

ECONOMIC DEVELOPMENT AND FEMALE WORK FORCE PARTICIPATION ACROSS STATES IN INDIA

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In this paper an attempt is made to study the trends and pattern of female work participation among the high and low per capita income states of India. It also aims to test the applicability of “U” curve hypothesis of female labour supply in high and low income states and also analyse the structural changes in women’s employment in response to structural changes in the state economy. Long term trend show that “U” curve has no applicability in both high and low income states despite growth in state income, expansion of female literacy and decline in fertility rates. Women of high per capita income states show higher levels of labour market participation than women of low per capita income states. The cause of concern lies in the fact that women of all states exhibit a downward movement in workforce participation since 2004-05 and the decline seems to be more rampant in rural than urban areas. On account of structural changes there is shift of activities in GSDP from primary to tertiary sector. The share of women’s employment is also moving in the same direction but at the same time it raises concern as those exiting agriculture are not absorbed by the non-farm sector rather they are joining the existing unemployed labour force.

Keywords: Female, Work, Structural Changes, U- Curve

INTRODUCTION

The gradual decline in women’s labour market participation in India with rapid economic growth has raised concerns among the academicians and policy makers whether India is experiencing jobless growth and whether women have been left out of the growth process. Understanding the downward movement in female labour force participation is necessary because female labour force participation is a driver of growth and secondly participation of women is a coping mechanism which arises in response to economic shocks of the household (Chaudhary and Verick, 2014). Labour force participation rate of women in countries having highest Human Development Index is around 60 percent and that of men is around 70 percent. Female labour force participation is relatively higher in some of the neighbouring countries of India whose HDI rank is lower than that of India. Female labour force participation in Bangladesh is 36 percent and in Nepal it is 81.7 percent whereas in India it is 23.5 percent (UNDP, Human Development Report, 2019). Lower levels of women’s labour force participation signify under-utilisation of human resources that deters economic growth and also the benefits of demographic dividend. It is against this backdrop an attempt is made in this research paper to study the relationship between economic growth and female work participation rate with special reference to the high per capita income and low per capita income states of India. This paper will address the following research questions: Is there any variability in the work participation rate (WPR) of women between high and low per capita income states? How does female WPR respond to economic growth measured in terms of GSDP? What has been the structural change in women’s employment as a result of structural changes in the economy? Does expansion of female literacy enhance female WPR?

The study is based on the employment and unemployment surveys of NSSO, Periodic Labour Force Survey (PLFS) and data published by NITI Aayog, Government of India. Other data sources are

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also used wherever necessary. The NSS reports of the 38th (1983), 43rd (1987-88), 50th (1993-94), 55th (1999-2000), 61st (2004-05), 66th (2009-10) and 68th (2011-12) rounds along with PLFS (2017-18) have been used to map the trends and patterns of female work force participation across sample states; structural changes and sectoral shifts in women's employment and also to assess the impact of education on women's employment. NSS provides three different employment estimates based on three approaches to activity classification - usual status, current weekly status and current daily status.. This paper uses the employment estimates based on usual status approach as it is a more inclusive indicator for measuring labour force participation rate because it considers both the major time criterion (principal status) and shorter time period (subsidiary status). Further, the concept work participation rate (WPR) is used in this study to measure women's participation in the labour market¹.

The study considers all major states of India as population and five high per capita income states and five low per capita income states are selected as sample states for the study on the basis of their per capita GSDP (Gross State Domestic Product) for the year 2017-18 at current prices. The sample states selected are:

| High Per Capita Income States | Low Per Capita Income States |
|-------------------------------|------------------------------|
| Gujarat | Assam |
| Haryana | Bihar |
| Maharashtra | Madhya Pradesh |
| Karnataka | Odisha |
| Kerala | Uttar Pradesh |

For assessing women's employment scenario in sample states, growth rates and correlation coefficients are used along with simple descriptive statistics for data analysis.

Female Work Participation Rate (FWPR) in India

A closer look at the NSS data shows that FWPR in India had declined from 29.6 percent in 1983 to 21.9 percent in 2011-12 and further dropped to 16.5 percent in 2017-18. Over a period of 1983 and 2017-18, only in 2004-05 there was an increase in FWPR by three percentage points. It has been argued that female labour market participation in rural areas tends to increase during periods of distress (drought or decline in growth rates of agricultural output, depressed wages and so on) and recede again when the economy improves (Himanshu, 2011). In fact the structure in employment growth during 1990-00 to 2004-05 can be partly attributed to the crisis in the agriculture sector which forced the normally non-working population to enter the labour market to supplement the household income (Abraham, 2009). Rural women exhibit higher levels of WPR than urban women. The rural –urban gap in female WPR is shrinking due to the withdrawal of women work force from the rural labour market.

FWPR in High and Low Per Capita Income States

Table 1 presents female WPR in high and low per capita income sample states for the period 1983 to 2017-18. High per capita income states viz., Gujarat, Haryana, Maharashtra, Karnataka and Kerala show a relatively higher female WPR in both rural and urban areas compared to the low income states

of Assam, Bihar, Madhya Pradesh, Odisha and Uttar Pradesh. Among the rich states Maharashtra consistently exhibits highest FWPR in rural areas for the entire period with FWPR varying between 29 and 54 percent. Rural Karnataka occupies the second position in FWPR except for the year 1999-2000 and its FWPR ranges between 21 and 46 percent over the study period. Least FWPR is found in rural Kerala and rural Haryana. Urban FWPR is lower than their rural counterparts and this feature is noticed in all the rich states. In urban sector Kerala tops the list in FWPR which varies between 16 and 24 percent over time and is closely followed by Karnataka. At the bottom is Haryana with urban FWPR ranging between 9 and 15 percent during 1983 and 2017-18.

Among the low per capita income states, Madhya Pradesh accounts for a relatively higher FWPR in both rural and urban areas for the entire period. Odisha and Uttar Pradesh occupy second and third positions respectively. Assam and Bihar record consistently least FWPR in rural and urban areas in all the periods. As per 2017-18 statistics, among the low income states, FWPR in rural areas seems to be very low in Bihar (2.5%). Urban sector of low income states display a similar scenario.

Table 1: Female Work Participation Rates in High Income and Low Income States in India

| Period | High Per Capita Income States | | | | |
|----------------------------|-------------------------------|---------|-----------|--------|-------------|
| | Gujarat | Haryana | Karnataka | Kerala | Maharashtra |
| | RURAL | | | | |
| 1983 | 40.6 | 27.5 | 45.3 | 35.0 | 54.4 |
| 1987-88 | 38.1 | 29.7 | 37.7 | 28.6 | 46.2 |
| 1993-94 | 39.6 | 27.1 | 43.0 | 23.8 | 47.7 |
| 1999-2000 | 41.3 | 20.2 | 38.0 | 23.8 | 43.4 |
| 2004-05 | 42.7 | 31.7 | 45.9 | 25.6 | 47.4 |
| 2009-10 | 32.0 | 25.0 | 37.0 | 21.8 | 39.6 |
| 2011-12 | 27.8 | 16.2 | 28.7 | 22.1 | 38.8 |
| 2017-18 | 16.5 | 9.6 | 21.1 | 16.6 | 28.9 |
| % change 2004-05 / 2017-18 | -26.2 | -22.1 | -24.8 | -9.0 | -18.5 |
| Period | URBAN | | | | |
| | Gujarat | Haryana | Karnataka | Kerala | Maharashtra |
| | URBAN | | | | |
| 1983 | 14.1 | 12.4 | 22.5 | 24.3 | 17.2 |
| 1987-88 | 11.2 | 12.3 | 19.6 | 19.8 | 15.9 |
| 1993-94 | 14.2 | 15.2 | 18.1 | 20.3 | 14.3 |
| 1999-2000 | 13.5 | 9.8 | 17.8 | 20.3 | 13.7 |
| 2004-05 | 15.1 | 13.2 | 18.1 | 20.0 | 19.0 |
| 2009-10 | 14.3 | 13.0 | 17.0 | 19.4 | 15.9 |
| 2011-12 | 13.3 | 9.7 | 16.3 | 19.1 | 16.6 |
| 2017-18 | 12.2 | 9.3 | 16.8 | 16.0 | 14.9 |
| % change 2004-05 / 2017-18 | -2.9 | -3.9 | -1.3 | -4.0 | -4.1 |

| Period | Low Per Capita Income States | | | | |
|----------------------------|------------------------------|-------|----------------|--------|---------------|
| | Assam | Bihar | Madhya Pradesh | Odisha | Uttar Pradesh |
| | RURAL | | | | |
| 1983 | 14.5 | 20.9 | 50.9 | 33.4 | 30.1 |
| 1987-88 | 16.2 | 19.3 | 41.0 | 27.6 | 21.9 |
| 1993-94 | 15.9 | 17.2 | 41.0 | 31.7 | 21.9 |
| 1999-2000 | 15.1 | 17.3 | 38.2 | 29.9 | 20.1 |
| 2004-05 | 20.9 | 13.8 | 36.6 | 32.2 | 24.0 |
| 2009-10 | 15.8 | 6.5 | 28.2 | 24.3 | 17.4 |
| 2011-12 | 12.2 | 5.3 | 23.9 | 24.6 | 17.7 |
| 2017-18 | 8.1 | 2.5 | 25.6 | 14.4 | 9.6 |
| % change 2004-05 / 2017-18 | -12.8 | -11.3 | -11.0 | -17.8 | -14.4 |
| | URBAN | | | | |
| | Assam | Bihar | Madhya Pradesh | Odisha | Uttar Pradesh |
| | URBAN | | | | |
| 1983 | 8.5 | 12.2 | 16.8 | 12.8 | 11.2 |
| 1987-88 | 8.4 | 7.9 | 14.4 | 12.5 | 9.4 |
| 1993-94 | 9.2 | 6.9 | 14.2 | 15.1 | 10.2 |
| 1999-2000 | 11.2 | 7.5 | 13.4 | 14.5 | 9.4 |
| 2004-05 | 10.9 | 6.5 | 15.4 | 14.8 | 11.7 |
| 2009-10 | 9.3 | 4.7 | 13.1 | 11.9 | 8.0 |
| 2011-12 | 9.0 | 4.5 | 11.5 | 15.5 | 10.2 |
| 2017-18 | 11.0 | 4.2 | 14.7 | 11.7 | 7.3 |
| % change 2004-05 / 2017-18 | 0.1 | -2.3 | -0.7 | -3.1 | -4.4 |

Source: NSS data on Employment and Unemployment Situation in India, 38th to 68th Rounds (1983 to 2011-12) and Periodic Labour Force Survey, 2017-18, Ministry of Statistics and Programme Implementation, National Statistical Office, Government of India.

On average, developed states show higher WPR of women in rural and urban areas than the less developed states in all the periods. The average WPR of women in rural areas of high and low per capita income states is estimated as 18.54 percent and 12.04 percent respectively for 2017-18 data. The average WPR for urban women of high income states is 13.84 percent and it is 9.78 percent for urban women of low income states. The average values suggest that women of high income states participate largely in work force than their counter parts in low income states.

This is in contrast to the theoretical and empirical studies which emphasises that economic necessity pushes women into the labour market. In Tamil Nadu low income districts show higher levels of female WPR than high income districts. Well developed districts viz. Kanniyakumari, Chennai, Thiruvallur, Kancheepuram and Coimbatore in terms of industrialisation, urbanisation, District GDP, per capita income and higher levels of female literacy account for the least WPR of women workers (less than 25 percent) whereas the poor, backward and agro based districts viz. Ariyalur, Perambalur, Villupuram, Tiruvanamalai, and Dindigul with lower levels of per capita income, female literacy and industrial development display higher FWPR of over 40 percent (Sundari, 2019).

If distress drives women into workforce, then more women of low income states should have been in

paid work. But this has not happened. Large scale out migration of men and women from low income to high income states in search of livelihoods could have resulted in lower work participation rate of women in low income states. According to the 2011 Census, four states, Uttar Pradesh, Bihar, Rajasthan and Madhya Pradesh accounted for 50 percent of India's total inter-state migrants. **Uttar Pradesh and Bihar alone recorded for the most number of inter-state migrants in 2011** (20.9 million people). On the other hand, Maharashtra, Delhi, Gujarat, Uttar Pradesh and Haryana housed 50 percent of the country's inter-state migrants. Uttar Pradesh figures in both lists – while there are people who leave it in search of livelihoods, there are also people who head for it in search of livelihoods (Jha and Kawoosa, 2019). The reasons for migration vary by gender. While two-thirds of women's migration is for marriage reasons, work and business account for one-third of male migrations, which is also the single largest reason for migration among men. Further large scale inter-state migration of women could have kept female unemployment rates at a lower level in these states.

Higher levels of FWPR among high income states may be attributed to high economic growth which accelerates women's participation in the labour market via expansion of education and generation of job opportunities, decline in fertility and general acceptance of women's paid work. A striking feature noticed is that invariably all the high and low per capita income states display a shrinking tendency in FWPR in rural and urban areas since 2004-05. Among the high income states, dramatic decline in female WPR is witnessed in rural areas of Gujarat (26.2 percentage points), Karnataka (24.8 percentage points) and Haryana (22 percentage points). Least decline by 9 percentage points is recorded by women work force of rural Kerala (Table 1). Like the WPR of rural females the WPR of urban females in high income states show a falling tendency over the period but the proportion of decline seems to be relatively smaller in urban than rural areas. Kerala, Maharashtra and Haryana record the highest decline in the WPR of urban women (4 percentage points).

Even the low income states show a declining trend in the WPR of rural women since 2004-05. Odisha exhibit greater decline in the WPR of rural women (17.8 percentage points) during 2004-05 and 2017-18. Next to Odisha, Uttar Pradesh (14 percentage points) and Assam (12.8 percentage points) show greater decline in rural women's WPR during the same period. A study of women's work force participation in the urban areas of low income states reveals that it has dropped in all the states except Assam which shows a negligible improvement by 0.1 percentage points during 2004-05 and 2017-18. The decline in FWPR seems to be considerably higher in urban areas of Uttar Pradesh (4 percentage points) and Odisha (3 percentage points). Overall it may be inferred that female WPR is shrinking in rural and urban areas of all states since 2004-05 and much of the decline has occurred in the rural sector. Only during 1999-2000 and 2004-05 most sample states show an increase in female WPR both in rural and urban areas.

Age –Wise FWPR across States

Considering the age group 15-29 years it is noted that WPR of women in this age group is shrinking in the rural and urban areas of all high and low income states. Experts attribute the decline in this age group to increased enrolment of women in educational institutions. What is surprising is the significant decline in the WPR of women in the productive age groups of 30-44 and 45-59 years in rural and urban areas of all sample states during 2004-05 and 2011-12 (Table 2). The rate of decline in these age groups seems to be more in rural than urban areas owing to job deficit. Within a period of 7 years (2004-05 and 2011-12) the high income states of Gujarat, Haryana and Karnataka record an alarming decline of more than 30 percentage points in the WPR of rural women in the

age group 30-44 years. Madhya Pradesh, among the low income states shows the highest decline of 27 percentage points in the WPR of rural women in the age group 30-44 years and is followed by Bihar (21 percentage points). A similar pattern of decline is witnessed in the WPR of rural women in the age group of 45-59 years with Gujarat leading by 27 percentage points followed by Haryana (20 percentage points) and Karnataka (19 percentage points). Even in this age group 45-59 years, Madhya Pradesh records the highest decline (20 percentage points) in the WPR of rural women and is closely followed by Bihar (16 percentage points). The urban scenario is relatively better as the WPR of women in the age groups 30-44 and 45-59 years declined by less than 10 percentage points in both high and low income states during 2004-05 and 2011-12. Overall what is worrying is the significant withdrawal of women in the productive age groups of 30-44 and 45-59 years from the labour market particularly in the rural areas of high and low income states.

The declining trend in women's WPR in high and low income states raises the question what is the impact of economic growth on female WPR. This is examined by analysing the relationship between FWPR and economic development in sample states.

Table 2: Age wise WPR of Women in High and Low Income States in India

| States | RURAL | | | | | | | |
|----------------|---------|-------|-------|---------|-------|-------|----------|------|
| | 2004-05 | | | 2011-12 | | | 2017-18* | |
| | 15-29 | 30-44 | 45-59 | 15-29 | 30-44 | 45-59 | 15-29 | 15+ |
| Gujarat | 57.6 | 75.4 | 69.9 | 33.9 | 45.2 | 42.6 | 15.1 | 21.6 |
| Haryana | 42.6 | 65.6 | 52.7 | 14.7 | 30.6 | 32.7 | 9.0 | 13.2 |
| Karnataka | 53.4 | 81.6 | 66.9 | 27.1 | 51.1 | 47.9 | 14.9 | 27.2 |
| Kerala | 18.9 | 47.8 | 46.1 | 12.6 | 41.2 | 39.3 | 7.9 | 20.8 |
| Maharashtra | 57.0 | 83.0 | 77.7 | 36.7 | 70.6 | 66.4 | 20.6 | 36.7 |
| Assam | 26.4 | 41.8 | 29.0 | 13.2 | 21.9 | 17.1 | 6.6 | 10.6 |
| Bihar | 14.7 | 32.2 | 26.8 | 5.1 | 11.4 | 10.4 | 1.4 | 3.8 |
| Madhya Pradesh | 50.7 | 70.8 | 63.7 | 31.3 | 44.0 | 43.6 | 20.8 | 34.9 |
| Odisha | 40.9 | 57.8 | 49.3 | 28.7 | 42.5 | 39.9 | 13.6 | 18.9 |
| Uttar Pradesh | 28.4 | 51.3 | 53.2 | 17.2 | 37.8 | 38.7 | 7.1 | 14.0 |
| India | 41.4 | 61.6 | 56.2 | 26.4 | 46.3 | 44.0 | 13.8 | 23.7 |
| URBAN | | | | | | | | |
| Gujarat | 17.5 | 28.1 | 20.4 | 17.0 | 22.7 | 16.4 | 15.2 | 15.5 |
| Haryana | 12.9 | 29.2 | 18.8 | 8.7 | 21.9 | 12.5 | 7.3 | 12.1 |
| Maharashtra | 21.1 | 34.3 | 25.2 | 17.6 | 31.3 | 18.1 | 15.0 | 21.2 |
| Karnataka | 14.9 | 32.7 | 36.1 | 15.8 | 38.8 | 28.7 | 9.6 | 19.8 |
| Kerala | 20.2 | 37.9 | 26.1 | 18.5 | 29.8 | 22.0 | 14.3 | 19.1 |
| Assam | 12.4 | 18.1 | 18.7 | 8.2 | 15.0 | 15.7 | 11.1 | 13.6 |
| Bihar | 5.3 | 14.3 | 18.9 | 4.7 | 9.1 | 10.3 | 1.7 | 6.0 |
| Madhya Pradesh | 17.9 | 28.8 | 30.3 | 10.0 | 22.1 | 21.9 | 12.3 | 19.6 |
| Odisha | 14.6 | 27.9 | 24.9 | 16.4 | 27.6 | 19.4 | 9.8 | 14.8 |
| Uttar Pradesh | 13.3 | 21.6 | 21.1 | 12.6 | 14.9 | 11.3 | 6.2 | 9.9 |
| India | 18.6 | 31.0 | 24.8 | 15.6 | 26.8 | 21.3 | 12.8 | 18.2 |

Source: Same as in table 1.

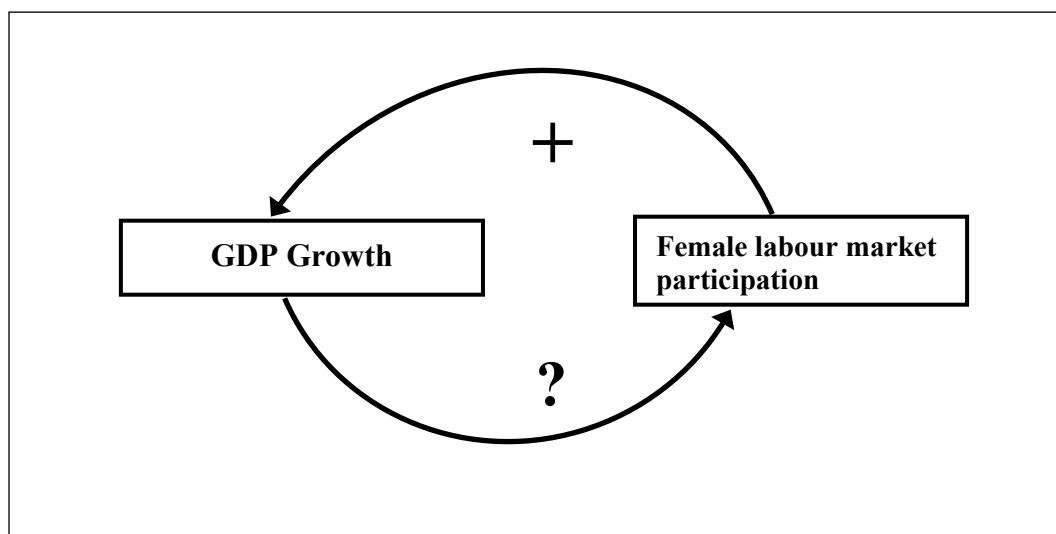
* - Age wise distribution of WPR of women in the age group 30-44 and 45-59 years is not available in PLFS report, 2017-18.

ECONOMIC DEVELOPMENT AND FWPR

Economic development is believed to increase the labour market participation of women through expansion of education, reduced fertility rates and household responsibilities along with structural changes in the labour market of the country. There are two approaches to explain the link between economic development and FWPR. The first approach suggests a positive impact of female labour force participation on GDP growth of the country (Luci, 2011). The second approach claims that GDP growth first lowers female labour market participation at early stages of development and then increases in the middle and long run (Goldin, 1994).

There is positive impact of women's education and labour market participation on GDP due to their impact on a country's human capital stock. Gender discrimination in education and employment has a negative impact on GDP, which implies that gender inequality is costly to economic development. A series of studies, theoretical and empirical ones, clearly prove that female labour market participation promotes GDP, but economists still disagree about the inverse impact of economic growth on female labour market participation (Luci, 2011). Figure 1 illustrates the direct impact of female labour force participation on GDP growth but reverse impact of GDP growth on female labour force participation is questionable.

Figure 1: The relationship between GDP growth and female labour market participation



Source: Luci, A. (2011).

The following section tests the “U” shape hypothesis by studying the relationship between FWPR and Gross State Domestic Product (GSDP) of sample states. Gross State Domestic Product (GSDP) is used as a proxy to measure the state's economic development. GSDP which is defined as a measure in monetary terms, of the volume of all goods and services produced within the boundaries of the state during a given period of time, is regarded as an important economic indicator to measure the economic development of a state whereas the per capita income is used as an important tool to measure regional disparities and also to determine the absolute and relative performance of the state economy.

All high income states show an increase in GSDP at constant price (2004-05) over time (except for Gujarat that recorded a negative growth in GSDP in 1987-88). The high income states record a compound annual growth rate of over 7 percent in GSDP during 1983 and 2017-18. Low income states also exhibit an increase in GSDP over time. Bihar and Odisha are exceptions to this trend. While Bihar records a negative growth rate in GSDP in 1993-94, Odisha registers a negative growth in GSDP in 1987-88. On the whole the growth in GSDP is above 5 percent in all low income states except for Bihar. Table 3 and 4 presents the growth rate in GSDP and the growth rate in FWPR over time in high and low income states respectively. Linking GSDP growth with FWPR among states some interesting facts emerge.

In Gujarat, with negative growth in GSDP (-1.3%) during 1983 and 1987-88, there is a decline in the growth rate of FWPR both in rural and urban areas by 1.6 and 6 percent respectively. When the growth in GSDP increased from 6.3 percent in 1999-2000 to 9 percent in 2004-05, growth in FWPR rate remained stagnant at 0.7 percent in rural Gujarat and in urban Gujarat the growth in FWPR increased by 2.3 percent. At higher rates of growth in GSDP since 2009-10, rural women of Gujarat show a greater withdrawal from workforce than urban women. In short, the long term trend shows that while GSDP recorded a growth rate of 7.46 percent over the period 1983 and 2017-18, FWPR in Gujarat recorded a negative growth rate of 2.6 percent in rural and 0.42 percent in urban areas. There is a negative correlation between GSDP and rural women's WPR in Gujarat as indicated by the results of correlation coefficient ($r = -0.928$) which is significant at one percent level. In the case of urban Gujarat though there is a negative correlation ($r = -0.173$) it is not significant at any conventional level (Appendix - 1).

The analysis leads to the conclusion that growth in GSDP of Gujarat, has not resulted in expansion of women's employment in the state. Figure 2 (a) displays an inverted "U" curve supply of female labour in rural Gujarat whereas in urban Gujarat the slope of female labour supply appears to be less steep.

Haryana today is a well developed industrial state, registering a growth rate of 7.92 percent in GSDP over time. However the state exhibits several ups and downs in FWPR in rural and urban areas in response to changes in GSDP. As seen in Gujarat, the decline in the growth of WPR of women in Haryana seems to be sharper in rural (-3.1%) than urban (-0.84%) areas. A striking feature noted in this context is that when the growth of GSDP increased from 6.28 percent in 1999-2000 to 10 percent in 2004-05, there is a significant increase in the growth rate of FWPR both in rural and urban areas by 9.43 percent and 6.14 percent respectively. The long term trend nevertheless indicates a negative impact of GSDP growth on FWPR in Haryana. The results of correlation coefficient ($r = -0.803$) suggest an inverse relationship between GSDP and FWPR in rural Haryana which is statistically significant at one percent level. Even in the case of urban Haryana there is a negative correlation between GSDP and female WPR ($r = -0.573$) but it is not significant statistically (Appendix -1). Figure 2 (b) demonstrates two inverted "U" curves between GSDP growth and FWPR in rural Haryana whereas in urban Haryana the slope is relatively smaller due to low levels of labour market participation by urban females.

Karnataka, one of the southern states of India, records a growth rate of 8.18 percent per annum in its GSDP during the period 1983 and 2017-18. With increase in GSDP both trends of rise and fall in FWPR is witnessed in Karnataka. When GSDP growth rate was 7.67 percent in 2004-05, there is a substantial improvement in the growth of rural women's WPR by 3.85 percent and minor improvement in urban women's WPR by 0.33 percent. The long term trend observed is that the

high growth in GSDP of Karnataka is accompanied by negative growth rate in rural (-2.2%) and urban (-0.86%) FWPR. This tendency is confirmed by the results of the correlation coefficient which suggest a negative relationship between GSDP and FWPR in rural ($r = -0.862$) and urban Karnataka ($r = -0.688$) which is statistically significant at one percent level only in the case of rural Karnataka (Appendix – 1). Figure 2 (c) show that the negative relationship between GSDP and FWPR is sharper in rural than urban Karnataka. In urban Karnataka, the female labour supply is almost flat and parallel to the x-axis implying sluggish growth in FWPR in response to GSDP growth.

Table 3: Growth Rate in Gross State Domestic Product of High and Low Income States in India

| Period | High Per Capita Income States | | | | |
|--------------|-------------------------------|---------|----------------|--------|---------------|
| | Gujarat | Haryana | Karnataka | Kerala | Maharashtra |
| 1983-84 | - | - | - | - | - |
| 1987-88 | -1.27 | 3.93 | 7.97 | 3.01 | 4.37 |
| 1993-94 | 9.24 | 8.31 | 4.59 | 7.59 | 9.18 |
| 1999-00 | 6.31 | 6.28 | 7.08 | 7.56 | 5.76 |
| 2004-05 | 9.01 | 10.05 | 7.67 | 9.46 | 7.08 |
| 2009-10 | 10.44 | 9.74 | 8.23 | 8.29 | 9.93 |
| 2011-12 | 8.83 | 7.72 | 6.87 | 7.43 | 7.85 |
| 2017-18 | 8.76 | 8.71 | 14.1 | 7.21 | 7.04 |
| 1983-2017-18 | 7.46 | 7.92 | 8.18 | 7.33 | 7.34 |
| Period | Low Per Capita Income States | | | | |
| | Assam | Bihar | Madhya Pradesh | Odisha | Uttar Pradesh |
| 1983-84 | - | - | - | - | - |
| 1987-88 | 4.39 | 4.41 | 4.28 | -0.41 | 3.71 |
| 1993-94 | 3.38 | -5.11 | 2.58 | 5.44 | 4.76 |
| 1999-00 | 3.93 | 3.19 | 4.97 | 5.28 | 5.00 |
| 2004-05 | 8.50 | 8.70 | 3.62 | 10.59 | 5.39 |
| 2009-10 | 5.50 | 7.79 | 8.21 | 8.31 | 7.09 |
| 2011-12 | 6.29 | 12.6 | 7.99 | 5.88 | 6.71 |
| 2017-18 | 8.95 | 6.90 | 7.43 | 8.91 | 6.94 |
| 1983-2017-18 | 5.79 | 4.44 | 5.34 | 6.49 | 5.61 |

Source: Compound Annual Growth Rate is calculated by the author based on GSDP data collected from NITI Aayog, Handbook of State Statistics, niti.gov.in/state-statistics.

Table 4: Growth Rate of Female Work Participation Rate in High and Low Income States in India

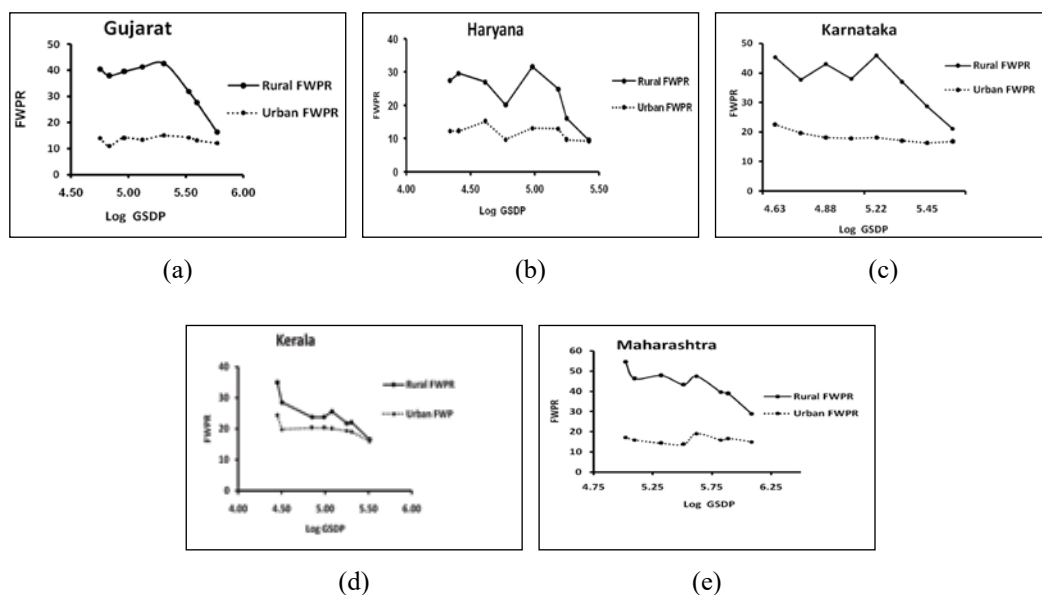
| Period | High Per Capita Income States | | | | |
|---------------|-------------------------------|---------|----------------|--------|---------------|
| | Gujarat | Haryana | Karnataka | Kerala | Maharashtra |
| | RURAL | | | | |
| 1983 | - | - | - | - | - |
| 1987-88 | - 1.58 | 1.94 | -4.49 | -4.92 | -4.00 |
| 1993-94 | 0.65 | -1.52 | 2.22 | -3.02 | 0.53 |
| 1999-2000 | 0.70 | - 4.78 | -2.04 | 0.00 | -1.56 |
| 2004-05 | 0.67 | 9.43 | 3.85 | 1.47 | 1.78 |
| 2009-10 | - 5.61 | - 4.64 | -4.22 | -3.16 | -3.53 |
| 2011-12 | - 6.79 | - 19.5 | -11.9 | 0.69 | -1.02 |
| 2017-18 | - 8.33 | - 8.35 | -5.00 | -4.66 | -4.79 |
| 1983-2017-18 | - 2.61 | - 3.05 | -2.22 | -2.17 | -1.84 |
| Period | URBAN | | | | |
| 1983 | - | - | - | - | - |
| 1987-88 | -5.59 | -0.20 | -3.39 | - 4.99 | -1.95 |
| 1993-94 | 4.03 | 3.59 | -1.32 | 0.42 | -1.75 |
| 1999-2000 | -0.84 | - 7.05 | -0.28 | 0.00 | -0.71 |
| 2004-05 | 2.27 | 6.14 | 0.33 | - 0.30 | 6.76 |
| 2009-10 | -1.08 | -0.30 | -1.25 | -0.61 | -3.50 |
| 2011-12 | -3.56 | -13.6 | -2.08 | -0.78 | 2.18 |
| 2017-18 | -1.43 | -0.70 | 0.50 | -2.91 | -1.78 |
| 1983-2017-18 | -0.42 | -0.84 | -0.86 | -1.22 | -0.42 |
| Period | Low Per Capita Income States | | | | |
| | Assam | Bihar | Madhya Pradesh | Odisha | Uttar Pradesh |
| | RURAL | | | | |
| 1983 | - | - | - | - | - |
| 1987-88 | 2.81 | -1.97 | -5.26 | -4.66 | -7.64 |
| 1993-94 | -0.31 | -1.90 | 0.00 | 2.34 | 0.00 |
| 1999-2000 | -0.86 | 0.10 | -1.17 | -0.97 | - 1.42 |
| 2004-05 | 6.72 | -4.42 | -0.85 | 1.49 | 3.61 |
| 2009-10 | -5.44 | -13.9 | -5.08 | -5.47 | - 6.23 |
| 2011-12 | -12.1 | -9.70 | -7.94 | 0.62 | 0.86 |
| 2017-18 | -6.60 | -11.8 | 1.15 | -8.54 | -9.69 |
| 1983-2017-18 | -1.70 | -6.05 | -2.00 | -2.44 | -3.31 |
| | URBAN | | | | |
| 1983 | - | - | - | - | - |
| 1987-88 | - 0.30 | -10.3 | -3.78 | - 0.59 | - 4.29 |
| 1993-94 | 1.53 | -2.23 | -0.23 | 3.20 | 1.37 |
| 1999-2000 | 3.33 | 1.40 | -0.96 | - 0.67 | - 1.35 |
| 2004-05 | -0.54 | -2.82 | 2.82 | 0.41 | 4.47 |
| 2009-10 | -3.13 | -6.28 | -3.18 | - 4.27 | -7.32 |
| 2011-12 | -1.63 | -2.15 | -6.31 | 14.1 | 12.9 |
| 2017-18 | 3.40 | -1.14 | 4.18 | - 4.58 | -5.42 |
| 1983-2017-18 | 0.76 | -3.09 | -0.39 | - 0.26 | -1.25 |

Source: Compound Annual Growth Rate - Calculated by the author based on data presented in table 1

In Kerala which is another southern state of India, there is a shrinking tendency in FWPR in response to changes in GSDP growth rates. However there are a few exceptions to this pattern. While an increase in the growth of GSDP to 9.46 percent in 2004 -05 is associated with a positive growth in FWPR in rural Kerala (1.47%) it is accompanied by a negative growth in urban Kerala (- 0.3%). The long term trend shows that high growth in GSDP at 7.33 percent, is associated with a negative growth in FWPR (rural: -2.17% and urban:- 1.22%) implying that growth has failed to expand women's employment in the state. The results of correlation coefficient confirms a negative relationship between GSDP and women's WPR in rural ($r = -0.833$) and urban ($r = -0.802$) Kerala which is significant statistically at one percent level (Appendix - 1). Figure 2 (d) shows a unique female labour supply in Kerala with expansion of GSDP. Urban Kerala demonstrates an inverted "U" curve of female labour supply. Initially female WPR declines, then remains stagnant and finally diminishes. In rural Kerala no definite shape of female labour supply is observed.

GSDP of Maharashtra, which is a highly industrialised state, records a compound growth rate of 7.34 percent per annum over time. With steady growth in GSDP, Maharashtra state shows a mixed trend of rise and fall in WPR of rural and urban women during 1983 and 2017-18. With a rise in the growth of GSDP during 1999-00 and 2004-05 from 5.76 percent to 7.1 percent there is an increase in the supply of female labour in both rural and urban areas as indicated by positive growth rates of 1.78 percent and 6.76 percent in rural and urban areas respectively. The long term trend nevertheless shows a negative impact of GSDP growth on FWPR in Maharashtra. This is supported by the correlation coefficient results that show a negative relationship between GSDP and FWPR in rural Maharashtra ($r = -0.927$) which is statistically significant at one percent level. Though a negative relationship is seen between GSDP and FWPR in urban Maharashtra, it is not significant statistically at any conventional level (Appendix - 1). Figure 2 (e) shows a continuous decline in female labour supply in rural Maharashtra since 2004-05. A mixed trend in female labour supply is observed in the case of urban Maharashtra.

Figure 1: Trends in GSDP and female work participation rate in high income states

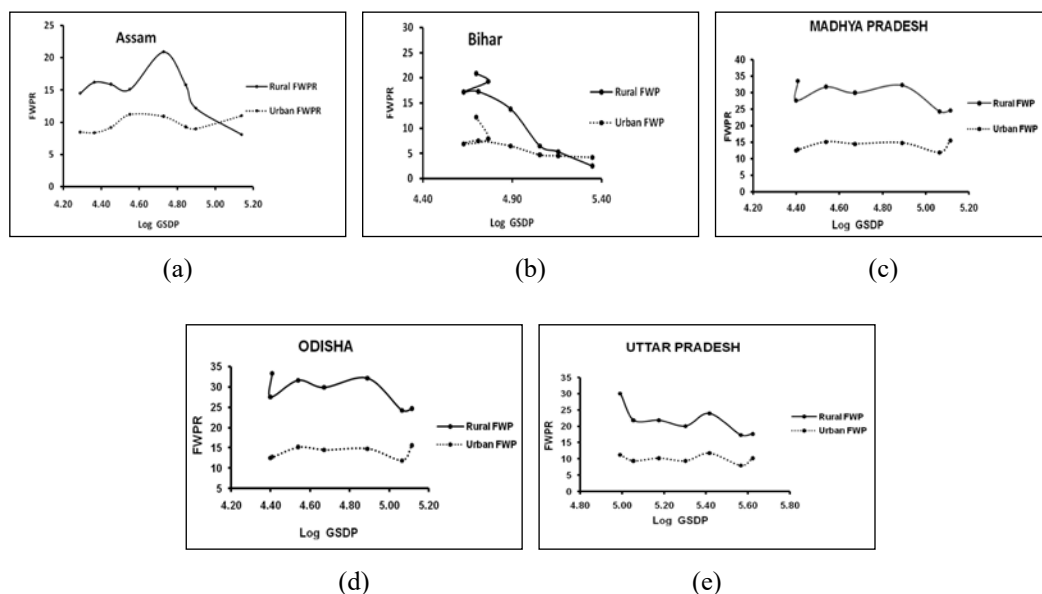


Assam which is one among the low income states, displays a growth rate of 5.79 percent per annum in GSDP during 1983-84 and 2017-18. When Assam shows a significant rise in GSDP growth from 3.9 percent to 8.5 percent during 1999-2000 and 2004-05, there is a remarkable increase in the growth of FWPR in rural areas by 6.72 percent, and a marginal decline in the growth of FWPR in urban areas by 0.54 percent. Long term trend however indicates that while rural female WPR shows a negative growth rate of 1.7 percent, urban female WPR displays a positive growth rate of 0.76 percent during 1983 and 2017-18, in response to GSDP growth of 5.79 percent over the period. The results of correlation coefficient shows a negative relationship between GSDP and FWPR in rural Assam ($r = -0.631$) which is statistically significant at 1 percent level. A positive correlation exists between GSDP and FWPR in urban Assam, but it is not statistically significant at any conventional level (Appendix – 1). Figure 3 (a) clearly demonstrates an inverted “U” curve supply of female labour in rural and urban Assam.

Bihar presents an interesting case. When GSDP of Bihar recorded a negative growth rate of 5.1 percent in 1993-94, female WPR has actually declined both in rural and urban areas. It is shocking to note that in 2011-12, when Bihar recorded the highest growth in GSDP by 12.6 percent, substantial proportion of women have withdrawn from workforce in rural (-9.7%) and urban (-2.15%) areas. The long term trend suggests a negative impact of GSDP growth on female labour supply in Bihar. While GSDP recorded a compound growth rate of 4.4 percent during 1983-84 and 2017-18, FWPR displays a negative growth rate of 6.1 percent in rural and 3.1 percent in urban areas. The results of correlation coefficient indicates a negative relationship between GSDP growth and FWPR both in rural ($r = -0.949$) and urban areas ($r = -0.764$) which is significant statistically at 1 percent level (Appendix – 1). Figure 3 (b) shows that female labour supply curve in rural Bihar is almost concave to the origin and urban Bihar demonstrates a mixed trend over time.

WPR of women both in rural and urban areas of Madhya Pradesh show a steady decline with growth in GSDP at 5.34 percent over time. The decline seems to be steeper in the case of rural (-2%) than urban women (-0.39%). When growth rate in GSDP dropped from 4.97 percent in 1999-2000 to 3.62 percent in 2004 -05, growth rate in FWPR in rural Madhya Pradesh diminished marginally by 0.85 percent and in urban Madhya Pradesh it increased by 2.8 percent during the same time. However, the long term trend indicates a negative impact of GSDP growth on female labour supply in Madhya Pradesh which is supported by the results of correlation coefficient. There exists an inverse relationship between GSDP of Madhya Pradesh and its female WPR both in rural ($r = -0.897$) and urban areas (-0.413) which is significant statistically at one percent level only in the case of rural (Appendix – 1). Figure 3 (c) clearly shows that in rural Madhya Pradesh, female labour supply curve is almost concave to the origin as seen in rural Bihar. In urban Madhya Pradesh, the trajectory of female labour supply shows fluctuations of rise and fall over time with growth in GSDP.

GSDP of Odisha exhibits the highest growth rate of 6.49 percent among the low income states during the period 1983-84 and 2017-18. With significant improvement in the growth of GSDP by 10.59 percent in 2004-05, there is simultaneous increase in the growth of FWPR by 1.49 percent in rural and 0.4 percent in urban areas. However in the subsequent period with decline in GSDP growth there is substantial fall in the growth of FWPR in rural (-5.47%) and urban Odisha (-4.27%). Long term trend suggests that the positive growth rate in GSDP is accompanied by negative growth rate in rural (-2.4%) and urban (-0.26%) FWPR in Odisha. The results of correlation coefficient highlight a negative relationship between GSDP of Odisha and its FWPR in rural ($r = -0.87$) and urban ($r = -0.269$) areas which is significant statistically at one percent level only in the case of rural (Appendix – 1). Figure 3 (d) shows two inverted “U” curves in female labour supply in rural Odisha and urban Odisha illustrates a mixed trend of rise, fall and stagnation in FWPR over time.

Figure 2: Trends in GSDP and female work participation rate in low income states

Uttar Pradesh, also displays a similar scenario. The minor improvement in GSDP growth in 2004-05 by 0.39 percent has resulted in a substantial rise in the growth of FWPR both in rural (3.6%) and urban (4.47%) Uttar Pradesh. However the long term trend indicate that the positive growth rate in GSDP by 5.61 percent is accompanied by negative growth rates in rural (- 3.3%) and urban (-1.25%) female WPR during 1983 and 2017-18. The results of correlation coefficient shows a negative relationship between GSDP and FWPR in rural (- 0.872) that is statistically significant at one percent level. The correlation coefficient though negative in the case of GSDP and FWPR in urban areas ($r = - 0.614$), it is not statistically significant at any conventional level (Appendix – 1). Figure 3 (e) clearly shows that rural FWPR is volatile to GSDP growth than urban FWPR in Uttar Pradesh.

The dynamic analysis thus indicates that “U” curve has no applicability in both high and low income sample states. Long term trend show a negative correlation between GSDP and FWPR in rural areas of all high and low income sample states which are statistically significant at one percent level. There is no convex impact of GSDP on female labour market participation. This negative relationship may be owing to decline in employment opportunities for women in rural areas particularly in agriculture. Further lack of education and skills is likely to deter rural women’s labour mobility to non-farm sector.

Sectoral Shares of GSDP and Women’s Employment in High and Low Income States

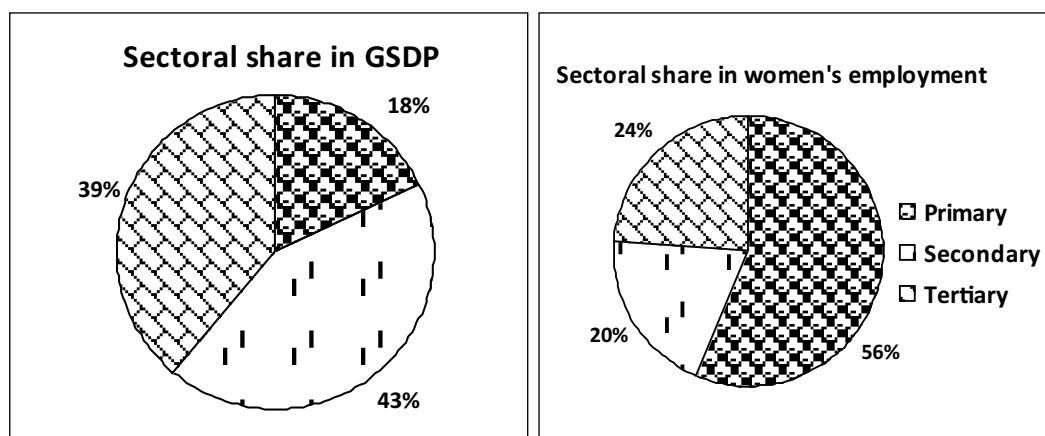
Sectoral composition of income in an economy is an important aspect for understanding the structure of the economy. The distribution of labour force among the sectors reflects the level and pattern of economic development. State economies are undergoing structural changes. They are moving from primary sector oriented to tertiary sector. The share of primary sector which consists of agriculture and allied, mining and quarrying in GSDP has declined invariably in both high and low per capita

income states during 1983-84 and 2017-18. In response to the structural changes in the economy all the sample states of high and low per capita income show a decline in the share of primary sector in women's employment both in rural and urban areas which is a positive aspect as women are moving into the modern sectors.

Table 5 presents the sectoral shares in GSDP and sectoral distribution of women workers in high and low states for the period 2017-18. In Gujarat, primary sector share in GSDP declined to 18 percent in 2017-18 and about 56 percent of women are engaged in primary sector. In contrast, tertiary and secondary sectors share in GSDP of Gujarat has increased to 46 percent and 39 percent respectively but the share of women's employment in these sectors is 19.7 percent and 24 percent respectively (Figure 3).

Figure 3 : Sectoral share in GSDP and female employment in Gujarat (2017-18)

Gujarat



Like Gujarat in Haryana also the contribution by primary sector in GSDP has dropped to 18 percent in 2017-18, but still primary sector accounts for greater share of women's employment (47%). Tertiary and secondary sectors in Haryana show higher levels of share in GSDP of 52 percent and 30 percent respectively as Haryana is one of the high income states in the country but employment generation by these sectors to women is not proportionate. Only 33 percent of women's employment is in the tertiary sector and 20 percent is in the secondary sector.

Karnataka also accounts for the same story. A considerable fall in the share of GSDP by primary sector (12%) is not accompanied by a significant fall in the share of women's employment. Nearly 55 percent of women are engaged in the primary sector in 2017-18. About 64 percent increase in the share of tertiary sector in GSDP of Karnataka records a lower share of women's employment of 28 percent. Despite an increase in the share of secondary sector in GSDP of Karnataka by 24 percent, only 17 percent of women are in secondary sector employment.

Among the high income states the experience of Kerala seems to be unique. Primary sector's share in GSDP has declined to 12 percent in 2017-18 and women's employment share in the primary sector has also dropped to 19 percent, lowest among all the sample high income states. While secondary sector's contribution to GSDP is 26 percent, its share in women's employment is much higher (30 %) than other high income states. Tertiary sector also accounts for larger share of women's employment

(55%) and its share in GSDP is 67 percent. Overall it may be stated that there is greater female labour mobility in Kerala from primary to tertiary and secondary sectors chiefly due to higher levels of female literacy (more than 90 %).

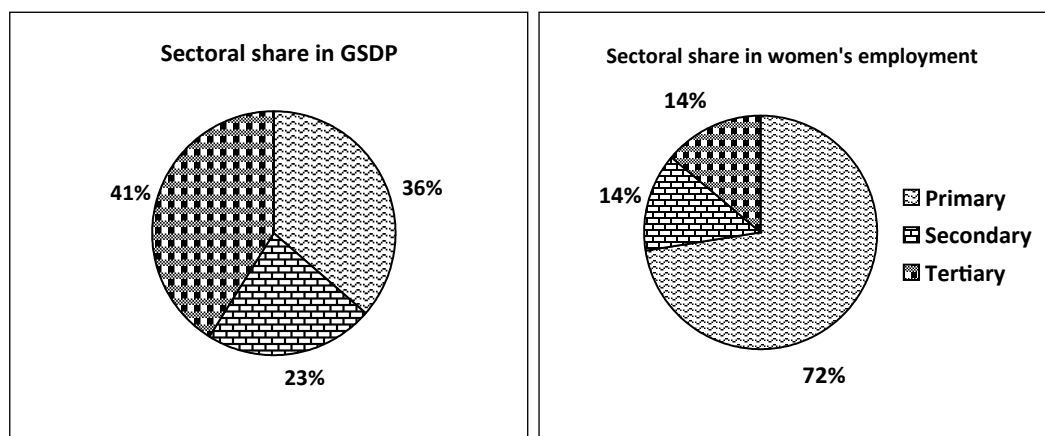
Table 5: Sectoral Share in GSDP and Women's Employment in High and Low Income States in India (2017-18)

| States | Sectoral share in GSDP | | | Sectoral share of women's employment | | |
|--------------------------------------|------------------------|-----------|----------|--------------------------------------|-----------|----------|
| | Primary | Secondary | Tertiary | Primary | Secondary | Tertiary |
| High Per Capita Income States | | | | | | |
| Gujarat | 18.1 | 43.0 | 38.9 | 56.36 | 19.74 | 23.9 |
| Haryana | 18.1 | 30.2 | 51.7 | 47.12 | 19.93 | 32.95 |
| Karnataka | 12.2 | 24.2 | 63.5 | 54.57 | 16.98 | 28.45 |
| Kerala | 12.1 | 24.3 | 63.7 | 19.04 | 25.56 | 55.4 |
| Maharashtra | 14.3 | 30.3 | 55.4 | 65.55 | 8.68 | 25.77 |
| Low Per Capita Income States | | | | | | |
| Assam | 27.6 | 21.4 | 51.0 | 45.78 | 8.71 | 45.51 |
| Bihar | 20.5 | 17.4 | 62.1 | 53.61 | 5.97 | 40.42 |
| Madhya Pradesh | 36.3 | 22.5 | 41.2 | 72.43 | 13.77 | 13.8 |
| Odisha | 27.3 | 29.2 | 43.5 | 55.11 | 24.86 | 20.03 |
| Uttar Pradesh | 26.9 | 26.0 | 47.1 | 64.57 | 14.95 | 20.48 |
| India | 18.6 | 28.2 | 53.2 | 57.16 | 17.67 | 25.17 |

Source: Periodic Labour Force Survey, 2017-18, Ministry of Statistics and Programme Implementation, National Statistical Office, Government of India.

Maharashtra which records 14 percent decline in the share of primary sector in GSDP in 2017-18 accounts for larger share of women's employment in primary sector (66%). Tertiary sector's share in GSDP is 55 percent and its share in women's employment is 26 percent. What is surprising is that Maharashtra, a well developed industrial state, accounts for just 9 percent of women's employment in secondary sector though its contribution to GSDP is 30 percent. Industrialisation in Maharashtra has failed to generate sufficient employment opportunities for women in the secondary sector.

In the case of low income states it is found that in Madhya Pradesh primary sector accounts for more than 70 percent of women's employment with this sector's share in GSDP is 36 percent (Figure 4). In Uttar Pradesh also more than 60 percent of women are in the primary while this sector's share in GSDP is 27 percent. Even in Bihar and Odisha significant proportion of women (more than 50 %) are engaged in primary sector activities while this sector's share in GSDP has declined to 27 percent in Odisha and to 21 percent in Bihar.

Figure 4 : Sectoral share in GSDP and female employment in Madhya Pradesh (2017-18)**Madhya Pradesh**

Women's share of employment in the secondary sector seems to be the least in Bihar (5.9%) followed by Assam (8.7%) and Uttar Pradesh (14.9%) and this sector's share in GSDP of low income states varies between 17 to 29 percent. In low income states of Bihar and Assam tertiary sector's share in GSDP is 62 and 51 percent respectively and the share of women's employment in tertiary sector is 40 percent in Bihar and 46 percent in Assam. A striking feature noticed is that despite more than 40 percent share of tertiary sector in GSDP of Madhya Pradesh, Odisha and Uttar Pradesh, women's employment share in tertiary sector is much below 20 percent.

Like the macroeconomic trends, the structural changes in the state economies do not follow the conventional pattern of Three -sector hypothesis of economic growth². According to this theory, the main focus of an economy's activity shifts from the primary, through the secondary and finally to the tertiary sector. Development in state economies is led by service sector. But this sector has not been a driver of employment creation for women workers. Further the service sector requires high skill that a majority of women do not possess (Lahoti and Swaminathan, 2016). Hence agricultural sector still continues to dominate women's employment. Kerala is an exception to this pattern as tertiary sector dominates women's employment. In most states the direction of change in women's employment structure is the same as the change in the sectoral share in GSDP but the rate of change in the sectoral share of women's employment appears to be very slow as secondary and tertiary sectors have not been drivers of employment generation for women workers.

Structural Changes and Women's Employment Status

The distribution of women workers by status or category of employment in rural areas of high income states shows that self employment is shrinking and wage employment is expanding over time (1983 – 2017-18) in Haryana and Karnataka. On the contrary self employment is increasing and wage employment is falling in rural areas of Gujarat and Maharashtra. Rural Kerala exhibits a decline in both self employment and wage employment. In urban areas casual labour segment is shrinking with expansion of regular employment category in all high and low income states. Haryana is an exception to this trend. Rural areas of low income states present a different scenario. Both self-employment and casual labour has declined in all low income states and Madhya Pradesh

is an exception to this pattern which shows an increase in casual labour segment in rural areas. A prominent feature noticed is that though casual labour segment is declining in rural areas of low income states, still a significant proportion of rural women in Bihar (37%), Madhya Pradesh (35%) and Odisha (38%) are engaged as casual labourers according to 2017 -18 data (Table 6). In short in all high and low states casual labour is shrinking and regular employment is expanding in urban areas and no definite pattern is observed in the case of rural areas.

Table 6: Status of Women's Employment in High and Low Income States in India

| States | Percentage change during 1983 / 2017-18 | | | | | |
|--------------------------------------|---|------------------|---------------|---------------|------------------|---------------|
| | Rural | | | Urban | | |
| | Self-employed | Regular employed | Casual labour | Self-employed | Regular employed | Casual labour |
| High Per Capita Income States | | | | | | |
| Gujarat | 3.9 | 7.6 | -11.4 | -11.8 | 27.4 | -15.5 |
| Haryana | -34.1 | 15.6 | 18.5 | -34.1 | 31.9 | 2.1 |
| Karnataka | -11.2 | 9.5 | 1.7 | -3.3 | 33.6 | -30.3 |
| Kerala | -29.6 | 32.6 | -3.0 | -27.4 | 31.0 | -3.6 |
| Maharashtra | 2.4 | 5.3 | -7.8 | -6.7 | 27.2 | -20.6 |
| Low Per Capita Income States | | | | | | |
| Assam | -39.9 | 52.2 | -12.3 | -7.0 | 17.7 | -10.7 |
| Bihar | -11.9 | 24.6 | -12.8 | -18.4 | 43.2 | -24.8 |
| Madhya Pradesh | -7 | 2.3 | 4.7 | -8.5 | 25.8 | -17.3 |
| Odisha | -6.8 | 7.3 | -0.4 | -5.5 | 29.9 | -24.4 |
| Uttar Pradesh | -4.1 | 6.9 | -2.8 | -19.3 | 27.0 | -7.7 |

Source: Same as in table 1.

Female Work Participation Rate and Female Literacy

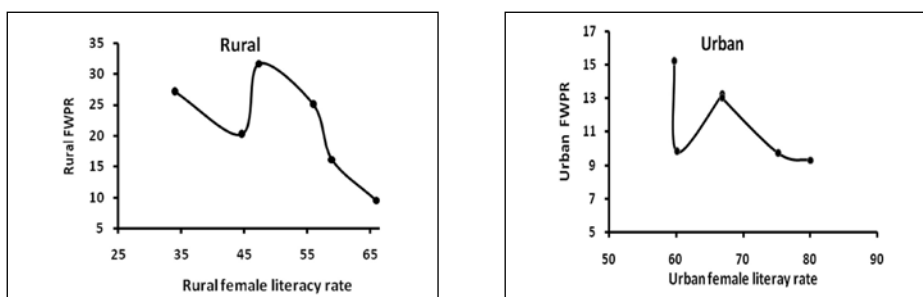
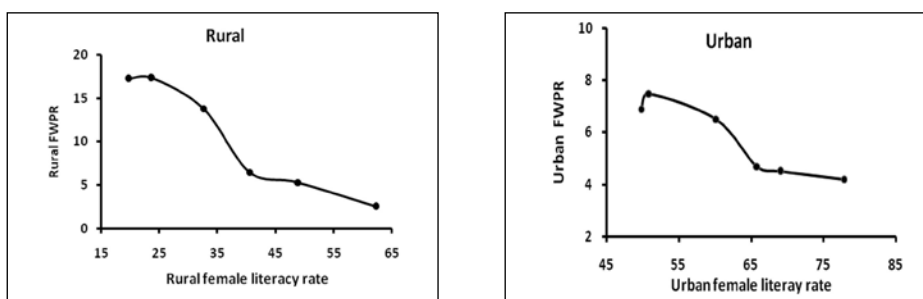
An examination of female literacy rate in high income states reveals that more than 60 percent of females in rural areas and more than 80 percent of females in urban areas are literate. Kerala tops the list with over 90 percent female literacy in rural and urban areas. A similar scenario is observed in low income states. While rural female literacy rate is around 60 percent, urban female literacy rate is over 80 percent in all low income states with the exception of Uttar Pradesh and Bihar where the urban female literacy rate is 74 percent and 78 percent respectively. Like Kerala, Assam shows good performance in female literacy which is 82 percent in rural and 90 percent in urban areas (Table 7).

The state level data show that there is no "U" curve supply of female labour in rural and urban sectors in all high and low income states. On the contrary an inverted trajectory is found in rural areas of all sample states and in urban areas a mixed trend is seen. Figure 5 and 6 presents a falling trajectory of female labour supply with spread of female literacy in both rural and urban regions of Haryana and Bihar. Only in urban areas of Assam and Madhya Pradesh we find a rise in FWPR with increase in female literacy in recent years (2011-12 and 2017-18). The overall trend noticed in this context raises the question does education have negative effect on female WPR.

Table 7: Female Literacy Rate in High and Low Income States in India

| States | 1993-94 | 1999-2000 | 2004-05 | 2009-10 | 2011-12 | 2017-18 |
|--------------------------------------|---------|-----------|---------|---------|---------|---------|
| RURAL | | | | | | |
| High Per Capita Income States | | | | | | |
| Gujarat | 36.1 | 43.0 | 46.9 | 51.4 | 56.5 | 66.4 |
| Haryana | 34.0 | 44.6 | 47.3 | 56.0 | 59.0 | 66.0 |
| Karnataka | 34.0 | 39.3 | 46.7 | 53.3 | 57.2 | 60.7 |
| Kerala | 71.7 | 78.7 | 80.6 | 85.3 | 87.6 | 91.0 |
| Maharashtra | 39.7 | 48.6 | 55.1 | 62.3 | 63.8 | 68.2 |
| Low Per Capita Income States | | | | | | |
| Assam | 52.1 | 53.7 | 63.5 | 70.8 | 74 | 82.3 |
| Bihar | 19.7 | 23.7 | 32.6 | 40.5 | 48.9 | 62.3 |
| Madhya Pradesh | 22.1 | 31.7 | 36 | 50.7 | 53.1 | 59.8 |
| Odisha | 30.5 | 37.1 | 46 | 56.9 | 57.1 | 67.8 |
| Uttar Pradesh | 22.9 | 30.7 | 36 | 45.6 | 46.9 | 60.0 |
| URBAN | | | | | | |
| High Per Capita Income States | | | | | | |
| Gujarat | 65.6 | 70.3 | 73.6 | 75.6 | 77.9 | 84.1 |
| Haryana | 59.7 | 60.1 | 66.9 | 66.9 | 75.3 | 80.1 |
| Karnataka | 62.0 | 69.9 | 69.4 | 73.1 | 76.6 | 81.1 |
| Kerala | 83.6 | 84.3 | 85.9 | 86.9 | 87.2 | 94.5 |
| Maharashtra | 68.0 | 72.6 | 74.8 | 80.2 | 83.6 | 86.2 |
| Low Per Capita Income States | | | | | | |
| Assam | 75.9 | 76.6 | 78.8 | 86.5 | 87.5 | 90.4 |
| Bihar | 49.8 | 50.9 | 60.2 | 65.8 | 69.0 | 77.8 |
| Madhya Pradesh | 57.0 | 61.6 | 65.1 | 73.0 | 73.8 | 81.4 |
| Odisha | 59.3 | 61.2 | 66.4 | 69.8 | 70.2 | 82.1 |
| Uttar Pradesh | 49.8 | 55.1 | 59.4 | 64.4 | 63.9 | 74.0 |

Source: NSS (1993 -94 - 2011-12), Employment and Unemployment Situation in India, and Periodic Labour Force Survey, 2017-18, Ministry of Statistics and Programme Implementation, National Statistical Office, Government of India.

Figure 5: Female literacy and female work participation rate in Haryana**Haryana****Figure 6: Female literacy and female work participation rate in Bihar****Bihar**

Education specific FWPR across states (2017-18) reveals that in rural areas of most states there is a definite pattern of the illiterate group dominating the workforce followed by the literates of varying levels. In Tamil Nadu (46%) and Maharashtra (40%) illiterate women dominate the rural work force. At the same time in these states rural women with post graduation and above degrees exhibit over 40 percent of WPR. The educational status of employed women in rural areas of Bihar, Madhya Pradesh and Uttar Pradesh seem to be poor. A different scenario is seen in the urban sector of the states. FWPR is highest in urban areas among the post graduate and above educational levels invariably in all the states covered in this study. Kerala tops the list with about 57.6 percent of its urban women with post graduate and above degrees in the labour market and is followed by Tamil Nadu (46%) and Odisha (44%). Overall the trend noticed is that WPR is falling among the illiterate women and is rising among the educated group both in rural and urban regions of the states. In all dimensions women's employment in Bihar seems to be very poor. Work participation rate of women is higher among illiterates, decreases consistently for higher educational groups, and again shows a rise for graduates and above (Majumder 2011).

Fertility Rates and FWPR in Sample States

Fertility measured as children per woman shows consistent decline in all the states since 1983 (Table 8). The decline seems to be robust in the case of high income states and the number of children per woman varies between 1.8 and 2.3 according to the latest available statistics (2016-17). It is

interesting to note that fertility rates have dramatically declined in low income states also such as Bihar, Odisha and Uttar Pradesh from 5-6 children per woman in 1983 to 2-3 children per woman in 2016-17 but there is no simultaneous improvement in FWPR specially in low income states. The results of correlation coefficient suggest a negative relationship between fertility and FWPR ($r = -0.855$) which is statistically significant at 1 percent level.

Table 8: Fertility Rates in High and Low Income States of India

| States | Children per woman | | | | |
|--|--------------------|------|------|------|---------|
| | 1983 | 1991 | 2001 | 2011 | 2016-17 |
| High Per Capita Income States | | | | | |
| Gujarat | 4.2 | 3.1 | 2.9 | 2.4 | 2.2 |
| Haryana | 4.8 | 4.0 | 3.1 | 2.3 | 2.3 |
| Karnataka | 3.7 | 3.1 | 2.4 | 1.9 | 1.8 |
| Kerala | 2.6 | 1.8 | 1.8 | 1.8 | 1.8 |
| Maharashtra | 3.7 | 3.0 | 2.4 | 1.8 | 1.8 |
| Low Per Capita Income States | | | | | |
| Assam | 4.2 | 3.5 | 3.0 | 2.4 | 2.3 |
| Bihar | 5.5 | 4.4 | 4.4 | 3.6 | 3.3 |
| Madhya Pradesh | 5.2 | 4.6 | 3.9 | 3.1 | 2.8 |
| Odisha | 4.5 | 3.3 | 2.6 | 2.2 | 2.0 |
| Uttar Pradesh | 5.8 | 5.1 | 4.5 | 3.4 | 3.1 |
| India | 4.5 | 3.6 | 3.1 | 2.4 | 2.3 |
| Value of r between FWPR and fertility rate | - 0.855* | | | | |

* - significant at 1 % level

Source: NITI Aayog, State Statistics, niti.gov.in/content/state-statistics

Unemployment and FWPR across Sample States

State wise examination of unemployment among women workers for 2017-18 indicates that in rural areas highest unemployment is seen in Kerala (19.6%). Assam with 14 percent and Haryana with 10 percent occupy the second and third positions in rural unemployment among women across the states (Table 9). Less than 3 percent unemployment rate among rural women is recorded mostly by poor and backward states such as Madhya Pradesh, Bihar and Uttar Pradesh. Well developed states account for higher rates of female unemployment in urban areas. Urban Kerala records the highest female unemployment rate (27%) and is followed by Haryana (12%) and Maharashtra (11%). Assam and Odisha, among the backward states also records a higher level of unemployment rate of more than 11 percent among urban women. Least unemployment among urban women is found in Gujarat (4%).

Table 9: Female Unemployment Rates according to Usual Status for States in India (15 years and above) – 2017-18 (in percent)

| States | RURAL | URBAN | TOTAL |
|----------------|-------|-------|-------|
| Gujarat | 4.1 | 4.3 | 4.1 |
| Haryana | 9.9 | 12.0 | 10.6 |
| Karnataka | 3.4 | 7.2 | 4.7 |
| Kerala | 19.6 | 27.4 | 23.2 |
| Maharashtra | 2.8 | 11.4 | 5.4 |
| Assam | 14.0 | 11.4 | 13.6 |
| Bihar | 2.3 | 6.2 | 2.8 |
| Madhya Pradesh | 1.2 | 6.9 | 2.1 |
| Odisha | 5.3 | 12.7 | 6.3 |
| Uttar Pradesh | 1.5 | 10.6 | 3.1 |
| India | 3.8 | 10.8 | 5.6 |

Source: Periodic Labour Force Survey, 2017-18, Ministry of Statistics and Programme Implementation, National Statistical Office, Government of India.

A study of female unemployment rates by educational level among states (2017-18) highlights that there is no unemployment for illiterate women in all the states. Kerala with more than 90 percent of female literacy accounts for highest unemployment rate among graduate women (47 %) and is followed by Odisha (42%) and Haryana (40%). About 15 to 35 percent unemployment is seen among women with post graduate and above educational levels in most states except for Bihar where the unemployment rate among women with post graduate and above educational level is just 8.7 percent. In short in both rural and urban areas, unemployment rate among the educated women (above secondary level) is considerably higher.

The unemployment figures lead to infer that the low participation levels of women is mainly due to job deficits. Most studies consider absence of employment opportunities as an important factor for falling trend in female work participation in India. There has been a marked slowdown in employment growth in India and that this slowdown has been relatively more marked in the case of female employment and that too in rural areas (Bhattacharya and Sakthivel, 2005). The economy has been unable to generate enough jobs commensurate with rapid economic growth. However, the past few years have seen not just an inability to generate new jobs, but also a net reduction in the number of jobs (Menon, 2019). The fall in employment in agriculture has not shown concomitant increase in opportunities for women in the manufacturing sector where most women with middle to secondary levels of education and from middle income groups are likely to look for employment (Chandrasekhar and Ghosh, 2011). Withdrawal of men from agriculture and shift to the construction sector in urban areas led to loss of jobs for rural women who were engaged as unpaid labour along with men (Kannan and Raveendran, 2012). Thus the achievements in female education and the subsequent loss of female jobs in agriculture could have contributed to the continued decline in female labour market participation.

CONCLUSION

FWPR in India varies across high and low income states. Though WPR of women is relatively higher in high per capita income states than the low per capita income states, it is showing a shrinking tendency in all states irrespective of the level of income. The drop in FWPR seems to be dramatic in rural areas. The decline in the WPR of women in the age group 30-59 years is another matter of concern. In high income states negative income effect and substitution effects have resulted in the withdrawal of women from the labour market. Lack of suitable jobs for educated women is another contributory factor towards lower WPR of women in rich states. In the literature on female employment, family income is identified as an important pull factor for shrinking female employment. This argument does not hold good for the low income states which show poor levels of women's work participation. Economic necessity in low income states has not pushed women into the labour force. Rather it has resulted in large scale out migration of women along with men.

Dynamic analysis of disaggregated data shows that there is no "U" curve supply of female labour in high and low per capita income states despite growth in GSDP, expansion of female literacy and decline in fertility rates. The direction of women's employment has shifted from primary to tertiary sector in accordance with the structural changes of the economy but still agriculture continues to dominate women's employment. Structural changes in the state economies have resulted in the decline of employment in agriculture and at the same time the modern sectors have failed to absorb the exodus of workforce exiting agriculture through creation of sufficient job opportunities. What is worrying is that in high and low income states self employment is shrinking and wage employment is expanding in rural areas. The declining trend in women's labour market participation in both rich and poor states in recent years implies that women's work force participation is determined not by economic factors alone and that it is largely influenced by social and cultural factors also that vary from state to state.

Given the current scenario of COVID -19 pandemic and nationwide lock-down measures taken to prevent the spread of the virus and with inter-state migrants returning to their place of origin on complete loss of livelihood, we may expect a rise in female work participation rate in India owing to distress. At the same time further decline in female labour supply cannot be ruled out, as slowdown in GDP growth rate is likely to increase female unemployment in the country.

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Appendix - 1

Results of Correlation Coefficients between GDP /GSDP and Female WPR in India and across High and Low Income States

| India / States | Rural | | | Urban | | |
|--------------------------------------|-------------|----------|----------|-------------|----------|----------|
| | value of r | t-values | p-values | value of r | t-values | p-values |
| High Per Capita Income States | | | | | | |
| Gujarat | (-) 0.928** | 6.092 | 0.001 | (-) 0.172 | 0.429 | 0.683 |
| Haryana | (-) 0.803** | 3.305 | 0.016 | (-) 0.573 | 1.713 | 0.138 |
| Karnataka | (-) 0.862** | 4.163 | 0.006 | (-) 0.688* | 2.321 | 0.059 |
| Kerala | (-) 0.833** | 3.683 | 0.013 | (-) 0.802** | 3.290 | 0.017 |
| Maharashtra | (-) 0.927** | 5.712 | 0.001 | (-) 0.068 | 0.076 | 0.872 |
| Low Per Capita Income States | | | | | | |
| Assam | (-) 0.631* | 1.989 | 0.094 | 0.463 | 1.279 | 0.248 |
| Bihar | (-) 0.949** | 7.431 | 0.000 | (-) 0.764** | 2.898 | 0.027 |
| Madhya Pradesh | (-) 0.897** | 4.963 | 0.003 | (-) 0.413 | 1.110 | 0.309 |
| Odisha | (-) 0.870** | 4.985 | 0.005 | (-) 0.269 | 0.687 | 0.518 |
| Uttar Pradesh | (-) 0.872** | 4.361 | 0.005 | (-) 0.614 | 1.923 | 0.102 |

** - significant at 1 percent level (2-tailed)

* - significant at 5 percent level (2-tailed)

Source: Calculated by the author

Notes and References

Notes

- 1- GSDP at current and constant prices: The estimate of State Domestic Product at current prices do not reveal the actual economic growth as they contain the combined effect of i) changes in the volume of goods and services and ii) changes in the prices. The effect of changes in the prices is eliminated by evaluating the goods and services at the prices prevailing during the certain fixed period known as base year. The estimate thus obtained is known as SDP at constant prices.
- 2 - The three sector hypothesis is a macroeconomic theory. The theory was developed by Allan Fisher (1939) and Colin Clark (1940) in the late 1930s. According to this theory, the main focus of an economy's activity shifts from the primary, through the secondary and finally to the tertiary sector.
- 3- Sustainable Development Goals - 1: No poverty 2: Zero Hunger 3: Good Health and Well-being 4: Quality Education 5: Gender Equality 6: Clean Water and Sanitation 7: Affordable and Clean Energy 8: Decent Work and Economic Growth 9: Industry, Innovation and Infrastructure 10: Reduced Inequality 11: Sustainable Cities and Communities 12: Sustainable Consumption and Production 13: Climate Action 14: Life Below Water 15: Life on Land 16: Peace, Justice and Strong Institutions (UN and NITI Aayog, 2019).

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