A New Price Regime
Land Markets in Urban and Rural India

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Land prices in urban and rural India have increased rapidly in the last decade — fivefold in urban areas and possibly more in some rural settings. Using comparable international data, this paper shows that urban prices are significantly higher than is commensurate with income and that the peaks of these prices are extraordinarily high. Similarly, rural prices in several regions are very high by international standards. It argues that the present conditions can be explained by a combination of increasing land scarcity with increasing money supply — from expanded housing credit, and rising incomes from white, black, and foreign sources — and increasing income and wealth inequality. All of which means this is no mere bubble.

The price of land has increased fivefold or higher in many regions of India in the last decade. I argue that this is a transition, not a bubble, caused by rising credit, income, and inequality in conditions of increasing land scarcity. That land prices have increased in recent years is common knowledge in urban India, but is less commonly known in and about rural India where the price rise has varied by region. This paper is an attempt to (a) quantify the dynamics of land prices; and (b) explore explanations for the rapidity of the rise after decades of stasis, and for the extraordinary and globally unprecedented peaks of these prices.

The body of the paper has separate examinations of India's urban and rural land markets. There are three reasons for this separate treatment. First, we know more about Indian urban land prices than rural land prices. Part of this examination involves an understanding of this phenomenon itself. Why, with almost 130 million discrete pieces of privately-owned agricultural land in the country, should there be limited information on prices? Second, because we know more about urban land prices, it is possible to provide more robust explanations for prices in urban settings. Third, the policy implications (not discussed here) are fundamentally different in urban and rural settings.

Urban Land Markets

Data

Tables 1 and 2 (pp 46 and 47) collate some systematic and comparable data on property and land prices in urban India, along with international prices, to understand the dynamics and current conditions of the urban land market. Let us understand what the data represent before we get to a discussion of what they mean.

Table 1 lists data on the price of residential property in 15 cities. These have been taken from the data set RESIDEX being generated and maintained by the National Housing Bank (NHB) based on home mortgage lending data provided by banks. These data provide the most reliable information on the price of middle- and upper-class residential properties in India. Its primary virtue is that it is built from real transactions. In addition, since bank lending is less susceptible to the well-known problem of "black" money in housing – because banks lend on the basis of contracts, which, by definition, do not include off-the-book payments – these data are "clean", in that they represent the closest approximations of true housing transaction prices.[1]

Every city in the RESIDEX data is divided into several zones (which typically are stamp duty zones). Table 1 lists the per

square foot residential property price averaged for the period 2007 through the third quarter of 2010 for the highest and lowest priced zones in each city. An average is shown here because it smoothens the quarter to quarter variation in lending, and hence, prices. But because these are averages from a period of rapid increase (in most cities) they tend to underestimate the most recent prices. Also shown is a rough calculation of what the underlying price of the land might be based on these property prices, and an index of price changes from 2001 to 2011.[2] The calculation of the underlying price of land is suggestive more than it is robust (because the data do not tell us when land was purchased or a residential structure built on it), but is probably reasonably close to the real price. These calculations roughly match the land prices obtained from direct land sales analysed in my larger project (Chakravorty 2012).

Table 2 is a compendium of international residential property prices collated from the website of the consulting firm Global Property Guide. These figures represent current purchase prices for 120-square metre apartments in the highest priced property markets in each country, which typically is in the capital and/or the largest city. To provide more detail and comparative figures, the table includes additional information from four countries – India (with data from Mumbai and Delhi), the US (New York City and Miami), Germany (Berlin, Munich, and Frankfurt), and France (three different points in Paris). These data appear to be reliable. They are almost certainly the best available, as they are taken from the most reliable sources within individual countries. For example, the Indian data are taken from RESIDEX, which, as I have argued above, is the most reliable source for the high-end property market in India. The purchase prices have been converted to rupees per square foot for comparability with Indian data. The rightmost column estimates the number of years of per capita income in the country (expressed in terms of purchasing power parity) needed to buy these properties.

Land Cost and Property Cost

Before discussing the outcomes revealed in these tables, it is useful to begin with an understanding of the relationship between land price and property price. The price of residential property is a bundle of two prices – the price of the structure and the price of land. The price of the structure has some variance that arises from the construction quality and finish and structure height (taller buildings need stronger foundations and more steel reinforcement). In India, we know that the cost of residential property construction does not vary much – in 2000, the construction cost per square foot was around Rs 500 (for reasonable quality); by 2009-10, that cost had risen to about Rs 1,000-1,100 per square foot, rising to around Rs 1,500 per square foot for high-rise buildings. This price rise matches the rise in the consumer price index in the same period – using a base of 100 in 2001, the consumer price index in the country had increased to 197 by the end of 2011.

The remaining price is the price of land. This price can have a very large variance – over space (that is, between urban and rural regions, between different urban regions, and within

specific urban regions) and over time. Within an urban or metropolitan area, the variance in the price of land arises from locational differences. Market access and transportation are the key factors, but they do not explain all the variance because there are differences in "amenities" such as neighbourhood and environmental quality.[3] Hence, the variation in the price of housing in a single city – in Table 1 it ranges from Rs 2,676 to Rs 39,702 per square foot in Mumbai – is almost entirely a result of the variation in the price of land.

What is the share of land price in the price of housing? There is a wealth of US data on this question. For example, in the mid-2000s, before the intertwined financial and real estate crises brought prices down, the share of land cost in the cost of property citywide was 89% in San Francisco, 82% in San Diego and Los Angeles, 76% in Miami, 74% in Boston, and 69% in New York City. After the crisis, in the late 2000s, this share was below 10% in several cities, including Detroit, Pittsburgh, St Louis, Memphis, and Oklahoma City.[4] If we assume the cost

Table 1: Price of Property and Land in Urban Areas (2001-11)

City	Price Per Square Foot, Average 2007-10			Possible Price of Land in Rs Crore/Acre		Citywide Price Index	
	Average	Lowest Zone	Highest Zone	Lowest Zone	Highest Zone	In 2007 (2001 = 100)	In 2011, Quarter 4 (2007 = 100)
Mumbai	7,319	2,576	39,702	10.3	252.9	268	193
Bangalore	5,826	5,671	10,140	30.6	59.8	313	100
Delhi	5,405	3,709	12,289	17.7	73.8	298	167
Chennai	3,728	2,591	4,744	10.4	24.5		296
Kochi	3,345	2,249	7,262	8.2	40.9		82
Pune	3,122	2,981	3,254	13.0	14.8		184
Hyderabad	2,949	2,312	3,435	8.6	15.9		79
Faridabad	2,915	2,081	4,007	7.1	19.7		218
Kolkata	2,471	1,747	4,235	4.9	21.2	237	190
Ahmedabad	2,460	1,235	2,851	1.6	12.1		167
Jaipur	2,442	1,215	3,904	1.4	19.0		64
Patna	2,169	2,016	2,715	6.7	11.2		140
Bhopal	2,146	1,534	5,964	3.5	32.5	260	211
Lucknow	2,006	1,641	2,407	4.2	9.2		165
Surat	1,911	1,661	2,411	4.4	9.3		152

"Possible price of land" calculated using the following assumptions: FSI of 1.5, construction cost of Rs 1,000 per sq ft in 2007-10, and land cost = finished price – construction price.
Source: Calculated from detailed RESIDEX data provided by Government of India officers. The summary indexed data are publicly available at www.nhb.org.in/Residex/Data&Graphs.php

of construction to be Rs 1,000 per square foot in 2007-10, the share of land cost in citywide property cost in India ranges from around 50% in cities like Surat and Lucknow to 83% in Bangalore and 86% in Mumbai. Note that these shares are based on citywide averages. In certain neighbourhoods of many cities (like New York and Mumbai) the share of land cost is well over 95% of the cost of residential property.

High Prices, Rising Rapidly

The data lead to two unambiguous findings – (a) urban property prices (which are based on land prices) are very high at the upper end, and (b) urban property prices have been increasing rapidly over the last decade, led by the rising price of land. Let us examine these two findings in some detail as their implications are quite consequential.

What is meant by the statement that the price of property and land in India is very high? High relative to what? Is there a

Table 2: Peak Housing Prices, International Comparisons (2011)

Country	Price in Euro/Sq Mt	Price in Rs/ Sq Ft	GNP Per Capita in PPP ($)	Years of Average Income to Buy Apartment
Hong Kong	19,323	1,16,728	48,347	65
Singapore	16,727	1,01,046	59,123	46
United Kingdom	15,187	91,743	35,645	69
US – New York	14,082	85,068	48,665	47
Japan	13,855	83,697	34,645	65
France, Paris – Highest	13,380	80,827	34,858	62
India – Mumbai	12,913	78,006	3,608	580
Switzerland	11,397	68,848	42,857	43
Russia	10,302	62,233	16,840	99
Italy	7,213	43,573	28,888	40
Taiwan	7,112	42,963	37,208	31
Sweden	6,991	42,232	39,847	28
China	6,932	41,875	8,288	135
France, Paris – Central	6,381	38,547	34,858	30
Finland	6,184	37,357	35,885	28
Canada	6,179	37,327	39,981	25
Luxembourg	5,559	33,581	83,437	11
Germany – Munich	5,459	32,977	37,428	24
Austria	5,109	30,863	40,978	20
Greece	4,936	29,818	27,843	29
France, Paris - Metropolitan	4,920	29,721	34,858	23
Netherlands	4,271	25,801	41,691	17
Czech Republic	4,040	24,405	25,525	26
Spain	4,022	24,296	30,233	22
India – New Delhi	4,002	24,176	3,608	180
Denmark	3,983	24,061	37,585	17
Cambodia	3,750	22,653	2,251	270
Germany – Berlin	3,704	22,375	37,428	16
Ireland	3,693	22,309	39,311	15
US - Miami	3,495	21,113	48,665	12
Poland	3,478	21,010	19,887	28
Germany - Frankfurt	3,477	21,004	37,428	15
Thailand	3,300	19,935	9,598	56
Philippines	3,204	19,355	3,890	133
Turkey	2,983	18,020	14,076	34
Brazil	2,834	17,120	11,767	39
Ukraine	2,807	16,957	7,126	64
Slovenia	2,786	16,830	28,874	16
Belgium	2,753	16,631	36,834	12
Argentina	2,329	14,069	16,831	22
Portugal	2,213	13,368	23,078	16
Malaysia	2,182	13,181	15,384	23
Romania	2,180	13,169	12,192	29
Estonia	2,153	13,006	19,375	18
Indonesia	1,781	10,759	4,657	62
Hungary	1,645	9,937	19,501	14
Mexico	1,544	9,330	15,113	17
Chile	1,329	8,028	15,998	13
Bulgaria	1,305	7,883	13,448	16

Original data are average per square metre prices in € of 120-sq m apartments located in the centre of the most important city of each country, either the administrative capital and/or financial capital and/or centre of the rental market. Additional data are included for selected countries: US (New York and Miami); Germany (Berlin, Frankfurt, Munich); and France (three different regions in Paris).

Indian prices are from south Mumbai (Altamount Road, Breach Candy, Carmichael Road, Churchgate, Cuffe Parade, Malabar Hill, Napean Sea Road, Nariman Point, Peddar Road, Walkeshwar, Warden Road) and New Delhi (Anand Niketan, Chanakya Puri, Defence Colony, Greater Kailash I and II, Hauz Khas, Jor Bagh, New Friends Colony, Saket, South Extension I and II). PPP (purchasing power parity) is the amount of money with the same purchasing power in different countries. It elevates the per capita income of less developed countries when compared to official exchange rates.

Source: Calculated from apartment price information in Global Property Guide (www.globalpropertyguide.com/) and PPP income data in en.wikipedia.org/wiki/List_of_ countries_by_future_GDP_(PPP)_per_capita_estimates

right price for property and land? These questions cannot be answered in the absolute, but only with reference to norms and international standards. If we assume that home ownership is a development objective, then home ownership should be affordable. A standard assumption in mortgage lending practice, in the developed world and India, is that a family can afford a home whose price is three to four times the family's annual income. That is, the price-to-income ratio should be around three and no more than four.

Now consider the highest end of the housing market in India in relation to its counterparts in the rest of the world (Table 2). The figures are startling. In Hong Kong, London, Tokyo, and Paris – four highly developed and dense megacities with among the highest land prices in the world – between 62 and 69 years of the national average income is needed to buy housing in the highest end of the property market. In New York city and Singapore, around 47 years of the national per capita income is needed to purchase housing in the most desirable neighbourhoods. In Mumbai, the comparable number is 580 years, far and away the largest number in this data set, and in Delhi, the comparable number is 180 years. Only one city, Phnom Penh in Cambodia, stands between Delhi and Mumbai. Only three other cities – Shanghai at 135 years, Manila at 133 years, and Moscow at 99 years – come within half of Delhi's range. In terms of price per square foot, the data show the same pattern. The price in south Mumbai is in the same range as prices in the highest price zones in Paris, Tokyo, and New York. The price in Delhi is in the range of prices in Amsterdam, Barcelona, Berlin, and Copenhagen.

Now consider real estate other than the most expensive. The annual per capita income in India at the end of 2011 was about Rs 60,000. At this income level, it would take about 100 years of average income to buy a modest 800 square feet flat at the prevailing metropolis-wide average rate in Mumbai. In metropolitan Bangalore and Delhi, the same modest flat in an average neighbourhood would require about 75 years of average income – more than the years of income needed to buy properties almost twice as large in the most expensive neighbourhoods of the most expensive real estate markets in the world. Another way of looking at housing prices relative to per capita incomes is to point out that the average Indian's annual income would buy him housing worth 1 square foot in south Mumbai and 4-5 square feet in central Delhi or Bangalore. This is quite extraordinary. Later in this section I argue that rising income and wealth inequality can explain this extraordinary situation.

What can we say about the price of land at the urban edge? This is an important question because urban growth can take place in only two ways – by infill, that is, by densifying the existing urban space, and by expansion, or bringing land on and just beyond the urban edge into urban use. There are limits to how much population can be accommodated by infill, which is why all cities grow by expansion. Moreover, users with large land needs – such as factories and office complexes – typically cannot afford land in the densely built-up area and have to locate close to the edge. The urban edge is a moving frontier. The price of land at that frontier is therefore a significant

determinant of how efficiently and rapidly that frontier can move, which is to say, how efficiently and rapidly urbanisation can take place.

The range of prices at the urban edge is lower than the range at the urban centre among India's big cities. This price probably ranges from around Rs 1.5 crore per acre in metropolises like Ahmedabad and Jaipur to around Rs 10 crore per acre in metropolises like Mumbai and Chennai.[5] In between are cities like Kolkata and Lucknow where the price of land at the urban edge probably approaches Rs 5 crore per acre.

Finally, let us briefly consider price changes. We have RESIDEX data for 10 years (2001-11) for five cities. Note that the initial base price year was 2001 and was recalibrated in 2007. Note also that these are property prices, not land prices. Broadly, property prices increased fivefold during 2001-11 in four of the five cities (Mumbai, Delhi, Kolkata, and Bhopal), and threefold in Bangalore, where there has been little price change in 2007-11.[6] As noted earlier, the consumer price index has doubled during this period. Hence the price of urban housing has increased by more than double the rate of overall inflation in the last decade. Recall the earlier discussion where I showed that the price of housing is driven by the price of land, not the price of the structure; the more expensive the housing, the more true this is. Hence, we can conclude that the price of urban land has generally increased fivefold in the decade 2001-11, a rate that is about 2.5 times the rate of inflation.

Demand and Supply

Why has the price of land risen so rapidly in the last decade and why is urban land so expensive? The most direct explanation is that the demand for urban land has increased but its supply has not increased commensurately. The mismatch between demand and supply has driven up prices, and since demand has increased rapidly, prices too have increased rapidly. Let us examine this explanation in detail.

There are several sources of increased demand. The high rate of economic growth from the early 2000s has undoubtedly been a significant contributor. All economic activity must take place on some land somewhere, therefore each new or expanded firm and factory and office has generated some new demand for land. Many estimates exist of the new square footage consumed by the information technology (IT), retail, and financial services sectors. It is hard to know how reliable these estimates are.

Added to this is the growth of the size of the middle class and the growth of income and access to housing credit in this class. The latter is of paramount importance. As recently as the mid-1990s, almost all housing purchases were cash transactions; if a buyer did not have the entire cash necessary to buy, he could not enter the market. Starting around 2000, the credit market in housing has grown very rapidly – it is now over 7% of gross domestic product (GDP), far less than in advanced post-industrial economies like the US and UK (where the corresponding figure is more than 80%) but far more than it was a few years ago in India. Nenova (2010) shows that housing finance disbursements increased from Rs 18,000 crore in

2000-01 to Rs 1,45,000 crore in 2008-09 (also see Patnaik, Shah and Suri 2011). The availability of housing credit has brought very large numbers of new housing consumers into the market, consumers who could not have bought housing without credit, and thereby significantly increased the demand for housing and land.[7] As a result, the real estate sector is one of the fastest growing in the country. The real estate boom has led to significant growth in supporting industries; cement, steel, paint, and so on during the construction phase; consumer durables like fridges, TVs, and ovens in the post-construction phase; and criminality and corruption. This boom has been abetted by government policies on housing credit and foreign direct investment in real estate.

It is common knowledge that urban land markets are now flush with money. The increase in housing credit is a major quantifiable source, but there are other sources of increased money supply that are less quantifiable but also widely known to exist. The leading categories here are "black money" and money from non-resident Indians (NRIs). The real estate sector is not only a source of black money generation (for example, by undervaluing real estate and underpaying taxes, and regularising unauthorised structures), but as the Ministry of Finance's white paper on black money argues, "Investment in property is a common means of parking unaccounted money and a large number of transactions in real estate are not reported or are under-reported" (Ministry of Finance 2012: 53). But the quantum of black money in real estate is unknown, as is the size of NRI investments in this sector.

Increasing demand alone is not a sufficient explanation for the very rapid rise in prices and the extraordinary peaks of those prices, especially in cities like Mumbai, Delhi, and Bangalore. A more complete explanation has to include supply factors. It is instructive to look at the work done by Bertaud on Ahmedabad, Bangalore, and especially Mumbai. He argues that a national obsession to "avoid congestion" has resulted in "Malthusian policies" that have severely constrained the supply of land, that in turn have led to high land prices, which again in turn have led to the massive growth of slums in Mumbai.[8] Bertaud identifies the following specific problems,

> A draconian and ill-conceived land use policy restricting the area of floor space which can be built on the little land available; muddled property rights preventing households and firms to freely trade land and floor space as a commodity; a failure to develop major primary infrastructure networks, which prevents the city to overcome its topographical constraint. In turn, the weakness of the infrastructure network is used to justify the restrictive land use policy (2011: 3).

Policies that limit the supply of urban land include low floor space index (FSIs) in all cities (rarely higher than 1.5 anywhere), various rent control acts (that favour tenants over owners and, over time, effectively transfer ownership rights to tenants, but not the title and the ability to sell), and urban land ceiling acts (abolished in most cities but still in force in cities like Kolkata). Vast amounts of urban land are in public uses that may have been justifiable decades ago but are less justifiable now. Examples include land used for defence (cantonments, army barracks), sick industries, unused airports and rail facilities, and so on. Between one-third and half of all

urban land is in public use – including some of the most desirable land (such as Lutyens' Delhi) – often inefficiently.

Other land that is not on the market is in slum areas where the absence of titles makes it non-marketable. We are reminded of Hernando de Soto's (1989) famous claim that $10 trillion in "dead capital" is sitting in the slums of the developing world because the poor lack titles to the land they live on.[9] There is little doubt that the supply of urban land has not kept up with the rapidly rising demand for it, and that a fundamentally new policy approach is needed to correct this growing imbalance. This is a large subject that deserves a more detailed treatment than I am able to provide here.

Inequality

The imbalance between demand and supply does not fully explain the extraordinarily high land prices in large sections of Mumbai, Delhi, and Bangalore. Recall that these prices, when expressed in terms of years of national average income, are the highest in the world – by a large margin. I argue that the source of this condition is income and wealth inequality. Urban land markets in India resemble the country's markets for education and health, in that they are polarised or dual markets. The features of these polarised markets are well recognised – expensive and high-quality education and healthcare, including access to the most advanced technology and highly trained service providers, in the privileged pole, and far less expensive and significantly poorer quality education and healthcare for the mass of the people. Many urban land markets are similarly polarised. A relatively small number of consumers are able to pay very large amounts for housing and their competition for land drives up its price far beyond what would have been possible in a more egalitarian distribution. That is, these polarisations are possible because of the extreme inequality in income and wealth distribution (especially in key cities like Mumbai, Delhi, and Bangalore) that has been a feature of India's growth spurt. There is little doubt that inequality has been increasing in India. The usual measure of inequality used in the country is consumption or expenditure inequality. This is an inadequate measure because it tells us nothing about inequality in the distribution of income or wealth.[10] The Gini Index of consumption inequality in urban India increased from 34.5 to 40.2 from 1993-94 to 2009-10 (Thorat and Dubey 2012). This is a substantial increase, but the new peak still underestimates the extent of income inequality. A rare income survey undertaken by the National Council of Applied Economic Research and the University of Maryland in 2004-05 showed that income inequality had reached a Gini Index of about 54 – a level comparable to the highest levels of income inequality in the world, in countries such as Brazil and South Africa.

There is an ongoing process of concentration of wealth among the super-rich. Walton (2010) estimates that between 1996 and 2008, the wealth holdings of Indian billionaires increased from 0.8% to 23% of GDP (also see World Bank 2011). Income and wealth are far more unequally distributed in India now than before and inequality levels are far higher than have long been presumed. The people at the very top of the distribution, the richest 0.1% of the population (which is 1.2 million people, a not insignificant number) live in the most dynamic and globalised cities and drive up land prices for everyone.

This is a critical difference between polarised land markets and polarised education and healthcare markets. The high cost of privileged education and healthcare has insignificant or small impacts on the cost of education and healthcare for the masses. Teachers and doctors are scarce resources, but not as scarce as urban land. The teachers and doctors providing services to the privileged pole are not, at the same time, providing services to the masses. Moreover, inexpensive or free government schools and hospitals are almost always available, however poor their quality. As a result, low-cost education and healthcare alternatives are generally available.

Not so land in polarised urban land markets. Here the privileged pole removes the best land for its own use from a tight land market. This directly drives up the price of the remaining land. There is very possibly an indirect price effect, whereby some proportion of the remaining land stays off market in anticipation of being absorbed by the privileged core. In other words, income inequality drives up the price of urban land for everyone, rich and poor. The poor effectively pay a land tax – through increased rents and decreased ability to buy – as a result of sharing their city with the elite.

Rural Land Markets

A stylised fact of rural land markets in India is that they are relatively inactive. Though there are about 130 million discrete pieces of agricultural land in private hands, there are few open and honestly recorded transactions and limited knowledge about prices. This discussion begins with explanations for and evidence of this condition, followed by an analysis of how agricultural land might be priced, using international comparisons and in the context of productivity and location. I argue that more is known about agricultural land prices now than ever before because in many regions of India there are now functioning land markets, and these prices are very high by international standards and are being created by the same factors – increasing scarcity with rising income and credit – that have led to rapidly increasing urban land prices.

Inactive Land Markets

In theory, an agricultural landowner should be open to the idea of selling his land if the income generated from it is matched or exceeded by the price on offer (which should be the net present value of all future incomes). This would be true if income was the only utility provided by land. There is a strong case to be made that in many settings agricultural production and the income generated from it is not the only source of utility from landownership; in fact, it may not be the most important source of utility.

Agricultural land is also viewed as an asset, an insurance, and a status good. It provides utility not only from the income it generates, but also as the source of the only income a typically unskilled farmer can earn, as a hedge against

disaster, as collateral to access credit, as an inheritance for future generations, as insurance for old age, and as a source of social status.

Some of the most eminent analysts of Indian agriculture have attempted to understand this condition. Raj (1970) has emphasised the power, prestige, and status value of land. Bhaduri (1983) has argued that land is valued differently from all other income-producing assets by its owners. Bardhan (1984) has suggested that the reluctance to sell comes from the belief that land is a less risky asset than others, especially when there are credit constraints. Binswanger and Rosenzweig (1986) have argued that these liquidity constraints do not allow small landholders and the landless to become buyers, which limits the market to large farmers and people with access to credit. Basu (1990) has argued that farmers are unsure of their ability to buy back land after they have sold it; without the possibility of buy-back they are reluctant to sell. Alternatively, there are cultural explanations, emphasising, for instance, the value of tradition and the social imperatives of continuing the work of one's forefathers. Guha (1987) and others have suggested that the social meaning of property rights varies between communities, whereby some communities have social norms that restrict sales, especially to outsiders.[11]

This element of the utility of land – that is, as an asset, insurance, and status good rather than a source of income – is subjective and contextual. The context varies with the landowner's access to other assets, insurance, and status goods than land, and the local social norms on land. As a result, the price of land has two components – an objective component that is relatively easy to measure and a subjective component that is difficult to measure. Consequently, each landowner has a reservation price, a price below which he will not sell, which is composed of an objective productivity-based price and a subjective price. Therefore, the reservation price is higher than the objective "market price" based on productivity alone. When land markets are inactive – that is, there are few open transactions – it is possible that the inactivity is a sign that the prices on offer do not account for both components, especially the subjective component.

An important piece of evidence in support of the claim of inactivity in agricultural land markets is the inactivity in evidence-based scholarship on the subject. There are few papers on agricultural land markets and land prices, and these are generally localised (to subregions within states), and because of the paucity of annual information, rely on several years or decades of data. Sarap's (1996) work on rural Haryana shows that in 30 years less than 9% of landowning households sold about 8% of the available area. Vijay's (2002) study in Andhra Pradesh shows sales of 4.5% and 0.7% of the available land in two villages in five years. In West Bengal, a 25-village study by Bardhan et al (2011) shows sales of 0.56 acre per household over the span of 37 years (1967-2004).

Two other studies are of special interest because along with information on land sales they provide locational context. Mani and Pandey's (2000) study of land sales in 1991 in Meerut

in Uttar Pradesh found that a large majority of the sales – especially to housing and industry – took place in plots proximate to roads and villages, whereas the plots that remained in agricultural use after the sale were of high revenue grade and relatively distant from transportation. Patil and Marothia (2009) studied land transactions between 1986 and 2000 in Dharsiwa block close to the capital Raipur in Chhattisgarh. Their data show the importance of proximity to roads (especially for buyers who turned the land to non-agricultural use), price (especially for medium and large landowners), and distress (for small and marginal owners who sold primarily for social ceremonies, loan repayment, medical needs, gambling, and community pressure).

The Price of Agricultural Land

If land is like other income-producing assets – that is, its value is determined solely by the income it can produce – how will agricultural land in India be valued? Let us try to calculate this.

Table 3 shows a set of numerical illustrations based on the latest available data on agricultural productivity by state (from Bhalla and Singh 2010). We begin by noting both the low level

Table 3: Agricultural Land Price Projections Based on Output

State	Output in Rs Per Acre, 2003-06 (1990-93 Prices)	Approx Output Per Acre, 2010 Prices	Approx Income Per Acre, 2010	Annuity Needed to Pay 2010 Income for 50 Years in Rs Lakh/Acre		
				Int Rate > Inflation	Int Rate = Inflation	Int Rate < Inflation
Punjab	6,224	19,796	6,929	2.1	3.2	5.2
Kerala	5,611	17,846	6,246	1.9	2.9	4.7
Tamil Nadu	5,311	16,892	5,912	1.8	2.7	4.4
West Bengal	4,916	15,636	5,472	1.6	2.5	4.1
Gujarat	4,792	15,241	5,334	1.6	2.5	4.0
Haryana	4,684	14,898	5,214	1.6	2.4	3.9
AP	4,671	14,856	5,200	1.6	2.4	3.9
UP	4,006	12,741	4,459	1.3	2.1	3.4
Assam	3,639	11,574	4,051	1.2	1.9	3.0
Karnataka	2,832	9,007	3,153	1.0	1.5	2.4
Odisha	2,709	8,616	3,016	0.9	1.4	2.3
HP	2,500	7,951	2,783	0.8	1.3	2.1
Maharashtra	2,413	7,675	2,686	0.8	1.2	2.0
Bihar	2,296	7,303	2,556	0.8	1.2	1.9
MP	2,283	7,261	2,541	0.8	1.2	1.9
Rajasthan	2,063	6,561	2,297	0.7	1.1	1.7
All India	3,425	10,893	3,813	1.1	1.8	2.9

Approximate income per acre calculated using a profit rate of 35% on value of output; the difference between interest and inflation rate in these calculations is 2 percentage points.
Source: Output data for 2003-06 taken from Bhalla and Singh (2010); remaining calculations by author.

of annual output (measured in Rs per acre) and its large variance between states. The India-wide average output was about Rs 3,400 per acre in 2003-06 (in 1990-93 prices). We know from the agricultural census that the average landholding size in 2005-06 was about 3 acres. Therefore, after adjusting for inflation, output per holding nationwide in 2010 may be in the range of Rs 33,000 per year. In Bihar, where the average landholding size was 1 acre and the output was Rs 2,300 per acre, the inflation-adjusted annual output per holding may be around Rs 7,300 in 2010. In Punjab, where the average holding was close to 10 acres and the average output about Rs 6,200 in

2003-06, the inflation-adjusted output per holding should be close to Rs 2 lakh.

Let us translate the output data into land prices, or, in this case, annuities that would produce the desired inflation-adjusted income for 50 years. Note that the method used here yields very rough estimates. However, these estimates are likely to overvalue land because the underlying assumptions are conservative.

The calculations in Table 3 are based on output per acre in 2003-06 (expressed in 1990-93 prices) adjusted for inflation to 2010. The difficulty lies in estimating the income per acre – that is, the profit of the farmer after deducting the cost of production – from these output figures. The cost of production per acre varies with technology and labour intensity, both of which vary by landholding size and from state to state. Foster and Rosenzweig (2011) estimate that profit or income varies between 20% and 35% of value of output, the highest margins being achieved when family labour is available at zero cost. The calculations in Table 3 are based on the highest profit rate of 35%.

The numerical illustrations show inflation-adjusted net present values of 50 years of income per acre in 2010. Three scenarios are provided for each outcome – (a) the rate of interest is higher than the rate of inflation by two points; this scenario yields a low estimate; (b) the two rates are the same; and (c) the rate of inflation is higher than the interest rate by two points; this scenario yields a high estimate. Over a long run, the most likely is scenario (b) and the least likely is scenario (c). However, to be conservative, let us use scenario (c) for the following discussion; that is, let us use the high price estimate. Under scenario (c), the average price of an acre of agricultural land in India should be around Rs 2.9 lakh in 2010. The highest average price should be in Punjab (about Rs 5.2 lakh per acre) and the lowest should be in Rajasthan (about Rs 1.7 lakh per acre).

Let us place these prices in comparative international context to examine whether they are reasonable estimates. Table 4 lists farmland prices in the US and Europe. Note first the range of prices in the two regions. In the US, the price ranges from about Rs 40,000 per acre in Montana to Rs 6.4 lakh per acre in New Jersey. In Europe, the price ranges from Rs 19,000 per acre in Lithuania to Rs 8.9 lakh per acre in the Netherlands.[12] In general, the more urbanised and developed a region, the higher the price of agricultural land. It is likely that farmland prices in these regions are partly driven by urban land demand (Swinnen, Ciaian and Kancs nd) and partly sustained by the high price of food (maintained, to some degree, through subsidies and tariffs).

The average India-wide estimate of Rs 2.9 lakh per acre in Table 4 is close to the price of land in the US state of Illinois, a very productive Midwestern "corn-belt" state, and more than quadruple the price in states like Kansas and Oklahoma, both productive wheat-growing regions (they are roughly as productive as Punjab). The India-wide average estimate of Rs 2.9 lakh per acre is more than the average prices in Spain, France, and Germany. The estimated price of average farmland in Punjab (Rs 5.2 lakh per acre) exceeds the price in all US states but one (New Jersey) and every European nation other than the Netherlands, Belgium, and Denmark.

We know that agricultural productivity in India is lower than in the developed world (primarily as a result of differences in the technology used in farming), as are food prices. That is, the value of output per acre is significantly higher in the developed world than India. Therefore, it is possible to argue that the prices suggested in Table 4 would be eminently reasonable, even excessive, by global standards.

What are the actual prevailing land prices in rural India? There is no simple answer to this question. We know that reliable price data are hard to get for the whole country and that there is significant regional variation in the number of land sales.[13] Some regions have active land markets – those proximate to urban areas (including relatively small district towns), and agriculturally prosperous regions, including entire states like Punjab and Haryana (some of these data are discussed below). Remote and less prosperous land markets are less active; some land markets (especially in adivasi regions) have very few formal transactions, in some part because of laws that constrain sales.

From land acquisition data analysed in Chakravorty (2012) we know that as recently as 1999-2000, hundreds of acres of agricultural land could be acquired for under Rs 1 lakh per acre. It is likely that this cannot be done for less than Rs 5 lakh per acre anywhere in the country now. We also know that there are several instances where price offers of Rs 7 to Rs 10 lakh per acre have been contested for being too low – for

Table 4: Price of Agricultural Land, International Comparisons

State, 2011	USA		Country	Europe	
	Value: $/Acre	Value: Rs/Acre		Value: Euro/Acre	Value: Rs/Acre
Top 10					
New Jersey	12,800	6,40,000	Netherlands 2007	13,765	8,94,800
California	9,230	4,61,500	Arable	14,170	9,21,000
Arizona	8,000	4,00,000	Grassland	12,753	8,29,000
Delaware	7,800	3,90,000	Belgium 2006	11,012	7,16,000
Maryland	7,000	3,50,000	Denmark 2006	9,231	6,00,000
Florida	6,030	3,01,500	Italy 2006	6,437	4,18,000
Illinois	5,800	2,90,000	Plains	10,850	7,05,200
Iowa	5,700	2,85,000	UK 2006	5,425	3,52,600
Pennsylvania	5,550	2,77,500	Prime arable 2007	6,275	4,07,900
Indiana	4,800	2,40,000	Poor livestock 2007	3,441	2,23,700
Bottom 10			Greece 2006 irrigated	4,899	3,18,400
Washington	1,960	98,000	Spain 2006	4,211	2,73,700
New Mexico	1,820	91,000	France 2004	3,846	2,50,000
South Dakota	1,810	90,500	Germany 2007	3,441	2,23,700
Texas	1,650	82,500	West Germany	6,478	4,21,000
Colorado	1,340	67,000	East Germany	1,619	1,05,200
Kansas	1,300	65,000	Finland 2007	2,530	1,64,500
Wyoming	1,270	63,500	Sweden 2006	1,500	97,500
Oklahoma	1,190	59,500	Arable	1,719	1,11,800
North Dakota	1,040	52,000	Grazing	783	50,900
Montana	807	40,350	Latvia 2006	1,457	94,700
			Czech Republic 2006	415	27,000
			Lithuania 2006	297	19,300

Currency conversion rates: $1 = Rs 50; Euro 1 = Rs 65.
Source: US data from USA Today (23 February 2012); Europe data from Swinnen, Ciaian and Kancs (no date).

example, near Nagpur in Maharashtra, near Mangalore in Karnataka, near Raipur in Chhattisgarh, and most famously in Maha Mumbai Special Economic Zone and Singur in West Bengal. We know of several price demands (in non-urban settings) of Rs 20 lakh per acre and more. We know of payments of more than Rs 50 lakh per acre in a non-urban setting in at least one case (Sanand in Gujarat). Granted, these are all cases of acquisition rather than consensual sale, but the key point is unmistakable – productivity is not the primary determinant of the price of agricultural land in India.

Consider some data from Punjab. Parmar (2007) reports,

> Jaswinder Singh Kang from the farm-rich Malwa region is just back from Melbourne after sealing a deal for 600 acres of agricultural land that he bought for Rs 2.1 crore. That works out to Rs 35,000 per acre. 'I sold five acres in Punjab for Rs 3 crore and bought 600 acres in Australia. I plan to buy another 400 acres in February', says Kang proudly.

Kang sold his land for Rs 60 lakh per acre. If he was paid for the land's productivity, that land should have been producing net income worth Rs 1.3 lakh per acre – that is 19 times the average productivity in Punjab and 34 times the average productivity in India. In the same news story, the joint secretary for agriculture for the Government of Punjab claimed that "while landholding per family is drastically shrinking in Punjab, prices have skyrocketed. The minimum cost of good agricultural land in Punjab is Rs 10 lakh per acre while on GT Road or near cities it goes over Rs 2 crore." Note that this is from 2007.

There is accumulating evidence that land prices in Punjab have reached very high levels. These are examples of land acquisition prices taken from Kaur (2010) – Rs 1.5 crore per acre in Mohali's Jhurheri village for the international airport (for land whose prevailing "market value" was Rs 50 to 60 lakh per acre) in 2008; Rs 1.5 crore per acre for farms near the highway and 1.25 crore for those seven or more kilometers away in Mullanpur, near Mohali; from Rs 19.6 lakh per acre for water-logged land to Rs 28 lakh per acre for fertile land in Gidderbaha for a power plant in 2008; and Rs 35 lakh per acre for the Rajpura thermal power plant in 2009. Even at these prices, at least one project was facing resistance in 2011 – in Gobindapura village of Mansa district, where land price offers of Rs 23-24 lakh per acre for a power plant were being contested; farmers were asking for Rs 50-60 lakh per acre.

The price of agricultural land in Punjab is generally known and very high, even by international standards, and nowhere is it based on productivity alone; in fact, it is common to see prices that are 20 or more times higher than what productivity alone could generate. It is possible to provide data that show this is true in all of Haryana and large parts of Kerala and Tamil Nadu, and agricultural regions proximate to urban areas in several states. Some of the price is productivity-based, some of it is location-based, and some based on a general scarcity of land.

Scarcity

Scarcity is the key. Let us note that "location" itself is a version of "scarcity." That is, they are not analytically separate categories. A location 2 km from the centre of a city is scarcer than a location 4 km from the centre of the same city; locations 50 km from that city's centre are plentiful. The price of land at these locations reflects their scarcity relative to the centre of the city. From this perspective, land scarcity is either spatial (that is, location-specific) or general (there is less land than the demand for it), but scarcity is the only valid analytical category.[14]

How scarce is agricultural land? The 2005-06 agricultural census shows that the nationwide average size of holdings was about 3 acres. This, not surprisingly, was the lowest average ever recorded. In the 35 years that the agricultural census has been undertaken, the average landholding size has decreased by almost half, from about 5.6 acres per holding in 1970-71. Punjab, whose land prices were discussed above, has the highest average size of landholdings in the country (almost 10 acres). The condition of land fragmentation and scarcity is far more acute in Kerala (where the average holding size is slightly larger than 0.5 acres), Bihar (1 acre), and West Bengal, Uttar Pradesh, and Tamil Nadu (about 2 acres each).

In India, land is scarce almost wherever habitation is possible. Urban land is scarce. Agricultural land is scarce. Struggles over land have in many ways been fundamental to the evolution of politics, economics, and culture in the country. This is not a new condition. The demand for land has been increasing for decades as the national population almost quadrupled after independence and the urban population almost sextupled. Yet, it is only in the last decade that the price of land has taken off. I have shown that urban land prices have quintupled in a decade. Agricultural land prices may have increased even more in many settings.[15] Why now? Let us consider two general explanations.

It is possible that the country is in a land bubble, like the real estate bubbles in the US in the mid-2000s and Japan in the late-1980s. Certainly there is a lot of media chatter about an urban land bubble. A bubble suggests that prices are driven by "irrational exuberance". Poorly informed agents imitate each other – acting like a herd – whereas the "market fundamentals" or "structural conditions" do not justify such behaviour. Bubbles burst sooner rather than later – after all, a condition that lasts for well more than a decade can hardly be a bubble – and hence are temporary by definition. I suggest that it is not too soon to declare that the Indian condition is not a bubble, and that the preliminary evidence presented here should convince most analysts that India is permanently in a new land price regime. This does not mean that there will not be any future short-term localised or generalised price declines, but that there will be no return to the prices that prevailed a decade ago. The datum has been raised.

If that is the case – that the land market is not a bubble and that this condition is not temporary but permanent – the argument can be made that the Indian land market reached a "tipping point" or "punctuation" around 2000. A slowly changing, almost static system suddenly started undergoing rapid change. Let us ask – what created the stasis and what led to the punctuation?

The combination of scarcity and widespread poverty kept land prices low for decades. Scarcity made the reservation

price of land (the minimum price a seller will accept) higher than its output could justify. Therefore, a buyer could not expect to recover his investment by keeping the land in the same use and the same income stream. Widespread poverty ensured that despite the high status and asset value of land – which suggests that some people should have been interested in buying even with income loss – few could afford to buy land. This condition was abetted by the general unavailability of credit and, in some settings, by policies (on land ceilings and alienation). Poverty was less widespread in urban areas and the desire for land and property was high, but the unavailability of credit kept most urban residents out of the property market.

I suggest that the punctuation or tipping point was the expansion of money supply in India – led by the expansion of housing credit (beginning around 2000) supplemented by income growth (white and black) and foreign investments. I have already discussed the effects of credit availability on the urban housing market; basically, the number of buyers increased rapidly but the quantum of urban land did not. In agricultural areas, the expansion of credit, in combination with income growth in a section of the population, allowed increased activity by risk-takers and status-seekers. The former are likely more interested in land whose use can be converted (that is, land close to urban centres or good transportation) or otherwise sold again for good economic returns; the latter, who may not be farmers or rural residents at all, are less likely to be motivated by income.

It is useful to be reminded about the diminishing marginal utility of income. The concept is simple and well known – the utility of an additional rupee for a man who has a crore is a lot less than for a man who has a thousand. So how does a self-interested *crorepati* get utility? There are several ways, and most of them lead to status. Hence, the rise of crorepatis leads to a rise in status-seeking behaviour, expressed primarily through visible consumption of status goods – gold and jewellery, flashy cars and opulent social ceremonies, and, above all, property. I have argued earlier that the rise in income and wealth inequality has led to extraordinarily high property prices in India's most desirable cities, and that these peak prices affect prices for everyone in those cities. It is possible that a similar phenomenon is in effect in selected agricultural land markets, the most prosperous ones. The peaks in these markets are not close to the urban peaks but are nonetheless extremely high relative to productivity and international prices.

The combination of land scarcity and widespread poverty kept land markets somnolent and land prices low for decades. The expansion of credit led to surging demand for land and rising prices. Added to this was the demand for more land for new economic uses and an increased supply of money from higher incomes, black money, and NRI investments in real estate. The concomitant rise in income and wealth inequality created extraordinary price peaks in selected settings with ripple effects in surrounding regions. The situation now is of increasing land scarcity everywhere and regionally varying prosperity. At one level the arithmetic is simple – there is a lot more money in some regions now, but no more land. This combination has created a variety of land markets. Some – in all urban and several rural regions – are active with high and increasing prices. Others – in remote rural areas – are less active and less is known about their prices. In many settings, the prices are very high by international standards and given India's development level, globally unprecedented.

I end with a note of caution. The explanations in this paper are less robust and more speculative than they could be. There is little empirical knowledge on some core issues – such as the size of black and foreign money in the real estate sector, the extent of income and wealth inequality in specific cities (especially those that are home to the truly wealthy), and the quantum of non-local buyers of agricultural land. It may not be possible to provide robust explanations from such weak empirical foundations. Given the importance of the land market for development and welfare outcomes, there is an urgent need for serious empirical investigations in this field. Moreover, it is necessary for policymakers to understand the land market before they plunge into potentially catastrophic new land policies, such as on acquisition. The situation demands immediate and thoughtful attention.

NOTES

1 If this is not true, if there remains a "black" money component that is undeclared and therefore not accounted for in the RESIDEX data, then the land price calculations here are underestimates. That is, the real price of land is higher than the estimates in Table 1.

2 The NHB website lists the price index, by zone, for each city, but not the raw price. I thank officers of the government of India for providing the detailed zone-level data for 2007-10.

3 There is large literature in urban economics on intra-urban location and land rent beginning with the classic works of von Thunen (1826) and Alonso (1964). More recent approaches and summaries can be found in Fujita, Krugman and Venables (1999) and World Bank (2009). In addition, there is an extensive literature on the "hedonic price" approach (Rosen 1974) in which a housing unit is broken down to the features of the unit itself (number of bedrooms, bathrooms), features of the neighbourhood (schools, crime), and environmental features (recreation, pollution, views). Regression models identify the prices buyers are willing to pay for each of these features. The first hedonic price modelling work in India has been done by Das, Senapati and John (2009) using data from metropolitan Mumbai.

4 These data are from the Lincoln Institute of Land Policy, which maintains detailed price information on urban land in the US. See www.lincolninst.edu/subcenters/land-values/

5 An examination of the detailed zone-by-zone data for all the metropolises (not shown here) suggests that the definition of city/metropolis in RESIDEX is variable, whereby cities like Mumbai and Chennai have coverage till the urban boundary, but cities like Bangalore and Delhi do not (which is why their low price zone is so high-priced).

6 There are two possible explanations for this. One, this may be the result of the opening of the new airport in 2008 and the land market that was opened up because of this. Or two, this may be an artefact of the definition of Bangalore in the RESIDEX dataset; Bangalore is more circumscribed than the larger metropolises of Mumbai, Kolkata, and Chennai. This matters because some of the largest price increases (proportionally) have generally taken place in peri-urban locations. This is true in Mumbai, Delhi, Chennai, and Kolkata (for which geographically disaggregated data from RESIDEX are available but not shown here). Further confirmation of this phenomenon is available for Mumbai in the work of Das, Senapati and John (2009) and from the data on Kolkata (2000-05) and Chennai (1999-2004) created by the Town and Country Planning Organisation (available at tcpomud.gov.in/Divisions/IEP/Study.html).

7 We must note that the availability of credit would not, by itself, necessarily lead to consumer borrowing. There has probably been a shift in thinking too, whereby the traditionally debt-averse and risk-averse Indian consumer is gradually becoming an eager borrower. It is possible that this is a sign of growing

confidence in the economy by the new generation of Indian professionals and growing confidence in their ability to remain financially solvent.

8 Bertaud notes that Greater Mumbai's slum population grew from 1.3 million or 22% of the population in 1971 to 6.6 million or 55% of the population in 2001.

9 It should be noted that de Soto's ideas are controversial and few scholars believe that land titling is the magic bullet that can solve the problems of poverty and slums in developing nations. Attempts to apply de Soto's ideas in India, such as the Dharavi Redevelopment Plan, raise very troubling questions about power and justice and the economic vitality of slum economies.

10 There tends to be a gap of 5-15 points on the Gini Index between different income definitions (gross, net disposable, net earnings, and so on) and expenditure (Chakravorty 2006).

11 However, these explanations are not fully satisfactory. Why would a farmer, if assured of an income that matches his historic output, not take up the offer, since it is very unlikely that he can earn more by continuing to farm, an activity that is prone to uncertainty and vagary? Perhaps information asymmetry is an issue. If the payoff is to come from an annuity, perhaps there is lack of knowledge of what an annuity means in practice and a lack of trust in the agent offering the annuity; if the payoff is a lump sum, perhaps there is lack of trust in one's own ability to use the money wisely. Some of these features of information asymmetry and trust appear in a recent fascinatingly detailed work on farmers in Singur, West Bengal, where the infamous Tata factory land acquisition episode took place (Ghatak et al 2012).

12 Note that the rupee equivalent of dollar and euro prices is far lower than shown here if PPP conversions are used instead of exchange rate conversions.

13 Moreover, the official records often understate the actual prices, primarily to under-pay stamp duties. State governments have pre-emptively set stamp duty rates to get around this problem, but all that means is buyers and sellers know what official price to declare, which is not necessarily the true transaction price. Even if the true transaction prices were known, the reservation price of land would remain unknown in many settings because a number of sales are distress sales. How many, we do not know. The land poor, who also lack access to credit, are known to sell land as the last resort to meet social obligations and pay off debt. Several studies have documented this, including Sarap (1996) and Patil and Marothia (2009).

14 There is one small puzzle. If the price of land is not based on productivity but scarcity, why should more productive land cost more than less productive land? If the determinant of the price of a plot of land is its location, then whether it has fertile soil or irrigation or produces multiple crops should have no influence on price. Similarly, if generalised scarcity is the price-driver, then productivity should be immaterial to price determination. Yet, productivity seems to matter. It is possible that its contribution to price is the capitalised additional income stream from higher productivity. It is possible that the contribution of productivity to land price is an inverse function of scarcity – that is, the closer a plot is to a city, or the scarcer land is in a region, the smaller is the productivity

component of price. These are reasonable hypotheses, but hypotheses nonetheless, because there is no analytical work in this area.

15 Alongside the evidence provided earlier, consider this final piece of ethnographic evidence from Harda, Madhya Pradesh, where "farmers noted that the cost of [land] registry today far exceeds the entire sale price during those years [the early 1980s]" (Krishnamurthy 2011: 60).

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