Key Drivers of Progress in Digitisation of India's Land Records

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Introduction

The poor land records and lack of access to these records adversely impact both the land markets in India and financialisation of land assets. In addition, they weaken an individual's property rights. The McKinsey Report of 2001, one of the earliest on the subject, and the recent World Bank Ease of Doing Business reports, pointed to the difficulty of transacting in land and property as a major area of concern in India. Due to the lack of updated land records, there have been litigations, scams, and property disputes over land ownership. The digitisation of land records is a critical first step in addressing this issue. In this regard, the Digital India Land Records Modernisation Programme (DILRMP) has been an important initiative under the Digital India mission, which aims for the digitisation of land records and the property registration process.

Digitised land records increase the visibility and availability of land for large-scale investment opportunities, while laying the foundation for the creation of a more accurate and comprehensive record that can be updated in real time. This will have positive effects in the long term, such as lowering of transaction and litigation costs for individuals and for the economy as a whole, simplifying the process of raising credit, and encouraging investment for making the land more productive. Given these benefits, however, the entire process of digitisation of land records is of value only if citizens are able to access the records with ease. As land is a State subject in the constitutional allocation of subjects between the Centre and States, significant variations are found in the status of land administration and digitisation efforts across the country. Moreover, the absence of any credible instrument for tracking the performance of individual States at regular intervals has further resulted in lack of information on the progress made by States, either temporally or horizontally. Therefore, we believe that the first step in fixing this problem is to precisely measure it.

In this context, NCAER's Land Records and Services Index (N-LRSI) has the potential of offering a reality check to the public on the ongoing digitisation efforts and highlighting matters requiring greater attention by policymakers. The NCAER study also highlights the potential benefits of the government's Digital India mission. One of the positive outcomes of the Index is that it will encourage competition among States, which will foster an improvement in the digitisation of land records. The latest round of the N-LRSI reveals that the States and Union Territories (UTs) have made significant improvements in digitisation in a short span of time between 2020 and 2021 despite the prevalence of the COVID-19 pandemic, which has restricted many economic activities in the country. In this policy brief, we discuss the key drivers that account for this recent improvement shown by many States and UTs. The discussion is mainly focused on the

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[1] Jain is an Associate Fellow; Sanan and Sen are Senior Advisors (Land Policy Initiative), NCAER.

digitisation of land records and the registration process.

Why is Digitisation of Land Records Important?

Digitisation of land records is critical for ensuring India's economic growth and poverty reduction. Poorly maintained and obsolete records that do not reflect the on-ground position lead to disputes and litigation, thereby constraining fresh investment and business. Reliable land and property records enable government, industry, and citizens to effectively use this asset by minimising transaction and litigation costs.

Digitised systems help the government—as the custodian of property records—in ensuring the easy maintenance, monitoring, and administration of land records, and can speed up the entire process of transactions in land records, which includes registration and mutation. For the economy as a whole, it can facilitate greater industrialisation by reducing the incidence of litigation and speeding up the administrative processes involved in land acquisition. For property owners, buyers, and real estate investors, it can smoothen the process of doing transactions and procuring documents, expedite online approvals, and reduce conflict in the ownership of properties. Specifically for land owners, this clarity in ownership status and proper definition of boundaries[2] can further help in raising credit or using it for other financial purposes.

The Problem So Far...

Land market imperfections is one of the foremost constraints to economic growth and investment opportunities in India. Also, since a majority of the value of household assets held in the form of land and immovable property, land and property are of enormous importance to households in the country. The need for improved maintenance of land records and easy access to land information has engaged the attention of the Central Government for over three decades now since the launch of the Computerisation of Land Records (CLR) scheme in 1987-88. The DILRMP, launched in 2014, is only the latest incarnation of this programme. Although, the website of the Department of Land Resources (DoLR), as accessed in January 2021, shows digitisation rates of 90 per cent and 53 per cent for the Record of Rights (RoRs) and Cadastral Maps (CMs), respectively, various studies point to differential and tardy progress across States/UTs. Moreover, the absence of any specific tool for measuring the performance of States and UTs in this important endeavour has further resulted in the lack of clear directions for improvements. Therefore, an evaluation of the progress reported by the States, which would provide credible evidence of digitisation, is ostensibly an important exercise. In this direction, the N-LRSI is a vital tool for States to improve their land records and services.

What is N-LRSI?

The NCAER Land Records and Services Index (N-LRSI) evaluates the status of all States/UTs on two aspects of the land records—the extent of digitisation of land records and the registration process; and improvements in the ease of procuring the land record copies and quality of land record services brought about by this digitisation process. The latest round of N-LRSI 2021 allowed for measurement of the progress made by the various States/UTs during a short span of one year based on the

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[2] Traditionally, spatial information on land records in the country is available in the form of either printed or handwritten village maps/sheets. The cadastre boundaries in these village maps are quite old, with many of the parcel boundaries further divided or merged, which are not reflected in the village map. Although the sub-division of each parcel is recorded and updated in the Field Measurement Book (FMB) by the revenue department, these are not updated in the cadastre. The GIS-encoded digitisation of cadastral maps helps in defining clear boundaries for land parcels by categorising various features like parcel boundaries, roads, railways lines, and intersections into either polygons, lines, or point features.

parameters that formed the basis of the N-LRSI 2020. At the same time, it facilitated an assessment of the extent to which the recommendations made to various States/UTs in N-LRSI 2020 were considered for implementation.

Scope of the Index

N-LRSI has had two editions so far. While the first edition was unveiled in February 2020, the second edition of the Index was released in March 2021. The same components and weights in scoring were used in both editions of the Index in order to enable comparison between the two rounds. This index groups the weighted indicators in the ratio of 60: 40 to measure the extent of computerisation of land records and

N-LRSI has fostered a competitive instinct amongst States, leading them to perform better by enhancing their services and processes. It also offers lessons to incentivise States in the pursuit of important national objectives.

N-LRSI Methodology

N-LRSI has two broad components: the extent of digitisation of land records and the registration process, and the quality of land records. For the composition of the Index, refer to Figure 1. Since this policy brief focuses on the extent of digitisation of land records and the registration process, the methodology has been discussed only for this component.

Figure 1: Composition of N-LRSI
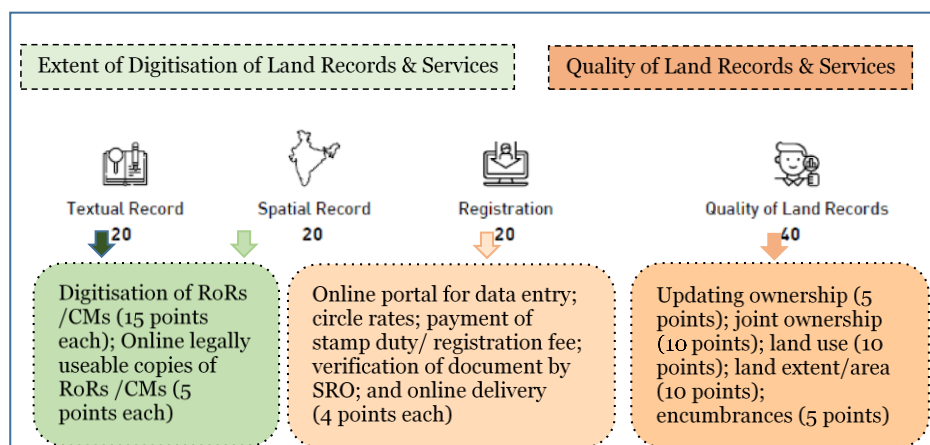
Source: N-LRSI 2021, NCAER.

registration; and the extent to which the record is congruent with the on-ground situation with regard to land ownership, possession, land use, extent, and encumbrances.

What N-LRSI does?

The N-LRSI shows that credible efforts at measuring performance can become a means for assuring better performance by the States. This is because this Index not only helps each State to ascertain where it stands in terms of providing digitised land records and associated services, but also offers insights and suggestions that can assist in improving their land record-keeping practices and processes in various ways. By ranking each State on the Index, the

Composition and Scoring: The extent of digitisation of land records and registration process comprises nine sub-indicators of which textual records (RoRs), spatial records (CMs), and circle rates were tested on the basis of sample villages drawn from the DoLR website, whereas data on the remaining six indicators was verified through either serving or retired revenue officers with in-depth knowledge of land matters in their respective States. For details of the scoring pattern for each of these sub-

indicators, refer to the latest N-LRSI 2021 report.[3]

Sample Design: A combination sampling strategy was adopted to test the availability of RoRs, CMs, and Circle Rates in order to both adequately capture the information on various components of the index, and facilitate a meaningful comparison between the two rounds of the Index. This strategy offered more extensive coverage, especially for measuring real incremental changes in the digitisation process and reduced errors pertaining to both sampling and non-sampling. This design draws a sub-sample from the 2019-20 sample, comprising both the available and not available cases during the test checks performed last year, as well as fresh sample units based on updated information available on the DoLR website. The sub-sample plots drawn from last year were re-tested for availability and, in the case of the fresh samples, the plots were selected through a three-stage stratified random sampling approach.

Coverage: The number of States/UTs which were covered in these sample test checks for the RoRs, CMs, and Circle Rates were 27, 17, and 26, respectively. Overall, including the sample test checks and information gathered from other sources, the status of digitisation of land records and registration process was analysed for 31 States/UTs.

Major Findings

N-LRSI 2021: Performance and Changes

The N-LRSI 2021 showed that the States and UTs have made significant progress in making their land records and aspects of the registration process digitally available to citizens over the course of one year between 2020 and 2021 despite the pandemic. The average N-LRSI score for all the States/UTs increased by 16 per cent between the two rounds. This improvement has been broad-based, as 28 States/UTs (out of 32 with at least some extent of digitisation) have shown improvement in the N-LRSI scores this time while two have scored at least as much again (Puducherry and Ladakh). Madhya Pradesh has emerged as the top performer for the second year in a row, scoring above 80 points on the Index, followed by West Bengal, Odisha, Maharashtra, and Tamil Nadu. The States showing the maximum improvement in the N-LRSI in 2021 over 2020 are Bihar, Karnataka, Tripura, West Bengal, and Andhra Pradesh. The most important reason for this outcome is the efforts made by these States with respect to various aspects of digitisation of land records (particularly spatial records) and registration services (for example, the adoption of new software or online payment mechanisms).

Progress of Digitisation of Land Records and Registration Process

The initiatives taken by the States in digitising their land records and the registration process during the pandemic is evident from an increase of almost 20 per cent in the mean score for this component, from 24.6 in 2020 to 29.6 in 2021, with 16 States and UTs performing above the mean score (see Figure 2). The top five States reported a much higher average score of 51.4 points (see Figure 3). The reasons behind this improvement in the performance of the States/UTs falling in the category of maximum improvement in the latest round relates to the two components of spatial records and registration process. Although textual records also show an improvement in the second N-LRSI, this is marginal, with the availability of records as verified by the test-checks increasing from 91.8 per cent in 2020 to 92.1 per cent in 2021.
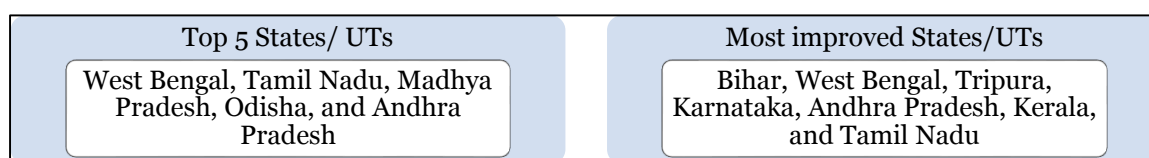
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[3]
https://www.ncaer.org/publication_details.php?pID=346

Figure 2: Extent of Digitisation of Land Records and Registration: Scores 2021 and Difference between the 2020 and 2021 Rounds
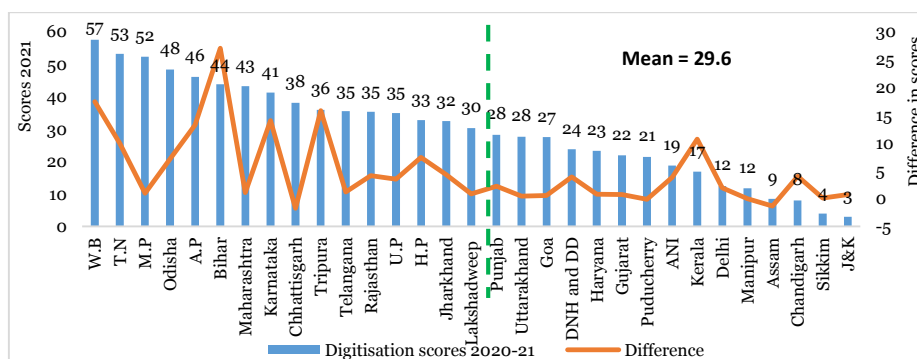
Source: N-LRSI 2021, NCAER.

Figure 3: States/UTs in the Top 5 and the Most Improved Category for the Extent of Digitisation

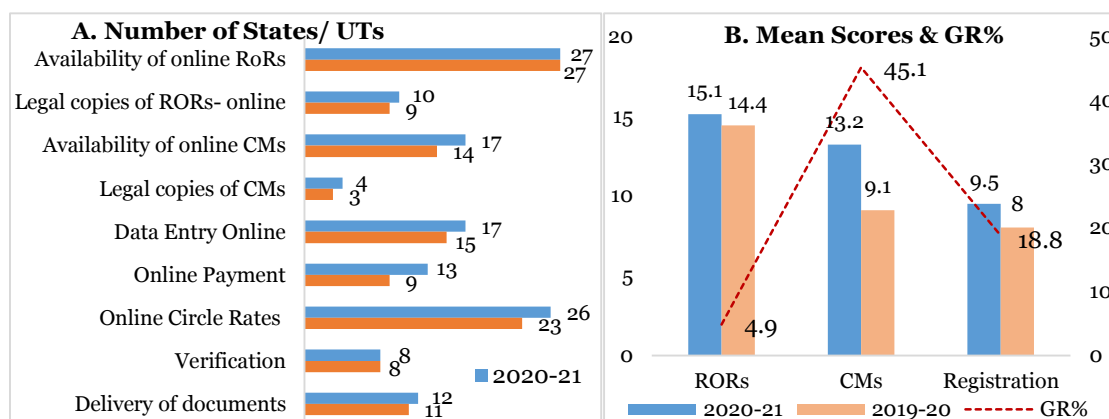| Top 5 States/ UTs	Most improved States/UTs
West Bengal, Tamil Nadu, Madhya Pradesh, Odisha, and Andhra Pradesh	Bihar, West Bengal, Tripura, Karnataka, Andhra Pradesh, Kerala, and Tamil Nadu

Source: N-LRSI 2021, NCAER.

The Key Driving Forces

Given the significant levels of digitisation of textual records already seen in N-LRSI 2020, the greatest scope for improvement was in making available digitised CMs and in offering online facilities for the various stages of the registration process. As mentioned earlier, the States/UTs have made efforts in both these areas, and that too without any additional expenditure being incurred under the Government of India's flagship DILRMP programme, as compared to the previous year (refer to Figure 4, (panels A and B) for improvements in the digitisation of land records and registration process. Some of the significant achievements reported in N-LRSI 2021 on these indicators are worth sharing here.

Cadastral Maps: The efforts in making CMs available are especially noteworthy. Not only has there been an increase in the number of States and UTs that have uploaded the digitised copies of CMs on their respective websites in 2021 (with the addition of three States, that is, Karnataka, Tripura, and Bihar), but

more States as compared to last year are now making the CMs available in mosaic format and reporting the actual measurement of plot boundaries. The online availability of CMs has gone up significantly to 87.8 per cent in 2021 from just 63.9 per cent, as per the test checks done during 2019-20. Overall, the average score for digitisation of spatial records shows a remarkable improvement of 45 per cent in 2021 over the previous round (see Figure 4, panel B). Clearly, many States/UTs have endeavoured to encash on possible quick wins to improve their N-LRSI scores (for the top five States and UTs exhibiting the greatest improvement, refer to Figure 5). For improving the services offered, West Bengal has upgraded the value of its digitised records by making digitally signed copies of both RoRs and CMs available on its website, and Himachal Pradesh has started providing legally signed copies of CMs from its Citizen Services Centres instead of providing them only from the departmental offices, as done earlier.

Figure 4: Improvements in Digitisation of the Land Record and Registration Process 2021: Number of States/UTs Offering Services (A) and Mean Scores (B)

Source: N-LRSI 2021, NCAER.

Figure 5: Top Five Performing and Most Improving States/UTs, 2020-21

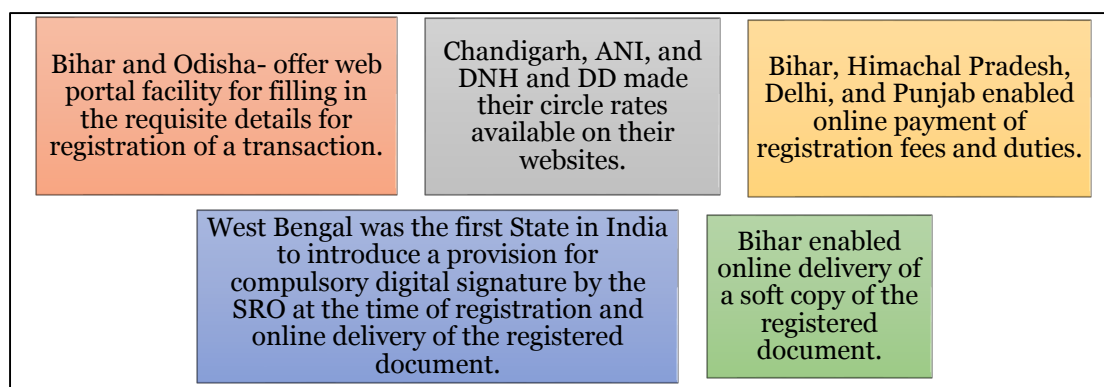| Textual Records	Spatial Records	Registration
Top Five Category	Top Five *Category*	Top Five *Category*
Tamil Nadu	Tamil Nadu	West Bengal
West Bengal	West Bengal	Maharashtra
Goa	Madhya Pradesh	Madhya Pradesh
Maharashtra	Lakshadweep	Odisha
Madhya Pradesh	Chhattisgarh	Bihar
Most Improving	*Most Improving*	*Most Improving*
Bihar	Bihar	Bihar
West Bengal	West Bengal	Odisha
Tripura	Tripura	West Bengal
Odisha	Karnataka	Chandigarh
Tamil Nadu	Andhra Pradesh	DNH and DD

Source: N-LRSI 2021, NCAER.

Registration Process: The latest round shows that the average score for registration is 9.5 for 30 States/UTs, up by 20 per cent over the previous round, with 14 States/UTs performing above the average score. No State/UT has shown a decline and only the States of Haryana, Tripura, Manipur, and Assam have been unable to improve their earlier scores. All other States reporting on this component have shown an improvement. The reasons for this improvement are related to areas like making available better stamp duty payment mechanisms; adoption of software for carrying out various registration-related processes, and increased availability of circle rates on websites (see Figure 4, panel A). These improvements indicate the positive intentions of the States/UTs to digitise their registration systems and offer a faster and more transparent experience to customers. Some of the noteworthy achievements seen in this round are delineated in Figure 6.

Overall, the efforts of the States to capitalise on the potential for quick wins is quite appreciable, as highlighted by the components of the Index that measure the extent of digitisation of the land records and the registration process.

Figure 6: Achievements of the States/UTs in Digitising Various Stages of the Registration Process

Bihar and Odisha- offer web portal facility for filling in the requisite details for registration of a transaction.	Chandigarh, ANI, and DNH and DD made their circle rates available on their websites.	Bihar, Himachal Pradesh, Delhi, and Punjab enabled online payment of registration fees and duties.
	West Bengal was the first State in India to introduce a provision for compulsory digital signature by the SRO at the time of registration and online delivery of the registered document.	Bihar enabled online delivery of a soft copy of the registered document.

Source: N-LRSI 2021, NCAER.
Note: ANI: Andaman & Nicobar Islands; DNH and DD: Dadra & Nagar Haveli and Daman & Diu; SRO: Sub Registrar Office.

Policy Lessons

It has been extremely heartening to see that many States/UTs have exhibited a significant interest in making an improvement from one round to the next, and have actually implemented various suggestions offered in N-LRSI 2019-20 in the short span of one year, which has led to considerable improvements. On the Index, though improvement has been most visible in the extent of digitisation of the records and the registration process, the quality of records has also seen progress, albeit at a slow pace. On the digitisation front, certain steps are worth emulating by the States/UTs lagging behind in this regard. These are summarised below:

i. In the case of some States, though land records are digitally available on the State web portals, accessibility remains an issue. Addressing these issues necessitates decisions on hardware up-gradation and software improvement, and for carrying out appropriate cross-checks to ensure that the information entered on the DoLR portal is in consonance with corresponding information on the State website.

ii. In addition, the accessibility of records can be enhanced by initiatives like: improving the website speed, adding translation services on the web, providing Frequently Asked Questions (FAQ) facilities on portals, making records available to citizens through mobile applications, and linking CMs with RoRs.

iii. In the case of States where textual or spatial records are available in hard copy but not yet digitised, there is a need to expedite the process of digitisation.

iv. In case of areas where land records are not available or not offered in a usable format, quick decisions are required for determining the mode of conduct of surveys in these areas. In such cases, High-resolution Satellite Imagery (HRSI) may prove suitable for rural areas and drone or Light Detection and Ranging (LIDAR)-based surveys for densely built-up habitations.

v. There is a need to upload cadastre maps in both mosaic and vectorised form for ensuring greater accuracy.

vi. Provisions should be made to make available legally usable copies of both RoRs and CMs on the web.

vii. Online provision for entry of data relating to the registration process needs to be introduced. So far, only 17 States have this provision,

viii. Complete online availability of circle rates should be ensured by cross-checking that all the revenue villages are actually reflected in the uploaded information.

ix. There is a need for adoption of software like e-GRAS for introducing online payment systems. N-LRSI 2021 shows that 14 States have e-stamping facilities while another 9 States are still using traditional methods of stamp papers.

x. Adopting holistic registration software like the National Generic Document Registration System (NGDRS) will enable the feature of digital signature by a competent authority at the time of registration and online delivery of the registered document. While some States have implemented this, so far only West Bengal has made this a compulsory provision. This is important to eliminate discretion at the SRO level in both completing the registration process and delivery of the document as well as to facilitate digital storage of the registered record.

The N-LRSI offers a great opportunity in many aspects for the Government of India. The latter can profitably view the N-LRSI as an instrument that credibly records improvements in the domain of land records and services. Additionally, the Government of India can explore approaches for rewarding and recognising States/UTs that perform better on this Index so that others are incentivised to improve their performance and move ahead the front-runners.

Further Readings

1. McKinsey Global Institute. 2001. *India the Growth Imperative*. Washington D.C.: MGI.
2. World Bank. 2020. *Doing Business 2020 Reforming to Create Jobs*. Washington D.C.: World Bank.
3. NCAER. 2020. "Report on Land Records & Services Index", February. Report available at: https://www.ncaer.org/publication_details.php?pID=317.
4. ———. 2021. "Report on Land Records & Services Index", March. Report available at: https://www.ncaer.org/publication_details.php?pID=346.
5. NCAER, IGIDR, and NIPFP. 2017. Synthesis Report on "A Pilot Impact Assessment of the Digital-India Land Records modernisation Programme", supported by Omidyar Network, September.

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About NCAER's Land Policy Initiative

NCAER launched the NCAER Land Policy Initiative (N-LPI) in April 2019 with generous support from the Omidyar Network, to build on NCAER's prior analytical work on land, its 60-plus years of experience with data collection, and long-standing relationship of trust with governments. The objectives of the N-LPI are to: (1) raise official and citizen awareness of the distortions in India's land markets and their cost to the economy; (2) produce and curate evidence and land data, offer solutions and State rankings that can nudge the States through competitive federalism to improve their land administration, records, and services; (3) where requested, pilot such solutions with the States and evaluate them; and (4) help to build a larger research community of analysts and experts on land issues in India. The Land Policy Initiative has been set up with two broad objectives, that is, the creation of: (a) NCAER's Land Records and Services Index (N-LRSI), and (b) NCAER's Land Data Portal. While the N-LRSI is designed to capture the extent of digitisation of land records and the quality of land records in Indian States and Union Territories, the Land Data Portal will be a data warehouse for all publicly available land data in India, along with N-LRSI data.

About NCAER

Established in 1956, the National Council of Applied Economic Research (NCAER) is India's oldest and largest independent, non-profit, economic policy research institute. NCAER's work cuts across many sectors, including growth, macro, trade, infrastructure, logistics, labour, urban, agriculture and rural development, human development, poverty, and consumers. The focus of NCAER's research is on generating and analysing empirical evidence to support and inform policy choices. It is also one of a handful of think tanks globally that combine rigorous analysis and policy outreach with deep data collection capabilities, especially for household surveys. For further details please visit www.ncaer.org.

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