: Who transmits home loan rate cuts better? *The Indian Express*. https://indianexpress.com/article/explained/housing-finance-companies-banks-home-loan-rate-cut-rbi-real-estate-covid-impact-7314248/

Tausczik, Y. R., & Pennebaker, J. W. (2009). The psychological meaning of words: LIWC and computerized text analysis methods. *Journal of Language and Social Psychology*, 29(1), 24–54. https://doi.org/10.1177/0261927x09351676.

The Real Estate (Regulation and Development) Act, MOHUA. (2016).

Vishwanathan, V. (2015, October 18). Why reverse mortgage is unpopular. *LiveMint*. https://www.livemint.com/Money/3ExMaNycbKkzQXpDS72w7O/WHY-REVERSE-MORTGAGE-IS-UNPOPULAR.html

Appendix

The following is the list of the companies in the indexes: Commercial complexes (COMM), construction companies (CONS), housing finance institutions (HFI), and construction materials companies (MAT).

Table 5. Companies in MAT, CONS, HFI & COMM Index

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S.No	MAT	CONS	HFI	COMM	
1	Greenlam	A G I Infra Ltd.	Aavas Financiers	Art Nirman Ltd.	
	Industries Ltd.		Ltd.		
2	Duroply Industries	Alpine Housing	Aptus Value	Mahindra	
	Ltd.	Devp. Corpn. Ltd.	Housing Finance	Lifespace	
			India Ltd.	Developers Ltd.	
3	Morganite Crucible	Ansal Buildwell	Can Fin Homes	Suratwwala	
	(India) Ltd.	Ltd.	Ltd.	Business Group	
				Ltd.	
4	Orient Abrasives	Ansal Housing Ltd.	G I C Housing		
	Ltd.		Finance Ltd.		
5	Carysil Ltd.	Arihant	Home First		
		Foundations &	Finance Co. India		
		Housing Ltd.	Ltd.		
6	Grindwell Norton	Ashiana Housing	Housing		
	Ltd.	Ltd.	Development		
	Lu.	Etd.	Finance Corpn.		
			Ltd.		
	Nr. I. I	D. L. I. F. A			
7	Nitco Ltd.	Brigade Enterprises	Ind Bank Housing		
	****	Ltd.	Ltd.		
8	J K Lakshmi	Conart Engineers	India Home Loan		
	Cement Ltd.	Ltd.	Ltd.		
9	Kajaria Ceramics	DLFLtd.	Indiabulls Housing		
	Ltd.		Finance Ltd.		
10	Orient Abrasives	Eldeco Housing &	L I C Housing		
	Ltd.	Inds. Ltd.	Finance Ltd.		
11	Grindwell Norton	Ganesh Housing	P N B Housing		
	Ltd.	Corpn. Ltd.	Finance Ltd.		
12	Orient Bell Ltd.	Garnet	Reliance Home		
		Construction Ltd.	Finance Ltd.		
13	A Infrastructure	Godrej Properties	Repco Home		
	Ltd.	Ltd.	Finance Ltd.		
14	Nitco Ltd.	Housing	S R G Housing		
		Development &	Finance Ltd.		
		Infrastructure Ltd.			
15	Graphite India Ltd.	K C L Infra	Sahara Housingfina		
	•	Projects Ltd.	Corpn. Ltd.		
16	Himadri Speciality	Kolte Patil	Star Housing		
	Chemical Ltd.	Developers Ltd.	Finance Ltd.		
17	N C L Industries	Macrotech			
	Ltd.	Developers Ltd.			
18	Ecoboard	N B C C (India)			
10	Industries Ltd.	Ltd.			
	muusules Liu.	Liu.			

19	Carysil Ltd.	Nila Infrastructures	
		Ltd.	
20	Visaka Industries	Oberoi Realty Ltd.	
20	Ltd.	Oberof Realty Eta.	
21	Carborundum	Omaxe Ltd.	
21		Olliaxe Liu.	
	Universal Ltd.		
22	Greenlam	Pansari Developers	
	Industries Ltd.	Ltd.	
23	Grindwell Norton	Parsvnath	
	Ltd.	Developers Ltd.	
24	Kajaria Ceramics	Prestige Estates	
	Ltd.	Projects Ltd.	
25	Greenlam	Puravankara Ltd.	
	Industries Ltd.		
26	Priti International	Radhe Developers	
	Ltd.	(India) Ltd.	
27	H I L Ltd.	Rainbow	
		Foundations Ltd.	
28	Prism Johnson Ltd.	Sobha Ltd.	
29	HILLtd.	Thakkers	
		Developers Ltd.	

Source: CMIE

Note:

1. COMM = Commercial Complexes, CONS = Construction Companies, HFI = Housing Finance Institutions, MAT = Construction Materials Companies.

2. There are 81 companies in MAT. We have randomly selected a few from the set for representing the index companies.