

Future of Work: Priorities for India

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November 30, 2022



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Scheme of Presentation

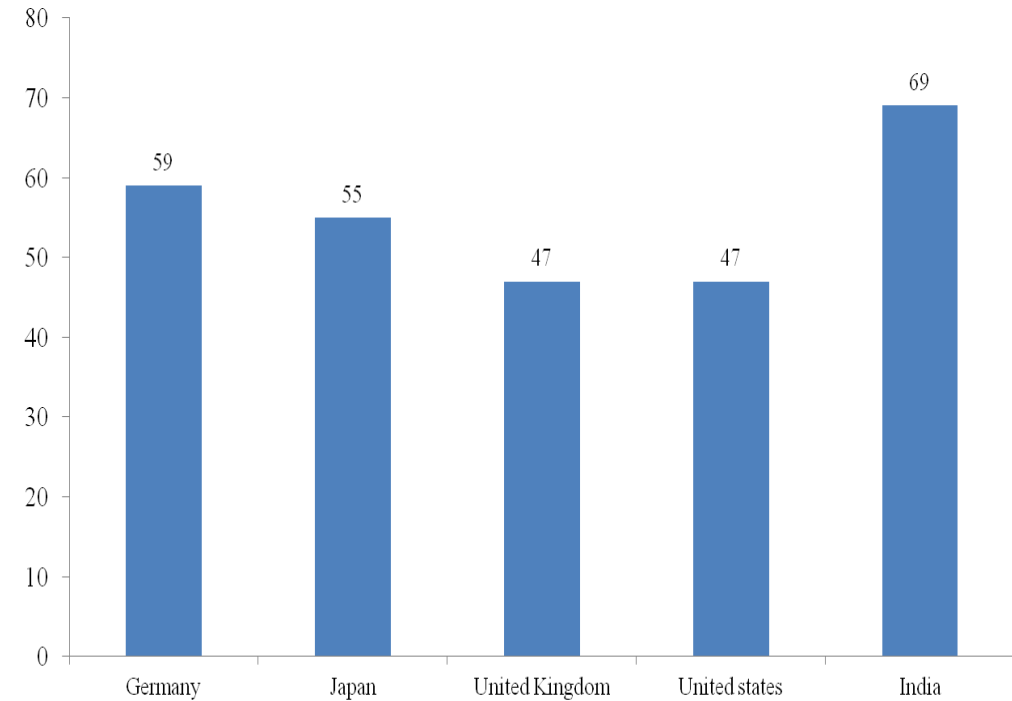
- *Future of Work: Debate, evidences and prescriptions*
- *Indian Labour Market Trends*
- *Priorities for India*

Technology and The End of Work?

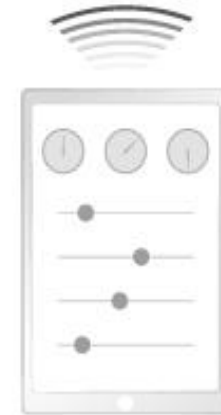
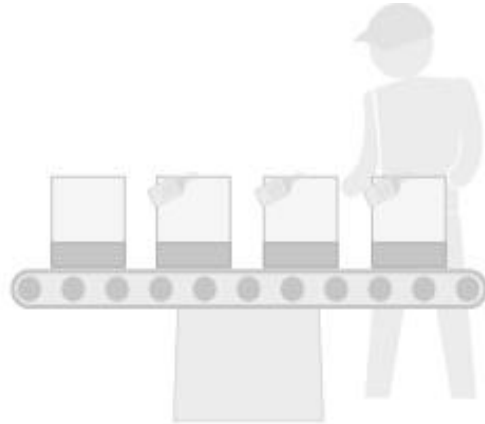


1. Artificial Intelligence
2. Quantum computers
3. Blockchain technology
4. 3D printing
5. New generation robotics include Sewbots, Baxter, and LBR iiwa

Proportion of jobs at risk of Automation



History Tells us a Different Story



1st Industrial Revolution

1760s-1900

Use of steam and mechanically driven production facilities

2nd Industrial Revolution

1900-1970s

Electric power driven mass production based on division of labor

3rd Industrial Revolution

1970s- to date

Extensive use of controls, IT and electronics for an automated and high productivity environment

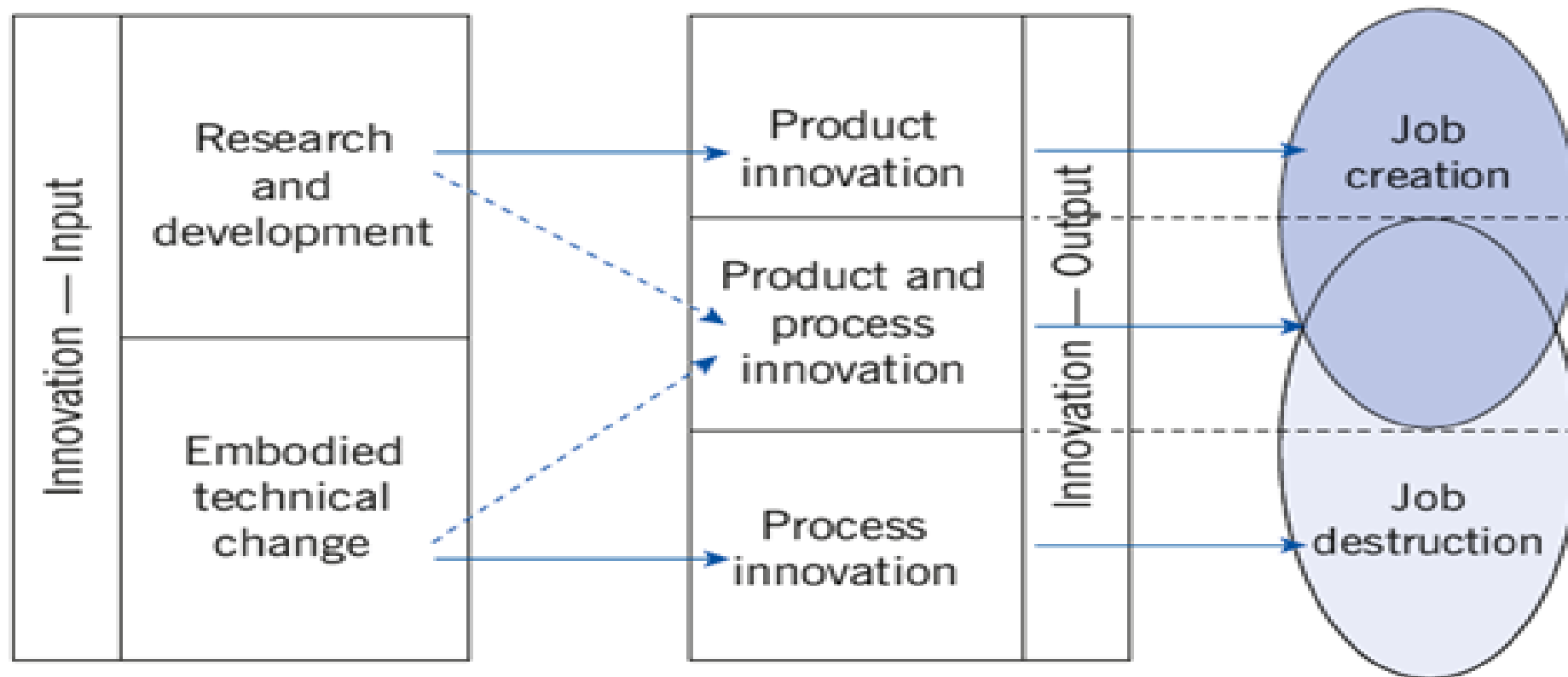
4th Industrial Revolution

Future

Smart: based on integration of virtual and physical production systems

Economics of Innovation and Employment

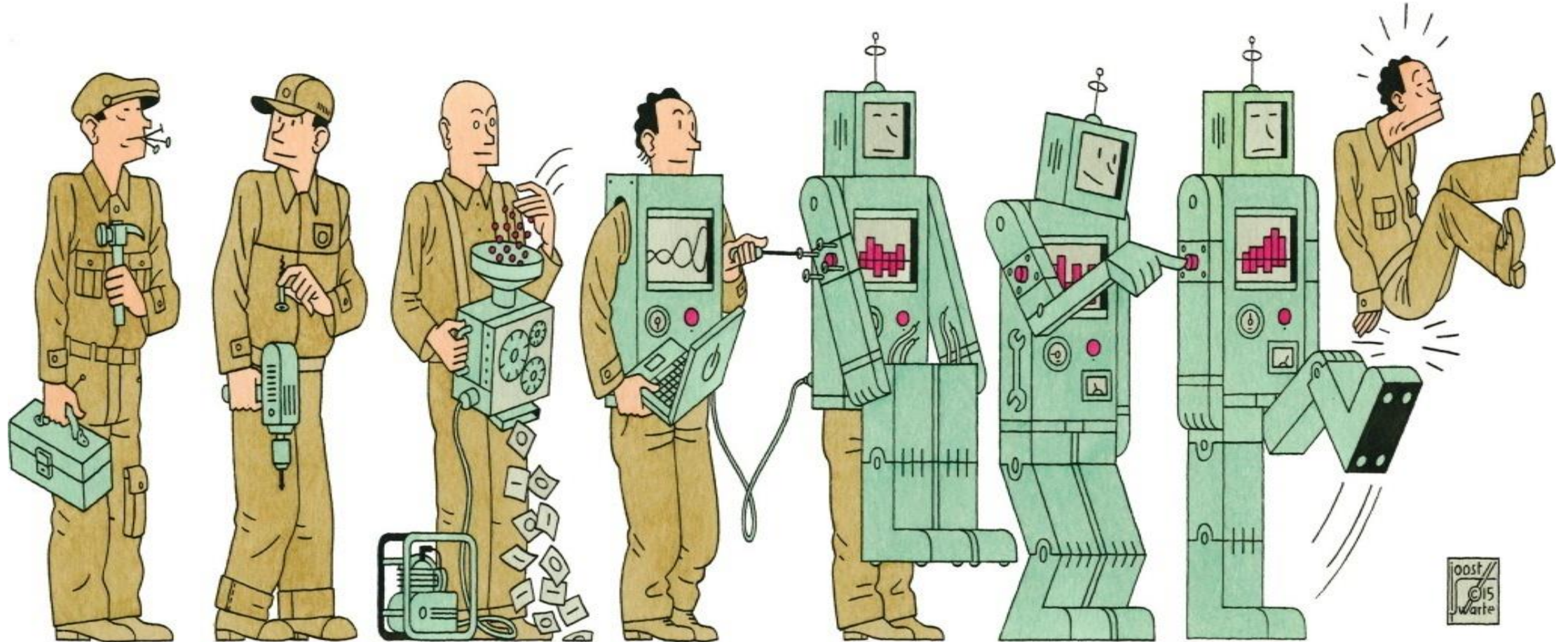
The two faces of innovation



Economic Rationale Behind Optimism

- Compensation Framework - Labour saving technology not a problem in long run
- Job creation through new products: Expansion of capital goods sector and emergence of new products
- Reduction in unit cost and increase in demand: **Efficiency Vs. Scale Effect**
 - What about imperfect market
- Increase in investment
- Decrease in Wage and end of labour saving innovations
- Trade union and increase in income: Keynesian Kaldorian tradition
- Job Creation through higher consumption
 - What if benefits of productivity gain not shared with workers

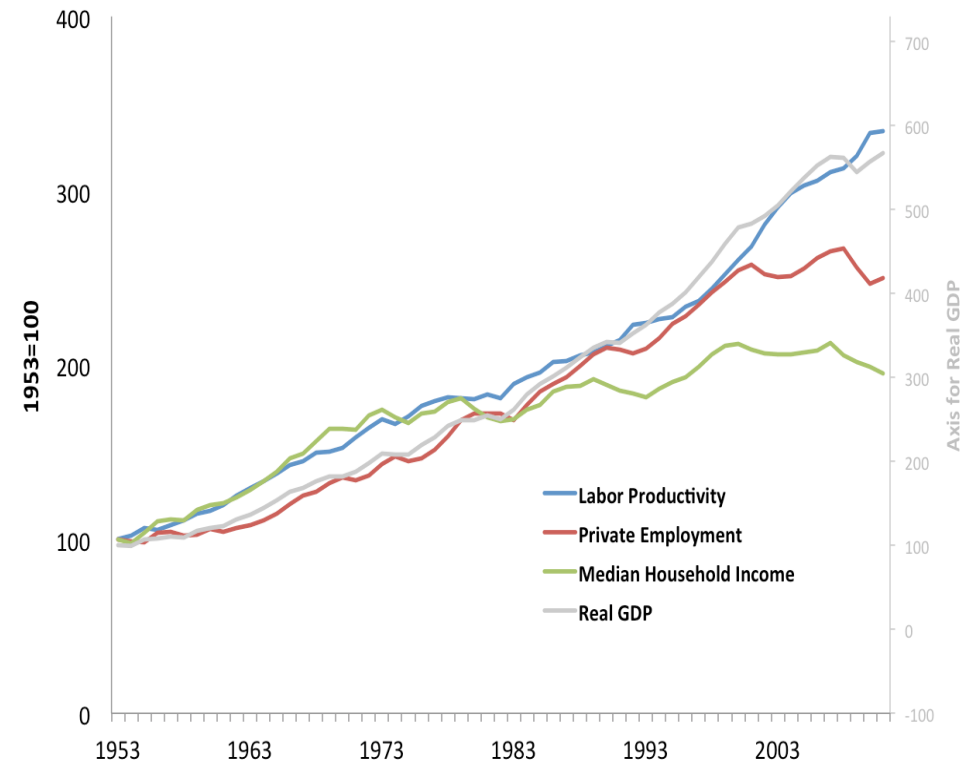
This Time its Different



The Great Decoupling

- Productivity growth not increasing the wage income
- Decoupling: Not Really (Stansbury and Summers 2017)

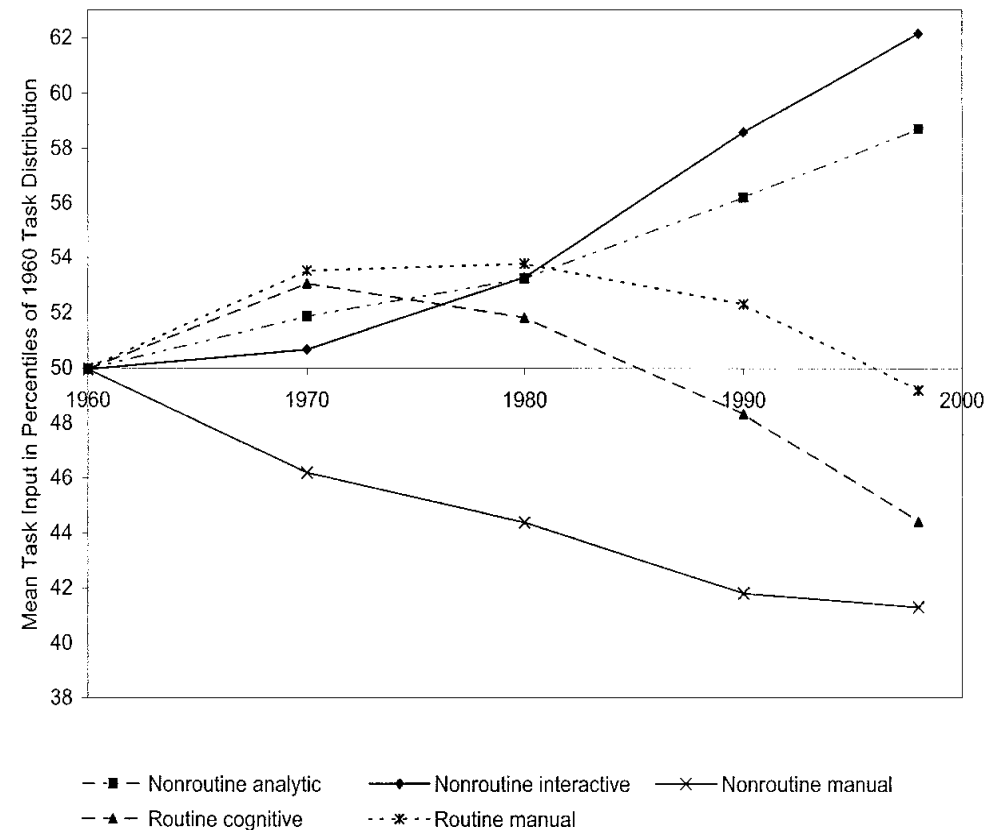
US Productivity, GDP, Employment, and Income: 1953-2011



Technology and Nature of Job

- De-routinization: Increase in demand for analytic and interactive skills
 - Adapting education system, focus on STEM
 - Reskilling
 - Bridging skill and digital divide
- Rise of gig economy and changing Employer-Employee relation
 - Informality and issue of social protection

Channing Task Content of Jobs



Indian Labour Market Trends

Channing Profile of Indian Labour Force

- Size and Shape of labour supply changing rapidly
- 9 million workers joining labour force annually
- Impressive improvement in the quality of the labour supply
- Supply of workers with college degree growing phenomenally
- Increase in supply of **vocationally trained workers remained less impressive**

	Education Level	1983-84		2011-12		2017-18	
		Million	Share	Million	Share	Million	Share
1	Not Literate	167.7	57.3	129.6	30.1	116.9	24.2
2	Literate Without Formal Schooling	6.0	2.0	2.0	0.4	1.6	0.3
3	Below Primary	26.8	9.1	44.2	10.3	27.6	5.7
4	Primary	36.8	12.5	56.7	13.2	61.7	12.7
5	Middle	26.9	9.2	70.6	16.4	101.4	21.0
6	Secondary	20.3	6.9	50.9	11.8	59.1	12.2
7	Above Secondary	7.6	2.6	75.5	17.5	114.4	23.6
7.1	Higher Secondary			29.6	6.7	42.0	8.7
7.2	Diploma/Certificate Course			6.4	1.5	7.9	1.6
7.3	Graduate			29.8	6.7	47.5	9.8
7.4	Postgraduate And Above			10.9	2.5	16.8	3.5
8	Total	292		430		483	

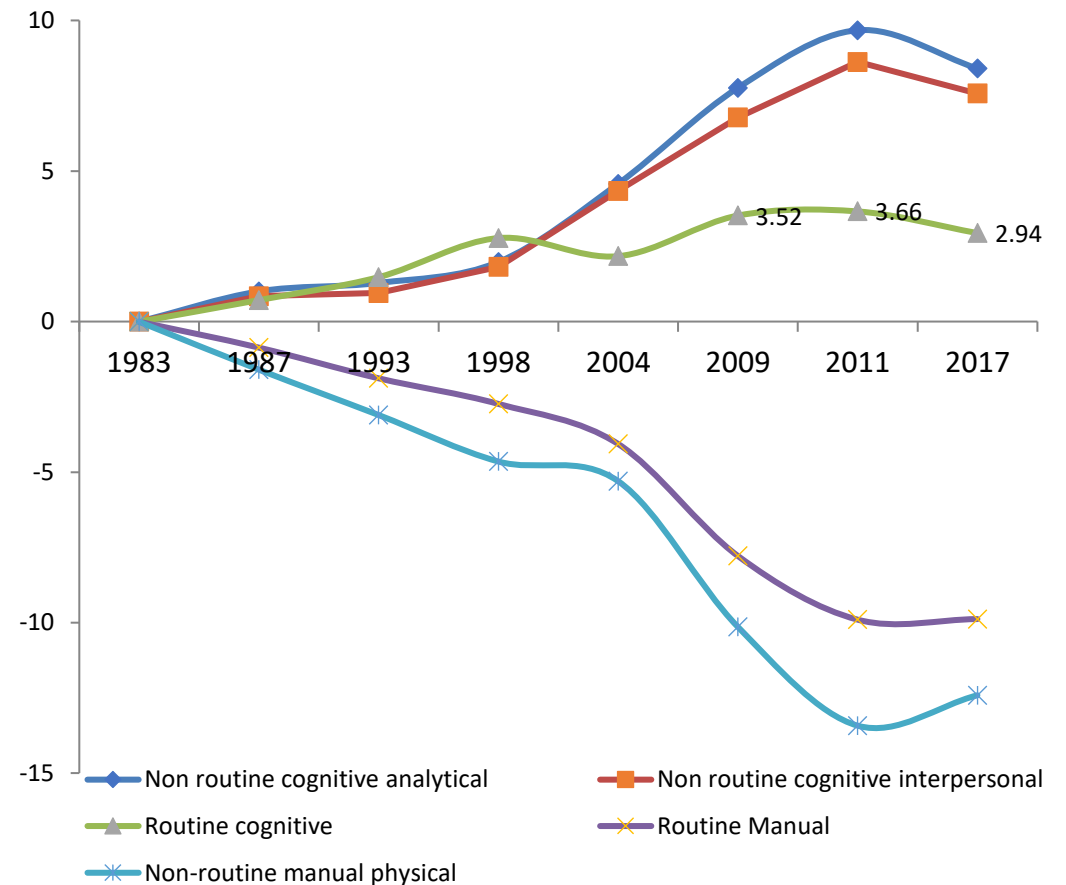
Occupation Structure Employment

- Noticeable change in occupation structure
- High skill occupations gained share in employment
- But no sign of polarisation, at least at aggregate level
- High Skill occupations gained at the cost of agriculture workers

	1984	1994	2010	2012	2018
Legislator, Senior Officers and Managers	1.12	2.03	5.52	7.06	7.65
Professionals	1.44	1.76	3.81	3.72	4.25
Technical and Associate Professionals	2.19	2.52	2.96	3.23	4.09
Clerks	1.64	1.80	1.94	1.99	2.04
Services, Shop and Market Sales Workers	6.34	7.53	7.02	7.61	9.42
Agriculture and Fishery Workers	44.93	39.61	33.22	30.94	30.12
Craft Related Trade Workers	9.46	10.53	11.62	13.19	12.06
Plant and Machine Operator	2.94	3.38	3.69	4.79	5.92
Elementary Occupations	29.94	30.84	30.23	27.46	24.44

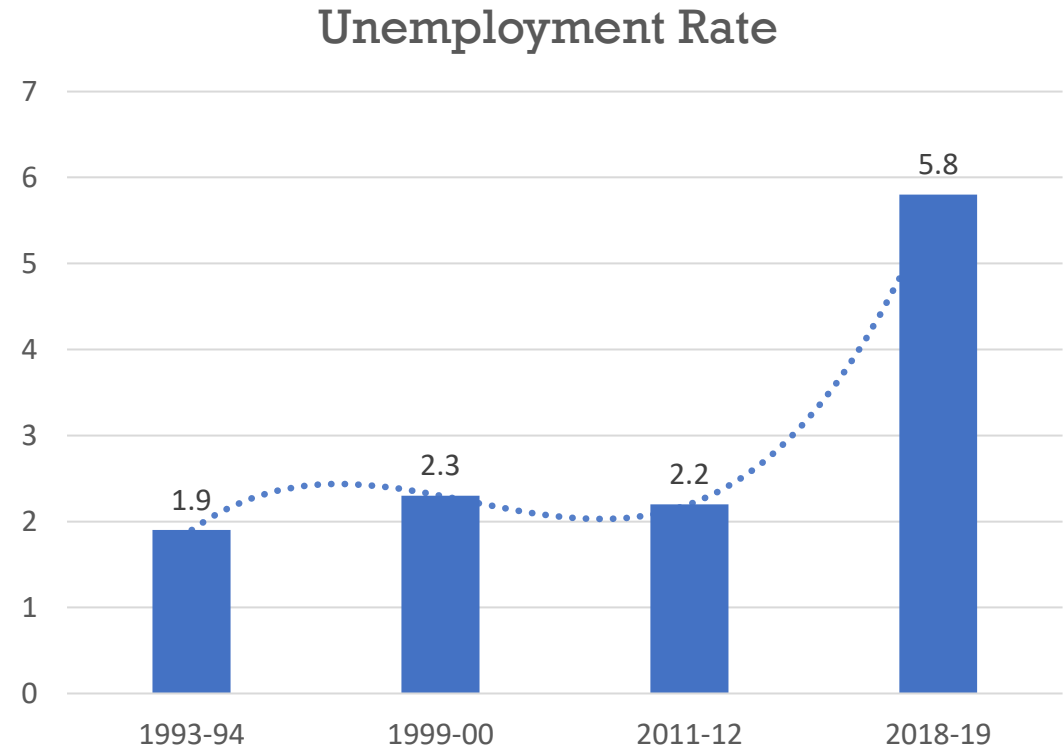
Task Content of Jobs has been changing

- Task content of jobs changed substantially since 1983
- Non-routine cognitive task contents increased
- But routine cognitive task content is holding at aggregate level
 - Complete de-routinisation of jobs in organised manufacturing sector
- Considerable variation in task content of jobs among different social groups



Jobs are not Growing in Line with Labour Supply

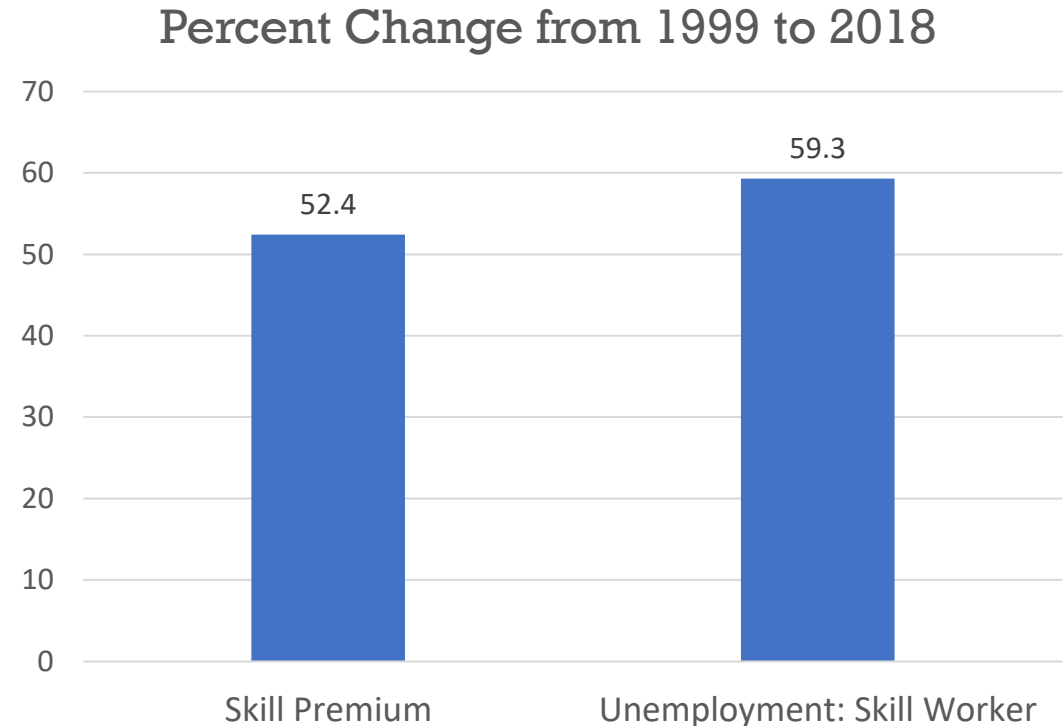
- Employment transition has been very slow
- With less than 15 share in GDP, primary sector still employs 42 percent of labour force
- Open unemployment rate was low but spiked recently
- Very high youth unemployment: 18%
- Unemployment among highly educated youth: 36 %



Challenge 1: Creating Decent Jobs for Educated Youth

Rising Skill Premium and High unemployment Among Educated

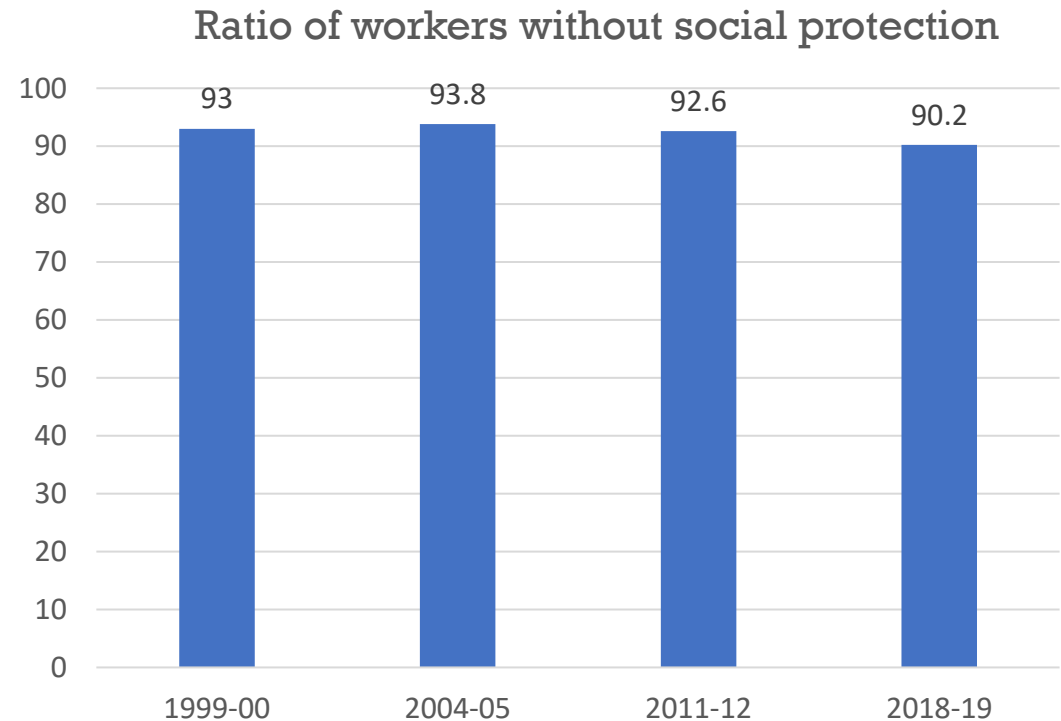
- Sketchy data on wage earning in PLFS makes it difficult to estimate skill premium
- Sectoral data shows massive increase in skill premium
- Unemployment rate has been also been highest among educated
- **Unemployable educated**: the quality of education?
- Poor reading and computational skills among student: **Learnability**



Challenge 2: Skill development, quality of education and learnability

High Informality

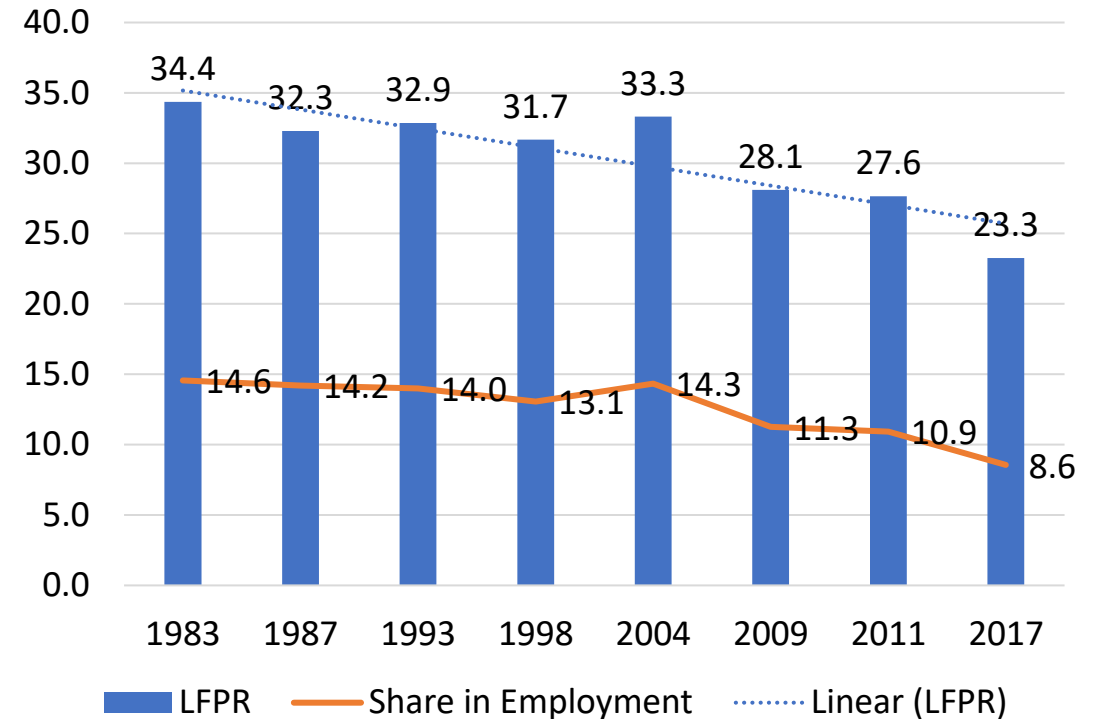
- Informality has always been high
 - Informality also increased in formal sector
- Govt. has been providing incentives for formalization of labour force
- Some positive movement, but more than 90% of workers are still without social protection



Challenge 3: Formalization and Social Protection

Low and Declining Female Participation

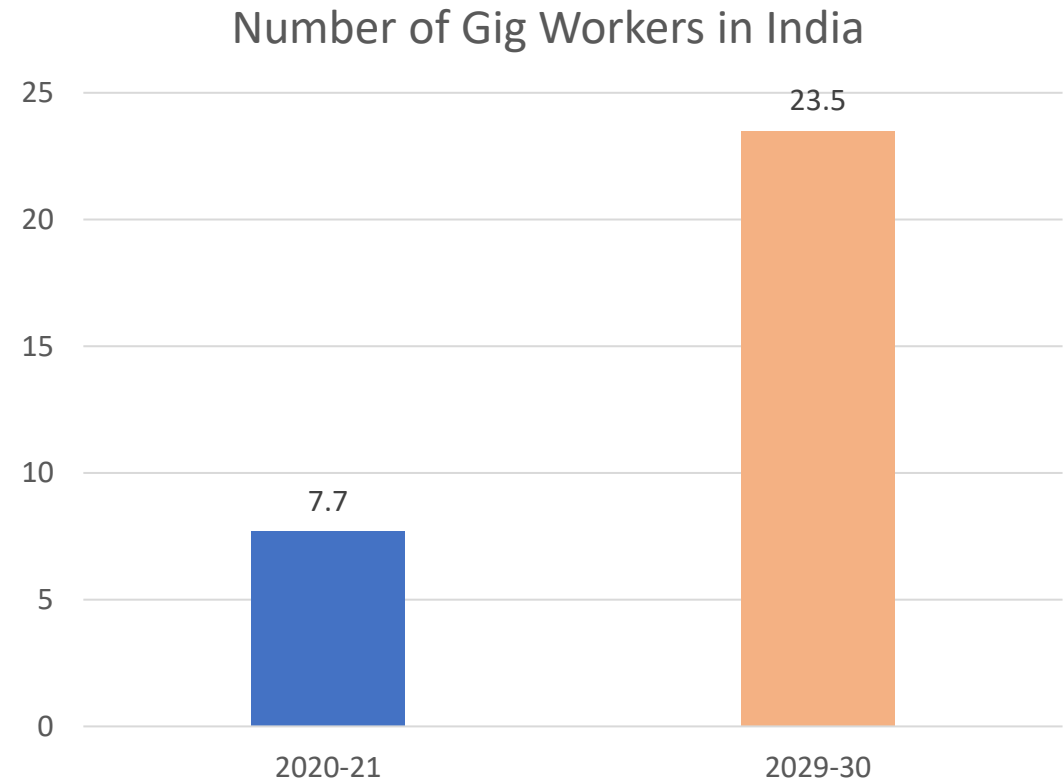
- Girl enrolment in India has been impressive
- 43 percent of graduate in STEM are female
- Despite this, female are leaving labour force



Challenge 4: Increasing female labour force participation

Platform Economy and Gig Workers

- Platform economy is offering massive opportunities for India
- Number of Platform workers growing rapidly
- Lack of regulations and monopsony power
- Social protection: paid sick leave, accident insurance, pension benefit



Challenge 5: Regulations for platform economy and safeguarding interests of gig workers

Priorities for India

- 1. Creating Decent Jobs for Educated Youth**
- 2. Skill development: Quality of education, learnability, digital literacy**
- 3. Universalisation of Social Protection**
- 4. Increasing female labour force participation**
- 5. Regulations for platforms to safeguard interest of gig workers**

Thank You!