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Modelling the challenges of youth employment: A key to reap demographic dividend

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Abstract
Growth and development in the past used synonymously in economic discussion and this remained acceptable. Growth is a quantitative term and implies more output, while development is a process, whereby the real per capita income increase is accompanied by reduction in the inequalities and satisfaction of the preferences of the masses. Progress means an improvement in economic welfare and it is linked with the consumption level. Development must represent the entire gamut of change by which the entire social system changes for the better. In fact output is a function of inputs (whatever is purchased by a producing unit that is primary inputs which do not lose their identity in the production prices and the secondary inputs which lose their identity in the process). The Institute for Human Development (IHD) and the International Labour organisation published the India Employment report on March 26, 2024, which highlighted the challenges of youth employments broader trends in the Indian Labour market, making growth and production more employment intensive, improving employment quality strengthening skills and bridging gap in the labour market patterns. There is large population of youth (particularly of women) who are not in employment, education and training (NEET) they are working force but are not in labour force (48.4% v/s 9.8% for young men). Demographic dividend could only be reaped, if our policy is to increase joyful and joyful employment policy for Indian youth, which could be possible by bridging the knowledge and skill gaps that helps in enhancing employability. Hence, growth is necessary but not the sufficient. Condition of sufficiency could only be satisfied when there is job for all, there is no poverty, no inequality and that result in fulfilment of basic needs of all. Our attempt as a researcher is to examine the present structure of work force, labour force and labour participation rate via modelling and then analyse statistically to reach the conclusion and findings.

Keywords: Modelling, joyful employment, demographic dividend

Introductions
Parameters related to social issues are education, health and employability and there are some indices to reflect them e.g. Global Hunger Index, Infant Mortality Rate, The Maternal Mortality Rate, Average life expectancy at birth, Domestic happiness, Ranking in corruption and of universities, technical institutions and other educational institutions (health institutes are also included). One of the accepted index at Global level is Human Development Index (based on average life expectancy i.e. health, number of years in schools i.e. education and purchasing power parity, the level of economic wellbeing) and the latest position of India is its 134th place out of 193 countries. It is hovering around 134 even after 76 years of Independence. The model on which developed economies have moved on the path of development starts from knowledge, understanding, skill building (application oriented as well as soft skills), conservation of natural resources (environment climate, air, water, minerals, forests etc.) Due emphasis has also been given on critical thinking, scientific reasoning, research innovation, entrepreneurship and logical interpretations. Employabilty is a function of so many variables and attributes (problem solving skills and positive attitude). Top ranking educational institutions are located in such countries that is why pass out graduates and others normally get the job according to their ability at the current wage rate without any considerable delay. According to the latest report on employability, 45% of the graduates in India found non-employable.

Mathematical Model

Output is a function of primary and secondary inputs:

Y=f(a, b, c, d…….) Where a, b, c, d…….are those inputs which are purchased by a producing unit for addition in value and output means whatever is sold by a producing unit. GDP is the monetary value of all final goods and services produced by the normal residents at current prices or constant prices as the case may be, within the domestic territory of an economy during an accounting year. There are three approaches to GDP.

Value added in all the sectors of the economy

Gross Domestic Expenditure

Gross Domestic Income

(Whenever there is production, it is due to the engagement of factors and they are rewarded for their work i.e. factor incomes are generated which are spent for the purchase of goods and services either for consumption or investment via savings).

Let us assume

Y=*f*(N, L, K, O, T)

Where N=Natural resources (on the earth, above the earth and under the earth);

L=Labour (Physical as well as Intelectual).

K=Capital formation that is addition of capital stock.

O=Organisation (Marketing, Finance, HR, Engineering and technology, R&D) and entrepreneurship that is risk bearing, caringout uncertainity and innovations.

T=Technology for the sake of similarity.

If we assume other factors as constant, our production function will be

Y=f (L, K)

$$dY = \frac{\partial f}{\partial L}\, dL + \frac{\partial f}{\partial K} dK \ldots\ldots\ldots\ldots\ldots\ldots\ldots (i)$$

∂f/∂L=Marginal Productivity of Labour in Units of Labour

DL=Change In Units of Labour

∂f/∂K=Marginal productivity of capital

DK=Change in Capital stock

DY=Change in GDP

If we divide equation (i) by DT on both sides we get following equation (ii)

$$\frac{dY}{dt} = \frac{\partial f}{\partial L}\frac{dL}{dt} + \frac{\partial f}{\partial k}\frac{dk}{dt} \ldots\ldots\ldots\ldots\ldots\ldots\ldots (ii)$$

Here

$$\frac{dY}{dt} = Rate\ of\ growth\ of\ GDP\ per\ year;$$

$$\frac{dL}{dt} = Rate\ of\ growth\ of\ Labour\ per\ year\ and$$

$$\frac{dk}{dt} = rate\ of\ growth\ of\ Capital\ stock\ per\ year$$

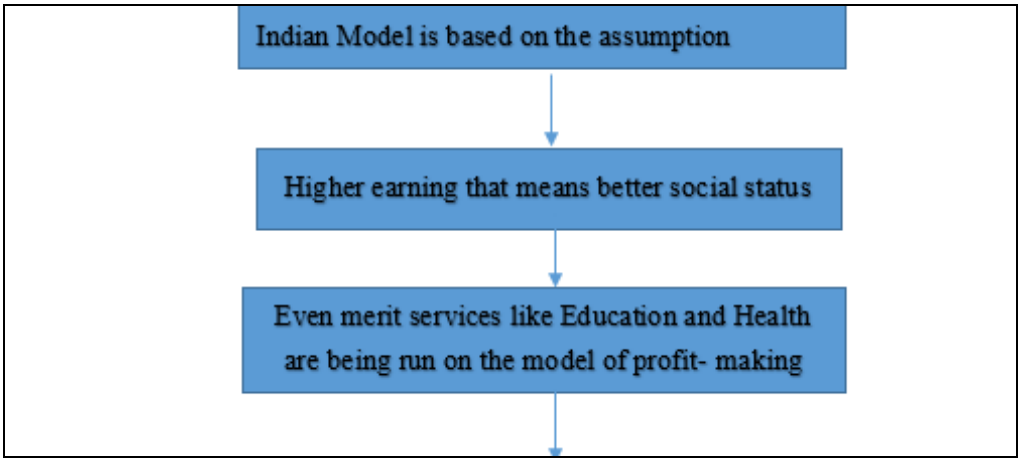
$$\frac{dk}{dt} = \frac{K_t - K_{t-1}}{dt} = Investment\ flow$$

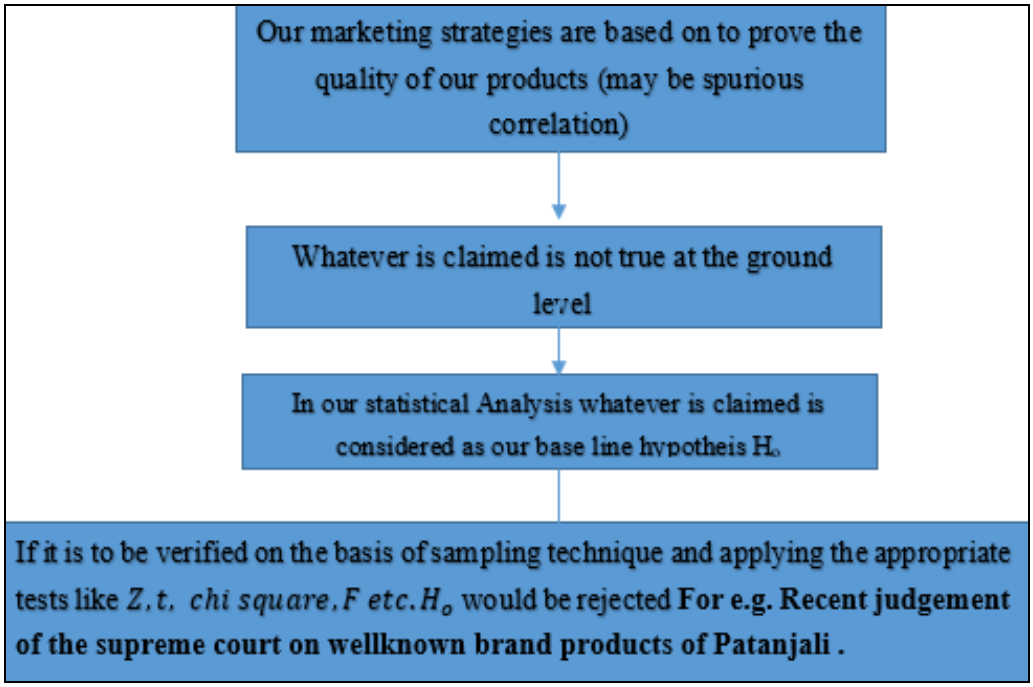
Now we are the most populous country of the Globe and we have got a major share of working population in the structure of population. Hence, we have to engage this population in gainful employment (Labour intensive activities), so that we could reap the fruits of this young population. In the coming years according to a new study published in the Lancet Journal, Global life expectancy has gone up in the last 30 years. Global average is 6.2 but for India it is 7.9 as more average deaths have decreased. Hence in the coming years India will have a change in the population structure and our dependent population because old age population will go up. Therefore, it is the time for utilisation of working population.

$$GDP\ Growth = \frac{Y_t - Y_{t-1}}{Y_{t-1}}\ X\ 100$$
$$= \left(\frac{Y_t}{Y_{t-1}} - 1\right) X\ 100$$

(If we utilise our young population in productive and gainful activities for addition of values, our GDP growth will be in two digits). As per our model this depends on an increase of the productivity of the factors as well as their utilisation with advancement of technology).

Statistical flow diagram





Development means quality of life, access to education, healthcare, sanitation, safe drinking water, fulfilment of all basic needs of all sections of the society, better distribution of economic power, structural and institutional changes for the better, advancement of science and technology through research and development, security and safety, conservation of natural resources with least possible pollution. Hence removal of all the obstacles economic as well as non-economic, morality, integrity, transparency and accountability, utilisation of resources are the key features of development.

Literature Review

Indian economy has become the fifth largest economy and also the fastest growing. The Govt. has now prepared a plan to expand the economy from$3.51 to$ 6.99 trillion in nominal terms (at current prices) by 2030. The target of taking the economy to $5T by 2024-2025, could not be fulfilled due to supply shocks as well as disruption due to COVID-19 but now the Govt. has also set an ambition target to raise per capita income to $4,418 from around $2500 (now) in the next 6 years. Similarly our export of goods and services are to be increased from $ 700 billion to $1.58 trillion by 2030.

Focus Areas

1. Improvement of workforce skills and vocational training with the implementation of NEP-2020.
2. Literacy rate from 78 to 82 percent by 2030.
3. Labour force participation rate to go up from 46% to 50% by 2030.
4. Unemployment rate to fall from 8% to 5% by 2030.
5. To make Indian economy a 3rd largest economy globally, 13% of the youth are not in education, employment or training (NEET). Thus the need for increased use of evidence in the design which is meant to implement of youth interventions to increase effectiveness and sustainability of interventions and outcomes. This depends upon strengthening training and education system, enhancing labour market, skills and entrepreneurship development. Database is available for research and analysis. The NEP-2020 has been designed in such a way so as to address a number of gaps in the present system.

A 7.3% GDP growth rate for the fiscal year 2023-24
GDP = Pvt. Final Consumption Expenditure (PVCE) + Gross Domestic Pvt Investment+ Govt purchase of goods & services + Net Exports
PFCE = 58% of total GDP (growth is 4.4%)
GFCE = Increased from 0.1% in 2022-23 to 4.1% in 2023-34
Gross Fixed Capital formation = (11.4% in 2022-23 and came down to 10.1% in 2023-24, due compensation has been made by the Govt's capital spending rather than Pvt Sector)
Net Exports = have not responded in the positive direction.

Literature Gap

It has been observed that there is always a difference between whatever is claimed and what really is achieved. Economics is a social science and its laws are subject to the condition, other things being equal (which may or may not). India is the world's fastest growing economy and will become the world's third largest economy subject to the condition that the rate of growth of the economy remains 8 percent or above per annum. The Reserve Bank of India's Monetary Policy committee has kept the policy rate in it's meeting on 5/4/2024 unchanged at 6.5% since Feb 2023 (after it started raising rates from May 2022. The policy rate was just 4% in April 2022).
(CPI) Consumer Price Index inflation rate is within the tolerance band of RBI (4.5% in March and tolerance band is (2-6%). Despite interest rates being high, growth prospects continue to be good. Repeated climate shocks have not affected the Rabi crop and that is why the potential growth of GDP during 2024-25 could be close to 8%. It all depends on climate conditions and other factors. Normally it is believed that tight money policy demotivates investments and thus generation of more income. If investment opportunities are encouraging, it would lead to the more demand for labour and employment opportunities.

The objectives of this paper are given below

1. To examine the trends of population with the change in its demographics.
2. To analyse the Indian Employment Report 2024 published by Institute of Human Development (IHD).
3. To study the impact of the implementation of NEP-2020.

Research Methodology

The discussion on the draft of NEP-2020 is almost complete and now it is to be implemented at all levels from primary to secondary to tertiary levels. This is a complete document and needs a fine infrastructure for its implementation. The teachers are to be trained /reoriented for its implementation so that the outcomes are in accordance with the objectives. This requires a strong will power and all resources (financial as well as others). The different agencies are busy to make necessary arrangements for its implementation from this academic session. This paper is based mainly on secondary data available from the reliable sources e.g. blue prints produced by the Govt. or its agencies, research outputs of various universities and institutes. Appropriate statistical tools have been used to draw conclusions and findings. Manufacturing is a sector, which is highly employment elastic sector, but COVID-19 could make a shift of labour from this sector to family oriented agriculture sector, which is already overburdened.

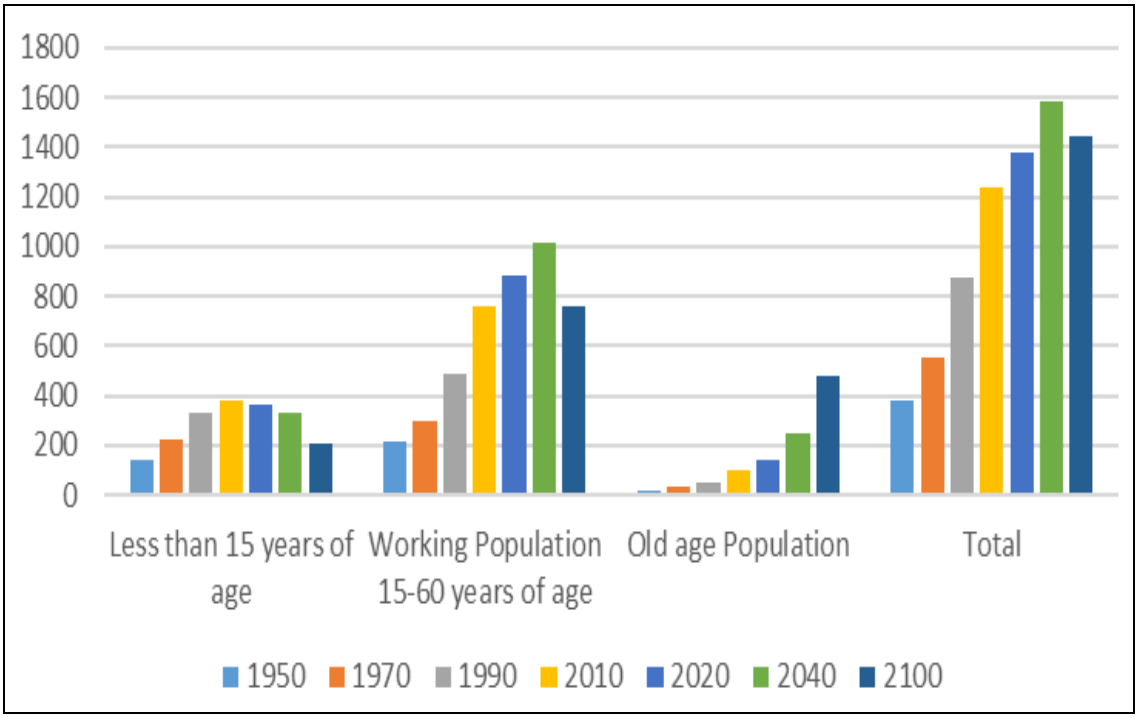
Objective 1

According to United Nations Department of Economic and Social Affairs, India's population was 1.429 billion as on 30/4/2023. Thus, India has taken the top position by becoming the most populous country of the world. India and China both are now almost at par so far as their population numbers are concerned but according to World Bank Data (2021), China's per capita GDP was nearly 5.56 times of India. 90% of Indian workers still toil in informal jobs (low paid jobs with almost nil social security benefits). With a large proportion of the working population, it is expected India to be in the potential demographic dividend with additional advantage of strong improvement in education levels. It is considered to be a key determinant to access better quality jobs. After COVID-19 pandemic, the share of agriculture in employment increased from 42.4% in 2019 to 46.4% in 2021 because agriculture and self-employment emerged as the employer of last resort.

Table 1 and Table 2 given below reflect the trends of Age wise population and its percentage wise population.

Table 1: Trends in age wise population of India in millions

Years	Less than 15 years of age	Working Population 15-60 years of age	Old age Population	Total
1950	141.3	214.9	20.3	376.5
1970	227.1	297.4	30.7	555.2
1990	331.5	488.4	53.3	873.2
2010	380.3	758.6	96.0	1234.3
2020	361.0	879.4	139.6	1380.0
2040	330.5	1014.0	248.1	1582.6
2100	210.2	756.1	480.7	1447.0

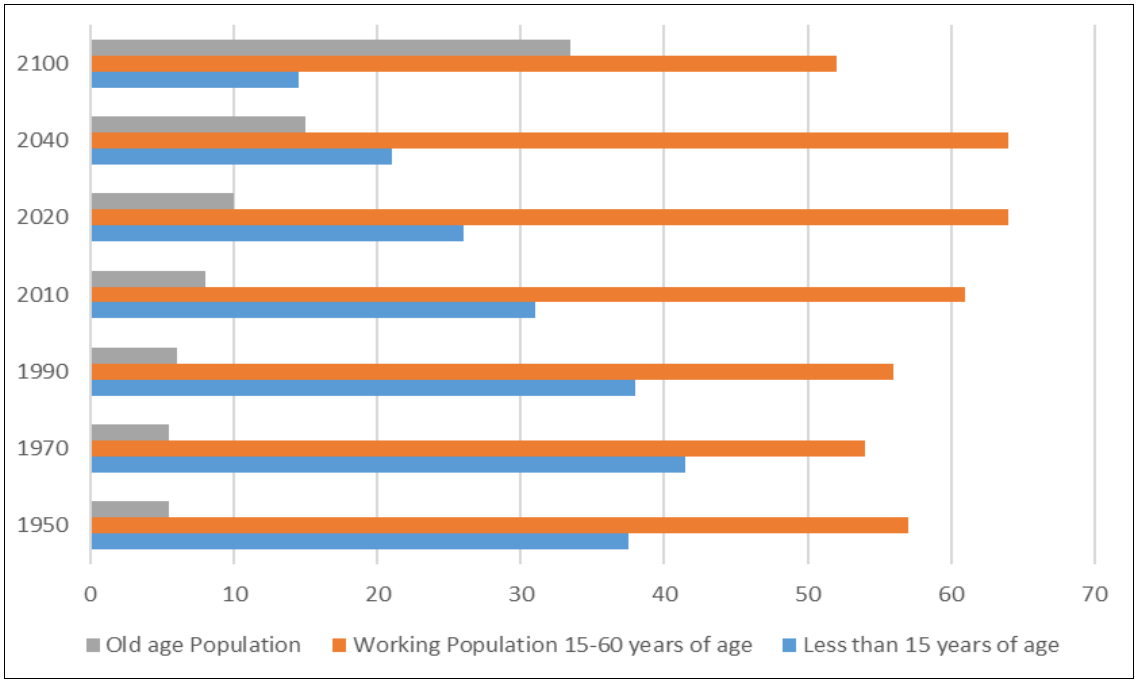


Graph 1: Trends in age wise population of India in millions

In 2023 Total Population was 143crore.

Table 2: Age wise population percentage wise

Years	Less than 15 years of age	Working Population 15-60 years of age	Old age Population
1950	37.5	57.0	5.5
1970	41.5	54.0	5.5
1990	38.0	56.0	6.0
2010	31.0	61.0	8.0
2020	26.0	64.0	10.0
2040	21.0	64.0	15.0
2100	14.5	52.0	33.5



Graph 2: Age wise population percentage wise

From Graphical representation of Table 1 and Table 2 it is very much clear that the large proportion of the working population, India is expected to get the demographic dividend for at least another coming more than 10 years but youth population at 27% in 2021 is likely to decline to 23% by 2036. Increasing youth population of 8 million each year is adding to the labour force but its participation in the labour market is showing a declining trend because of their participation in education they are more likely to be employed in formal sector.

Potential demographic dividend can be achieved only

- When growth process is employment oriented.
- When inequalities of the labour market are addressed.
- When skills are enhanced that is improving quality employment.
- When knowledge gaps are bridged.

Objective 2

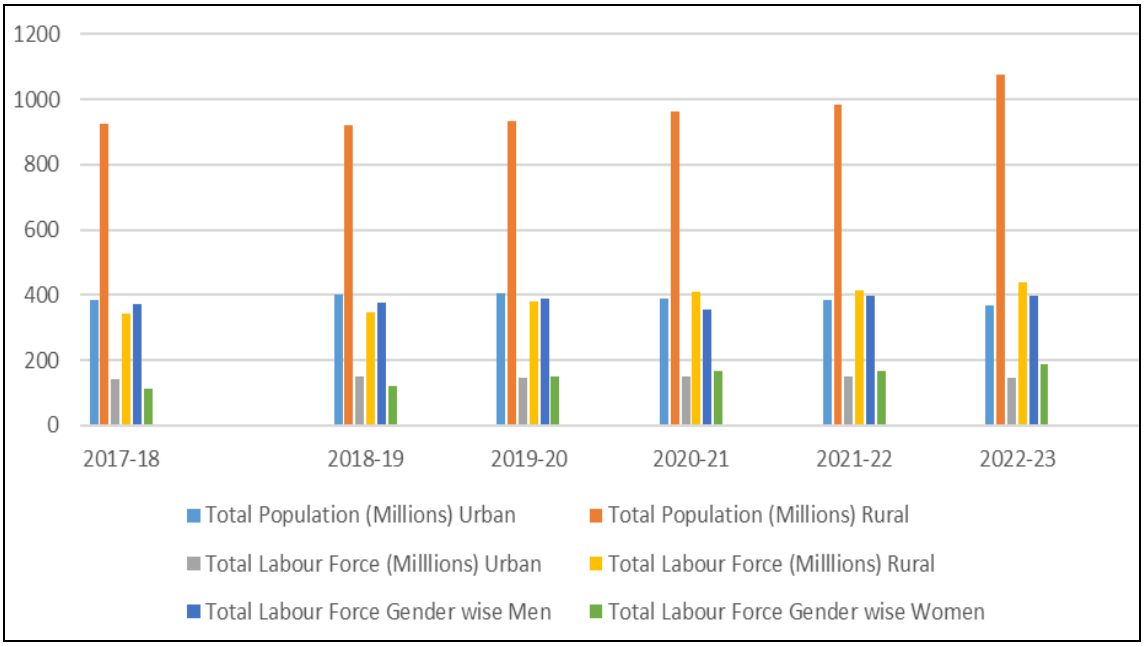
According to the periodic labour force survey conducted between July 2022 and June 2023, which was released in the month of October 2023 shows the key trends in the labour market of India:

- How much has India's Labour grown?
- India's working age population is continued to grow 3 crores from 2010 to 2020 but the participation in the labour force which was 53% in 2017-18 has rise up to 62% in 2022-23.
- A large chunk of the addition to the labour force is from women.
- India's rural areas account for almost all additional labour force.

Table 3A and 3B highlights the trends below:

Table 3A: Key trends in population and labour force

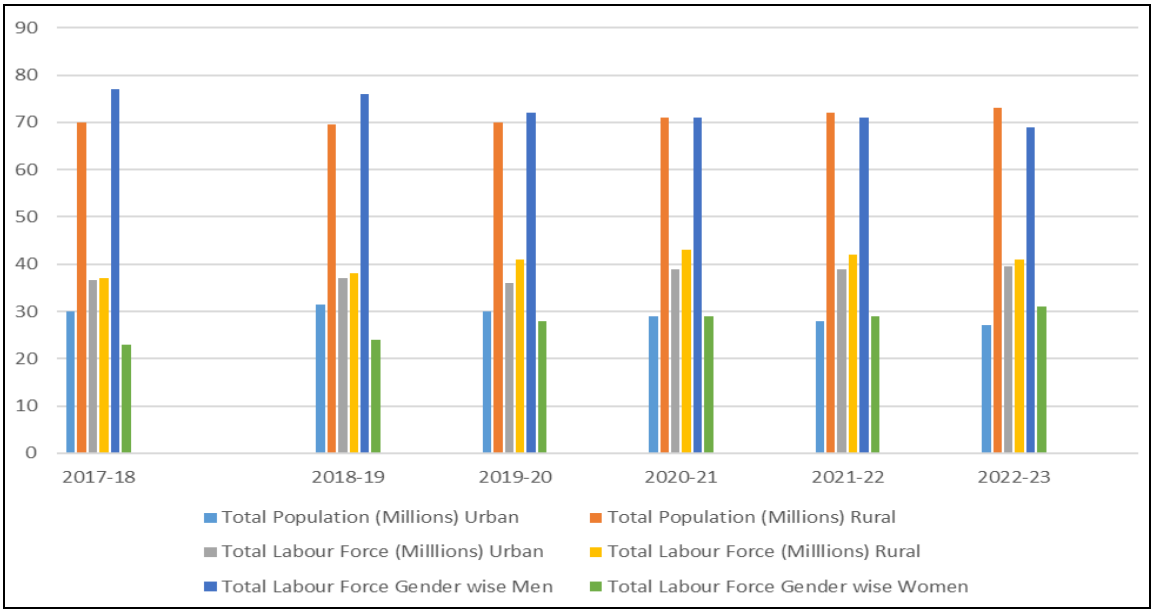
Years	Total Population (in years)		Total Labour Force (in millions)		Total Labour Force gender wise	
	Urban	Rural	Urban	Rural	Men	Women
2017-18	384	926	141	343	372	112
2018-19	403	922	149	348	376	120
2019-20	407	932	147	380	387	150
2020-21	391	962	152	411	357	166
2021-22	384	983	150	415	398	167
2022-23	366	1074	145	440	398	186



Graph 3A: Key trend in population and labour force

Table 3B: Key Trends in population and labour force in percentage

Years	Total Population (in years)		Total Labour Force (in millions)		Total Labour Force gender wise	
	Urban	Rural	Urban	Rural	Men	Women
2017-18	30	70	36.4	37.04	77	23
2018-19	31.5	69.5	37	38	76	24
2019-20	30	70	36	41	72	28
2020-21	29	71	39	43	71	29
2021-22	28	72	39	42	71	29
2022-23	27	73	39.6	41	69	31



Graph 3B: Key trend in population and labour force percentage wise

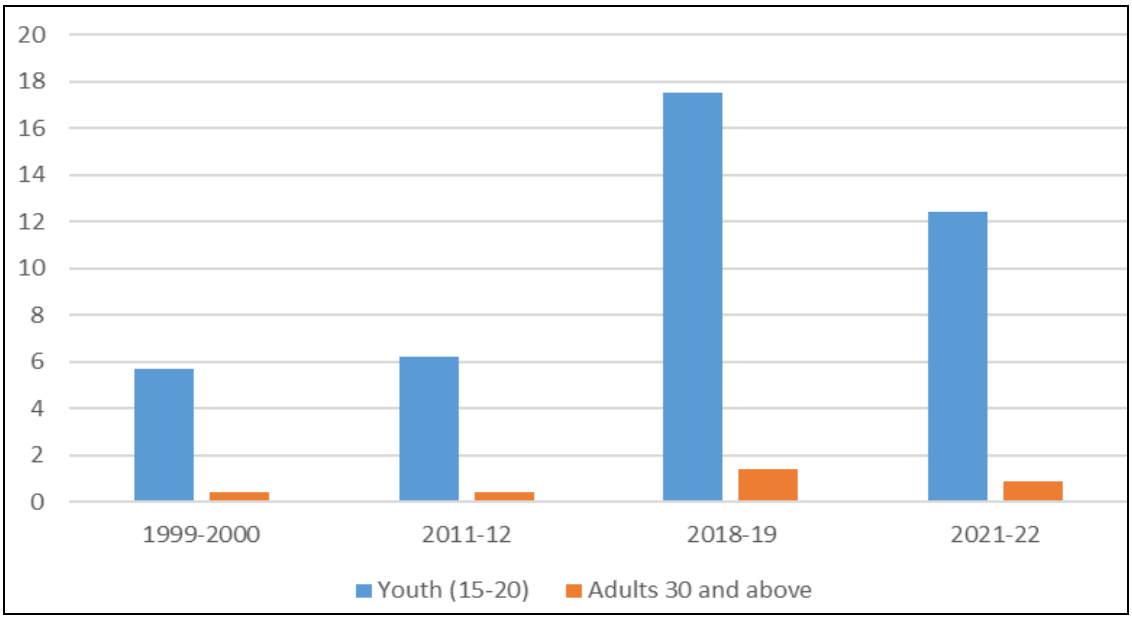
Table 3C: labour force growth during 2017-18 to 2022-23 in percentage

Age of population	Growth of labour force
Below 15	-1
15-18	2
19-24	2.6
25-29	11.5
30-40	29.4
41-60	39.3
60+	11.1

Youth population contribution is 16% only Here, Modal Population = 41-60 and growth of Labour Force Modal Value is 39.3. India's unemployment report conducted by the Institute of Human Development and The International Labour organisation published on March 26, 2024 highlights Youth have much higher levels of unemployment along with education and unemployment both are not directly linked.

Table 4A: Unemployment rate Adults

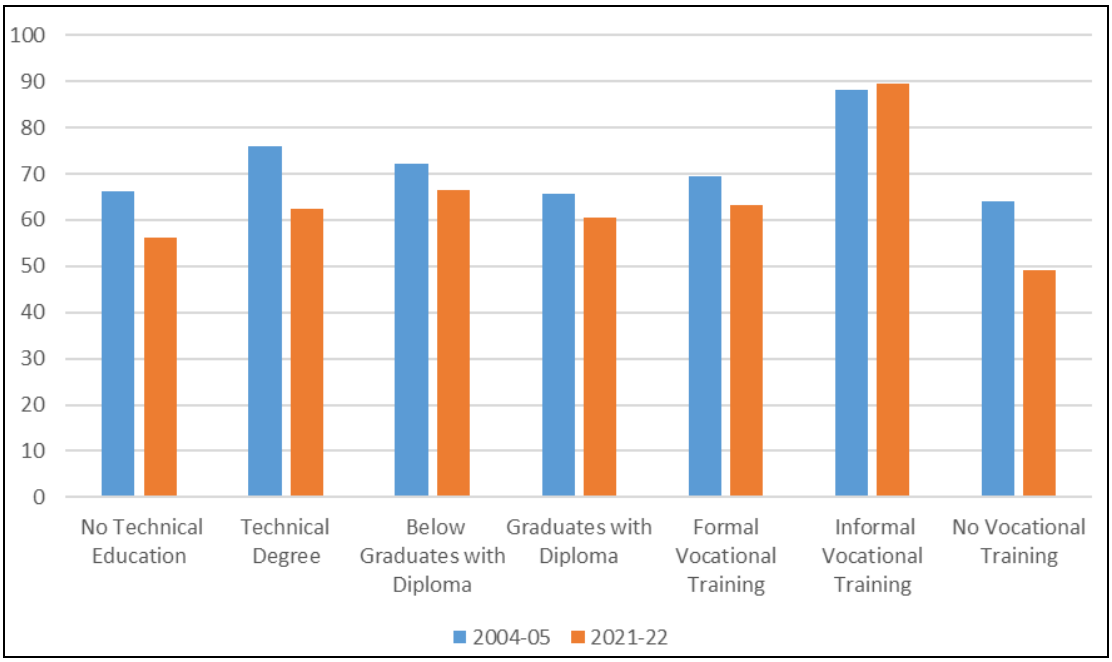
Years	Youth (15-20)	Adults 30 and above
1999-2000	5.7	0.4
2011-12	6.2	0.4
2018-19	17.5	1.4
2021-22	12.4	0.9



Graph 4A Unemployment rate

Table 4B: Work participate rate in percentage

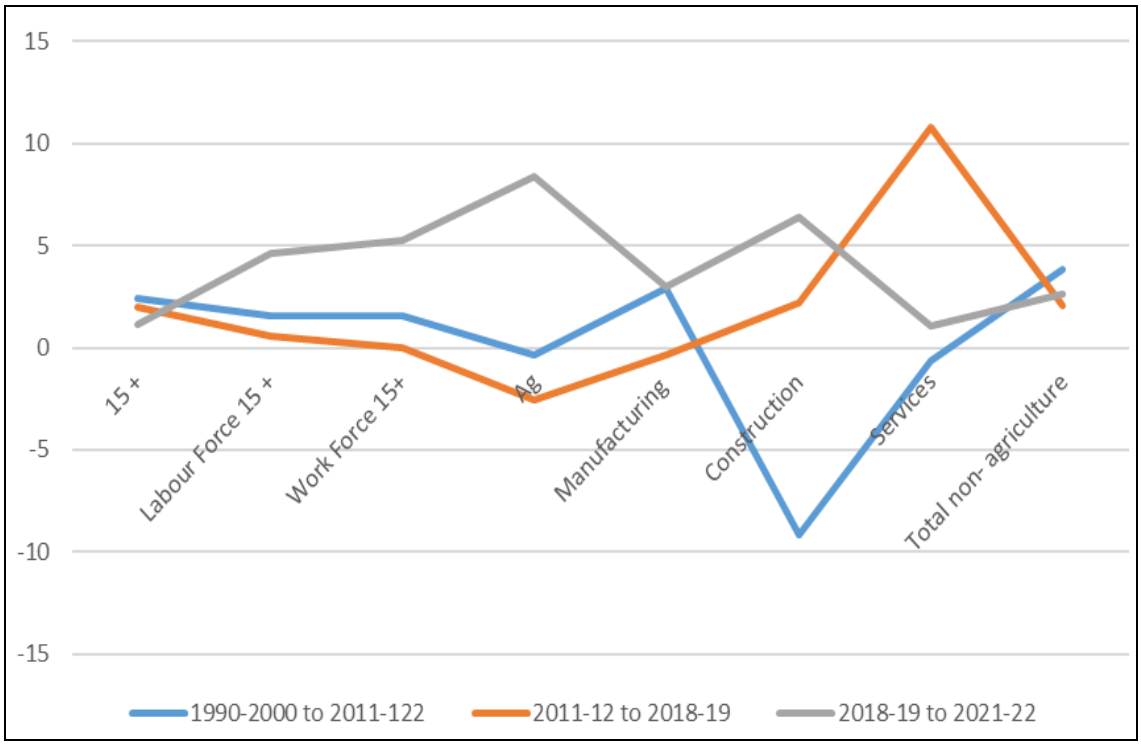
Qualification	2004-05	2021-22
No Technical Education	66.2	56.3
Technical Degree	75.9	62.3
Below Graduates with Diploma	72.3	66.5
Graduates with Diploma	65.8	60.6
Formal Vocational Training	69.4	63.3
Informal Vocational Training	88.2	89.4
No Vocational Training	64	49.2



Graph 4B: Work Participate Rate

Table 4C: Compound annual growth rate in percentage

Population	1990-2000 to 2011-122	2011-12 to 2018-19	2018-19 to 2021-22
15 +	2.39	2.01	1.15
Labour Force 15 +	1.54	0.56	4.62
Work Force 15+	1.55	0.01	5.29
Ag	-0.39	-2.55	+8.39
Manufacturing	2.89	-0.33	3.0
Construction	-9.15	2.18	6.37
Services	-0.67	10.8	1.09
Total non-agriculture	3.86	2.09	2.61



Graph 4C: Compound annual growth rate percentage wise

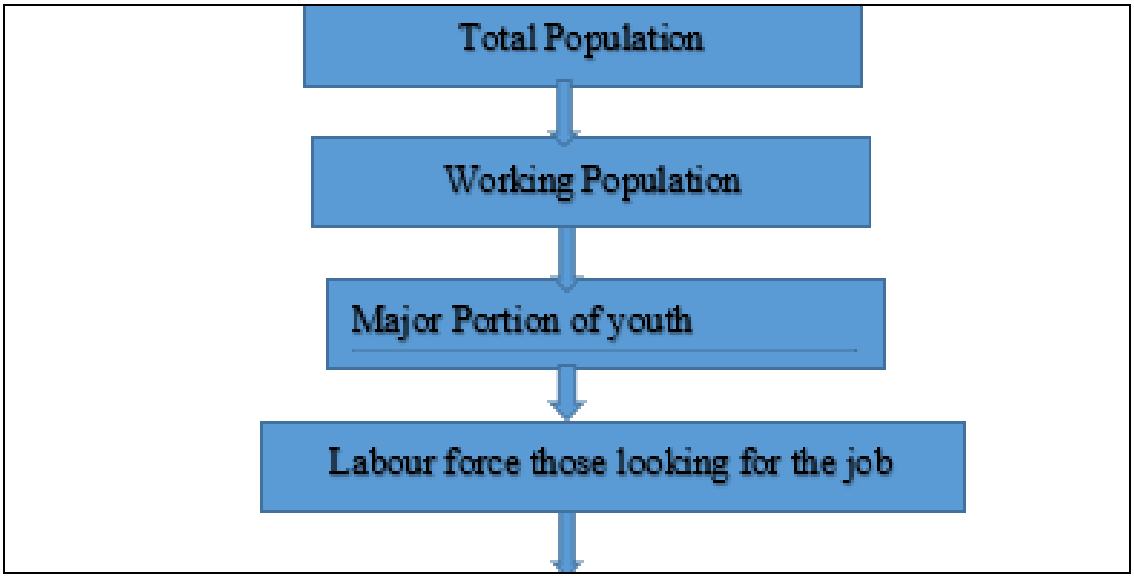
The work force and labour force looking for jobs are lagging with population growth and that is why there is a fall in the labour force participation rate. It is clearly visible in the graphical interpretation**.**

Objective 3

In developing countries like India the pattern of investment in education should be a high priority, because knowledge and skill both powers are needed for development i.e. a set of well qualified and trained professionals like engineers, technologist, business executives, administrators, Doctors and Para-medical staff, Security Personnel's, Trained persons in AI and business analytics, software, hardware, soft skills etc. It has been proved by that if education is an investment, it is 3-5 times better investment in physical capital. Importance of Human capital could be well-understood with the development-model on which developed countries have moved. In this very academic session 36% of the pass out graduates of prestigious IIT Mumbai have not yet been placed and moreover, our educated youth has been tagged with unemployable i.e. there is gap between what is and what ought to be.

A comprehensive document NEP-2020 is ready to be implemented so that top skills which are required in the implementation of this policy gets due recognition because of their excess demand in the market. The areas given below are in excess demand:

(a) Programming language
(b) Business Analytics and Statistical Analysis
(c) Machine Learning
(d) Data Visualisation
(e) Big Data Technologies
(f) Artificial Intelligence (AI)
(g) SQL Data base skills
(h) Effective Communication and soft skills course structures are being designed on the basis of the requirements for the enhancement of employability so that demographic dividend could be reaped.



But some are not able to work, some of them are not qualified to work, some are not willing to work and there are some who do to have required skills, attitude and aptitude for the work

Disguised unemployed (family unpaid work) seasonal unemployment, frictional unemployment, Involuntary and Voluntary unemployment and there are persons, who are found not suitable for the job, Half population in our country do not come to join the labour market due to socio-economic and psychological factors. For some jobs are available but they are not willing to join because of mobility.

Hence they join less productive and less quality jobs mostly in informal sectors (90)%

Home makers jobs are considered voluntary, hence their services are not counted in GDP

Labour Force participation rate is low, Hence Demographic dividend is not reaped . It is considered as a curse rather than blessing

Half population is also a human being they should join the active labour force. Jobs can be created in the service sector e.g. care service sectors then GDP rises to double digit.

Conclusion and Findings

1. The unemployment problem in our country is becoming centred around educated youth (education is key discriminant of accessing better jobs).
2. Since the working age population is increasing, it means a growing demand for jobs (Gross enrolment rate in higher education has gone up from 5% in 1991 to 29.4% in 2020 youth employment rate has gone up from 15% in 1991 to 24.9 in 2020)
3. Unpaid family work has replaced some casual work in rural areas (94.5million in rural areas in 2022-23, which was 54.7 million in 2017-18 and 9.1 million in 2022-23 from 7.4 million in 2017-18).
4. Active participation and empowerment of the weaker section including women in decision making activities.
5. Manpower planning and Planned Parenthood.
6. Indian Labour Market's nature has become very complex over the years.

End Notes

1. Report published in Daily HT April 04,2024, P-02 by Rhythima.
2. Budget Speech (Intrim Budget) 2024-25, Daily HT, Feb, 02 2004.
3. Advanced estimates released by NSO on Jan 05, 2024.
4. Alakh N. Sharma and Ravisrivastava unemployment and Demographic dividend HT April 02, 2024, P-10.
5. Pavitra Kanagraj what will the country employment challenge look like going forward Daily HT 12.04.2022, P-+2.
6. Jha A. Number Theory, Daily HT 23.12.2023, P-+2.
7. Indian unemployment report Daily HT March28,2024, P-02
8. Jha A. understanding the risk of unpaid workers in India, Daily HT Dec 26,2023, P-+2.

References

1. Norman L Hicks, Paul P. Streeten, Indicators of Development. The search for a Basic Need Yardstick World Development; c1979, 7.
2. Goldstein JS. Basic Human Needs: The Plateau curve World Development; c1985, 13.
3. Hagen EE. A Frame work for Analysing Economic and Political Development, In Development of emerging countries (Ed.) RE Asher; c1962.
4. UNRISD, Contents and Measurement of social and Economic Development; c1970.
5. Morris D. Morris, Measuring the condition of the World's poor: The Physical Quality of Life Index; c1979.
6. Ranis FCH, Stewart F. Basic Needs: A Framework for Analysis; c1979.