

Lineal Spread and Radial Dissipation: Experiencing Growth in Rural India, 1993-2005

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The distribution of benefits from economic growth since the early 1990s has followed an identifiable spatial pattern. People in the largest cities have achieved the greatest gains, followed by people in small towns and villages close to towns. Further away, in villages located more than five kilometres from the nearest town – home to more than half of the entire population of India – inflation-adjusted per capita incomes *fell* between 1993 and 2005. The steepest declines were experienced by the lowest income groups. Rising inequality is a natural result of these spatially distributed trends. The debilitating effects of “distance from town” need to be countered by connecting outlying villages with more and better physical and social infrastructures.

The Indian economy grew rapidly during the decade of the 1990s and into the new millennium, but growth in the post-liberalisation period has been accompanied by rising inequality.¹ Analysts examining the rise of inequality have explored some of its spatial dimensions, noting how income differentials have widened across states of India and between rural and urban areas.² However, other aspects of spatial inequality also need to be examined; importantly, differences *within* rural India need to be considered, for they are indicative of how deeply benefits from growth have penetrated into the countryside.

Globalisation-driven economic growth in a country whose population remains largely rural has spatial effects on the distribution of benefits. Distance from market, both physical and cognitive, can importantly influence individuals’ economic prospects. By alternatively facilitating or limiting access to market-based opportunities, distance can intervene critically between effort and reward. Unfortunately, it is difficult to define (far less, measure with precision) a variable that reliably assesses differences in communities’ relative market access. A proxy variable – distance to nearest town – is utilised instead in the analysis that follows.³ Surveys conducted independently by three separate agencies each provides, fortunately for our purposes, data for distance (in kilometres) to the nearest town. The existence of these independent data sources helped triangulate our findings.

These results show that while average inflation-adjusted per capita incomes have grown between 1993 and 2005 in villages located within five kilometres from the nearest town, they have *fallen* in villages situated more than five kilometres from the nearest town. *Negative* growth was experienced over a vast swathe of rural India: villages located more than five kilometres from towns account collectively for more than 80% of India’s rural population (and more than half of the entire population of India).⁴ This half of the Indian population has seen its living conditions worsen during a period of high-speed economic growth.

The worst effects of negative growth were felt among the lowest income groups. Inflation-adjusted per capita incomes of the bottom quintile (lowest fifth) in villages located more than five kilometres from the nearest town fell by more than 15% over the same 12-year period.

Increasing inequality in India in the post-liberalisation phase has, therefore, followed a distinctive spatial pattern. Impulses to growth, centred in the largest cities, have spread in lineal fashion – like the arms of a family tree – flowing sequentially from larger cities down to smaller ones. People in the largest cities have experienced the biggest income gains; smaller towns have also gained but not as much.⁵ Beyond towns, the benefits from economic

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growth have been distributed sparsely and radially dissipated. Those living at greater radial distances from the nearest town have fared poorly on average, and the poorest among them have fared the worst, incurring losses in purchasing power.

Because of these trends, a close-to-urban bias has come into play that can be expressed in the form of the following thumb-rule: It is harder to take advantage of the opportunities provided by high-speed, services-driven and globalisation-linked economic growth the further away from a city one happens to reside in.⁶

Instead of being mitigated, these disadvantages of distance have been compounded by public policies. Critical infrastructure has been located preferentially in close-to-urban villages. Compared to villages that are adjacent to towns, villages located at greater radial distances have been under-provided with paved roads, electricity supplies, irrigation facilities, telephone links and the like. Consequently, people in further away villages have faced a harder time in making connections with market-based opportunities.

As a result, therefore, of the nature of present-day economic growth, and assisted by close-to-urban-biased infrastructure policies, distance to town has come to matter importantly. As a predictor of rural individuals' differential economic prospects, distance to nearest town can serve as a reasonably good proxy.

How Distance to Town Makes a Difference

Three sources of data consulted for these analyses merit brief description before the results from data analysis are introduced. Two waves of sample surveys representative of rural areas of 16 major states, undertaken by the National Council for Applied Economic Research (NCAER), a well known applied economics research institution in India, constitute the first data source.⁷ These multidimensional surveys, conducted, respectively, in 1993-94 and 2004-05, encompass a wide range of human development and poverty-related issues. A stratified random sampling design resulted in the selection in 1993-94 of 33,230 households from 16 large states. About one half of these households, 13,459 in all, were selected at random for resurvey in 2004-05. We examined these data sets in order to investigate the nature of changes occurring within different villages and households.

The second set of data – the District-Level Household and Facility Survey of 2007-08 (DLHS-3) – is broader in coverage, providing information related to 7,20,320 households from 28 states and six union territories of India during 2007-08.⁸ A total of 78% of the surveyed households (5,59,663 households in all) lived in rural areas, and we focused on this part of the DLHS-3 sample.

The third set of data is from the Census of India, conducted, respectively, in 1991 and 2001. Census data for the household level are not publicly available, so we used these data for our village-level analysis, examining them in particular to assess differences in infrastructure provision among different bands of villages, located at increasing radial distances from the nearest town.

Table 1 provides the calculations related to changes in per capita income that resulted from stratifying villages in the two NCAER data sets by distance (in kilometres) from the nearest town. Three concentric circles were constructed for this purpose.⁹ The nearest circle of villages, located within five

kilometres from the nearest town, made up 13.1% of the rural Indian population, according to the Census of 2001. The next circle or band of villages, located between five and 10 kilometres from the nearest town, accounted for 19.5% of the rural population. The third and last band of villages, beyond 10 kilometres from the nearest town, is the most heavily populated, accounting in 2001 for 67.5% of the entire rural population. These are the villages that have fared the worst during the period of post-liberalisation economic growth, as we will see later in this paper.

Monthly per capita incomes for households in each of these concentric circles (or bands) of villages were averaged separately for 1993-94 and 2004-05.¹⁰ The figures for 1993-94 were adjusted for inflation in order to derive figures comparable to those recorded in 2004-05.¹¹

Table 1: Radial Distance, Income Growth and Poverty Reduction

Village Distance to Nearest Town	Share in Rural Population (Census 2001)	Monthly Per Capita Income (1993-94)	Monthly Per Capita Income (1993-94 at 2004-05 Prices)	Monthly Per Capita Income (2004-05)	Change in Per Capita Income (1993-2005)	Population Below Poverty Line (1993)	Poverty Reduction (1993-2005)
	%	Rs	Rs	Rs	%	%	%
<=5 km	13.1	379	662	762	15.1	39.4	3.2
>5 to <=10 km	19.5	395	696	693	-0.4	35.8	-5.6
>10 km	67.5	388	678	666	-1.8	34.7	-6.2
All rural India	100	388	680	696	2.4	36.1	-3.9

Source: NCAER data (1994, 2005).

The figures reported in Table 1 show how the effects of market-led growth have been experienced most directly and beneficially in a fringe group of rural areas located adjacent to towns. Average per capita incomes have grown rapidly in villages located within this umbra – or inner belt of villages – that circles towns within a radial distance of five kilometres. Outside the five kilometre limit, within the “penumbra” of villages – located more than five kilometres from the nearest town – real per capita incomes have fallen.¹²

The benefits of national economic growth have, therefore, penetrated only a thin layer of the Indian countryside, petering out and turning negative in villages beyond five kilometres from towns. Results from regression analysis showed that, even after controlling for the effects of diverse factors, distance to town continued to make a significant and large difference.¹³

Poverty has been reduced within umbra villages, but it has simultaneously increased within penumbra villages, as the last two columns of Table 1 indicate.¹⁴ In villages located between five and 10 kilometres from the nearest town, the percentage in poverty went up by 5.6% over this 12-year period, while still further away, more than 10 kilometres from towns, the increase in poverty was higher, 6.2%. The sorriest part is that the vast majority of rural Indians live within such penumbra villages, more than five kilometres from the nearest town.¹⁵

Distance to town is thus critically important for understanding current-day economic trends in rural India. Being less well linked to towns is no longer a matter merely of standing still, of being a bystander left behind by the train of economic progress. Those who were left behind have tended to fall further behind.

Per capita incomes have fallen in penumbra villages, with the lowest income groups experiencing the largest dips. Table 2 (p 46) provides these figures after disaggregating each band (or belt) of villages into income quintiles, arranged from the lowest to the

highest. These income quintiles were calculated separately for each of the two observation years, 1993-94 and 2004-05.¹⁶

Table 2: Income Growth and Distance from Towns (by income quintiles)

Income Quintiles	Monthly Per Capita Income (1993-94)	Monthly Per Capita Income (1993-94) at 2004-05 Prices	Monthly Per Capita Income (2004-05)	Change in Per Capita Income (1993-2005) (%)
Rural India (all)	388	680	696	2.4
Villages within 5 km of nearest town				
Lowest quintile	93	160	166	3.8
Q2	174	301	320	6.3
Q3	256	446	480	7.6
Q4	390	682	788	15.5
Highest quintile	983	1,723	2,061	19.6
Villages >2 to <=5 km				
Lowest quintile	100	174	143	-17.8
Q2	181	315	279	-11.4
Q3	270	471	431	-8.5
Q4	408	717	691	-3.6
Highest quintile	1,017	1,804	1,922	6.5
Villages >5 to <=10 km				
Lowest quintile	102	177	149	-15.8
Q2	188	325	283	-12.9
Q3	270	470	428	-8.9
Q4	408	710	676	-4.8
Highest quintile	971	1,708	1,797	5.2
Villages >10 km				
Lowest quintile	102	177	149	-15.8
Q2	188	325	283	-12.9
Q3	270	470	428	-8.9
Q4	408	710	676	-4.8
Highest quintile	971	1,708	1,797	5.2

Source: NCAER data (1994, 2005).

Every income quintile in umbra villages increased its purchasing power, with the richest groups experiencing the largest, and the poorest groups experiencing the smallest, percentage increase. Thus, national growth had positive effects overall in villages adjacent to towns.

In penumbra villages, as well, the richest groups grew richer, albeit not to the same extent as the richest groups in umbra villages. However, every other quintile has become poorer than before. The poorest groups in penumbra villages have seen their purchasing power fall by more than one-sixth over the same 12-year period.

The income scale has, therefore, been stretched at both ends: even as the highest incomes rose higher, the lowest incomes fell precipitously. The highest income groups (in villages closest to towns) increased their purchasing power by nearly 20%. The lowest income groups (in villages furthest from towns) concurrently saw their purchasing power diminish by more than 15%. These facts help us understand better how inequality has grown within rural India.

To be further away from towns and markets is a bane in this era of market-led growth, but to be poorer *and* further away is a recipe for disaster. Rural discontent, rising to the level of militancy in some regions, can be better understood in light of these results, which show a decline in rural incomes (in absolute as well as relative terms), with the fewest gains being made (and the deepest losses being incurred) by people living further away from India's growing towns. States such as Bihar, West Bengal, Jharkhand, Orissa, Chhattisgarh, Madhya Pradesh and Andhra Pradesh have both a greater-than-average share of further away villages and a higher-than-average incidence of civil unrest.

More than 95% of the rural populations of Andhra Pradesh, Orissa, and Jharkhand, and more than 90% of the rural populations of Bihar, West Bengal and Chhattisgarh, live in villages located more than five kilometres from the nearest town. These people have seen their purchasing power drop, even as the country as a whole has grown rapidly. That they might experience discontent and disenchantment becomes easier to fathom.

Spatial Hierarchy of Economic Growth

The data and analyses presented above show how spatially-patterned inequality has increased in rural India, but *why* such a trend should have come into being still needs to be explained, and if possible, countered. In this section and the next one, we will draw upon theory and evidence to sketch the rudiments of a likely explanation. First, we will look at the reasons why towns have acquired disproportionate economic importance. Following that, we will examine why and how distance to towns makes a difference in rural areas.

Sassen (2001: 3) has provided, in the global context, an explanation for the growing economic importance of towns, particularly the largest cities:

A combination of spatial dispersion and global integration has created a new strategic role for major cities... [which] now function in four new ways: *first*, as highly concentrated command points in the organization of the economy; *second*, as key locations for finance and for specialised service firms, which have replaced manufacturing as the leading economic sectors; *third*, as sites of production...; and *fourth*, as markets for the products and innovations produced. These changes in the functioning of cities have had a massive impact... Cities concentrate control over vast resources... Key structures of the world economy are necessarily situated in cities.

As economies become driven by services, particularly high-technology and financial services, bigger cities acquire increased dominance as economic hubs. An integrated mass of infrastructure – banks and broadband connections, shopping malls and first-rate schools, secretarial services and airports, restaurants and entertainment arts – must all coexist in order for a city to attract a critical mass of upwardly mobile specialists and professionals. Smaller towns and peripheral villages can do no better than to link up with these hubs.¹⁷

The post-liberalisation Indian experience mimics these trends, showing how growth that is services-driven and globally-linked spreads downward in lineal linkage from bigger towns to smaller settlements. This lineal spread has benefited towns people in India, albeit to different extents, depending on their city's size. Examining the period between 1987-88 and 1993-94, Dubey, Gangopadhyay and Wadhwa (2001: 57) found that "poverty incidence did decline with town or city size. This was true for all occupational groups." Going further, they pointed out that "while larger cities have higher educational levels, education alone does *not* explain the differing poverty... Larger cities tend to have better social and economic infrastructures".

The effects of these differences in social and economic infrastructures have been revealed by analyses which show that, no matter what one's level of education, earnings are higher if one lives within a large town as compared to a small town (and in a small town as compared to a rural village). For instance,

individuals who have only a primary education can earn up to 68% more by living in a metro city (one that has more than five million people) as compared to a smaller town (with fewer than 5,00,000 people). Among people with college degrees, the corresponding income differential is smaller, though still substantial: 38% (Shukla 2010). Poverty continues to be lowest in the largest cities and highest in small towns and rural areas (Kundu and Sarangi 2007). In fact, as we saw above, poverty has *grown* in villages located further away from towns.

Village residents who live closer to towns can more easily benefit from these lineal-radial patterns of economic development: their lands grow in value and their labour is in greater demand. Those who live further out have comparatively little to offer that is of equal value. Their lands are not attractive to builders or industrialists. Their labour supply, particularly that of the less educated ones, simply adds to the growing pool of unskilled or partly skilled labour, demand for which has risen much less slowly as compared to demand for skilled workers (Kijima 2006).

The cumulative effect of these differences in earning potentials becomes visible when we look at asset ownership. The biggest towns have the largest concentrations of assets. Table 3 provides some points of comparison, illustrating the steep gradient that continues to persist. Each of the four types of assets examined here is owned by a greater proportion of households in large cities as compared to small towns (and small towns as compared to rural villages), reflecting the congealed effect of differences in earning opportunities.

Table 3: Share of Households Possessing Assets of Different Kinds (2004-05)

Category of Habitation	Percentage of Households Who Possess			
	Car	Color TV	Refrigerator	Mobile Phone
Towns >5 million people	24	82	64	54
Towns <50,000 people	7	51	26	21
Rural India	3	24	8	7

Source: Shukla (2010).

Substantial differences in asset holdings are also visible *within* rural areas. Not surprisingly, given what we have seen above, distances to town helps sort out these differences (Table 4). Every asset type examined here is possessed by a larger share of household in umbra as compared to penumbra villages.

The thesis of radial dissipation receives further support when we look at assets in addition to incomes. The possession of each type of asset dissipates regularly as we move outward from towns into the remote countryside.

Declining Agriculture, Diminishing Infrastructure and Differential Access

Explaining why rural assets and incomes are both patterned radially, why distance to town matters so much, is assisted by drawing on three contemporary facts, which, considered together, help understand better the nature of handicaps suffered by penumbra villagers:

- First, there is the diminishing contribution of agriculture to rural incomes, and the need, therefore, to acquire supplementary incomes from non-farm occupations, particularly earning sources that are based in towns;
- Second, the differential provision of linking infrastructure – favouring villages closer to towns – hampers the ability of people

from penumbra villages to forge the required economic linkages with towns; and

- Third, the rising premium to higher education and superior skills, the preferential location of high schools and colleges in towns and villages closer to towns, and the greater ability of richer villagers to acquire higher education (no matter at what distance), helps explain further the growing gap between richer and poorer villagers and among villages located closer to and further from towns.

Let us examine each of these factors in turn. The share of agriculture in rural incomes has fallen by more than 25% (from nearly 60% in 1993-94 to less than 35% in 2004-05).

The diminishing importance of agriculture is not just due to the growth of other sectors; agriculture itself is also in crisis, after a decade of the lowest growth rates since Independence. During 1994-95 – 2004-05, its annual growth rate was only 0.6% (as against, in most years since Independence, between 2% and 4%). This crisis in Indian agriculture is well acknowledged by Indian authorities (Lerche 2010: 67).¹⁸

With each passing generation, holdings have been subdivided, resulting in a preponderance of tiny and uneconomic family farms. Between 1993 and 2005, the proportion of landless households increased from 13% to 15%; more than 60% of all farming households operate marginal holdings, less than one hectare in size (NCEUS 2007: 112-13). Simultaneously, agricultural productivity has not increased significantly for many years.¹⁹ As a result, the amounts received per capita from agriculture have fallen in both relative and absolute value.

Surprising as it may seem to some, agriculture provides *less than half* of all incomes in contemporary rural India. The rest has to be earned elsewhere, principally in towns. Survival needs “*require* developing a connection with the city”.²⁰ As Gupta (2005: 751) remarks, “the sheer inertia of the agrarian economy...is forcing people to look elsewhere for both livelihood and respect”. One or more members from nearly 30% of all rural households have migrated to towns (NSSO 2010), and several more are “circular” migrants, going into towns for a few days or weeks at a time

Table 4: Percentage of Rural Households with Assets of Different Kinds (2008)

Asset Type	Village Distance to Nearest Town (kms)				
	All Rural India	<=2 km	>2 to <=5 km	>5 to <=10 km	>10 km
Electric fan	34.4	42.4	39.8	37.8	29.8
TV (Color or B and W)	32.2	41.1	35.7	33.6	29.0
Phone (mobile or fixed line)	28.8	37.0	32.8	30.5	25.5
Pressure cooker	25.5	33.7	27.1	25.3	23.8
Motorcycle/scooter	11.6	14.3	13.5	12.8	10.0
Refrigerator	6.4	10.4	8.4	7.4	4.6
Pukka (brick or stone) home	19.6	27.8	24.1	22.0	15.8

Source: DLHS-3 data.

and returning to their villages in between (Deshingkar and Farrington 2009). Connecting with cities has, therefore, become crucial for village residents. Such connections are assisted by the availability of linking infrastructure.

Rural infrastructure has been vastly expanded over the 10-year period between 1991 and 2001. The percentage of villages connected by paved roads went up from 42% to 64%, and the proportion served with electric power went up from 68% to 76%. However, public infrastructure remains disproportionately located in

umbra (or inner-circle) villages. Penumbra (or outer-circle) villages have been allocated fewer power lines, road links, irrigation channels and so on. Census data, presented in Table 5, show how the presence of each of four different key public infrastructure types becomes steadily weaker with increasing radial distance from towns.

Table 5: Radially Dissipating Public Infrastructure (2001)

	Village Distance to Nearest Town						
	1-5 km	6-10 km	11-15 km	16-20 km	21-30 km	31-50 km	>50 km
Access to paved roads (proportion of villages)	66.8%	60.0%	57.4%	53.7%	49.3%	43.3%	34.0%
Access to power supply (proportion of villages)	84.1%	81.2%	80.9%	78.7%	75.6%	69.1%	59.3%
Area under irrigation (irrigated area/total area)	53.8%	49.2%	40.7%	31.4%	29.1%	23.5%	18.1%
Fixed-line telephones per village	8.4	6.8	4.9	4.3	3.5	2.9	1.9

Source: Census of India (2001) data.

Instead of compensating against market trends, public infrastructure policies have tended to exacerbate the situational disadvantages of penumbra villagers. While 67% of villages within five kilometres of towns were connected by paved roads in 2001, the corresponding proportions in villages 21-30 kilometres and more than 50 kilometres from towns were much smaller, 49% and 34%, respectively. Similarly, while more than 84% of umbra villages were served by power supply, this proportion fell to 59% in villages located furthest from towns.²¹ Poorer roads and greater distance working together considerably raise the transaction costs that have to be incurred by people from penumbra villages.

The resulting differential ability to connect with towns and with market-based opportunities is reflected in the ways that people – in umbra and penumbra villages – have differently compensated for the declining contribution of agriculture. How different groups of people have made these adjustments depends as much on what they are capable of doing as on the nature of opportunities available to them, which, in turn, hinges critically upon where they reside. Distance from nearest town structures

Table 6: Changes in Income Sources (Percentage change between 1993 and 2005)

Villages and Income Quintiles	Agriculture and Allied Activities	Agriculture Labour	Non-Agriculture Labour	Non-Farm Self Emp	Salaried and Prof	Others
Rural India	-21.5	5.1	3.8	1.8	5.1	5.7
Villages within 5 km of nearest town						
Lowest	-18.0	10.3	7.6	-5.5	-1.1	6.8
Q2	-11.9	8.8	7.6	-8.3	1.8	2.0
Q3	-13.1	9.5	12.3	-8.2	-2.9	2.5
Q4	-16.6	9.5	6.9	-2.9	-1.7	4.8
Highest	-26.0	1.6	2.3	6.5	8.5	7.1
Villages <=5 km	-20.2	5.3	5.3	0.4	3.8	5.5
Villages at 5 to 10 km from nearest town						
Lowest	-13.4	11.3	4.0	-8.3	1.9	4.4
Q2	-16.8	12.2	4.0	-5.0	1.8	3.9
Q3	-13.7	10.1	6.9	-2.6	-2.8	2.1
Q4	-20.9	5.0	6.9	1.3	1.8	5.7
Highest	-26.5	1.2	1.6	6.9	10.2	6.6
Villages >5 to <=10 km	-20.8	3.9	3.2	2.3	5.9	5.5
Villages beyond 10 km of nearest town						
Lowest	-18.1	14.8	-0.5	-2.6	2.4	3.9
Q2	-14.5	13.4	6.4	-7	-0.8	2.4
Q3	-20.5	13.4	7.2	-3.1	-1.0	3.9
Q4	-18.5	9.0	6.5	2.0	-3.4	4.4
Highest	-28.2	1.2	1.5	6.3	11.1	8.1
Villages >10 km	-22.3	6.0	3.3	2.1	5.0	6.0

Source: NCAER data (1993, 2005).

people's opportunity sets, as demonstrated by the figures presented in Table 6.

Two differences, examined in Table 6, are especially worth noting. First, the difference between umbra and penumbra villages can be gauged by looking at how the lowest income quintiles in each type of village have separately compensated for the declining share of agriculture in their households' incomes. While people of the lowest quintile in umbra villages – because of their proximity to towns and assisted by superior infrastructure – have been able to avail themselves of non-agricultural labour opportunities (in addition to undertaking agricultural labour in their villages), the lowest income quintile in villages beyond 10 kilometres from the nearest town have had to rely more centrally on agricultural labour, thus limiting their earning potential.²²

The second notable difference is between upper and lower income quintiles. Across village strata, relatively richer villagers have increased their holds on the most lucrative urban opportunities, arising from salaried and professional occupations. People from lower income quintiles have only too rarely been able to take advantage of the same (theoretically-) available opportunity sets. Depending on where they live – closer to towns or further from them – they have resorted instead to non-agricultural labour opportunities and agricultural ones, respectively.

Public policies that have tended to concentrate critical public infrastructure within already-favoured villages have helped propagate such dis-equalising trends. The unequal distribution of educational ability has also made a key difference.

Table 7 shows the distribution of educational qualifications across villages at different radial distances and among different income quintiles. Figures related only to secondary (and higher) education are considered here. Any lower educational qualification makes little or no difference to earning potential at the present time.²³ These results show that the proportion of households in which one or more adults have secondary or higher education falls from 48% in the

declining share of agriculture in their households' incomes. While people of the lowest quintile in umbra villages – because of their proximity to towns and assisted by superior infrastructure – have been able to avail themselves of non-agricultural labour opportunities

Table 7: Proportion of Households with at Least One Adult Member Having Secondary and Higher Education

Villages and Income Quintiles	Percentage of Households
Rural India	37.1
Villages within 2 km of nearest town	
Lowest quintile	28.0
Q2	26.4
Q3	46.6
Q4	54.9
Highest quintile	76.4
Villages <=2 km	47.8
Villages at 2-5 km from nearest town	
Lowest quintile	22.4
Q2	26.5
Q3	35.8
Q4	46.4
Highest quintile	69.4
Villages >2 to <=5 km	38.2
Villages at 5-10 km from nearest town	
Lowest quintile	27.8
Q2	29.9
Q3	31.0
Q4	46.2
Highest quintile	60.4
Villages >5 to <=10 km	38.5
Villages beyond 10 km from nearest town	
Lowest quintile	22.0
Q2	23.2
Q3	30.6
Q4	36.8
Highest quintile	61.4
Villages >10 km	34.9

Source: NCAER data (2005).

nearest villages to 35% in villages at the greatest radial distance from towns. In each band of village, however, this proportion is, not surprisingly, greatest among the highest income groups.

Differences in educational ability are related to the ease of access that people in nearer and further villages have to high schools and colleges. As recently as 2008, DLHS-3 data show, people from penumbra villages needed to travel, on average, 12 kilometres in order to attend higher secondary schools, more than *twice* the distance that umbra villagers needed to travel for the same purposes. The difference in distance to college between umbra and penumbra villages is also large and significant: 12 kilometres vs 22 kilometres. Richer villagers, possessing greater resources, can more easily bridge these distance gaps, reproducing and magnifying initial inequalities.

Because they have been better able to invest in higher education, higher income groups, particularly in umbra villages, have been more successful at obtaining the higher-paying and more secure salaried urban jobs, demand for which has been rising relative to the demand for unskilled work (Kijima 2006).²⁴ Less educated village residents, because they can usually supply unskilled (or low-skilled) labour and nothing else, have to compete with others who live closer to towns, for the same limited pool of opportunities.

While living for several weeks in a village of southern Rajasthan, 16 kilometres from the nearest town, one of us saw how these daily struggles are carried out in practice. Because they need to travel greater distances and incur greater travel expenses, day-labourers from further away villages suffer a severe handicap. The openings available on any given day get filled up even before they reach the spot; the earliest bus may arrive too late. These burdens are heaviest where no roads exist, and where the aspiring day-labourer has to travel on foot. Transaction costs of different kinds increase as distance increases, and as transaction costs rise, fewer households participate in markets, which diminishes their choice sets and lowers their welfare.²⁵ Earning Rs 100 a day, and from that amount spending Rs 30 on transport – while incurring a two-hour commute each way – is not an easy way to make a living; many give up trying, and only the youngest and strongest persist.

It is people such as these who have responded most enthusiastically to the new wage-earning opportunities provided by the government programme, NREGA.²⁶ Although data are not readily available that show the uptake of NREGA works in villages at different distances from the nearest town, it seems reasonable to suppose that in the further away villages, more people have turned out at NREGA worksites.

Patterns of social and economic development occurring in tandem with post-liberalisation economic exchange have helped widen existing cleavages, privileging cities and close-to-urban villages. A similar dynamic, occurring earlier in the west, led to the emptying out of rural areas, accompanied by the growth of a city-centred society and a services-driven economy. Whether such a path is viable for India still remains an open question. It is not clear that we know what the answers will be.

Conclusion: What Should Be Done?

Dots, representing cities, shine brightly in satellite pictures of the world at night. The map of India is studded with such dots, some small and others large. These points of light are surrounded by swathes of darkness, representing the rural areas. Such a map and such representations are apt metaphors for the nature of economic changes experienced in cities and villages over the 12-year period, 1993-2005. Cities, prospering, have lit up, and these lights have been partly reflected in villages located closest to cities; further into the rural areas, darkness has grown.

The evidence advanced here shows how, during the 12-year period, 1993-2005, when the national economy was rapidly growing, inflation-adjusted incomes fell, on average, and poverty grew, in villages located more than five kilometres from the nearest town. More than two-thirds of all people in rural Indian live in such further away villages, indicating how the spatial dimension of poverty in an era of market-led growth are critically influenced by distance to town. Growing inequality, a direct result of these trends, is a particularly worrying phenomenon, since it bodes ill for political stability as well as for future growth prospects.²⁷

These sobering conclusions may change somewhat if data from other sources or other time periods are examined.²⁸ Clearly, neither markets nor towns are frozen in time. Markets have expanded their reach, and new towns have come up where there were previously villages. To some extent, our different data sources helped to keep track of these advances. Although issues of comparability and coverage loom large, some broad

Table 8: Indications of Changing Radial Distance
(rough estimates)

Distance to Nearest Town	Percentage of Rural Population			
	Census (2001)	NCAER (2005)	DLHS-3 (2008)	Change (2001-08)
<5 km	13	22	31	18
5-10 km	20	28	27	7
>10 km	67	50	42	-25
Total	100	100	100	0

indications of urban expansion are provided by looking simultaneously at Census data from 2001, NCAER data from 2005, and DLHS-3 data from 2008 (Table 8).

These rough comparisons indicate that the proportion of rural population in umbra villages (within five kilometres of towns) could have increased from 13% in 2001 to 31% in 2008, a gain of 18 percentage points. Simultaneously, the proportion living in the furthest-out villages (more than 10 kilometres from the nearest town) may have fallen even more drastically, by as much as 25 percentage points.²⁹ Can it be hoped, therefore, that the autonomous growth of markets, and with it, the spread of towns, will bring progressively more villagers within the beneficial inner circle? Unfortunately, the data do not support any such optimistic prognosis.

While towns have, in fact, advanced, the bad news is that towns have gone where market forces have taken them, following the money, while largely avoiding marginal areas with greater concentrations of poorer people. In 2008, for example, villages beyond five kilometres of towns accounted for 69% of the entire rural population, but even greater proportions of poorer people – more than 75% of scheduled castes, 83% of scheduled tribes and 73% of below-poverty-line households – lived within such villages. It seems too much to hope that the expansion of towns in the future will automatically correct these trends.

There are different ways in which to interpret and account for these results. One way – a pessimistic one – is to conclude that globalisation-driven economic growth in a largely rural country, with large numbers of poor and less educated people, will, by its nature, only be skin-deep. But that is to deny what else might be possible.

A more realistic option lies not in becoming, like Myanmar, isolated from world economic influences, but rather in assisting the remotest and poorest by helping them better realise for themselves the potential of market-based opportunities. In an era of globalisation, markets are backed by public policy. Governments everywhere have attended to the needs of the market, preferentially supplying quality infrastructure in big cities. It is important that cities possess the infrastructure required to attract organisations and individuals who help create new wealth.

But it is *also* necessary that the opportunities provided by globalisation be brought home to a larger number of people; public policies cannot also simply follow the money. When governments pledge their citizens to a path of market-led economic growth, it

becomes incumbent upon them to reduce the distance that exists between citizens and markets.

The question of exclusion of many has to be addressed. Unless investments in high-quality physical and social infrastructure are simultaneously made that connect outlying areas with the mainstream of growth, inequality will continue growing, and inclusive growth will remain a distant dream.

India's first Prime Minister, Jawaharlal Nehru, writing in 1961, stated "I have no doubt that there is a vast reservoir of talent in this country. If only we can give it opportunity!"³⁰ Policy tools are urgently required that can help convert this vision into reality in India (and other similarly situated developing countries). Countries that have successfully attained inclusive growth have paid attention to the need simultaneously of catering to the market *and* building strong and reliable links with outlying rural areas.³¹ Currently, too little is being done in this regard in India, and as a result, "in terms of inequality of opportunity and intergenerational mobility", India may well be on the way to becoming "one of the worst [countries] in the world" (Bardhan 2010: 132).

NOTES

- For evidence about rising inequality see, for example, Azam and Shariff (2011); Cain et al (2010); Chaudhuri and Ravallion (2007); Deaton and Dreze (2002); Dev and Ravi (2007); Jayadev et al (2011); Sarkar and Mehta (2010); Sen and Himanshu (2004); Shukla (2010); and Sundaram and Tendulkar (2003a and 2003b).
- Barua and Chakraborty (2010) and Singh et al (2003) provide evidence for increasing regional inequality (looking at differences across states of India). Deaton and Dreze (2002); Dev and Ravi (2007); Jayadev et al (2011); and Sen and Himanshu (2004) indicate how rural-urban differences have become wider than before.
- Among the three data sources examined below, the Census of India (2001) adopted the following criteria for defining towns (urban areas): "(a) All statutory places with a municipality, corporation, cantonment board or notified town area committee, etc, or (b) A place satisfying the following three criteria simultaneously: (i) a minimum population of 5,000; (ii) at least 75% of male working population engaged in non-agricultural pursuits; and (iii) a density of population of at least 400 per sq km (1,000 per sq mile)." The other two data sources – the NCAER and DLHS surveys – adopted a different methodology, recording the distance from each surveyed village to the nearest town as indicated by key respondents or focus groups. We recognise that "Distance to Town" may not be the ideal proxy for "Distance from Market". Lacking data, however, on any better proxy, we decided to utilise this variable, recognising that better analyses can (and should) be carried out in the future.
- Rural areas account for a two-thirds (or greater) share of the Indian population. Different sources confirm that these numbers are changing quite slowly. A recent official report on employment conditions, which surveyed a random sample of nearly 50,000 rural and urban households, notes that of every 1,000 Indian households "722 Households are Rural and the Remaining 278 are Urban" (GOI 2010: 24).
- Shukla (2010) provides these statistics for incomes and expenditures in Indian towns of different sizes.
- The thesis of "Urban Bias", put forward, among others, by Lipton (1977) and Bates (1981), showed how development planners, because of their own urban origins and because of political compulsions, were inclined to bias policies in favour of town dwellers, disproportionately locating projects and spending money in urban and close-to-urban (including roadside) locations. Thirty years later, this bias continues to operate, although some of its sources have changed: markets are driving the new form of urban bias, and policy planners are following suit, as we will see below.
- A number of prior publications have utilised data from one or the other of these NCAER surveys. See, for example, Azam and Shariff (2011); Krishna and Shariff (2011); and Shukla (2010).
- These surveys were conducted by the Mumbai-based Indian Institute for Population Sciences (IIPS) and published by the Ministry of Health and Family Welfare of the Government of India. Concerned in the main with health and family welfare, data on assets and other well-being measures were also collected as part of these surveys.
- A fourth, and smallest, concentric circle was also considered, consisting of villages within two kilometres of towns, but these results were not qualitatively different from those for villages within five kilometres of towns. In addition the two-kilometre belt contains only a tiny proportion of the rural population (3.8% in 2001), so we selected to drop this innermost belt from subsequent analyses. We also experimented with different distance classifications, repeatedly uncovering the robustness of the five-kilometre dividing line. Readers interested in these results can obtain them on request from the authors.
- These measures of household income were derived after summing across more than 50 separate components, the same methodology being followed in both survey years. These income estimates were found on analysis to be closely correlated with other familiar measures of economic well-being, including asset ownership, housing quality, and consumption expenditure.
- The Consumer Price Index for Agricultural and Rural Labourers was utilised as the price inflator for these calculations.
- Some readers have justifiably expressed their discomfort with our use of this umbra-penumbra analogy. Kentaro Toyoma expressed himself as follows: "The umbra/penumbra imagery is nice, and I understand what is intended. But, as an ex-physicist, I should mention that the umbra, while being closest to the axial center, is where the shadow is darkest, and the penumbra, while further away from the axial center, is less dark". In our rendition, it is these darker parts where the effects of growth have been felt most intensely, where the canvas has been most deeply coloured, such as by an ink-blot or laser beam.
- These results, available on request from the authors, also showed how some other factors made a difference, including household size; age of household head; education to *secondary or higher* level; social group (with scheduled castes and tribes, Other Backward Classes, and Muslims faring worse than high-caste groups); remittances (received from outside rural areas); and percentage of households in a village who possess telephones. Having taken a loan in the past five years or suffering a major illness negatively affects households' economic prospects. Education below secondary level did not make a significant difference, an important point, to which we will return below.
- Comparing household incomes with state-specific income poverty lines for rural areas (calculated by the Indian Planning Commission) helped identify those households which were poor, respectively, in 1993-94 and in 2004-05. The resulting numbers are at variance with the official statistics, which record a lower rural poverty ratio. To some extent, these differences are to be expected: we rely on household income data, while the official statistics draw on consumption data; and we consider only 16 states, while the official statistics refer to the entire country. But there is considerable controversy about the true poverty figure. For instance, Dev and Ravi (2008) report a rural poverty ratio of 36.4% for 2004-05, and an expert group (the Tendulkar Committee) which re-estimated poverty for both rural and urban areas at the behest (and with the authority) of the Indian Planning Commission, reported a rural poverty rate of 41.8% in 2004-05 (GOI 2009), almost 2 percentage points *higher* than the estimates presented in Table 1.
- Clearly, five kilometres is an average figure, and some towns, such as Delhi or Bangalore or Mumbai, may cast their beneficial shadows over a wider area, whereas littler towns, often only just larger than villages, may have more circumscribed radial effects. While the five-kilometre divide is robust on average, one has to be wary while interpreting these results in relation to any particular city or village.
- Thus, each row of Table 2 does not necessarily report results for the same sets of households. For an examination of household poverty dynamics that made use of the same data sources, see Krishna and Shariff (2011).
- In addition, in a dynamic which may be peculiar to India, where infrastructure will not grow fast enough within any given town but where the number of towns is many, business corporations have moved outward progressively to middle- and

- smaller-sized towns, sensing that the traffic jams in bigger cities would only grow worse.
- 18 Indeed, a government report asserts how “farmers have come to be identified as a highly marginalised section of the population” (NCEUS 2007: 119).
- 19 For a more detailed (and quite depressing) accounting of these trends, see the official report of the expert group on agricultural indebtedness (GOI 2007).
- 20 Krishna and Shariff (2011: 536, 539). A long-time observer of trends in rural India, describing the strategies adopted by many rural households, notes both “self-exploitation, in the form of long working hours together with low pay, and...pushing part of the younger generation...away from agriculture and the village, so as to veil their downward mobility” (Bremman 2003: 30; emphasis added).
- 21 The rapid advance of mobile telephony has to some extent helped. The NCAER survey of 2004-05 – which showed that only 15% of households in villages of the first concentric circle (contained within two km of the nearest town) and only 9% of the population in villages beyond 10 kilometres possessed a telephone of any kind (fixed-line or mobile) – was likely catching at its very early stages the spurt of growth in rural mobile telephone coverage. A survey conducted six years later (in 2010) in 18 villages of southern Rajasthan found that more than 70% of all village households had at least one mobile telephone. Strikingly, 35% of all households identified as being inter-generationally poor, also possessed a mobile telephone (often one that is used only for receiving incoming calls). See Krishna (forthcoming).
- 22 In addition to the overall decline of agriculture as a source of employment and income, another important difference between village-based agricultural and city-based non-agricultural labour has to do with the regularity of demand and conditions of work. Agricultural labourers are “subject to long working hours at meagre wages well below the minimum wage. Further, due to lack of opportunities, there is a high level of unemployment and underemployment” (NCEUS 2007: 125). Labour requirements in agriculture have a few sharp peaks; harvesting requires many people, for instance – but during the rest of the year, the farming family does not require additional hands. Urban labouring opportunities may not be always available to all who come, but the chances of getting a job and earning a wage are higher year-round in a town compared to a village. Urban wage rates also tend to be higher, rising with the size of the town, as seen above.
- 23 Sarkar and Mehta (2010: 47) report that “there are certain thresholds of educational level in both rural and urban areas, beyond which wages increase significantly”. Primary and middle school education make hardly any difference. “Wages increase significantly only after, at least, secondary level of education”, and these differences have become larger post-liberalisation.
- 24 Largely because of these factors, “the rural elite and the rural non-agricultural groups have seen their wealth grow most rapidly” (Jayadev et al 2011: 92).
- 25 See Bellemare and Barrett (2006) and de Janvry et al (1991).
- 26 The National Rural Employment Guarantee Act (NREGA) undertakes to provide (as a right that can be demanded by any village resident), “one hundred days of wage-employment in a financial year to [every] rural household whose adult members volunteer to do unskilled manual work”, for further details, see the website <http://www.nrega.nic.in/netnrega/home.aspx>.
- 27 A recent paper, which reviews much of the earlier literature while also introducing fresh evidence, emphasises the long-term inverse relationship between inequality and sustained economic growth. See Berg and Ostry (2011).
- 28 Unfortunately, we were not able to track down any other data sets that measure distance to nearest town (or something similar). We eagerly await the release of village-level data from Census 2011, and will be very glad to learn of other likely sources of data.
- 29 Despite these reductions, 69% of the rural population continued to live within penumbra villages in 2008.
- 30 Jawaharlal Nehru, Letter to Chief Ministers, 27 June 1961, cited in Shourie (2006: x).
- 31 Whang (1981) explains how such opportunity equalising policies have worked in South Korea; Findlay and Wellisz (1993) do the same for the case of Hong Kong; while for the Chinese case, see Xiaojian (2007). Krishna (2010) reviews these and other examples.

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