

COVID-19 pandemic, lockdown and the Indian labour market: Evidence from PLFS 2017-18

Vasavi Bhatt, Shweta Grover and Ajay Sharma*

Abstract

Using the PLFS 2017-18, this study intends to analyse current labour market from the perspective of COVID-19 pandemic, subsequent lockdown and the expected slowdown in the Indian economy. We intend to explore the questions such as: a) What part of labour market would be largely unaffected from lockdown and expected slowdown? What type of occupations would be the riskiest in the wake of social distancing norms? Which are the vulnerable groups of workers in the labour market, that are likely to be the most affected due to the lockdown and its aftermath?

Keywords: COVID-19, lockdown, Indian labour market, work from home, decent work

JEL Classification: J10, J21, J63, J80, D69

* Vasavi Bhatt is Ph.D. Candidate with Indira Gandhi Institute of Development Research. Shweta Grover has recently completed her Ph.D. from Indian Institute of Management Indore. Ajay Sharma is faculty at Indian Institute of Management Indore.

1. Introduction

COVID-19 has overpowered the ability to earn a living for many people, rendering the world economy to a standstill, and bringing a myriad of social and economic changes. The situation in India is no different. With the number of COVID-19 cases increasing significantly, the Indian government announced a complete lockdown to practice social distancing like many other countries. During the lockdown, unemployment increased from 8 percent to 24.3 percent between March and May 2020¹. India's Index of Industrial Production (IIP) also fell by 16.7 percent year-on-year in March 2020². It is the steepest decline since 1994. A plausible reason could be that the lockdown has closed many businesses either temporarily or permanently eventually exposing many workers to job loss. On May 3, 2020 the government partially opened up the economic activities suggesting workers to continue working from home to ensure social distancing. This kind of work flexibility is not ubiquitous across all jobs and the plight of migrants is conspicuous through the media.

In light of the detrimental effects of COVID-19 on the global and national economy, this study explores three key aspects of the Indian labour market. First, based on the task content of occupations, we intend to understand what sort of occupations allow working from home such that workers will be able to cope with the aftermath of the lockdown and following slowdown. Our estimates from Periodic Labour Force Survey (PLFS) 2017-18 suggest that approximately 17-19 percent of non-farm workers are engaged in work from home (WFH) occupations. Second, given the nature of the pandemic, many of the occupations are categorized as risky due to high exposure to human interaction. We show that almost half of the workers are employed in high risk and medium risk occupations. Third, we identify the set of workers who are the most vulnerable in the current labour market, vulnerability being defined as per the definition of ILO (2009) based on the concept of social safety nets. We find that 15-17 percent of non-farm workers in rural and urban areas are vulnerable and face higher risk of job loss during a lockdown.

We derive motivation from literature that discusses various channels through which labour markets and especially workers are affected during a crisis/slowdown³. The first channel is through direct job loss on account of reduced aggregate demand in the economy and reduction or closure of production activities. Economic downturn can lead to falling revenues and rising costs of firms (Von Wachter et al., 2009), longer durations of unemployment (Kroft et al., 2016) with men, blacks, younger age cohort and less educated workers suffering the most in terms of employment loss (Hoynes et al., 2012). The second channel discusses the skills and jobs that would be affected by the slowdown. Recession or slowdown may lead to huge churning in the labour market in the favour of highly skilled workers and non-routine jobs (Hershbein and Kahn, 2018; Jaimovich and Siu, 2020). The third channel explores the role of government interventions since during recessions it becomes essential for countries to make comprehensive changes in their approach to tackle labour market woes, explained by Turrini et al. (2015) as the “back against the wall” hypothesis. Adascalitei and Morano (2015) and Eichhorst et al. (2010), provide a detailed account of labour reforms across countries with respect to the 2008 crisis. Drawing motivation from these various strands of literature on economic slowdown and labour market outcomes, we discuss various groups of workers who

¹<https://unemploymentinindia.cmie.com/> (Last accessed on May 30, 2020).

²<http://mospi.nic.in/iipdata> (Last accessed on May 30, 2020).

³The extensive literature talks about all the agents in the labour market, i.e. workers (including self-employed), firms, intermediaries as well as government agencies, but our focus in the study remains confined to workers. See Bewley (1999), Fabiani et al. (2015).

are likely to be affected in the aftermath of economy wide lockdown and imminent slowdown of Indian economy.

The rest of the paper is organized as follows. Section 2 discusses the dataset and methodology used in the analysis. Section 3 provides the main findings about the various aspects of labour market i.e. workers in WFH jobs, high risk jobs and vulnerable workers. The last section concludes.

2. Data and methodology

This study uses data from the PLFS conducted by National Sample Survey Office (NSSO) for the period July 2017 to June 2018. The PLFS data provides socio-economic and demographic information for a sample of 102,113 households comprising 433,339 individuals in rural and urban areas across all Indian states. The primary focus of the survey is to provide information on the economic activity status of all household members including their occupation and industry of work. This dataset also enables us to look at the status of workers from multiple perspectives such as enterprise type, location of work and social security benefits. The occupation codes are available at 3-digit level based on National Classification of Occupations (NCO) - 2004 and the industry of work codes are available at 5-digit level based on National Industrial Classification (NIC) - 2008. The information on non-farm⁴ workers in the working age (15-59 years)⁵ is based on their usual principal and subsidiary status of work. Sample weights provided in the dataset are used to derive population estimates.

Given the nature of COVID-19 pandemic and its implications on nature of interaction among individuals, social distancing is indispensable. This makes some occupations either riskier or less likely to be remotely performed than others. We follow a task based approach using O-NET dataset (an extensive job survey covering various aspects of jobs and workers suitable for them) to identify WFH occupations and their riskiness as described below.

Identifying work from home (WFH) occupations

To identify WFH occupations, we follow the methodology by Dingel and Neiman (2020, hereafter DN) and extended by Yassenov (2020). DN identify seventeen attributes from O-NET covering multiple aspects of an occupation such as requirement of physical activity, working with machine and equipment, virtual or physical contact with other people and exposure to outdoor environment, infection or injury to decipher which occupations can be categorized as WFH. They classify an occupation as WFH only if none of the requirements hold⁶. Following DN (Yassenov) method 16 (12) 3-digit occupations out of 113 can be done from home in India that employ 17 to 19 percent of working age non-farm workers. But their distribution is rather skewed across major occupation groups as discussed later in the paper.

⁴Non-farm sector, in this study, excludes NIC 2008 division 01, “Crop and animal production, hunting and related service activities”.

⁵The Annual Report PLFS 2017-18 (Government of India 2019) identifies 15-59 years as working age. We follow the same practice in this paper. Only 0.18 percent of workers in the sample are less than 15 years old and 7.36 percent are 60 years or older.

⁶Yassenov (2020) add another eleven attributes to this list to make the criterion more stringent. Refer to Dingel and Neiman (2020) and Yassenov (2020) for detailed discussion on construction of WFH measure.

Measuring riskiness of occupations

For measurement of risk factor, we categorize occupations based on the following attributes from O-NET: “performing or working directly with public”, “physical proximity” and “exposed to disease or infections”⁷ (Bhorat et al., 2020; Barbieri et al., 2020). The value for each attribute ranges from 1 to 5 and is rescaled on a scale of 0 to 100. The three attributes are added and further standardized on a 0 to 100 scale to calculate an integrated risk factor. Occupations are categorized as high, medium and low risk if their risk factor is greater than or equal to 70, less than 70 but greater than or equal to 50 and less than 50 respectively. Out of 108 3-digit occupations, 21 are high risk, 29 are medium risk and 58 are low risk occupations⁸.

It should be noted that these measures are only indicative of the actual characteristic of the occupations as workers may actually not be able to work from home for multiple reasons. Therefore, these indicators give an upper bound of number of workers in occupations based on WFH and risk level classification.

Vulnerability in labour market

ILO (2009) defines a worker to be vulnerable if a) the earnings from the employment is not able to lift the person and his/her household out of the poverty, b) the economic activities carried out by the workers is not able to provide them any social safety nets in terms of social security benefits, paid leaves, formal contracts and so on, and c) a combination of both (a) and (b) criteria. These workers are the most vulnerable to any shock in the labour market and ILO (2009) report argues that their employment cannot be counted as decent work (sustainable development goal 8). Saunders (2003) adds one more criterion to identify vulnerable workers which is workers who though are eligible to receive social security benefits but are either unaware to avail such benefits or are not given such benefits (evaded by the firms).

3. Main Results

We will first discuss the estimates and characteristics of the WFH workers followed by the distribution of workers in occupations of different risk levels. Lastly, we will address the vulnerable group of workers in the labour market.

Workers in work from home occupations

As per the PLFS survey, the potential WFH workers constitute 19 percent of the workforce which is an increase from 16 percent in 2011-12 (Chatterjee et al., 2020). It is comparable to the estimate of 13 percent workers for developing countries but is way less than USA (34 percent) and China (28 percent based on Yunnan Province estimates) (Saltiel, 2020).

⁷ Different other attributes from O-NET have been used to assess the contact intensity of occupations. We believe that the aforementioned attributes in the form of an index best capture the overall risk factor of an occupation. See, <https://bit.ly/36KFb3s>; and <https://bit.ly/2TRis0o> (Last Accessed on May 30, 2020).

⁸ For five 3-digit occupations, we could not find values for the components of the risk factor in O-NET, and hence, they were dropped.

In India, urban areas have higher share of WFH workers than the rural areas (see Table 1). This remains true for both male and female workers. A larger share (23 percent) of female labour force is employed in WFH occupations than their male (18 percent) counterparts. Such pattern could be an outcome of gender roles assigned to occupations and more flexible occupations preferred by women. It has been observed that more women work in cognitive jobs while more men work in manual jobs (Acemoglu & Autor, 2011; Balasubramanian, 2018). An age-cohort wise analysis highlights that individuals in older age cohort are more likely to be in WFH occupations than younger worker. Although there is mixed evidence in the literature about how the distribution of workers in WFH jobs varies with age, more older workers may be performing delegation and management tasks that can be performed remotely.

Table 1: Share of Workers in the Working Age Group (15-59 Years) in WFH Occupations, 2017-18

	Total			Male			Female		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
WFH (in percent) DN approach	15.68	22.34	18.87	15.01	21.32	17.95	19.21	26.45	23.08
WFH (in percent) Yasenov approach	15.03	19.31	17.08	14.32	18.14	16.10	18.76	24.01	21.57
Total workers (millions)	103.43	94.86	198.29	86.90	75.90	162.80	16.53	18.96	35.49

Source: Authors' estimates based on micro data from PLFS 2017-18.

The 37.41 million workers (by DN approach) in India who can potentially work from home are concentrated in few major occupation groups. Based on one-digit occupational classification, following DN approach, legislators, senior officials and managers (category 1), professionals (category 2), associate professionals (category 3) and clerks (category 4) have 87, 43, 49 and 57 percent of WFH workers respectively⁹. Service-related occupations and other elementary occupations or those that require working on site or outdoors have negligible percent of workers who can work from home. Based on this, we can say that WFH occupations are generally associated with cognitive tasks, which is also corroborated by the fact that a larger share of workers (47 percent) in WFH jobs have above higher secondary level of education. The same holds for rural and urban workers where 39 percent and 53 percent of workers in WFH jobs belong to above higher secondary level of education respectively. On the other hand, only one fifth of the entire workforce falls in this category of education level, and the share is even lower for non WFH workers.

Next, we come to the spatial distribution of workers in WFH jobs. We generate the district level share of workers who can work from home using PLFS data. In Figure 1, it seems clear that some states and regions have higher concentration of WFH workers. This includes states of Karnataka, Kerala, parts of Tamil Nadu, national capital region of Delhi and nearby districts, coastal Maharashtra (including Pune), Chandigarh and adjacent parts of Haryana, Punjab and Himachal Pradesh, substantial part of North eastern states, Kolkata and nearby districts. The spatial analysis allows us to make some calculated predictions about which are the regions who would be able to cope with the wrath of the lockdown.

⁹ The corresponding numbers by Yasenov approach are 84, 34, 38 and 57 percent respectively.

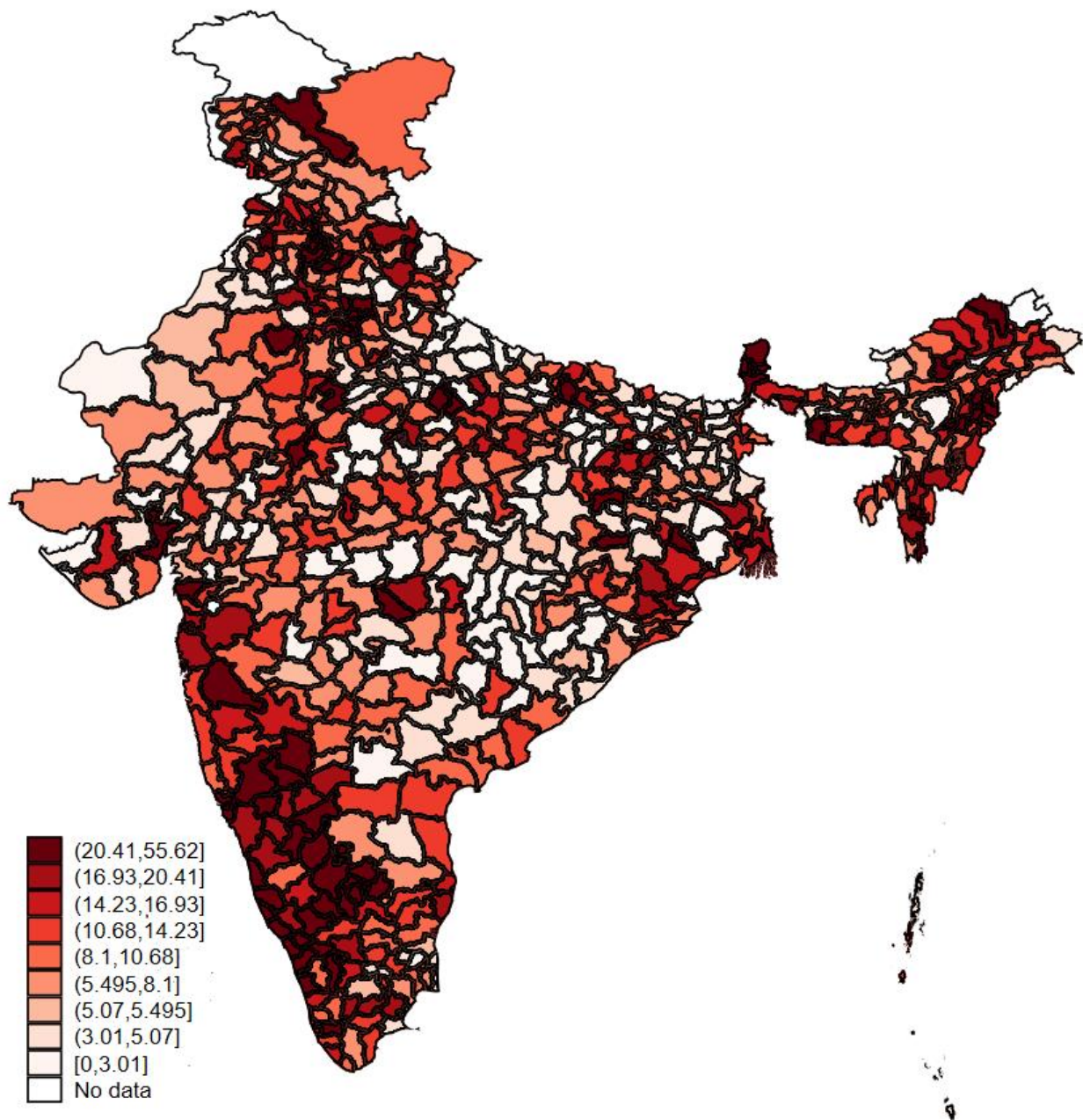


Figure 1: District wise share of WFH workers using DN approach

Workers in high, medium and low risk occupations

During the lockdown on account of COVID-19 pandemic, on the opposite spectrum of WFH workers are the individuals who are part of essential services and engaged in activities which can be classified risky, as the concept of social distancing does not apply to them. Though many of the essential services come under the high risk occupations, the reverse is not true. For example, a barber is a high risk occupation, as social distancing cannot be maintained but it is not characterized as essential services.

Workers in high risk occupations are always going to be more exposed to infections by virtue of their jobs requiring them to deal with public, working in proximity with other workers or exposing them to disease or infections. Then there are workers whose jobs are low risk but

face the risk of job loss because they cannot go out and work. But these workers will find it least difficult to go back to work. Hence, returning to work post lockdown depends on the risk factor associated with the job and it is likely to be slower for workers in high risk jobs. Therefore, industries that have a larger share of workers in low risk occupations may find it easy to reopen.

Using the aforementioned risk index, we find that almost half of the workforce is employed in medium or high risk jobs (see Table 2). The share of workers in these jobs is higher in rural areas than in urban areas. Similar pattern holds for men. It can be noticed that women have a higher share of workers in WFH jobs and lower share in low risk jobs. Thus, a lockdown like situation may have a less intense impact on women as compared to men but bringing them back to work may be more difficult (Mongey et al., 2020).

Table 2: Share of Workers in the Working Age Group (15-59 Years) in Occupations by Risk Level, 2017-18

	Total			Male			Female		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
High Risk (in percent)	13.50	14.61	14.03	14.51	15.13	14.80	8.18	12.54	10.51
Medium Risk (in percent)	40.81	29.28	35.29	38.61	26.62	33.02	52.40	39.90	45.71
Low Risk (in percent)	45.69	56.11	50.68	46.88	58.25	52.18	39.43	47.56	43.78
Total workers (millions)	103.22	94.72	197.94	86.75	75.78	162.53	16.47	18.94	35.41

Source: Authors' estimates based on micro data from PLFS 2017-18.

The ten most risky occupations which includes health professionals and protective service workers employ 10.23 million workers comprising more than 5 percent of the non-farm workers and none of these are WFH occupations. Travel attendants and personal service workers such as barbers that are high risk do not come under essential services but are also not able to perform their jobs at home. Hence, their services are suspended in view of social distancing making them vulnerable to a voluntary lockdown like situation.

Combining the WFH feasibility and the risk factor of the occupations at the sectoral level can provide more insight into which sectors are most exposed to risk and which sectors remain functional in a lockdown like situation so that informed policy decisions can be made (see Table 3). Three stark work environments emerge from Table 3. The first one is the safest work environment with a large share of workers employed in low risk and WFH jobs. The information and communication sector is one such sector where more than 60 percent workers can work from their homes and more than 70 percent of them also perform low risk activities. In the education sector, most of the workers perform medium risk jobs followed by low risk jobs and can work from home also. The requirement to make interaction and work with close proximity to students may increase the risk factor of jobs in this sector. However, with remote learning most of the workers in this sector can shift to low risk category. Another work environment consists of low risk jobs that cannot be performed remotely. The sectors that fall in this category are manufacturing, water and sewerage and wholesale and retail since most of the workers in these sectors need to go on site to work. This makes these workers vulnerable not to health risk but to a voluntary lockdown. The third category of work environment consists of jobs that are high risk and cannot be done from home. Such sectors

are transport and storage, public administration and human health. These sectors are also essential to keep the society running in the situation of a lockdown.

Table 3: Distribution of Workers in the Working Age Group (15-59 Years) by Feasibility to Work from Home and Risk Level of Their Occupation Across Sectors, 2017-18

NIC 2008 Sections	Share of workers (in percent)	Workers in Non WFH Jobs (in percent) (DN Approach)	Workers in WFH Jobs (in percent) (DN Approach)	Total (in percent)	Workers in High risk Jobs (in percent)	Workers in Medium risk Jobs (in percent)	Workers in Low risk Jobs (in percent)	Total (in percent)
Agriculture	0.74	94.54	5.46	100	2.24	61.36	36.40	100
Mining	0.74	93.49	6.51	100	8.76	48.38	42.86	100
Manufacturing	21.53	86.95	13.05	100	2.21	19.24	78.56	100
Electricity	0.63	86.44	13.56	100	15.61	40.59	43.80	100
Water & Sewerage	0.44	81.09	18.91	100	8.21	16.04	75.75	100
Construction	20.92	97.44	2.56	100	0.56	78.98	20.46	100
Wholesale & Retail	17.43	76.61	23.39	100	1.39	7.71	90.91	100
Transportation & Storage	9.01	89.56	10.44	100	70.21	5.03	24.76	100
Accommodation & Food	3.26	79.15	20.85	100	2.87	50.66	46.47	100
Information & Communication	1.86	37.87	62.13	100	7.66	19.46	72.88	100
Finance & Insurance	1.92	70.93	29.07	100	8.37	49.52	42.11	100
Real Estate	0.38	52.27	47.73	100	5.57	55.08	39.35	100
Professional, Scientific & Technical	1.49	72.50	27.50	100	17.88	44.40	37.72	100
Administrative & Support	2.10	67.07	32.93	100	36.02	20.45	43.52	100
Public Administration	2.93	70.08	29.92	100	43.79	14.92	41.29	100
Education	7.00	32.09	67.91	100	12.72	58.76	28.51	100
Human Health	2.17	91.69	8.31	100	69.89	17.29	12.81	100
Arts & Entertainment	0.46	83.92	16.08	100	15.03	63.10	21.87	100
Other Service	3.18	78.09	21.91	100	31.51	30.18	38.31	100
Household Activities	1.82	98.43	1.57	100	25.18	68.87	5.95	100
Total (millions)	197.94	160.52	37.41	197.94	27.77	69.86	100.31	197.94

Source: Authors' estimates based on micro data from PLFS 2017-18.

In the current situation, one might be interested in understanding whether regions which are better off in terms of economic activity and per capita income are also center of high risk jobs or not? Using per capita state domestic product as a proxy for economic activity, Figure 2 suggests that the share of workers in high risk jobs in a state tends to bear a positive relation with its per capita net state domestic product. This figure shows the position of the states in terms of risks faced by them while opening up.

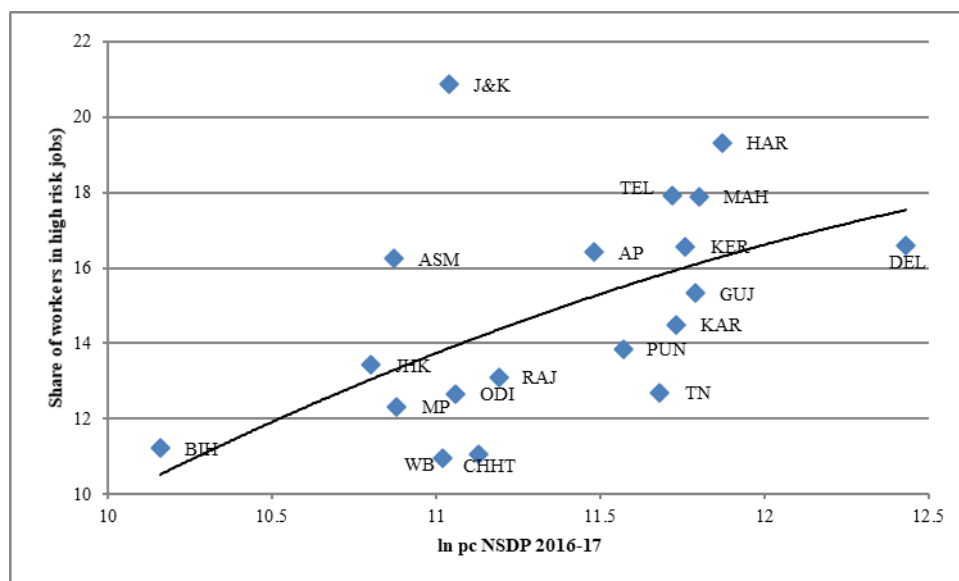


Figure 2: Correlation between per capita NSDP 2016-17 and share of workers in high risk jobs for top 20 states by number of workers

This sub-section provides the policymakers a tool to understand the risks faced by the workers and in turn by the economy during the lockdown as well as during the process of opening up of the economy.

Vulnerable workers in labour market

We use the indicators suggested by ILO (2009) to measure the vulnerable workers in the labour market. First set of workers are part of below poverty line households. Since there are no official estimates of poverty after the year 2011-12 provided by Rangarajan Committee Report (Government of India, 2014), we use the bottom two deciles of households by their monthly per capita expenditure to identify below poverty line households¹⁰. Based on this criterion, we find that 15 percent (15.2 million) of rural and 17 percent (15.9 million) of urban workers can be categorized as vulnerable and not part of decent employment.

Moreover, in order to practice social distancing, these workers are likely to be out of work (among these workers only 7 percent in rural and 13 percent in urban areas can work from home) with their household most affected. Their chances of getting employment will also be gloomy in the succeeding slowdown. In rural areas vulnerable workers largely work as casual labourers (53 percent), followed by self-employed (27 percent) and lastly wage and salaried workers (20 percent). The situation is slightly better in urban areas with 38 percent self-employed, 34 percent wage and salaried and 28 percent casual workers. Also, among the vulnerable workers engaged in wage and salaried activities, 91 percent of rural and 94 percent of urban earn below Rs. 15000 per month of salary, which is a threshold below which worker should be mandatorily eligible for social security benefits if the size of the firm in which they are employed is above 20 workers¹¹. Only 16 (19) percent of rural (urban) vulnerable wage and salaried workers, are part of enterprises above 20 workers. A cursory

¹⁰Estimates of poverty rate for 2011-12 using the Tendulkar methodology are 25.7 percent in rural areas and 13.7 percent in urban areas. On the other hand, for the same period, Rangarajan committee estimates are 30.9 percent for rural and 26.4 percent for urban areas.

¹¹For some of the regulations, the eligibility is 10 workers or above. For a detailed discussion on worker's welfare and social security benefits (especially provident fund) refer to Naraparaju and Sharma (2017).

look highlights that majority of these vulnerable workers are engaged in economic activities outside the purview of social security benefits. Coming to whether they (wage and salaried vulnerable workers) actually receive any type of social security benefit (such as provident fund, pension, gratuity, maternity or health benefits) from their employer or not, we find that only 18 percent (0.53 million) in rural and 14 percent (0.77 million) in urban give the answer in affirmative. In addition, 16 percent (0.46 million) in rural and 13 percent (0.70 million) in urban areas are not aware whether they receive or are eligible for such benefits.

Interestingly, out of the 15.2 (15.9) million vulnerable workers in rural (urban) areas, only 0.55 (0.77) million receive any type of social security benefit i.e. only 4-5 percent of these workers. In the current scenario, some of the direct policy intervention such as reduction in the deductions for Employee Provident Fund (EPF) for employees and employers from 12 percent to 10 percent would only benefit to a miniscule of these vulnerable workers (4-5 percent). On the other hand, increase in the allocation of Mahatma Gandhi National Rural Employment Scheme (MGNREGS) would surely benefit the casual workers and part of other workers who would be forced to work as casual labour in the rural areas. For urban vulnerable workers, no such direct schemes are announced which has been one of the triggers for worker's mobility from urban to rural areas¹².

Another important safety net, which can reduce the impact of a voluntary lockdown for wage and salaried workers can be availability of paid leaves. In PLFS survey, we do not have information on how many paid leaves a worker can take but we can identify whether or not worker is at least eligible for such leaves. As compared to overall incidence of paid leave eligibility of 44 (47) percent in rural (urban) areas, among the vulnerable wage and salaried workers, it is just 26(19) percent. Further, only 13 (11) percent of vulnerable wage and salaried workers in rural (urban) areas have any type of written contract with their employers.

After closely observing the characteristics of the vulnerable group of workers, we can say that majority of them do not even qualify for any type of social security net, but even those who qualify for such benefits do not have it, either due to informal nature of employment, avoidance or evasion by the employers or in some case even the workers do not want to be part of the formal contracts in order to take higher earnings in current period at home.

4. Conclusion

This study attempts to provide a timely analysis of labour market with a focus on identifying the effect of COVID-19 pandemic induced lockdown and the subsequent slowdown. Using PLFS survey 2017-18, we identify various groups of workers in the labour market who would be largely unaffected, exposed to higher risk (especially in the wake of social distancing) and would be the most vulnerable set of workers in the current scenario. The key takeaways are as follows.

First, in the aftermath of the lockdown and with social distancing being the norm, the possibility of working from home or remote locations will be one of the most desired traits of the workers. We identify the WFH occupations and find that they employ less than 20% of workers. They are largely concentrated in urban areas. We also find that some occupations are more risky than others in terms of exposure to human interaction. Almost half of the

¹²We do not intend to say that this is a primary trigger for such mobility but contributes to a long list of woes faced by vulnerable group of workers, especially in urban areas.

labour force is employed in high risk and medium risk occupations. Depending on the composition of workers by the risk level of their jobs, certain industries are more affected than others. Lastly, we identify the vulnerable group of workers as per the definition of ILO (2009) for Indian labour market. Using the bottom two deciles as proxy for poor households, we find that 15 percent of rural and 17 percent of urban non-farm workers can be categorized as vulnerable, with no decent work. Most of them are either self-employed or casual workers and largely without any social protection.

It is pertinent to gauge the magnitude of workforce and the occupational structure of an industry by the feasibility of the jobs to be done at home, the associated risk level and vulnerability. This will enable to make informed policy decisions that can facilitate workers to go back to work in a safe environment. This study intends to provide inputs for the Indian policy makers and academics, who are working for the benefits of various agents in the labour market. It attempts to start a dialogue and discussion to design and implement labour market policies which utilize the strengths of the current labour market as well as is aware of the Achilles' heel in the current scenario.

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