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Poverty in India in the face of Covid-19: Diagnosis and prospects*

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Abstract

India has been hard-hit by the Covid-19 pandemic. The virus has exacted a heavy toll in terms of lives lost and deteriorating health outcomes. The economic consequences of the pandemic have been similarly grim. In this paper we attempt an initial, interim, assessment of the impacts of the crisis on poverty. We review the growing literature that considers emerging poverty impacts, noting that there remain significant knowledge gaps due to limited evidence on current welfare outcomes. We analyze pre-Covid survey data to examine the incidence of chronic poverty and downward mobility during a period of rapid economic growth and declining poverty. A profile of poverty during such a period might offer a plausible, partial, window on population groups currently at risk. We suggest that, notwithstanding the severe initial impacts of the crisis on poverty, there are grounds for expecting further consequences going forward. As the virus has spread out of the relatively affluent cities, and as economic stagnation persists, rural areas, with historically higher rates of chronic poverty and vulnerability, may

see particularly sharp increases in poverty. While recent vaccination developments offer some grounds for optimism, there remains an urgent need to identify, implement and amplify effective policy alleviation measures.

1 | INTRODUCTION

The year 2020 marks a major break in the progress achieved throughout the world in reducing global poverty. Sustainable Development Goal 1, announced by the international development community in 2015, had proclaimed the ambitious objective of ending extreme global poverty by 2030. Success in meeting the Millennium Development Goal of halving global poverty during the 1990–2015 interval had undoubtedly emboldened the architects of the Sustainable Development Goals to pursue a poverty objective that, while clearly aspirational, did not appear to be entirely beyond reach. The onset of the Covid-19 pandemic in early 2020 has dampened these ambitions. Nowhere is this more evident than in India, a country where poverty reduction during the first decades of the 2000s had been remarkable, but where the impact of the Covid pandemic has been staggering in terms of both public health and economic livelihoods.

Given that the Covid-19 pandemic remains in full swing, it is impossible to arrive at a complete assessment of its full impact on poverty in India and how it may evolve going forward. The economic consequences of the crisis are still working their way through the Indian economy, and policy measures aimed at addressing both the public health and economic fallout from the crisis continue to be formulated and rolled out. Empirical evidence on the actual impact of the crisis also remains highly fragmented and incomplete.

Yet, to preserve as much as possible of the progress that India undeniably achieved in recent decades, policies that mitigate the most severe consequences of the crisis must be introduced. To this end, there is a need to anticipate the likely consequences of the crisis for poverty. Not only is it necessary to track how poverty is evolving in the face of the crisis, but it is important to also identify and understand the circumstances of those who face a heightened risk of falling into poverty as the crisis continues to unfold.

In this study we attempt to provide an assessment of how the fight to end extreme poverty in India has been disrupted by the arrival of the Covid-19 crisis. In particular, we are interested in informing policy-making by providing insights into possible population groups that are likely to have been most seriously affected by the crisis, or to be particularly exposed to its most pernicious consequences in the months and years to come.

We start in the next section with a brief review of progress in poverty reduction prior to the onset of the Covid-19 crisis. We are severely handicapped in this regard in that nationally

representative poverty data that underpin official estimates of poverty in India are not available beyond the year 2011/12, when the last publicly available National Sample Survey was published. Nonetheless, we document that, in the period between 2004/05 and 2011/12, poverty reduction in India was indeed significant. It seems likely that a trajectory of declining poverty persisted until the Covid-19 crisis hit in 2020.

We then proceed in Section 3 to briefly describe the spread and dimensions of the Covid-19 crisis in India and provide a timeline of the policy measures that were introduced in response to the spread of the virus. Section 4 summarizes findings from a desk review of reports on the poverty impacts of the crisis. Absent systematic and current statistical evidence, we rely on a variety of sources and often anecdotal evidence to arrive at an initial impression of the poverty consequences of the crisis and its economic manifestations.

We then turn in Section 5 to a statistical analysis of household survey data from the first decade of the 2000s to investigate patterns of poverty dynamics that occurred during that time. We employ methods to construct synthetic panels from cross-sectional survey data to inquire into the characteristics of the chronically poor in India during this period of rapid economic growth and poverty reduction. It is likely that those who remained poor during that interval are among those who are also at greatest risk of destitution during the sharp economic downturn ushered in by the Covid-19 crisis. We also scrutinize those who, during the period 2004/05–2011/12, faced a heightened risk of falling into poverty. Again, it seems reasonable to suppose that those population groups that are most vulnerable during such a period of rapid progress are likely to count among the most vulnerable during a period of tremendous economic stress. In Section 6 we offer some concluding remarks.

2 | PRE-COVID POVERTY TRENDS

The evolution of poverty in India has long been the subject of close attention. In particular, with the introduction of economic reforms in the early 1990s, there has been a strong interest in seeing how poverty outcomes fared as economic growth accelerated (Datt & Ravallion, 2011; Ravallion, 2011). Figure 1 illustrates that poverty fell sharply during this period, falling from nearly 50 per cent of the population in 1987/88 to just over 20 per cent in 2011/12 (Dang & Lanjouw, 2018). Although growth started to pick up in the mid-1990s, the evidence suggests that poverty reduction only started to gather pace in the early 2000s, after the 2004/05 round of the National Sample Survey (NSS) and, in particular, between the 2009/10 and 2011/12 rounds. Interestingly, the dramatic falls in poverty between 2009/10 and 2011/12 occurred when per capita growth rates were in fact lower than during the 2004/05–2009/10 interval (Figure 1).

A question of considerable importance concerns how poverty evolved from 2011/12 up to the onset of the Covid-19 crisis. Unfortunately, the data needed to answer such questions are not available. The subsequent "quinquennial" round of the NSS survey after 2011/12, fielded during the 2017/18 survey year, has not been released by the National Sample Survey Organization (NSSO). There is considerable debate as to the likely evolution of poverty, with many commentators suggesting that the pace of poverty reduction slowed post-2011/12, alongside the lower per capita income growth rates for India as a whole. What seems unambiguous is that with the onset of the Covid-19 crisis, the decline in poverty is likely to have halted altogether.
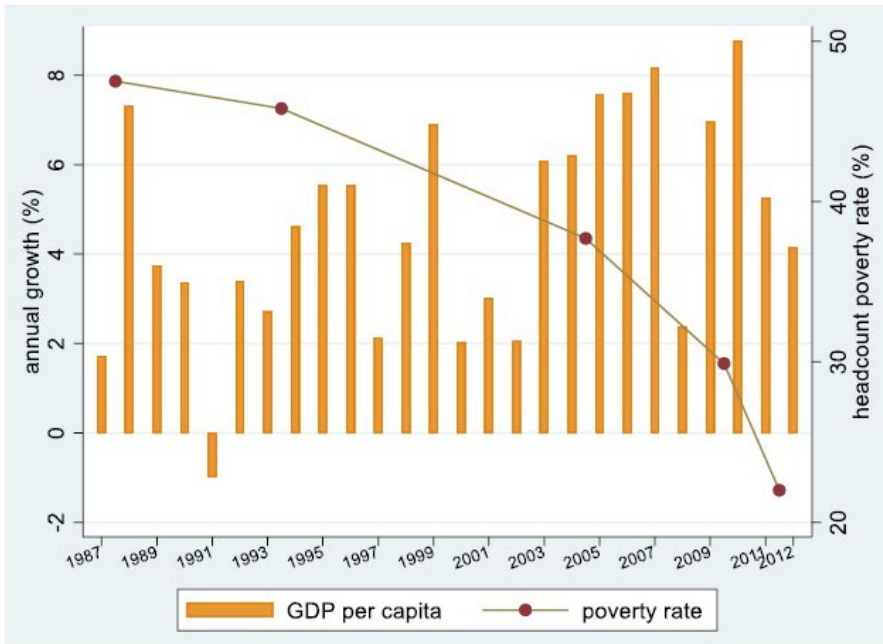
FIGURE 1 Trends in poverty and gross domestic product per capita for India, 1987/88–2011/12. Source: Dang and Lanjouw (2018) [Colour figure can be viewed at wileyonlinelibrary.com]

3 | THE COVID-19 PANDEMIC

The Covid-19 pandemic, to which India became exposed at the beginning of 2020, has left a deep mark on the country. In absolute terms, the spread of the virus has been striking – particularly during the surge in the early months of 2021. With over 27.1 million reported cases (as of May 26, 2021), India lagged behind only the United States in terms of the absolute number of Covid-19 infected persons (John Hopkins University Center for Systems Science & Engineering, 2021). Compared to its vast population, however, India's Covid-19 outbreak seems less catastrophic. The country ranked 94th out of all 199 investigated countries on the number of cumulative confirmed Covid-19 cases per million people as of May 25, 2021 (Our World in Data, 2021a). However, the rapid spread of Covid-19 during the spring of 2021 was particularly alarming (Figure 2). In late May, India topped the World Health Organization's (WHO) worldwide list of newly reported Covid-19 cases in the last 24 hr with an astounding 222,315 cases on May 24 (WHO, 2021). Worryingly, these data may well have been underestimated.[1]

Beyond the health crisis, India has also faced severe socioeconomic challenges. As noted earlier, the Indian economy was already slowing down before the recent pandemic. The two nation-wide lockdowns introduced shortly after the onset of the pandemic, which have been rated as among the most stringent in the world,[2] dealt the Indian economy an additional blow. The first lockdown, starting on March 25, 2020, and lasting for 21 days, involved a total closure of almost every type of commercial entity (except for grocery outlets) (Ministry of Home Affairs, 2020a; Singh et al., 2020). The second one comprised an extension of the first lockdown – initially for two weeks until May 3, followed by another 2 weeks, and finally extending until May 31 (Ministry of Home Affairs, 2020b, 2020c, 2020d). During the second lockdown, districts were divided into
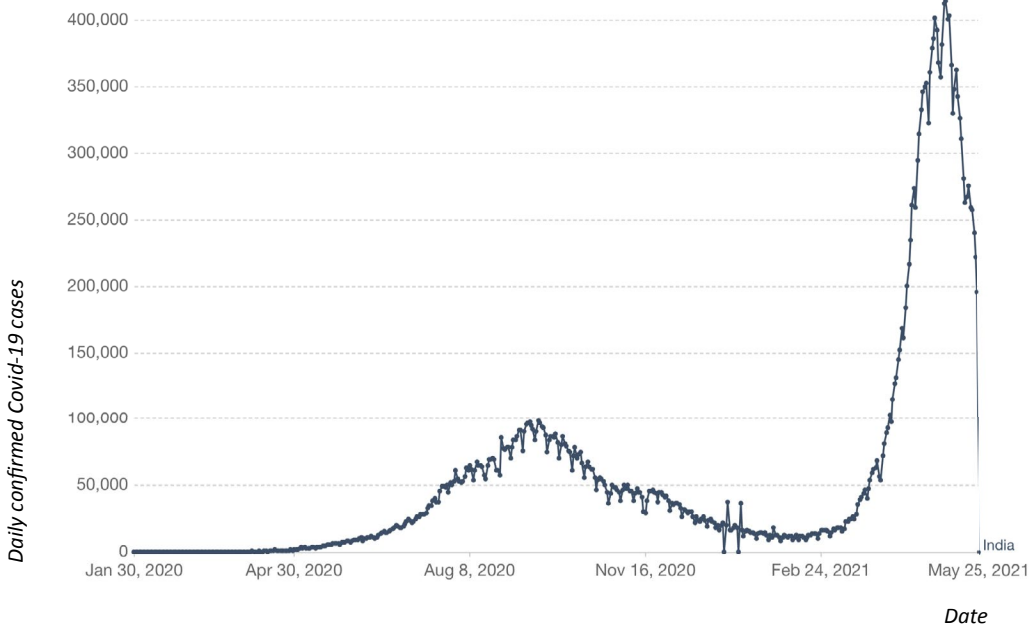
FIGURE 2 Time-map of daily confirmed Covid-19 cases in India as of May 25, 2021. Source: Our World in Data (2021b) [Colour figure can be viewed at wileyonlinelibrary.com]

three possible zones – red, yellow and green, depending on the spread of Covid-19 in that area – that determined the severity of measures in those places (Ray & Subramanian, 2020, p. 3). Within the red zones, the highest-risk areas were furthermore classified as containment zones (Express News Service, 2020). Although states and Union territories carried the responsibility to demarcate containment zones and to declare appropriate measures, the measures were expected to involve at least a night curfew from 7 p.m. to 7 a.m. imposed by the national government (Home Secretary, 2020). Within the containment zones, the lockdown was further extended to June 30 and finally to July 31 (Ministry of Home Affairs, 2020e).

While the lockdown was extended in the containment zones, the rest of India was slowly reopened in different unlock phases (Gangwar & Ray, 2021, p. 435). More recently, many states reverted to lockdowns on their own as a response to the new Covid surge in early 2021.

The disruption to economic activity in India throughout the lockdown period has been investigated by Beyer et al. (2021) who scrutinize daily electricity consumption and night-time light intensity for evidence of economic turmoil. These two indicators capture important inputs into a wide range of economic activities and data are available at short notice and at high resolution (Beyer et al., 2021, pp. 4–5). Their model, which can explain 90 per cent of the variance in electricity consumption and light intensity in normal times, reveals that on the day the first lockdown was imposed (March 23, 2020), electricity levels were 21 per cent lower than their predicted normal value. It was not until the end of June, after the lockdown measures had been lifted, that deviations from the predicted normal electricity levels were no longer statistically significant (Beyer et al., 2021, pp. 5–7). However, in an extended analysis for *The Economist*, Beyer and colleagues show that India's rapidly rising infections have reversed the economic recovery from June (Figure 3). Clearly, the second wave placed the Indian economy under further strain.
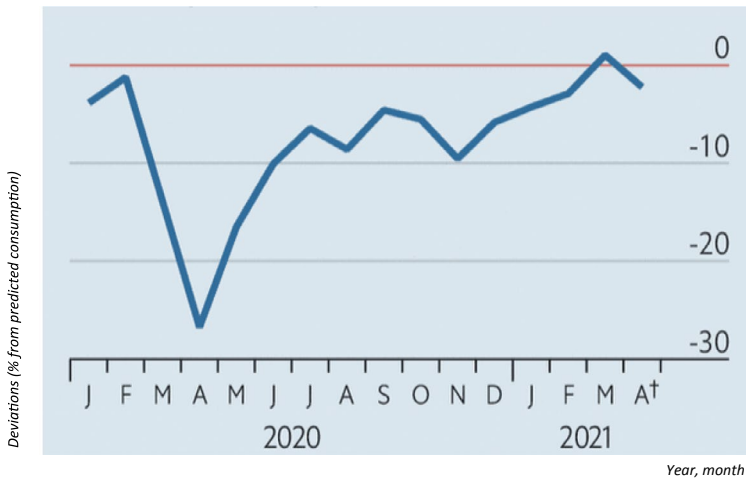
FIGURE 3 Deviations from predicted daily normal electricity consumption in India (%). Source: The Economist (2021) [Colour figure can be viewed at wileyonlinelibrary.com]

4 | POVERTY IMPACTS: A DESK REVIEW

The socioeconomic consequences of the Covid-19 crisis and the measures subsequently taken to address them are unlikely to be distributed uniformly among Indian citizens. It is thus useful to identify those population groups that are most exposed to the economic burden of the current crisis in India and to elaborate on the specific vulnerabilities they face. We begin by assembling insights gleaned from a review of research and media reports that have emerged since the onset of the pandemic.

One of the most widely observed vulnerable groups in India is informal workers. This segment of the labor force is vast. A report by the National Commission for Enterprises in the Unorganised Sector (NCEUS) shows that, based on sectoral statistics from 2004–2005, the informal sector contributed up to 50 per cent to India's national gross domestic product (NCEUS, 2009, p. 23). What makes informal workers economically vulnerable is that they are excluded from social security benefits, thereby being left unprotected against sudden shocks such as illness or death (Unni & Rani, 2003, p. 130). Moreover, informal employment often generates lower incomes than similar formal employment does (Al Dahdah et al., 2020). Based on data from India's national 2011–2012 Employment and Unemployment Survey studying over 450,000 individuals across India, Narayanan (2015) estimates the formal–informal wage gap at different quantiles of the wage distribution and finds that this gap is significant for both Indian males and females across each quantile. He suggests that informal workers are consistently punished for being informal workers, even when they have similar characteristics and skills to their formal worker counterparts. Lastly, informal workers often possess individual characteristics that draw them to this type of work and create other vulnerabilities simultaneously – such as being female or belonging to a lower caste (Unni & Rani, 2003). We touch further upon these cross-dimensional characteristics below.

The Covid-19 crisis has accentuated the vulnerability of informal workers in several ways. First and foremost, informal workers saw an immediate decline in their earnings as soon as the lockdown put their jobs on hold (Al Dahdah et al., 2020). Based on data from the 2017–2018

Periodic Labour Force Survey, Estupinan and Sharma (2020, pp. 14–17) estimate that 89.5 per cent of those at risk of losing their job during the first national lockdown and 68 per cent of those at risk during the second national lockdown were informally employed. Moreover, they estimate that the average wage loss for informal employees throughout the entire lockdown period in 2020 was 22.62 per cent, compared to a relatively low 3.83 per cent for formal employees.

Although informal employment could technically be more easily restored after a lockdown than formal employment, the numbers disappoint. Using a combination of personal surveys, secondary reports from organizations engaged with informal employees and comprehensive fieldwork, a case study by Azim Premji University (2021a) conducted in Bangalore showed that only 6 per cent of the informal employees interviewed had returned to their previous job with similar or higher wages, and 15 per cent had not returned to any sort of work by December 2020. Finally, one could expect a sudden loss of income to have a bigger impact on informal than on formal employees given their generally lower-income status (Centre for Monitoring Indian Economy, 2020).

Beyond the loss of income, informal employees are vulnerable due to a lack of access to health care. With one of the largest private and unregulated health-care insurance markets, only 37 per cent of the Indian population had any form of health insurance in the fiscal year 2017/18 (Chatterjee, 2016; Tikkanen et al., 2020). Although two-thirds of the insured rely on public health insurance, informal employees might especially miss out on such chances (Tikkanen et al., 2020). The largest existing health insurance schemes in place – the Employees' State Insurance Scheme and the Central Government Health Scheme – rely upon employment in the formal sector, and smaller initiatives meant to target informal employees have not quite lifted off yet due to their limited focus on surgical procedures and families below the poverty line (La Forgia & Nagpal, 2012). Informal employees thus risk facing high out-of-pocket payments when they fall ill with the coronavirus.

One particularly vulnerable subgroup of informal workers are migrant workers, who often reside in rural areas but travel intra- or inter-state to urban areas for work (Rawal et al., 2020). In a paper by Srivastava (2020, pp. 29–30), the total number of vulnerable migrant workers is estimated using data from the NSSO, the National Statistical Office and the Census of India. Defining vulnerable migrant workers as those workers who either migrate for a short duration (i.e. seasonal migrants) or longer-term migrants from the four lowest consumption quantiles and five lowest occupational categories,[3] the paper estimates that there are about 128 million such migrant workers in India (Srivastava, 2020, pp. 8–13).

It should be noted that even compared to other informal workers, migrant workers face a particularly high chance of losing employment. In the four-hour interval following the announcement of the first lockdown in March 2020, most of these migrant workers were suddenly left without a job (Sengupta & Jha, 2020, pp. 158–162). Systematic data on the effects of the two nationwide lockdowns on migrants and other vulnerable communities are scarce, but a purposive sampling study from 5,000 telephone interviews conducted in 12 Indian states by Kesar et al. (2020) reveals that 86.6 per cent of inter-state migrant workers lost employment due to these lockdowns in 2020. Regression analysis further shows that migrant workers were significantly more likely to be laid off than similar non-migrant workers – rural migrant workers were 73.9 per cent more likely and urban workers 50.7 per cent more likely to lose their job than their non-migrant counterparts (Kesar et al., 2020, pp. 19–22).

Presumably, these job losses were only partially recovered during the unlock phase. A survey of 372 migrant workers in the automobile, construction and garment sectors revealed that, in October 2020, 60 per cent of the migrant workers were still fully out of work (Seth, 2020, p.

1). A survey conducted by Azim Premji University among 2,778 individuals across 13 states revealed that around 20 per cent of the informal workers interviewed who lost their job during the first two nationwide lockdowns were still out of work in October and November (Azim Premji University, 2021b, p. 17, n.d.).

Alongside a heightened risk of losing their job, migrant workers are especially vulnerable to getting infected with Covid-19. It is generally known that the housing conditions for migrant workers in their area of employment are often rudimentary and cramped, making it difficult for them to self-isolate (Sengupta & Jha, 2020, pp. 158–162). A cross-sectional study by Babu et al. (2017, pp. 336–338), using a sample of almost 50,000 internal migrant households from 13 different Indian cities, revealed that the majority of those (43.4 per cent) lived in non-registered slums, followed by registered slums (32.7 per cent) and dwellings at the work or construction site (11.7 per cent). The majority of these workers (70.6 per cent) further resided in single-room shelters, had no access to a private water tap (44.6 per cent) or their own private toilet (63.8 per cent). Under such conditions, the chances of getting infected with Covid-19, paired with facing high out-of-pocket payments, are substantial.

Confronted with income shortfalls and the risk of getting infected with the coronavirus, national and local lockdowns compel migrant workers to go back to their rural homes, sometimes under hazardous conditions (Sengupta & Jha, 2020, pp. 158–162). The first nationwide lockdowns (from March 25 to May 31) caused a flood of migrants attempting to return home. Estimates by the economist and demographer Amitabh Kundu and his colleagues put the number of internal migrants who returned home at around 12 million (Chishti, 2020). The issue was prominent enough for the national government to help individual states transport about 9.9 million migrants by means of designated buses and trains between May and June (Iyer, 2020). Unfortunately, the most vulnerable immigrant workers were unable to access these transportation opportunities as they were stranded in peripheral locations and on work sites, leaving them no alternative but to walk home (Srivastava, 2020, p. 18). A database of media-reported deaths in India up to July 3 showed that, out of the 961 deaths that resulted from the lockdowns (deaths resulting from Covid-19 infection not included), 209 were caused by walking long distances or during migration (Thejesh GN, 2020). Despite a large number of these migrants returning to their work sites in the unlock phase, news reports fear that the new wave Covid-19 and subsequent local lockdowns will cause another migrant push to rural India (Agarwal & Bellman, 2021; Gulati et al., 2021, p. 24; Naik, 2021; The Indian Express, 2021).

When returning home, migrants may find themselves in an even more vulnerable position due to the absence of social protection measures and health facilities in rural areas. First of all, media reports show that in rural areas there is often a lack of awareness of appropriate measures against Covid-19 or of what it means to quarantine. Furthermore, local efforts to inform rural residents about these matters are inadequate (Agrawal, 2020). Even when returning migrants and villagers are well informed, the quarantine arrangements in rural areas frequently fall short: they either involve being placed in poorly equipped quarantine centers or going into self-quarantine, for which many migrants lack the means (Sengupta & Jha, 2020).

Second, numbers show that rural areas severely lack health-care facilities compared to urban areas. Based on a nationwide survey conducted with 14,746 households from 12 different states, a report by the IMS Institute from 2013 revealed that inhabitants in rural areas all across India have to travel disproportionately further to access a health-care facility: 63 per cent of the rural population have to travel over 5 kilometers to access a hospitalization unit, compared to 26 per cent of the urban population (IMS Institute for Healthcare Informatics, 2013, p. 17). Moreover, the number of hospital beds in rural areas may be critically low. With data from the Directorate

General of State Health Services, a study by Ghosh and Dinda (2017, p. 110) reveals that the states whose rural areas have the fewest hospital beds per hundred thousand inhabitants are Bihar (5.685), Chhattisgarh (7.762), Uttar Pradesh (9.947), Haryana, (14.864), Madhya Pradesh (19.065) and Maharashtra (18.360). Three of these six states are among the top states home to inter-state migrants. Professor Kundu from the Research and Information System estimated that, based on the 2011 Census of India, Uttar Pradesh would rank first (accounting for 25 per cent of the inter-state migrants), Bihar second (accounting for 14 per cent) and Madhya Pradesh fourth (accounting for 5 per cent) (Singh & Magazine, 2020).

For rural areas, the threat of bad containment measures and inadequate health-care provisions is severe. Data from the Backward Regions Grant Fund, dedicated to the development of backward (rural) districts, shows that the contribution of the 243 backward regions for which data were available to the number of infections has risen from 11.2 per cent during the first Covid-19 wave to 16 per cent during the new second wave. Moreover, in absolute terms, the death toll from these regions has quadrupled compared to that of the first wave (Sinha, 2021; Ministry of Panchayati Raj, n.d.). Though the new wave has initially spread most rapidly in urban areas, the consequences of the second wave may be hardest felt in the less well-equipped and impoverished rural regions (Mehta & Jamkhandikar, 2021; Mitra et al., 2021).

Aside from serious health risks, another issue that awaits migrants when returning home is further income losses. In rural areas, poor households are typically unable to generate sufficient income from farming. With the nationwide lockdown falling exactly within the winter harvest season in 2020, rural families faced a shortage of labor and equipment and saw their crops being left unsold (Maggo, 2020). Based on key informant interviews among 1,515 farmers in two contrasting Indian states (Haryana and Odisha), Ceballos et al. (2020, pp. 1–3) found that, in both states, the majority (61 per cent and 74 per cent, respectively) could not sell their crops immediately upon harvest. Thus, migrant workers and their rural-based families have experienced a double-dip in income from both a lack of wages and salaries and a lack of produce sales.

Such a double-dip in income might lead to concerning levels of indebtedness. In a mixed-methods-based study including both data from the Networks, Employment, Debt, Mobility and Skills in India Survey and individual in-depth surveys from 2016 to 2017 distributed among 2,692 individuals across 15 rural villages in Tamil Nadu, Guérin et al. (2020, p. 11) shows that 99 per cent of the households were indebted, with a median of four outstanding loans per family and an average value of Rs. 58,000 (almost US$800) per loan. Informal interviews from the same study revealed that following the first-wave lockdown, families were pressured by lenders to pay back their outstanding debts and faced difficulties finding new sources of credit (Guérin et al., 2020, pp. 17–20).

4.1 | Cross-cutting dimensions

Certain dimensions, such as gender, religious status or caste, will affect one's vulnerability in the current crisis disproportionately. These cross-cutting dimensions often coexist with one's (informal) employment situation to create an even more vulnerable profile (Ray & Subramanian, 2020, pp. 46–47). We will touch upon three of these dimensions: gender, religion and caste.

First, women are likely to carry a higher burden during the current crisis than men. Despite only 20 per cent of all Indian women being employed, among those women who are employed, 90 per cent are involved in informal employment, thus facing the associated vulnerabilities (World Economic Forum, 2020, p. 28; International Labour Organization, 2018, p. 88). The current crisis

is likely to disproportionately affect their employment status. Based on the Centre for Monitoring Indian Economy's Consumer Pyramids Household Survey, drawing on data from 174,405 households nationwide, Ashwini (2020, pp. 3–4) found that women employed pre-lockdown were approximately 20 per cent less likely to be employed post-lockdown than pre-lockdown employed men. Estimating the effect of being female in rural areas on the risk of employment loss, another study finds that being a rural-based female increases one's chance of losing employment during the lockdown period by 75.7 per cent compared to being a rural-based male (Kesar et al., 2020, p. 22).

The vulnerability of women extends beyond a disproportionate loss of income. The literature suggests that, due to their lower social status, women in India are likely to suffer disproportionately from food shortages and price hikes, thus having higher chances than men of going hungry (Asadullah & Raghunathan, 2020; Global Hunger Index, 2010, p. 14). Moreover, women often suffer from additional health risks (and accompanying high out-of-pocket payments). Research suggests that Indian households are more likely to prioritize, and devote more resources to, the health-care needs of males than of females (Barcellos et al., 2014; Oster, 2006). Female-headed households are also more likely to suffer economically from a health shock. A study by Dhanaraj (2014, p. 15), which employs a logit model on a panel data set covering more than 3,000 households in the Indian state of Andhra Pradesh over 15 years, estimates that female-headed households faced an 80 per cent higher risk of experiencing such a welfare loss relative to male-headed households.

Muslims form another vulnerable group. First, they are more likely to be employed in vulnerable segments of the informal sector than other religious groups. According to the 2014 Post Sachar Evaluation Committee (PSEC)[4] report, a mere 23 per cent of the Muslim urban households earn their livelihoods through regular wage employment compared to 42 per cent of all urban households. Furthermore, their incidence of relying on non-agricultural self-employment is 25 per cent, compared to 14 per cent for Hindu households (PSEC, 2014, p. 14). Moreover, Muslims often lack access to social resources available to other vulnerable communities and suffer from a lower distribution of public welfare services and benefits, making it more difficult to cope with a loss of earnings (Pandya, 2010, pp. 16, 29). This could explain why, according to the Dhanaraj study (2014, p. 15), Muslim households have an estimated 26.5 per cent higher chance of welfare loss due to serious illness or death than other religious groups. They are also more likely to sell assets or borrow money to cope with such a loss, which in the long run is believed to increase their economic vulnerability even further (Dhanaraj, 2014, pp. 6, 17). Thus, the current Covid-19 crisis might deteriorate their already low economic status.

Third, Scheduled Castes (SCs, more commonly known as Dalits) are a particularly vulnerable constituency. Households belonging to this group are often reliant on low-paid informal jobs that require migrating or commuting to urban areas, thus exposing them to the vulnerabilities of informal employment (Ganguly, 2020). Estimates provided by the NSSO, based on surveys covering more than 2.5 million households in 2011/12, indicate that SCs account for the bulk of households dependent on income from casual labor (Ministry of Statistics & Programme Implementation, 2015, pp. 21–25). In addition, SC members had limited access to public benefits even before the crisis, and are likely to be in even more desperate need of them now (Ganguly, 2020). The study by Kesar et al. (2020, p. 34) revealed that 54 per cent of all SC members in the sample did not receive any type of cash transfer during the first nationwide lockdown, which is considerably higher than the percentage for the other socially disadvantaged castes, namely the Scheduled Tribes (46 per cent) and the Other Backward Classes (44 per cent). Unsurprisingly, then, SC members were more susceptible to going hungry than other groups.

Using a telephone survey among 164 rural households across 13 states, Niyati and Vijayamba (2020) reveal that the proportion of households with less than usual food consumption in September 2020 was higher among SC members (56 per cent) than among households belonging to other castes (42 per cent).

5 | POVERTY IMPACTS: INSIGHTS FROM HISTORICAL ANALYSIS OF POVERTY DYNAMICS

Documenting the poverty consequences of the Covid-19 crisis with formal statistical analysis is difficult due to the non-availability of the necessary household survey data. As noted above, some efforts have been made to produce interim results based on phone interviews, data on electricity consumption and via the recording of economic activity through night-lights data (Beyer et al., 2020; Kesar et al., 2020). However, insights are still very limited and piecemeal.

One additional potential direction is to analyze pre-Covid data to identify population groups in India that face a heightened likelihood of being chronically poor (i.e. long-term poor) or that face a heightened risk of falling into poverty even if currently non-poor. The working hypothesis here, is that vulnerability and chronic poverty observed during a period of rapidly rising living standards may point to population groups that are deprived in a fundamental sense, and are thus particularly likely to be hard hit when general economic conditions deteriorate.

Studying such poverty dynamics at the all-India level is difficult, however, as the data underpinning official poverty estimates in India come from cross-section rather than panel surveys. Dang and Lanjouw (2018) attempt to overcome this constraint by applying a "synthetic panel" method to NSSO data, and study welfare dynamics based on estimates derived from this approach. Their approach is outlined in the companion paper by Garcés-Urzainqui et al. (2021) included in this symposium issue. We build on their analysis to assemble potential insights into the population groups particularly exposed to the impacts of the Covid-19 crisis.

As described in Garcés-Urzainqui et al. (2021), a key parameter needed to produce point estimates of poverty transitions on the basis of the synthetic panel approach is the correlation over time of the error terms from consumption models estimated with the two cross-sectional rounds of data. The procedure for estimating this correlation from cross-section data is not uncontroversial, with some observers casting doubt on the stability and reliability of the estimate that results from it (Elbers, 2021; Herault & Jenkins, 2019). Fortunately, in an earlier exercise employing these methods, Dang and Lanjouw (2018) were able to validate NSS-based estimates of poverty dynamics for India employed in the present study by comparing them with those obtained from the India Human Development Survey (IHDS), an actual panel data set also covering the 2004/05–2011/12 period. They indicate that the error term correlation that they approximate using only cross-sectional NSS data is not far from that observed in the IHDS panel data. While the IHDS could directly support analysis of poverty dynamics, the overall sample size is smaller than that of the NSS, and the latter also underpin the official poverty estimates in India. For this reason it was preferred, in the present study, to apply the synthetic panel method to the NSS data rather than to base the analysis on the IHDS survey. Dang and Lanjouw (2018) show that at the national-level estimates of poverty mobility in India based on the IHDS and NSS line up very closely.

As indicated in Garcés-Urzainqui et al. (2021), poverty dynamics can be explored by dividing the population into two groups: one poor and the other non-poor. But the analysis can be expanded further by disaggregating the non-poor group into two groups: the "vulnerable" (those that are non-poor but still face a significant risk of falling into poverty) and the "secure" (or

"middle class"). These two groups can be distinguished on the basis of a "vulnerability line" that lies above the poverty line and that separates the two non-poor groups from one another. A common, but rather ad-hoc, approach is to arbitrarily scale up the poverty line by a certain factor to obtain such a vulnerability line. For example, in India, vulnerability has in the past been proposed to occur within a fixed income range between 1.25 times and twice the national poverty line in India (NCEUS, 2007). This approach has the advantage of being simple and easily communicated, but it appears to be based on no underlying rationale.

A recent approach proposed in Dang and Lanjouw (2017) instead derives the vulnerability line from a specified probability of the non-poor falling back into poverty. This approach estimates a vulnerability line that lies above the poverty line and below which the non-poor population faces an average risk of falling back into poverty equal to some predetermined level (designated by Dang and Lanjouw as the vulnerability index). The vulnerability index itself has to be specified upfront and can be based on various criteria, including budgetary planning, social welfare objectives, or relative concepts of well-being. In contrast to Pritchett et al. (2000) and Chaudhuri (2003), this approach to estimating vulnerability considers as "vulnerable" a segment of the population that is currently non-poor, treating this population segment as distinct from the currently poor (even though the poor are certainly also likely to be vulnerable in a deeper sense).

Dang and Lanjouw (2018) analyze the dynamics of poverty and vulnerability in India based on the synthetic panels procedure outlined above. Their analysis covers multiple rounds of data between 1987 and 2012. We report here their findings for the period 2004/05–2011/12 (Table 1). Dang and Lanjouw (2018) estimate a vulnerability line that is based on a vulnerability index of 20 per cent. In other words, they derive a vulnerability line such that the risk, on average, of those who are located between the poverty and the vulnerability line is 20 per cent. This analysis yields a vulnerability line based on the 2004/05–2011/12 synthetic panel interval equal to Rs. 770 in 2004/05 prices and can be compared to the rural India poverty line in 2004/05 of Rs. 447 per person per month.

Table 1 points to a fair amount of consumption mobility between 2004/05 and 2011/12. However, transitioning out of poverty and directly into the "secure" category is a very rare occurrence; most

TABLE 1 Welfare transition dynamics based on synthetic panel data, India, 2004/05–2011/12 (percent)

Vulnerability line corresponding to V-index of 0.2		2011			
		Poor	Vulnerable	Secure	Total
2004	Poor	17.8	15.1	3.6	36.5
		(0.0)	(0.0)	(0.0)	(0.1)
	Vulnerable	6.4	19.4	14.6	40.4
		(0.0)	(0.0)	(0.0)	(0.0)
	Secure	0.6	5.6	17.0	23.1
		(0.0)	(0.0)	(0.1)	(0.1)
	Total	24.8	40.1	35.1	100
		(0.0)	(0.0)	(0.1)	

Note: The vulnerability line is that which corresponds to a vulnerability index of 0.2 in 2004/05–2011/12 (i.e. Rs. 770). All numbers are in 2004 prices for all rural India. The rural India poverty line is Rs. 446.68 for 2004/05. All numbers are estimated with synthetic panel data and weighted with population weights, where the first survey round in each period is used as the base year. Bootstrap standard errors in parentheses are estimated with 1,000 bootstraps, adjusting for the complex survey design. Household head's age range is restricted to between 25 and 55 for the first survey and adjusted accordingly for the second survey in each period. Estimation sample sizes are 91,751 and 75,159 for the first and second periods, respectively.

Source: Dang and Lanjouw (2018).

"escapes" from poverty landed the poor into the category of the vulnerable. Between 2004/05 and 2011/12, just under 18 per cent of the population was estimated to be chronically poor (in the sense of being poor in both periods). Of the 37 per cent of the population estimated to be poor in 2004/05, therefore, roughly half (48.8%) was unable to escape from poverty. At the same time, while just over 40 per cent of the population could be considered vulnerable in 2004/05, an estimated 6.4 per cent had dropped back into poverty by 2011/12 and another 19.4 per cent continued to face a heightened risk of falling back into poverty. Given that the economy of India was growing particularly strongly during this interval, and that overall poverty fell markedly (from an estimated 37 per cent to 25 per cent for this subset of the population, comprised of households with household heads aged between 25 and 55), it seems reasonable to suppose that the chronically poor and vulnerable possess characteristics and attributes that would make them particularly likely to experience reversals during a period of generalized contraction. It is also plausible that many of these characteristics and attributes would persist over time. If so, acquiring a better sense of the characteristics of the chronically poor and the vulnerable between 2004/05 and 2011/12 might point to the population groups also most at risk during the current Covid-related economic downturn. Under that hypothesis we undertake such a profiling exercise below.

5.1 | Who are the chronically poor and the downwardly mobile?

Our interest here is in studying chronic poverty and vulnerability during a time of rapid economic growth and deriving from that exercise some insights into how the current Covid-19 pandemic might expose particular population groups to a heightened risk of poverty. In order to base our estimates on the actual experience of households during the 2004/05–2011/12 period, we present our findings in terms of the odds of belonging to the chronically poor and the odds of actually being downwardly mobile between 2004/05 and 2011/12.[5] In doing the latter we depart slightly from our concept of vulnerability, in that we look at the characteristics of those households who actually dropped into the status of poor in 2011/12 from the status of vulnerable or secure in 2004/05, combined with those households who fell into the status of vulnerable in 2011/12 from the status of secure in 2004/05. From Table 1 we can see that the average odds of downward mobility were thus 19.8 per cent (12.6/63.5 = 0.198). while the average odds of chronic poverty were 48.8 per cent (17.8/36.5 = 0.488).

We consider first in Table 2 the association between education and the odds of belonging to the category of either the chronically poor or the downwardly mobile. Table 2 indicates that the

TABLE 2 Profile of the chronically poor or downwardly mobile, 2004/05–2011/12: Education

Characteristics	Chronically poor	Downwardly mobile
Educational levels (odds)		
Less than primary education	1.064	1.139
Primary education	0.973	1.066
Middle school	0.903	1.009
Secondary education	0.757	0.857
College	0.762	0.542
Average odds	**1.000**	**1.000**

Note: Estimates show the difference between the probability of falling into each category relative to the mean chronic poverty and vulnerability rates of 48.8% and 19.8%.

education level of the household head is closely associated with both chronic poverty and downward mobility. Households in which the household head is uneducated, or has less than primary school completion, are more likely than average to comprise the chronically poor or to be downwardly mobile. Chronic poverty becomes less likely once the household head has primary schooling or higher. And as education levels rise, the likelihood of chronic poverty diminishes further. The odds of downward mobility, on the other hand, only diminish appreciably (falling below 1) once the household head has completed secondary schooling or higher. Even a little education thus seems to help protect against chronic poverty, but more than a minimum is needed to guard against a heightened risk of downward mobility. From this, one might infer that protection measures during the Covid-19 crisis should not fail to target those with moderate education levels as well. This is especially so since it is likely that overall education levels are likely to have increased since 2011/12.

Table 3 examines patterns of employment of heads of households and the odds of being chronically poor or downwardly mobile. Considering first the chronically poor, we see that on the whole rural workers have a higher than average odds of belonging to the chronically poor, while urban workers are less exposed. Among rural workers, only those employed in the "others" (non-labor) category have a lower than average odds of being chronically poor. Agricultural laborers in rural areas are particularly strongly linked to chronic poverty, while urban wage workers are least exposed. As noted above, the economic crisis induced by Covid-19 was particularly strongly felt, at least initially, by informal sector workers in urban areas. To the extent that the patterns prevailing in 2004/05–2011/12 continued to hold, it would appear that the poorest of the poor at the all-India level were not those who were initially hit the hardest by the crisis.

Looking at patterns of downward mobility in Table 3, we see that households headed by agricultural laborers were also particularly likely to experience downward mobility between 2004/05 and 2011/12, a time when rural incomes and employment were rising sharply. It is difficult to imagine that this vulnerability of agricultural laborers would not persist when the Indian economy experienced a sharp reversal as a result of Covid-19. In urban areas, urban wage workers had the lowest odds of downward mobility, consistent with the booming, urban-led, growth trajectory under way in India between 2004/05 and 2011/12.

Table 4 considers the likelihood of chronic poverty and downward mobility among different social groups between 2004/05 and 2011/12. Given that the Indian economy was growing strongly during this period, it is not surprising that Scheduled Tribes – the social group least

TABLE 3 Profile of the chronically poor or downwardly mobile, 2004/05–2011/12: Employment

Characteristics	Chronically Poor	Downwardly mobile
Employment sector of household head (odds)		
Rural self-employed in non-agriculture	1.030	1.128
Rural agriculture labor	1.095	1.205
Rural other labor	1.076	1.172
Rural self-employed in agriculture	1.026	1.128
Rural others	0.961	1.022
Urban self-employed	0.701	0.689
Urban wage work	0.680	0.645
Urban others	0.745	0.752
Average odds	1.000	1.000

Note: See explanatory notes to Table 2.

TABLE 4 Profile of the chronically poor or downwardly mobile, 2004/05–2011/12: Caste

Characteristics	Chronically poor	Downwardly mobile
Caste (odds)		
Scheduled Tribes	1.262	1.427
Scheduled Castes	1.071	1.125
Other Backward Castes	0.903	0.977
Other Castes	0.899	0.877
Average odds	**1.000**	**1.000**

Note: See explanatory notes to Table 2.

likely to be full participants in the modernizing Indian economy – experienced the highest odds of chronic poverty. Relative to the average, the odds of chronic poverty were more than 25 per cent higher for this group. Compared to the Scheduled Tribes, Scheduled Castes face lower odds of chronic poverty, but are still significantly more likely than average to experience such poverty. This ranking of deprivation between Scheduled Tribes and Scheduled Castes also carries over to downward mobility. Scheduled Tribes were particularly likely to experience downward mobility between 2004/05 and 2011/12, followed by the Scheduled Castes. The other caste groups in the Indian population (Other Backward Classes and other castes) faced lower than average odds of chronic poverty and downward mobility.

Table 5 indicates that Muslim households were only slightly more highly represented than Hindu households among the chronically poor during the 2004/05–2011/12 period. However, the likelihood of downward mobility among Muslim households was considerably higher than among Hindu households. This finding resonates with the earlier discussion of the vulnerable position of Muslims in India during the Covid-19 pandemic.

Table 6 examines the odds of chronic poverty and downward mobility by population groups defined in terms of dependency ratio. Households with a dependency ratio above 50 per cent are both slightly more likely than average to be chronically poor, and rather more likely than average to experience downward mobility.

We turn, finally, to the spatial distribution of chronic poverty and downward mobility across Indian states between 2004/05 and 2011/12. Table 7 indicates that of the major states, chronic poverty was relatively pronounced in Rajasthan, West Bengal, Jharkhand, Orissa, Chhattisgarh and Madhya Pradesh, and to a lesser extent Bihar. These are not states where Covid-19 outbreaks were initially recorded. Indeed, the states of Maharashtra and Delhi are often described as having been confronted early on by the Covid-19 crisis, but, with respective odds of chronic poverty between 2004/05 and 2011/12 of 0.932 and 0.715, would appear to have been relatively

TABLE 5 Profile of the chronically poor or downwardly mobile, 2004/05–2011/12: Religion

Characteristics	Chronically poor	Downwardly mobile
Religion (odds)		
Hindu	1.004	1.000
Muslim	1.016	1.080
Other	0.832	0.776
Average odds	**1.000**	**1.000**

Note: See explanatory notes to Table 2.

TABLE 6 Profile of the chronically poor or downwardly mobile, 2004/05–2011/12: Dependency ratio

Characteristics	Chronically poor	Downwardly mobile
Dependents as % of household members (odds)		
0%–25%	0.963	0.946
25%–50%	0.999	0.997
50% or higher	1.028	1.054
Average odds	**1.000**	**1.000**

Note: See explanatory notes to Table 2.

TABLE 7 Profile of the chronically poor or downwardly mobile, India, 2004/05–2011/12: Major states

Characteristics	Chronically poor	Downwardly mobile
Major States (odds)		
Jammu and Kashmir	1.011	1.054
Himachel Pradesh	0.989	1.058
Punjab	0.841	0.816
Chandigarh	0.744	0.633
Uttaranchal	0.968	0.984
Haryana	0.946	0.953
Delhi	0.715	0.659
Rajasthan	1.030	1.038
Uttar Pradesh	0.987	1.022
Bihar	1.005	1.068
West Bengal	1.047	1.050
Jharkhand	1.066	1.098
Orissa	1.083	1.096
Chhattisgarh	1.100	1.112
Madhya Pradesh	1.071	1.054
Gujarat	0.993	0.961
Maharashtra	0.932	0.903
Andhra Pradesh	0.986	0.993
Karnataka	0.974	0.962
Kerala	0.919	0.942
Tamil Nadu	0.917	0.913
Average odds	**1.000**	**1.000**

Note: See explanatory notes to Table 2.

well protected in this regard. This lends some further support to the contention that the crisis affected a relatively better-protected segment of the population – at least initially – than might have been feared. Again, however, this observation would need to be tempered by the fact that the large-scale migration back to rural areas following the lockdown originated largely from such cities as Delhi and Mumbai, and would thus drive rising poverty rates in rural areas of such poor sending-states such as Bihar, Jharkand, and Orissa.

When we examine the odds of downward mobility and consider those states with particularly large rural populations – regions within which there are fears that the Covid-19 virus has more recently been spreading – these are also the states with the highest chronic poverty rates during prosperous times: Rajasthan, West Bengal, Jharkhand, Orissa, Chhattisgarh, Madhya Pradesh, joined now also by Bihar, Uttar Pradesh and Himachal Pradesh. In these states, the odds of downward mobility were all greater than average during the 2004/05–2011/12 period. To the extent that our conjecture is correct – that scrutinizing poverty dynamics during good times offers a perspective on looming trouble-spots and particularly vulnerable groups during an economic downturn – we may take from this that poverty impacts in India will become more pronounced as the coronavirus spreads away from its initial points of entry into regions and among population groups that appeared initially to have been spared.

6 | CONCLUDING REMARKS

India is suffering deeply from the Covid-19 pandemic. Although the country had achieved major successes in its efforts to reduce poverty in the decades up to 2020, there are grounds for suspecting that the combined health and economic consequences of the spread of the coronavirus have brought that progress to a halt. It is reasonable to fear that progress in fighting poverty may have been significantly reversed.

Assessing the full implications of the crisis for poverty is hampered by the lack of solid evidence on poverty in the period immediately preceding the onslaught of the Covid-19 crisis. Systematic statistical evidence on the evolution of poverty in the face of the crisis is also still pending. However, this paper shows that the rapidly growing literature documenting the spread of the virus, the corresponding impact on health outcomes, and the economic repercussions of the lockdown measures aimed at slowing the spread, provides ample grounds for suspecting a significant impact on poverty. This literature also documents population characteristics and identifies population subgroups that are facing sharply falling living standards.

The numerous studies assembled and reviewed in this paper point to the particular vulnerability of informal sector wage workers in urban areas. The studies document the phenomenon of mass migration by laid-off temporary workers in urban centers – where the spread of the virus was first documented – back to their villages in rural areas. The literature further indicates that among those who have suffered a loss of employment and falling earnings, women, Scheduled Castes (Dalits) and religious minorities (notably Muslims) are disproportionately represented.

Because the greatest number of coronavirus cases have been documented in large urban centers such as Delhi and Mumbai, and because the phenomenon of mass migration has generally been of laid-off urban workers, one may be inclined to view the poverty impact of the Covid-19 crisis as largely confined to urban areas. There are grounds, however, for caution in drawing such a conclusion. First of all, the second Covid-19 wave has spread far more rapidly and widely into rural regions than was initially experienced in the spring of 2020. Further, it is widely acknowledged that documentation of the spread of the virus is less comprehensive in rural areas than in urban centers, due to fewer resources, lower capacity, and a greater unwillingness of the rural population to submit to testing and the possibility of quarantine. As a result, the current incidence of Covid infections is likely to be both surging, and undercounted, in rural areas. Furthermore, the consequences of a rise in infections may be more difficult to carry for these areas due to their underdeveloped health-care infrastructure.

Our analysis of poverty dynamics in India – based on pre-Covid experience during an episode of rapid economic growth and poverty decline – indicates, moreover, that the risk of chronic (long-term) poverty and the likelihood of falling into poverty are particularly high in rural areas, and in those states to which a majority of Covid-driven migrants are moving. Our analysis is premised on the notion that poverty persistence and downward mobility during periods of generalized prosperity can help point to likely "hotspots" and particularly at-risk population groups when economic downturns occur. We suggest, therefore, that while the initial impact of the Covid-19 pandemic was on sectors and population groups that were relatively less poor, as the crisis spreads and the economic consequences of the crisis continue to reverberate, it is likely that the poverty impacts will become increasingly acute. Absent comprehensive and effective policy interventions to combat these poverty impacts, we suggest that they will be increasingly visible in rural areas.

The world, and India, remain in the midst of an unprecedentedly severe health and economic crisis. Recent progress in the development and application of a vaccine against Covid-19 provides grounds for some optimism but is unlikely to dramatically alter circumstances on the ground for some time to come. The final consequences of the crisis on poverty are still unclear. There is a pressing need to continue to assemble and analyze emerging evidence to document the scale of the challenge and to identify those who are in greatest need of assistance. Policies must learn from emerging lessons and adapt in response to the evolving picture on the ground. Successful experience must be digested and documented, as it is not unlikely that new pandemics, calling for renewed intervention, will emerge in the future.

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ENDNOTES

[1] It should be noted that, in contrast to other countries, the number of PCR tests in India could not be isolated from the total number of tests performed, indicating that its test rate could also be based on other, less reliable tests (Our World in Data, 2021c). According to the *Hindustan Times*, the more unreliable rapid antigen test made up about 49 per cent of the tests in November 2020 (Hindustan Times, 2020). Furthermore, other news reports indicate that massive testing seems to be largely done in low-profile areas just to meet the high-testing target (Menon, 2020; Express Web Desk, 2020).

[2] See also the Oxford Covid-19 Government Response Tracker (OxCGRT, n.d.), which includes an index for the stringency of the government response to Covid-19. India's government response received a score of 86.57 out of 100 'stringency points' the day the first lockdown was announced. The following days this score rose quickly to 100.

[3] Srivastava employs the 2004 National Classification of Occupational categories as defined by the National Career Service project, which is based upon the level of skill and education necessary to perform the occupation. The lowest five out of nine categories are: (5) service workers and shop and market sales workers; (6) skilled agricultural and fishery workers; (7) craft and related trades workers; (8) plant and machinery operators and assemblers; (9) elementary occupations (Srivastava, 2020, p. 10; Ministry of Labour & Employment, 2015, pp. 4–14).

[4] The PSEC is a committee set up by the Prime Minister's Office on Socio-Economic and Educational Status of the Muslim Community in India to evaluate the socioeconomic conditions of Muslim Indians (PSEC, 2014). The PSEC uses national data sets (such as from the NSSO) to infer its results.

[5] The data that support the findings of this study are available from the corresponding author upon reasonable request.

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