Health Status, Standard of Living and Labour Force Participation in India: A Panel Data Analysis

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Abstract: Good health and decent living standard have significant implication on labour supply and productivity. With gradual decline in poverty rate in post liberalisation era, India is trying hard to improve overall health status of the population as well as provide decent living standard. The objective of the study is to investigate the impact of population health status, standard of living deprivation on labour force participation in Indian states. The results show that population health status (measured by life expectancy at birth) relates positively with workforce participation. Moreover, living standard deprivation affects labour supply negatively and the result is statistically significant. Effective policy efforts should be directed towards improving population health as well as reducing living standard deprivation hence providing enough healthy time to participate in the labour force. Ultimately this will brighten country's growth prospect and help India to reap the benefits of demographic dividend by productively employing the mass adult population.

Keywords: Labour force participation, health status, standard of living deprivation, India

I.INTRODUCTION

After Millennium Development Goals, the world is striving hard to achieve the 17 Sustainable Development Goals (SDGs). The 2030 Agenda for Sustainable Development was adopted by the members of the United Nations in 2015. It is an urgent call for action by all countries to reduce poverty, inequality, hunger and other deprivation in tandem with improvement in health and education. All these goals are eventually directed towards spur in growth rates. To ensure sustainability, efforts have to be made by all countries to embark upon climate change and work together to preserve natural resources. India is still facing significant challenge to reduce poverty, provide shelter to the homeless and endow with all the basic amenities to the mass populations. These are expected to increase labour force participation and pave the way for more inclusive growth or achieve growth with equity. Being an active member of UN, India needs to improve its position in this regard by 2030.

The recent evidence shows that women constitute less than 30 per cent of the workforce and the trend is declining in recent years. Not only that, overall growth of workforce has been slowed down in the past years. When India is going to have the highest proportion of working age population, the 'jobless' growth pattern has to be reversed. Else, the country will fail to take the advantage of the demographic dividend. Most of the SDG goals are targeted to improve well-being which will ultimately enhance growth of labour productivity and facilitate to take the country out of the vicious circle. Improvement in education, good health along with access to safe drinking water, uninterrupted power supply, proper sanitation and latrine facility etc. can improve standard of living which will eventually save manpower and encourage labour market activity. Lack of all these social indicators is detrimental to country's progress.

The importance of better living standards on labour supply and income generation is manifold. People without toilets at home spend a great deal of time each day queuing up for public toilets or seeking secluded spots to defecate (unhygienic practice). In a recent study to calculate the benefits of sanitation investments, the World Health Organization made an estimate of 30 minutes per person per day is wasted, amounting to 21 unproductive hours a week for a household of six people. Improved sanitation would give every such household an additional 21 hours a week to work, study, or do anything else. This time has an estimated annual economic value of over US$100 billion each year. Without having sanitation facility and improved source of safe drinking water lots of manpower gets wasted to take care of sick child or family member or oneself. Spending on education will have no prominent effect if most of the children miss schools most of the days because of poor living standards. WHO estimated that 200 million days of school attendance per year can be added by meeting proper sanitation targets. Lack of public toilets is a strong barrier for women to work outside during menstruation. This often deters them to go outside home. Moreover, if clean fuel is not available for cooking then dung, wood or coal is used as a mode of cooking. This is a major source of indoor air pollution and leads to serious health disorder. Moreover, rural men and women spend lots of time in collecting firewood for cooking and bringing drinking water from far flung areas in India which is a great economic loss. Over 3.8 million premature deaths occur annually due to exposure to household air pollution. Clean cooking fuel can improve their health and at the same time save time for market and non-market activities. As per 50th round of NSS employment and unemployment survey it is observed that 593 and 231 women per 1000 females engage in firewood collection in rural and urban areas respectively. 537 women per 1000 females are involved in preparing cow dung cakes. They would have used their manpower for some income generating work if they were endowed with access to clean fuel for cooking. On the other hand, all income generating activities in rural areas gain momentum if uninterrupted power supply is ensured (Khandker at al., 2012). Indirectly, this will reduce poverty and raise per capita income in poverty stricken parts of the country. Moreover, people below the poverty line are mostly deprived of basic amenities. They live in 'kaccha' houses as a result of which their lives are more prone to be affected by natural calamities and various diseases which in turn reduce their productivity.

Therefore, the objective of the present study is to investigate the relationship between population health status and living standard deprivation on labour force participation in India at the macro level.

II.BRIEF NATIONAL PROFILE

Table 2.1 shows statistics on the percentage of the population aged 15–64 participating in the labour force. The statistics show that total labour force participation in India is lower than the world rate and other countries. Women's participation is especially poor. Labour force participation in India has declined over the period under consideration also. It is worth noting that the gap in labour force participation rate between male and female has widened over the years.

Table 2.1: Labour Force Participation Rates in Different Nations

	Labour Force Participation Rate (Total)			Labour Force Participation Rate (Male)			Labour Force Participation Rate (Female)		
	1995	2005	2017	1995	2005	2017	1995	2005	2017
World	70.07	69.12	67.42	56.25	55.99	53.86	56.25	55.99	53.85
India	62.55	63.05	56.16	86.17	85.66	81.71	37.16	38.77	28.69
USA	76.14	74.26	71.84	83.30	80.38	77.45	68.96	68.14	66.19
UK	74.49	75.22	77.28	83.13	81.80	82.36	65.93	68.68	72.22
UAE	76.04	79.08	80.48	92.95	93.16	92.77	31.92	37.76	41.60
East Asia and Pacific	79.35	78.29	74.65	87.09	84.4	82.85	71.32	67.90	66.13

Note: Labour Force participation rate is measured by the percentage of male population ages 15-64 (modelled ILO estimate).
Source: Author's compilation from WDI dataset.

Table 2.2: Average Life Expectancy at Birth in Different Nations

	Life Expectancy at Birth (Total)			Life Expectancy at Birth (Male)			Life Expectancy at Birth (Female)		
	1995	2005	2016	1995	2005	2016	1995	2005	2016
World	66.32	69.14	72.03	64.14	67.12	69.95	68.69	71.31	74.26
India	60.41	64.56	68.56	59.79	63.72	67.09	61.09	65.44	70.17
USA	75.62	77.49	78.69	72.5	75	76.3	78.9	80.1	81.2
UK	76.84	79.05	80.96	74.3	77	79.2	79.5	81.2	82.8
UAE	72.94	75.42	77.26	72.10	74.67	76.56	74.34	76.84	78.77
East Asia and Pacific	70.03	73.23	75.40	67.91	71.23	73.38	72.31	75.37	77.55

Note: Life expectancy is measured in years.
Source: Author's compilation from WDI dataset.

Table 2.3: Adult Mortality Rates in Different Nations

	Adult Mortality Rate (Male)			Adult Mortality Rate (Female)		
	1995	2005	2014	1995	2005	2014
World	223.594	200.498	175.884	152.818	138.174	117.125
India	264.173	236.373	217	211.275	178.003	143.776
USA	166.792	141.797	131.567	89.271	81.407	79.191
UK	118.784	97.443	84.007	72.535	61.571	53.69
UAE	127.826	97.245	81.739	101.951	70.54	53.693
East Asia and Pacific	162.761	137.89	125.28	111.823	93.995	82.375

Note: Adult mortality rate is measured as male/female adult deaths per 1,000 male/female.
Source: Author's compilation from unicef dataset. MMR WHO, UNICEF, World Bank Group and UNPD (MMEIG), www.data.unicef.org

Table 2.2 shows average life expectancy at birth across various regions of the world. The statistics show that India performs relatively poorly against all other regions of the world initially. But over the years life expectancy has improved significantly. Females in the region have longer life expectancy relative to males and this situation prevails in all other regions of the world.

Table 2.4: Health Indicators in Different Nations

	Maternal Mortality Ratio				Under 5 Mortality Rate		
	1995	2005	2015		1995.5	2005.5	2015.5
World	369	288	216	World	88.4	64.6	44.4
India	471	280	174	India	113.3	77.9	47.5
USA	12	13	14	USA	9.6	8.1	6.9

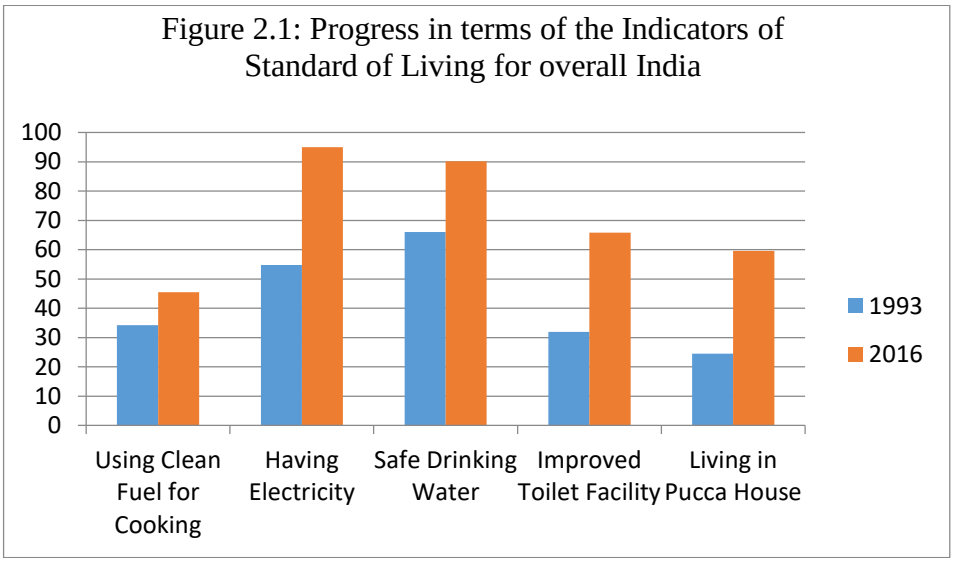
UK	11	12	9	UK	7.3	6.2	4.6
UAE	12	6	6	UAE	15	10	9.1
East Asia and Pacific	134	98	62	Eastern Asia and South Eastern Asia	51.2	30.3	18.3

Notes:
1. Maternal mortality ratio is measured as a modelled estimate per 100,000 live births.
2. Under-5 mortality rate is measured as under-5 deaths per 1,000 live births.
Source: Author's compilation from WHO, Unicef and World Bank dataset.

Tables 2.3 and 2.4 give a snapshot of performance of India in terms of various health-related indicators with other regions of the world. Statistics on health indicators such as maternal mortality ratio, gender specific adult mortality rates and under-5 mortality rates are reported. The statistics show again that India is gradually improving in all the indicators. Under-5 mortality rate has gone down remarkably over the period from 113.3 percent in 1995 to 47.5 percent in 2015. Also India has given impressive performance in reducing MMR and it is now very near to the target MMR of 150. India will have to struggle further to bring down adult mortality rates which were estimated to be higher than the world average (Table 2.3).

Figure 2.1 shows that India has made remarkable progress in terms of electrification and providing safe drinking water. However, more than 50 percent of the population still uses solid fuel for cooking. Also, further progress has to be made towards building more toilets and 'pucca' houses.

Figure 2.1: Progress in terms of the Indicators of Standard of Living for overall India



Source: Author's own calculation

III.METHODOLOGY AND DATA SOURCES

The panel data analysis provides better insight to the phenomenon. The term 'panel data' refers to data sets where the same cross-sectional unit is surveyed over time. The fixed effects model is given by,

$$Y_{it} = \alpha_i + \beta' X_{it} + u_{it}, i = 1,2, \dots\dots, N; t = 1,2, \dots\dots T$$

where Y_{it} is the output and X_{it} is the vector of inputs for the i-th cross-section unit in the t-th period. The α_i 's are estimated as coefficients of dummy variables. This model is also referred to as the 'Least Squares with Dummy Variables' (LSDV) model. Also assume $u_{it} \sim IN(0, \sigma^2)$.

For the purposes of estimation, this study employs the following specification of the static panel data model as expressed in Equations (3.1) to (3.3) below:

$$LFP_{it}^{T} = \alpha + \beta_1 Y_{it} + \beta_2 SCH_{it}^{T} + \beta_3 LE_{it}^{T} + \beta_4 SLD_{it} + \beta_5 F_{it} + \sum_n \gamma_n POP_{nit} + \varepsilon_{it} \quad (3.1)$$

$$LFP_{it}^{M} = \alpha + \beta_1 Y_{it} + \beta_2 SCH_{it}^{M} + \beta_3 LE_{it}^{M} + \beta_4 SLD_{it} + \beta_5 F_{it} + \sum_n \gamma_n POP_{nit} + \varepsilon_{it} \quad (3.2)$$

$$LFP_{it}^{F} = \alpha + \beta_1 Y_{it} + \beta_2 SCH_{it}^{F} + \beta_3 LE_{it}^{F} + \beta_4 SLD_{it} + \beta_5 F_{it} + \sum_n \gamma_n POP_{nit} + \varepsilon_{it} \quad (3.3)$$

where 'i' is state, 't' is time, LFP is labour force participation rate, LE is life expectancy at birth, SCH is the percentage completing secondary education, Y is per capita NSDP growth rate, F is the fertility rate, SLD is the measurement of standard of living deprivation, Pop is percentage of total population age-group under 14, 15 to 59 and above 60 years. The superscript 'T',

'M' and 'F' represents total, male and female respectively. A description and source of these variables are presented in Table 3.1.

Here β_i are the parameters to be estimated and ε_{it} is the random error term with zero mean and constant variance. After estimating the parameters, we are interested to know the overall significance of the model and individual significance of the each of the explanatory variables in the model for which F-test and t-test will be done respectively.

The standard of living deprivation is calculated using the methodology used to construct Human Poverty Index (HPI, 2001) adopted by Planning Commission of India. The indicators chosen are i) proportion of household cooks with wood, dung, charcoal or coal; ii) proportion of household without access to improved sanitation facility; iii) proportion of household does not have access to safe or improved drinking water; iv) proportion of household living without electricity; v) proportion of population living in 'kuccha' house. These indicators are even used to calculate multidimensional poverty index (MPI) by UNDP. Lastly, proportion of population below the poverty line is considered here as an indicator which is earlier used by Planning Commission of India to construct HPI, 2001. The living standard deprivation index is calculated by simply taking the average of these indicator values for each of the states (HPI, 2001).

Table 3.1: The Variables and Data Sources

Variables	Source
LFP	NSS Employment and Unemployment Survey Rounds
SCH	NSS Employment and Unemployment Survey Rounds, NHDR, GOI
LE	Sample Registration System (SRS), Abridged life table, Office of the Registrar General & Census Commissioner; Economic Survey for data prior to 1995-99
Y	Handbook of Statistics on Indian Economy, RBI
F	SRS, Registrar General, GOI
POP	Census Reports; 1991, 2001, 2011
SLD	NFHS Report I, II, III, and IV, Ministry of health and Family Welfare, GOI.

Population figures corresponding to 1993, 1999, 2006 and 2016 and labour force participation rates for 2016 are generated by induction method.

IV.RESULTS

Three equations (3.1) to (3.3) are estimated here. Before estimation, two preliminary tests have been carried out separately for each of the three equations. These are Breusch and Pagan Test and Hausman Test. The Hausman test (1978) is usually applied to test for fixed versus random effects models. The test suggests that if there is no misspecification in the model then the error term will be uncorrelated with the explanatory variable. Here we have found the test statistic to be significant. Breusch and Pagan (1980) Test is to determine whether the data supports panel structure. Here desired results are obtained for both the tests. Hence, static fixed effects panel estimation technique is adopted.

Table 4.1: Descriptive Statistics

Variables	Mean	Standard Deviation	Minimum	Maximum
Labour Force Participation Rate (Total)	54.63	10.85	34.6	86.5
Labour Force Participation Rate (Male)	73.2	10.01	45.7	88.87
Labour Force Participation Rate (Female)	27.09	13.00	4.75	50.45
Per Capita NSDP Growth Rate	9.82	1.02	8.02	11.79
Percentage of population completing secondary schooling (Total)	10.18	3.54	4.15	19
Percentage of population completing secondary schooling (Male)	12.38	3.59	5.6	20.1
Percentage of population completing secondary schooling (Female)	7.94	3.88	2.7	18.5
Life Expectancy at Birth (Total)	65.82	4.58	55.4	75.05
Life Expectancy at Birth (Male)	65.01	4.17	55.6	75.3
Life Expectancy at Birth (Female)	66.62	5.24	55.2	77.9
Living Standard Deprivation Index	0.427	0.15	0.113	0.69
Fertility Rate	2.64	0.75	1.56	4.82
Population under 14 years	31.39	5.19	20.6	40.2
Population between 15-59 years	61.15	4.06	53.6	69.6
Population above 60 years	7.45	1.84	4.3	13.2

Source: Author's own calculation

Table 4.1 presents summary statistics of all variables used in the analysis. The statistics show a mean labour force participation rate of about 54.63 per cent with mean labour force participation rate for males and females of about 73.2 per cent and 27.09 per cent respectively. Women's labour supply on average is very low compared to their male counterpart. On the contrary, average life expectancy at birth was lower for males (65 years) than for females (66.6 years). It is shocking to obtain that percentage of

population completing secondary education is only 10.18 percent (mean value). Female educational attainment is even much lower 7.94 percent (mean value) with 2.7 percent being the minimum value.

In Table 4.2 the result of static panel estimates shows positive and statistically significant impact of growth and education on workforce participation. Also, population health status (measured by life expectancy at birth) is found to be having positive and statistically significant (at 5 percent level) impact on labour market activity. Also, living standard deprivation shows strong negative effect on labour supply significant at 1 per cent level.

Table 4.2: Empirical Result for Panel Data Estimates for Equation 1

Dependent Variable: Total Labour Force Participation Rate	
Explanatory Variables	Panel Estimates
Growth of per capita NSDP	4.22868 (1.917144)**
Percentage of population completing higher secondary education	1.479095 (0.7092558)**
Life Expectancy	0.8636224 (3873804)**
Fertility Rate	-3.420502 (3.393294)
Living Standard Deprivation	-46.92 (8.368479)***
Population Under 14 years	3.495191 (1.882193)
Population between 15-59 years	4.125765 (1.946179)
Population above 60 years	3.198903 (1.819219)
Constant	-429.737 (188.6031)
F- value = 82.75 Prob > F = 0.0000	

Notes:

1.*** significance at 1 percent; ** significance at 5 percent; * significance at 10 percent
2. Robust standard errors are reported in parentheses
Source: Author's computation

Table 4.3 provides the estimates of the positive effect of growth of income on male labour force participation rates at 1 percent level of significance. The importance of good health has once again established here. It has found having positive impact on male labour supply significant at 10 per cent level. Further economic deprivation negatively affects the labour supply (significant at 10 percent level of significance). Though fertility rate has found to be statistically significant at 10 percent level but the coefficient has not shown the desired sign. Education is having a positive impact though not statistically significant.

The estimation result for equation 3.3 states that once again growth of income positively and significantly affects women's labour supply. Among other regressors health status and education are also having positive and statistically significant (at 10 percent) impact. Surprisingly, fertility rate has shown significant and positive relationship with women's labour supply at 10 percent level. Once again economic deprivation showed negative association with the labour market integration with the coefficient significant at 5 percent.

Table 4.3: Empirical Result for Panel Data Estimates for Equation 2

Dependent Variable: Male Labour Force Participation Rate	
Explanatory Variables	Panel Estimates
Growth of per capita NSDP	8.073159 (1.43)***
Percentage of male completing higher secondary education	0.25534 (0.6421)
Life Expectancy male	0.9213773 (0.469)*
Fertility Rate	-5.3498 (2.67)*
Living Standard Deprivation	-20.07754 (13.6)*

Population Under 14 years	0.7328 (2.535)
Population between 15-59 years	-1.8925 (2.5112)**
Population above 60 years	0.2846 (2.57)
Constant	43.58347 (247.9038)
F- value = 65.59 Prob > F = 0.0000	

Notes:

1.*** significance at 1 per cent; ** significance at 5 per cent; * significance at 10 per cent
2**.** Robust standard errors are reported in parentheses
Source: Author's computation

Table 4.4: Empirical Result for Panel Data Estimates for Equation 3

Dependent Variable: Female Labour Force Participation Rate	
Explanatory Variables	Panel Estimates
Growth of per capita NSDP	4.219 (1.822)**
Percentage of female completing higher secondary education	1.365014 (0.867959)*
Life Expectancy female	1.049042 (0.5850665)*
Fertility Rate	1.084032 (2.027069)*
Living Standard Deprivation	-77.17029 (30.49844)**
Population Under 14 years	0.8539253 (2.672649)
Population between 15-59 years	1.274424 (2.55583)
Population above 60 years	1.115931 (3.279549)
Constant	-86.33718 (268.1945)
F- value = 110.13 Prob > F = 0.0000	

Notes:
1.*** significance at 1%; ** significance at 5%; * significance at 10%
2**.** Robust standard errors are reported in parentheses
Source: Author's computation

V.DISCUSSION

The summary of the descriptive statistics clearly documents that women's labour force participation is very low compared to male participation rate. Disproportionate household work burden, social stigma, existence of gender bias within the labour market are all responsible for this outcome. The existing literature has also discussed all these issues to explain women's poor participation in the labour market (Kabeer 2003; Das, Bordia and Desai, 2003; Kambhampati and Rajan, 2008; Eshwaran, Ramaswamy and Wadhwa 2013; Caranzza 2014; Lahoti and Swaminathan, 2016).

The positive relationship established between labour force participation and population health meets *a priori* expectation. Good health increases productivity and time available for work for both market and non-market activities. In this regard, a healthy population is expected to live longer and work for more years which increase their lifetime earnings. The poorer the health, the lesser is the time available to participate in income generating activity (Becker, 1964; Grossman, 1972; Soares and Falcao, 2008; Novignon, Novignon and Arthur, 2015; Banerjee, 2017). Also, the positive and significant relationship between education attainment and labour force participation was expected.

The relationship between fertility rate and male labour force participation has produced somewhat surprising result. Here the sign of the coefficient associated with fertility has found to be negative which is difficult to explain. This is counter-intuitive to the expectation that fertility rate significantly and positively affects market activities of men. Further investigation is required to ascertain the relationship. However the positive integration between fertility rate and women workforce participation can be explained. With increase in fertility, dependency burden goes up which necessitates women to join the market making monetary contribution in the household. This finding matches with the observation by Priebe (2011) and Banerjee (2017).

The empirical finding well establishes the fact that socio-economic deprivation causes lot of hardship. It reduces labour market participation of male as well as female. Lack of basic amenities significantly reduces productive work hours as per the result.

Decent living standard brings better health as well as improved educational attainment. Thus it contributes to better human capital formation which will obviously translate into higher probability of better lifetime earnings. All these will brighten country's growth prospect and reduce poverty in the long run.

VI.CONCLUSION

The study set out to investigate the impact of each of the variables, population health status, educational attainment, fertility rate, growth of income and socio economic deprivation on labour force participation across states of India using a static panel model analysis. The findings call for improved population health status and better living conditions following the importance of labour force participation at the macro level. Socio economic deprivation is a great hindrance to effective labour supply. A person's participation in the labour force does not only contribute to the growth of a country at the macro level but also the improvement of well-being at the micro level. Thus effective policy efforts should be directed at providing facilities that will improve health and living conditions hence providing enough healthy time to participate in the labour force. Various government schemes, for example, Saubhagya yojana, Ujjwala scheme, Swachh Bharat Abhiyan, Swajal scheme, Pradhan Mantri Awas Yojana etc., are all directed to provide decent living standard to the deprived population. Poverty rate is gradually falling down after liberalisation. Further poverty reduction accompanied by improvement in living standard will support India to ride on a high growth path alongside ensuring fast growth of labour force. Not only that, increase in public expenditure for strengthening health infrastructure will be needful. Meticulous efforts have to be made to reduce maternal mortality, child and adult mortality as well as controlling the disease burden.

Government efforts should also be directed towards increasing employment opportunities and ensuring job security. Special emphasis has to be given for better training and skill formation of young women. Besides these, the government can call for more investments in those sectors which are women intensive. The role of the government and many NGOs' working in promoting the self-help groups are appreciable. Moreover, development of more agro-based industries having strong export potential must also be encouraged.

Various government schemes are implemented to tackle all these problems but care has to be taken to ensure that these schemes should not benefit the wealthier people and there should not be any leakage in the system. Otherwise, government will fail to meet the desired target and the entire expenditure will be wasteful. Strong monitoring, timely disbursement of funds, regular assessment of the progress have to be done to increase the effectiveness. Once electrification and infrastructure for providing safe water, improved sanitation are made, lots of efforts are to be made to ensure uninterrupted power and water supply, maintenance of all these. Thus we can conclude saying that much trumpeted demographic dividend is likely to be much smaller than anticipated unless significant strides can be made to create job opportunities for the entire population through improvement in population health status and living standards, educational expansion initiatives.

REFERENCES

[1] Alkire, Sabina and Selim Jahan (2018). *The New Global MPI: Aligning with the Sustainable Development Goals* (Occasional Paper). UNDP Human Development Report Office.

[2] Banerjee, K. (2018). Impact of Economic Development and Socioeconomic Factors on Women Workforce Participation in India in the Context of Labour Market Inequality. The *Indian Economic Journal*, December (Special Issue), pp. 222-229.

[3] Becker, G. (1964). *Human Capital*. University of Chicago Press, Chicago.

[4] Bhalla, Surjit S. and Ravinder Kaur (2011). *Labour Force Participation of Women in India: Some Facts, Some Queries* (Working Paper 40). Asia Research Centre, London School of Economics and Political Science.

[5] Breusch,T. and A.R. Pagan (1980). The Lagrange Multiplier Test and Its Application to Model Specification in Econometrics. *Review of Economic Studies*, 47, pp. 239-253.

[6] Cai, L. and G. Kalb (2005). *Health Status and Labour Force Status of Older Working-age Australian Men*. Melbourne Institute Working Paper No. 9/05.

[7] Cai, L., K. Mavromaras and U. Oguzoglu (2008). *The Effects of Health and Health Shocks on Hours Worked*. IZA Discussion Paper Series No. 3496.

[8] Carranza,E. (2014). Soil Endowments, Female Labour Force Participation, and the Demographic Deficit of Women in India. *American Economic Journal: Applied Economics*, 6(4), pp. 197-225.

[9] Currie, J. and B. C. Madrina (1999). Health, Health Insurance and Labour Market. In O. Ashenfelter and D. Card (eds.), *Handbook of Labour Economics.* (pp. 3310-415). Elsevier Science, Amsterdam.

[10] Das, Bordia and Desai (2003). *Why are Educated Women Less Likely to be Employed in India? Testing Competing Hypothesis* (Social Protection Discussion Paper Series. No. 0313). Social Protection Unit. Human Development Network. The World Bank.

[11] Eswaran, Mukesh, Bharat Ramaswamy, and Wilima Wadhwa (2013). Status, Caste, and Time Allocation of Women in Rural India. *Economic Development and Cultural Change*, 61(2), pp. 311-33.

[12] Grossman, M. (1972). On the Concept of Health Capital and the Demand for Health. *The Journal of Political Economy*, Vol. 80, No. 2, pp. 223–55.

[13] Kabeer et al. (2013). Paid Work, Women's Empowerment and Inclusive Growth: Transforming the Structures of Constraint. *New York: UN Women*.

[14] Khandker et al. (2012). *Who Benefits Most from Rural Electrifications? Evidence in India*. Paper prepared for Presentation at the Agricultural and Applied Economics Association's 2012 Annual Meeting, Seattle, Washington.

[15] Lahoti, Rahul and Hema Swaminathan (2016). Economic Development and Women's Labor Force Participation in India. *Feminist Economics*, 22(2), pp. 168-195.

[16] Novignon,J., J. Nonvignon and E. Arthur (2015). Health Status and Labour Force Participation in Sub-Saharan Africa. *African Development Review*, 27(1), pp. 14-26.

[17] Planning Commission (2001). *National Human Development Report*, Technical Appendix, Government of India, 132-133.

[18] Priebe,J. (2010). Child Costs and the Causal Effect of Fertility on Female Labour Supply: An Investigation for Indonesia 1993-2008. *CRC-PEG Discussion Paper 45*, University of Gottingen, Gottingen.

[19] Roy, K. and Halder, S.K. (2010). Measuring Poverty and Socio-Economic Deprivation Inequalities in India at Sub-National Level. *Asia Pacific Social Science Review*, 10(1), pp. 59-84.

[20] Soares, R. Rodrigo and Bruno L.S. Falcao (2008). The Demographic Transition and the Sexual Division of Labour. *Journal of Political Economy*, 116(6), pp. 1058-1104.