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UNEMPLOYMENT IN INDIA: SKILLING, AUTOMATION AND THE FUTURE OF JOBS

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DISCUSSION PAPER

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ABSTRACT

Over the last couple of decades, the Indian economy has been on a sustained high growth path. This has led to positive economic outcomes for a significant share of the country's population. However, this period of sustained high growth has seen stagnant job creation and low absorption of labour into the economy, leading to persistent unemployment. This is at a time when more than half of the country's population is between the working age of 15-59 years, referred to as India's demographic dividend. While job creation has been plagued by long-standing structural issues, one of the key components of low absorption of labour is the lack of skilled, or what is sometimes called 'industry-ready', labour in the country. Skill development schemes have tried to answer this skill gap, but how effective can they be with industrial automation now in the fray? This paper explores the nature of unemployment in India and analyses the performance of skill development schemes in improving employability in the context of automation.

CONTEXT

The Indian economy has been on a sustained high growth path since the early 2000s and is consistently placed among the fastest growing large economies in the world (IMF 2019; World Bank 2019a; World Economic Forum 2015). One of the key dividends of this growth has been a steady decline in extreme poverty in the country. According to the World Poverty Clock, the share of India's population living in extreme poverty[1] came down from 6.6% of the total population in January 2016 to 3.3% in January 2019. India is well on track to eradicate extreme poverty before 2030.

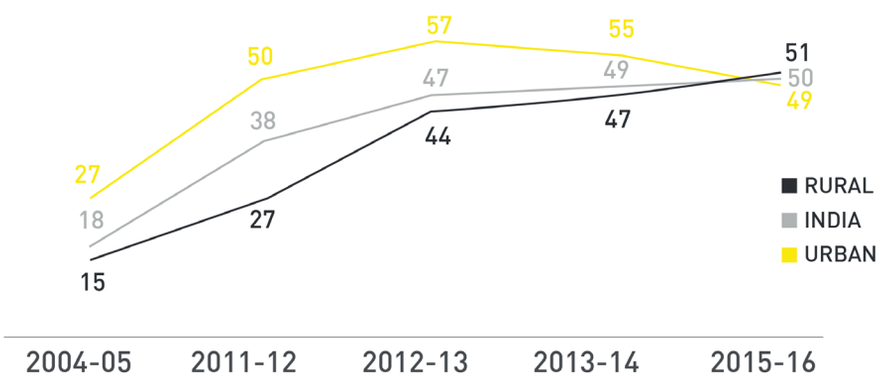
However, this high growth path has seemingly not led to a significant decline in unemployment levels. The Periodic Labour Force Survey (PLFS) of the National Statistical Office (NSO) showed that the unemployment rate in the country in 2017-18 was at 5.3% in rural India, and 7.8% in urban India, resulting in an overall unemployment rate of 6.1% (NSO, 2019). Though many in the media and political circles were alarmed at the "45-year high" the unemployment rate had reached as per the report, differing sampling methodologies of past (NSSO and Labour Bureau surveys on Employment-Unemployment) and present reports make it difficult to gauge the intensity of the problem (Jha 2019; The Hindu 2019; Livemint 2019).

Nonetheless, the available data (see figure 1) suggest that unemployment in India has become worse during the high-growth era of the last two decades. As per UNDP's Asia-Pacific Human Development Report 2016, out of the 300 million individuals that were added to India's working age population during 1991-2013, the economy could absorb only 140 million (UNDP 2016: 53). The phenomenon of 'jobless growth' has become a key characteristic of India's economy at a time when 62% of the country's population is between the working age of 15-59 years, and anywhere between 4-12 million people are added to the labour force[2] of the country annually (India Skills Report 2018; Dewan 2018). By 2050, projections show that 280 million more individuals will be added to the working age population (UNDP 2016: 6). This means that, while the rapid economic growth of the last two decades did not translate into adequate job creation, the economy will now have to cater to a much larger job market.

1 Share of population living on less than $1.9 a day, as defined by the World Bank. However, the Bank has three different poverty lines for countries it categorises as poor ($1.9), lower middle income ($3.2) and upper middle income ($5.5). Even though India is now a lower middle income country, the World Poverty Clock uses the poverty line set for poor countries as a universal standard.

2 Labour force is the number of working age individuals, employed or unemployed, actively looking for work.

FIGURE 1: UNEMPLOYMENT RATE (PER 1000 PERSONS)
(ABRAHAM, 2017: 17)



Note - 2004-05 and 2011-12 data from NSSO; 2012-13 to 2015-16 data from Labour Bureau

While the Indian economy has not been able to create enough jobs, it also suffers from the presence of surplus unskilled labour[1] that is not employable. The twin phenomena of inadequate job creation and surplus unskilled labour, thus, has contributed to the low absorption of labour into the economy keeping net unemployment steady. India's formal economy, which only has a 10% share of the total economy, cannot absorb unskilled labour readily because most of them lack industry-ready skills. Most of this labour is absorbed by the remaining 90% of India's economy which is informal in nature, and dominated by low-paying jobs with high attrition rates (Labour Bureau, 2014: 1).

The informal economy is fed by mostly unskilled seasonal migrants who, temporarily or permanently, leave agriculture to work daily wage jobs in sectors that do not require specialised skills. So, while the formal economy does not have adequate availability of skilled labour[2], the relative size of the informal economy acts as a pull factor for unskilled labour. Government interventions in the form of skill development schemes have tried to address this problem by providing unskilled individuals with employable skills.

In this paper, informality of the Indian economy is taken as the context in which the process of skilling is being undertaken through skill development schemes to meet the demand of the economy. The paper, thus, discusses the relationship between economic growth and job creation in India, evaluates the success of India's skill development programmes, and gauges their ability to face the changing reality of jobs in the context of automation.

1 Individuals lacking formal education (including drop-outs), specialised skills, and involved in jobs requiring physical effort.
2 Individuals who have completed formal education, acquired highly specialised skills, and are involved in jobs requiring significant use of cognitive ability.

ECONOMIC GROWTH AND JOB CREATION - SOME STRUCTURAL ISSUES

Job creation has always been an important element of the growth process of a country. Economic growth should result from a suitable combination of employment growth and productivity growth[1]. Conversely, if an economy sustains growth, its outcome should be visible in terms of job creation and income growth.

1. Employment Elasticity

Employment Elasticity[2] is one way of measuring the level of employment growth for every 1% rise in Gross Domestic Product (GDP). According to the State of Working India Report 2018, in the 1970s and 80s, when GDP growth was around 3-4%, employment grew at 2% annually. However, since the 1990s and particularly in the 2000s, GDP growth accelerated to 7% but employment growth slowed to 1% or less. Now, a 10 % rise in GDP results in less than 1% increase in employment (Azim Premji University 2019: 17). This means during the rapid economic growth of the first two decades of the 21st century, the ability of the Indian economy to create jobs decreased. Over the last few years, as the annual GDP growth rate has seen a downturn, job creation must have declined further. This fact validates the PLFS 2017-18 data quoted earlier.

So, why has the Indian economy not been able to produce enough jobs even during periods of high growth?

There is no easy answer to this question. Employment generation and economic growth do not have a unidirectional relationship, and employment elasticity can be affected by a range of variables including labour supply, wages, and investment, among others (Misra & Suresh 2014: 5). A look at sectoral data can provide insights into the employment generation capability of different sectors of the Indian economy, and help us understand the structural issues that need to be addressed for the economy to be able to cope with the influx of new job-seekers.

2. Unemployment Across Sectors

As the Indian economy has gradually transformed from an agriculture-driven one to a services-driven one, the nature of employment across sectors has also transformed. Between 2005 and 2011, the number of workers engaged in agriculture fell by 37 million, while between 2011 and 2015 it fell by another 10 million (Azim Premji University 2019: 59-60).

Conventional understanding of structural transformation[3] of an economy dictates that workers leaving agriculture should be absorbed into the labour-intensive industrial (particularly manufacturing) sector, and eventually into the services sector. But, growth in the industrial sector, as well as its share of total employment, has stagnated in recent years (figure 2 below). Moreover, while employment in manufacturing increased from 11.7% to 12.6% during 2004-2011, it went from 6.4% to 11.7% for the non-manufacturing sector which consists of construction and other utilities (Azim Premji University 2019: 62).

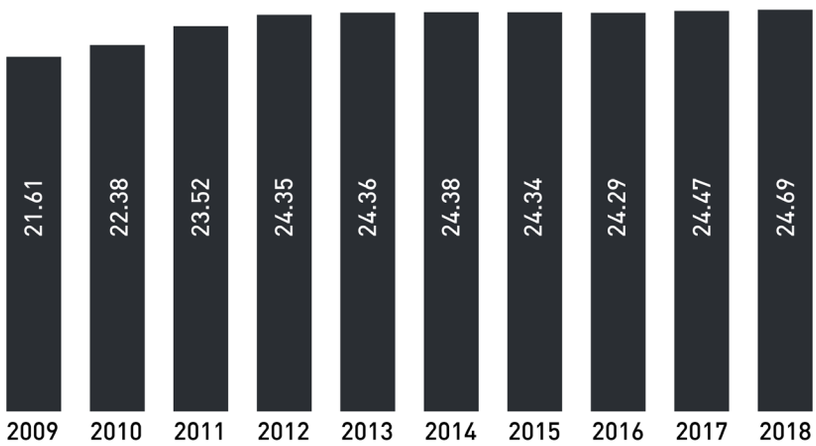
1 A measure of how efficiently an economy utilises labour and other inputs to produce sustained output over a period of time.

2 The ability of a growing economy to create jobs.

3 Transfer of economic activity, including labour, across different sectors of an economy, namely agriculture, industry, and services. Under the Lewis model of development economics, agriculture initially provides cheap labour to industry and services, propelling the process of urbanisation which in turn provides new technology and cheap industrial inputs to agriculture thereby increasing yields and bringing down the costs of feeding a growing population. After a period of time, agricultural labour productivity converges with non-agricultural labour productivity ultimately leading to eradication of extreme poverty and sustained economic growth as seen in developed economies of the west.

Thus, the manufacturing sector, which should be labour intensive, was not able to absorb the surplus labour coming out of agriculture.

FIGURE 2: EMPLOYMENT IN INDUSTRY (% OF TOTAL EMPLOYMENT) IN INDIA (WORLD BANK 2019B)



In fact, since the early 2000s, agriculture (-0.08) and manufacturing (0.33) have shown the lowest employment elasticities, while construction (1.01), utilities[1] (1.17), and mining (0.34) have shown higher potential for creating jobs (Misra & Suresh 2014: 10).

3. Unskilled Labour and the Lewis Trap

The phenomenal growth of employment in construction has made it the second highest provider of jobs in rural areas after agriculture in recent years (Azim Premji University 2019: 62). The catch in this growth story is that construction attracts seasonal employment, i.e., mostly unskilled labourers who migrate from villages to nearby small towns or big cities. A largely non-remunerative agriculture sector has contributed to the increase in seasonal migrants and their preference for unskilled work in construction, mining, etc.

The French agro-economist Bruno Dorin has identified this phenomenon as India's journey towards what he calls the Lewis Trap[2] (Dorin 2017: 9-11). According to Bruno, structural transformation in developed economies was a result of large scale mechanisation of agriculture and off-farm migration over decades. In countries like India, large scale mechanisation has not worked because more than 80% of farms in the country are small and marginal in nature (less than 2 hectare in area). As a result, India has embarked towards a scenario characterised by capital-intensive growth in the industrial sector focused on increasing industrial productivity through new technology. This has made growth 'farmer-excluding', as the bulk of the workforce remains 'trapped' in the agriculture sector engaged in non-remunerative farm work.

To overcome this state of disguised unemployment, unskilled workers from farms have been diversifying their sources of income as seasonal or permanent migrants, most prominently in low-paying jobs in construction, mining and utilities. By one estimate, 82% of male workers and 92% of female workers earn less than INR 10000 a month (Azim Premji University 2019: 18). Clearly, a majority of India's workers are not being paid decent wages[3], albeit more in the informal sector than the formal

1 Electricity, sewerage, waste management, water supply, etc.

2 Comes from the concept of Lewis Turning Point first propounded by William Arthur Lewis in 1954 wherein movement of surplus rural labour to cities stops as rural wages increase during the transition of an agrarian economy to an industrial one.

3 The concept of Decent wage flows from ILO's Decent work agenda. Decent work involves "opportunities for work that is productive and delivers a fair income, security in the workplace and social protection for families, better prospects for personal development and social integration, freedom for people to express their concerns, organize and participate in the decisions that affect their lives and equality of opportunity and treatment for all women and men" (ILO 2019).

sector (table 1).

Table 1: Annual Real Wages in India 1999-2015 (Azim Premji University 2018: 104)

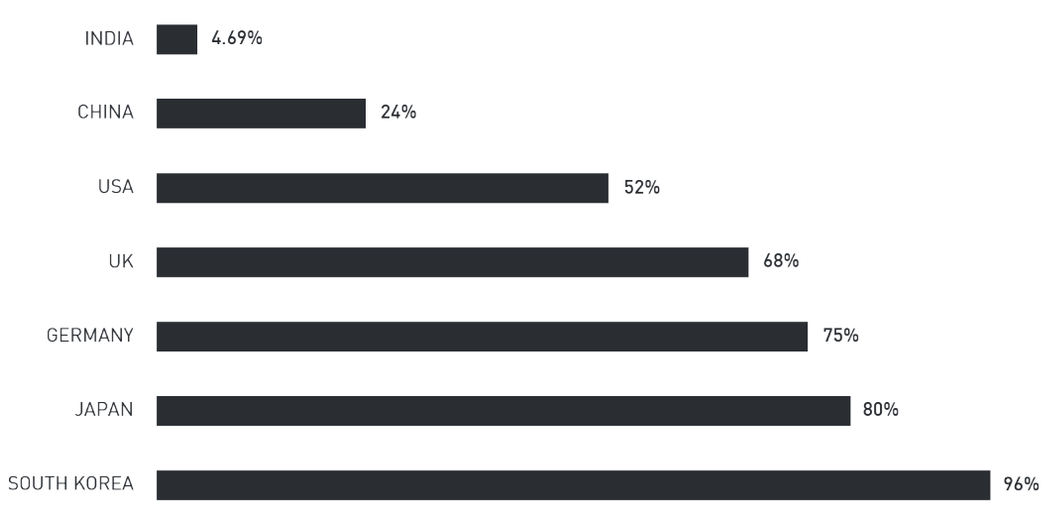
YEAR	AGRICULTURE (INR)	FORMAL MANUFACTURING (INR)	INFORMAL MANUFACTURING (INR)	INFORMAL SERVICES (INR)
1999	49,014	1,22,118	45,227	46,027
2005	47,781	1,20,760	50,488	-
2010	55,491	1,28,173	57,928	56,150
2015	77,571	1,39,576	70,848	71,776

The significant wage differences in the formal and informal sectors in India make it crucial to increase labour absorption in the formal sector. That is because the problem is not limited to the number of jobs available, it is about the quality of work, remuneration, social security benefits (EPFO, gratuity, maternity leave, etc.) and other incentives (paid leave, health insurance, bonus, etc.) that a job provides which are clearly better in the formal sector. This is where skill development schemes come in to the picture.

SKILL DEVELOPMENT - A REAPPRAISAL

In November 2014, the central government set up the first Ministry of Skill Development and Entrepreneurship in the history of independent India. Realising the need to create a skill ecosystem in the country, given the dearth of skilled labour (figure 3 below), the ministry launched Skill India or the National Skill Development Mission (NSDM) in 2015.

FIGURE 3: COUNTRY COMPARISON - FORMALLY SKILLED WORKERS AS PART OF TOTAL WORKFORCE (MINISTRY OF SKILL DEVELOPMENT AND ENTREPRENEURSHIP 2015B: 6)



In a 2016 report, the National Skill Development Corporation (NSDC), tasked with gauging the human resource requirements in different sectors of the economy, had concluded that during 2017-2022, India might have an incremental human resource requirement of 103 million, most of which would be in construction and real estate (30.6 million) (Ministry of Skill Development and Entrepreneurship, 2018: 7). Taking this study into account, the NSDM had set a target of skilling at least 300 million people by 2022 (Ministry of Skill Development and Entrepreneurship 2015a: 3). Some of the key mission objectives are:

- Aligning employer demand and workforce productivity with aspirations of trainees.
- Building skilling capacity in informal sectors like construction, and enabling workers to transition to formal employment through upskilling.
- Building awareness among the youth regarding the aspirational value of skill development.
- Creating a national Labour Market Information System (LMIS) that would match the demand and supply of skilled labour in the country, provide information regarding skilling initiatives to the public, and help in monitoring the performance of state-level skill development programmes.

Skill training was supposed to be provided for as many as 40 sectors and across 10 levels of competencies recognised by the National Skills Qualification Framework (NSQF). The flagship scheme under NSDM, the Pradhan Mantri Kaushal Vikas Yojana (PMKVY) set a target of skilling 10 million people during 2016-2020. However, as per the NSDC's annual report 2017-18, there was a huge gap between the number of people skilled and the number of placements (table 2 below). A majority of the candidates trained under the scheme underwent the Short-term Training (STT) module, which according to the PMKVY website, is aimed at school/college dropouts and unemployed individuals (Jadhav 2019). The STT module lasts between 150-300 training hours depending on the job role (PMKVY 2019). In essence, the STT is a low-skill job training course aimed at unskilled labour (we will come back to this point in the next section)[1].

Table 2: Year-wise progress under PMKVY (NSDC 2018: 18)

CATEGORY	FY 2016-17	FY 2017-18	TOTAL
Total Enrolled	5,97,214	24,08,442	30,05,656
Total Trained/ Oriented	2,23,809	21,54,760	23,78,569
Total Certified	85,104	16,21,214	17,06,318
Total Placed	281	4,52,828	4,53,109

Skill India, thus, has not been able to convert a large majority of its trained individuals into employable labour, rendering their skills useless. One reason for this low placement rate is a focus on supplying skilled labour instead of a demand-driven skilling programme. This is particularly crucial in the context of decreasing employment elasticity as discussed earlier. Skilling schemes need to be informed by industry demand, otherwise they will have perennially low placement rates. Industry demand is, of course, a dynamic factor for which a real-time LMIS is essential. Although an LMIS already exists as part of the National Skill Development Agency (NSDA), critics have pointed out that the system lacks a crucial centralised database on Industrial Training Institutes (ITI), employability information on informal sector, and the occupation and qualification structure of firms, among others (Jagannathan 2018: 177-178).

1 An inference we make in this paper as there is no data available on the nature of skill (low, medium, high) provided to trained individuals under PMKVY.

Awareness about the scheme among the youth is another major problem. According to one survey, 71% of the country's youth are not aware of government-run skill development programmes under Skill India (Mishra et al 2018: 69). While the flagship skill development scheme is grappling with low placement rates and lack of awareness at present, there is an emerging threat in the form of automation that might render most low and medium skilled individuals jobless in the near future.

AUTOMATION IN THE INDIAN CONTEXT

Technological advancement has affected jobs throughout history, most prominently during the Industrial Revolution in the West where the advent of engines and complex machines improved production efficiency, brought down costs, and engendered newer forms of work. Automation is one such technological advancement at present that is ushering in the so-called Fourth Industrial Revolution. Recent studies have predicted massive job losses across sectors with the absorption of robots and AI, among other technologies, in industry and services. When it comes to India, though, it is as yet difficult to gauge the overall impact of automation. However, estimates seem to paint a bleak picture.

According to the World Bank, 69% of jobs in India are threatened by automation (World Bank 2016). As per McKinsey's estimates, activities associated with wages of around $1.1 trillion are automatable, impacting 233 million jobs in India (Manyika et al 2017: n.pag.). Compared to that, the US might incur a loss of 60 million jobs. Table 3 shows a country comparison of estimated number of jobs at risk in major economies.

Table 3: Country Comparison: Jobs at risk due to automation (Manyika et al 2017: n.pag.)

COUNTRY	JOBS AT RISK (MILLION)
China	394
India	233
United States	60
Japan	35
Europe Big 5 (France, Germany, Italy, Spain, UK)	54

Available estimates seem to suggest that China and India will be disproportionately impacted by automation, owing to their large workforce. But the situation might be graver for India because, unlike China, 90% of India's economy is informal and dominated by low-paying low-skill jobs, as discussed earlier. Low skill jobs, unlike high skill jobs that require expertise or specialisation, have always been more prone to replacement by mechanisation and automation. Additionally, it seems the financial, banking and telecom sector in India might be most impacted among the formal sectors, losing upto 1.5 million jobs by some estimates (Jagannathan 2018: 100). These three sectors are dominated by middle-level skill jobs and provide employment to India's middle class. Hence, it seems low-skill and middle-skill jobs, which form the majority of jobs in India, are at risk from automation.

Upskilling and a reorientation of skill development schemes towards high skill training can be a response to this, but as pointed out earlier in this section, a majority of the people currently being trained under Skill India belong to the low skill oriented STT module. So, the government needs to re-evaluate its priorities under Skill India and focus on making the existing cohorts employable. Further, skill development policies need to focus on preparing a high-skilled workforce to adapt to the effects of automation. However, there are long-running structural issues that might make these efforts redundant.

As discussed earlier, India's industrial sector (particularly manufacturing) has been capital intensive and not labour intensive, taking the country towards the Lewis Trap. India, unlike China, has thus missed the crucial turning point where industry would have rapidly absorbed surplus low-skilled labour from agriculture. China successfully went through this very process, making it the manufacturing hub of the world, and is now seeing a significant increase in wages. China will now push for automation as the next step to maintain its industrial productivity. Though this presents an opportunity for India to take the mantle of manufacturing (reflected in the government's Make in India push), the employability levels under Skill India, as well as the significant difference in productivity and quality of goods that automation can provide, might decrease the chances of the Indian industry having any competitive edge in the global market. This ultimately could lead to an increased push towards automation in the already capital-intensive industrial sector in India, making even the newly skilled cohorts coming out of Skill India, jobless.

Having said that, the extent to which automation will impact jobs depends not only on its technical feasibility, but also on its costs, relative scarcity, labour costs, regulatory frameworks and social acceptance (Manyika et al 2017: n. pag.).

CONCLUSION

While introducing this paper, we had mentioned that 62% of India's current population is between the working age of 15 to 59 years. This increasing share of working age population, called the demographic dividend, arrives only once in a country's existence, and if harvested properly through adequate job creation and labour absorption, can lead to higher incomes, increased savings, higher investment and ultimately, rapid economic growth (Mehrotra 2016). For that to happen successfully, more jobs need to be created in the non-farm sectors. Simultaneously, agricultural productivity needs to be enhanced. However, this demographic dividend can become a demographic disaster if job creation stagnates and the labour force sees rapid expansion, resulting in high rates of unemployment and massive social discontent. India seems to be going through the latter of those scenarios at present. India's demographic dividend will come to an end by 2040, i.e. in the next 20 years.

One of the key interventions in this regard, the skill development schemes, have not yet been able to convert skill trainings into equivalent number of placements, thus having a marginal effect on requisite labour absorption in the economy. Moreover, automation is on the horizon, changing the job market for the worse. Structural reforms aimed at increasing the employment generation capacity of the economy, as well as, a radical reorientation of the skill development scheme are now needed, both in the near term, to harness India's demographic dividend within the next 20 years, or else, India's much celebrated growth story could end up becoming a pipe dream.

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