Female labour supply in india: proximate determinants

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FEMALE LABOUR SUPPLY IN INDIA: PROXIMATE DETERMINANTS

INTRODUCTION

It is quite surreal to talk of women's work participation since almost all women work – inside or outside their home, against or without payment, for production or self-consumption, and also for reproduction. The traditional academic view however ignores this and chooses to define '*work*' in such a manner so as to exclude majority of those activities that are predominantly performed by women. Naturally magnitude of official female labour supply (or Female Labour Force Participation Rate – FLFPR) is quite low in developing countries including India, hovering around half of the corresponding male figures. This phenomenon has its roots in the patriarchal nature of developing societies where women's role as a homemaker is not a conscious choice but a compulsory duty, thrust upon her by the society, family, and spouse. Participation in the labour market is not encouraged as it infringes upon the time devotion to the household, including child bearing and rearing. Given this backdrop women who are in the labourforce must be having compelling reasons for doing so. Either they hail from poor households and have to earn to supplement family income, or they are educated/skilled women from well-off, mainly urban households and are empowered enough to enter labour market on their own terms. In the first case, the household is frequently stigmatised as being unable to provide for their womenfolk. In the second, often the women are themselves stigmatised as not fulfilling their primary and natural duties. While such ideas seem crude, prehistoric, and even barbaric, much of it is still true, in spirit if not in letters, in developing countries. What then induces women to transcend such social barriers and take part in labourforce? We have already hinted at two factors – economic hardship and skill/education. But a gamete of other factors may affect female labour supply in complex ways and needs critical analysis. This paper attempts to alienate some such factors in the Indian context. While research on female labour supply has been quite frequent in the context of developed countries [see Kiilingsworth and Heckman (1986) for a dated but comprehensive survey; a more recent discussion is in Eckstein and Lifshitz (2011)], the issue has not been explored in similar rigour in developing countries perspective. In Indian context there is a clear

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dearth of econometric analysis of labour supply, notable exceptions being Bardhan (1979), Mathur (1994), Kanwar (1998), Dasgupta and Goldar (2005)]. However, these handful of studies look either at macro phenomenon with state level FLFPR being dependent on regional socioeconomic factors, or takes a micro approach and explores individual work participation decision as a function of individual characteristics. The present study is unique in the sense that it combines these two approaches and models individual labourforce participation decision dependent on causal variables enveloping individual, household, and regional factors, thereby filling the research gap in an important area of development process. The latest NSSO survey data on employment and unemployment [66th round data for 2009-10, NSSO (2010)] is used for the analysis, contrasting with the 1993-94 NSSO data [50th round data, NSSO (1996)] to identify possible temporal changes in the dynamics of the process.

FACTORS DETERMINING FLFPR – THORETICAL DISCUSSION

Theoretical perspective regarding female labourforce participation has been discussed quite extensively since the pioneering works of Mincer (1962) and Cain (1965). One of the more comprehensive ones in recent times has been that of Schultz (1988), Goldin (1995), and Mammen and Paxson (2000). These studies have explained why FLFPR behaves in a non-linear fashion over time as countries develop – the U-shaped female labour supply proposition. Factors that cause such a pattern include education, wage, and income level of the household. The pattern is made more complex by the age factor which relates to FLFPR in an inverted-U fashion – participation being higher in the middle ages when women have completed their 'motherly' duties and are still physically strong to enter the labour market.

There are other factors whose roles in affecting FLFPR are also multidirectional. At the personal level marital status may be an important factor – single women being more probable to be in the labour market. At the same time, married women may also be pushed into the labourforce because of inadequate family income.

At the household level a plethora of factors may come into play. Size of the household is crucial as women from large families may be compelled to work in order to provide for the extra feeding

mouths. On the other hand, if the family has more adult male members then womenfolk need not have to work. Therefore, more important than family size would be household dependency ratio and household sex ratio. Women from families with high dependency ratio or with more females would be more probable to be in the labourforce than others. Again, if the dependency is due to presence of infants and toddlers, women may actually be tied to the household to look after the children rather than work outside. So this factor has to be controlled for while analysing.

For married women, apart from own characteristics, those of the spouse also play important roles. Higher educational attainment of husband may loosen the social/ethical shackles on the wives, encouraging them to enter labourforce. Similarly, husbands who have regular salaried jobs may encourage their wives also to do so. From the other way, in case of marriage, matching may take place between similarly educated/employed males and females. We may call this positive impact *Peer Effect*. Opposite to this, there operate certain forces which we may call *Income Effect* and *Social Pride Effect*. Men with higher educational qualifications and assured jobs may find their own income adequate enough and discourage their wives from working. They may also find it below their social status (and ego?) to let their wives work to earn. These two sets of opposing force juxtapose and the final impact on FLFPR is really a matter of time and space, to be explored critically.

At the macro level too, factors are identifiable but the impacts are far from unidimensional. For example, important variables may be local economic conditions, employment situation, and prevailing wage rates. It is expected that a vibrant local economy will create sufficient labour demand to induce women to join labour force. Alternatively, a stagnant economy may force women into the labour market due to poverty – as the poor can ill afford to stay out of work. The relative strengths of these pull/push factors are matters of investigation.

The same duality holds for employment and wage situations. A loose labour market with high unemployment and low wages may discourage potential female workers to declare themselves as jobseekers. They would rather declare themselves as outside labourforce – the *discouraged worker effect* [for further theoretical and empirical views on this see Blundell et al (1998), Ehrenberg and Smith (2003), Dagsvik et al (2010)]. The opposite impact, or the *added worker*

effect, would tend to increase FLFPR when the employment situation for the men folk becomes uncertain [for more details on the underlying theoretical premises see Ashenfelter (1980), Heckman and MaCurdy (1980), Lundberg (1985), Ehrenberg and Smith (2003) and Borjas (2005)]. High wages may increase opportunity cost of not working and FLFPR may rise due to *substitution effect*. On the contrary, an *income effect* may also operate which reduces FLFPR as male earnings rise and the increased income enables the households to 'buy' the female labour themselves.

It is thus quite clear that female labourforce participation is a complex issue and theoretically there may be a myriad of apparently contradicting forces at play simultaneously. The outcome would depend on the relative strengths of these cross-currents and a country at a specific time will exhibit a special dynamics of its own. Naturally policy-framing would require understanding the intricacies of this dynamics – something that this papers attempts to do in Indian context. It is expected that the empirical exercise that follows will be able to elucidate the nature of female labour supply in India and provide insight into this issue in a developing society in general.

TRENDS IN FEMALE LABOUR SUPPLY IN INDIA

Work Participation

The official FLFPR has been 23.3 per cent in 2009-10, almost half of the aggregate LFPR (Table 1). This is also 5 percentage point lower than the 1993 figures. The decline has been sharper in rural areas relative to urban. In contrast, male LFPR has increased marginally over the same period. As mentioned earlier, this official statistics, by ignoring a whole gamete of economic activities, does not do justice to the women folk. Women whose principal activity is domestic duties are not considered within labour force even if they perform certain extra-domestic economic activities. This subset, in the Indian context, includes those who, in addition to domestic duties, are engaged in – free collection of goods (vegetables, roots, fire-wood, cattle feed, etc.); sewing, tailoring, weaving, making baskets & mats, preparation of cow-dung cake, etc. for household use; husking of paddy, grinding of foodgrains, preparation of gur, preservation of meat and fish for household consumption; and, tutoring of children. We contend that this assortment of

jobs adds to the family's consumption basket and hence should qualify as economic activity or *work*. If we extend our definition of labourforce to cover these economic activities undertaken mostly by women but not considered as *work* by official agencies (NSSO), a different picture emerges. (Modified) FLFPR in that case jumps to over 60 per cent, a marginal rise over the 1993 figures. It is therefore clear that while women are withdrawing from the active labour market, an increasing proportion of them are complementing their domestic duties with extra-domestic economic activities, trying to balance the society's demand from them with their own economic aspirations or compulsions. This double burden of work for women is also a special characteristic of developing countries. The seemingly conflicting results (decreasing official FLFPR along with increased dual activity of women) may be caused by any of two processes. First is a distress driven dynamics where stagnant labour market situation discourages women to take up employment as a full time activity while at the same time forces them to pursue subsidiary activities to add to the household consumption basket. Second, improved economic conditions may induce women to withdraw from active labour market but pursue some extra-domestic activities to fulfil personal or household aspirations. Which of these two is more relevant in the Indian context will become clearer as we progress further with this paper.

[Table 1 here]

Occupation Class and Job Types

What are the major sectors where women have got engaged? It is observed that majority of female workers are engaged in farming and allied occupations, which is quite natural in the context of predominantly agriculture based livelihood pattern in India. Apart from this, women in India have traditionally found jobs in Healthcare, Pre-tertiary education, and Personal services. If we segregate the occupation classes into three broad groups – White Collar, Pink Collar, and Blue Collar, we find that more than 80 per cent of women are engaged in Blue collar jobs – farming, manufacturing, transport, and as unclassified labourers. Share of women in White Collar jobs is miniscule and has declined over the 1993-2009 period. Such a pattern signals some sort of low quality female labour supply in India and is a disturbing trend. It also indicates that the drop in official FLFPR may have been due to such adverse labour market situation faced by women.

The type of engagement for female labour force indicates close to half of women being self-employed, presumably in family farms and firms. However, a welcome trend has been the declining share of casual workers and consequent rise in share of regular women workers.

[Table 2 here]

It thus appears that women in India are withdrawing from the active labour market but increasingly engaging themselves in economic activities in addition to their principal domestic duties. The incidence of double burden is therefore rising. Also, there are two contrasting trends in operation – declining share of women in white collar jobs and increasing share of regular salaried women workers, prompting us to explore the female labour supply behaviour in India more rigorously.

FEMALE LABOURFORCE PARTICIPATION IN INDIA: PROXIMATE DETERMINANTS

As mentioned in the opening section, we have combined the micro and macro approaches in this paper and have examined how individual decisions regarding labourforce participation is influenced by individual, household, and macro level factors. We have used a binary choice model where working age women (15-59 years of age) are classified into *within labourforce* and *outside labourforce*, and *being within labourforce* is modelled as a logistic function of causal variables. Variables used include – Age, Years of schooling, and Marital status at the individual level; Socio-religious group, Place of residence, Household sex ratio, Household dependency ratio, and (log of) Household income at the household level; and, State's PCNSDP, Average Unemployment rate, and Average Wage rate at the macro level. In addition, a separate regression is also run for currently married women which includes husband's educational and employment status as well. Before going into the regression results, let us first examine the behaviour of aggregate FLFPR across groups based on education, household economic condition, socio-religious membership, and region (state).

Results from Group Averages

A clear U-shaped pattern is observed between education and FLFPR (Table 3). Participation is higher among illiterates, decreases consistently for higher educational groups, and again shows a rise for graduates and above. The U-shape is more pronounced for urban areas rather than rural.

[Table 3 here]

Similar pattern is obtained for household economic situation (proxied by household mpce). Participation is highest for the poorest decile of households, decreases as economic situation improves, showing a hint of rise again for the topmost decile (Table 4).

[Table 4 here]

It is thus clear that at bottom levels of education and economic condition labourforce participation is mostly distress driven. Here the income effect is stronger too and women withdraw from labour market as the situation improves. Only at the higher end of the spectrum, for educated/skilled women and those from economically well-off households does the substitution effect come into play. Also, these women are mostly employed in white collar tertiary sector jobs with moderately high wages and hence can ignore the social stigma attached to working women. This social psychology is crucial as it appears that rural women are finding it difficult to enter labourforce even at the higher end of the education-income spectrum and hence the rising part of the U is limited to the urban areas mostly.

The socio-cultural dimension is evident from the fact that FLFPR is highest among the tribal population and least among Hindu upper caste and Muslims (Table 5). The former has a tradition/culture of female work participation and hence does not perceive it as something unnatural or dishonourable. The latter groups are more protective about their womenfolk and discourage them from working outside as it is perceived to be below undignified and less honourable.

[Table 5 here]

At the regional level, FLFPR is higher for states with larger share of tribal people and the hill states – Jharkhand, Chhattisgarh, Himachal Pradesh, Meghlaya, Mizoram, Nagaland, Uttarakhand, and Sikkim (Table 6). On the contrary, FLFPR is lower in the predominantly urban

states – Delhi, Goa, Pondicheri, Lakshadweep, Andaman & Nicobar. Whether there is any link between regional economic condition and FLFPR will be investigated later.

[Table 6 here]

Results from Model Estimates

While a broad overview is obtained from the average results, let us now explore the micro decision making process as evident from the binary choice models. We have used 4 separate functional forms. The first model uses only personal attributes as causal variables, the second adds household characteristics to the first, and the third adds regional macro variables to the second. Model 4 is for currently married women and adds variables related to education and employment of the spouse. Regressions are run first with a Rural/Urban dummy (Table 7) and then separately for rural and urban areas (Tables 8 & 9). Let us now examine the implications of the results obtained.

[Table 7 here]

Individual Characteristics

The U-shaped relation between education of a woman and her work participation decision is quite clear from the results. While one year increase in mean years of schooling (MYS) reduces the odds of a woman being in the labourforce by approximately 10 percentage points, square of MYS increases the odds, hinting at such a non-linear pattern. Age, on other hand, has the opposite impact – the odds rising by about 20 percentage points for each year increase in age while Age-squared reduces the probability. If we compare the 2009 results with that for 1993, it is observed that over time the impact of education has declined whereas that of age has amplified.

[Table 8 here]

Marital status has shown two opposite impacts over the study period. For the 1993 data, single women had almost one and half times a likelihood of being in labourforce compared to that of married women. In 2009 however, being currently married increase the odds of participation in labourforce, though the impact is statistically insignificant. This apparent incongruity is resolved if we look at the rural/urban processes separately. It is evident that even in 2009, single women from urban areas had almost twice an odds ratio of being in labourforce relative to married

women. It is for the rural areas that the single women have a lower odds ratio. This perhaps follows from the nature of jobs available in urban and rural areas – jobs being more skill based in urban areas and hence open to single women as well while in rural areas labourforce participation is closely related to the agricultural process, family land holding, and joint family system where single women have very little need or scope for active engagement in labour market.

[Table 9 here]

Household Characteristics

As evident earlier, belonging to scheduled caste household reduces the odds of being in labourforce by almost 50 percentage points relative to the scheduled tribes. Belonging to Hindu Upper caste or Muslim household reduces the probability further. The socio-cultural traits of the social groups are therefore quite strong in India. This dampening impact has weakened over the study period, indicating some kind of social churning on one hand and on the other greater availability of supposedly *dignified* jobs for women in recent years.

Location of the household (rural or urban) is an important factor as women in rural areas are twice as likely to be in the labourforce compared to urban women, the gap increasing in recent times as well. This can again be related to the nature of jobs performed by rural households where women have a major role in both on-farm and off-farm activities. On the contrary, work participation in urban areas is more a personal choice. Moreover, differences in economic conditions between rural and urban areas may also be a deciding factor where higher rural poverty forces rural women to enter labour market in greater numbers compared to urban women. The rising gap can thus be related to greater urban affluence and increased urban-rural disparity in recent times.

At the household level, presence of more female members significantly increases the likelihood of labourforce participation of women. This is expected as in absence of adequate male earnings, women have to enter labour market for livelihood. Rise in Household dependency ratio, defined as number of 60+ members per adult male member, reduces the odds of women being in the labourforce, making it quite clear that, in India, rather than pushing women into the labour market to add to family income, large families with more dependents require the womenfolk to stay at

home for care-giving. Naturally, this impact is stronger for married women – underling once more the social bias in imposing certain archetype role on women.

Household income level, as expected, is inversely related to women's labourforce participation. Roughly, doubling of the family's income situation reduces the odds ratio of a woman to be in labourforce by more than half. Quite significantly, this impact is substantially higher in 2009 than that in 1993 when similar increase in income led to a fall in odds ratio by roughly 20 percentage points. It appears that with a rise in average living standards during 1993-2009 the *income effect* has become much more pronounced and increased family income now enables more and more families to withdraw their womenfolk from the labourforce. The corollary of this result could be that women enter labour market more due to push factors, withdrawing at the first indication of household prosperity. Significance of such a process for overall labour market policies and women empowerment in particular is a matter of further exploration.

Married Women and Characteristics of Spouse
How do husband's education and employment affect women's decision regarding labourforce participation? It appears that with rise in husband's education, women's labourforce participation decreases marginally. On the other hand, husband's employment status has opposite effects in rural and urban areas. In rural areas, women are more likely to be in the labourforce if their husbands have regular jobs – substituting/complementing the male labour in family farms by female labour being a possible reason. In the urban areas however, odds of labourforce participation reduces if the husband has a regular job – the *income effect* and *social pride effect* clearly outweighing any possible *peer effect*. Over time, while the impact of husband's education has declined, that of the employment status of husband has strengthened.

Regional Macroeconomic Characteristics
So far we have talked of micro issues. Apart from them local and global macroeconomic phenomenon also cast their shadows on women labourforce participation. Effects of three such variables representing general economic condition of the region (state PCNSDP), regional labour market situation (state average unemployment rate), and return from paid work (state average wage from casual work) have been examined.

It is observed that wages have an insignificant but positive impact on women labourforce participation as women from states with higher average wage level having a higher odds of being in labour market. Unemployment has had a mixed impact. During 1993, and in rural areas during 2009, higher unemployment marginally reduces the likelihood of participation – the *discouraged worker effect* seems to be stronger in such cases. But for the urban areas in 2009, higher unemployment appears to increase the probability of a woman to be in the labourforce, hinting at a relatively stronger *added worker effect*.

General economic condition has had a contrasting impact over the period of study. In 1993, women from states with lower PCNSDP were more likely to be in labourforce – odds ratio decreasing by about 30 percentage points for doubling of PCNSDP. In 2009 however, higher PCNSDP appears to increase the odds significantly – more than doubling in rural areas and increasing by about 50 percentage points in urban areas for doubling of PCNSDP. It thus appears that two decades back women's work participation was inversely related to regional economic condition and rather than labour demand, supply of female labour was the deciding factor. Perhaps recently female labour supply has become responsive to labour demand and as employment opportunities open up in economically vibrant regions women decided to join the labourforce in greater numbers. As indicated earlier, nature of jobs available in recent times also influence such decisions. Another reason may be that the rising inequality observed in the economically advanced regions in recent years has a polarisation effect on the society and have induced women from low income households to enter labour market. Further, it may also be true that women in some states are shifting from *invisible* work to *visible* work and hence their contribution to the domestic product are now being recorded and accounted, leading to higher PCNSDP for these states. Given the complexity of the process such a bidirectional causality seems more realistic.

CONCLUSION

Our study provides a brief insight into a hitherto neglected area – the female labour supply process in India – by examining the role of some proximate determinants, both at micro and

macro level. It appears that work participation decision by women depends on personal attributes, household characteristics, local economic conditions, socio-religious traditions, and for married women also on husbands' characteristics. The push factors are stronger at the lower end of the spectrum while pull factors and opportunity cost of not working are stronger at the upper ends. Because of the multidimensional nature of the interlinkages, it appears impossible to have a blanket one-size-fits-all approach towards the issue of women's work. In addition, there is a large grey area of invisible work undertaken by women, complicating matters further. Researchers have to identify and isolate such complexities to meaningfully understand the world of women's work and adopt appropriate policies for their betterment. It is hoped that the current study is only a small step towards that goal.

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Notes

[1] We have included this group in our Modified LFPR.

References

Ashenfelter, O. (1980), 'Unemployment as Disequilibrium in a Model of Aggregate Labor Supply', *Econometrica,* Vol. 48, No. 3, pp. 547–564.

Bardhan, P. K. (1979), "Labour Supply Functions in a Poor Agrarian Economy", American Economic Review, Vol. 69, No.1, pp 73-83.

Blundell R, J Ham, and C Meghir (1998), 'Unemployment, Discouraged Workers and Female Labour Supply', *Research in Economics,* No. 52, pp103-131.

Borjas, G. (2005), *Labor Economics*, McGraw-Hill, New York

Cain, Glen (1966), *Married Women in the Labour Force: An Economic Analysis,* The University of Chicago Press, Chicago.

Dagsvik, J. K., T Kornstad, and T Skjerpen (2010), Labor Force Participation and the Discouraged Worker Effect', Discussion Papers No. 642, *Statistics Norway Research Department*, [from http://www.ssb.no/publikasjoner/DP/pdf/dp642.pdf, accessed on 12-05-2011]

Dasgupta, Purnamita and Bishwanath Goldar (2005) – 'Female Labour Supply in Rural India: An Econometric Analysis', Working Paper No. 265, Institute of Economic Growth, New Delhi

Eckstein, Zvi and Osnat Lifshitz (2011), 'Dynamic Female Labor Supply', *Econometrica,* Vol. 79, Issue 6, pp1675–1726

Ehrenberg, R. and Smith, R. (2003), *Modern Labor Economics: Theory and Public Policy*, Addison-Wesley.

Goldin, C. (1995), 'The U-Shaped Female Labor Force Function in Economic Development and Economic History', Working Paper No. 4707, NBAER, Cambridge, Mass.

Killingsworth, M R and J J Heckman (1986), Female Labor Supply: A Survey, *in O. Ashenfelter and R. Layard (eds) Handbook of Labor Economics, Volume I, Elsevier Science Publishers B V, 1986* [from http://elsa.berkeley.edu/~saez/course/ Heckman%20and%20Killingsworth_Handbook.pdf, accessed on 12-5-2011]

Heckman, J. and MaCurdy, T. (1980), 'A Life Cycle Model of Female Labour Supply', *The Review of Economic Studies,* Vol. 47, No. 1, pp47–74.

Kanwar, S. (1998), *Wage Labour in Developing Agriculture: Risk, Effort and Economic Development*, Ashgate, USA

Lundberg, S. (1985), 'The Added Worker Effect', *Journal of Labor Economics*, Vol. 3, No. 1, pp11–37.

Mammen, K. and Paxson, C. (2000), 'Women's Work and Economic Development', Journal of Economic Perspectives, Vol. 14, No 4, pp141–164

Mathur, A. (1994) – 'Work Participation, Gender and Economic Development: A Quantitative Anatomy of the Indian Scenario', *The Journal of Development Studies,* Vol. 30, No. 2, pp 466-504.

Mincer, J. (1962), "Labour Force Participation of Married Women: A Study of Labour Supply. In H. G. Lewis (ed.) Aspects of Labour Economics", Princeton, N. J.: Princeton University Press. 63-97.

Schultz, T. (1988), 'Education Investments and Returns', *Handbook of Development Economics,* Vol. 1, pp543–630.

DATABASE

NSSO (2010) – *Unit level Records on Eighth Quinquennial Survey on Employment and Unemployment in India 2009-10,* NSS 66th Round - July 2009-June 2010, National Sample Survey Office, Government of India

NSSO (1996) – *Unit Level Records on Sixth Quinquennial Survey on Employment and Unemployment in India 1993-1994,* NSS Fiftieth Round - July 1993-June 1994, National Sample Survey Organisation, Government of India.

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Table 1

Labour Force Participation of Women in India – 1993 – 2009

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Status	1993			2009		
	Rural	*Urban*	*Total*	*Rural*	*Urban*	*Total*
(Numbers – in millions)						
Domestic Work only	43.85	29.63	73.48	73.07	43.27	116.34
Extra-domestic Work[a]	43.91	7.81	51.72	52.92	16.02	68.94
Domestic duty & Work	0.19	0.04	0.23	11.42	0.97	12.39
Work only	70.29	12.71	83.00	128.59	21.41	150.00
All Economically Active[b]	**114.39**	**20.56**	**134.95**	**192.93**	**38.4**	**231.33**
Labour Force Participation Rates						
Official LFPR (%)	**33.0**	**16.0**	**28.3**	**26.5**	**14.6**	**23.3**
Modified LFPR1 (%)[b]	**66.0**	**34.9**	**58.1**	**68.9**	**40.7**	**61.8**
Modified LFPR2 (%)[c]	**91.2**	**85.3**	**89.7**	**95.0**	**86.5**	**92.9**

Source: Author's calculations based on NSSO (1996) and NSSO (2010).

Note: a – those engaged in domestic duties plus other activities as explained in text; b – includes those engaged in *Work Only*, *Domestic Duty and Work*, and *Extra-domestic Duties*; Modified LFPR1 is derived from this; c – Modified LFPR2 includes all individuals who perform domestic duties;

Table 2
Women Employment by Occupation Groups in India

Occupation Group	Numbers in millions		Percentage Share	
	1993	2009	1993	2009
White Collar	6.4	9.3	7.7	6.2
Pink Collar	6.9	11.5	8.3	7.7
Blue Collar	69.8	129.5	84.0	86.2
Type of Job				
Self Employed	42.9	74.9	51.6	49.9
Casual Worker	19.1	32.7	23.0	21.8
Regular Worker	21.0	42.5	25.3	28.3

Source: Author's calculations based on NSSO (1996) and NSSO (2010).

Table 3
Female Labour Force Participation Rate in India by Educational Status

| Educational Status | % of 15-59 years females in labourforce | | | | | |
| | 1993 | | | 2009 | | |
	Rural	Urban	Total	Rural	Urban	Total
Illiterate	46.9	28.8	44.3	46.1	27.9	43.1
Primary Passed	37.2	20.9	32.9	38.8	24.8	35.6
Middle Passed	34.2	18.6	29.1	37.3	21.3	33.1
Secondary Passed	24.6	13.5	20.2	29.8	15.9	25.0
HS Passed	24.8	14.9	19.4	24.0	11.1	18.1
Graduate & Above	26.8	17.2	20.4	20.5	12.3	15.4
Aggregate	42.3	22.5	37.3	39.8	21.0	34.5

Source: Same as Table 1.

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Table 4

Female Labour Force Participation Rate in India by MPCE Class

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Decile Group of MPCE	% of 15-59 years females in labourforce					
	1993			*2009*		
	Rural	*Urban*	*Total*	*Rural*	*Urban*	*Total*
First	50.6	35.8	46.9	43.5	28.8	39.1
Second	46.6	29.3	42.0	42.3	29.0	38.2
Third	43.2	23.2	37.1	42.7	23.3	37.3
Fourth	41.8	20.0	36.4	41.0	22.8	35.8
Fifth	40.7	18.8	34.9	41.3	20.8	35.5
Sixth	39.4	17.0	33.9	41.1	18.7	34.9
Seventh	37.6	19.3	32.8	39.6	17.2	33.5
Eighth	37.7	18.7	33.0	39.3	16.2	33.0
Ninth	36.3	23.5	33.3	36.4	16.0	30.9
Topmost	44.0	24.7	38.3	32.8	19.5	29.0

Source: Same as Table 1.

Table 5
Female Labour Force Participation Rate in India by Social & Religious Group

Socio-religious Group	% of 15-59 years females in labourforce					
	1993			2009		
	Rural	Urban	Total	Rural	Urban	Total
Hindu ST	60.6	31.3	58.0	50.4	29.7	48.4
Hindu SC	45.2	30.3	42.7	42.7	25.5	38.8
Hindu OBC	na	na	na	40.3	23.2	35.9
Hindu Upper Caste	38.7	21.1	33.6	31.5	17.1	25.4
Muslim	23.2	18.5	21.6	24.0	15.9	20.7

Source: Same as Table 1.

Table 6
Female Labour Force Participation Rate in India by States

| States / UTs | % of 15-59 years females in labourforce | | | | | |
| | 1993 | | | 2009 | | |
	Rural	Urban	Total	Rural	Urban	Total
Andhra Pradesh	64.4	26.0	54.5	62.8	26.7	52.5
Arunachal Pradesh	64.2	17.4	58.8	44.7	22.5	39.9
Assam	22.8	16.5	22.0	25.6	14.9	24.3
Bihar	22.5	11.2	21.2	10.6	9.1	10.4
Jharkhand	-	-	-	26.4	15.5	24.2
Goa	31.7	29.6	30.9	19.9	16.3	18.9
Gujarat	51.9	20.4	41.6	47.7	21.3	37.1
Haryana	36.1	21.4	32.2	38.1	20.8	32.8
Himachal Pradesh	68.6	25.4	65.2	68.5	25.8	64.8
Jammu & Kashmir	41.7	17.7	35.8	42.9	21.1	37.4
Karnataka	54.1	26.0	45.9	52.7	25.1	42.8
Kerala	31.9	30.2	31.5	36.7	34.5	36.1
Madhya Pradesh	51.6	21.1	44.5	44.5	19.4	38.4
Chhattisgarh	-	-	-	57.6	21.6	50.8
Maharashtra	62.6	23.5	47.8	56.0	23.5	42.0
Manipur	46.1	31.2	41.8	32.7	21.6	29.8
Meghalaya	73.2	30.4	67.5	56.4	35.6	52.4
Mizoram	52.9	42.2	49.3	59.7	43.0	51.9
Nagaland	29.0	16.3	25.8	48.8	22.0	42.0
Orissa	33.7	19.9	32.0	37.2	17.8	34.5
Punjab	31.1	14.7	26.3	34.9	18.5	29.4
Rajasthan	58.3	22.0	49.8	56.6	19.3	47.3
Sikkim	39.1	21.1	37.6	47.5	21.9	44.4
Tamil Nadu	59.1	32.9	49.9	56.0	28.3	43.8
Tripura	18.7	20.5	18.9	33.6	26.4	32.2
Uttar Pradesh	29.2	15.7	26.6	28.2	11.8	24.4
Uttaranchal	-	-	-	58.7	17.4	48.7
West Bengal	24.1	22.5	23.7	22.3	20.9	21.9
Andaman & Nicober	40.0	24.2	35.5	35.8	32.7	34.5
Chandigarh	21.6	37.7	35.8	24.2	20.7	21.5
Dadra & Nagar Haveli	59.0	37.5	57.6	7.4	2.5	6.0
Daman & Diu	33.4	23.9	29.7	26.7	12.5	20.6
Delhi	15.6	14.8	14.9	5.4	8.6	8.4
Lakshadweep	23.8	19.5	21.7	47.6	37.0	42.2
Pondicheri	38.0	21.7	27.3	50.3	29.5	35.6
All India	42.3	22.5	37.3	39.8	21.0	34.5

Source: Same as Table 1.

Table 7
Proximate Determinants of Female Labour Force Participation in India
Dependent Variable: Whether in Labour Force; Logistic Regression Results

Causal Variables	*1993*				*2009*			
	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 1*	*Model 2*	*Model 3*	*Model 4*
Mean Years of Schooling	0.804	0.818	0.798	0.846	0.875	0.904	0.895	0.937
MYS_squared	1.016	1.015	1.017	1.014	1.008	1.006	1.007	1.005
Age	1.146	1.188	1.190	1.146	1.199	1.267	1.271	1.222
Age_squared	0.998	0.998	0.998	0.998	0.998	0.997	0.997	0.998
Marital Status – Single[a]		1.445	1.424		1.000	0.982	0.980	
Scheduled Caste[b]	0.539	0.497	0.509	0.522	0.672	0.686	0.639	0.620
OBC					0.623	0.713	0.689	0.704
Hindu Upper	0.429	0.436	0.438	0.473	0.431	0.540	0.504	0.497
Muslim[c]	0.461	0.485	0.488	0.391	0.440	0.520	0.480	0.409
Urban[d]	0.501	0.475	0.496	0.474	0.403	0.448	0.412	0.349
HH Sex Ratio		1.206	1.198	1.198		1.879	1.883	1.956
HH Dependency Ratio		1.000	1.000	1.000		0.781	0.795	0.768
HH Income		0.822	0.804	0.834		0.474	0.438	0.440
MYS of Husband				0.950				0.959
Husband's Employment				1.163				1.096
State PCNSDP			0.648	0.674			2.130	2.137
State Avg Wage Level			1.002	1.002			1.003	1.004
State Unemployment			0.984	0.980			0.984	0.978
Pseudo R-squared	**0.12**	**0.15**	**0.15**	**0.16**	**0.17**	**0.27**	**0.29**	**0.28**
Correct Classification %	**67.9**	**70.2**	**70.3**	**67.9**	**64.9**	**70.2**	**71.8**	**71.5**

Source: Same as Table 1.

Note: Model 4 only for Currently Married Women; a – Base Group is Currently Married; b – Base Group is Scheduled Tribe; c – Base Group is Hindu; d – Base Group is RURAL;

Table 8
Proximate Determinants of Female Labour Force Participation in India – 1993
Dependent Variable: Whether in Labour Force; Logistic Regression Results

Causal Variables	RURAL				URBAN			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Mean Years of Schooling	0.847	0.858	0.832	0.865	0.799	0.821	0.814	0.854
MYS_squared	1.009	1.010	1.011	1.010	1.016	1.016	1.017	1.017
Age	1.140	1.158	1.164	1.139	1.131	1.244	1.246	1.204
Age_squared	0.998	0.998	0.998	0.998	0.998	0.997	0.997	0.998
Marital Status – Single[a]		1.162	1.150			2.529	2.527	
Scheduled Caste[b]	0.529	0.504	0.515	0.512	0.893	0.749	0.755	0.650
OBC[b]								
Hindu Upper[b]	0.448	0.455	0.454	0.483	0.603	0.529	0.519	0.455
Muslim[c]	0.362	0.364	0.375	0.348	0.631	0.640	0.661	0.587
HH Sex Ratio		1.165	1.166	1.199		1.260	1.255	1.193
HH Dependency Ratio		1.000	1.000	1.000		1.000	1.000	1.000
HH Income		0.820	0.776	0.845		0.673	0.680	0.733
MYS of Husband				0.956				0.917
Husband's Employment				1.216				1.025
State PCNSDP			0.675	0.733			0.662	0.641
State Avg Wage Level			1.002	1.002			1.001	1.001
State Unemployment			0.976	0.975			0.996	0.992
Pseudo R-squared	**0.08**	**0.08**	**0.12**	**0.12**	**0.07**	**0.11**	**0.11**	**0.11**
Correct Classification %	**60.9**	**63.3**	**64.5**	**64.6**	**77.1**	**79.6**	**79.7**	**81.6**

Source: Same as Table 1.

Note: Model 4 is only for Currently Married Women; a – Base Group is Currently Married; b – Base Group is Scheduled Tribe; c – Base Group is Hindu;

Table 9
Proximate Determinants of Female Labour Force Participation in India – 2009
Dependent Variable: Whether in Labour Force; Logistic Regression Results

Causal Variables	RURAL				URBAN			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Mean Years of Schooling	0.917	0.941	0.936	0.899	0.808	0.862	0.846	0.814
MYS_squared	1.003	1.002	1.002	1.002	1.014	1.012	1.013	1.012
Age	1.210	1.264	1.272	1.231	1.154	1.289	1.287	1.215
Age_squared	0.998	0.997	0.997	0.997	0.998	0.997	0.997	0.998
Marital Status – Single[a]		0.820	0.814			1.839	1.838	
Scheduled Caste[b]	0.663	0.676	0.621	0.600	0.785	0.737	0.698	0.658
OBC	0.619	0.695	0.665	0.682	0.702	0.752	0.722	0.682
Hindu Upper	0.428	0.508	0.464	0.461		0.644	0.619	0.593
Muslim[c]	0.407	0.468	0.429	0.374	0.648	0.716	0.706	0.587
HH Sex Ratio		1.976	1.979	2.093		1.637	1.641	1.664
HH Dependency Ratio		0.767	0.781	0.760		0.833	0.844	0.789
HH Income		0.548	0.501	0.509		0.252	0.247	0.226
MYS of Husband				0.965				0.933
Husband's Employment				1.146				0.995
State PCNSDP			2.398	2.378			1.517	1.385
State Avg Wage Level			1.004	1.005			1.001	1.002
State Unemployment			0.977	0.970			1.014	1.010
Pseudo R-squared	**0.100**	**0.211**	**0.228**	**0.239**	**0.075**	**0.244**	**0.242**	**0.249**
Correct Classification %	**61.4**	**67.3**	**68.5**	**68.9**	**76.0**	**81.8**	**85.1**	**85.0**

Source: Same as Table 1.

Note: Same as Table 8;