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Introduction

A lot has been written about the India growth story; relatively little, however, about the ongoing *radical* transformation in the Indian economy. This transformation has much to do with education rather than growth; with women rather than men; with inclusion today and growth tomorrow. Among all the "revolutions" taking place in India today, this is, and will be, the most far reaching. It is not an exaggeration to state that the entire dynamic of man-woman and family relations is changing in India. This has obvious implications for fertility, labour force participation, jobs, and family income in India.

The plan of the paper is as follows. Section 2 describes the data and definitions used in this study. Fertility and labour force participation are affected by broadly the same parameters. Section 3 looks at the great fertility decline in India and concludes that India is set to achieve replacement level fertility levels in the next ten years and perhaps in the next five. The section presents econometric evidence from NSS surveys to justify the forecast. Section 4 documents the trend in labour force participation rates (LFPR) in India since the early 1980s. It is shown that the LFPR for females in urban India has stayed constant at a low level of around 25 percent for the last twenty five years (weekly status definition). The section documents trends for an "adjusted" LFPR – the adjusted ratio is with respect to women working *or* attending school. It is shown that this ratio has shown a marked tendency to increase and in 2004/5 had reached a value of 36 percent i.e. 36 percent of women in urban India were either working or attending school; the comparable number was 31 percent in 1983.

Section 5 explores some of the alleged reasons for the low female participation rates; in particular, whether the large "prevalence" of an unpaid nature of female jobs leads to low participation. The unpaid nature of the jobs is shown to be an artefact of the NSS data which does not collect information on incomes received from self-employment. If more women work on family farms, or in family firms (e.g. shops) then it will artificially appear to be the case that a greater proportion of women are in unpaid jobs. Close examination of the NSS data for twenty five years reveals that there is little difference in the unpaid/paid nature of jobs between men and women.

Section 6 examines wage differences between men and women since 1983. One of the assumed determinants of low LFPR is the belief that women get far lower wages than men for comparable jobs and ability. The NSS data suggests that this is not the case – there is only a 10 to 20 percent residual wage gap unexplained by human capital variables. Section 7 examines the determinants of labour force determination for urban women. Section 8 concludes.

Section 2 – Data and definitions

In the main, this study uses the large sample National Sample Surveys (NSS) for the years 1983, 1993/94, 1999/2000, and 2004/5. There are two surveys that the NSS conducts in each of the large sample years – a consumption and expenditure (CE) survey, and an employment and unemployment (EU) survey. Until 1993, the households surveyed by the CE and EU surveys were identical. In addition to the eight surveys mentioned above, the recently released small sample (half of large sample) CE and EU surveys for 2007/8 are also used. These NSS surveys provide a rich basis for examining labour force participation issues. In

addition, the several surveys published by the National Fertility Health Survey (NFHS) are also examined, as are CSO national accounts state level data.

In a companion paper (Bhalla(2011)) it was noted that there were problems with the NSSO consumer expenditure surveys; in particular, that the survey capture (ratio of average per capita survey expenditures to the corresponding figure yielded by national accounts data) had declined precipitously to less than 50 percent. There are problems with the EU surveys as well. The 1987/88 large sample survey data on wages was so "unclean" that no researcher has used it. Some problems are present with the 2007/8 data as well. For example, average real wages for both females and males show a decline between 8 and 12 percent between 2004/5 and 2007/8. Overall, the data are likely a lot more accurate with respect to binary variables like age, sex, work status, occupation etc. It is these latter data that are most used in this paper, though wage and related data are also used.

Section 3: Demographic Transition and Fertility Rates

Change in future demographic structures are powerfully influenced by changes in fertility rates. The most commonly used measure of fertility rate is the *Total Fertility Rate* (TFR).[1] Total fertility rates have fallen over the years from 3.61 in 1981 to 2.68 in 2006. A total fertility rate of 2.1 children per woman generates broad stability of the population and is referred to as the replacement level of fertility. The fertility projections made by Registrar General of India, estimates a fertility rate of 2.1 for 2026[2]. Our projections, based on Census and NFHS data and assuming a constant rate of decline, forecast a TFR of 2.1 for 2020. By these relatively conservative predictions, which do not take into account a possible acceleration in decline due to greater urbanization and higher education levels, India will achieve the transition to stable rates by 2020 . While total fertility rates are a good indicator of time specific trends, a good measure of time series variations in demography, is what is referred to as *Completed Fertility Rate* (CFR)[3]. In order to trace the CFR of women who now belong to the 45-49 cohort, one needs data dating back to 1976. The first available fertility estimates for India is the 1981 census. Women who fall under the 40-45 age category in 2006 (which is the latest data available) would have been in the 15-19 age category in 1981. The CFR for women born in 1966 (and turned 15 in 1981) is 2.59.

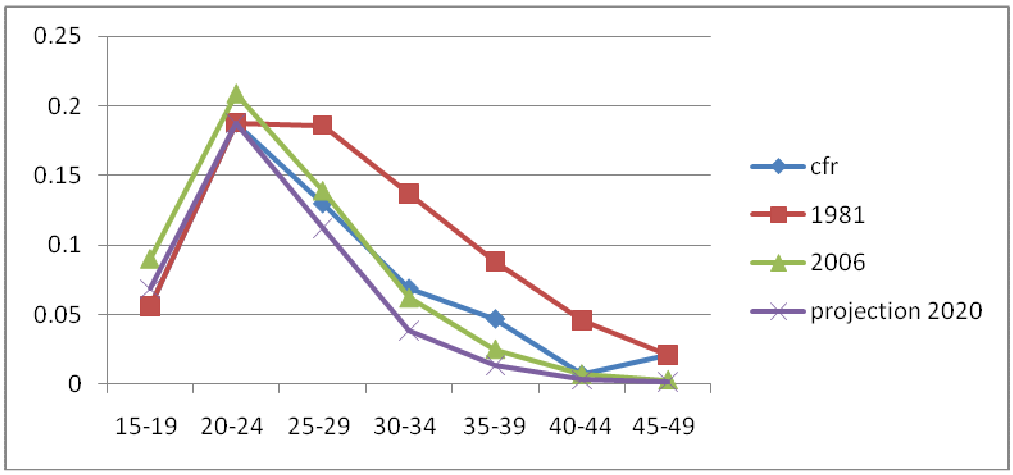
The key take-away from this brief summary of fertility patterns is that very likely the *average* fertility rate for a very diverse India (including the economically backward states of Bihar, UP, Orissa etc.) will be close 2.1 by the end of the decade, if not somewhat sooner around 2015. Demographers like Dyson and Bose have argued that the achievement is likely by the earlier date.

[1] The *Total Fertility Rate* (TFR) in a specific year is the number of children that would be born to each woman if she were to live to the end of her childbearing years and if the likelihood of her giving birth to children at each age was the currently prevailing age-specific fertility rates. It is generally computed by summing up the age-specific fertility rates defined over a five-year interval.

[2] See Dyson (2009), Table 1, pg. 406.

[3] The *Completed Fertility Rate* (CFR) is the number of children produced by a given generation of women once they have come to the end of their childbearing years (which are between 15 and 49 years).

Chart 1: Age pattern of fertility in India, 1981, 2006 and 2020 (projected)



Fertility decline: What do household level data say?

The internationally comparable National Fertility Health Surveys are very useful for documenting and understanding the determinants of fertility. Unfortunately, these surveys have relatively little information on an important aspect – the levels of living of a household (or household income or household consumption). It has a qualitative "standard of living" index, but this index is of limited use in testing for the effects of family income on fertility.

Similar problems occur with data such as the NSS. While relatively complete data are available on consumption, and work, and occupation, the information on fertility is incomplete and indirect. Nevertheless, an initial attempt to study fertility with the NSS data is made below. The "relationship to head" information in the employment and unemployment schedule allows one to identify a "nuclear" family with reasonable accuracy. A nuclear family is defined as one without any siblings of either the head of the household or her spouse, and without any grandchildren. Parents and parents-in-law living in the household can be part of the nuclear family. If this definition is accepted and realistic, then the richness of the household data can be exploited to yield insights into the contours of fertility decline.[4]

Most of the variables constructed are standard in the literature. Family income (in the NSS case, family consumption), and educational levels of the males and females in the nuclear household. The socio--religious aspects are captured through classification variables like scheduled caste (SC), scheduled tribes (ST) and whether the household was Muslim or not. In addition, a new variable – whether the family belongs to the middle class or not – is introduced. Though often conjectured, lack of data and definition has prevented use of this important determinant.

The middle class is defined according to an international standard – the dividing line is that level of PPP income which the developed Western countries use to define *their* middle class. In this sense, this definition (see Bhalla (2007) and Bhalla (2011)) is truly a world

[4] The inclusion of parents or parents in law does strictly exclude a joint family, but the objective is to construct a data base for fertility and labor force participation.

middle class line and one that is as applicable to understanding events in the 18th century as the 21st century. The middle class line is approximately $PPP 10 per capita per day, or Rs. 40000 per capita per year (2010 prices). For a family of five, this amounts to Rs. 200,000 a year, coincidentally a level at which income taxation begins in India.

Table 1 documents fertility levels in India according to three different data sets – Ministry of Health and Human Welfare, MOHHW, NFHS and NSS. The NSS data document the decline till 2007/8 – from a level of 3.1 in the 1983 NSS data to 2.2 in 2007/8. The NSS data are incomplete as noted above; the official MOHHW figures indicate a decline in fertility of 0.5 from 1996 to 2005/6 – approximately 0.3 child per year. The NFHS data suggest a decline of 0.7 child for the 12 year period from 1993/94 to 2005/6 – or 0.6 child per year. The same trend would imply a level of 2.1 children per woman by 2015. The slower trend observed in the official data imply a level of 2.4 in 2015.

Taking all the data together, and noting the gradual convergence taking place between the NFHS and the MOHHW data, it does appear that fertility is set to decline to 2.1 by 2015.

Table 1: Fertility Trends in India

	1983	1993/94	1996	1998/99	1999/00	2000/01	2004/05	2005/06	2007/08
Source: NSS									
All India	3.1	2.6			2.7		2.4		2.2
India: Rural	3.1	2.6			2.8		2.5		2.3
India: Urban	3.1	2.4			2.7		2.2		2.1
Source: MOHFW									
All India			3.4	3.2	3.2	3.1	2.9	2.9	
India: Rural			3.7	3.5	3.5	3.5	3.3	3.2	
India: Urban			2.4	2.4	2.3	2.3	2.1	2.1	
Source: NFHS									
All India		3.4		2.9				2.7	
India: Rural		3.7		3.1				3	
India: Urban		2.7		2.3				2.1	

Note: 1) NFHS - National Family Health Survey
2) MOHFW - Ministry of Health & Family Welfare
3) NSS - National Sample Survey

So what does determine fertility? Some Tobit estimates

Given that fertility is a zero-positive variable, the Tobit method is an obvious method to evaluate the determinants of fertility. Table 2 reports some of the results. First, there is a strong negative relationship between fertility and per capita income, after controlling for the effects of education and socio-economic status. Roughly, a doubling of per capita income from current levels will reduce fertility by 1.2 children; in 1983, such a doubling would have led to a fertility decline of 0.7 children. This relationship is, of course, not unexpected and is one of the oldest stylized facts in the literature. Over the next five years, at the current pace

of per capita income growth of 7 percent, fertility should reduce by about 0.5 child per woman, *ceteris paribus*.

Separate and divergent effects of male and female education on fertility are the other "expected" result. Each additional 10 years of schooling decreases fertility by between 0.2 and 0.4 children.

Table 2: Determinants of fertility, NSS data for nuclear families' Tobit model

	1983	1993/94	1999/00	2004/05	2007/08
Log Per Capita Consumption	-0.66	-1.25	-1.4	-1.13	-1.16
Education (Mean Years)					
Husband's education	0.03	0.06	0.05	0.04	0.04
Wife's education	0.04	-0.03	-0.03	-0.04	-0.02
Socio-Economic Variables					
Middle Class	-0.14	-0.02*	-0.006*	0.006*	-0.18
Scheduled Caste	-0.23	-0.29	-0.08	-0.01*	-0.03*
Scheduled Tribe	-0.16	-0.04*	0.098	0.4	0.34
Muslim	0.43	0.44	0.68	0.67	0.59
Urban	0.24	-0.15	0.11	-0.03	0.08
Constant	7.07	10.3	11.25	9.48	9.42
Predicted No. of Children					
Education of Wife					
None	3.3	2.8	3	2.8	2.5
4 - 7 Years	3.1	2.6	2.8	2.4	2.2
≥ 7 Years	2.4	1.9	1.7	1.6	1.3
All	3.2	2.7	2.9	2.5	2.2

Note: 1) The asterisk (*****) indicates **statistical insignificance** of the coefficients of the variables

Socio-economic effects:

Being a Muslim adds to fertility, *ceteris paribus*, and the magnitude of the effect has stayed broadly constant over time i.e. being a Muslim adds about 0.5 children to overall fertility. The results pertaining to being an ST are intriguing and deserve further research; for them, the sign in the 1980s was negative, but in 2004/5 was positive. Being an SC has an insignificant effect on fertility today, while having a negative effect in the 1980s and 1990s.

Middle class: Being a member of the middle class is sometimes significant and negative, and sometimes not. (Note that middle class is correlated with income at the individual level – state level regressions confirm the importance of the middle class in negatively affecting fertility). In 2008, about 0.2 less children are born to middle class families, *ceteris paribus*.[5]

[5] In 1983, at an aggregate level, less than 10 percent of the population was middle class; in the 2000s, the magnitude is well above 30 percent.

The NSS data analysis is strongly indicative of fertility levels dropping to replacement levels in the next five years – a result consistent with the broad macro analysis documented in Chart 1. According to average fertility levels by education levels (NFHS data, Table 6.1, Rao et. al. 2010) the highest fertility levels are for illiterate women – 4.03 in 1996 and 3.55 in 2005/6. Women with 5-7 years of education have fertility levels of at least 1 child lower. The NSS data suggests that illiterate women are now less than half of the population (45 percent) compared to 72 percent in 1983. However, among the women who will determine future fertility, those between the ages of 12 and 30, the fraction of illiterate women was 60 % in 1983 and 23 percent in 2007/8. So on grounds of illiteracy alone (and movement into at least secondary education) fertility should decline by about 0.5 children over the next decade.

Thus, according to various methods, one obtains the forecast of replacement level fertility levels in the next five years. Dyson (2009) reports various projections of fertility. He reports the Registrar General of India's forecast of 2.1 level by 2026; his own "middle" forecast is for a TFR level of 2.13 for the years 2016-21. The derived NSS forecast is closer to Dyson's.

If the fertility decline does occur on this "schedule", then it is almost inevitable that the labour force participation rate (LFPR) of women is set to radically increase from its present low levels. What the pattern of LFPR is, and its determinants, and its future evolution, is the subject of investigation in the rest of this paper.

Section 4: Patterns in labour force growth

While fertility has been declining and approaching international norms for India's level of development, labour force participation (LFPR) of females in India lags considerably behind the "norm". It is the urban component that is very low, the rural LFPR being high because of poverty and the necessity of work. The determinants of LFPR, primarily urban LFPR, are explored in this section.

There are three (and more) definitions of labour force in India. The preponderance of definitions for work status emanates from the structure of the economy in the 1950s and 1960s when it was heavily agricultural. The "original" definition of work status was divided into two components – principal and secondary. Starting in the late seventies, the NSSO started collecting data on the work status on a daily basis, and within each day, on a half-daily basis.

The convention in most developing countries in the world is to measure labour force related variables on the basis of weekly status e.g. "did you work for at least one hour in the preceding week". The occupation, industry and wage in the previous week are then recorded. This is the definition followed in this paper – except that the minimum duration is not one hour but half a day. But see Bhalla-Das (2005) for a detailed examination of the trends according to the three definitions.

Table 3(a) documents the trend in labour force participation for men and women, and urban and rural. The following facts are noteworthy. First, the large difference in the LFPR of women residing in the rural and urban areas. In rural areas the LFPR has hovered around 45 percent (but note the "data error" print of only 38 percent for 2007/8); the outlier nature of these data for LFPR needs to be investigated further). The international norm for LFPR for

women is around 60 percent, and so even rural India is some distance away from "fitting" the worldwide pattern.

Urban India is lower, much lower, and with a labor force pattern not very dissimilar from that prevailing in most Islamic countries. And the rate has not changed much for the last 25 years with an average rate around 23 percent or a level a little more than half the level prevailing in the rural areas.

Table 3a: Percent of Population in the Labour-Force (in % , ages 15-59)*

	1983	1993/94	1999/00	2004/05	2007/08
All India	68.3	71.2	62.8	62.5	58.7
Females	40	46.5	38.9	38.6	32*
Males	90.5	90.2	85.6	85.5	84.6
Rural India	70.5	75.5	66.3	65.9	61.7
Females	45.1	53.1	45.2	44.7	37.6
Males	91.1	92	87	86.9	85.6
Urban India	61.8	54.3	54.2	55	52.2
Females	23	23	22.5	24.3	19.7
Males	88.6	82.4	82.4	82.7	82.5

Note: 1) Labour force refers to the 15-59 age group that reports that they are working, or looking for work, according to the 'weekly status' definition of employment.
2) Surprising drop to 32 percent - maybe considered an outlier

Table 3(b) defines labour force a bit differently. In most developed economies, the share of students in the working age group stays relatively constant. In developing countries, and those involved in a transition, more education is the alternative to going out to work at the age of 15 or 16 or even 22. Hence, what Table 3(b) presents is an adjusted definition of whether one is in the labour force or not. The numerator of a labour force participation ratio is the number of people working or unemployed; the denominator is the number of people in the relevant age group 15 to 59. The adjusted definition changes the numerator to include those attending school.

Table 3b: Percent of Population in the Adjusted* Labour-Force

	1983	1993/94	1999/00	2004/05	2007/08
All India	72.9	77	70.9	71.6	68.9
Females	43.1	50.9	45	45.9	40.6*
Males	96.3	97.1	95.6	96.4	96.4
Rural India	74	79.7	72.7	73.5	70.5
Females	46.8	55.9	49.5	50.4	44.4
Males	96.1	97.3	95.6	96.4	96.3
Urban India	69.8	66.4	66.3	67.4	65.6
Females	30.5	33.3	33.4	35.5	32.3
Males	96.9	96.1	95.6	96.3	96.5

Note: 1) Adjusted refers to the labour force that is either working or in education (15-59 age group).
2) Surprising drop to 40.7 - maybe considered an outlier

The results underline the radical change taking place in the education/work arena. In 1983, only 47 percent of women in rural India were in the adjusted labour force, compared to 45 percent in the "unadjusted" labour force. In 2004/5, the comparable numbers are 50 and 45 percent. Urban India shows a larger change – the adjusted number of women in the labour force is 36 percent in 2004/5 compared to the unadjusted 24 percent level. Given the trends in fertility documented in the previous section, it is likely that this number will approach the international "norm" of 50 to 60 percent in the next 10 to 15 years.

Table 4: Average years of education and still in school

	1983	1993/94	1999/00	2004/05	2007/08
Rural Females					
Years of Education	1.3	2	2.5	3.3	3.8
% in School (age 15-24)	5.6	8.9	13.6	18.1	22.6
Rural Males					
Years of Education	3.4	4.6	4.7	5.7	6.1
% in School (age 15-24)	17.2	16.9	26	29.3	33.4
Urban Females					
Years of Education	4.7	6.1	6	7.3	7.6
% in School (age 15-24)	22.5	30.6	33.2	35.6	40.1
Urban Males					
Years of Education	7.2	8.2	7.8	9	9.2
% in School (age 15-24)	28.5	39.2	38.4	40.3	43

Note: Years of Education is the mean of the population ages 15-59 years

Table 4 shows the relevant data pertaining to education. In 1983, the average education level of rural women was only 1.3 years; in 2007/8, this had tripled to 3.8 years. Only 5.6 percent of young rural girls in the age-group 15 to 24 were going to school in 1983; in 2007/8, this number had quadrupled to nearly a quarter. Urban women show the same transformation, though the rate of change is less (they start from a higher "base"). The female education ratio relative to men has also improved markedly; rural females, for example, had only 38 percent of male education in 1983; this fraction had increased to 62 percent in 2007/8. And young urban females had attained an average education level of 82 percent of that of men in 2007/8.

Given the accelerated pace of female education (the drop-out rates for secondary school levels in 2009/10 are broadly the same for both boys and girls), it is expected that after a low steady level of LFPR, the coming decade should see this level markedly accelerate. Econometric evidence is provided in the next few sections.

Section 5: Paid and unpaid work

The data on female education suggest that the LFPR "should be" a lot higher in India than it is. Not only has the LFPR for women been low, and constant, but it is also possible that the jobs that the women are obtaining are marginal jobs and or unpaid family jobs. This section explores an alternate explanation for low LFPR – the possibility that women are unable to obtain paid jobs. Table 5 is an accounting exercise which is meant to simply map the nature of work, and education, of the Indian work force.

The percent of the female work force that works as unpaid labour is a matter of some debate. The NSSO data do not collect any wage information for the self-employed – whether cultivators in rural areas, or doctors in the urban areas. The workers for which no wage or income information is gathered include the following, with numbers referring to the weekly status code in the NSS data: self-employed (own account worker) – 11; employer – 12; and unpaid family worker – 21. In the case of a family farm, or firm, it is the case that more often than not, the male gets classified as an own account worker and the female as "unpaid family worker". The paid categories consist of the following: worked as regular salaried/wage employee – 31; worked as a casual wage labourer in public works – 41 and 42; casual worker in non-public works – 51. Attendance at an educational institution is classified as status category – 91.

Table 5a aggregates into three categories with the first as unpaid (covering the first three codes above); the second category as paid and the third category as education. With this classification, the following results emerge:

The first point to note that in 1983, for example, almost half the rural female work force was working as "unpaid" labour, and that this number had declined to 43 percent in 2007/8. However, it is *not* the case that women work as unpaid labour and men as paid. *The fraction of the work force that is "unpaid" is nearly the same for women and men*, with the fraction marginally higher for women (54 percent unpaid women vs. 46 percent unpaid men in 2004/5).

Second, almost an equal amount of women and men were attending educational institutions, 7.3 per cent women vs. 6.2 per cent men, both in 1983, 11.5 and 9.1, in and 2004/5.

Table 5a: Structure of labour force in India – unpaid, paid and in education

	1983	1993/94	1999/00	2004/05	2007/08
All India Females					
% Unpaid	48.6	51.1	47.8	54.2	42.6
% Paid	44.1	39.5	40.8	34.3	35.7
% in Education	7.3	9.4	11.4	11.5	21.7
All India Males					
% Unpaid	47.2	44.7	42.7	46.2	43.3
% Paid	46.6	47.7	48.4	44.7	44
% in Education	6.2	7.6	8.9	9.1	12.7
Rural Females					
% Unpaid	52.7	56.3	52.3	58.5	48.7
% Paid	43.6	37.8	40.7	33.8	35.6
% in Education	3.7	5.9	7	7.7	15.7
Rural Males					
% Unpaid	53	49.9	47.2	49.9	47.5
% Paid	41.7	42.6	45.3	42.5	41
% in Education	5.3	7.5	7.5	7.6	11.5
Urban Females					
% Unpaid	27.1	34.6	29	36.5	23.6
% Paid	47.1	44.7	41.3	36.4	35.9
% in Education	25.8	20.7	29.7	27.1	40.5
Urban Males					
% Unpaid	30.6	35.5	31.8	37	34.7
% Paid	60.5	56.7	55.8	50.3	50.2
% in Education	8.9	7.8	12.4	12.7	15.1

Notes: The three categories – unpaid, paid and in education – account for the distribution of men and women aged 15-59 years.

Only three years later, in 2007/8, the fraction of women attending school had increased to 21.7 percent. This seems to be too high a jump for the data to be accurate; however, only when data are released for subsequent years, will we be able to ascertain the outlier nature of 2007/8 data with any accuracy.

These results suggest that explanations for low LFPR rates have to lie elsewhere i.e. it is unlikely to be the unpaid/paid nature of the job, that explains labor force participation of women, in either rural or urban areas of India.

Table 5b: Labour Force Breakdowns for *Rural* Females

	1983	1993/94	1999/00	2004/05	2007/08
% of Labour-force*					
in Agriculture	85.5	83.4	85.3	80.9	80.2
in Manufacturing	7.6	8.5	9	11.5	10.9
in Construction & Services	6.9	8.2	5.7	7.6	8.9
% of Paid Workers					
in Agriculture	84.9	82	85.8	72.1	77.9
in Manufacturing	7.4	8.5	7.9	13.6	10.2
in Construction & Services	7.7	9.5	6.3	14.3	11.9

Note: 1) Labour-Force refers to the 15-59 age group that reports that they are working, or looking for work, according to the 'weekly status' definition of employment.

Table 5c: Labour Force Breakdowns for *Urban* Females

	1983	1993/94	1999/00	2004/05	2007/08
% of Labour-force*					
in Agriculture	21.2	17.5	14.6	15.2	11.5
In Manufacturing	29.6	24.2	28	31.6	30.3
in Construction & Services	49.2	58.3	57.4	53.2	58.2
% of Paid Workers					
in Agriculture	16.2	15	12.8	6.9	10.3
in Manufacturing	25.9	19.2	25.1	21.2	24.9
in Construction & Services	57.9	65.8	62.2	71.9	64.8

Note: 1) Labour-Force refers to the 15-59 age group that reports that they are working, or looking for work, according to the 'weekly status' definition of employment.

Section 6: Wages and sex discrimination in the Indian workplace

Another issue concerning female LFPR in India stems from the fact that women receive substantially lower wages than men. This "discrimination", it is hypothesized, can lead to the lower participation rates.

However, according to NSS data for paid work, the unadjusted wage ratio (average women wages to men wages) has *increased* from a low of 45 percent in 1983 to about 58 percent in 2007/8. In developed economies, such a "raw" ratio is closer to 75 percent; on this unadjusted basis, the data are suggestive of sex-discrimination in wages, and discrimination of a fairly large magnitude – male wages nearly double that of female wages in the last decade. The data are for daily wages based on weekly employment and weekly wages.

Two possible reasons for this disparity in wages are discrimination per se, and occupational choice by women into lower paying jobs e.g. clerical versus production. In most of the comparator countries, female education is approximately the same as men, and often is higher. In India, however, gender discrimination occurs even before a woman enters into the labour force. It happens at birth when sex-selection technology is employed to ensure fewer female births.[6] This discrimination then continues into the education space – girls obtain fewer years of schooling than boys, and/or lower quality education. And since education is an important determinant of wages, women obtain less income than men, a third factor. So unlike a comparator country, the sex wage gap in India is caused at least in part by less education of women. How much is a matter of empirical determination. Finally, there is a fourth factor at work – women typically have less work experience than men and therefore obtain lower wages.

That women likely have less work experience than men was extensively documented by O'Neill (2002). She showed that if one accounted for the loss of experience due to child rearing, then, given their human capital background, women obtained a similar wage as men in the US – i.e. no evidence of wage-based sex discrimination. This section applies a similar test to Indian data.

A traditional Becker-Mincer wage equation has the following three human capital variables: education, proxied by years of schooling, work experience (proxied by age minus the years of schooling minus six years) and the square of experience. It is the experience definition which makes the estimation less than precise. Household surveys typically do not go into the life history of an individual so one does not know how many years of work each individual has. With men, the approximation of taking the age and then deducing the work experience involves little error; for a woman who never marries, or does not have any children, the same approximation works. But for women with children, there is an error introduced with the assumption that for the same age and education, women have less work experience than comparable men. Women withdraw from the labour force for child-bearing; the expected withdrawal is 2 years per child. If an average woman had three children, then for the same age (say 40), she would have six years less experience than her male counterpart of the same age and level of education.

[6] See the various papers by Kaur on this subject.

A human capital wage model is estimated and results reported in Table 6 for urban men and women[7].

Table 6: Human capital equations using NSS data, urban India, 1983 to 2007/8

	Constant	b1	b2	b3* (*1000)	Number of Obs.	R^2
Urban Females						
1983	2.12	0.14	0.05	-0.63	4865	0.52
1993/94	1.93	0.14	0.05	-0.67	6838	0.42
1999/00	2.23	0.14	0.05	-0.65	8071	0.49
2004/05	2.03	0.14	0.06	-0.72	6747	0.49
2007/08	2.28	0.15	0.04	-0.35	6527	0.53
Urban Males						
1983	2.67	0.1	0.05	-0.68	29168	0.46
1993/94	2.54	0.1	0.05	-0.65	28676	0.3
1999/00	2.72	0.11	0.06	-0.73	34030	0.47
2004/05	2.62	0.11	0.06	-0.68	25337	0.49
2007/08	2.8	0.12	0.04	-0.41	27668	0.48

Notes: 1) The above regression results are for the simple human capital model where, Y = a + b1(Education) + b2(Experience) + b3(Experience^2). Experience is defined as Age - Education – 6 years. Y is the logarithm of the daily wage.

2)b1 = Coefficient of Mean Years of Education

3) b2 = Coefficient of Mean Years of Experience

4) b3 = Coefficient of Mean years of Experience Squared

The increased percentage in wage for each extra year of female education is around 14 percent; for men it is substantially *lower* at 11 percent. This coefficient is stable across the years. The coefficient on experience is stable and similar for males and females. And over the years experience is beginning to count for more; for both men and women the recent (negative) coefficients on the squared experience term are about half to two thirds the level obtained in the 1990s and 1980s.

In addition to the basic variables, models were also estimated with some basic socio-economic background variables in the equation i.e. whether one is Muslim, or SC/ST. Somewhat surprisingly, being an SC/ST adds about 10 percent to an urban woman's wage, *ceteris paribus*.[8] Being a Muslim reduced the urban woman's wage by 19 percent in 1983, but in 2007/8 the magnitude was down to minus 3 percent and the coefficient was not statistically significant.

[7] Identical regressions were run with a two-stage (Heckman) formula with marriage, number of children below the age of 6, education and experience as the control variables. Near identical results were obtained, so only the OLS results are reported.

[8] Many SC women are employed in urban sanitation services. Women from other castes do not do this work. ST women in urban areas are largely employed in the domestic work sector. North-eastern tribal women are employed in the hospitality industry and also in beauty parlours and as housemaids. Most rural Rajasthani migrant women work in construction in urban areas, especially in urban areas. They will not work in the domestic maid or sanitation areas.

The equations reported above can be used to deduce the impact of loss of experience on a woman's wage for different years of experience. Less experience translates into lower wages for the woman even though she is exactly the same age as a man, with the same educational qualifications, and who entered the job market at the same time as a man. Suggestive results are as follows. If a woman with 30 years of experience and six years of education has one child and withdraws from the labour force for 2 years, then her wages are assumed to reflect a job experience of 12 years whereas in reality her job experience will be for 10 years. These two years of less experience will cause her wage to be 6.3 percent less. For a 35 year old woman and 2 children, there is 4 years of less experience and the wage loss is 10.4 percent. For a 40 year old woman and 3 children and six years of loss of experience, the wage loss is 11.9 percent.[9]

Table 7 (next page) reports some basic results for various classifications of jobs and wages. Three different "industries" are identified: agriculture, manufacturing and services (including construction). The wages and related education attainment variables are for the sub-set of individuals in each industry reporting wages received; individuals reporting self employment and therefore no data on wages (about half the sample) are obviously excluded from the calculations pertaining to education and wages. The labour force participation data are reproduced from Table 3.

On an aggregate basis (all industries) female wages were 45 percent of male wages in 1983 and 55 percent in 2007/8. This raw wage comparison is typically around 75 percent for developed economies so at "face value", there is considerable wage discrimination in India even in 2007/8. Intriguingly, the wage gap decreased by 10 percentage points between 1983 and 2007/8. Is this because of less sex based discrimination today? The education gap has decreased by 0.3 years, and given a 14 percent return on education, this means about 4 percent higher wage in 2007/8 than 1983. If one adds to this the fertility decline of 1 child (and about 7 percent less wage) then the 2007/8 data, while reporting higher relative wages, is consistent with no change in the pattern or magnitude of sex-based wage discrimination.

[9] If the withdrawal from the labor force is one year per child rather than the two years assumed, then the wage loss is approximately half of that reported.

Table 7a: LFPRs for All India Females & corresponding Female: Male Education and Wage Differentials

	1983	1993/94	1999/00	2004/05	2007/08
% Labour-force*	40	46.5	38.9	38.6	32*
% Adjusted* Labour-force	43.1	50.9	45	45.9	40.6*
Overall					
Years of Education - Male	4.4	5.3	5.6	6.8	7.1
Male Wages	61.0	60.9	88.2	100.5	98.6
Years of Education - Female	2.0	2.9	3.4	4.5	5.0
Female Wages	27.6	30.7	49.6	58.7	54.6
Female Education Gap (Years)	2.4	2.4	2.2	2.3	2.1
Female: Male (Wage Ratio)	45.2	50.4	56.2	58.4	55.4
Agriculture					
Years of Education - Male	2.4	3.4	3.7	4.4	5.1
Male Wages	33.9	33.4	47.9	48.8	46.9
Years of Education - Female	0.5	0.9	1.4	1.9	2.3
Female Wages	20.4	22.4	32.8	33.5	31.1
Female Education Gap (Years)	1.9	2.5	2.3	2.5	2.8
Female: Male (Wage Ratio)	60.2	67.1	68.5	68.6	66.3
Manufacturing					
Years of Education - Male	5.2	5.8	5.5	6.1	6.6
Male Wages	81.9	79.0	93.7	94.9	93.9
Years of Education - Female	1.9	2.6	2.8	3.6	4.1
Female Wages	26.9	32.7	48.0	48.0	51.8
Female Education Gap (Years)	3.2	3.2	2.7	2.5	2.5
Female: Male (Wage Ratio)	32.8	41.4	51.2	50.6	55.2
Construction & Services					
Years of Education - Male	6.6	6.9	7.6	8.5	9.1
Male Wages	89.3	93.6	142.3	147.3	166.3
Years of Education - Female	4.5	5.2	5.8	7.3	8.3
Female Wages	61.9	68.5	121.1	106.2	119.6
Female Education Gap (Years)	2.2	1.7	1.8	1.2	0.8
Female: Male (Wage Ratio)	69.3	73.2	85.1	72.1	71.9

Note: 1) Labour-Force refers to the 15-59 age group that reports that they are working, or looking for work, according to the 'weekly status' definition of employment.

2) All wage data are for real per day wages, with the rural price index of 2004/5 as the deflator.

3) Education Gap = Mean Male Years of Education - Mean Female Years of Education

Table 7b: LFPRs for Rural Females & corresponding Female: Male Education and Wage Differentials

	1983	1993/94	1999/00	2004/05	2007/08
% Labour-force*	45.1	53.1	45.2	44.7	37.6
% Adjusted* Labour-force	46.8	55.9	49.5	50.4	44.4
Overall					
Years of Education - Male	2.9	3.7	3.8	4.86	5.2
Male Wages	45.2	50.7	68.1	78.3	71.3
Years of Education - Female	0.7	1.3	1.4	2.45	2.7
Female Wages	22.5	25.9	39.0	42.8	38.9
Female Education Gap (Years)	2.1	2.4	2.4	2.4	2.5
Female: Male (Wage Ratio)	49.9	51.0	57.2	54.7	54.6
Agriculture					
Years of Education - Male	1.6	2.1	2.6	2.9	3.8
Male Wages	33.7	33.2	47.4	48.6	46.7
Years of Education - Female	0.4	0.7	1.0	1.3	1.8
Female Wages	20.4	22.5	32.8	33.6	31.3
Female Education Gap (Years)	1.2	1.4	1.6	1.6	2.0
Female: Male (Wage Ratio)	60.4	67.6	69.3	69.1	67.1
Manufacturing					
Years of Education - Male	4.1	5.0	4.5	4.9	5.5
Male Wages	61.5	66.9	77.1	82.8	77.0
Years of Education - Female	1.5	2.3	2.2	2.3	2.8
Female Wages	21.8	29.3	41.1	43.9	45.7
Female Education Gap (Years)	2.6	2.7	2.3	2.6	2.7
Female: Male (Wage Ratio)	35.4	43.8	53.3	53.0	59.3
Construction & Services					
Years of Education - Male	6.4	7.1	7.8	8.8	9.1
Male Wages	76.0	88.8	136.9	133.7	141.7
Years of Education - Female	3.9	5.6	6.5	8.3	8.6
Female Wages	45.4	57.1	120.4	87.8	89.3
Female Education Gap (Years)	2.5	1.4	1.2	0.5	0.6
Female: Male (Wage Ratio)	59.7	64.2	88.0	65.7	63.0

Note: 1) Labour-Force refers to the 15-59 age group that reports that they are working, or looking for work, according to the 'weekly status' definition of employment.

2) All wage data are for real per day wages, with the rural price index of 2004/5 as the deflator.

3) Education Gap = Mean Male Years of Education - Mean Female Years of Education

Table 7c: LFPRs for Urban Females & corresponding Female: Male Education and Wage Differentials

	1983	1993/94	1999/00	2004/05	2007/08
% Labour-force*	23	23	22.5	24.3	19.7
% Adjusted* Labour-force	30.5	33.3	33.4	35.5	32.3
Overall					
Years of Education – Male	7.3	7.8	7.7	8.9	9.2
Male Wages	93.6	93.5	127.9	133.1	145.5
Years of Education – Female	4.9	5.7	5.8	7.8	7.9
Female Wages	52.6	58.6	94.0	96.2	103.4
Female Education Gap (Years)	2.4	2.1	1.9	1.2	1.3
Female: Male (Wage Ratio)	56.2	62.7	73.5	72.3	71.1
Agriculture					
Years of Education – Male	2.4	3.1	3.4	3.6	4.7
Male Wages	41.2	37.7	63.9	54.5	52.1
Years of Education – Female	0.7	1.1	0.8	1.8	2.0
Female Wages	20.0	20.0	32.9	30.1	24.9
Female Education Gap (Years)	1.7	1.9	2.6	1.8	2.7
Female: Male (Wage Ratio)	48.6	53.1	51.4	55.2	47.7
Manufacturing					
Years of Education – Male	6.4	7.7	6.6	7.6	7.6
Male Wages	93.3	92.5	109.4	106.8	111.0
Years of Education – Female	3.1	4.6	3.8	5.3	5.4
Female Wages	34.0	41.3	57.1	54.3	59.2
Female Education Gap (Years)	3.4	3.1	2.8	2.2	2.2
Female: Male (Wage Ratio)	36.5	44.7	52.2	50.8	53.3
Construction & Services					
Years of Education – Male	8.2	8.3	8.7	10.2	10.7
Male Wages	99.0	99.6	145.6	155.8	180.5
Years of Education – Female	7.1	7.5	7.8	9.0	9.9
Female Wages	72.7	78.0	121.4	114.9	136.2
Female Education Gap (Years)	1.1	0.8	1.0	1.2	0.8
Female: Male (Wage Ratio)	73.4	78.3	83.4	73.7	75.5

Note: 1) Labour-Force refers to the 15-59 age group that reports that they are working, or looking for work, according to the 'weekly status' definition of employment.
2) All wage data are for real per day wages, with the rural price index of 2004/5 as the deflator.

3) Education Gap = Mean Male Years of Education - Mean Female Years of Education

It remains to determine whether human capital considerations explain the level of the wage gap in different years. An illustrative calculation for all workers in 2004/5 (similar calculations can be done for each industry and each year) yields the following results. In this year, the education gap between males and females is 2.3 years. So on a base of Rs. 100; a woman would receive 32.2 percent (14 percent for each extra year of education) more for the same education level as the male, or Rs. 132.2. Her average fertility in 2004/5 would be approximately 2.7 years, or, on average, a withdrawal for 5.4 years from the workplace. This less experience would have caused her wage to be about 12 percent less. Adding this 12 percent to Rs. 132.2 yields Rs. 148.1 as her "adjusted" wage index. The table reports that an average woman's wage was Rs. 58.7 in 2007/8; inflating this by 1.48 yields Rs. 86.9 as her adjusted wage. A comparable male received Rs. 100.5 in the same year, suggesting a 13 percent level of average discrimination in female wages.

The raw unadjusted data suggested a discrimination level of 41 percentage points in 2004/5; simple adjustment for human capital variables reduces this discrimination level to only 13 percentage points. Similar calculations can be done for different years – the results are broadly the same. Sex-based wage discrimination is likely present in India, but its magnitude is both small and considerably less than popularly imagined.

Section 7: Some assumed determinants of labour force participation

The mystery behind the low LFPR for women remains. Fertility has declined rapidly, and is declining further. Incomes have increased with the fast pace of growth in the last decade. And jobs are no longer scarce – indeed, for educated labour, there is apparent scarcity. And wage discrimination in the work place is small and therefore not likely to be a deterrent. So why aren't there more women entering the labour force?

But they are. As discussed in Section 3, about 10 percentage points of the average labour force participation is in terms of women not working and not working at home but going to school. This suggests that the future should witness a rapid increase in the LFPR. This section examines the "standard" determinants of LFPR using individual level data. Results for only urban LFPR are reported.

One of the stylized facts about women's LFPR is that there is a U curve relationship between LFPR and level of development. This pattern arises because at poor, low levels of income, survival instincts dictate that the women work. As income increases, the women feel less pressure to work and therefore withdraw from the workplace. In India this is associated with women's labour force withdrawal for family status purposes. In the context of a culture that believed in the seclusion of upper caste and class women to maintain high family status, many social anthropologists have noted that as a family's income improves, it tends to withdraw its women from labour. M.N. Srinivas referred to such withdrawal of women from labour as an upward mobility strategy or Sanskritization. Women tend to re-enter the labour force when the new labour they find is commensurate with their family status. Service jobs (teaching, nursing, government services such as anganwadi or village health workers, clerical jobs in urban areas are preferred once manual labour has been abjured. Eventually, after income levels reach a certain high level, women re-enter the work force, thus completing the U.[10]

[10] See Mammen-Paxson (2000) for an excellent discussion of the issues related to women's labour force participation.

The U curve, and other aspects, are explored below on the basis of NSS data for urban females for the years 1983, 1993/94, 1999/00, 2004/5 and 2007/8. As emphasized throughout this paper, it is examination of trends in urban India that can yield insights about LFPR.

The model of LFPR has the standard determinants – classification variables for different socio-cultural groups (SC, ST and Muslims), the mean education levels of the head of the household and the spouse, real per capita consumption of the family, and whether the household is poor (Tendulkar poverty line) or middle class. Since the dependent variable, labour force participation is a classification variable (0 or 1), the models have been estimated by the probit method, and the coefficients reported are for the marginal effects along with the associated z-statistics.

NSS individual level data – LFPR for urban women

Results are reported for each of the five NSS survey years, 1983 to 2007/8 in Table 8 (page-21). The major findings are as follows:

Inverted U-shaped relationship between labour force participation and per capita income (consumption):

As found by other studies as well (e.g. Rao et. al. (2010)) the U shaped pattern is *not* observed with Indian data. Indeed, the data are strongly suggestive of a positive effect of family income on LFPR; there are indications of an inverted U curve in later years, though the inflexion level is at very high levels of per capita consumption. This means that for all intents and purposes, the relationship between labor force participation and income is monotonic, and positive.

Education:

As expected, education of females has a strong positive effect on LFPR. The coefficients for the human capital variables stay broadly constant over time with each 10 years of education yielding an extra 6.5 percentage point increase in the LFPR. Education of the male head of the household has an opposite and a stronger negative effect. The net effect is negative, a finding which does not change over time.

Socio-Economic background:

If a woman was an SC or ST, the chance of her working was about 8 percent higher in 1983 and 3 percent higher in 2007/8.[11] Separate estimates for SC and ST suggest that the ST's have a higher than average probability of working, though this effect is declining over time. In 1983, they had a 10 percent chance of working; today, that effect is down to 4 percent.

Muslim women have the lowest probability of working. However, there is an increasing trend in participation; in 1983 urban Muslim women had a 10 percent lower chance of working; this has almost halved to a 6 percent lower chance in 2007/8.[12]

[11] As mentioned earlier, SC/ST women have always had higher labour force participation rates. Various factors account for this. The correlation between low caste and poverty was high in the past. Hence women of these groups have always laboured. Post independence, the SCs were able to avail of government jobs in sanitation in towns and cities. Women benefitted from this secure form of employment. However, this advantage may now be reducing with a lessening of the stigma associated with sanitation work. More recently, ST women from all parts of the country are joining the urban labour force in the domestic work sector and in the hospital industry.

[12] Seclusion norms were earlier much stronger among the Muslim community and affected their labour force participation. As education improves among Muslim women, some of these barriers are falling away. See Kaur 2010.

Poverty and Middle Class:

The definition of middle class is for a per capita consumption level that is almost 8 times the Tendulkar line. In the in-between zone – greater than the Tendulkar line and less than the international middle class line – a person is not poor by Indian standards but poor by international standards. The approximate magnitudes of the three different classifications in India in 2007/8 are as following: 30 percent poor, 30 percent not-poor by Indian standards but poor by international standards, and 40 percent middle class.

The assumption that the poor need to work is verified by the data. In 1983, being poor induced a 7 percent greater chance to work for urban women; this effect was reduced to 4 percent in 2004 and almost zero percent in 2007/8.

By Indian standards, being middle class in 2007/8 meant that one belonged to the upper 40 percent of the population; in 1983, this meant belonging to the upper 5 percent. The recent effect of the middle class is negative; each middle class urban female has a 4 percentage point less chance of working.

Table 8: Determinants of labour force participation in India – NSS data for nuclear families

	1983	1993/94	1999/00	2004/05	2007/08
Consumption (*10^-5)	3.8 (2.5)	4.7 (9.3)	8.5 (10.4)	7.7 (8.7)	5.4 (10.3)
Consumption Squared (*10^-10)	9.6* (0.4)	-3.8 (-7.8)	-5.3 (-4.4)	-5 (-3.7)	-3 (-5.1)
Education (Mean Years)					
Male Household Head	-0.013 (-21.9)	-0.009 (-20.8)	-0.01 (-22.8)	-0.01 (-21.9)	-0.01 (-22.9)
Female Worker	0.005 (8.8)	0.003 (6.31)	0.002 (3.7)	0.003 (6.8)	0.006 (13.3)
Middle Class & Poverty					
Middle Class	0.04 (4.1)	0.01* (1.8)	-0.02 (-2.8)	-0.05 (-7.7)	-0.04 (-7)
Poor	0.072 (12)	0.074 (15.7)	0.06 (12.6)	0.043 (8.5)	0.0004 (6.8)
Socio-Cultural Background					
Scheduled Caste	0.074 (10.5)	0.042 (7.2)	0.026 (5)	0.015 (2.7)	0.017 (3.4)
Scheduled Tribe	0.1 (8)	0.062 (5.7)	0.062 (6.8)	0.043 (4.1)	0.042 (4.5)
Muslim	-0.097 (-14.6)	-0.078 (-13.1)	-0.092 (-17.6)	-0.09 (-15.9)	-0.057 (-11.3)

Note: 1) A coefficient with the asterisk (*), shows that it is **statistically insignificant** at the 5% level of significance.

Section 8: Conclusions

This paper has explored various aspects of labour force determination in India. Some of the more important findings are as follows:

1) India has one of the lowest labour force participation rates for women in the world; more accurately, one of the lowest rates for urban women. In rural India, poverty considerations lead to greater LFPR, a finding confirmed by individual level data analysis of the NSS data for the last 25 years.

2) However, the stated LFPR rates (in the mid twenties for urban women compared to an international developed country norm of about 60) do not reveal the "true" nature of the transformation occurring in the Indian economy. The LFPR rates in India, unlike for developed economies, are for the age group 15-59 years; as such, a large portion of the school going population, ages 15 to 24, is included in the eligible work force.

If adjustment is made to the definition of being in the labour force (i.e. going to school or working) then there is a large increase in the estimated LFPR – it increases by about 11 percentage points to 36 percent in urban India.

3) Income growth (proxied by growth in real per capita consumption) has a persistently positive effect on female participation. There is little evidence of a U shaped relationship between LFPR and income in urban India. Indeed, the finding is of an inverted U, and the inflexion point is observed at very high levels of income (beyond the 95^{th} percentile, if not later).

4) As found in various studies, female education has a positive effect on LFPR. Each year of education adds about 0.6 percentage points to the participation rate.

5) However, there is one consistent factor operating in the opposite direction – education of the spouse (male). This has a larger negative effect (each extra year of male education means a drop in participation of 1 percentage point) than the positive effect of female education. Most likely this is because of the gap in earnings (or potential earnings) of men and women. Women tend not to work if married to highly educated males who earn a substantial income. If the earnings gap was to be too high, the status of the work the woman would engage in would be low; this is not allowed due to 'family status production' (Papanek, 1979) work that women are expected to perform. This also points to the male female education and skill gap.

6) Some evidence is found of a depressing effect of the middle class on participation. It is the presence of the emerging middle class, which coupled with male education, is slowing down the increase in LFPR. If the results on fertility decline are anything to go by, this effect will considerably decline over the next decade.

7) There has been some speculation that the low level of LFPR in India is due to discrimination against women in the workplace. They receive lower wages, and often do not get entry into "paid" jobs. There is additional discrimination against the economically backward communities like the scheduled caste and scheduled tribes who together account for a quarter of the population.

8) Most of the findings, based on extensive analysis of NSS household level data for the last 25 years, are counter to this conventional wisdom. Women have marginally (about 10 percent) less paid jobs than men. The social groups SC and ST have larger participation rates, *ceteris paribus*. Only the Muslims have a lower rate (about 6 percentage points lower today compared to about 10 percentage points lower in 1983).

9) As mentioned above, there is discrimination against women in terms of entry into the labour force. This occurs via the male education effect – higher male education leads to less LFPR for urban women. There is also considerable evidence that discrimination occurs pre-birth i.e. the awfully low child sex ratio in India.

10) But once women enter the labour force, the evidence of that discrimination is very small. This is one of the major findings of this paper. Observed wage rates of women are only about 55 percent of observed wage rates of men, or that observed wage rates for men are about double that of women. But this is not indicative of large scale wage

discrimination since the average woman had about 2.4 years less education than an average man twenty five years ago, and about 2.1 years less today. Each extra year of education has a 14 percent yield, so the education gap accounts for a large fraction of the wage gap. In addition, women have less experience than men for the same age and education due to child bearing. Each child means a withdrawal from the labour force for around two years; this means that an average woman with 2 children will have about 12 percent less wages than her equivalent male counterpart. Hence, most of the wage gap is explained by "economic" factors – about 15 percent remains i.e. even after adjusting for lower education and lower experience, women in 2004/5 received about 15 percent less wage than a comparable man. Given that education levels are reaching parity, future wage gaps will decline – but not because of better non-discriminatory practices.

11) In addition to no discrimination in the work place, there is considerable evidence of women being more in control with respect to decisions about fertility. One of the major findings of this paper is that replacement levels of fertility are likely to be reached by 2015 – about 10 years sooner than that targeted by official Indian agencies.

12) Given these findings, a forecast can be made. Labour force participation rates of women should rise rapidly from the present low levels of around 35 percent (adjusted for education) to something like 50 percent in the next decade. This would still be lower than comparable countries which have a 60 percent plus rate.

The transformation of the Indian labour force is incomplete, as is research on this important topic. The effect of low sex ratios on LFPR needs to be investigated in detail, as is the effect of migration. Female migration for work has increased substantially in recent decades. A striking trend is unmarried young women migrating for work in contrast to mainly marriage related migration. Much of the former involves rural to urban migration with opportunities opening up for women in metros and in large cities. There is evidence that particular ethnic and socio-cultural groups tend to concentrate in various sectors of the labour market. Studies in the area of gender and migration also point out that marriage migration often leads to entry into the labour force and the two processes are not mutually exclusive (Kaur 2004, 2006, Palriwala and Uberoi 2008, Roy 2006). The recent NSS 2007/8 survey has rather good data on migration and in this paper the use of these data has been initiated.

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