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COVID-19: Emergence, spread and its impact on the Indian economy and migrant workers



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COVID-19: Emergence, spread and its impact on the Indian economy and migrant workers

Ashok Gulati, Shyma Jose and B.B. Singh

Abstract

This study examines the impact of the Covid-19 pandemic and the related nationwide lockdown on the Indian economy, particularly on food systems. It also takes up an important issue of millions of migrant workers in India who seem to have suffered the most during this period. The loss of their livelihood, incomes, and food insecurity are captured through a survey of 2917 migrant workers in six different states of India. At the end, the study gives recommendations on how to broaden the support for migrant workers nationwide.

Due to the pandemic-induced lockdown, the Indian economy contracted 24 percent in the first quarter of the financial year (FY) 2020-21 (April-June). The worst affected sectors were construction, trade and hotel and other services, and manufacturing. Consequently, the unemployment rate surged to 23.5 percent in April 2020. Given the easing of lockdown and measures taken by the government in the wake of the first wave of the pandemic, the economic growth revived to -7.5 percent in the second quarter of FY 2020-21. The food processing industry particularly manufacture of grain milling products, dairy products and animal and vegetable oil, were resilient during the lockdown. However, the pandemic adversely impacted the processing and preservation of meat, fruits and vegetables. Notably, the agricultural sector is the only sector that recorded a positive growth rate of 3.4 percent during the first two quarters of FY 2020-21. Nevertheless, the disruption of the agri-food supply chain, particularly during the initial period of the lockdown, pushed food inflation from 8.8 percent in March 2020 to 11.7 percent in April 2020, but it came down to 3.4 percent by the end of the third quarter (December) of FY 2020-21.

The unprecedented migrant crisis was one of the major catastrophes that emerged during the pandemic. The sudden imposition of the lockdown had a severe impact not only on employment but consequently on the earnings and savings of the migrants once they reached their villages. At their native place, with no proper employment opportunities, the household income of migrants fell by 85 percent during June-August 2020, as per the survey findings. With the revival of economic activities post-lockdown, we found that 63.5 percent of migrants have returned to the destination areas by February 2021, while 36.5 percent were still in their villages at their native places. Although the migrant's household income has increased after remigration, there is still a contraction of 7.7 percent relative to the pre-lockdown level. The household income of the migrants who are still at their native place post-lockdown contracted more than 82 percent compared to pre-lockdown.

To revive the economy and provide support to vulnerable populations, the central government announced a series of packages. These included an additional quantity of subsidised food-grains under the Public Distribution System (PDS), cash transfers through Jan Dhan Yojana, free gas supply under the *Ujjwala* scheme, an ex-gratia to widow/senior citizen as well as income transfer to farmers under *PM-Kisan*. Overall, our survey showed 84.7 percent of the migrants had access to subsidised cereals under PDS, while the percentage receiving pulses was much lower at 12 percent during November-December 2020. Moreover, only 7.7 percent of migrants in their native place reported being engaged in Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) or any other public work. The demand-driven skill training under GKRY reached only 1.4 percent of migrants at their native place in our survey. Many workers reported a fall in the quality of food consumed during the lockdown and post-lockdown compared to the pre-lockdown level. With no access to relief measures and entitlements, a quick recovery of the migrant workers seems grim.

Keywords: Covid-19, lockdown, food system, migrants, India

JEL codes: H55, I15, I18, J61

Executive summary

The outbreak of Covid-19, starting with Wuhan in China in late 2019, intensified and spread worldwide. It has impacted several economies badly, including advanced economies such as the USA and many European countries. India recorded the highest single day Covid cases (315,925) in the world, surpassing Brazil and the US (as of April 21st, 2021). However, in terms of per million population, the country recorded one of the lowest infection (8436 confirmed cases per million) and fatality rates (118 deaths per million) (as of March 9th, 2021).

This study examines the impact of the Covid-19 pandemic and consequent nationwide lockdown on the Indian economy, particularly on food systems. More specifically, it attempts to empirically capture the effect of Covid-19 on overall economic growth, agriculture, food industry, food inflation, etc., since the nationwide lockdown started on March 24, 2020. Besides this, it also takes up an important issue of millions of migrant workers in India who seem to have suffered the most during this period of lockdown. The loss of their livelihood, incomes, and food insecurity are captured through a survey of 2917 migrant workers in six states of India. These states are - Uttar Pradesh, Bihar, Jharkhand, Odisha, Chhattisgarh, and West Bengal, which generally contribute to about two-thirds of the migrant labour force in the country. And finally, there is an essential question about what role the government played in alleviating the distress of the most vulnerable sections of the population in ensuring their livelihoods and food security? These are some of the questions addressed in this study.

Indian government declared a stringent lockdown on March 24th, 2020, at a notice of just four hours, to control the pandemic. The cessation of economic activities disrupted the supply chains and production networks, resulting in an overall decline in output growth, a significant increase in unemployment and reduced earnings and savings, which threatened the food and livelihood security of millions of workers in the country.

Due to the pandemic-induced lockdown, the Indian economy contracted 24 percent, the lowest quarterly growth, during the first quarter of the financial year (FY) 2020-21 (April-June). (FY in India runs from April 1st to March 31st). The worst affected sectors were construction, trade and hotel and other services, and manufacturing. The Index of Industrial Production (IIP) also experienced a sizable contraction of 55.5 percent in the first half of FY 2020-21 (April – September), reaching its historical low with most of the industries being closed down. Consequently, the unemployment rate surged to 23.5 percent in India in April 2020 (CMIE, 2020).

Given the easing of lockdown and measures taken by the government in the wake of the first wave of the pandemic, the economic growth revived to -7.5 percent in the second quarter of FY 2020-21 (July-September), registering a V-shaped recovery. Within the manufacturing sector, the examination of IIP for manufacturing food products reflects that the food processing industry particularly manufacture of grain milling products, dairy products and animal and vegetable oil, were resilient during the lockdown. However, the pandemic adversely impacted the processing and preservation of meat and fruits and vegetables during the lockdown.

Notably, the agricultural sector is the only sector that recorded a positive growth rate of 3.4 percent during the first two quarters of FY 2020-21, providing a cushion to keep the rural economy afloat during the Covid-19 pandemic. A bumper food-grain production of 303.3 million tonnes in 2020-21, remarkable procurement operation (39 million tonnes of wheat in *rabi* marketing season (RMS) 2020-21 and 46 million tonnes of rice in the ensuing *khariif* marketing season (KMS) 2020-21 coupled with favourable monsoon contributed significantly to agricultural growth. Similarly, a steep increase in tractor sales (17.35 percent) and farm exports (9.8 percent) between April-December FY 2020-2021 over the same period of FY 2019-2020 also helped revive the agricultural sector and the rural economy. However, the disruption of the agri-food supply chain, particularly during the initial period of the lockdown, pushed food inflation (measured by consumer price index (CPI)) from 8.8 percent in

March 2020 to 11.7 percent in April 2020, but it came down to 3.4 percent by the end of the third quarter (December) of FY 2020-21.

The unprecedented migrant crisis was one of the major catastrophes that emerged during the pandemic. The government was caught unaware as it did not have accurate information on the number of migrants who needed support. Although the government stated that the number of reverse migrants stood at 10.4 million in September 2020, it seems underestimated, according to various studies. The sudden imposition of the lockdown had a severe impact not only on employment but consequently on the earnings and savings of these migrants once they reached their villages. At their native place, with no proper employment opportunities, the household income of migrants fell by 85 percent during June-August 2020, as per the survey findings.

With the revival of economic activities post-lockdown, we found that 63.5 percent of migrants have returned to the destination areas by February 2021 (Phase 3 survey), while 36.5 percent were still in their villages at their native places. Notably, Bihar recorded the highest percentage of migrants returning to the destination post-lockdown at 92.5 percent. In comparison, the migrants from West Bengal (40.3 percent) and Jharkhand (31.2 percent) were hesitant to return to the destination area post-lockdown. Although the migrant's household income has increased after remigration, there is still a contraction of 7.7 percent relative to the pre-lockdown level. The household income of the migrants who are still at their native place post-lockdown contracted more than 82 percent compared to pre-lockdown.

To revive the economy and provide support to the vulnerable population, the central government announced a series of packages. These included an additional quantity of subsidised food-grains under the Public Distribution System (PDS), cash transfers through Jan Dhan Yojana, free gas supply under the *Ujjwala* scheme, an ex-gratia to widow/senior citizen as well as income transfer to farmers under PM-*Kisan*. Notably, the central government also launched *Garib Kalyan Rozgar Yojana* (GKRY) to generate employment opportunity in rural areas in six states with a high concentration of reverse migrants.

Did the schemes reach the targeted population, and how effective were these schemes to mitigate the pandemic's negative impact? Overall our survey showed 84.7 percent of the migrants had access to subsidised cereals under PDS, while the percentage receiving pulses was much lower at 12.2 percent during November-December 2020. Moreover, only 7.7 percent of migrants in their native place reported being engaged in Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) or any other public work. It may be that the migrant workers were not ready to work in MGNREGA schemes where wages were as low as about 40 percent of what they used to get at their place of work, or it may be that MGNREGA did not have its total reach. The demand-driven skill training under GKRY reached only 1.4 percent of migrants at their native place in our survey. Many workers reported a fall in the quality of food consumed during the lockdown and post-lockdown compared to the pre-lockdown level. With no access to relief measures and entitlements, a quick recovery of the migrant workers seems grim.

The study recommends a) scale of permissible work under MGNREGA could be broadened to absorb the wide range of skilled and unskilled migrants, b) skill mapping of the migrants could be conducted at *Gram Panchayat* or block levels to provide employment on a demand-driven basis under GKRY, c) create a local platform at the *Gram Panchayat* level to register and connect these workers and employers so that they get the opportunity to work closer to their home, d) eastern states in India require a massive reconstruction programme - like Roosevelt's New Deal, to build infrastructure, agricultural markets and rural housing and in the long run, alleviate distress migration e) implementation of 'One nation, one ration card' with an option to receive cash or grain in kind, needs to be fastened for the portability of PDS entitlements at the destination f) a universal social protection programme is crucial to provide cushion to the vulnerable section against uncertainty and, g) lastly, a periodic database on migrant workers, say every five years, must be carried out, for any meaningful policies based on this data.

Preface

Covid-19 has caused unprecedented health and economic shock across the world. To control the spread of the pandemic, many countries imposed partial or complete lockdowns during the first wave of Covid-19. India also declared a stringent nationwide lockdown on March 24th, 2020. Given that the country took early lockdown measures, India was able to delay the peak of its first wave of Covid-19 infections (98,000 daily new cases) until mid-September 2020. Infection rates declined to less than 9,000 new cases only during the first week of February 2021 (MoFHW, 2021).

But this resulted in a heavy economic loss. The disruption of economic activities and supply-chains caused a considerable decline in GDP growth (down by almost 24 percent in first quarter (April-June) of FY 2020-21), and a significant increase in unemployment, threatening livelihood security of millions of workers in the country. Migrant workers were the worst-hit.

With the easing of the lockdown and prompt measures by the government to address supply-side shocks, the economy and other major sectors started to recover by the second quarter of the FY 2020-21. The approval of the Covid-19 vaccines and the inoculation drive in India had raised hopes to not only control the outbreak of the virus, but also increase the momentum of economic revival.

However, the general public and the government were again caught unaware by the sudden surge in new Covid-19 cases during March 2021. With the single-day spike reaching 315,925 on April 21th, 2021, India's second wave of Covid-19 seems much stronger and more intense than the first one. Notably, the spike in the daily Covid-19 cases is now three times that of the highest daily cases recorded during the first wave. The emergence of a double mutant in Maharashtra, and lowering of guards against Covid-19 by the public as well as by the government led to a frightening spike, almost like a tsunami, of new cases, so much so that the health system came to a brink of collapse. Mumbai and Delhi had to announce weekly lockdowns to control the situation, and many other states may follow soon. The fear of a full lockdown has again triggered an exodus of migrant workers from industrial centres and cities to their native villages.

The present study offers important policy lessons for the administration of the ongoing second wave based on the examination of the first wave of Covid-19 infections. Specifically, this study examines the effect of Covid-19 on overall economic growth, agriculture, food industry, food inflation, etc. during the first wave. The paper also discusses the impact of the pandemic on migrant workers using a survey of 2917 migrants in six states, namely Bihar, Chhattisgarh, Jharkhand, Odisha, Uttar Pradesh and West Bengal. These six states accounted for two-third of the reverse migrants during the first lockdown. The survey was conducted in three phases: Phase-1 between June and August 2020; Phase-2 between November and December 2020; and Phase-3 during the last week of February 2021, to capture the varying degrees of vulnerabilities among the migrants prior to, during, and after the first lockdown. The three rounds of the survey were conducted in collaboration with the Inferential Survey Statistics and Research Foundation (ISSRF).

The potential impact of the second wave of Covid-19 infections is not studied here. It will take another 3-4 months before things get clear on that front. But lessons from the first wave may come in handy when dealing with the second wave.

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1 Introduction

Novel Coronavirus (Covid-19) has caused an unprecedented health crisis and economic shock across the world. Many governments imposed complete or partial lockdowns to control the outbreak, which resulted in economic recessions with a surge in unemployment, disruption of the supply chains and food systems. According to the International Monetary Fund's (IMF) World Economic Outlook (January 2021), the global economy is estimated to have contracted 3.5 percent during 2020. Notably, the pandemic has increased the vulnerabilities of millions of workers with a decline of 10.7 percent (equivalent to US\$ 3.5 trillion) in the global labour income during the first three quarters of 2020, as compared to the same period in 2019 (International Labour Organisation (ILO), 2020). Further, the pandemic induced employment and income loss has transcended into food and livelihood insecurities.

At the macro level, the nationwide lockdown in India resulted in the complete halting of economic activities, affecting the supply chains and production networks with an overall decline in output growth. Consequently, on the demand side, there was a significant increase in unemployment, reduced earnings and savings, which increased the large-scale vulnerabilities of millions of workers (Sahoo, 2020, Dev, 2020, Debuquet et al., 2020).

Against this backdrop, we try to assess the impact of the Covid-19 pandemic on the Indian economy. While our main objective is to study the potential effects of the lockdown on the major sector of the Indian economy, particularly on the food systems, including food supply chains, food production and procurement and food industry, we have also discussed the government responses for these sectors in the wake of the first wave of pandemic. One of the most inhumane crises that emerged in India during the lockdown has been the unprecedented reverse migration. This impacted the income and consumption of one of the most vulnerable sections of society. Therefore, we also discuss in detail the migrant crisis as well as evaluate measures taken by the centre and various state governments to minimise the negative impact of the pandemic on this vulnerable population.

The pandemic is still coming back with second and third waves, and available real-time information on the migrants is incomplete. Thus, the present study tries to study the impact of the pandemic on migrant workers using a telephonic survey of migrants across six states: Bihar, Chhattisgarh, Jharkhand, Odisha, Uttar Pradesh, and West Bengal. The survey was conducted in three phases between 30th June and 15th August 2020, 7th November and 30th December 2020 and the last week of February 2021. The three rounds of the survey, conducted in collaboration with the Inferential Survey Statistics and Research Foundation (ISSRF), captures the varying degrees of vulnerabilities among the migrants prior to, during, and after the lockdown.

Based on the present study's findings, we present some policy lessons for India and other developing countries for future administration of such a pandemic.

The paper is divided into five sections. Section 1 briefly introduces the study's objectives and focuses on the emergence and spread of the Covid-19 pandemic in the global context and India. Section 2 analyses how the nationwide lockdown impacted the overall economy and broad sectors, and specifically on the food production, procurement and processing industry. Section 3 highlights the centre's and selected state government's responses and policies to mitigate the pandemic's negative impact. Section 4 examines the implication of the pandemic on labour migration using the findings of the survey, and in Section 5, we put forward some policy recommendations to deal with such a pandemic in future.

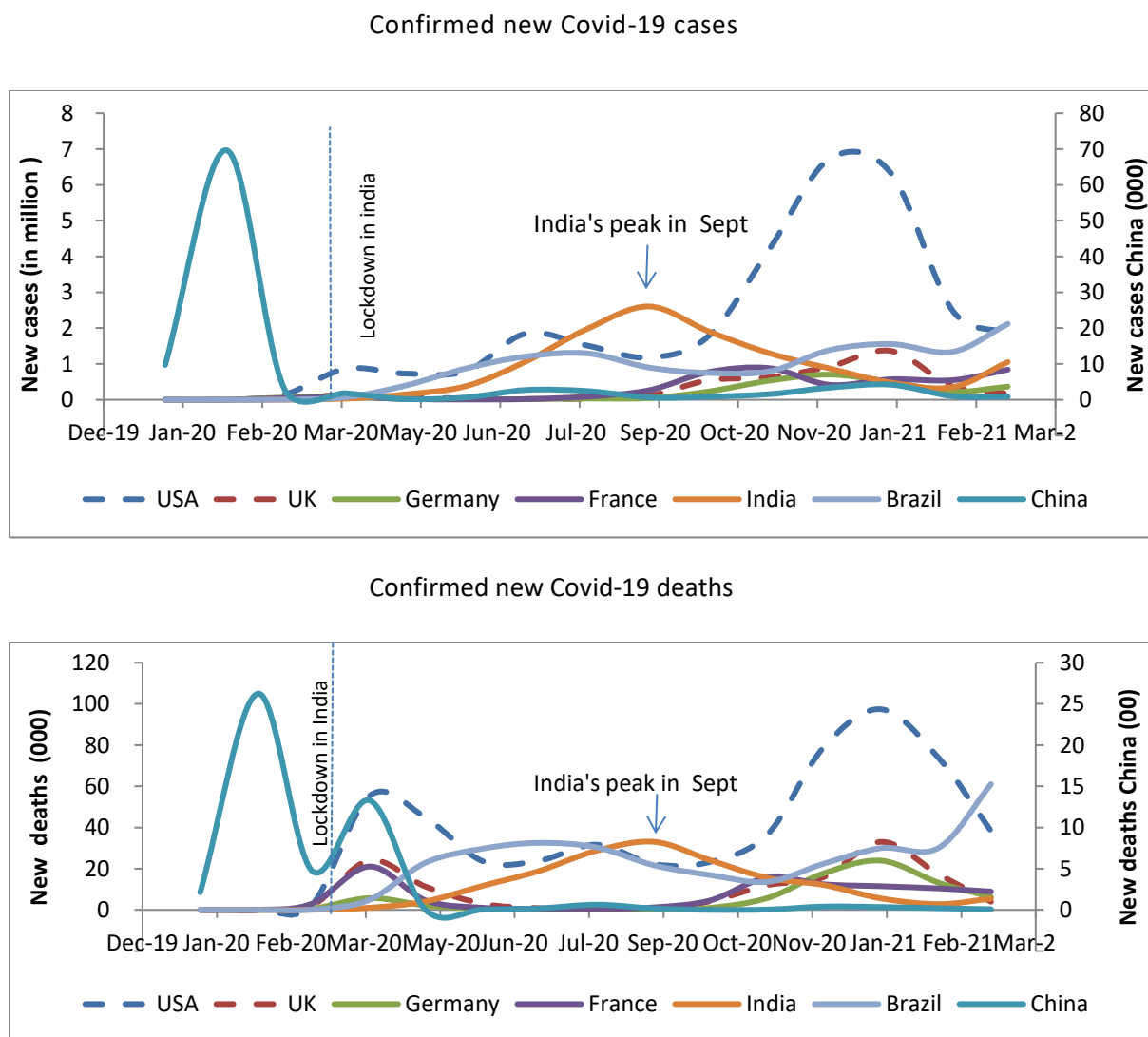
1.1 The Covid-19: Emergence and global spread

The emergence of Covid-19 and its spread created severe health and economic shocks across the globe. Covid-19 first emerged in Wuhan, China, in late 2019. Since then, the pandemic has intensified

and spread through different trajectories across 220 countries in terms of confirmed cases, fatality and recovery rates (Economic Survey 2020-21). The outbreak of Covid-19 to the rest of the world prompted the World Health Organization (WHO) to declare it a pandemic on March 11, 2020.

Figure 1 shows the global spread of Covid-19 cases and fatality across selected countries. Since the first outbreak of Covid-19 in China, the country experienced its first wave of Covid infections and death during February 2020. However, since then, China has controlled the spread of the disease, if their data is to be believed. The advanced economies such as the USA, UK, Germany and France have been impacted disproportionately, with the USA and UK experiencing their third waves, both in Covid cases and deaths.

Figure 1: COVID -19 infection waves across selected countries



On the other hand, India experienced its first wave and peak during mid-September with 98 thousand new cases (on September 17th, 2020) since its first Covid case on January 30, 2020. Despite an early and stringent lockdown, India has the second-highest number of Covid-19 cases in the world after the United States, crossing 15.6 million, as of April 21th, 2021 (WHO Covid-19 Global Data, 2021).

However, the examination of per capita infection and fatality rates reflects that India recorded one of the lowest Covid cases (8436 confirmed case per million) and fatality rates per million population (118

death per million) on March 9th 2021. Not just that, the fatality rate in India is lower than the world average of 332 per million population. On the other hand, advanced countries such as the United States and the United Kingdom as well as Brazil recorded an alarmingly high infection rate and death rate per million population.

An important measure to tackle the Covid-19 spread is conducting the test on a completely unbiased and random national sample. In India, albeit the initial strategy adopted was reactive testing, i.e., testing the patients with symptoms, the approach has been amended towards comprehensive surveillance. As of Oct 5th, 2020, India exceeded the 140 tests per day per million populations, as advised by the World Health Organization (WHO) (ToI, 2020). Although India has ramped up its testing rate, it is still lagging compared to the advanced countries like the USA, UK, Germany, and Brazil and South Africa (see Appendix A1). With a relatively low testing rate, India may be undercounting the actual cases and needs a comprehensive testing strategy to control the spread.

1.2 Spread of the pandemic in India

The spatial trend of Covid-19 cases across Indian states and territories (as of March 9th, 2021) is illustrated in Figure 2. During the initial stages of the pandemic, the outbreak of the Covid-19 mainly concentrated in the western and northern parts of the country (Economic survey 2020-21). Notably, Maharashtra has been one of the worst affected states, with the highest number of Covid infections and death in India (Figure 2). However, Goa has the highest Covid cases per capita. At the same time, Odisha¹, Uttar Pradesh, Rajasthan and Kerala recorded lower fatality rates per capita (see Appendix A2). To effectively control the pandemic's spread, India has ramped up its testing strategy with 0.17 million tests per million of population. Across states, testing per capita is better in Delhi, followed by Goa, Kerala, Karnataka and Andhra Pradesh (see Figure 3).

Figure 2: Spatial trend of Covid-19 incidence in

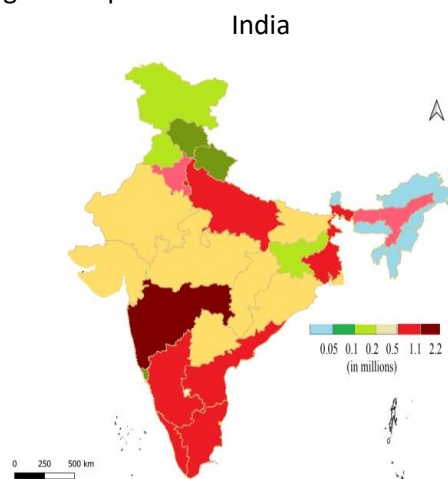
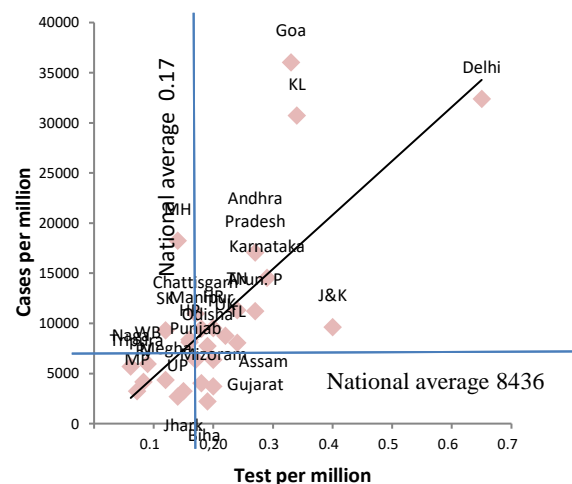


Figure 3: Ramped-up Covid-19 testing



Source: <https://www.Covid19india.org/> (as on March 9th, 2021)

¹ The state of Odisha has managed to remarkably contain their fatality rates from Covid-19 through incentivizing quarantine scheme which offers Rs 15000 to the people who complete the stipulated quarantine (Ray and Subramanian 2020).

2 Nation-wide lockdown and its impact on the economy

Before examining the pandemic's, macroeconomic implications and discussing the economic policies adopted to mitigate the economic shock, we discuss the lockdown strategy adopted to flatten the epidemiological curve.

Many countries declared full or partial lockdown to control coronavirus spread and prevent their health systems from being overwhelmed. India also adopted a scenario-based approach to assess and minimise the impact of Covid-19. On March 24th, 2020, at a notice of about four hours, the Indian Government declared a stringent nationwide lockdown. The lockdown was announced when the number of cumulative Covid-19 cases² and deaths were around 519 and 9, respectively (WHO Covid-19 Global Data, 2020). The rationale for an early nationwide lockdown was primarily to ramp up testing facilities, set up quarantine centres, treatment facilities, isolate the confirmed patients and reduce the Covid-19's spread.

The stringent nationwide lock-down in India was imposed in four phases. In the first phase (25th March-14th April 2020), the government had shut down the entire economy - all non-essential services, the agricultural and non-agricultural sector, educational institutions, along with all means of transport. In the second phase (15th April – 3rd May), economic activities were permitted in agricultural and allied sectors, manufacturing units of pharmaceuticals, medical devices and construction of medical facilities and work under Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA). On May 1, 2020, the Centre issued guidelines permitting the inter-state movement of migrant labour and stranded persons by special trains. In the third (4th-17th May) and fourth phase (18th-31st May), several activities had resumed and the lockdown was restricted to only Red zones districts³ and containment zones, respectively.

After 68 days, on May 31st, 2020, the government announced Unlock 1.0 for the phased reopening of the economy, except in the containment zones. Subsequently, the lockdown was relaxed in a phased manner, and measured relaxation was allowed in regions outside the containment zone. The non-essential establishments and activities, including hotels, restaurants, hospitality services, metro rail, domestic flights, and shopping malls, have resumed following the easing of lockdown restrictions.

The sudden imposition of the lockdown in India had a drastic impact on the economic front, leading to a total collapse of the economy, rendering millions jobless. Due to the pandemic induced lockdown, the Indian economy is estimated to have contracted 8 percent during the FY 2020-21 (April-March), according to the World Economic Outlook (January 2021). The quarterly growth rate of overall GDP and broad sectors till the second quarter of FY 2020 is shown in Figure 4. The Indian economy was already experiencing a decelerating GDP growth, a significant decrease in industrial output, a decline in private investment and a fall in tax revenues much before the pandemic's emergence (Kishore, 2020). The quarterly growth of GDP's has been falling continuously since the fourth quarter (Q4) of the FY 2017-18.

The April-June quarter of 2020-21 recorded the lowest-ever economic growth, with the GDP contracting by 23.9 percent and plunging into a technical recession. This staggering decline in GDP's growth rate reflected the closure of all the economic activities owing to the nationwide lockdown. The pandemic's overall impact on the economy depended on the government's measures and the extent to which intermittent lockdowns were required in the country's different regions (Dev and Sengupta, 2020). In the second quarter of FY 2020 (July to September), GDP's growth contracted 7.5 percent, with the lockdown restrictions being eased. Although opening up the economy led to a partial recovery, the full revival would depend on this recovery's momentum. Given the measures taken by

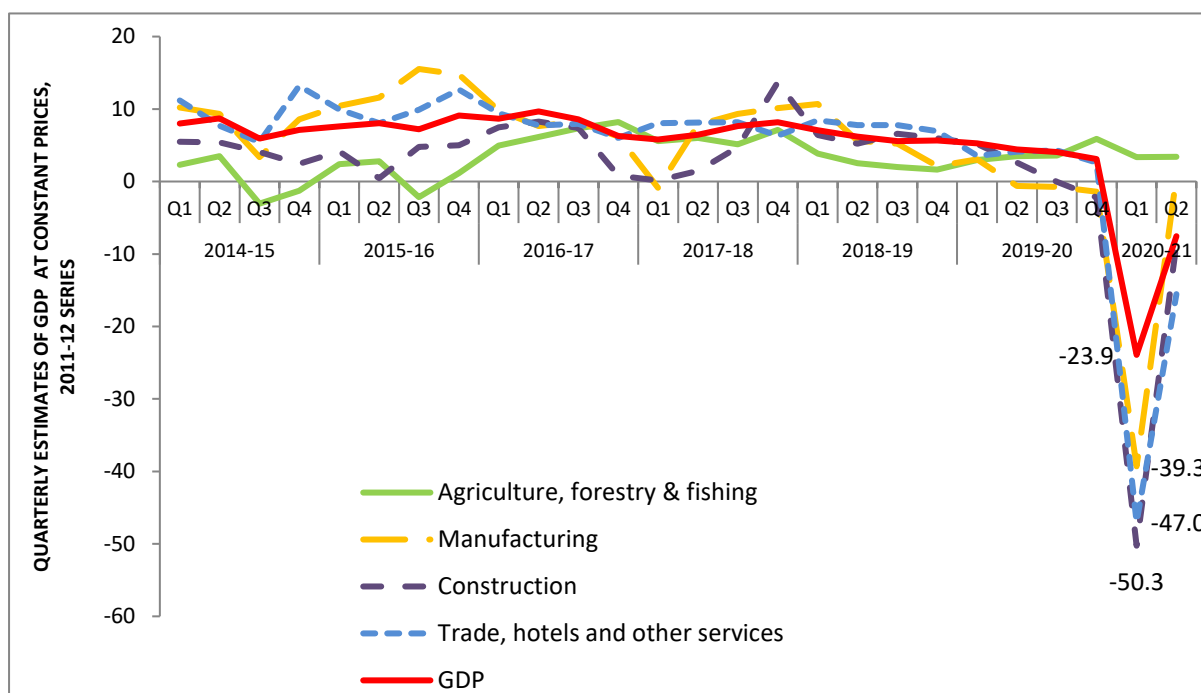
² The first Covid-19 case was confirmed in India on January 30, 2020.

³ The districts in India were divided into three zones- Red, Orange and Green, based on the concentration of Covid-19 cases.

the government in the wake of the first wave of the Covid-19 pandemic, the recovery of India's GDP during the first two quarters of FY 2020-21 have been sharp V-shaped.⁴

All the significant sectors barring agriculture, recorded negative growth in the first quarter of FY 2020-21. The worst affected sectors were construction (contracted 50.3 percent), trade, hotel and other services (-47 percent) and manufacturing (-39.3 percent). Like GDP, these sectors also registered a V-shaped recovery in the second quarter of FY 2020-21. Notably, the agricultural sector is the only sector that recorded a positive growth rate of 3.4 percent during the first two-quarters of FY 2020-21, higher than that of 3 percent in the first quarter of FY 2019-20.

Figure 4: Quarterly estimates of the growth rate of GDP at constant 2011-12 prices



Source: MOSPI, GoI

2.1 Impact on the agricultural sector

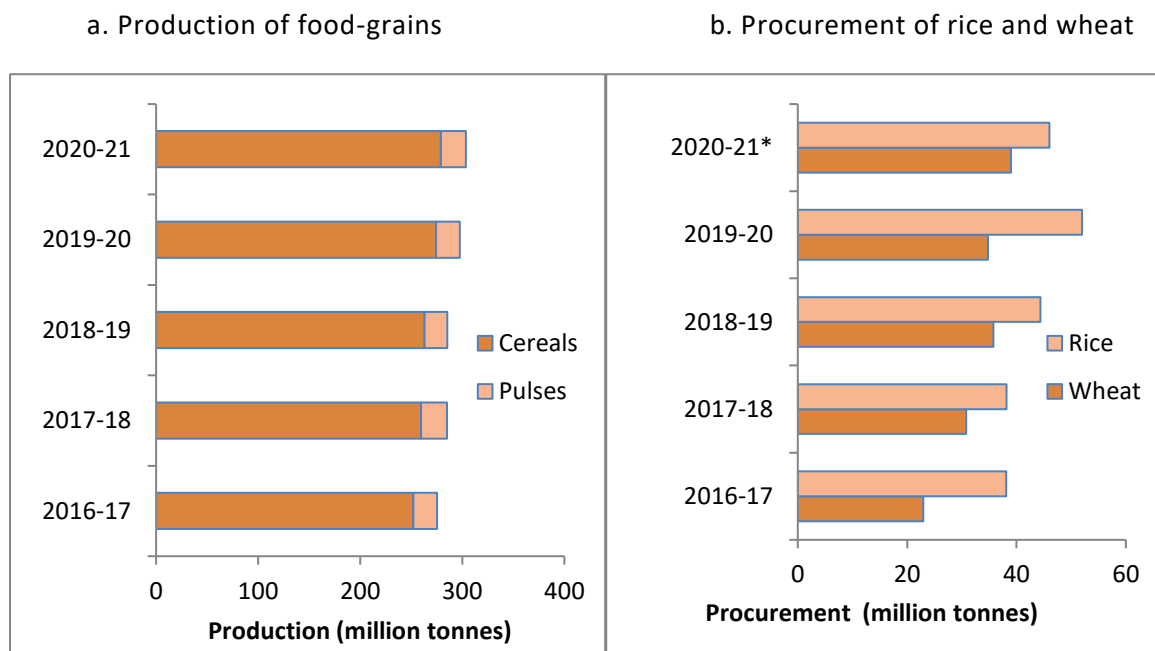
With a positive growth rate of 3.4 percent during the first two-quarters of FY 2020-21, the agriculture sector has provided a cushion to keep the rural economy afloat during the Covid-19 pandemic. Due to the government's prompt measures to restore the disruption of the supply chain and ensure smooth sowing operation during the pre-monsoon and monsoon period, the agriculture sector has been resilient to the pandemic-induced lockdown. Furthermore, remarkable agricultural production, increased tractor sale⁵ and fertilizer production coupled with increased acreage during *Kharif* season due to favourable monsoon contributed significantly to agricultural growth (Sharma, 2020; Gupta 2020). In 2020-21, the food-grain production reached 303.3 million tonnes (according to the 2nd Advanced Estimates), which included 120.3 million tonnes of rice and 109.2 million tonnes of wheat (see Figure 5). In 2020-21, the production of rice and wheat has been the highest in the last fifteen years. Even sugarcane and cotton recorded a significant increase in production from 370 million

⁴The revival in domestic demand is also reflected in the collection under goods and services tax (GST) which surpassed Rs 1 trillion signalling revival of revenue in the economy (see Appendix A3).

⁵ Tractor sales registered the highest year-on-year growth of 17.35 percent in FY 2020-2021 (April to December 2020) as compared to FY 2019-2020 (See Appendix A5).

tonnes to 398 million tonnes and 36 million bales to 36.5 million bales, respectively, from 2019-20 to 2020-21.

Figure 5: Production of food-grains and procurements of rice and wheat over the last five years



Source: Production data from the DES, and procurement data from the website of Food Corporation of India & DFPD.

Note: * as on 23.3.2021 for rice and as on 27.02.2021 for wheat

Likewise, unabated procurement operation, stocking up of food-grain buffers and channelizing the supply during the initial stage of the pandemic also helped revive the agricultural sector and the rural economy. The wheat procurement (39 million tonnes) from farmers across the country has been highest in the *rabi* marketing season (RMS) 2020-21 compared to the last five years. The rice procurement in *Kharif* marketing season (KMS) 2019-20 was 52 million tonnes against 44 million tonnes the previous year. In the ensuing KMS 2020-21, around 46.0 million tonnes of rice have been procured from farmers across the country as on March 23rd, 2021.

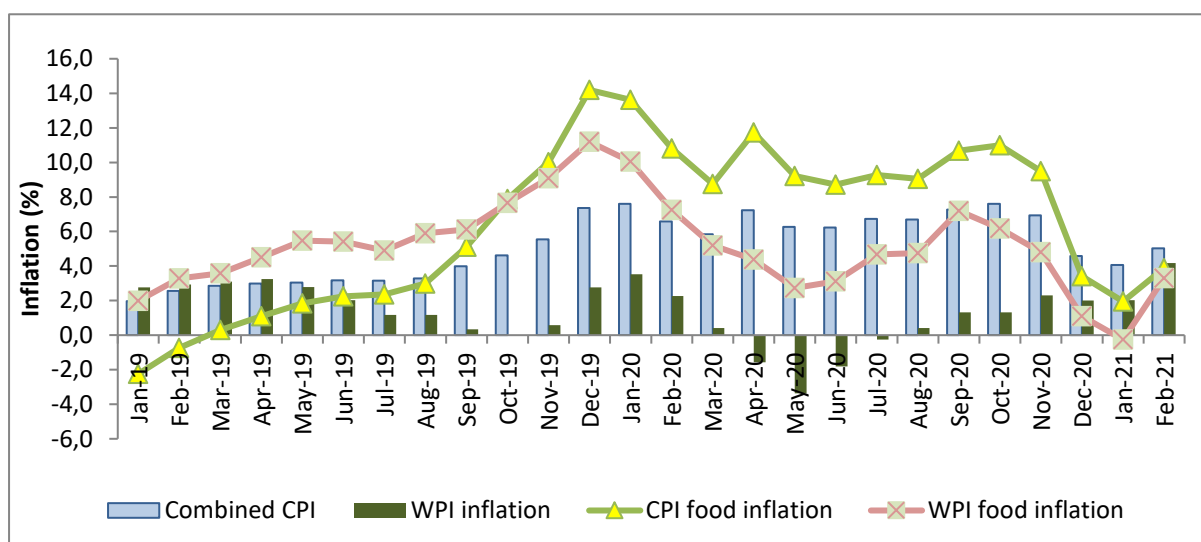
Another significant factor to have positively impacted the agricultural sector during FY 2020-21 was the increase in farm exports. Between April-December 2019 and April-December 2020, the agricultural exports rose from \$26.3 billion to \$28.9 billion registering an increase of nearly 9.8 percent, while farm imports contracted 5 percent from \$16.4 billion to \$15.7 billion during the same period. Table A4 (in Appendix) illustrates India's top agricultural commodities that are imported and exported. In April-December 2020(P), marine products, rice (basmati and common), buffalo meat, spices, and sugar were the top exported commodities, while vegetable oils, pulses, fresh fruits and cashew were the top imported commodities.

An increase in the global prices of many agri-products helped India to push up its agri-exports, especially non-basmati rice, cotton, sugar, oilseeds meals, wheat and maize. Also, dry weather conditions in some major producing countries like Argentina, Brazil, Thailand and Vietnam have helped to revive India's farm exports (Damodaran, 2021).

2.1.1 Impact on agri-food supply chain and food inflation

The stringent lockdown imposed for two months from March 24 to May 31 severely disrupted the agri-food supply chain, particularly during the initial period (Narayanan 2020). Albeit the government took steps for the smooth operation of agricultural activities, however the shortage of labour, higher transportation cost due to restrictions on vehicles' movements and intermittent closure of wholesale *mandis* hindered the smooth working of the agri-food supply chain. Despite these disruptions during the lockdown's initial phases, the agri-food system has been remarkably resilient to protect the nation's food security. However, the lockdown and consequent bottlenecks on the agri-food supply chain impacted consumer prices and food prices (Figure 6). During the initial phase of the lockdown, the gap between inflation measured using wholesale prices (WPI) and retail prices (measures using consumer price index (CPI)) had increased drastically. The disruption in transportation and delivery of agricultural produce and an increase in transaction costs of retail traders operating during the lockdown have been the major contributors to widening the gap between wholesale prices and retail prices (Narayanan and Saha, 2020).

Figure 6: General and food inflation during the pandemic



Source: MOSPI and Ministry of Commerce & Industry, Gol, various years

Due to the disproportional rise in onion prices during the second half of 2019, CPI food inflation was high, shooting to almost 14.2 percent in December 2019. Since early 2020, food inflation has been declining and reached 8.8 percent in March 2020. The sudden imposition of the lockdown in March resulted in increasing CPI inflation to 7.2 percent and CPI food inflation to 11.7 percent by April 2020. The increase in inflation was primarily due to the rise in the prices of pulses, oils and perishables, including onions and tomato (Narayanan and Saha 2020). Notably, food prices have been significant drivers of retail inflation during FY 2020-21. However, CPI food inflation fell drastically to just 3.4 percent with a decline in prices of vegetables, cereals and protein products in December 2020.

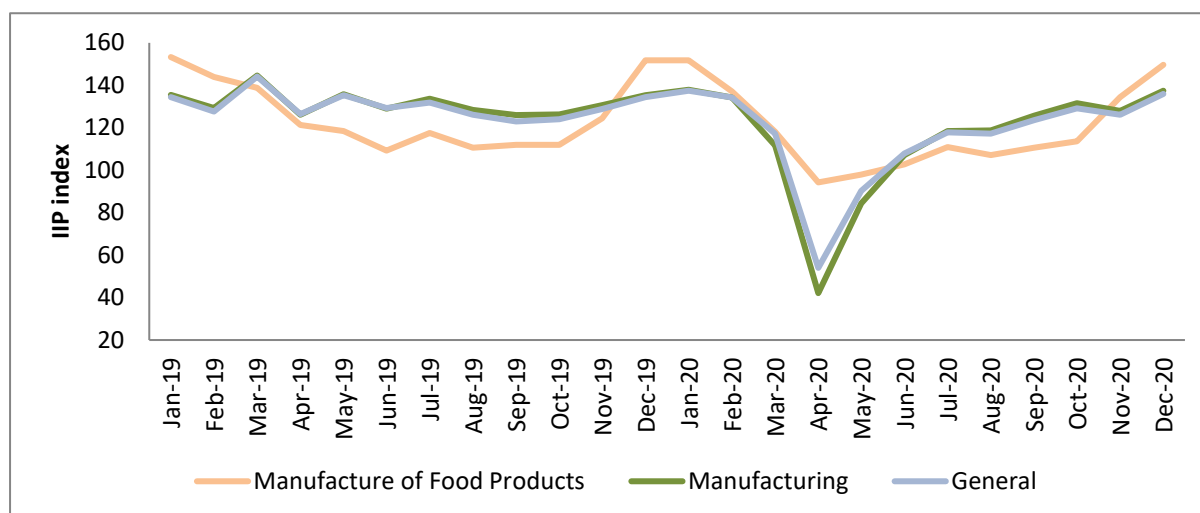
2.2 Impact of the pandemic on the industrial output

The majority of industrial activities was shut down in the wake of the nationwide lockdown to contain the spread of the coronavirus. The shutting down of industrial production resulted in a sizable contraction in the Index of Industrial Production (IIP)⁶ in the first half of FY 2020-21. In April 2020, the

⁶ IIP is a composite indicator that measures short term changes in the volume of production including mining, electricity and manufacturing during a given period of time.

IIP contracted 55.5 percent, reaching its historical low with most of the industries being closed down. Between April to September FY 2020-21, the contraction of IIP started slowing down and improved in October 2020 with the easing of the lockdown and resumption in industrial production (see Figure 7). Like GDP, IIP general and IIP for manufacturing have also experienced a V-shaped recovery with consistent movement towards the pre-pandemic level.

Figure 7: Index of Industrial Production during the pandemic



Source: MOSPI, GoI, various years

Note: General indices include mining, manufacturing and electricity

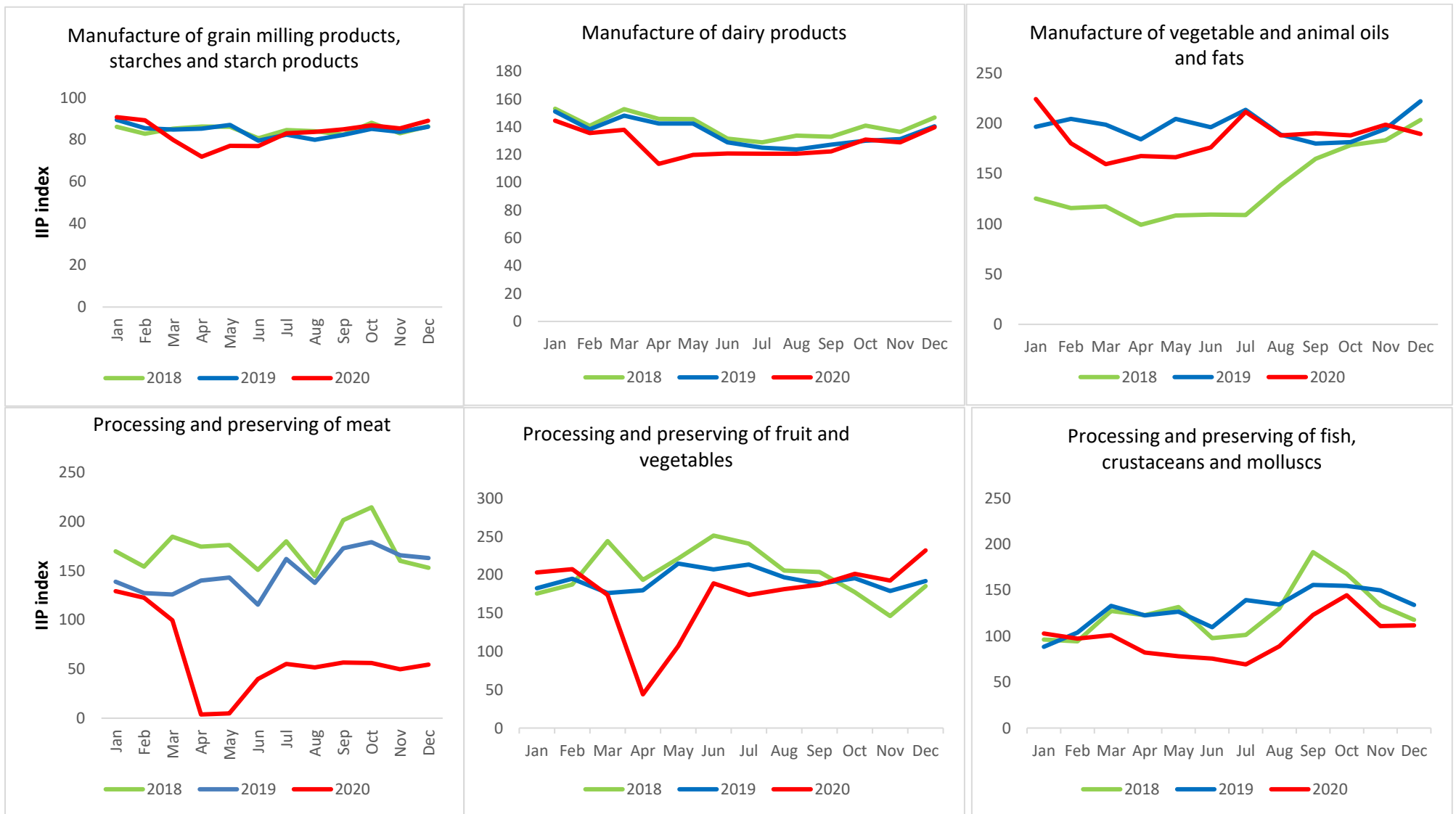
2.2.1 Impact of the pandemic on the food processing industry

Manufacturing of food products, particularly the food processing industry, has enormous potential for value addition of farm outputs, employment generation, exports promotion and domestic supply chain strengthening. However, the processing of food products has been low in India. According to Ghosh (2014), only 2.2 percent of fruits and vegetables, 35.0 percent of milk, 21.0 percent of meat and 6.0 percent of poultry products are processed in India. In 2017-18, the food processing sector accounted for 1.4 percent of total gross value added (GVA) and 7.9 percent of manufacturing GVA.

The industry also contributed to 4.5 percent of total manufacturing exports (RBI Bulletin 2020). With the increasing importance of processed food in consumption patterns, the industry is vital for value addition and increasing agricultural exports. Some of India's major food processing industries are manufacturing of grain milling products, manufacturing dairy products, processing edible oils, processing and preserving fruits and vegetables, and processing meat and fish. What has been the pandemic's impact on the manufacturing of food products and the food processing industry?

Figure 8 illustrates the impact of Covid-19 on the selected IIP of food processing industries in India during the pandemic compared to previous years. The major food processing industries such as the manufacturing grain milling products, manufacturing dairy products and processing of vegetable and animal oils and fat were not affected much due to the lockdown. However, the pandemic had a considerable effect on the processing and preservation of meat and fruits and vegetables during the initial period of the lockdown. Although the processing of fruits and vegetables has recovered to the pre-pandemic level, the IIP of the meat processing industry is still lower than in the last two years. Lack of consumer confidence in meat products' food safety, as many feared the false premise of meat and poultry products being a potential transmitter of the coronavirus, could be a significant reason for the decline in meat products' demand. Overall, as mentioned earlier, the food processing industry, except the meat, fruits, and vegetable processing sector, did not suffer the pandemic's brunt like other manufacturing sectors.

Figure 8: Impact of the pandemic on the food processing industry



Source: MOSPI, GoI, various years

2.3 Unprecedented migrant crisis: Scale and intensity

One of the humanitarian crises that emerged during the pandemic was the massive reverse migration. The pandemic brought the issue of labour migration to the forefront, exposed the daily vulnerability faced by the migrant workers ranging from dire working and living conditions, exclusion from social protection and labour rights.

Due to the sudden lockdown on March 24th, which gave just 4 hours' notice, migrants were caught unaware, and so was the government about their problems. The lockdown-induced closure of economic activities has threatened millions of workers' livelihood, access to food, shelter, and basic necessities. With the restriction of movement and no transportation mode available during the initial phase of lockdown, migrants started on bicycles and even on foot to go to their villages. This was a catastrophe unfolding at a large scale that people had not seen earlier. The grim reality is that with the lockdown, millions lost their jobs, and the unemployment rate surged to 23.5 percent in India in April 2020, according to the Centre for Monitoring the Indian Economy (CMIE)⁷ (see Appendix A6). Loss of income and the fear of hunger led to the migrant's exodus from urban metro cities to their native places.⁸

The central government failed to comprehend the nature of the migrant crisis. Besides, there are no periodic surveys to capture information about migrant workers, except the Census and NSSO. Therefore, the central government did not have accurate figures for the migrant workers who needed economic support.

As per the 2011 Census, there were 455.8 million migrants (450m internal and 5.8m external) in India. Most of them had moved either since birth or marriage or some other reasons. Only 40.8 million reported employment while 3.5 million reported business as the primary reason for migration. In 2016, using both 2011 Census data and railway passenger data, the Economic Survey (2016-17) had estimated that the number of inter-state migrant workers could be around 60 million, and about 80 million inter-district migrant workers, migrating within the same state. Overall, there could be thus about 140 million (60+80) migrant workers in 2016-17, both inter-state and intra-state. However, both these figures could be underestimates as Census data underestimates the long-term circular migrants, whereas the short-term circular migration is not captured. These migrants have retained their links with their native homes in rural areas and have no place to call home in the urban destination areas (Srivastava 2020a). Using the NSS (2007-08) and Census (2001 and 2011) data on migration, Srivastava (2020b) has projected the figures for both short duration (55 million) and long-term circular migration (85 million) in 2017-18.

These short-term and long-term circular migrant workers with more concentrated origins, particularly in the poorer states such as Bihar, West Bengal, Uttar Pradesh, Chhattisgarh, Jharkhand, Odisha and Madhya Pradesh, have borne the brunt of the lockdown. Given that the circular migrants are a large chunk of the workforce, the central government needs to recognize the scale, magnitude, and nature of migrant labour and provide adequate economic support to address the migrant crisis. Besides, the underestimation of migrant workers can have serious ramification, as many of these vulnerable migrants can be excluded from various relief measures taken by the government.

⁷ Around 121 million lost their jobs in April 2020 and the only gain in employment during this period was registered by farmers (5.8 million) due to the easing of lockdown for agricultural activities in the second phase (CMIE, 2020).

⁸ However, following this exodus of the migrants, the Centre issued stringent orders on the movement of the migrants and directed them on road to be sent to shelter homes and quarantine.

3 Government response: Relief and stimulus packages

This section discusses the important measures and relief packages announced by the central government for the economy and vulnerable population and their efficacy to mitigate the pandemic's negative impact.

The Central government announced a welfare package of Rs 1.7 trillion under the '*Pradhan Mantri Garib Kalyan Yojana*' (PMGKY) on March 26th, 2020. The *Pradhan Mantri Garib Kalyan Ann Yojana* (PM-GKAY) offered an additional 5 kg of food grains and 1 kg of pulses per household to 800 million individuals covered under National Food Security Act (NFSA) till July 2020. This scheme was extended till the end of November 2020, costing Rs.900 billion (about USD 12 billion) to the central government. The relief package also included Rs 500 per month, for three months, to an estimated 28 million women *Jan Dhan* account holders; an ex-gratia payment of Rs.1000 to widows, elderly, pensioners and disabled persons; enhanced wage rate from Rs.182 to Rs.202 under MGNREGA; free LPG cylinder for three months to *Ujjawala* beneficiaries and collateral-free loans of up to Rs.2 million to female self-help groups under *Deen Dayal Upadhyay Yojana*. Further, the centre also announced front-loading the first instalment of *Pradhan Mantri Kisan Samman Nidhi* (PM-Kisan) to farmers (Rs. 2000 per farm households). For the workers in the organised sector, the Government will pay for both the employer and employee contribution to Employee Provident Fund (EPF) accounts (total 24 percent) from April-June 2020 for establishments with up to 100 employees, where 90 percent employees are drawing less than Rs 15,000 per month. For the construction workers registered with the Building & Construction Workers (BoCW), the State Governments were directed to use the BoCW cess funds to aid workers in the construction sector.

However, this relief package of Rs 2.7 trillion announced by the government accounted for less than one percent of the GDP and was not enough to curb the negative impact of the Covid-19 pandemic. Former RBI Governor, Raghuram Rajan, has argued that around Rs 650 billion would be required to help the vulnerable population crippled by COVID-19 pandemic. At the same time, Abhijit Banerjee suggested giving cash doles to the bottom 60 percent of the population to stimulate demand.

Another relief cum stimulus package of Rs.20 trillion, *Atma-Nirbar Bharat* or Self-Reliant India, was announced by the centre on May 12th, 2020. It subsumed a range of monetary and fiscal stimulus to revive the economy and businesses. Some of the essential components of the package for the vulnerable population and farm sector were a) additional Emergency Working Capital Funding for farmers through NABARD (Rs 300 billion), b) concessional credit boost to 25 million farmers through *Kisan Credit Cards* (Rs.2 trillion), c) Agriculture Infrastructure Fund for farm-gate infrastructure for farmers (Rs.1 trillion), d) foodgrains for migrant workers, i.e. 5 kg of grains per person and 1 kg pulses per family per month for two months who are not covered under NFSA, e) affordable rental housing complexes for migrant workers/urban poor under the *Pradhan Mantri Awas Yojana* (PMAY) for migrant labour/urban poor, and f) additional, Rs.400 billion allocated to MGNREGA over and above Rs.615 billion allocated in the Budget 2020-21.

Additionally, *Atmanirbar Bharat* also took significant steps to reform the agricultural sector to link farmers directly to the market for barrier-free inter-state trade. The government passed the Farmers' Produce Trade and Commerce (Promotion and Facilitation) Act, 2020; the Farmer (Empowerment and Protection) Agreement on Price Assurance and Farm Service Act, 2020; and The Essential Commodities Amendment Act, 2020 (ECA) in September 2020. These laws lift restrictions and potentially provide greater choice and freedom to farmers to sell the product and to buyers to buy and store, thereby increasing competition in agricultural marketing.

The examination of India's relief-cum-stimulus package highlighted that these measures had neglected the urgent need for economic support to the millions of citizens who have lost their livelihood, particularly the migrant workers. Further, under the *Atma Nirbhar Bharat Scheme*, 0.8 million tonnes

of food-grains were allocated for the stranded migrants and all those who are not covered under NFSA⁹ (Gol, 2020b) for a period of two months between April to June; however, the scheme was extended till August 31, 2020. As per the details available, 0.27 million tonnes of food-grains (covering 26.7 million households) were distributed for two months under the scheme (as of September 23, 2020). About 39 thousand tonnes of pulses was also allocated, of which 16.6 thousand tonnes of pulses (covering 16.6 million households) were distributed till August 31, 2020. According to a Wire report (Wire Staff 2020), around 26 states have lifted 100 percent of food grains allotted to them in September. However, Bihar, Chhattisgarh, Nagaland and Odisha distributed all food grains allocated to the migrants. The distribution of pulses has been rather dismal as compared to the food-grains, with only Delhi and Manipur reporting a 100 percent distribution of pulses.

Additionally, adding up the total stimulus announced by the Indian government and Reserve Bank amounted to Rs 29.86 trillion or 15 percent of the GDP. However, breaking down these packages shows that the centre's additional fiscal contribution to the stimulus would be under 2 percent of GDP in 2020-21 (Iyer, 2020), not enough to address the pandemic's negative impact on the crucial sectors. The careful assessment of packages highlights that the government has adopted a 'fiscal conservatism' rather than an expansionary fiscal policy (Ghosh, 2020). Given the V-shape recovery of the economy in the second quarter of FY 2020-21, measures could focus on building a resilient economy for the future.

3.1 Measures for migrants: Relief and rehabilitation

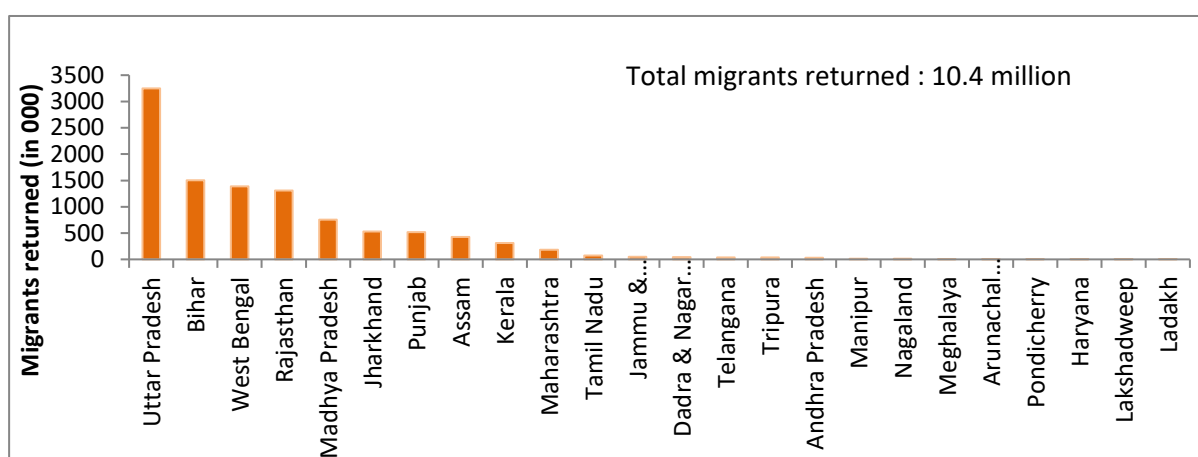
Apart from the stimulus package, the central government also provided shelter and food to the distressed and stranded migrant workers during the initial period of the nationwide lockdown. According to the Central Government's Status Report to the Supreme Court in the first week of April, around 0.63 million persons were provided shelter by the various state governments. Over 0.4 million were provided shelter by Non-Governmental Organisations (NGOs). The centre and state governments/UTs provided food to 5.4 million migrant workers while NGOs were feeding around 3.0 million. About 1.5 million stranded migrant workers were given shelter by their employers/industry.

On May 1, 2020, the Centre permitted the inter-state movement of migrant labours and stranded persons by special trains, *Shramik* Special Train services. Till June 12, 2020, Indian railways had run about 4277 *Shramik* Special trains carrying over 6 million passengers. The percentage share of *Shramik* Special trains across destination and originating states has been shown in Appendix A7.

According to the Status Report filed by the Solicitor General to the Supreme Court on May 28, 2020, the estimate of reverse migration was around 9.7 million, including 5 million transported by *Shramik* trains and 4.1 million through inter-state bus transport. About 0.5-0.6 million migrants had gone barefoot to their native villages as per the Gol's March 31st Status Report submitted to the Supreme Court. Later in September 2020, the government's revised reverse migration estimates suggested that 10.4 million migrant workers had returned (see Figure 9). However, these reverse migration figures are much lower than the estimates provided by Chinmay Tumble and Amitabh Kundu. Their estimates of reverse migration since mid-March stood at 30 million and 12 million, respectively (Chishti, 2020).

⁹ Due to dearth of data on the magnitude of migrants/stranded migrants, "a liberal estimate of about 80 million such persons were made by the Department of food and public distribution (10% of approx. 800 million NFSA population) a liberal allocation of 8 LMT food-grains (Rice/Wheat) for two months – May and June 2020 was made to States/UTs to cover maximum of migrants/stranded migrant persons under the scheme" (Gol, 2020b).

Figure 9: Migrants returned, as of September 2020 (in thousands)



Source: Lok Sabha Unstarred Questions No. 174 (as on 14.09.2020), Ministry of Labour and Employment, GoI

The massive reverse migration of workers highlighted the need to provide urgent relief and generate large-scale employment in the coming months. Although unconditional cash transfers can provide relief in the short run, it is critical to provide poor households employment opportunities to earn basic income, particularly in the eastern state.

In this regard, *Garib Kalyan Rojgar Abhiyaan* (GKRA), a massive employment-rural public work programme, was launched on June 20, 2020, to boost the employment and livelihood opportunities of the returnee migrant workers. The scheme was proposed to work in mission mode for 125 days, focussing on rural infrastructure and create livelihood opportunities in 116 districts of the six states, i.e., Bihar, Uttar Pradesh, Madhya Pradesh, Rajasthan, Jharkhand and Orissa. The central government has earmarked Rs.500 billion for GKRA, which encompassed a plethora of rural public work ranging from rural housing for the poor, plantation, provision of drinking water through *Jal Jeevan Mission*, *Panchayat Bhavans*, community toilets, rural *mandis*, rural roads, other infrastructure like cattle sheds, *Anganwadi Bhavans* etc. The programme also included an extensive skill mapping of the workers, so that returnee migrant workers get an employment opportunity based on their skills. As of September 15, 2020, 270 million person-days of employment was generated across six states, with Rajasthan accounting for 40.9 percent of the person-days generated, followed by Uttar Pradesh (21.7 percent), Madhya Pradesh (17.6 percent), Bihar (15.6 percent) and Odisha (2.7 percent) (see Appendix A8). Furthermore, as per the latest data, as of October 12, 2020, around 320 million person-days employment has been provided under GKRY (GoI, 2020a). Additionally, 68,824 workers have been provided skill training through Krishi Vigyan Kendras (KVKs) under GRKY.

Many of these rural public works have been executed through the MGNREGA, which has emerged as a critical safety net to generate employment on a massive scale for the migrants returning to rural areas and revive rural demand. Around 3414 million person-days of work have been generated under the programme in the fiscal year 2020-21, an increase of 29 percent compared to the fiscal year 2019-20. The number of households who got employment under the scheme increased from 54.8 million to 67.6 million during the same period (as of April 21st, 2021). This suggests that many reverse migrants have chosen to work at their native places than return to the urban areas for livelihood. Furthermore, to boost rural employment and accelerate the rural economy, an additional outlay of Rs.100 billion is being provided for PM *Garib Kalyan Rozgar Yojana* by the centre, which can be used for MGNREGA or *Gram Sadak Yojana*.

Although the containment measures and welfare packages were announced by the centre, the implementation of these measures was the state governments' responsibility. Apart from the aforementioned central government's schemes, several states had initiated various relief measures for the vulnerable population. Bihar government had transferred an ex-gratia amount of Rs.1000 per household to bank accounts of ration cardholder as well as migrants stranded in other states through

direct benefit transfer (GoB, 2020). The UP government has transferred an ex-gratia amount of Rs 1000 to daily wage earners for financial aid and the provision of maintenance allowance of Rs 1,000 for returning migrants.

The Odisha government introduced a scheme of incentivising quarantine by offering Rs.2000 to register and complete institutional quarantine for migrants. Apart from that, the state government also provided cooked food for needy people in rural areas at affordable prices.

In Chhattisgarh, the state government provided rice for two months for household covered under NFSA. Additionally, two quintals of rice were allocated to every *Gram Panchayat* for distributing a maximum of 5 kg to individuals without ration cards. Further, 4 kg of rice at the primary level and 6 kg of rice at the upper primary level was provided by the state government for school children covered under the Mid-day meal scheme.

4 Findings of the migrant survey

Hitherto, we have assessed the pandemic's impact on the economy using secondary data sources and how the sudden imposition of lockdown resulted in unprecedented reverse migration. We also highlighted the various stimulus packages and relief measure announced by the government to support the vulnerable population.

In the present section, we study what has been the impact of the pandemic on migrants. We also examine if the policy responses and relief measures announced by the government have reached the targeted, notably, if it has led to robust recovery among these migrant workers post-lockdown.

We interviewed via telephone around 2917 migrants from 34 districts across six states, Bihar, Chhattisgarh, Jharkhand, Odisha, Uttar Pradesh, and West Bengal, from June to August 2020 in the Phase-1 survey. These six states, accounting for 66.7 percent of the total returnee migrants, were chosen due to the high concentration of reverse migration during the lockdown period. To illustrate the overall picture, we have used the weighted averages of these six states. The weights for each state have been calculated using the latest data on the reverse migration given by the Ministry of Labour and Employment, Government of India (Lok Sabha Unstarred Question No. 174) (see Appendix A9)¹⁰.

The findings of the Phase-1 survey highlighted that loss of livelihood at the destination and shortage of money, stated by 70 percent of the migrants, were the primary reasons to return to their native places. However, one-third of the migrants returned due to the fear of Covid-19 (see Appendix A10). The survey also threw light on the appalling condition of the returnee migrants, with more than one-third reporting not being engaged in any economic activity. Importantly, we found the household income of the reverse migrants had declined from more than Rs.14700 a month at the destination to less than Rs.2305 after returning to their native places, a decline of 85 percent. Despite the various government assistance and relief measures announced, only 8.50 percent of the migrants received deposits in their Jan-Dhan accounts. Only 3.53 percent of the total migrants got employed in any public works or MGNREGA. The migrants were also asked willingness to return to the destination in the survey. Two-third of the migrants reported a desire to return to the destination. Of these, around 40.90 percent said better employment opportunity at the destination as the primary reason to return. Economic distress due to the pandemic has likely rendered them to food, nutritional, and financial insecurity.

During November-December 2020 (four months after Phase-1 survey), we expected that many migrants would have gone back to the place of destination or found employment at their native place. We conducted a follow-up Phase-2 survey of the reverse migrant surveyed in Phase-1 via telephone during November-December 2020. The aim was to capture the condition and rehabilitation of these reverse migrants, including remigration, source of livelihood at the destination and native place, consumption pattern, earning, and the aid/assistance received. Incidentally, the contact details of 143 migrant workers had changed during the revisit survey. Hence, we could collect information from 2774 migrants out of the 2917 respondents surveyed during Phase 1.

Since the Phase 2 survey was conducted during November -December 2020, which coincided with the sowing period for the *rabi* crop, it was expected that many migrants would not be willing to return to the destination state. Moreover, the economy was at the nascent stage of recovery during the Phase 2 survey; thus, we conducted a third phase of the survey (Phase 3) during the last week of February 2021 to capture the actual remigration¹¹. In the Phase 3 survey, we interviewed the 1545 migrants who were still at their native place during the Phase 2 survey. In Phase-3, we limited our survey

¹⁰ The statement by the Ministry of Labour and Employment provides information about the reverse migrants from Bihar, Jharkhand, Uttar Pradesh, and West Bengal. However, the magnitude of reverse migration in Odisha and Chhattisgarh is not provided. To enumerate reverse migrants in Odisha and Chhattisgarh, we used the dashboard of the Odisha Government (as on 7 July 2020) and a statement of the Government of Chhattisgarh (as on 16 June 2020) asserting that 106928 migrants returned from 78 Shramik Special Trains and others by vehicle and on foot.

¹¹ In Odisha, the survey got completed only by March 3rd, 2020.

questionnaire to capture the extent of remigration, household income and occupational status at native place post-lockdown. The sample size of the survey has been discussed in Table 1. Detailed sample design is discussed in Appendix A11.

Table 1: Sample number of migrant home returnees surveyed in Phase-1, Phase-2 and Phase 3

State	Migrants Survey Phase-1	Migrants Survey-Phase 2	Migrants Survey-Phase 3
Bihar	470	470	185
Chhattisgarh	500	500	281
Jharkhand	195	125	86
Odisha	497	497	263
Uttar Pradesh	795	725	407
West Bengal	460	457	323
Total of six selected states	2917	2774	1545

Source: Authors' compilation

4.1 Demographic and economic characteristics of the migrants

The survey collected information from the household head of the migrants. Around 97 percent of the migrants belonged to male-headed households, and about 3 percent were from female-headed households. The median age of the migrants was 26 years. More than half of the migrants were in the age group of 20-30 years, and a quarter was in the age group 30-40 years. The migrant in the age group below 20 years and above 40 years together accounted for less than 20 percent (see Appendix A12). A fourth of the migrants (24.7 percent) were educated till primary school, and the majority were educated till secondary school (60.4 percent), while 2.2 percent were illiterate. Only 2.4 percent of migrants were graduates and above or had technical education.

Our sample includes migrants who worked in the destination area for a considerable time before they were impelled to move back to their native place due to the sudden imposition of the lockdown. The majority of migrants (close to 40 percent) were long-term circular migrants who stayed at the destination for more than five years, while a third of migrants stayed at the destination for 2-4 years and less than 30 percent stayed for less than a year. These migrants, mostly being short-term and long-term circular migrants, have retained links to their native places in rural areas. The average household size was 5.7 among the migrants.

4.2 Remigration post lockdown

With the revival of economic activities post-lockdown, many migrants have returned to the destination for livelihood. Around 43.8 percent of migrants had returned to the destination areas during November- December 2020 (in the Phase 2 survey), while 56.2 percent are still at the native places (Table 2). As economic activities were still resuming, it was expected that the remaining reverse migrant would also return to their destination in the coming months. In the Phase 3 survey, the migrants returning to their destination increased to 63.5 percent, while 36.5 percent were still in their villages at their native places. Across states, Bihar recorded the highest percentage of remigration post-lockdown at 92.5 percent¹², followed by Uttar Pradesh and Odisha (65.2 percent each). However, the migrants from West Bengal (40.3 percent) and Jharkhand (31.20 percent) reported a lower percentage of migrants returning to their destination, suggesting hesitation to migrate back post-lockdown.

¹² Interestingly, Bihar reported that all the migrants from female-headed households have migrated back to their destination after easing the lockdown restrictions.

Table 2: Extent of remigration among the return migrants (%)

State	Migrants who have migrated back in Phase-2 (Nov-Dec, 2020)	Migrants who have migrated back by Phase-3 (Feb 2021)	Migrants who have migrated back to rural areas by Phase-3	Migrants still at native place	Migrated to the same place post-lockdown
Bihar	60.64	92.48	0.90	7.52	64.76
Chhattisgarh	43.80	61.60	72.40	38.40	21.75
Jharkhand	31.20	31.20	5.13	68.80	64.10
Odisha	47.08	65.19	1.85	34.81	67.28
Uttar Pradesh	43.86	65.24	1.06	34.76	96.83
West Bengal	29.32	40.26	5.43	59.74	80.43
Weighted average of six states	43.88	63.51	5.68	36.49	79.34

Source: Authors' compilation

Around 80 percent of migrants returned to the same destination, where they had worked prior to the pandemic.¹³ In Uttar Pradesh, 97.0 percent of the migrants returned to the same destination area, followed by West Bengal (80.4 percent) and Odisha (67.3 percent). In Chhattisgarh, only 21.75 percent migrated to the same destination¹⁴. Additionally, we found 72.4 percent of migrants from Chhattisgarh preferred to migrate to rural areas after the lockdown (see Table 2).

The opening up of the economy and lack of employment opportunities at the native place has pushed most workers back to urban destinations. The duration of stay at the native place before migrating back and preferred destination state¹⁵ among the migrants have been illustrated in Appendix A13 and A14. Notably, most migrants (64.3 percent) reported staying at the native place for 4-7 months, while less than a third of migrants stayed for more than nine months before migrating back and around 6.8 percent stayed for at least three months.

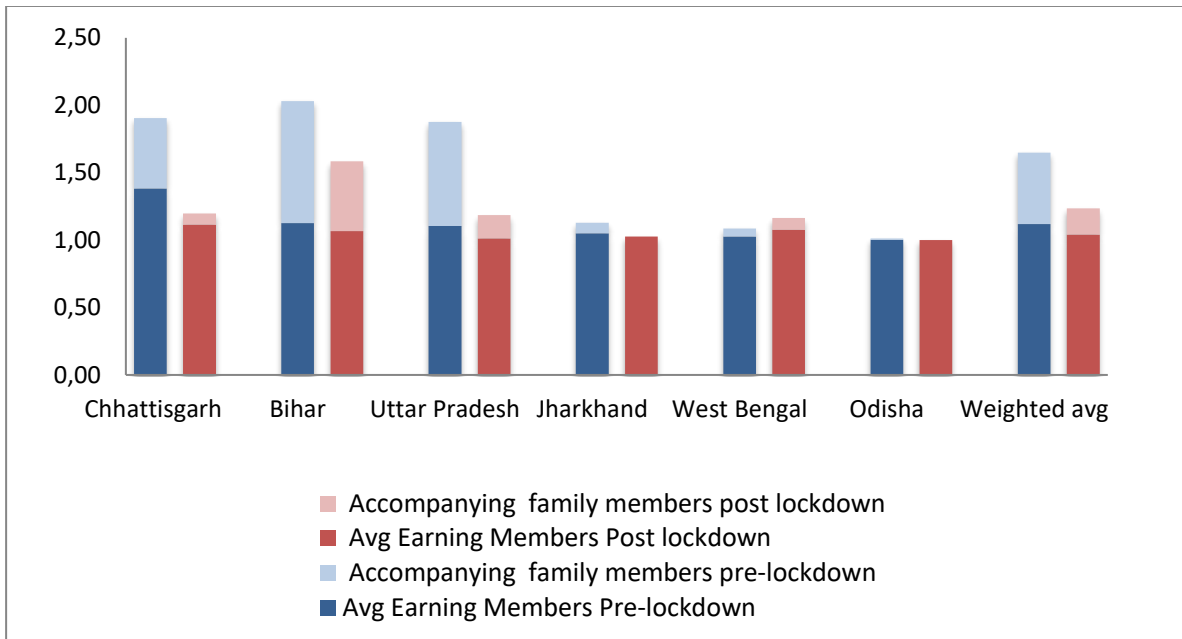
The survey collected information about the household's average earning members and whether the migrant had returned alone or with dependents prior to and after the lockdown. There was a significant decline in the average earning members, and a high percentage of migrants chose to travel alone to a place of livelihood without their family members post-lockdown.

¹³ Same destination meant the place where the return migrants stayed before the lockdown which is the same city/town in case of urban areas and the same development block in case of rural areas.

¹⁴ Many migrants from Chhattisgarh reported wage theft at the last place of employment, due to which they wanted to work nearer to their villages.

¹⁵ We observed that many migrants from West Bengal, Chhattisgarh, and Jharkhand choose to be closer to their native places post-lockdown.

Figure 10: Average earning member and dependent at the destination area



Source: Authors' compilation

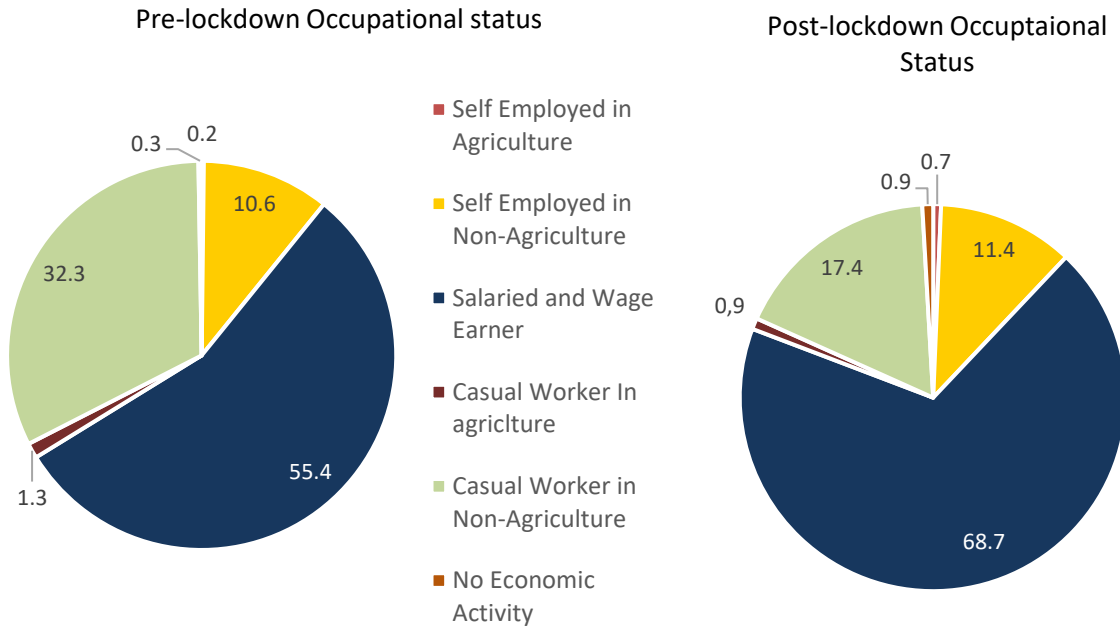
For instance, the average number of earning members declined from 1.12 to 1.04, while the accompanying family members declined from 0.53 to 0.20 at the destination between pre- and post-lockdown (Figure 10). Uncertainty concerning their livelihood at the destination is the primary factor influencing the household decision to migrate back with or without accompanying family members. This trend is prominent particularly for the states such as Chhattisgarh, Bihar, and Uttar Pradesh, which had a higher number of family members accompanying them prior to the lockdown vis-a-vis post-lockdown.

4.3 Impact of the pandemic on the occupational status

Figure 11 illustrates the occupational status of migrants at the destination before and post lockdown. We have classified the occupational status across five activities: self-employed in the agricultural sector, self-employed in the non-agricultural sector, salaried and wages earners, casual workers in the agriculture sector, casual workers in the non-agricultural sector.

We found that the return migrants not engaged in any economic activities at the destination area have moderately increased from 0.18 percent to 0.65 percent between pre-lockdown and post-lockdown. Further, there was a significant shift in the activity status from casual work to salaried and wage earners among the migrants who have migrated back to their destinations post-lockdown. For instance, the share of salaried and wage earners increased from 55.4 to 68.7 percent, while the percentage of casual workers in non-agriculture has decreased from 32.3 to 17.4 percent. The state-wise occupational status of migrants at the destination has been presented in Appendix A15.

Figure 11: Occupational status prior to and post lockdown among the migrants who have returned to their destination areas



Note: Figures are the weighted average of the six states
Source: Authors' compilation

Note that the increase in the share of migrants engaged in the salaried and wage employment post-lockdown does not imply better working conditions or improved nature of employment relation, but the migrants wanting an assured monthly payment at the destination.¹⁶ Overall, 86.1 percent of migrants were in wage employment post-lockdown. Of these, about 82.8 percent of the migrants did not have any written job contract with the employer, and 89 percent were not covered under any social security or job security benefits like paid leave. The precarious nature of employment and the vulnerabilities of the migrant workers emphasise the need for a universal social protection system (NCEUS 2007; Srivastava 2013). The working condition and employment relations of migrant workers in wage employment have been discussed in greater detail in Appendix A16.

More than half of the returnee migrants were still at their native places during the revisit survey between November and December 2020. We wanted to study if the activity or occupational status among these migrants recorded any change between the Phase-1 (June-August, 2020) and Phase 2 (November-December, 2020) survey.

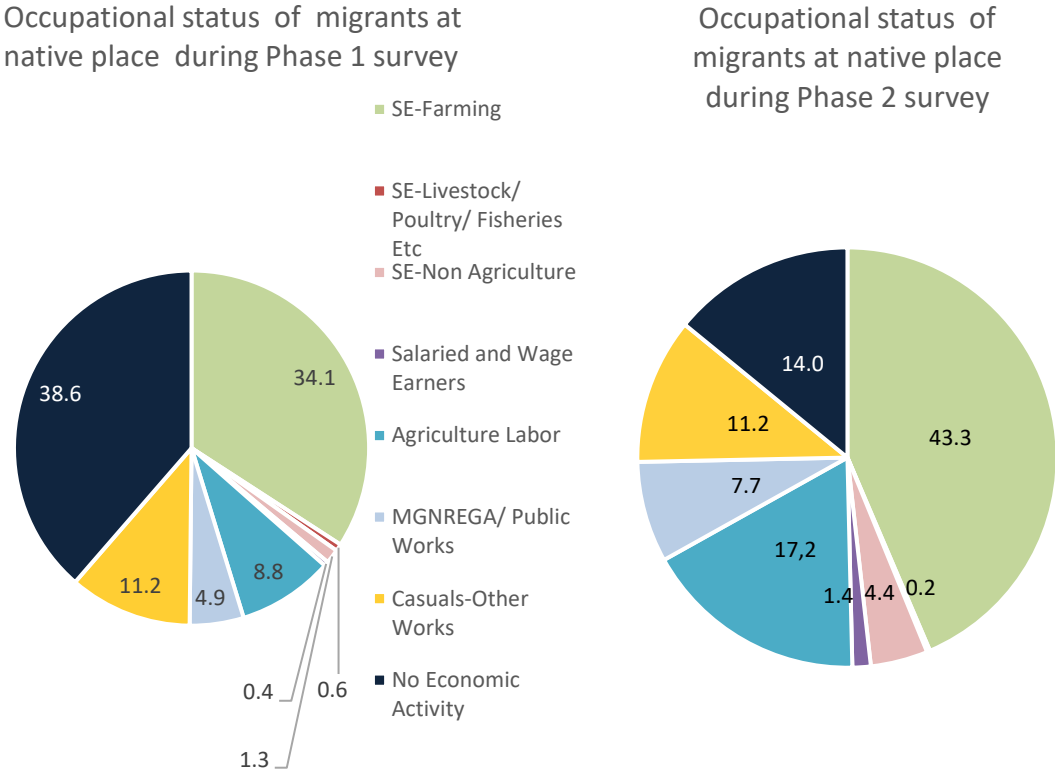
During Phase-1, more than one-third of migrants (38.6 percent) reported not being engaged in any economic activity at the native place. In contrast, a third were engaged in self-employed in farming (34.1 percent), followed by casual labour in other works (11.2 percent), agricultural labour (8.8 percent), MGNREGA/public work (4.9 percent) and self-employed in non-agriculture (1.3 percent).

There has been a significant change in the activity status of the migrant workers at native places during the Phase-2 survey (Figure 12). For instance, the share of migrants not engaged in any economic activity declined to 14.0 percent. In contrast, the percentage of self-employed in agriculture, MGNREGA/public work, and agricultural labour significantly increased to 43.3 percent, 7.7 percent and 17.2 percent, respectively. The share of migrants at native place self-employed in non-agriculture and

¹⁶ Many migrants reported asking labour contractors for assured work and monthly remuneration at the destination areas before returning post-lockdown.

salaried and wage earners has slightly increased; however, remained at 4.4 percent and 1.4 percent, respectively. We observed that public works such as MGNREGA and GKRY were limited to absorb the influx of reverse migrants, against what has been professed by the government sources. The state-wise occupational status of migrants at the native place has been shown in Appendix A17.

Figure 12: Occupational status among the migrants at the native place during Phase-1 & Phase 2 survey



Note: Figures are the weighted average of the six states
 Source: Authors' compilation

4.4 Income and consumption shock due to pandemic

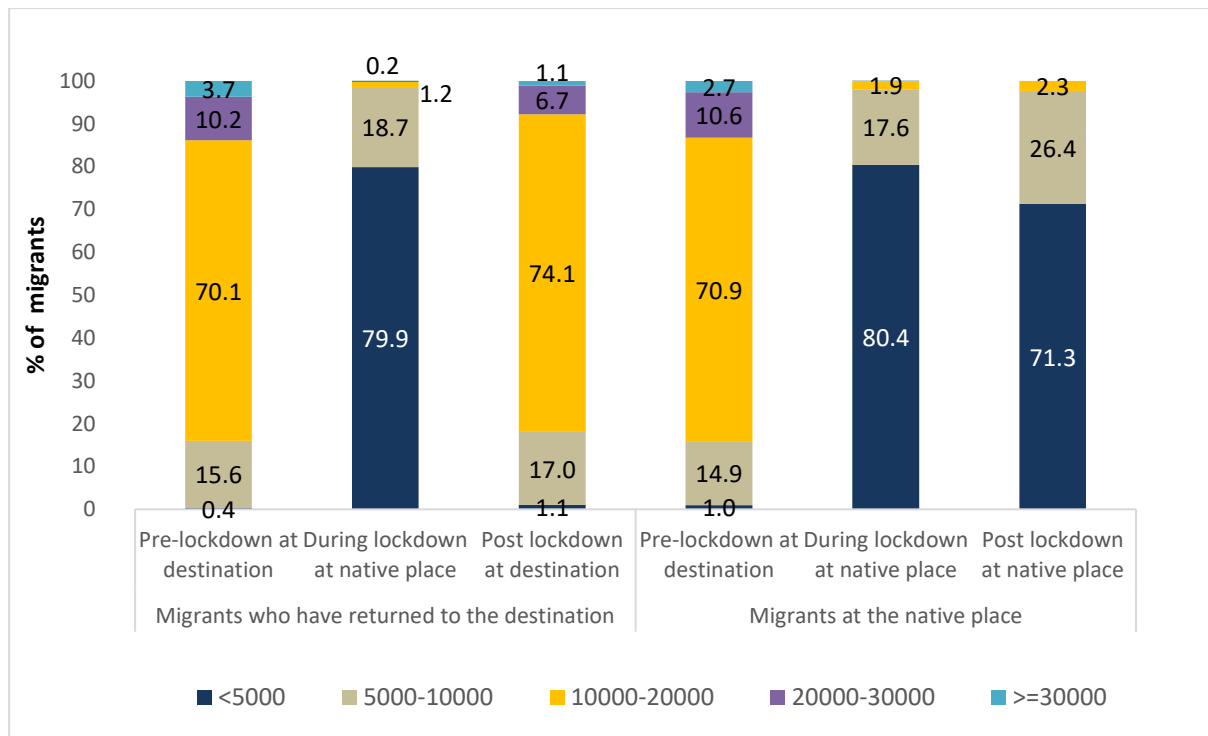
The sudden imposition of the lockdown had a severe impact not only on employment but consequently on earnings and savings once these migrants reached their villages. However, many of them have returned to their destination post-lockdown. How has the migrants' household income distribution changed from pre-lockdown to post-lockdown?

The majority of the migrants (approximately 80 percent) during the lockdown reported that their household income has declined below Rs.5000 per month. Although the situation improved after remigration with 74.1 percent of migrants reporting household income in the range of Rs.10000-20000 per month at the destination, migrants reporting household income ranging between Rs 20,000-30,000 have reduced from 10.2 percent before the lockdown to 6.7 percent post-lockdown (see Figure 13).

Even after the lockdown, many migrants are still at their native places in the villages, engaged primarily in agricultural activities. Among these migrants at native place post-lockdown, about 71.3 percent

reported their household income was less than Rs 5000 per month and 26.4 percent had household income in the range of Rs 5000 to 10000. Lack of employment opportunities in their native places and subsequent income losses could push these rural migrants into financial insecurities, threatening their livelihood securities.

Figure 13: Distribution of migrants across the household income at destination and native place



Note: Figures are the weighted average of the six states
Source: Authors' compilation

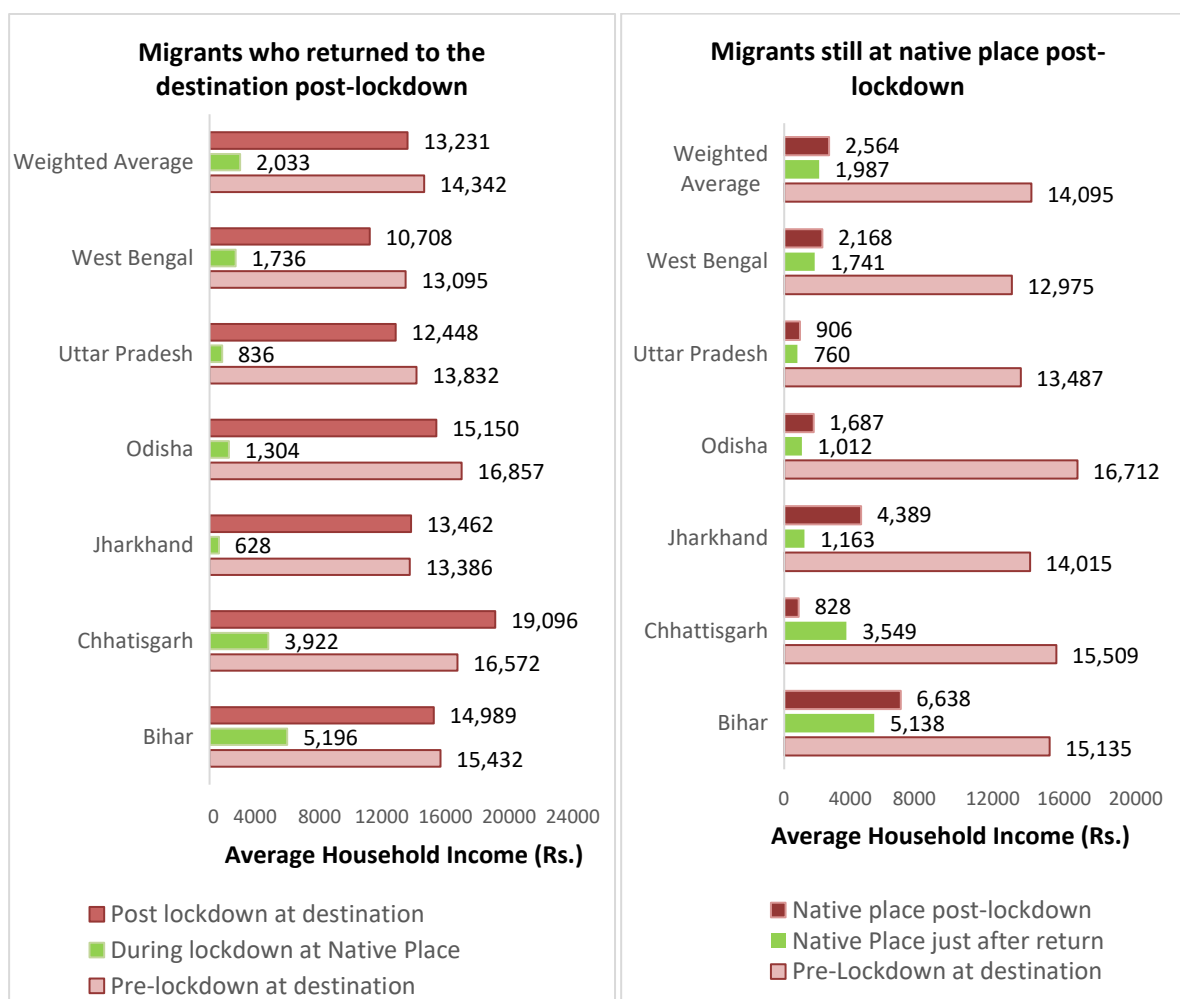
What has been the effect of the pandemic on the migrant's average household income? We have segregated the impact on household income across the migrants who have returned to the destination and the ones at the native place (see Figure 14).

After easing lockdown restrictions, about two-third of migrants have returned to their destination and are engaged in economic activities during the Phase 3 survey. Among these migrants, the destination area's household income prior to the lockdown was Rs.14342 per month. However, during the lockdown, the household income declined to Rs.2033 a month as more than half of the migrants did not find any work after returning to their native places. In percentage terms, the decline in household income was as high as 85.8 percent.

The average household income increased to Rs.13231 per month after returning to the destination. However, it is much lower than their pre-lockdown earnings. Although household incomes have increased post-lockdown, there is still a 7.7 percent contraction in income relative to the pre-lockdown.

More than a third of the migrants are still at native places in their villages during the Phase-3 survey. After reverse migration, the average household income among these migrants declined from Rs.14095 a month at the destination to Rs.1987 a month at the native place. Many of these workers worked in manufacturing, construction, trade and retail at the destination areas; however, most of them had to shift to farming activities after returning to their native places. During Phase-3, the household income level of the migrants at the native place increased to Rs.2564 a month, yet the income loss was more than 82 percent compared to pre-lockdown.

Figure 14: Migrant’s household income at destination and the native place post-lockdown



Source: Authors’ compilation

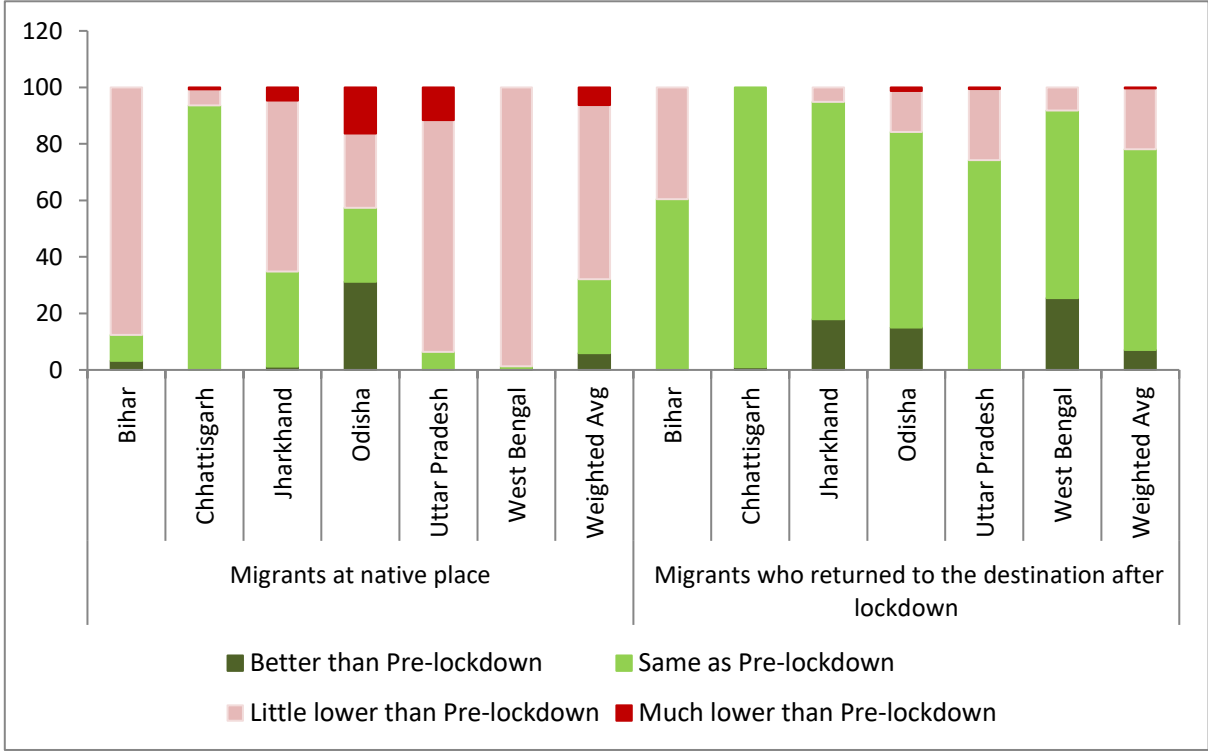
The state-wise average household income of migrants shows considerable variations. After remigration, the migrants from Chhattisgarh reported the highest average household income, followed by Odisha and Bihar. In contrast, migrants from West Bengal reported the lowest household income. Notably, the migrants from Odisha, Uttar Pradesh and West Bengal registered a significant decline in household income post-lockdown. In contrast, migrants from Chhattisgarh and Jharkhand recorded an increase in their household income after remigration.

The household income of the migrants still in their native place, especially in Uttar Pradesh and Chhattisgarh, is the lowest among all the other states. Moreover, Bihar reported the highest household income among the migrants who were still in the native place. Most of the migrants in Bihar are engaged in public work or are self-employed, which could be why the average household income is higher in the state.

It is clear from the above discussion that the cessation of economic activities and consequent reverse migration had a far-reaching effect on the employment and earnings of the migrant households. The loss of income during the lockdown had an adverse impact on the consumption behaviour of these migrants. In the survey, we have tried to gauge the effect on food consumption using the perception of the migrants about the quality of food consumed post-lockdown vis-a-vis before the lockdown.

The majority of the migrants (71 percent) after remigration admitted that the quality of food was the same as pre-lockdown. In comparison, 7.0 percent reported that the quality of food was better than the pre-lockdown period. However, about a fifth opined that the quality of food was poorer compared to the pre-lockdown period. Across states, Bihar and Uttar Pradesh have a higher share of migrants reporting more inferior quality of food than pre-lockdown level (Figure 15).

Figure 15: Consumption shock on the migrant’s household



Source: Authors’ compilation

However, the quality of food consumed at the native place has drastically deteriorated. More than 65 percent of migrants at the native place reported that the quality of food intake was less than that of the pre-lockdown period, and a quarter of the migrants admitted that it was the same as that of the pre-lockdown period. In West Bengal, 99 percent reported that the quality of food is poorer than the pre-lockdown level, while in Bihar and Uttar Pradesh, more than 80 percent of migrants reported that the quality of food had deteriorated.

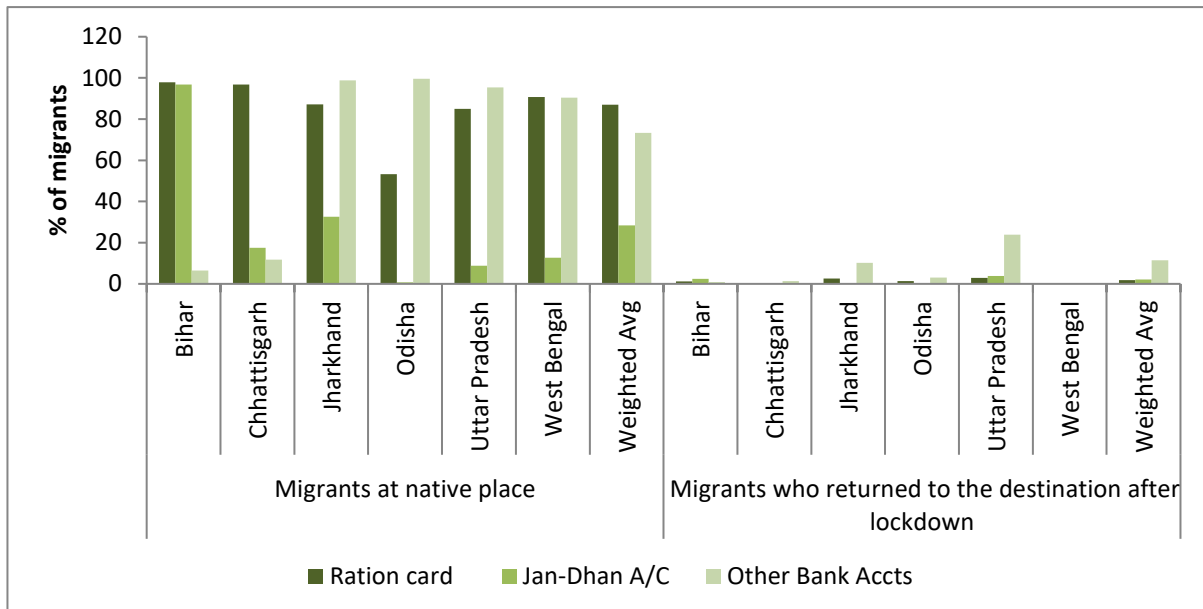
4.5 Accessibility to social safety nets and relief measures

The central and various state governments had announced relief measures to mitigate the plight of migrants during the lockdown. Most of the relief measures (discussed in section 3.1) were merged with the existing social protection programmes such as the distribution of an additional quantity of subsidised food-grains under the PDS, cash transfers through Jan Dhan Yojana, free gas supply under the *Ujjwala* scheme, an *ex-gratia* to widow/senior citizen as well as income transfer to farmers under *PM-Kisan*. The reach of these measures depended on the migrant’s access to entitlements and social safety nets such as possession of a ration card, Jan-Dhan account, and other bank accounts.

Entitlements at the destination states have been relatively low for the migrants due to lack of documentation (see Figure 16). Only 1.75 percent and 2.1 percent of migrants reported possessing a ration card and a Jan-Dhan account while 11.4 percent of the migrants had access to other bank accounts at the destination during the Phase 2 survey. The situation worsens, especially for migrants from Bihar and West Bengal with complete inaccessibility to a Jan–Dhan account and a ration card at

destination states. Following this, the portability of entitlements, particularly ration cards, need to be dealt with urgently. In this regard, the One Nation One Ration Card scheme has been launched. However, its implementation and extension across the country has to be fastened.

Figure 16: Access to social safety nets and bank accounts



Source: Authors' compilation

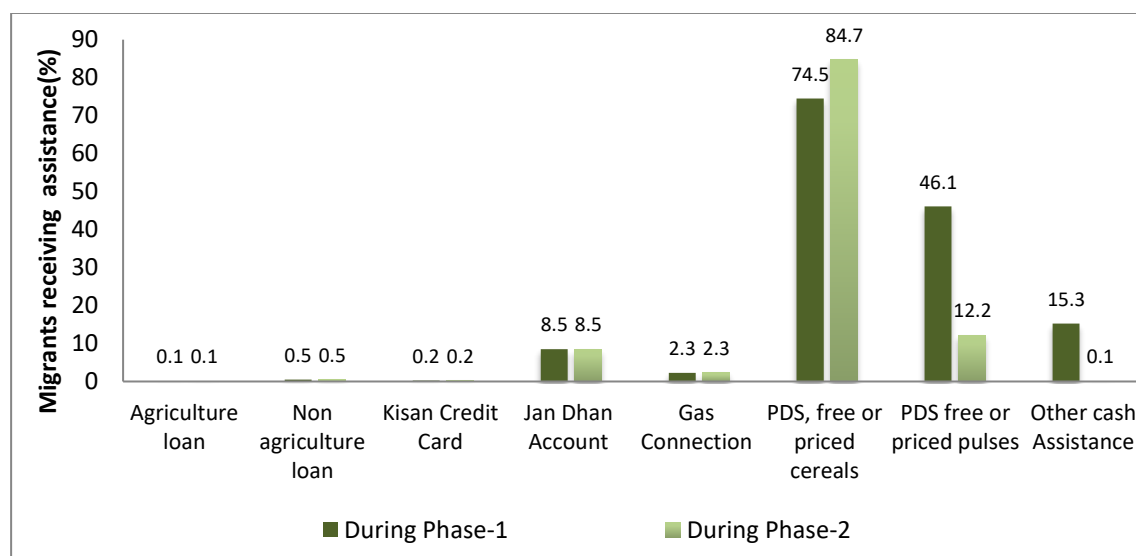
Although the entitlement to a ration card, Jan-Dhan account, and other bank accounts is significantly higher among the migrants at the source state than at the destination state, there is wide state-wise variation. In Bihar, 97.8 percent of migrants at their native place have access to a ration card, followed by Chhattisgarh (96.7 percent) and West Bengal (90.7 percent), while it was only 53.23 percent in Odisha. Likewise, there are high variations in possession of a Jan-Dhan bank account at the source state ranging from 97 percent in Bihar to 0.76 percent in Odisha. Migrants in most of these source states have either a Jan-Dhan account or other bank accounts except Chhattisgarh, where 29.18 percent of the migrants have either of the two bank accounts.

Furthermore, we examined the reach and efficacy of various relief measures and government assistances in mitigating the economic shock among these migrant workers. Figure 17 presents the percentage distribution of migrants at the native place who have received any government assistance during the Phase 1 survey and Phase-2 survey.¹⁷

The migrants at the native place who received cereals (rice, wheat or both) under PDS increased significantly between Phase 1 and Phase 2 survey, from 74.5 to 84.7 percent. However, the percentage receiving pulses (*chana*) declined from 46.1 to 12.2 percent. The leakages in pulses were much higher than in cereals. Note that, even though the possession of a ration card was higher at source state, many reported not receiving free or subsidised food grains entitled to them, reflecting leakages in the PDS system.

¹⁷ The reference dates for Phase 1 and 2 are July 31, 2020 and November 30, 2020, respectively.

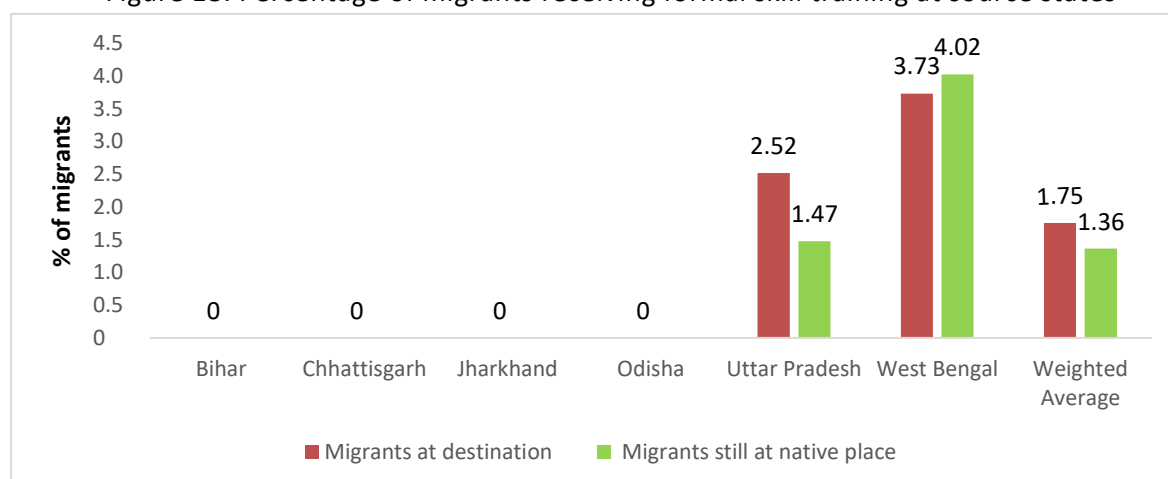
Figure 17: Percentage of migrants receiving any government assistance at source state



Note: Figures are the weighted average of the six states
Source: Authors' compilation

Furthermore, around 23.8 percent of migrant's received an ex-gratia amount through the Jan-Dhan scheme or any cash assistances during June-August 2020. However, the percentage receiving any cash assistance has declined to 8.6 percent by November-December 2020. This could be since most of these schemes were announced for the initial few months. Migrants at the native place who could access agricultural loan (0.1 percent), non-agricultural loan (0.51 percent), Kisan-credit card (0.21 percent), and free gas supply (2.26 percent) were abysmally low. These findings reiterate with the Stranded Workers Action Network (SWAN) Team (2020) and Lahoti et al. (2020), who also highlighted the inaccessibility among the migrants to most of the government assistance¹⁸.

Figure 18: Percentage of migrants receiving formal skill training at source states



Source: Authors' compilation

We also examined if these return migrants received any government assistance for skill up-gradation or training in our survey. Only 1.75 percent of migrants who have returned to the destination and 1.36 percent of migrants at the native place reported receiving any formal skill training in the source state

¹⁸ The Stranded Workers Action Network (SWAN) Team (2020) found that 82 percent of the workers received no ration from the government (out of 12,248 migrants) after 32 days since lockdown, while 97 percent (out of 10,383) has received no cash aid from the government during the initial period of lockdown. These findings are based on the interaction of SWAN teams (till April 26th, 2020), with 1,531 groups of workers, adding up to 16,863 people, of which 10,929 were stranded workers.

(Figure 18). Moreover, none of the migrants from Bihar, Chhattisgarh, Jharkhand, and Odisha received any formal training, while the migrants from Uttar Pradesh (2.5 percent) and West Bengal (3.7 percent) reported receiving skill training. The skill training initiative under GKRA, which was to be implemented in a Mission mode for reverse migrants, has been abysmally flawed in implementation, which will have a severe ramification on the recovery of the migrant workers post-lockdown.

5 Conclusion and policy recommendations

The evidence presented in the study suggests that the pandemic and consequent lockdown had a profound impact on the economy, particularly the manufacturing, construction and trade and services sector. The agriculture and the food processing industry were not severely affected by the pandemic. It is worth noting that agriculture was the only sector that attained a positive growth rate during the first two-quarters of FY 2020-21. Additionally, a significant increase in agricultural production and procurement in FY 2020-21 coupled with increased farm exports during April to December 2020 also positively contributed to its resilience.

To revive the economy and provide support to the vulnerable population, the central government announced a series of packages. Given the government's prompt measures to restore the supply-side shocks and easing of the lockdown restrictions, the GDP and other major sectors experienced a sharp V-shaped recovery by the second quarter of FY 2020-21. Besides, the recent Covid vaccines' approval and the inoculation drive in India have raised hopes to control the outbreak of the virus and increase the momentum of economic recovery.

The major catastrophe that emerged due to the pandemic and the lockdown was the unprecedented migrant crisis. The pandemic has brought to the forefront the vulnerabilities of the migrant workers in precarious employment relation with no job and social security. Besides, the government's stimulus packages have neglected the dire needs of the migrant workers who faced the brunt of the lockdown. Ironically, the central government did not have accurate figures on the number of migrants as the latest data on migrants was available from Census 2011. First and foremost, we recommend that a periodic database on migrant workers must be carried out, at least once every five years, which is necessary for formulating policy recommendation and effective implementation of schemes.

Most of these migrants are engaged in precarious jobs with no job or social security. Even after remigration, we found that the household income of the migrants is still 7.7 percent lower than the pre-pandemic level, whereas, among the migrants still at their native place, the income has contracted 82 percent. Additionally, many workers reported a fall in the quality of food consumed during the lockdown and post-lockdown compared to the pre-lockdown level. The pandemic has exposed these migrants to vulnerabilities that transcended employment and income loss to food and nutritional insecurity. The implementation of 'One nation, one ration card' to provide PDS entitlements at the destination, with an option to receive cash or grain in kind, needs to be fastened.

Overall, our survey showed that only 7.7 percent of migrants at native place reported being engaged in MGNREGA or any other public work during the Phase 2 survey. This suggests that various employment schemes, including GKRY, have either neglected most of these migrants or that migrants did not want to do MGNREGA work. Furthermore, the average days of employment per household under the MGNREGA scheme was 50.1 in FY 2020-21, 48.4 in FY 2019-20, 50.9 in FY 2018-19 (as of April 21st, 2021) (MoRD, GOI 2021). The employment guarantee of 100 days under MGNREGA or implementation of the GKRY in mission mode for 125 days has not been achieved. Besides, 55 percent of migrants at the native place are willing to return to the destination, of which 65.6 percent reported employment as the primary reason to return. The situation certainly warrants close monitoring to ensure no gap exists between measures announced and implementation on the ground.

Moreover, the demand-driven skill training under GKRY, conducted under the component of Pradhan Mantri Kaushal Vikas Yojana, has not reached most of these migrants. For instance, only 1.4 percent of migrants reported getting any skill or training at the native place in our survey. We recommend that the scale of permissible work under MGNREGA should be broadened to absorb the wide range of skilled and unskilled migrants. The skill mapping of the migrants could be done at *Gram Panchayat* or block levels to provide employment on a demand-driven basis under GKRY. A local platform can be created at the *Gram Panchayat* level to register and connect these workers and employers so that they get the opportunity to work closer to their home.

Although the MGNREGA has absorbed some rural migrants during the lockdown, other feasible alternatives such as the *Pradhan Mantri Awas Yojana* (PMAY-Gramin) could be prioritised to generate large scale rural employment and provide affordable houses to rural populations. This will stimulate the rural economy and positively impact rural infrastructure, particularly in the eastern states. Notably, India's eastern states require a massive reconstruction programme - like Roosevelt's New Deal during the Great Depression in the USA in 1930s - to build infrastructure, agricultural markets, rural housing, as well as bringing along private players and industrialist. This 21st century New Deal will stimulate demand, create employment and provide a fillip to the rural economy, and in due course alleviate distress of migration.

Notably, many of these workers were bypassed by the relief measures announced by the government. With no access to relief measures and entitlements, full recovery of the migrant workers seems daunting despite many being drawn back into migration circuit with the revival of economic activities. The registration and formalisation of the migrants at the destination is crucial to provide them with minimum wage, proper working conditions, grievance redressal, and skill up-gradation. In this regard, the Niti Ayog's draft national policy on migrant workers has been a significant step taken by the government to provide basic entitlements and recognition to migrants as "integrals part of the development." The draft also identifies critical issues that need to be addressed, such as the portability of entitlements, social safety nets, voting rights, health, education, and housing. A universal social protection system is needed to provide a cushion to the vulnerable migrant workers against uncertainties. However, only time will tell, whether the suggestions of the Niti Ayog's draft policy will be implemented successfully.

References

- Chishti, S. (2020, June 8). Explained: How many migrant workers displaced? A range of estimates. The Indian Express. Retrieved from <https://indianexpress.com/article/explained/coronavirus-how-many-migrant-workers-displaced-a-range-of-estimates-6447840/> (accessed on January 11, 2021)
- CMIE (Centre for Monitoring Indian Economy) (2021). Unemployment Rates in India. Retrieved from <https://unemploymentinindia.cmie.com/> (accessed on March 15, 2021)
- Covid19india.org (2021). Cumulative number of Covid 19 Cases in India. Retrieved from <https://www.covid19india.org/> (accessed on March 31, 2021)
- Damodaran, H. (2021, February 5). Farm exports defy overall trend in 2020, see 9.8 percent growth. The Indian Express. Retrieved from <https://indianexpress.com/article/india/farm-exports-india-covid-19-2020-7175200/> (accessed on April 15, 2021)
- Debuquet, D.L., Martin, W. and Vos, R. (2020). Impacts of COVID-19 on Global Poverty, Food Security and Diets. IFPRI Discussion Paper 01993. IFRPI
- Dev, M. and Sengupta, R. (2020). Impact of Covid-19 on the Indian Economy: An Interim Assessment. Indira Gandhi Institute of Development Research: Mumbai. Retrieved from <http://www.igidr.ac.in/pdf/publication/WP-2020-013.pdf> (accessed on December 30, 2020)
- Dev, M. (2020). Addressing COVID-19 impacts on agriculture, food security, and livelihoods in India. In J. Swinnen & J. McDermott (Ed), Covid-19 and Global food security: IFPRI: Washington, DC
- Directorate General of Commercial Intelligence and Statistics (DGCIS), Government of India (2021). Foreign Trade Statistics. Retrieved from http://www.dgciskol.gov.in/foreign_trade_statistics.aspx (accessed on February 21, 2021)
- Ghosh, J. (2020). A critique of the Indian government's response to the COVID-19 pandemic. Journal of Industrial and Business Economics, 1–12. Advance online publication. <https://doi.org/10.1007/s40812-020-00170-x> (accessed on January 11, 2021)
- Ghosh, N. (2014). An assessment of the extent of food processing in various sub-sectors. Revised report submitted to Ministry of Agriculture, Institute of Economic Growth, New Delhi.
- Gol. Government of India. (2020a). Garib Kalyan Rojgar Abhiyan. Press information Bureau. Ministry of rural development. Retrieved from <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1654680> (accessed on February 20, 2021)
- Gol. Government of India. (2020b). Distribution of Free Foodgrains and Pulses to Migrant Labourers. Press information Bureau. Ministry of Consumer Affairs, Food & Public Distribution. Retrieved from <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1658096> (accessed on February 21, 2021)
- Gol. Government of India. (2020c). Indian Railways operationalizes 4197 "Shramik Special" trains till 3rd June, 2020 (0900hrs) across the country and transports more than 58 lacs passengers to their home states through "Shramik Special" trains since May 1. Press information Bureau . Ministry of Railways. Retrieved from <https://pib.gov.in/PressReleasePage.aspx?PRID=1629043> (accessed on February 21, 2021)
- Gol. Government of India. (2020d). Garib Kalyan Rojgar Abhiyan. Press information Bureau . Ministry of Rural Development. Retrieved from <https://rural.nic.in/press-release/garib-kalyan-rojgar-abhiyan> (accessed on January 23, 2021)
- Gol. Government of India. (2021). One Nation One Ration Card under implementation by 32 states and UTs reaching 69 Crore Beneficiaries: Finance Minister. Press Information Bureau. Ministry of Finance Retrieved from <https://pib.gov.in/Pressreleaseshare.aspx?PRID=1693888> (accessed on February 21, 2021)
- Gol. Government of India. (2021). GST Revenue collection for December 2020 recorded all time high since implementation of GST. Press Information Bureau. Ministry of Finance. Retrieved from <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1685332> (accessed on February 21, 2021)

- GOI. Government of India. (Various years). Agency Wise Procurement of Wheat and Rice during Various Years. Retrieved from <https://dfpd.gov.in/procurement-figures.htm> and <https://fci.gov.in/procurements.php?view=871658096> (accessed on March 21, 2021)
- GOI. Government of India. (various years). Advance Estimates of Food Grains, Oilseeds & Other Commercial Crops. Directorate of Economics and Statistics (DES). Retrieved from https://eands.dacnet.nic.in/Advance_Estimates.htm (accessed on March 22, 2021)
- Gulati, A. (2020, May 11). There is an opportunity to put India's agri-marketing and PDS system on a more efficient path. The Indian Express. Retrieved from <https://indianexpress.com/article/opinion/columns/coronavirus-public-distribution-system-scheme-national-food-security-agri-marketing-ashok-gulati-6403569/> (accessed on January 1, 2021)
- Gupta, P. (2020, August 6). Agriculture emerges as bright spot amid pandemic, says RBI; rural demand picks up too. The financial express. Retrieved from <https://www.financialexpress.com/economy/agriculture-emerges-as-bright-spot-amid-pandemic-says-rbi-rural-demand-picks-up-too/2046547/> (accessed on April 15, 2021)
- ILO. International Labour Organisation. (2020). ILO Monitor: COVID-19 and the world of work. Sixth edition Updated estimates and analysis. Retrieved from https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/briefingnote/wcms_755910.pdf (accessed on February 10, 2021)
- IMF. International Monetary Fund. (2021). World Economic Outlook Update, January 2021: Policy Support and Vaccines Expected to Lift Activity. Retrieved from <https://www.imf.org/en/Publications/WEO/Issues/2021/01/26/2021-world-economic-outlook-update> (accessed on February 27, 2021)
- Iyer, P.V. (2020, November 18). The key theme of Atmanirbhar packages: spur demand rather than cash in hand. Retrieved from <https://indianexpress.com/article/explained/atmanirbhar-bharat-fiscal-stimulus-sitharaman-budget-7049911/> (accessed on January 5, 2021)
- Kishor, R. (2020, Sept 1). India's economy was facing worst-ever deceleration before Covid-19 hit. The Hindustan Times. <https://www.hindustantimes.com/business-news/india-s-economy-was-facing-worst-ever-deceleration-before-covid-19-hit/story-gOJfU86IJ64UPOjLBoypvN.html> (accessed on January 4, 2021)
- Lahoti, R., Amit, B., Rosa, A., Surbhi K, and Nath, P. (2020). Hunger Grows as India's Lockdown Kills Jobs-Results of a Survey from 12 States. The India Forum, 5 June 2020.
- Ministry of Finance, Government of India. (2017). Economic Survey 2016-17. Retrieved from <https://www.indiabudget.gov.in/budget2017-2018/survey.asp> (accessed on March 12, 2021)
- Ministry of Finance, Government of India. (2021). Economic Survey 2020-21. Retrieved from <https://www.indiabudget.gov.in/economicsurvey/> (accessed on March 12, 2021)
- MOSPI. Ministry of Statistics & Programme Implementation, Government of India. (Various Years). Consumer Price Index Numbers. Retrieved from https://www.mospi.gov.in/?search_block_form=wpi&op=Go (accessed on March 22, 2021)
- MOSPI. Ministry of Statistics & Programme Implementation, Government of India. (Various Years). Index of Industrial Production. Retrieved from <http://mospi.nic.in/iip> (accessed on March 20, 2021)
- MOSPI. Ministry of Statistics & Programme Implementation, Government of India. (Various Years). Annual and Quarterly Estimates of GDP at constant prices, 2011-12 series. Retrieved from <http://mospi.nic.in/data> (accessed on March 10, 2021)
- Ministry of Commerce and Industry, Government of India. (various years). Wholesale Price Index (WPI) Data. Retrieved from <https://eaindustry.nic.in/> (accessed on March 22, 2021)

- Ministry of Labour and Employment, Government of India (2020). Lok Sabha Unstarred Questions No. 174. Retrieved from <http://164.100.24.220/loksabhaquestions/annex/174/AU174.pdf> (accessed on January 23, 2021).
- Ministry of Rural Development, Government of India (2021, March 17). MGNREGA: At a Glance. Retrieved from http://mnregaweb4.nic.in/netnrega/allvidetailsdashboard_new.aspx (accessed on March 24, 2021).
- MoFHW. Ministry of Health & Family Welfare. (2021). India's daily Covid-19 case count. Retrieved from <https://www.mohfw.gov.in/> (accessed on March 31, 2021).
- Narayanan, S. (2020, July 20). How India's agrifood supply chains fared during the COVID-19 lockdown, from farm to fork. Retrieved from <https://www.ifpri.org/blog/how-indias-agrifood-supply-chains-fared-during-covid-19-lockdown-farm-fork> (accessed on January 23, 2021).
- Narayanan, S. and Saha, S. (May 12, 2020). Urban Food Markets and the Lockdown in India. Retrieved from <https://ssrn.com/abstract=3599102> (accessed on February 2021)
- NCEUS (National Commission for Enterprises in the Unorganised Sector) (2007). Conditions of Work and Promotion of Livelihoods in the Unorganised Sector, National Commission for Enterprises in the Unorganised Sector, Government of India and Academic Foundation, August, New Delhi.
- Pinto, A.R., Bhowmick, A. and Adlakha, R.K. (2020, September 9). How did India's rural economy fare through the COVID-19 lockdown and the re-opening? [Blog post]. Retrieved from <https://blogs.worldbank.org/endpovertyinsouthasia/how-did-indias-rural-economy-fare-through-covid-19-lockdown-and-re-opening> (accessed on February 14, 2020)
- Ray, D. and Subramanian, S. (2020): India's lockdown: an interim report. *Indian Economic Review*, Vol.55 (Suppl 1):S31–S79. Retrieved from <https://doi.org/10.1007/s41775-020-00094-2> (accessed on December 31, 2020)
- RBI Bulletin (2020, March 11). Food Processing Industry in India: Challenges and Potential. Retrieved from https://www.rbi.org.in/Scripts/BS_ViewBulletin.aspx?Id=18823 (accessed on February 20, 2021)
- Sahoo, P.A. (2020). COVID-19 and Indian Economy: Impact on Growth, Manufacturing, Trade and MSME Sector. *Global Business Review*. Vol 21(5) 1159–1183, Retrieved from DOI: 10.1177/0972150920945687 (accessed on Dec 30, 2020)
- Sharma, S. (2020, September 2). Another milestone for farm sector: Now, Kharif acreage at lifetime high; bumper harvest likely. *The Financial Express*. Retrieved from <https://www.financialexpress.com/economy/another-milestone-for-farm-sector-now-kharif-acreage-at-lifetime-high-bumper-harvest-likely/2072475/> (accessed on April 15, 2021)
- Srivastava, R. (2013). A social protection floor for India. ILO. New Delhi: ILO
- Srivastava, R. (2020a). Growing Precarity, Circular Migration, and the Lockdown in India. *The Indian Journal of Labour Economics*. Retrieved from <https://doi.org/10.1007/s41027-020-00260-3> (accessed on February 15, 2021)
- Srivastava, R. (2020b). Understanding circular migration in India: Its nature and dimensions, the crisis under lockdown and the response of the State. Centre for Employment Studies Working Paper Series. WP04/2020, Institute for Human Development, New Delhi. Retrieved from https://www.ihindia.org/Working%20Paers/2020/IHD-CES_WP_04_2020.pdf (accessed on February 20, 2021)
- Statista. (2021). Rate of coronavirus (COVID-19) tests performed in the most impacted countries worldwide as of March 8, 2021 (per million population). Retrieved from <https://www.statista.com/statistics/1104645/covid19-testing-rate-select-countries-worldwide/> (accessed on March 15, 2021)
- SWAN Team (2020). 32 days and counting: COVID-19 lockdown, migrant workers, and the inadequacy of welfare measures in India. Stranded Workers Action Network. Retrieved from

https://covid19socialsecurity.files.wordpress.com/2020/05/32-days-andcounting_swan.pdf
(accessed on December 28, 2020)

Times of India (2020, October 5). With 828 tests/day per million population, India exceeds WHO. Retrieved from <https://timesofindia.indiatimes.com/india/with-828-tests/day-per-million-population-india-exceeds-who-advisory-on-covid-testing-by-almost-six-times/articleshow/78484704.cms> (accessed on Jan 5, 2021)

Tractorjunction (2021). Domestic Tractor Wholesale Figures Apr'20 - Dec'20 (YTD FY'21). Retrieved from <https://www.tractorjunction.com/assets/images/images/news/tractor-1611404821.png> (accessed on March 15, 2021)

United Nation. (2019). World Population Prospect 2019. Retrieved from <https://population.un.org/wpp/>(accessed on January 5, 2021)

WHO. World Health Organisation. (2021). WHO Covid-19 Global Data. Retrieved from <https://covid19.who.int/info/> (accessed on April 15, 2021)

Wire Staff (2020). Only 33% Foodgrain Allocated for Migrants Under Atmanirbhar Bharat Was Distributed. Retrieved from <https://thewire.in/rights/migrant-food-distribution-atmanirbhar-bharat> (accessed on December 29, 2020)

Appendix

A1: Comparison of India's Covid-19 infection, fatality and testing rates with selected countries

Countries	Infection rate per million	Fatality rate per million	Rate of testing per million (in millions)
USA	86584	1573	1.11
UK	62141	1833	1.38
France	58775	1350	0.84
Brazil	51462	1244	0.13
Germany	29901	859	0.54
South Africa	25647	854	0.15
World	14949	332	-
India*	8436	118	0.17
China	71	3	0.11

Source: WHO Covid-19 Global Data (as on March 9th, 2021), Population projection of 2020 from World Population Prospect 2019 and data on testing per million from Statista.com (as on March 8th, 2021). * Data for India from covid19.org (as on March 9th, 2021)

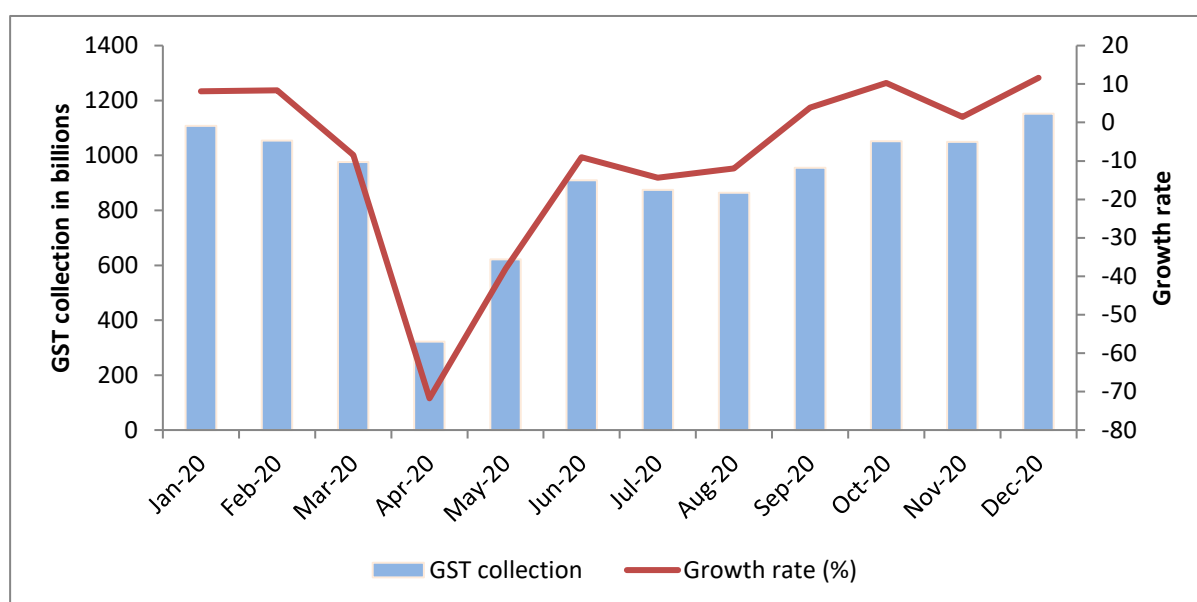
A2: Cases, deaths and tests per million by Indian states and territories

States	Confirmed Cases per million	Deaths per million	Recoveries per million	Test per million (in millions)
Goa	36014	518	35085	0.33
Delhi	32368	551	31729	0.65
Kerala	30711	122	29463	0.34
Maharashtra	18243	429	17004	0.14
Karnataka	14520	187	14520	0.29
Andhra Pradesh	17057	137	16900	0.27
Tamil Nadu	11304	165	11085	0.24
Uttar Pradesh	2686	38	2640	0.14
West Bengal	5952	106	5813	0.09
Odisha	7736	45	7674	0.19
All India	8436	118	8175	0.17

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Source: Covid19india.org
Note: Figures are as of March 9th, 2021

A3: Trend in GST collection (in Rs billions)



Source: PIB, Gol, 2020

A4: India's top agricultural export and import commodities (US\$ million)

Exports	2018-19	2019-20	Apr-Dec 2019	Apr-Dec 2020 (P)	Imports	2018-19	2019-20	Apr-Dec 2019	Apr-Dec 2020 (P)
Marine product	6803	6722	5456	4544	Vegetable Oils	9,890	9,673	7,266	7,976
Buffalo Meat	3587	3200	2518	2370	Pulses	1,141	1,440	1,163	1,253
Rice - Basmati	4712	4372	2978	2947	Fresh Fruits	1,988	1,993	1,424	1,495
Spices	3322	3621	2809	2902	Cashew raw	1,608	1,278	1,026	853
Rice others	3038	2031	1460	3068	Spices	1,135	1,439	1,147	783
Sugar	1360	1966	1176	1723	Sugar	449	350	288	580
Oil meals	1509	828	645	935	Alcoholic Beverages	668	656	505	388
Total exports	39187	35586	26324	28893	Total imports	20428	21423	16431	15676

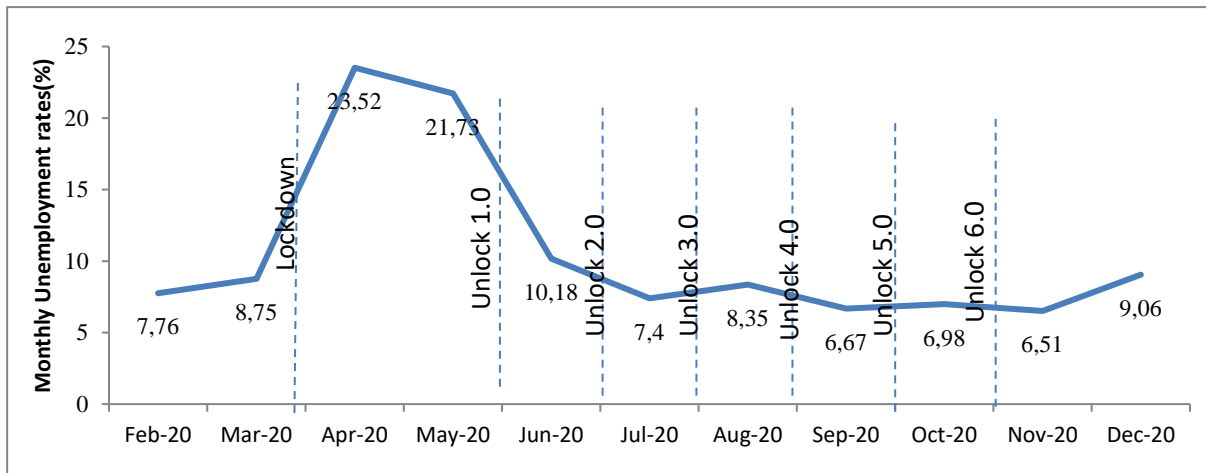
Source: DGCIS, Gol (as on February 16th, 2021)

A5: Domestic tractor industry Aril 2020 to December 2020 (YTD FY 2020)

Manufacturer	YTD FY 2021	YTD FY 2020	% change	Market share YTD FY21	Market share YTD FY20	% change
M&M Group	253284	234277	8.11	38.36	41.64	-3.28
Tafe Group	123892	98183	26.18	18.76	17.45	1.31
Sonalika	88520	64918	36.36	13.41	11.54	1.87
Escorts	70919	63130	12.34	10.74	11.22	-0.48
John Deere	62289	51423	21.13	9.43	9.14	0.29
New Holland	26298	22325	17.80	3.98	3.97	0.01
Kubota	12181	9965	22.24	1.84	1.77	0.07
VST	6581	5315	23.82	1.00	0.94	0.05
Captain	3310	1990	66.33	0.50	0.35	0.15
Indo Farm	3092	2187	41.38	0.47	0.39	0.08
Force	2710	2419	12.03	0.41	0.43	-0.02
ACE	1946	1682	15.70	0.29	0.30	0.00
Preet	3520	1277	175.65	0.53	0.23	0.31
SDF	1799	3601	-50.04	0.27	0.64	-0.37
Total	660341	562692	17.35	100.00	100.00	

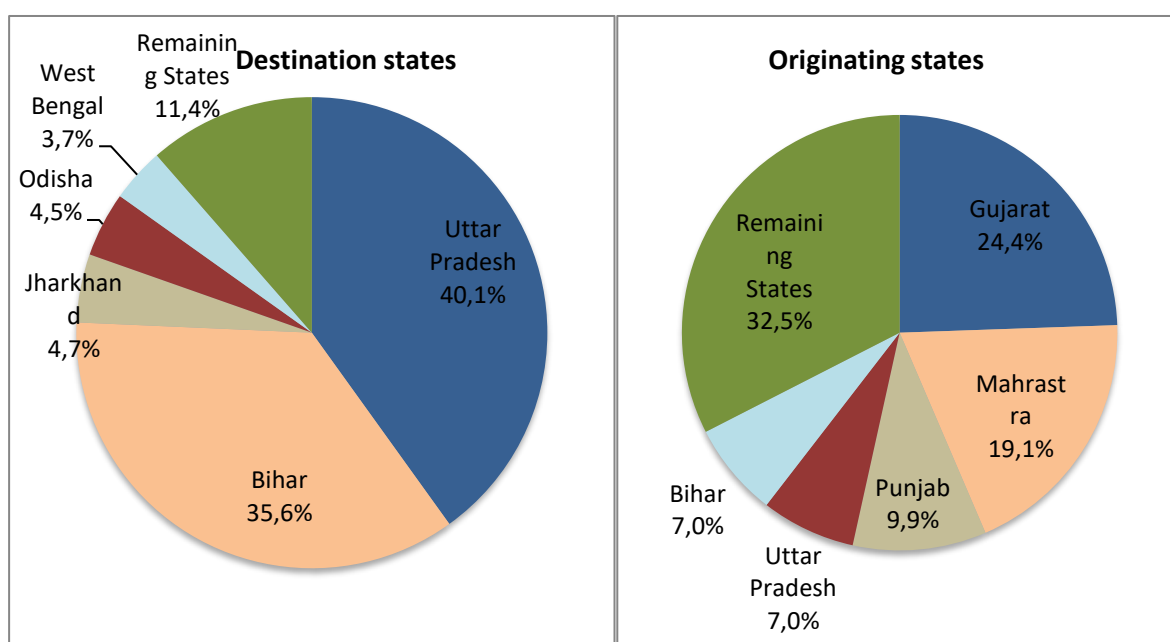
Source: www.tractorjunction.com (as of January 23, 2021)

A6: Monthly unemployment rate (%), 2020



Source: CMIE, 2020

A7: Percentage share of *Shramik* Special trains according to destination and originating states



Source: PIB, Ministry of Railways, Gol (as on June 3, 2020)

Note: A total of 4197 trains have operated till June 3, 2020

A8: State-wise employment generated in person-days and amount spent so far under *Garib Kalyan Rojgar Abhiyan* (as of Sept 15th, 2020)

States	Mandays Employment Generated (in millions)	Expenditure (Rs. in billions)
Bihar	42.5	67.1
Jharkhand	4.0	6.62
Madhya Pradesh	47.8	42.33
Odisha	7.4	10.00
Rajasthan	111.3	60.44
Uttar Pradesh	59.1	49.05
Total of six states	272.1	235.59

Source: PIB, Gol (as of 15th Sept 2020)

A9: Distribution of migrants by the reason for reverse migration

State	No work at the destination area	Shortage of money to survive	Danger of Covid-19 at the destination place	Evacuated by Land lord	Desire to be with family at the Native Place	Others
Bihar	74.26	14.04	11.70	-	-	-
Chhattisgarh	96.60	-	3.20	-	-	0.20
Jharkhand	63.59	15.90	20.51	-	-	-
Odisha	56.74	1.41	40.44	0.40	1.01	-
Uttar Pradesh	63.90	20.63	13.21	1.26	1.01	-
West Bengal	-	1.96	96.74	-	1.30	-
Weighted average	59.86	9.50	29.55	0.41	0.65	0.03

Source: Authors' compilation

A10: State wise number of migrants and their calculated weights

State	No. of Migrants	Weights
Bihar	1500612	19.73
Chhattisgarh*	530047	6.97
Jharkhand*	375000	4.93
Odisha	565126	7.43
Uttar Pradesh	3249638	42.73
West Bengal	1384693	18.21
Total of six states	7605116	100.00

Source: Authors' calculation from the Lok Sabha Unstarred Questions No. 174 (as on 14.09.2020), Ministry of Labour and Employment, Gol

Note:* Data for Odisha and Chhattisgarh is taken from the dashboard of the Odisha Government (as on 7 July 2020) and a statement of the Government of Chhattisgarh (as on 16 June 2020), respectively.

A11: Sample Design

The Migrant Survey was conducted in six states: Bihar, Chhattisgarh, Jharkhand, Odisha, Uttar Pradesh, and West Bengal, which accounted for more than two-thirds of the reverse migrants who returned to their native places due to the pandemic induced lockdown. A multi-stage sample design was adopted for the migrant survey. *Gram Panchayats* were the first stage units and the migrants were the ultimate stage units. The selected states were divided into Commissionerate/Revenue Divisions, and from each Commissionerate/Revenue Division, one district was selected by using Simple Random Sampling. However, we did not include the Commissionerate/districts located in the western part of Uttar Pradesh in the survey. These districts are known to pull migrants from other states or neighbouring districts for livelihood and have a lower influx of reverse migrants.

From the selected 34 districts, we then selected 20 *Gram Panchayats* (GPs) using systematic sampling to ensure that a large number of blocks in the districts got represented. For the selection of *Gram*

Panchayats, the frame of Local Government Directory (LGD) was used, which includes LGD Code, State Code, State, District, Block, Local Body, Name of Secretary and Contact number of Secretary etc. Every GP maintained a village-wise list of reverse migrant families, which contained information on the name of migrants, date of return, mode of journey, state, and place from where he/she has returned, and contact number. We collected this information via telephone from the respective GPs, and from each GPs, we selected five migrants.

Thus, a multi-stage sampling with a two-phase telephone survey was used as the frame for selecting sample migrants. In the first phase, the respective GP Secretary/*Panchayat* Executive Officer (PEO) was telephonically requested for the details of the reverse migrants. Furthermore, migrants are selected in such a way that each of the villages within the *Gram Panchayat* got represented. If there was any difficulty in getting the list of the migrants from GPs or lack of response from the migrants, we substituted it with another *Gram Panchayats* or migrants. The first phase involved collecting the list of migrants with contact numbers from the selected GPs of sample districts. In the second phase, we enquired about the selected reverse migrants via telephone.

The detailed information on migrant's demographic and economic characteristics, occupation, income, and consumption prior to, during and post lockdown, and their access to the policy support was collected telephonically.

In the survey, we selected nine districts from Uttar Pradesh and five districts each from the rest of the states. The sample, therefore, covers 505 *Gram Panchayats* and 2917 migrants. Table A11.1 shows the selected districts and *Gram Panchayats* along with the number of migrants that were surveyed.

Table A11.1: Distribution of selected *Gram Panchayat* and migrants in selected districts

State	Districts	No. of <i>Gram Panchayats</i> (GP) Surveyed	No. of Migrants Surveyed
Total	34 districts	505	2917
Bihar	5 districts	90	470
	Aurangabad	10	104
	Begusarai	11	110
	Patna	6	48
	Saharasa	21	108
	Samastipur	42	100
Chhattisgarh	5 districts	99	500
	Bilaspur	28	100
	Dantewada	15	100
	Jashpur	20	100
	Mahasamund	19	100
	Rajanandgaon	17	100
Jharkhand	5 districts	35	195
	East Singhbhum	4	27
	Garhwa	6	39
	Giridih	8	40
	Godda	11	64
	Simdega	6	25
Odisha	5 districts	99	497
	Bhadrak	20	97

	Ganjam	18	100
	Kendujhar	21	100
	Malkangiri	20	100
	Puri	20	100
Uttar Pradesh	9 districts	125	795
	Ambedkar Nagar	5	42
	Baharaich	6	61
	Banda	11	103
	Barabanki	18	89
	Basti	18	100
	Jalaun	10	100
	Jaunpur	20	100
	Mau	20	100
	Pratapgarh	17	100
West Bengal	5 districts	57	460
	Hooghly	7	70
	Jalpaiguri	10	99
	Malda	9	98
	Purulia	12	103
	South 24 Parganas	19	90

Source: Authors' compilation

Table A11.2: State-wise date of the survey

State	Phase-1 (2020)		Phase-2 (2020)		Phase-3 (2021)	
	Start of Survey	Completion of Survey	Start of Survey	Completion of Survey	Start of Survey	Completion of Survey
Bihar	12 July	28 July	24 Nov.	12 Dec.	21 Feb.	25 Feb.
Jharkhand	7 July	1 Aug.	11 Nov.	9 Dec.	22 Feb.	25 Feb.
Odisha	5 July	21 July	17 Nov.	23 Dec.	25 Feb.	3 March
Uttar Pradesh	12 July	15 Aug.	22 Nov.	30 Dec.	21 Feb.	25 Feb.
West Bengal	14 July	30 July	7 Nov.	1 Dec.	22 Feb.	24 Feb.
Chhattisgarh	30 June	28 July	9 Nov.	25 Nov.	20 Feb.	23 Feb.

Note: Phase-2 Survey was conducted during November-December 2020 with the reference as 30 November 2020. Phase-3 was conducted during February 2021, with the reference date as 28 February 2021. The reference date of Phase-1 is 31 July 2020.

Source: Authors' compilation

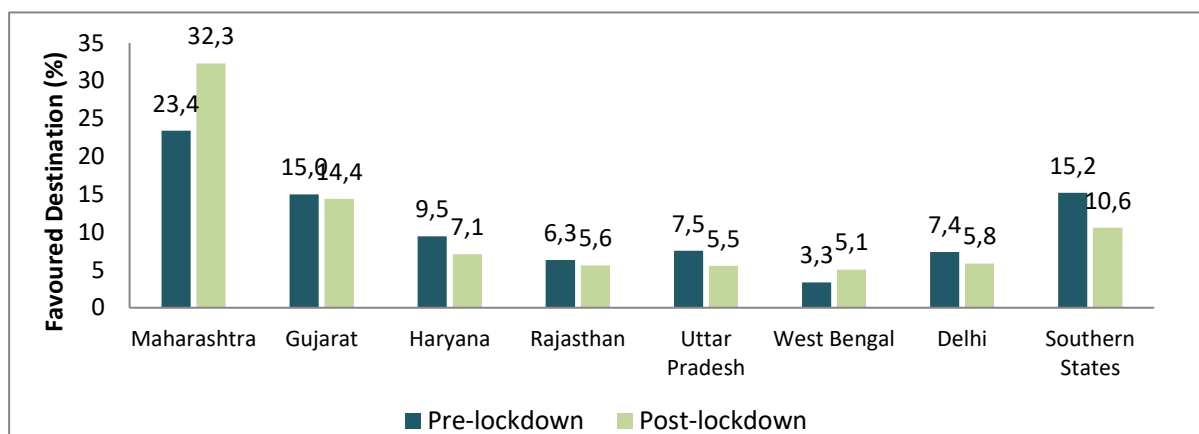
A12: Distribution of the migrants across age, educational status, duration at the destination and average household size

Median age (%)		Duration at destination (%)	
≤20 years	9.0	≤1 year	29.1
20-30 years	52.6	2-4 years	32.0
30-40 years	25.6	5-7 years	16.5
40-50 years	10.1	>7 years	22.4
≥50 years	2.8	Average household size	
Educational status (%)		Bihar	4.0
Illiterate	2.2	Chhattisgarh	5.4
Primary	24.7	Jharkhand	5.7
Secondary	60.4	Odisha	5.2
Higher secondary	10.2	Uttar Pradesh	6.8
Graduate and above	2.1	West Bengal	5.1
Technical education	0.3	Weighted average	5.7

Note: Figures are the weighted average of the six states except the state data

Source: Authors' compilation

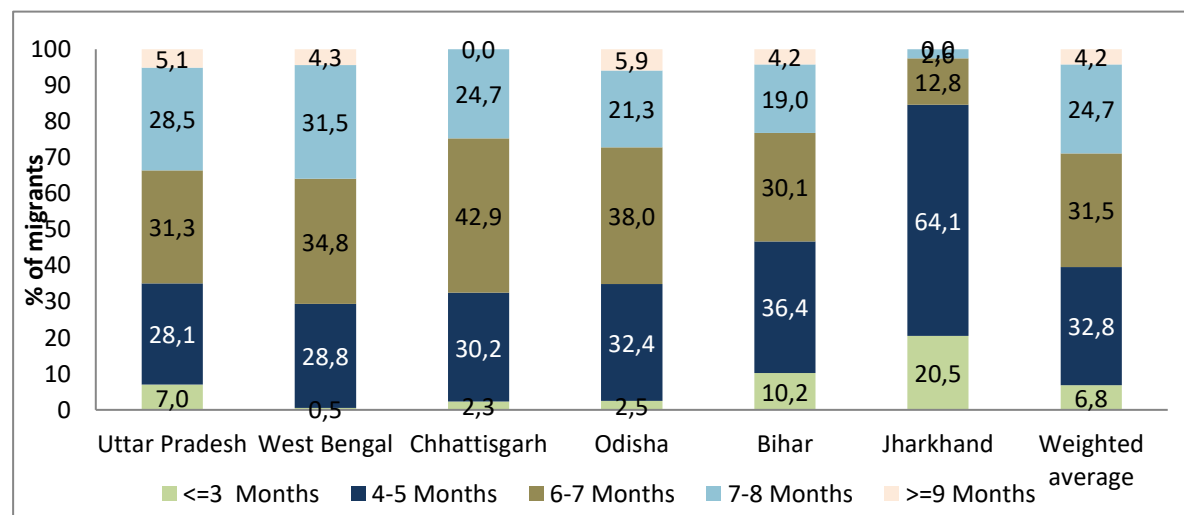
A13: Major destination states among the migrants



Note: Figures are the weighted average of the six states

Source: Authors' compilation

A14: Duration of stay at the native place before migrating back to the destination



Source: Authors' compilation

A15: State-wise occupational status prior to and post lockdown after remigration

	States	Self employed in agriculture	Self employed in non-agriculture	Salaried and wage earner	Casual worker in agriculture	Casual worker in non-agriculture	No economic activity
Pre-lockdown	Bihar	-	-	24.70	0.90	73.49	0.90
	Chhattisgarh	0.00	3.25	3.25	10.06	83.44	-
	Jharkhand	-	-	79.49	2.56	17.95	-
	Odisha	-	2.16	80.25	1.85	15.74	-
	Uttar Pradesh	0.42	23.47	61.52	0.63	13.74	0.21
	West Bengal	-	1.63	69.02	-	29.35	-
Post-lockdown	Bihar	0.90	16.87	26.20	0.90	54.52	0.60
	Chhattisgarh	1.62	-	83.77	13.31	0.97	0.32
	Jharkhand	-	-	97.44	-	2.56	-
	Odisha	-	1.54	67.28	-	31.17	-
	Uttar Pradesh	-	18.39	71.88	0.21	9.09	0.42
	West Bengal	2.17	0.54	92.93	-	1.09	3.26

Source: Authors' compilation

A16. Working condition and type of employment after remigration

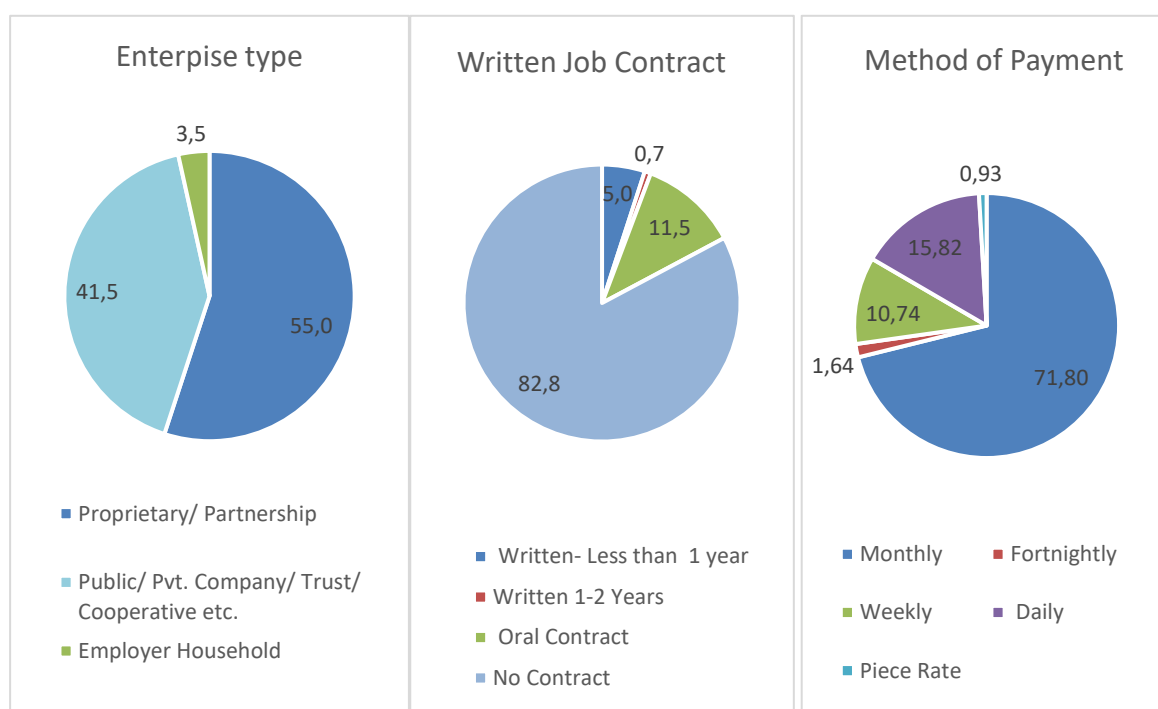
After migrating to the destination post-lockdown, many migrants reported difficulties in finding work in the destination areas. Many migrants had to go without work for weeks before being engaged in any economic activity.¹⁹ What are the employment and working conditions among the migrants who managed to find employment, specifically in wage employment (i.e., casual workers and salaried and wage earners) at the destination?

Overall, 86.1 percent of migrants who have returned to their destinations post-lockdown are in wage employment. More than 55 percent of these migrants are employed in proprietary and partnership enterprises, while 41.5 percent were engaged in public and private companies, trusts and cooperatives (see Figure A16.1). Only a fraction of migrants (3.5 percent) is working in employer households. About 82.8 percent of the migrants in wage employment did not have any written job contract with the employer, while 5 percent had written contracts for 1-2 years and less than one percent have written contracts for more than a year. This resonates with the increasing informalisation of the workforce with no job security, which has serious ramifications on the worker's livelihood securities.

The remuneration pattern among the wage earners at destination revealed that the majority are paid monthly (71.8 percent). In contrast, one-tenth is paid weekly wages, and around 15.8 percent are paid daily rates. Notably, the mode of payment depends upon the occupation and activity status of these workers. In the survey, most casual workers were paid wages on daily rates, while workers in construction were paid weekly or fortnightly payments.

¹⁹ On average, 82.8 percent of migrants who returned to the destination reported being without work for a week, while 15.3 percent were without work for one to two weeks. However, around 1.64 percent of the migrants stated that it took more than 15 days to find work after returning to the destination post-lockdown.

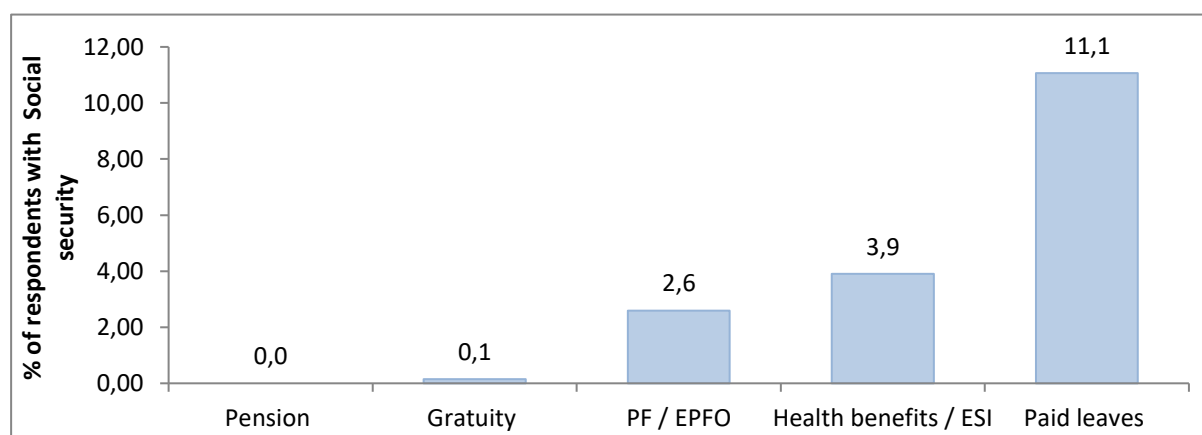
Figure A16.1: Enterprise type, written contracts and mode of payment among the migrant in wage employment at destination



Note: Figures are the weighted average of the six states
 Source: Authors' compilation

The survey examined social security provisions among the wage earners at the destination post-lockdown. Among the wage earners at the destination, 11.1 percent reported getting paid leaves, 3.9 percent reported getting health benefit or having ESIC membership, while 2.6 percent reported having EPFO membership. However, none of the migrants reported being enrolled in any pension scheme (Figure A16.2). Even though more than two-thirds of the migrants at the destination were employed in salaried and wage employment, most of them were not covered under any social security benefits.

Figure A16.2: Social security benefits among the migrant in wage employment at destination



Note: Figures are the weighted average of the six states
 Source: Authors' compilation

A17: State-wise occupational status among the migrants at their native place during Phase 1 and Phase 2 survey

	States	SE-Farming	SE-Livestock/ Poultry/ Fisheries Etc	SE-Non Agriculture	Salaried and Wage Earners	Agriculture Labour	MGNRE GA/ Public Works	Other Casual Works	No economic activity
Phase-1 survey	Bihar	58.92	-	-	-	13.51	-	21.62	5.95
	Chhattisgarh	21.35	4.63	0.36	1.4	6.41	1.78	39.86	24.2
	Jharkhand	60.47	-	1.16	-	-	-	11.63	26.74
	Odisha	34.6	-	-	-	0.76	0.76	1.90	61.98
	Uttar Pradesh	31.2	0.98	1.23	-	10.07	7.86	2.70	45.95
	West Bengal	7.43	-	3.72	1.9	7.74	7.74	15.79	55.73
Phase-2 survey	Bihar	17.3	0.54	16.22	2.2	13.51	34.05	11.35	4.86
	Chhattisgarh	56.94	-	-	-	16.73	-	0.36	25.98
	Jharkhand	19.77	-	5.81	-	10.47	-	59.30	4.65
	Odisha	34.22	0.38	0.76	0.8	0.76	-	7.22	55.13
	Uttar Pradesh	77.15	0.25	0.74	1.2	10.07	2.21	3.44	3.44
	West Bengal	0.93	-	2.17	2.2	47.06	0.31	15.17	32.20

Source: Authors' compilation

1. Evers, Hans-Dieter and Solvay Gerke (2005). Closing the Digital Divide: Southeast Asia's Path Towards a Knowledge Society.
2. Bhuiyan, Shajahan and Hans-Dieter Evers (2005). Social Capital and Sustainable Development: Theories and Concepts.
3. Schetter, Conrad (2005). Ethnicity and the Political Reconstruction of Afghanistan.
4. Kassahun, Samson (2005). Social Capital and Community Efficacy. In Poor Localities of Addis Ababa Ethiopia.
5. Fuest, Veronika (2005). Policies, Practices and Outcomes of Demand-oriented Community Water Supply in Ghana: The National Community Water and Sanitation Programme 1994 – 2004.
6. Menkhoff, Thomas and Hans-Dieter Evers (2005). Strategic Groups in a Knowledge Society: Knowledge Elites as Drivers of Biotechnology Development in Singapore.
7. Mollinga, Peter P. (2005). The Water Resources Policy Process in India: Centralisation, Polarisation and New Demands on Governance.
8. Evers, Hans-Dieter (2005). Wissen ist Macht: Experten als Strategische Gruppe.
- 8.a Evers, Hans-Dieter and Solvay Gerke (2005). Knowledge is Power: Experts as Strategic Group.
9. Fuest, Veronika (2005). Partnerschaft, Patronage oder Paternalismus? Eine empirische Analyse der Praxis universitärer Forschungsk Kooperation mit Entwicklungsländern.
10. Laube, Wolfram (2005). Promise and Perils of Water Reform: Perspectives from Northern Ghana.
11. Mollinga, Peter P. (2004). Sleeping with the Enemy: Dichotomies and Polarisation in Indian Policy Debates on the Environmental and Social Effects of Irrigation.
12. Wall, Caleb (2006). Knowledge for Development: Local and External Knowledge in Development Research.
13. Laube, Wolfram and Eva Youkhana (2006). Cultural, Socio-Economic and Political Constraints for Virtual Water Trade: Perspectives from the Volta Basin, West Africa.
14. Hornidge, Anna-Katharina (2006). Singapore: The Knowledge-Hub in the Straits of Malacca.
15. Evers, Hans-Dieter and Caleb Wall (2006). Knowledge Loss: Managing Local Knowledge in Rural Uzbekistan.
16. Youkhana, Eva; Lautze, J. and B. Barry (2006). Changing Interfaces in Volta Basin Water Management: Customary, National and Transboundary.
17. Evers, Hans-Dieter and Solvay Gerke (2006). The Strategic Importance of the Straits of Malacca for World Trade and Regional Development.
18. Hornidge, Anna-Katharina (2006). Defining Knowledge in Germany and Singapore: Do the Country-Specific Definitions of Knowledge Converge?
19. Mollinga, Peter M. (2007). Water Policy – Water Politics: Social Engineering and Strategic Action in Water Sector Reform.
20. Evers, Hans-Dieter and Anna-Katharina Hornidge (2007). Knowledge Hubs Along the Straits of Malacca.
21. Sultana, Nayeem (2007). Trans-National Identities, Modes of Networking and Integration in a Multi-Cultural Society. A Study of Migrant Bangladeshis in Peninsular Malaysia.
22. Yalcin, Resul and Peter M. Mollinga (2007). Institutional Transformation in Uzbekistan's Agricultural and Water Resources Administration: The Creation of a New Bureaucracy.
23. Menkhoff, T.; Loh, P. H. M.; Chua, S. B.; Evers, H.-D. and Chay Yue Wah (2007). Riau Vegetables for Singapore Consumers: A Collaborative Knowledge-Transfer Project Across the Straits of Malacca.

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