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Structural Transformation; Youth Unemployment; Discouraged Labour Force; Demographic Dividend; India

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Please add the following references in the list:

Desai, S. and D. Jain, (1994). Maternal employment and changes in family dynamics: The social context of women's work in rural South India. *Population and Development Review*, 20(1), 115-136.

Heckman, J. (1979). Sample Selection Bias as a Specification Error. *Econometrica*, 47 (1), 153-161.

Newey, W. K. (1987). Efficient estimation of limited dependent variable models with endogenous explanatory variables. *Journal of Econometrics*, 36 (3), 231-250.

Census (2011) and PLFS (2017-18) are references to data sources. I have done necessary changes.

Stalled Structural Change Brings an Employment Crisis in India

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Abstract

Using national-level employment data, this paper explores both the supply- and demand-side factors responsible for stalling India's structural transformation on the employment side. **AQ1** We have found that although the overall LF participation has consistently been declining, the size of open unemployment and discouraged LF are rising at an unprecedented pace. **AQ2** This employment crisis arose because of the stalled structural transformation owing to the lack of effective demand for skilled workers in the non-farm sectors. This crisis is not only reflected in stagnant real wages, but it also adversely affected GDP growth and the incidence of poverty. Hence, unless measures are taken quickly, India's demographic dividend, which ends in 2040, is under severe threat. **AQ3**

1. Introduction

The Indian economy passed through a phase of structural transformation and became a lower middle-income country with substantial reduction in income poverty (see Chauhan et al. 2016) during 2004–2005 to 2011–2012. Over this period, a significant decline in the overall ~~Llabour Fforce~~ participation rate (LFPR) in India also occurs, slower for males but much faster for women. This was caused by an upsurge in enrolment of boys and girls in the secondary and higher levels of education (Rangarajan et al. 2011; Hirway 2012; Thomas 2012; Kannan and Raveendran 2012; Mehrotra et al. 2014) along with a decline of the agricultural workforce due to mechanization (Sudarshan and Bhattacharya, 2009;

Himanshu 2011; Mehrotra et al. 2014) and rising cost of cultivation (Narayanamoorthy 2013). **AQ4**

A review of past studies conducted in various countries of the world suggests that the overall LFPR of countries tends to fall over the initial period of economic development to reach a minimum and then starts rising as the country develops further (see Durand 2015; Bardhan 1979; Mincer 1985; Psacharopoulos and Tzannatos 1989; Schultz 1990). In other words, the LFPR shows a U-shape as countries progress from low to higher levels of economic development. It happens because, over the initial phase of structural transformation as women move out [1] of agriculture and allied sectors because of a relatively stronger negative income effect than the positive substitution effect of the rising real wage, the overall female LFPR starts falling; however, it moves upward again as women acquire appropriate skills and return to the LF at an advanced stage of development to participate in non-agricultural jobs (Fatima and Sultana (2009); Klasen and Pieters 2015; Luci, 2009; Mehrotra ~~and &~~ Parida 2017). **AQ5**

Therefore, it was believed that in India the overall LFPR could also start increasing as educated youth (girls and boys) would begin to join the labour force (LF). But in contrast, it continued to decline post 2011–2012, despite the increasing size of both the educated LF and working age population (see Kannan and Raveendran 2019; Kapoor 2015; Kapoor and Krishnapriya 2019; Mehrotra and Parida 2019). This is perhaps because of a combination of factors: poor education level; poor competencies because of low-quality skilling; and also high level of skill mismatches in the labour market (see Ajithkumar 2016; Agrawal and Agrawal 2017; Hajela 2012; NSDC 2013; Mitra 2018; Mehrotra et al. 2015; Singh et al. 2020; World Bank 2008). This skill issue has implications for the phenomenon of rising educated youth unemployment (see Ahmed 2016; Mehrotra and Parida 2019). From the above review of studies, it could be hypothesized that both a set of supply- and demand-side factors were driving the structural transformation in employment. Hence, this paper tries: to identify these factors, by examining the recent trends and pattern of LF participation, sectoral employment patterns and the nature and structure of current open unemployment, and to suggest timely measures to resume this structural transformation over the long run. **AQ6**

This paper is organized as follows: Section two provides the sources of data and outlines the regression estimation methods of our study. Section three, which presents the paper's findings, is organized into three subsections. The first subsection not only explains the broad trends and patterns of LF participation, but also highlights the situation of rising open unemployment and discouraged labour force. Subsection two analyses the existing demand-side crisis by explaining the sectoral employment trends. Subsection three goes deeper and explores the supply-side factors that determine the labour force participation behaviour of both men and women in India. Section four concludes the paper along with a discussion on policy options.

This paper is based on the unit-level data of National Sample Survey (NSS), collected through both "Employment and Unemployment Survey (EUS)" and Periodic Labour Force Surveys (PLFS[2]) stretching the period 2004–2005 to 2018–2019. The employment and unemployment status of individuals is obtained by considering their UPSS status. The sectoral employment is estimated based on the National Industrial Classification (NIC) 1998 and 2008 codes after due concordance. To obtain absolute numbers, the NSS estimates are adjusted[3] to the projected census population why is para having a different line spacing?
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To explore the individual- and household-level factors that determine the LF participation (LFP) decision of men and women, at the micro-level, we have estimated their LF participation functions. Since the dependent variable in both the cases is dichotomous (which assumes value 1 for LF participation and zero otherwise) and we have a very large sample, probit regression is an appropriate choice. Both simple and instrumental variable (IV) probit regressions models are used. While the simple probit is based on the assumption that the latent variable LFP (is positive for labour force participation and zero otherwise) depends on exogenously determined explanatory variables, the IV-probit regression provides robust estimates in the presence of potential endogenous regressors. In this case, we expect that monthly per capita expenditure (a measure of households' economic status) is likely to be correlated with the error term, as men and women belonging to lower economic classes are more likely to participate in the LF to improve their standard of living and family income. Improved living standards would enable those households to devote a larger share of spending on education and skill development of their children (following Engel's law). The possession of better human capital motivates young boys and girls to participate in the LF in increasing numbers (see Kingdon and Unni 2001; Chaudhary and Verick 2014). The Wald test of exogeneity suggests (see Tables 2 and 3) that monthly per capita expenditure is endogenous, and hence, the IV-probit regression is the appropriate functional form that provides unbiased estimated coefficients.

Among other regressors, wage/earnings is another factor determining LF participation decisions (see Singh et al. 2020). However, information on wage of the unemployed is not available. Similarly, for the self-employed wage is only available for the year 2018–2019 (in PLFS data), but it is not available for 2004–2005 and 2011–2012. To include the wage variable in the model, a predicted wage is imputed for these groups by running two separate wage regression equations (for male and female) using Heckman (1979) selection correction, under the assumption that men and women with similar characteristics can get similar salary in the labour market even though they do not work or work as self-employed. While estimating in Stata, by default, IV-probit uses maximum likelihood estimation (MLE), we have used the two-step option, which is based on Newey's (1987) minimum Chi-squared method of estimation. Both these methods are used alternatively, but a few do not use MLE to avoid large numbers of iterations. The estimated results and its discussion are given in the first subsection of section four.

3. Findings

3.1. Labour force participation: issues and challenges ahead

A demographic dividend is defined as a stage in a country's demographic transition in which the share of the working age population is rising, and the corresponding share of the dependent population (those under 15 and over 60 years) is falling (Mehrotra, 2014)

. The labour force consists of those in working age (15–59 years) who are looking for work. In a country in the midst of its demographic dividend, one would expect that young people are getting more educated, and they look for work (before or after completing education).

In India, on the supply side, while the working age population has been rising, total LF (those looking for work) is not growing as expected. For a labour surplus country, passing through a demographic dividend with a rising youth population, a falling growth rate of the LF is not good news for long-run economic growth. This is because the demographic dividend cannot be realized if those entering working age either don't look for work (e.g. girls) or don't find work if they are looking. The dividend will only be realized if they find non-farm work, because productivity in industry and services is higher than in agriculture. If they find work there, their incomes will grow, savings will also grow across the economy, which will drive aggregate investment growth that will in turn accelerate GDP/income growth.

Between 1993–1994 and 1999–2000, the total LF grew on average 1.2% pa from 381 to 408 million (see Fig. 1a). Surprisingly, this growth rate increased to 3% pa with an unprecedented 12 million pa rise from 1999–2000 to 2004–2005. But since then, it is not increasing despite the fact that number of youth (including educated and trained) in the working age population has consistently been rising. Over 2004–2005 and 2011–2012, the growth of LF decreased to 0.44% and remained stuck at this level (0.45%) during 2011–2012 to 2018–2019, and thus, LF grew only 2 million pa. Notably while the youth population increased about 72 million, the youth LF declined by about 25 million (from 163 to 138 million) over 2004–2005 to 2018–2019 (Fig. 1b, c). This phenomenon is not explained by rising educational enrolment, rather it is due to the lack of job opportunities for the youth (particularly for women) in the non-farm sectors. While number of youth workers continued to decline in agriculture (during 2004–2005 and 2018–2019) and industry (2.5 million decline of male and 4 million decline of female workers during post 2011–2012 periods), service sector jobs did not increase as anticipated. For male youth, service sector jobs increased from 28.7 to 29 million during 2004–2005 and 2011–2012 and further to 32.3 million by 2018–2019, while in case of females it increased from 5.8 to 6.6 million during 2004–2005 and 2011–2012 and further to 7.1 million by 2018–2019. The declines in agriculture and industry were not offset by the slow increases in service sector jobs. Hence, this should be raising alarm bells for policy makers, since open unemployment increased sharply in the period since 2012 (a subject we return to shortly).

Fig. 1

Labour force, youth population and participation in education and training, 1994–2019.

While male LF grew, the growth of male LF declined from about 5.5 million pa between 2004–2005 and 2011–2012 to about 5 million pa (over 2011–2012 to 2018–2019). At the same time, the rate of withdrawal of women from the LF continued at the rate of about 2.5 million pa over 2004–2005 and 2018–2019 (with the LF falling from 157 to 121 million).

While the youth male LF recovered (which had declined 2.8 million over 2004–2005 to 2011–2012) with a 1.1 million rise over 2011–2012 and 2018–2019 (a good news), young women in the LF continued to fall with a 10.5 million fall post 2011–2012, in addition to the 13 million decline over 2004–2005 and 2011–2012 (Fig. 1 b). Given that number of young girls participating in education and training declined to 2 million pa post 2011–2012 from the previously noted 3.1 million pa over 2004–2005 and 2011–2012 (Fig. 1 d), this further fall in female LF participation is really a matter of concern. This is because those young women who have completed their education are not participating in the labour market. Similarly, the number of young males in education and training fell from about 3.4 million pa over 2004–2005 and 2011–2012 to about 2 million pa over 2011–2012 and 2018–2019, but still only about 0.6 million pa male youths have joined the labour force.

Furthermore, the *urban* female LFPR declined marginally from 18 to about 16% over 2005 and 2019 (with about 0.5% point rise over 2011–2012 and 2018–2019, which is a good news). But the steady fall in *rural* female LFPR post 2012 pulled the overall female LFPR down to a historically low level (Fig. 2 a). This is also true in the case of young women (Fig. 2 b). What is tragic is that education levels of youth, especially of girls, have risen rapidly since the mid-noughties; the falling LFPR of youth indicates that rising expectations will meet the wall of dashed hopes. For women, the job market offers few opportunities in rural areas, and it is also tight in urban areas, as their LFPR in urban areas has also been declining consistently.

Fig. 2

LFPR and real wage trends by sector, 2005–2019.

Source: Authors estimation and plot based on NSS and PLFS unit data. Note: The real wages for rural and urban areas are computed after adjusting the consumer price indices (CPI) for industrial worker (IW) and agricultural labour (AL), respectively
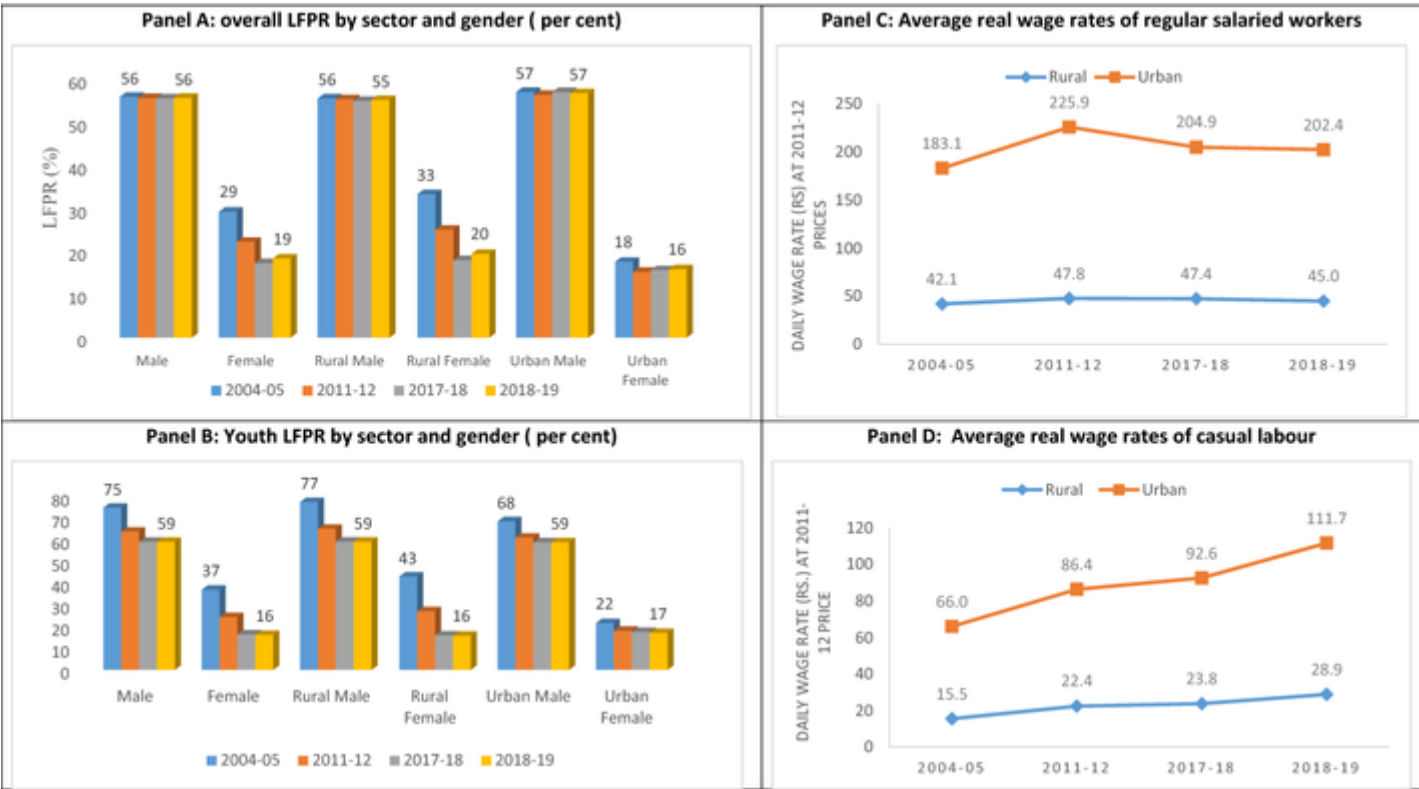
Even though the overall male LFPR was almost constant at about 56%, the LFPR of male youth declined consistently since 2004–2005 (from 75 to 64% over 2004–2005 and 2011–2012 to 59% by 2018–2019). Since 2004–2005, educational enrolment of boys also increased massively (Fig. 1 d). We should examine whether participation in higher education is really the sole supply-side factor pulling the LFPR of young males down or not.

3.2. Labour force participation by level of education and age group

We find that the overall decline of youth LF is due to the falling LFPR of low-skilled (illiterates or less educated) persons. This is true in both rural and urban labour markets (Table 1). But the LFPR of those with graduate and higher level of general education, and with either technical education or formal vocational training, is not only higher, but it also increased marginally since 2011–2012. It implies two things: first, the young whose numbers attending higher education and technical or vocational training had risen after 2004–2005 have already started looking for jobs, but those with low education (particularly females) are opting out of the labour market due to the lack of suitable opportunities in the non-farm sectors within their vicinity. This gives a new dimension to education-driven inequality.

Table 1

LF participation rate by sector, age groups and level of education

Labour force participation rate by sector and age groups (%)											
Source Authors' estimation based on NSS and PLFS unit-level data											

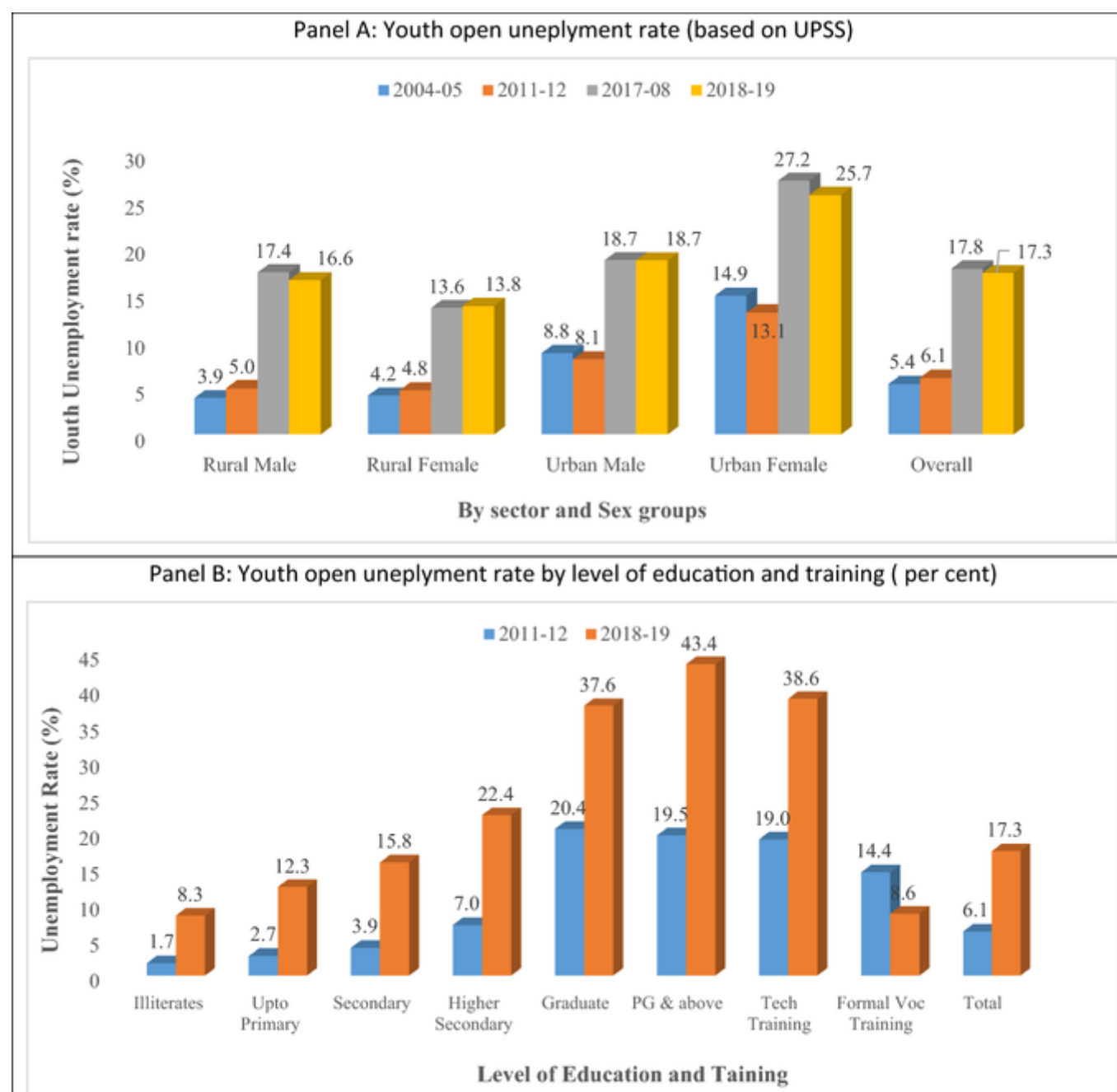| Level of education | Labour force participation rate by sector and age groups (%) | | | | | | | | | |
| | Rural areas | | | | | Urban areas | | | | |
	1993–1994	1999–2000	2004–2005	2011–2012	2018–2019	1993–1994	1999–2000	2004–2005	2011–2012	2018–2019
Age 15–29 years (youth)										
Illiterate	68.0	65.5	66.4	56.5	36.5	50.6	49.9	52.9	51.3	39.0
Primary	60.0	66.6	61.0	50.3	38.7	44.7	56.8	52.7	48.4	37.9
Secondary	46.1	55.1	48.1	35.0	23.7	31.2	45.3	35.3	29.1	22.4
Higher secondary	44.5	49.8	49.9	35.5	25.3	27.0	33.4	34.7	26.3	19.9
Graduate and above	57.9	69.3	68.0	53.1	48.3	42.1	51.6	54.1	53.9	47.4
Tech below graduate	56.4	74.5	76.5	64.3	69.2	55.9	64.0	69.1	56.8	67.2
Tech graduate and above	NA	NA	65.1	59.2	73.3	NA	NA	60.1	61.2	64.0
Vocationally trained	NA	NA	65.1	55.7	80.5	NA	NA	56.0	51.3	76.5
Total	61.3	59.3	60.2	46.4	37.8	40.7	43.2	46.6	40.5	38.7
Age 15–59 years (working age population)										
Illiterate	72.7	70.8	73.5	64.1	52.4	53.8	52.0	54.4	50.9	43.7
Primary	69.5	73.7	70.1	63.0	54.2	54.0	60.0	57.6	55.7	48.2
Secondary	59.5	64.8	60.9	51.2	41.1	47.2	52.5	48.6	43.8	37.4
Higher secondary	58.5	61.9	63.5	49.8	39.5	44.1	47.8	51.4	42.9	33.4
Graduate and above	74.9	81.7	80.6	69.6	60.8	65.2	68.2	67.5	65.8	56.9
Tech below graduate	73.9	82.1	85.0	74.7	77.9	75.8	76.9	80.3	73.1	74.2
Tech graduate and above	NA	NA	77.9	77.5	78.4	NA	NA	74.6	75.5	74.3
Vocational trained	NA	NA	65.1	68.2	88.6	NA	NA	56.0	67.8	84.4
Total	70.3	68.7	70.6	60.9	54.5	53.2	53.8	56.2	52.7	51.6
Age 60 and more years (elderly)										
Illiterate	43.0	38.3	40.0	38.2	27.4	24.3	21.0	20.9	18.9	17.6
Primary	62.7	53.6	57.3	53.3	43.4	32.3	25.6	25.1	24.8	22.8
Secondary	67.1	57.5	66.5	56.3	44.9	24.1	29.3	20.4	23.7	20.4
Higher secondary	77.3	58.7	58.5	56.1	47.2	23.0	22.5	25.4	19.9	19.5
Graduate and above	70.2	61.2	60.4	54.4	32.9	26.4	25.1	24.2	21.7	19.3
Tech below graduate	71.9	58.5	48.7	53.7	64.8	34.2	29.8	35.1	29.0	25.6
Tech graduate and above	NA	NA	72.1	52.3	43.9	NA	NA	36.0	31.8	27.7
Vocational trained	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total	47.4	42.5	44.8	43.1	32.6	27.2	23.7	22.8	21.8	20.2
Source Authors' estimation based on NSS and PLFS unit-level data										
'Graduate and above' refers to those with 3 years of undergraduate education or more										

The LFPR of illiterates and those with primary and secondary education was higher over the 1990s and the noughties, but it started declining in both rural and urban areas, since 2011–2012 (Table 1). This suggests that many are staying on longer in school. However, those who have either three years of graduate and above level of general education or technical or vocational training their LFPR is not only relatively higher, but also rising post 2011–2012. That means education and training are simultaneously playing both a negative (for the poorly educated) and positive role (for the better educated) post 2011–2012 periods. It appears the poorly educated face constraints in participating in the labour market.

The LFPR of the older population (> 60 years) by their level of education also reflects a similar pattern. While mechanization in agriculture and fewer other options in rural areas could be factors behind their falling LFPR in rural areas, high incidence of poverty and informality could be the major reason behind for a relatively slow rate of decline of elderly LFPR in urban India.

3.3. An upsurge in youth unemployment despite falling LFPR

The overall open unemployment rate increased to an all-time high of 5.8% from 2.2% between 2011–2012 and 2018–2019, again a 45-year high; unemployed persons increased from 10.6 to 24 million (3 million pa rise). Youth unemployment rate (based on UPSS) increased from 6.1 to 17.3% between 2011–2012 and 2018–2019 (Fig. 3). For each level of education, the unemployment rate increased sharply between 2011–2012 and 2018–2019 (Fig. 3 b), a doubling or tripling of rates within just seven years, with unemployment rates rising with the level of education. They reached almost 40% for graduates and postgraduates. Moreover, for the graduates with technical education degree the unemployment rate was the highest (38.6%). In the case of formally vocationally trained this rate was down to 9%.

Fig. 3

Panel A: Youth open uneplyment rate (based on UPSS)

Panel B: Youth open uneplyment rate by level of education and training (per cent)

Just five states accounted for over a third of this massive rise in open unemployed (Uttar Pradesh 3.6 million, Andhra Pradesh 2.2, Tamil Nadu 2.2, Maharashtra 1.9 million, and Bihar 1.9). The slow growth (or scarcity) of non-farm jobs and the rising open unemployment together have resulted in a massive increase in discouraged youth labour force. Youth "Not in Labour Force, Education and Training (NLET)" increased by about 2 million pa over 2004–2005 and 2011–2012, which further increased to about 3 million pa 2011–2012 and 2018–2019 (see Mehrotra and Parida 2019).

The states in which the incidence of unemployment is higher, they also have reported large number of discouraged LF in the form of NLET youth. The situation is alarming because an additional 127 million youth (Fig. 1 d) are currently attending education and training, while 24 million were currently unemployed and 98 million were NLET (during 2018–2019). After completing education/training, they would either search for jobs or remain NLET. If they join the labour market, the unemployment rate would increase further. But if they prefer to remain NLET, it would increase the volume of discouraged LF or the so-called potential reserve army. Those who are moving out of agriculture (at the rate of 4.5 million pa), along with the unemployed and NLET youth and elderly population (which is growing[4]) would constitute the total demographic liability for the economy as a whole.

3.4. Lack of demand and existing labour market crisis in India

The Indian economy is passing through an unprecedented phase in its employment history, as its total employment (i.e. total workforce) fell for the first time in its history over 2011–2012 and 2018–2019 (by 5 million). The agriculture sector sustained a decline of employment at the rate of 4.5 million pa (about 33 million in total) over 2011–2012 and 2018–2019, a Lewisian shift that had begun post 2004–2005 (Table 4). Hence, the share of employment in agriculture also fell from 49 to about 42.5% post 2011–2012 (to 2018–2019)— which is desirable because it is symptomatic of some structural change, but still much slower than before. Non-farm jobs were growing at the rate of 7.5 mn pa over 2004–2005 and 2011–2012, which has fallen to under 3 mn new non-farm jobs between 2011–2012 and 2018–2019. Post-COVID-19 pandemic economic shock, it has fallen much further.

Moreover, over the 2011–2012 to 2018–2019 period manufacturing also recorded a 3.3 million decline in jobs, which was also unprecedented in India's economic history; it entailed a fall in its share of employment from 12.6 to 12.1% of the total workforce, which is not only well below that in China (20%), but even Bangladesh (16%). Falling manufacturing jobs is the opposite of the government of India's goal of 'Make in India' and the opposite of what is desirable if the process of structural transformation is to be sustained.

The most labour-intensive subsectors had contributed to the growth of overall and youth employment in manufacturing over 2004–2005 and 2011–2012. However, these subsectors were also responsible for the largest fall in jobs post 2011–2012 (Table 4). The decline occurred in: food and beverages, tobacco products, textiles, wearing apparel, wood products and furniture, paper and paper products, rubber and plastic products, and jewellery and sports goods, etc. Since most businesses in labour-intensive subsectors are micro and small units, demonetization (of large denomination currency notes suddenly announced in late 2016 that adversely impacted economic activity in the unorganized sector) and other short-term unfavourable economic conditions might have been responsible for the decline. For

However, it is notable that a few relatively capital-intensive subsectors consistently contribute to the growth of manufacturing employment, even though their share of total employment is quite low, and they are also quite import-intensive (Mehrotra, 2020). These subsectors include machinery equipment, electrical and electronics machinery, motor vehicles, and basic metals (Table 4). These are the subsectors, which normally demand relatively skilled and professionally trained workers. Boosting growth of employment in these sectors is very crucial because it is likely to increase the share of regular salaried employment and formal jobs. But it seems a bit difficult because the capital intensity in these subsectors is growing rapidly in recent years (Rodrik 2012; Goldar 2013; Mehrotra et al. 2014; Parida, 2015

). Hence, addressing the skill issues along with a structured industrial policy is the need of the hour, for boosting growth of jobs in these subsectors (Mehrotra and Guichard 2020).

These trends in manufacturing employment are consistent with what was happening to manufacturing and its share in GDP most recently. The share of manufacturing in India's gross value added (GVA) declined to 15.1% in 2019–2020, as compared to 18.35% in 2010–2011. Prima facie, this is indicative of a greater share of the domestic demand being channelled towards consumption of foreign goods and services. There is a need to address the deficiencies in the manufacturing sector and improve its competitiveness to tap the unmet domestic demand and turn the sector into a growth dynamo (Export–Import Bank of India 2020).

The non-manufacturing sector (mostly construction), which was creating about 4 million jobs pa over 2004–2005 and 2011–2012, created only about 0.6 million pa over 2011–2012 and 2018–2019, as the economy slowed after its 'dream run' of 8% pa GDP growth over 2004 to 2013 (Table 4). Investment in infrastructure had risen between 2004 and 2008 from 4 to 7% of GDP, driving construction jobs and growth as investment to GDP had risen to its all-time peak of 38%. In the non-manufacturing sector, the topmost employment-generating subsector is construction, which contributes about 54.3 million (about 92%) out of total 59 million jobs in non-manufacturing in 2018–2019 (Table 4). As the economy slowed post 2014 and infrastructure investment growth also fell (as well as overall investment to GDP fell to 29%), overall construction employment growth fell sharply post 2012. An absolute decline of youth employment in these sectors puts a further question mark on their future job prospects, given that their manufacturing employment has also fallen.

Moreover, a slow growth of construction jobs has negative implications for low-skilled employment, real wages and the incidence of poverty. Since real wages remained flat over 2011–2012 and 2018–2019, particularly in rural areas (Fig. 2 c, d), it could be argued that the incidence of poverty may not have declined unlike what was anticipated by some optimists (e.g. Bhalla and Bhasin 2019); this is again unprecedented in Indian economic history. However, an industrial policy aiming to improve manufacturing would have a knock-on effect on the growth of employment in the non-manufacturing sector, as the non-manufacturing sector has both forward and backward linkages with manufacturing. This would also have positive implications for poverty reduction. **AQ7**

The only sector that sustained jobs growth post 2012 (3 million pa) is services. Service sector employment is driven by both traditional and modern services. But traditional services like retail trade (37.3 million), land transport[5] (21 million), public administration and defence (7.5 million) and whole sale trade (6 million) were still holding a major share (about 48%) of total service sector employment in 2018–2019. Post 2012, these subsectors saw a decline of youth employment, with a corresponding rise in modern services employment—which require much higher levels of education and skills (Table 4).

The modern services (in descending order of importance by employment share) are—education, art and entertainment, hotel and restaurant business, event catering and other food service activities, health and community social services, telecommunication, business support service activities, sale/maintenance/repair of motor vehicles, financial intermediation, computer-related activities, research and development, modern auxiliary transport, real estate services, and insurance and pension funding—have been driving the growth of overall as well as youth employment in services.

Moreover, a rise in modern services is good for another reason. If this trend continues, the share of formal employment within services will rise further, as it has already increased in recent years. Figure 3 a shows a consistent increase from 19 to 20% over 2004–2005 and 2011–2012 and to 22% by 2018–2019.

While falling total and youth employment in agriculture is good news from the viewpoint of structural transformation, falling manufacturing employment and decelerating construction employment growth are bad news for the economy, which had moved up to lower middle-income status in 2007. However, India still has the lowest per capita income among G-20 and BRICS countries. To sustain income growth and to reduce poverty, employment growth in manufacturing and construction is necessary; during 2004–2005 and 2011–2012, non-agricultural job growth had tightened the labour market and raised real wages across India's states. As a result, nearly 140 million people rose above the poverty line—a first in India's history, in that until 2004–2005 the absolute number of poor in India had never fallen. However, that process of structural transformation over the long run has stalled post 2012 across India's states.

3.5. India's economic slowdown

India had experienced unprecedented GDP growth of 8% pa over 2003–2004 to 2013–2014, which has slowed since then. That period was characterized by the highest investment rates, growth rates of exports; India was adding 7.5 million new non-agricultural jobs per annum (as we noted above). At the same, a fiscal stimulus after the global economic crisis had also raised public investment and consumption expenditure. The withdrawal of the fiscal stimulus put in place right after the Lehman collapse has demonstrated structural problems. India's growth rate first slowed to 7% pa by 2016 and lower still after the exogenous shock (delivered by the government) of demonetization of 86% of the currency in late 2016, which reduced jobs in the unorganized sector sharply; consumption demand began falling. Banks' non-performing assets rose sharply to over 11% of all bank loans, and credit offtake collapsed. A structural economic slowdown ensued. **AQ8**

The real drivers of GDP are private consumption, private investment, exports and government expenditure. Let us start with private consumption.

and 2018, as Fig. 2 shows (the exact opposite of what was happening between 2004–2005 and 2011–2012)—primarily because non-agricultural job growth has been very low, compared to the earlier period (when 7.5 mn new non-agri jobs were being created annually and open unemployment was 2.2%). Non-agri job growth since 2012 has been about 4 mn pa, by contrast (and open unemployment rose to an unprecedented 6.1%), with youth rates triple that rate at 18% (see Fig. 4). Consequently, real wages for regular urban workers that had risen from 2004–2005 to 2011–2012 by 24% have actually fallen about 15% between 2012 and 2019. Rural regular wages, which had risen by 13%, fell slightly. Urban casual wages in real terms had risen by 31% earlier and rose only 7.1% between 2012 and 2019. Rural casual wages had risen 44.5% before 2012 but barely rose 6% over 2012–2019 (Fig. 2c, d).

In other words, the post 2016 economic slowdown is a crisis of incomes, driven by non-agri jobs barely growing. We have already seen above that while manufacturing jobs had risen by 11% between 2004–2005 and 2011–2012, they fell by 6% between 2012 and 2019. Construction jobs, which account for most of the jobs that rural migrants would take, rose in the earlier period by 96.5% compared to 9% recently; services jobs rose earlier by 18.6% versus 15% post 2012. **AQ9**

With wages and incomes down, people can maintain consumption only by cutting savings. Stagnant wages had led to a first-ever rise in the incidence of poverty between 2012 and 2018 (as per the leaked report of household consumption expenditure).[6] As wages stagnated, household savings fell from 23.6% (2011–2012) to 17% of GDP by 2017–2018 (2011–2012 series), i.e. to levels prevailing in the early 1990s, a quarter century ago. Of this, financial savings as a share of GDP are 7.2%, or at levels prevailing during 1990 and 1997. Naturally, a second driver of GDP growth, gross fixed capital formation is down to levels before 2004–2005, when India's dream run of growth began; at 28% in 2018–2019, they were nearly 6% points below that in 2011–2012; estimates for 2019–2020 suggest they are down much further and will fall further post-COVID pandemic. As income growth is lower, consumption is compressed or only maintained at the expense of savings.

Despite private corporate savings having risen from 9.5% in 2011–2012 to 11.6% of GDP (2017–2018), there is no appetite (animal spirits) for investment growing faster.

Exports, a third driver of GDP, have failed to underpin growth. Merchandise exports were lower over 2014–2018 than in 2013–2014 in USD terms; as a share of GDP, they fell from 17.2% in 2013–2014 to 15.2% in 2019–2020.

Can the fourth driver of aggregate demand, government expenditure, be expanded? There was already a "silent fiscal crisis" by early 2019, and the non-discretionary recurrent expenditure and off-budget expenditures leave little elbow room for capital expenditure. India's fiscal stance in the run upto GEC was pro-cyclical. But growth pre-GEC had been robust, so that fiscal space still existed to pump-prime the economy from late 2008 onwards. India's fiscal stimulus was large. Hence, in 2014 the new government went into fiscal consolidation overdrive to bring the deficit down to 3.4% in 2018–2019. Hence, there was still no fiscal space to use public investment to stimulate the economy now because of the COVID-19 pandemic. This is one cyclical element in the current downturn.[7]

The second cyclical element is the outcome of monetary policy. In the aftermath of the GEC, a former RBI Deputy Governor had argued rightly that "Indian monetary policy could have tilted unduly towards the 'easy' side and could have prolonged the expansionary monetary policy cycle for a longer period than what would have warranted". However, over-borrowing when the real interest was in negative territory post 2008 underlies the non-performing assets of the banks (the NPA-crisis). NPA-overhang is the foundational reason for low borrowing continuing. Banks have also lent to non-banking financial companies, who on-lent to especially MSMEs, for whom too credit has now dried up in the financial sector crisis, and will dry up further in the post-COVID crisis. The NPAs are expected to worsen from their pre-COVID levels of 8.5% of advances to at least 14.5% by late 2021.

The combination of structural and cyclical factors slowing India's economy down is likely to remain a serious constraint on both the quantity and quality of non-farm jobs. There is little expectation that per capita GDP levels will revive to 2019–2020 levels even by 2022–2023.

To sum up, it could be stated that falling demand for workers in agriculture due to mechanization and slow growth of construction sector employment together have been responsible for a drastic fall in the demand for low-skilled workers. Moreover, sluggishness in aggregate domestic demand (due to increased poverty incidence) along with falling exports after 2014 has implied falling demand for manufacturing sector employment. Although service sector accommodates a share of the labour force, the quality of service sector employment is still very poor. These factors together might have been responsible for rising educated youth unemployment, and the size of discouraged youth, those who are neither attending education nor actively looking for jobs. We turn now to the supply-side factors that have determined labour force participation in India.

3.6. Supply-side factors determining LF participation of men and women in India

Here, we identify the major supply-side factors responsible for slow growth of the Indian labour force. We have mainly focused on micro-level factors, which include both individual- and household-/family-level characteristics. The LF participation decision function of both male and female is estimated using probit regression models (see Tables 3 and 4).

We found that individual characteristics like age, education and marital status significantly influence the decision of both male and female to participate in the LF. As expected, age as a proxy for job market experience has a positive influence on the LFP of both men and women. Both age (as a continuous variable) and age dummies reflect the same thing. The higher the age, the more likely that the person will be in the labour force.

The coefficient of marital status dummy is negative for male, whereas it is positive for female. This result clearly reflects the prevailing patriarchal traits and existing gender stereotype in Indian society. Other things being constant, currently married men are more likely to participate in the labour market, whereas in case of their female counterparts the thing is just the opposite. Because, after marriage men are supposed to become the breadwinner (partly or sometime entirely) of their family, and hence, they are supposed to start searching for their means of livelihood. In contrast, currently married and unmarried women are not allowed to go for paid jobs due to existing social stigmas and patriarchal norms (see Desai and Jain 1994; Mehrotra and Parida 2017). This is also revealed from the positive and

years) of the female equation, which implies women often do caring jobs within the family.

While the education dummies have expected positive signs for males (see Table 3), it produced contrasting results (negative estimates) in the case of females (see Table 4). This result substantiates the argument that a rise in primary and secondary school enrolment has a negative influence on female LFPR. However, the positive coefficient of higher education dummy (graduate and above level of general) and technical and vocational education dummies reflects the fact that women with higher levels of general education or with technical and vocational qualifications are more likely to participate in the labour market.

A negative significant sign of log MPCE (monthly per capita consumption expenditure) coefficient supports the theoretical argument that with increasing standard of living (due to rising real wages) both men and women (low skilled in particular) tend to withdraw from the labour market, a negative *income effect*. On the other hand, a positive significant sign of the log MPCE square term indicates that after a threshold level, both men and women are likely to participate in the labour force, as the standard of living increases. This implies better-off households can spend more on their children's education and hence the latter are likely to join the labour force. A statistically significant positive coefficient for the higher education dummy substantiates this argument.

Another important labour market variable, viz. wage/earning, has also shown the expected positive sign in the equation for both men and women. This implies that rising wage/earning level will encourage many young boys and girls to participate in the labour market. But the relatively low value of the estimated coefficient of predicted wage (in both Tables 2 and 3) shows the fact that the positive *substitution effect* (showing as a preference for income rather than doing household chores or enjoying leisure hours) of the rising wage still fails to offset the negative *income effect* on the supply of labour. Hence, the overall LFPR is declining. This result is substantiated by Mehrotra and Parida (2017), where it is claimed that women's participation in domestic duties increased enormously due to unavailable suitable jobs in their vicinity. Moreover, Mehrotra and Parida (2019) highlight that even a large number of educated males are still out of the labour market, while the open unemployment has risen.

Table 2

Sectoral employment trends, 2005–2019

Type of industry and subsectors	Total employment (million)			Youth employment (million)		
	2004–2005	2011–2012	2018–2019	2004–2005	2011–2012	2018–2019
Total employment	459.4	474.2	468.8	154.2	138.0	113.8
Agriculture and allied total	268.7 (58.6)	231.9 (48.9)	199.2 (42.5)	85.7 (55.6)	60.7 (44)	39 (34.3)
Manufacturing total	53.9 (11.7)	59.8 (12.6)	56.6 (12.1)	22.4 (14.5)	22.1 (16)	17.4 (15.3)
Food and beverages	5.5	6.4	5.9	1.9	2.1	1.7
Tobacco products	4.7	4.9	3.4	1.9	1.7	1.0
Textiles	9.7	9.2	8.2	4.5	3.9	2.4
Wearing apparel	7.2	9.6	9.8	3.4	3.8	3.2
Leather products	1.3	1.3	1.3	0.6	0.5	0.5
Wood products	5.2	3.9	3.1	1.9	1.2	0.5
Paper products	0.6	0.5	0.8	0.2	0.2	0.3
Printing media	0.9	0.6	0.7	0.4	0.2	0.1
Petroleum products	0.1	0.2	0.2	0.0	0.1	0.1
Chemical products	2.0	1.2	1.3	0.8	0.4	0.4
Rubber and plastics	0.8	1.1	1.0	0.4	0.4	0.4
Non-metallic products	4.5	5.0	4.1	1.5	1.9	1.3
Basic metals	1.0	1.5	1.8	0.3	0.6	0.5
Fabricated metals	2.6	3.0	2.8	1.1	1.0	0.7
Machinery equipment	1.3	1.0	1.3	0.4	0.4	0.5
Electronics machinery	0.3	0.4	0.5	0.2	0.2	0.2
Electrical machinery	0.7	1.0	1.4	0.3	0.6	0.4
Medical instruments	0.1	0.8	0.8	0.1	0.3	0.3
Motor vehicles	0.6	1.0	1.2	0.3	0.4	0.6
15.4 other transports	0.4	0.5	0.3	0.1	0.2	0.1
Furniture	4.3	2.4	2.2	2.0	0.7	0.7
Jewellery and sports goods	0.0	3.3	2.6	0.0	1.2	0.9
Recycling	0.1	1.0	2.0	0.0	0.3	0.5
Non-manufacturing total	29.4 (6.4)	55.3 (11.6)	61.3 (13.1)	11.6 (7.5)	19.4 (12.6)	18 (15.8)
Mining and quarrying	2.7	2.6	2.1	0.8	0.9	0.8
Electricity, water and gas	1.2	2.5	2.9	0.1	0.7	0.6
Construction	25.6	50.3	56.3	10.7	17.8	16.6

Source Authors' estimation based on NSS and PLFS unit-level data

Type of industry and subsectors	Total employment (million)			Youth employment (million)		
	2004–2005	2011–2012	2018–2019	2004–2005	2011–2012	2018–2019
Sale, maintenance and repair motor vehicles	2.5	3.2	3.6	1.4	1.4	1.6
Wholesale trade except motor vehicles	5.1	5.3	6.1	1.6	1.5	2.5
Retail trade except motor vehicles	33.7	35.6	39.3	11.8	9.8	9.5
Hotels and restaurants	5.8	7.8	8.9	2.0	2.4	2.3
Land transport	15.1	17.5	22.9	5.4	5.1	6.1
Water transport	0.1	0.1	0.2	0.02	0.02	0.04
Air transport	0.1	0.1	0.2	0.02	0.01	0.04
Auxiliary transport activities	0.5	0.9	1.2	0.2	0.3	0.3
Post and telecommunications	1.9	4.3	5.3	0.6	1.8	2.1
Financial intermediation	2.1	2.6	3.5	0.6	0.8	1.2
Insurance and pension funding	0.6	1.0	0.7	0.1	0.2	0.1
Activities auxiliary to financial intermediate	0.2	0.8	0.7	0.1	0.2	0.1
Real estate activities	0.5	0.9	1.1	0.04	0.1	0.2
Renting of machinery and equipment	0.5	0.6	0.9	0.2	0.2	0.3
Computer and related activities	0.8	1.5	2.6	0.5	0.3	0.6
Research and development	0.0	1.1	1.3	0.003	0.4	0.4
Other business activities	2.5	2.6	4.6	0.7	0.9	1.4
Public administration and defence	8.3	7.9	7.5	0.8	1.1	1.3
Education	11.1	14.1	19.6	3.4	3.5	3.7
Health and social work	3.5	4.4	5.6	0.9	1.2	2.5
Other social services (art and entertainment)	12.7	15.1	16.3	4.1	4.5	3.5
Source Authors' estimation based on NSS and PLFS unit-level data						
Figures in brackets are share of sector in total employment						

Adult women's LF participation is often restricted due to education or other family responsibilities including cooking, child care and care of the elderly and other such household activities. This is clearly reflected in the negative coefficients for the number of children (up to five years) and the number of elderly (60 years and above) in the female equation (Table 4). It is substantiated further by the coefficient of the number of adult females (15–65 years) in the household. This variable has a positive influence on female LFP, because the presence of more adult women in the family enables women to participate in gainful employment without having to take care of children. **AQ10**

Table 3

Determinants of male labour force participation

Variables	Simple probit results				IV-Probit result (Model 3)		
	Model 1		Model 2				
	Coefficient	Z-value	Coefficient	Z-value	Coefficient	Z-value	ME (dy/dx)
Log MPCE (IV variable)	− 0.26	− 68.5***	− 0.18	− 37.9***	− 0.14	− 30.0***	− 0.02
Log MPCE square (IV variable)	0.02	1.4	0.02	1.5	0.01	1.7*	0.0002
Predicted wage/earning	0.14	7.5***	0.11	5.4***	0.12	3.5***	0.01
Age	0.01	35.3***	–	–	–	–	–
Age square	0.002	4.5***	–	–	–	–	–
15–29 Years	–	–	2.60	303.2***	2.47	279.3***	0.34
30–44 Years	–	–	3.50	260.0***	3.37	247.1***	0.46
45–59 Years	–	–	2.67	186.7***	2.49	170.7***	0.34
60 years and above	–	–	1.09	78.8***	0.86	56.9***	0.12
Primary	0.14	27.8***	0.11	15.2***	0.10	13.8***	0.01
Middle	0.77	126.4***	− 0.19	− 23.0***	− 0.20	− 24.3***	− 0.03
Secondary	0.68	101.1***	− 0.48	− 56.4***	− 0.49	− 56.9***	− 0.07
Higher secondary	0.73	96.1***	− 0.52	− 55.1***	− 0.53	− 55.9***	− 0.07
Graduate and above	1.09	121.5***	0.00	− 0.2	− 0.02	− 1.4	0.004
With technical education	0.19	15.4***	0.24	18.0***	0.24	17.8***	0.03
Vocational formal	0.39	33.4***	0.65	34.2***	0.65	34.1***	0.09

Source Authors' estimation based on NSS and PLFS unit-level data

| Variables | Simple probit results | | | | IV-Probit result (Model 3) | | |
| | Model 1 | | Model 2 | | | | |
	Coefficient	Z-value	Coefficient	Z-value	Coefficient	Z-value	ME (dy/dx)
Vocational informal	1.47	124.9***	0.88	71.1***	0.86	69.9***	0.12
Household/family Size	− 0.02	− 26.0***	0.00	− 2.5**	–	–	–
Elderly member	–	–	–	–	0.09	25.8***	0.01
SC	0.01	1.6*	0.00	0.3	0.01	1.1	0.001
OBC	− 0.10	− 15.2***	− 0.03	− 3.9***	− 0.03	− 3.8***	0.002
Others	− 0.15	− 21.4***	− 0.02	− 2.8***	− 0.03	− 3.0***	0.001
Hindu	0.02	3.3***	0.04	4.4***	0.06	7.1***	0.01
Muslim	0.17	21.3***	0.09	9.5***	0.10	9.6***	0.01
Unmarried	− 0.18	− 12.8***	− 0.35	− 20.5***	− 0.45	− 25.9***	− 0.06
Married	0.94	87.4***	0.55	45.2***	0.51	40.9***	0.07
Family head	0.94	110.3***	0.80	77.9***	0.94	92.1***	0.13
Married child of head	1.52	112.8***	0.82	51.7***	0.83	52.1***	0.11
Eastern region	− 0.05	− 9.3***	− 0.05	− 6.7***	− 0.03	− 4.4***	0.001
Western region	− 0.05	− 8.0***	− 0.03	− 4.7***	− 0.03	− 3.6***	0.002
Southern region	0.03	6.0***	0.06	8.8***	0.08	11.5***	0.01
Central region	− 0.06	− 7.8***	− 0.08	− 8.7***	− 0.07	− 7.4***	− 0.01
North-Eastern region	0.03	4.2***	− 0.06	− 7.0***	− 0.04	− 5.0***	− 0.01
Rural area	0.12	30.6***	0.15	30.6***	0.14	28.9***	0.02
Period 2011–2012	− 0.06	− 11.8***	− 0.08	− 12.5***	− 0.08	− 12.8***	− 0.01
Period 2018–2019	− 0.14	− 24.9***	− 0.18	− 26.1***	− 0.15	− 21.9***	− 0.02
Constant	0.82	25.7***	− 0.80	− 20.7***	− 1.25	− 34.5***	
Number of observations	829,738		829,738.00		829,738.00		
Wald Chi-square	505,558.9***		714,393.3***		717,530.4***		
Pseudo R-square	0.4502		0.6361		–		
Wald χ^2 (exogeneity)	–		–		1756.49***		

Source Authors estimation based on NSS and PLFS unit-level data

*,**,***Imply statistical significance at 10, 5 and 1% levels, respectively

Table 4

Determinants of female labour force participation

| Variables | Simple probit results | | | | IV-probit result | | |
| | Model 1 | | Model 2 | | Model 3 | | |
	Coefficient	Z-value	Coefficient	Z-value	Coefficient	Z-value	ME (dy/dx)
Log MPCE (IV variable)	− 0.19	− 53.2***	− 0.15	− 41.7***	− 0.18	− 28.0***	− 0.02
Log MPCE square (IV variable)	0.001	− 2.2****	− 0.001	− 1.7*	0.001	− 2.0**	− 0.0002
Predicted wage/earning	0.12	1.9*	0.12	2.4***	0.11	2.5**	0.001
Age	0.004	26.4***	–	–	–	–	–
Age square	− 0.0001	2.5**	–	–	–	–	–
15–29 years	–	–	1.01	153.4***	1.05	159.2***	0.24
30–44 years	–	–	1.22	171.2***	1.25	172.8***	0.28
45–59 years	–	–	0.82	112.4***	0.84	115.4***	0.20
60 years and above	–	–	0.85	62.5***	0.89	69.5***	0.21
Primary	− 0.16	− 33.4***	− 0.22	− 43.7***	− 0.25	− 48.0***	− 0.06
Middle	− 0.05	− 8.4***	− 0.18	− 30.9***	− 0.41	− 66.3***	− 0.10
Secondary	− 0.06	− 8.7***	− 0.20	− 28.5***	− 0.50	− 67.0***	− 0.12
Higher secondary	0.05	5.8***	− 0.10	− 12.2***	− 0.43	− 50.6***	− 0.10
Graduate and above	0.61	71.6***	0.52	59.6***	0.19	20.8***	0.04
With technical education	0.48	35.1***	0.50	36.1***	0.47	34.1***	0.11

Source Authors estimation based on NSS and PLFS unit-level data. ZONES have to be explained in footnote, not here

Variables	Simple probit results				IV-probit result		
	Model 1		Model 2		Model 3		
	Coefficient	Z-value	Coefficient	Z-value	Coefficient	Z-value	ME (dy/dx)
Vocational training informal	1.20	121.5***	1.11	109.4***	0.98	96.9***	0.23
Household size	− 0.02	− 24.2***	–	–	–	–	–
Children under 5 years	–	–	− 0.20	− 95.6***	− 0.14	− 64.6***	− 0.03
Adult female	–	–	0.30	205.9***	0.24	151.4***	0.05
Family head primary	0.18	10.7***	0.17	10.1***	0.09	5.2***	0.02
Family head middle	0.09	4.1***	0.16	7.5***	0.17	7.6***	0.04
Family head secondary	0.11	4.2***	0.23	8.5***	0.28	10.0***	0.06
Family head higher secondary	0.16	5.0***	0.33	10.3***	0.34	10.8***	0.08
Family head graduate and above	0.10	3.1***	0.24	7.4***	0.26	7.9***	0.06
Family head with technical education	− 0.001	− 0.02	0.01	0.2	0.03	0.5	0.01
Family head vocational formal training	− 0.02	− 0.3	− 0.02	− 0.3	− 0.11	− 1.6	− 0.02
Family head vocational informal training	− 0.10	− 2.2**	− 0.06	− 1.3	− 0.15	− 3.4***	− 0.04
SC	− 0.28	− 41.2***	− 0.23	− 33.1***	− 0.25	− 34.1***	− 0.06
OBC	− 0.33	− 54.2***	− 0.30	− 47.3***	− 0.28	− 44.0***	− 0.07
Others	− 0.42	− 65.5***	− 0.38	− 57.5***	− 0.34	− 50.6***	− 0.08
Hindu	− 0.16	− 27.3***	− 0.12	− 18.8***	− 0.14	− 22.8***	− 0.03
Muslim	− 0.39	− 50.0***	− 0.38	− 47.7***	− 0.47	− 56.9***	− 0.11
Unmarried	− 0.63	− 50.3***	− 1.07	− 82.2***	− 0.89	− 75.9***	− 0.21
Married	0.18	17.9***	− 0.02	− 1.8*	− 0.33	− 32.5***	− 0.08
Head of the family (self)	0.77	69.9***	0.95	84.4***	0.78	66.2***	0.18
Married child of family head	0.40	45.3***	0.66	72.1***	0.48	51.2***	0.11
Spouse of married child of family head	0.21	21.8***	0.18	18.2***	0.04	3.9***	0.01
Unmarried child of family head	0.27	30.5***	0.40	43.9***	0.26	25.9***	0.06
East zone	− 0.36	− 62.7***	− 0.30	− 50.7***	− 0.34	− 55.2***	− 0.08
West zone	0.14	25.9***	0.18	31.7***	0.19	32.0***	0.04
South zone	0.18	35.2***	0.25	47.2***	0.26	47.8***	0.06
Central zone	− 0.04	− 5.4***	0.02	2.1**	0.01	1.3	0.002
North-east zone	− 0.09	− 14.0***	− 0.05	− 7.9***	− 0.09	− 13.5***	− 0.02
Rural area	0.43	110.3***	0.41	102.6***	0.44	105.4***	0.10
Period 2011–2012	− 0.19	− 40.4***	− 0.18	− 35.8***	− 0.20	− 39.1***	− 0.05
Period 2018–2019	− 0.49	− 89.4***	− 0.39	− 69.6***	− 0.44	− 76.1***	− 0.10
Married* no. of children under 5 years	–	–	− 0.20	− 5.2***	− 0.14	− 4.2***	− 0.01
SC* married	− 0.12	− 3.2***	− 0.02	− 3.1***	− 0.15	− 3.1***	− 0.02
OBC* married	− 0.23	− 4.2***	− 0.14	− 4.3***	− 0.128	− 4.0***	− 0.03
Others* married	− 0.12	− 4.5***	− 0.03	− 7.5***	− 0.24	− 5.6***	− 0.01
Constant	0.81	29.0***	0.19	6.8***	− 0.55	− 19.1***	
Number of observations	780,943		780,943		780,943		
Wald Chi-square	191,475***		241,340.6***		276,893.9***		
Pseudo R-square	0.23		0.29		0.32		
Wald χ^2 (exogeneity)	–		–		2023.27***		

Source Authors estimation based on NSS and PLFS unit-level data. ZONES have to be explained in footnote, not here

*,**,***Imply statistical significance at 10, 5 and 1% levels, respectively

The interplay of social–economic, cultural and regional factors, which influence both female and male LF participation, is quite complicated. For example, we have found positive and significant coefficients for Scheduled Caste (SC) dummy in male equation, and all other castes have negative coefficients. This implies both Scheduled Tribe (ST) and SC males are more likely to participate in the labour market as compared to Other Backward Classes (OBC) and "Other" higher caste males. But the negative signs of all the caste dummies in case of female equation implies women in tribal families are more likely to participate in the labour market, whereas higher caste OBC women and other castes (including *Brahmin, Kayastha*, etc.) are less likely to enter the labour force. This is mainly because of the nature of jobs that women do, which are quite different. Women belonging to socially and economically marginalized groups including poor and Scheduled Tribes (ST) and Scheduled Castes (SC) normally work in either agriculture, construction or in labour-intensive manufacturing

In the case of religion dummies, we got contrasting signs for male and females. The coefficient of religion dummies of males is positive, but negative for females. This implies that Hindu or Muslim women are less likely to participate in the labour market as compared to others (mostly Christian and Sikh women), while in case of males it is just diametrically opposite.

Restrictive social norms are still highly prevalent in most parts of India. Due to socio-economic development and cultural norms, the probability of LF participation of women is a bit higher in both southern and western India. But the Eastern and Central states are still more agrarian states, where women have less freedom to take up jobs outside their vicinity. But Southern Indian states are more urbanized, in which women enjoy more freedom, including participating in the labour force (Mehrotra and Parida 2017; Parida 2019; Parida and Madheswaran 2020). **AQ12**

Although on the supply side a number of factors (including social-cultural set-up) constrain men and women participating in the labour market, availability of quality jobs always influences the overall LFPR of any country. Hence, the current labour market crisis could be overcome by generating sufficient decent jobs in the non-farm sector. **AQ13**

4. Concluding remarks

The Indian economy is now at critical phase of economic development, as its overall and female LF participation has been declining despite the fact that it is passing through a phase of demographic dividend, which is likely to fade before 2040. GDP growth was 8% pa over 2004–2014 and slowed thereafter, and India had already entered a recession over 2018 and 2019; with the COVID-19 exogenous shock, the slowdown will deepen. Improved level of education and training and a higher market wage/earning are likely to help improve the overall LFPR, if there was a positive demand environment. However, the slowing economic growth, the stalled structural transformation due to declining manufacturing jobs and decelerated growth of low-skilled construction sector employment, and stagnant wages put a question on its quick revival. Although services have played an important role in driving job growth since the turn of the millennium, the poor quality of traditional services jobs have failed to attract many educated and trained youth. This has resulted in a massive rise in the number of open unemployed and discouraged workers (in the form of those not in education, training or in the labour force looking for work). **AQ14**

To revive growth structural transformation needs to be sustained through increased domestic demand and export promotion. Domestic demand can be raised through permanent reduction in income poverty by generating quality jobs in manufacturing and service sectors. This could be achieved through a structured industrial policy aiming to address both supply- and demand-side issues of India's industrial labour market. Moreover, policies to promote youth employment (both government and private) in growing modern services also offer increasing opportunities (as recent data shows): in education, health and social work, research and development, public administration and defence, financial intermediation including insurance, and telecommunication, would not only create jobs for educated youth, but increase the share of regular and formal employment in services. This is even the more the case in e-commerce, which has shown strong employment growth post-pandemic.

Publisher's Note

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[1] Since women are active participants in the LF through their roles as contributing family workers on family farms for which they do not get any monetary remuneration.

[2] This annual survey is designed to replace the previous quinquennial Employment and Unemployment Survey (EUS).

[3] Absolute number of workers, unemployed and NLET population are estimated by multiplying the NSS/PLFS estimates with the Census Adjustment Multiplier (CAM). CAM is just the ratio of Census Projected Population to NSS/PLFS estimated population.

[4] Share of elderly population increased from 8.6 percent (as per Census 2011 population data) to 9.8 percent (as per PLFS 2017–2018 unit level data).

[5] It mostly includes the traditional transport of tangible goods and people by heavy vehicles (bus and trucks), cycle rickshaw or auto rickshaw, etc. But it partly also includes the modern transport services in the cities and towns by light vehicles like taxi and e-rickshaws.

[6] Rural consumption fell 8 per cent between 2012 and 2018, and urban consumption expenditure barely rose 2% over the six-year period (NSS Consumption Expenditure Survey 2018).

[7] The Government of India's fiscal stimulus post-COVID-19 in 2020–2021 was barely 2.2% of GDP, less than half of the size of the fiscal stimulus in other emerging market economies.