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Impact Of Coronavirus On Indian Real Estate And Distribution On House Prices In India

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Abstract

In India, advancements in the housing sector have received a lot of attention. These debates are driven by worries over supply, especially at the top end of the market. In this regard, despite housing being a normal good, basic regression estimations show that income elasticity of house price fluctuations over the post-2010 period is negative. We explore the role of income distribution in order to uncover the fundamental cause. According to our empirical research, there is a positive (negative) correlation between changes in housing prices and the proportion of households in the bottom (top) quintiles of income.A jump in demand driven by an increase in the income share of the top income quintile may not put pressure on house prices given the existing adequate supply of homes at the high end of the market. Additionally, a decrease in their home demand may result from the bottom three income quintiles' diminishing income share. In order to reduce the disparities in the housing market, strategies aimed at increasing income equality may be helpful.

Keywords: Coronavirus, Indian real estate Housing market, Income distribution

1. Introduction

One of the main economic worries in India is the state of the housing market. This is a result of both internal developments and the severity of the US financial meltdown in 2008, which was brought on by the sub-prime mortgage industry. In light of tighter financial circumstances, the media frequently reports that there are concerns about supply in the home market. For instance, a discrepancy between sales figures and occupancy permits suggests a buildup of unsold housing units, validating fears of business groups. The housing complexes that cater to the top end of the income distribution appear to be the culprits, despite the fact that there is a lack of official statistics to identify the causes of this buildup.

On the price front, we can observe that actual property prices dropped by as much as 18% by the end of 2018 after peaking in mid-2016, which indicates that the market is significantly unbalanced. House prices don't drop rapidly to clear the market, as Case and Shiller (2003) argued; instead, they exhibit nominal downward rigidity, which raises the possibility of a collapse. Although there hasn't been any discernible progress in terms of market clearing, India's high inflation, which has recently been in the double digits, lowers prices in real terms and enables price mechanisms to clear out excess supply and shift the market towards equilibrium.

We notice a negative relationship between real income and changes in real home prices over the post-2010 period. This seemingly contradictory outcome has served as inspiration for accounting for income distribution in addition to revenue itself. With the groundbreaking work of Piketty, the topic of income distribution has recently grown in popularity (2014). Piketty's work, which focuses on income distribution in the developed world, shows how income inequality has gotten worse faster since the 1970s. The World Bank's World Development Indicators Database only contains data on India's income distribution going back three decades.

We evaluate the regional housing market in India during a specific time period in this study, where we see significant supply, declining real prices following a period of rapid expansion, and worsening income distribution circumstances. Based on a panel data set with 26 statistical regions spanning 4 years (2014–2017), our empirical findings. A closer examination of the income distribution reveals that while an increase in the share of the fifth (top) income quintile is associated with a decreased impact of income changes on house price changes over the sample period, increases in the shares of the first, second, and third income quintiles are associated with a strengthened impact of income changes on changes in home prices.Thesefindings may indicate a possible mismatch between the types ofhouses supplied and the type of houses demanded by potentialbuyers.

2. Relatedliterature

The first body of scholarship focuses on examining the relationship between fundamentals like income and per capita income and housing prices. The primary goal of these investigations is to estimate an error-correction specification that takes the long-run relationship into consideration (e.g. Abraham and Hendershott, 1996; Capozza et al., 2002; Meen, 2002; Galin, 2006; Case and Schiller, 2013). These studies are based on the hypothesis that, in the housing market, even if house values and income fluctuate in opposite directions over the short term, their error-correcting process will eventually cause them to move toward their long-term steady connection.There is no agreement on whether housing prices and income are co-integrated, despite the fact that several research have looked into the relationship between the two. One of the primary causes, according to Durmaz, is the absence of the proper supply and demand shifters that would accurately reflect the fluctuations of the housing market (2011).

Another body of literature focuses on using multivariate analysis to examine the factors that influence home prices. These studies consider elements like interest rates, demography, and supply-related factors like the amount of housing stock available or development costs in addition to income. (e.g.NellisandLongbottom, 1981;CaseandShiller, 1990;Abelsonet al., 2005;Liu and Shen, 2005; Greiberand Setzer, 2007; Esteban andAltuzarra,2008;Chenetal.,2007;GuoandWu,2013;andCeritog˘lu,2019).The main finding of these studies is that mortgage interest rates have a negative impact on home values whereas per capita income, wealth, and population growth have favourable effects. The relationship between home prices and income, according to certain studies, could occasionally be negative. According to Pour et al. (2013), Iran had a negative income-house price association since there was a major surplus of real estate and there was a lot of development going on throughout the real economic growth times. In addition, Xu and Tang (2014) offer proof for the UK's negative income-house price link between 1971 and 2012, claiming that it resulted from consumers' contradictory decisions regarding real estate investment and other expenditures.

The two literary streams previously mentioned place little to no attention on the distribution of income and income inequality, instead concentrating primarily on the link between property price and income. A recent body of study on housing markets takes into account both income and income inequality. On the other hand, Zhang, Jia, and Yang (2016) contend that income inequality plays a significant role in both the price to income ratio and the housing vacancy rates in China.

In light of this, our empirical work connects the two strands of literature above by focusing on the short-run dynamics of housing prices in a multivariate regression setting. Our research also considers the income distribution, presenting empirical evidence from an emerging economy perspective, comparable to the final body of literature discussed.

3. Impact of Coronavirus on Indian real estate

Things are once again looking bright for India's real estate sector in 2022 as the negative effects of the Coronavirus outbreak progressively fade. Growth rates for the months of January and March reflect this. In Q1 2022, 70,623 units were sold as opposed to 66,176 units sold in Q1 2021, representing a 7% annual growth, according to Real Insight Residential - January-March 2022. On the supply side, 79,532 units were introduced overall in Q1 2022 as opposed to 53,037 units in Q1 2021, demonstrating YoY growth of 50%.

Rates of apartments in India's megacities have also begun to display more intense growth after a protracted period of sluggish expansion. The studies' eight markets all experienced an increase in the average price of new homes, the report demonstrates.

Table 1: City-wise price card

City	Price range in Rs per sq ft as on March 2022*	YoY % growth
Ahmedabad	3,500-3,700	8%
Bangalore	5,600-5,800	6%
Chennai	5,700-5,900	9%
Delhi NCR	4,500-4,700	4%
Hyderabad	6,000-6,200	7%
Kolkata	4,300-4,500	5%
Mumbai	9,800-10,000	4%
Pune	5,400-5,600	8%
India	**6,600 – 6,700**	**7%**

Source: Real Insight Residential – January-March 2022, PropTiger Research
**Weighted average prices as per new supply and inventory*

Further increases in real estate prices, which are extremely anticipated given that the RBI raised the repo rate by 90 basis points through two swift announcements, could impair the market's momentum. Following the announcement by the RBI on June 8, 2022, banks have started to announce increases in lending rates. This choice might also encourage builders to raise the cost of brand-new house developments in India.

Surge in Covid-19 cases may derail real estate from recovery path

According to the head of the industry group CREDAI, the demand for residential real estate in India may be negatively impacted by a sharp increase in new Coronavirus cases.

India made for 13.08 percent of all active Coronavirus cases worldwide as of this writing. At the moment, it has the second-highest number of active cases per country. India had 2,83,07,832 cases altogether as of June 2, 2021, and 3,35,102 people have died from the infection.

Large portions of India, particularly Delhi, Maharashtra, Rajasthan, Odisha, and Gujarat, are now subject to restrictions such as partial lockdowns, weekend lockdowns, night curfews, etc. due to the increase in instances during the COVID-19 second wave.

"The COVID-19 pandemic's second wave causes us concern. I don't believe there will be a problem if migrant labour is present on the sites and there is support for the supply chain and logistics. The (buyer) sentiment could be affected in the event of a total lockout or loss. At a virtual press conference, CREDAI national president Harsh Vardhan Patodia warned that COVID-19 "may prove to be a short-term dampener."

A shift in the banking system's philosophy may have an impact on India's housing demand. In a recent analysis, QuantEco Research predicted that the COVID-19 second wave would affect the Indian economy by encouraging people to preserve money rather than spend it. In contrast, the initial wave of economic recession in 2020 was mostly caused by supply disruptions brought on by a protracted nationwide lockdown. This would have an especially negative effect on expensive housing purchases in the nation.

"Compared to last year, the expectation of a consumption hitch is more tangible. According to QuantEco Research analyst Yuvika Singhal, consumer redux could resemble a U-shaped recovery this year as opposed to a V-shaped one. Singhal also revised down India's FY 2022 growth prediction by 150 basis points to 10 percent.

Despite consumers' optimistic perspective toward this asset class in the wake of the epidemic, the demand for residential spaces could suffer significantly if the government does not decide to reduce the tax burden on home purchases.

Housing affordability seen increasing

India's ongoing campaign to vaccinate against the coronavirus will have a good effect on the country's real estate market as well.

Despite the lingering effects of the Coronavirus epidemic on the sector, India's residential real estate market is projected to experience higher sales and supply in the January–March 2021 period if the increasing affordability of homes is any indication.

Home buyers can currently obtain mortgages with yearly interest rates as low as 6.65 percent while the RBI maintains the repo rate at 4 percent. In contrast, the average interest rate for house loans in January 2020 was 8%. Due to the impact on demand, price growth in the housing sector has also been challenged over the last 12 months.

Property brokerage firm JLL India stated in a research titled "India Real Estate Outlook - A new boom cycle" that new home supply in 2021 would continue to be in the inexpensive and mid-segment, with developers aiming to capitalise on significant pent-up demand.

The recovery in the nation's housing sector may also be greater and faster than anticipated given that the majority of rating agencies have revised their estimates of India's GDP outlook upward.

Fitch Ratings upgraded its estimate of India's growth for the fiscal year 2021–2022 to 12.8 percent on March 24, 2021 from its prior estimate of 11 percent, citing a "stronger carryover effect, a looser fiscal stance, and better virus management." As the internal immunisation drive against the virus gains momentum, a number of major rating agencies and international think tanks, including Moody's Analytics and the Organisation for Economic Co-operation and Development (OECD), have also increased their projections for India's growth.

With the economy picking up and employment witnessing stability, the existing momentum in housing sales could sustain in the year 2021, the brokerage firm opined.

Vaccine rollout to restore normalcy in India's Corona-hit housing segment

The government of India has contracted with Serum Institute of India Ltd, the largest volume vaccine manufacturer in the world, to produce a billion doses of the AstraZeneca Coronavirus vaccine. On January 12, 2021, distribution across locations began.

Mid-January will mark the start of India's race to immunise its more than 1.3 billion citizens, and the country's residential real estate sector, which employs the most unskilled labourers, will benefit from what may be considered one of the world's largest immunisationprogrammes.

While announcing its monetary policy statement on February 4, 2021, India's banking regulator, RBI, stated that threats to the recovery may diminish and economic activity is projected to pick up steam in the second half of 2021. "Financial markets are still booming thanks to cheap credit conditions, an abundance of liquidity, and hope for the vaccination deployment. With the country's vaccination programme now fully implemented, the economy is rebounding, and the outlook has greatly brightened, according to RBI governor Shaktikanta Das.

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Green shoots of resurrection have already already become visible amid anticipation for the start of the immunisationprogramme, and this is reflected in the quarterly house sales and new supply data.
Home sales in India's eight prime residential markets reached 58,914 units in the October-December 2020 period, showing a 68 percent quarterly increase, according to a recent report by property brokerage firm by PropTiger.com. After reaching a record low during the previous two quarters amid a dramatic rise in the number of infections - as of January 12, 2020, India had reported nearly 10.5 million COVID-positive cases and 1,51,000 deaths due to the virus infection. The amount of new supplies also significantly improved, growing by 173 percent from quarter to quarter (Q0Q).
"When all things are taken into account, the industry has demonstrated incredible perseverance in 2020, despite unheard-of challenges that have reduced consumer spending and caused the economy to decline. The immense potential of the real estate sector, which employs the majority of unskilled workers in the nation, is demonstrated by the fact that housing sales in India's key markets have begun to recover despite the general gloom brought on by the pandemic, according to Dhruv Agarwala, group CEO of Housing.com, Makaan.com, and PropTiger.com. Agarwala notes that the sector's performance is especially noteworthy in light of the pandemic's significant impact on many people's ability to generate revenue.
Although this could be seen as the beginning of a full-fledged, gradual recovery process, much will depend on how successfully Asia's third-largest economy handles the challenging task of making the vaccine accessible to its large population amid supply-side concerns given its limited health and transportation infrastructure. The same issue would have an effect on the overall economic recovery scenario, which would play a crucial role in determining the direction of India's residential real estate market going forward. India's economy is not at all stable at this point.
According to government predictions, even in the best-case scenario, India's gross domestic product growth is expected to decline by a record 7.7 percent during 2020–21, with the epidemic severely impacting the manufacturing and services divisions.
Global agencies and research tanks, however, have predicted a considerably steeper downturn. In fact, the International Monetary Fund (IMF) predicted that India's economy would contract by 8% in the current fiscal year in its World Economic Outlook report, which was published on January 26, 2021. This prediction was higher than the 7.7% decline forecast by the government's advance estimates. However, the IMF has predicted that the economy will expand at a rate of 11.5 percent in the upcoming fiscal year before falling to 6.8 percent in 2022–2023. Accordingly, India would continue to have the world's fastest-growing big economy over the next two years. The global organisation added that it was taken aback by India's second-quarter growth figures.Contrary to expectations for a double-digit decline, India's GDP growth declined by 7.5 percent in the third quarter.
India's economy is predicted to decrease by 9.6 percent in FY 2021 by the World Bank, due to sharp declines in private investment and family consumption. In 2021, growth is predicted to rebound to 5.4%. The Indian economy is expected to decrease by 10.3 percent in FY 2021, according to the International Monetary Fund, which also expects it to grow by 8.8 percent the following year.

Indian housing market's initial reaction to COVID-19

Since the global Coronavirus outbreak in December 2019, a lot has happened. Businesses worldwide ground to a halt as nations took drastic efforts to contain the virus, causing monetary authorities to lower growth predictions for the global economy, including India.
The Indian economy would grow at a rate of -10.3 percent in 2020, according to the International Monetary Fund (IMF), down -5.8 percentage points from the organization's June forecast. This prediction was made in the World Economic Outlook October 2020 report titled, "A Long and Difficult Ascent."
Gobal rating agencies S&P, Moody's, and Fitch predicted that the Indian economy would drop by 11.5 percent and 10.5 percent, respectively, in the current fiscal after the GDP data for the first quarter of FY21 indicated a decline of 23.9 percent over the same quarter previous fiscal earlier.
On September 14, 2020, S&P Global Ratings reduced its FY21 growth forecast for India to -9 percent from a previous estimate of -5 percent as the number of illnesses in the nation reached record highs. The ongoing COVID-19 escalation, according to S&P Global Ratings Asia-Pacific analyst Vishrut Rana, is one issue impeding private sector activity.
While the pandemic's negative effects are already being felt around the globe, conflicting views are starting to emerge regarding COVID-19's effects on the real estate industry. As a result of this global health emergency, the importance of workspaces in a post-Coronavirus world has been called into question.
A prolonged lockdown that began on March 25, 2020, and was eventually extended until June 7, 2020, amid a dramatic rise in the number of infections, worsened the situation in Asia's third-largest economy in India, where the economic contraction points to a delayed start of the long, arduous road to recovery.
It is clear that research organisations believe India's real estate market will soon come to a halt. According to data from PropTiger.com, property sales in India's eight largest cities fell by 66% between July and September 2020.

Although deal volumes for office space in India reached an all-time high of over 60 million sq ft in 2019, they climbed year over year by 27%. However, the virus attack is also anticipated to impede the growing momentum in India's commercial industry.
Before the sudden onset of the global catastrophe, any optimistic predictions about its growth were retracted. Now, the government is working on strategies to prevent the economy in general and businesses in particular from falling further into a slump, amid growing concerns that the rupee will fall to a low of Rs 78 against the US dollar.
While the real extent of the damage is hard to grasp in a scenario where every day is making a great difference, one thing is for certain – India’s real estate sector will suffer short-term shocks on account of the contagion.

Table 2: Housing market in India’s top 8 cities (April-June 2020)

Sales	Down 79%
Project launches	Down 81%
Inventory	738,335 units

Source: PropTigerDataLabs

The epidemic, according to rating agency ICRA, would negatively affect developers' cash flows and project delivery capacities in addition to having a substantial impact on the economy if it were not quickly contained.
ICRA stated in a recent note that the three-month loan moratorium announced by the RBI on March 28 will give some comfort to builders. However, it added that in case of a longer outbreak, the impact on overall economic activity is likely to be deeper and more sustained, which would have a more significant impact on developer cash flows and project execution abilities.This lending embargo, which the RBI subsequently extended to August 31, 2020, may be extended once more if the economy continues to deteriorate.
As a precaution against delays in project completion and as a show of support for the builder community, the government has also stated that developers may request a six-month extension of the project deadline under the RERA by claiming the force majeure provision.

COVID-19 impact on Indian housing market

Even if it currently does not appear that costs will decrease right away, the emergence of the coronavirus has further slowed a recovery that may have been plausible due to numerous government initiatives to boost demand.
In order to make home purchases more viable, the centre recently announced more tax advantages and lower interest rates on home loans, in addition to creating a stress fund for stalled projects worth Rs 25,000 crore.
In India's residential real estate sector, which has been reeling under the pressure caused by mega regulatory changes like the Real Estate Regulatory Authority (RERA), the Goods and Services Tax (GST), demonetisation, and the benami property law, the demand slowdown in the residential segment has already curtailed housing sales, project launches, and price growth.

COVID-19 impact on home buyers in India

If low interest rates—home loan interest rates are currently under 7 percent—and high tax exemptions—rebate against home loan interest payments can reach Rs 3.50 lakhs annually—were going to change consumer behaviour, the coronavirus outbreak is likely to put a stop to that change, at least in the short- to medium-term.
Purchase decisions could be delayed if prospective buyers are unwilling or unable to make site inspections. "With the Coronavirus epidemic affecting all economic sectors, the problems have gotten worse for India's real estate industry, which has been grappling with a "difficult scenario" ever since the introduction of economic and regulatory reforms.The decision-making process has been significantly delayed, and the slowness since the end of February is evident, according to Hiranandani.
Businesses reducing their personnel would also require many potential buyers to delay making a final choice on purchasing real estate until their employment situation was clarified.
Even though the RBI has announced many rate cuts, which have lowered the repo rate to 4%, any favourable effects on buyer sentiment would only be felt in the medium to long run. However, the move would be a huge help to current customers who would find it difficult to make EMI payments in the short- or medium-term due to the shutdown or in the event of a job loss.
The pandemic has, however, also made buyers appreciate the importance of home ownership, boosting the market attitude for residential real estate.
According to a poll by Housing.com and NARECCO, 53% of respondents stated they had merely postponed their intentions to buy a home for six months and would then go back on the market. In the study, about 33% of participants

claimed that in order to work from home, they would need to make improvements to their homes. 47 percent of respondents to a survey of renters said they would consider investing in real estate if the price was reasonable.
With the use of goods like virtual tours, drone photography, video chats, and online booking platforms by developers and purchasers, we are witnessing a tremendous increase in online demand for real estate. The rental and purchase of real estate may change as a result of technology, and some states may transfer their real estate registration processes online. Although physical site visits will still be vital, Rangarajan predicts that purchasers will visit fewer homes than in the past since they would research new properties using technology and book some of them online.

COVID-19 impact on builders in India
While a continuing crisis in the nation's non-banking finance sector, a key source of funding for the housing sector, made borrowing extremely difficult and jeopardised their plans to complete projects within the promised timeline, slump-hit builders were pinning their hopes on government support to get rid of the growing unsold inventory.
According to statistics from PropTiger.com, as of September 2020, developers have unsold stock worth roughly Rs 6 lakh crores.Construction work is currently at a near standstill due to a viral lockdown in India and a delay in the arrival of manufacturing supplies and equipment from China. This will extend project delivery schedules and raise developers' overall costs. The pandemic has been contained by China, the virus's birthplace, and employees have begun to return to their workplaces. Builders will be compelled to delay orders in this area due to the tense situation between the two neighbours.A number of actions announced by the government in its stimulus package targeted specifically against the coronavirus and the EMI holiday for developers during the critical period are some measures that could provide some assistance to the building industry.

COVID-19 impact on office space in India
Even though people are gradually returning to occupations where working remotely is not an option, remote work remains the primary method of operation for businesses at the moment.
Companies announced remote working for employees to stop the virus from spreading earlier as illnesses spiked dramatically. This announcement sparked discussion about whether work-from-home arrangements could eventually replace traditional office facilities. While the eventual degree of corporate success attained through remote working will determine the answer to that question, a short-term shock to India's commercial real estate market is inevitable.
Because of improved access to liquidity and a reduced risk of default, developers in this sector continue to be hopeful, but the effects of the virus are also felt in the office environment. According to international real estate firm JLL, corporates and co-working companies continued to postpone their growth plans in the wake of the pandemic, resulting in a 50% decline in net leasing of office space in the quarter from July to September 2020 across seven key cities.The net absorption of office space in seven cities, including Delhi-NCR, Mumbai, Kolkata, Chennai, Pune, Hyderabad, and Bengaluru, was 10.9 million square feet in the preceding period. The net office space lease decreased by 47 percent between January and September of 2020, from 32.7 million square feet to 17.3 million square feet. According to JLL, the idea of remote working had a part in the decline in the need for office space. "Corporate occupiers' increased use of office space consolidation and optimization tactics led to modest net absorption levels that could not keep up with new completions. As a result, the overall vacancy rate rose from 13.1% in the second quarter of 2020 to 13.5% in the third, according to a statement from JLL.
However, experts anticipate that the pre-COVID-19 development velocity in this sector will soon return.In fact, according to a research by international real estate firm Knight Frank, the office sector earned an 81 percent share of the USD 2.31 billion in total private equity investment made across 11 deals in the first nine months of 2020, followed by warehouse at 10% and residential with 9%. Private equity investors have benefited from the current state of the economy's recession by searching for Grade A businesses with significant growth potential. As a result, the office segment's assets had successful investment activity.According to Shishir Baijal, CMD of Knight Frank India, the average deal size for office investments has been noticeably higher in 2020 so far compared to the entire year 2019. The analysis noted that this asset class will continue to be profitable over the medium to long term, even though the sector continues to draw investors due to its solid fundamentals.

COVID-19 impact on mall developers in India
In India, a total of 54 malls were anticipated to open their doors in 2020. However, these predictions were made before the coronavirus pandemic began. Only five news malls were thus able to open in some of the most prestigious cities in the nation, including Gurugram, Delhi, Bengaluru, and Lucknow. This also illustrates the retail sector's turmoil in India.

Before the government imposed a total lockdown, foot traffic at malls in India was cut in half as a result of the fear surrounding the virus' spread. Even though the government has eased limitations and allowed malls to exist, albeit with rigorous regulations, this market segment continues to suffer. According to a poll conducted by the Retailers Association of India (RAI), retailers did not profit from lockout relaxations because business remained mediocre.

COVID-19 impact on warehousing in India

There have been predictions that the Indian warehousing industry will greatly benefit, presuming that e-commerce will expand significantly in the post-COVID-19 environment. The fact that this increase will extend to smaller cities as well as big cities is much more significant.

Savills India, a real estate consultancy business, estimates that compared to the original estimate of 45 million square feet, the supply of additional storage space in 2020 may only be 12 million square feet. A large capacity increase could be anticipated in 30-35 new tier-2 and tier-3 cities, though, as long-term demand increases.

Outlook for Indian real estate in 2021

Despite the pandemic having a significant negative impact on the industry in 2020, better times are anticipated in 2021. In the upcoming year, there will be a high demand for residential real estate due to the growing significance of home ownership among consumers and investors.

4. EmpiricalAnalysis

We have shown a set of basic panel regression findings where the only explanatory variable is the income measures. However, income is not the only factor that affects how much a house fluctuates in value. As a result, we expand our empirical study by including data related to income inequality as well as significant shifts in supply and demand in the housing market.

(a) Dataandmethodology

The lack of data for India during this investigation is one major drawback we face. Since 2010, the official house price index has been released on a monthly basis. On the other hand, information about income distribution at the national or regional level is made public once a year. We are left with only a short period of observation as a result. We gather data on a region-by-region basis to investigate the relationship between home price dynamics and income distribution in order to get around this problem and to take advantage of cross-regional variance. Since regional income distribution data only go back to 2014, we are compelled to use this smaller data set to conduct our empirical research.The lack of data for India during this investigation is one major drawback we face. Since 2010, the official house price index has been released on a monthly basis. On the other hand, information about income distribution at the national or regional level is made public once a year. We are left with only a short period of observation as a result. We gather data on a region-by-region basis to investigate the relationship between home price dynamics and income distribution in order to get around this problem and to take advantage of cross-regional variance. Since regional income distribution data only go back to 2014, we are compelled to use this smaller data set to conduct our empirical research.To determine the difference in credit flows, the regional stock of real home credit data from the SBI is double-differenced. The difference between the total number of new homes sold in a given region in a given year and the total number of occupancy permits for houses granted; both statistics are sourced from INDIA. The Consumer Tendency Survey, which is carried out by INDIA in collaboration with the SBI, provided the information on expectations. Expectations data specifically pertains to responses to the question "the possibility of purchasing or building a house (during the next 12 months)".

Although the proper variable to utilise in the analysis is disposable income, the regional data on this variable is less complete than per capita GDP when we take changes in income into account (only 3 years of observations are available in this case). Due to its longer availability and tight association with mean disposable income, we opt to utilise the per capita GDP as the primary income measure in the empirical research (Fig. 1).

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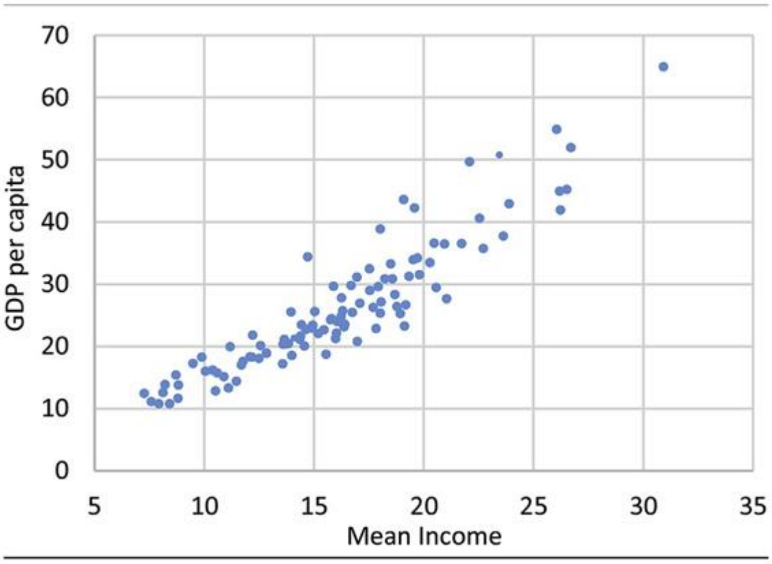

Fig.1:GDPpercapitavs.MeanDisposableIncome.

The second type of statistics refers to information on regional income distribution that is accessible from INDIA. We define the poverty rate using two different criteria in addition to the Gini coefficient: The percentage of the population whose income is less than 50 (or 60) percent of the median income is shown as the poverty rate 50 (or 60). Share "z"/1 variables, where z = 2, 3, or 4, refer to the ratio of the upper quintiles' mean income to the first quintile's mean income. The term "income share variables" describes the proportion of each income quintile in a region's overall income. Each quintile represents 20% of the total population, with the fifth quintile representing the highest income bracket.Table2reportsdescriptivestatisticsforincomedistributionmeasures.

Table2: Descriptivestatistics-incomedistributionrelatedindicators

	Obs	**Mean**	**Std.Dev.**	**Min**	**Max**
Povertyrate_50	104	10.20	2.28	5.10	15.90
Povertyrate_60	104	16.97	2.73	10.30	23.70
Share_2/1	104	1.58	0.09	1.40	1.86
Share_3/1	104	2.11	0.16	1.78	2.47
Share_4/1	104	2.88	0.30	2.36	3.63
Share_5/1	104	5.87	0.92	4.27	8.23
IncomeShare_1	104	7.52	0.76	5.93	8.99
IncomeShare_2	104	11.83	0.85	9.69	14.08
IncomeShare_3	104	15.75	0.80	13.34	17.71
IncomeShare_4	104	21.44	0.72	19.01	23.29
IncomeShare_5	104	43.46	2.61	37.84	51.67

Notes:Thedescriptivestatisticsare reportedas theaverage ofregionsoverthesampleperiodof2014-2017.

(b) Results

When we reach our base model (the last column of the table), which is where we account for house purchase expectations, increased stock, housing credits, and the unemployment rate, we have added all other significant variables. According to our argument, adjusting for unemployment reduces the cyclical effects on income distribution. Results show that regions with lower income inequality have a greater impact on changes in housing prices. When significant indicators are taken into account, this impact remains strong.Last but not least, we note that the main supply and demand shifters contained in the specifications exhibit the predicted signals and are largely statistically significant at standard levels. The impact of income distribution on the income elasticity of house prices is found to be robust in the analysis, which includes a large number of additional control variables in addition to these.

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The estimation outcomes are consistent with the view shown in Fig. 2. The effect of income fluctuations on changes in home prices is strengthened by an increase in the first three income quintiles' percentage of total income.When the share of the fourth income quintile is taken into account, this effect is rendered unimportant. It's noteworthy to note that the coefficient shifts from positive to negative when the income changes interact with the top quintile's income share. This finding implies that decreased income elasticity of real property prices is connected with a worsening of the income distribution caused by an increase in the income share of the top quintile. The prevalent understanding that there are imbalances in the housing market is somewhat supported by the beneficial effects of lower income quintiles and the detrimental effects of the top quintile.In other words, given the supply of unsold homes, a potential increase in demand driven by a rise in the income share of the top quintile is insufficient to counteract a decline in demand brought on by lower income shares among the bottom three quintiles. Such a finding may be a symptom of saturation at the high income-oriented sector of the housing market or of supply exceeding demand in the high-end of the housing market given the rise in the income share of the top quintile over the sample period.
Overall, the findings so far suggest that the increase in income in equality has adversely affected the housing mark et over the sample period. The results also suggest that by removing the imbalances, any increase in income equality may aid in restoring the housing market's normal operation. What would the elasticity estimates be, for example (case 1), if we increased the sample mean shares of the first four income quintiles by two standard deviations and decreased that of the top quintile by two standard deviations (after making sure they add up to 100)? With the highest income shares observed in the sample for the first four quintiles and the minimum income share observed for the fifth quintile, we can perform another "what if" exercise (scenario 2).Once more, we confirm that the total of the income shares is one hundred. Given the market's supply structure and leaving all other factors constant, Fig. 2 shows that income elasticity would go back to being positive in both cases. Intuitively, the outcomes of the two cases are pretty similar. We do not place much weight on that since the predicted coefficient for the fourth quantile is not statistically significant in either scenario. These counterfactual analyses unmistakably imply that there is potential for legislation, such as tax legislation, that can dampen the market's overstock by skewing the distribution of income.

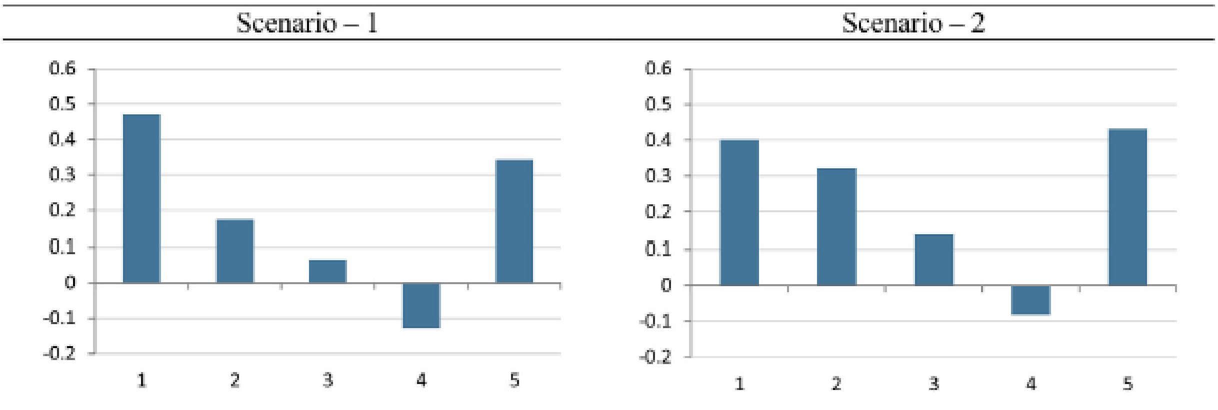

Fig.2: Incomeelasticityofhousepricechangesunderanimprovedincomedistribution.

5. Conclusion

Through building, the housing market is connected to both the real estate market and the banking industry. As a result, a positive housing market forecast is a crucial component of financial stability. Given that the housing market played a significant role in many financial crises throughout economic history, including the 2008 global meltdown, an imbalance in the market can quickly cause worry and erode confidence.
In this study, we sought to explain a housing market anomaly that we had noticed: the anticipated post-2010 period's negative income elasticity of house prices. Income distribution evolved as a significant method to address this issue among many others. We looked for actual evidence to support this while keeping supply-related considerations in mind. At this point, it should be recalled that the subject handling was difficult by the dataset's short time series dimension. In spite of this, we use a panel regression scenario to analyse the relationship between income distribution and the housing market.
Although controlling for income distribution fell short of achieving positive income elasticity across the study period, our empirical findings imply that finding distinct influences of income quintiles on house prices is worthwhile investigation. A demand boom driven by an increase in the income share of the top income quintile may not put pressure on house prices given the existing adequate supply of homes, some of which may be at the high end of the market.

Additionally, the housing demand of the bottom three income quintiles may decline as a result of their dropping income share. In order to reduce the disparities in the housing market, strategies aimed at increasing income equality may be helpful.

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