

Do Family Planning Programmes Help The Employment of Women? The Case of Indian Mothers*

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Does family planning help female employment?

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Abstract

The paper deals with female employment in developing countries. Our argument is that, in the first stage of development, demographic and health policies, like family planning (FP), have proved to be more beneficial for women's position in the labour market than governmental programmes supporting household income and promoting employment (GP). Our household model predicts that an exogenous improvement in household production technology due to FP gives a woman a chance to choose whether to participate in the labour force. A representative data survey for all Indian states (NFHS-2, 1998-1999) allows us to analyse the role of FP in the probability of married women, between the ages of 15 and 49, seeking employment. Our results for urban and rural India show that the FP effect is significant in rural India, namely women who have been visited by an FP public worker have a higher probability of being employed. Moreover, for rural India, we compare this effect with that of GP. Our results show that the correlation of this particular FP intervention with the employment probability of women is at least as high as that of GP. This result appears to hold true in different model specifications.

JEL Classification: J13, J16, J18, J22, O18

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1 Introduction

Much of the literature on female participation in the labour force in developing countries focuses on the conflict between the employment of mothers and a woman's family role. It is argued, in particular for South Asian societies, that a woman's participation in income generating activities outside the family results in poor health and higher mortality for her children¹ Moreover, since wage levels and the quality of jobs for women are generally very low in developing countries, maternal participation may be associated with child labour² Also, in countries where labour opportunities for females outside the home are poor, the increase in a woman's schooling is predominantly seen as a pre-condition to improving her children's education (see, for example, Behrman, Foster, Rosenzweig and Vashishtha, 1999)³ This emphasis on a woman's reproductive role and child welfare persistently conflicts with efforts to promote greater female involvement in the labour market. Society's preference for limiting women's activities to the domestic sphere, however, is often overridden by economic necessity, and poorer women are sometimes more likely to be employed than richer women (Desai and Jain, 1994).

By contrast, other studies show that a fundamental source of mothers' empowerment is indeed paid employment (see, for example, Boeri, Del Boca and Pissarides, 2006). It is generally thought that women who contribute to household resources have greater power over them, since earnings from their own work should represent an easy resource to control. Moreover, the degree of control over income may be positively related to the children's welfare (Folbre, 1987; Haddad, Hoddinott and Alderman 1997).

From the 90s onwards, these observations have led to firm recommendations from international institutions on how to increase women's participation in the market and improve

their working conditions as a key strategy to reduce fertility and mortality, improve nutrition and welfare (World Bank, 1991; United Nations Development Program, 1996; UNICEF, 2007). As far as economic policies are concerned, national programmes in favour of female employment have tended to preserve women's domestic role and promote traditional skills, and home-based and part-time work. These programmes have not yielded many results in terms of better jobs and earning opportunities for women (Mehra, 1997; Raikhy and Mehra, 2003).

Our question is then if, in the first stage of development, demographic and health policies, like family planning, may be more beneficial for women's position in the labour force than economic programmes promoting employment. This article intends to contribute to the literature that studies how family planning policies, by changing the relative prices of goods produced and consumed within the households, affect the allocation of time of family members. Our focus is on the role of family planning for women's participation in the labour force. Researchers have studied the impact of family planning on the fertility of women, child schooling and child work. Some articles try to disentangle schooling and family planning effects on fertility (see, for example, Schultz, 1994), also considering the problem of the endogeneity of education to family planning programmes (see, for example, Angeles, Guilkey, Mroz, 2005). Other studies have shown that the effect of family planning programmes on child schooling tends to be limited when other programmes and community infrastructures are available (Rosenzweig and Wolpin, 1982). As to the participation of children, the study by Sinha (2005) for rural Bangladesh shows that, by reducing the mother's fertility, the family planning programme raised significantly boys' labour. This result is attributed to the large contribution to household income made by children in a low-income rural economy.

To our knowledge, the effect of family planning on women's participation has not been studied yet. The lack of literature on this relevant topic for women's empowerment motivates our comparative focus on the relative role of demographic and economic policies for the employment of women. We set up a model to test our argument that, at the present stage of development, demographic and health programmes have proved to be more effective for women's position in society than specific policies supporting household income and promoting employment.⁴ We concentrate on family planning (FP), reproductive and child-care programmes implemented in India. We chose this country because it has a long-standing and, by now, consolidated tradition in demographic policies. In particular since 1996, a year of radical transformation in population-related policies, a programme of doorstep delivery of services by family planning workers was implemented in all Indian States.

We incorporate this aspect in our theoretical model of women's participation in developing countries, by assuming that the family planning policy implies a sudden improvement in domestic technology. This gives women a better control over their time resources and an opportunity for a utility-improving allocation of time. In the empirical model, estimated on data drawn from the National Health Family Survey (NFHS-2) for 1998-1999, we contrast the effects of this demographic programme, designed to be exogenous to women's choices, with those of governmental programmes for the alleviation of poverty in rural India.

The study of women's labour market involvement in a country like India entails an attentive consideration of its social and religious norms. Recent economic literature focuses on these aspects of the Indian society (see, for example, Bhaumik and Chakrabarty, 2006; Gang, Sen and Su Youn, 2002; Kijima, 2006; Deshpande, 2007). Taking account of the literature we measure the effects of caste and religion on women's employment.

Our results for urban and rural India show that the FP effect is significant in rural India, that is, women who have been visited by an FP public worker have a higher chance of being

employed. The comparison with the effect of Governmental Policies (GP) supporting household income and promoting employment in rural India, show that the effect of this particular FP intervention is at least as high as that of GP. This result appears to hold true across different definitions of female employment and model specifications.

The paper is structured as follows. Section 2 describes women's employment in India using NFHS-2. Section 3 and 4 respectively review employment and demographic policies implemented in India from the 1950s onwards. Section 5 presents our baseline theoretical model. Section 6 describes the sample and variables. Section 7 discusses our results and section 8 concludes the paper.

2 Female employment in India: a way towards women's empowerment?

In our framework, we consider employment as a way towards women's empowerment. This view is closely linked to the idea that women can control resources if they contribute to them, and that earnings from their own work is the easiest resource to control. If labour is assumed to have this function, identifying it in developing countries poses several problems of definition. This is because a great number of women is engaged in agricultural and household activities that are often unpaid, or paid in kind and frequently uncounted. A brief description of female employment in India offers a stylised example of this situation.

The employment rate of Indian women is low compared to that of other developing and developed countries, but shows an increasing trend in recent years. The National Family Health Survey reports that the employment rate of ever-married women for India as a whole was 32 per cent in 1992-1993 and achieved 37 per cent in 1998-1999 (IIPS and ORC Macro, 2000).

Given the huge size of the population and the obvious different opportunities for work throughout the country, it is not surprising that there is an astonishing difference in women's employment rate among Indian states. The highest percentage of women who work is in the North-Eastern States of Manipur (70 per cent), Nagaland (64 per cent), and Arunachal Pradesh (60 per cent), and the lowest is in Punjab (9 per cent) and Haryana (13 per cent). Women's work participation is also relatively low (25 per cent or less) in Assam, Himachal Pradesh, Delhi, Sikkim, Uttar Pradesh, and Kerala. The job participation of women is relatively high in all the Southern States (except Kerala), in all the Western States, and in Madhya Pradesh.

The distinction between rural and urban areas reveals other sources of heterogeneity. The probability of employment is lower in urban areas (26 per cent) compared to rural areas (44 per cent), where women mostly work as agricultural or self-employed labourers, being often exploited in terms of earnings and working times.

The higher proportion of women's participation in rural areas may be ascribed to the fact that in developing countries such as India, poverty forces women to join the workforce. The empowering effect of employment, therefore, depends a great deal on the type and the quality of work. It is obvious that women who have occasional, seasonal and/or unpaid jobs, or who are reduced to slavery in a rural plantation, are less likely to be empowered by their work. Agricultural workers (including the self-employed) account for about three-quarters of the women who work in rural areas. The self-employed in agriculture, who account for about 60 per cent of all agricultural workers in rural areas, are mostly farmers. Women who work as farmers in rural areas, are often self-employed on their family farm and are subject to the seasonality of their work. In fact, 86 per cent of them are unpaid workers and four in ten are employed occasionally or seasonally. Agricultural employees are women employed as agricultural labourers, plantation labourers, forestry workers and related workers. Of them,

one woman in ten is unpaid and more than four women in ten are engaged only for seasonal or occasional work.

Women in urban areas are involved in more diversified activities: especially skilled and unskilled manual work, sales, and domestic activities, but also in more qualified activities such as nursing, other medical occupations and teaching. In urban areas the percentage of unpaid and occasional workers is lower than in the rural areas. One woman in ten is unpaid and two women in ten are engaged only for seasonal or occasional work. However, in urban areas also, even if less representative of the total number of working women, the category at higher risk of being in unpaid and/or seasonal work are the self-employed women in agriculture, followed by sales and manual workers (skilled and unskilled).

Since we believe that women's empowerment is closely related to the earning capacity stemming from a permanent paid job, we address this topic by studying the determinants of the probability of such event as opposed to that of being employed seasonally and unpaid.

3 Governmental Programmes for economic development and employment (GP)

Programmes to ease access to employment have been implemented in India since the 80s⁵. Some of these were specifically addressed to women with the aim of promoting stable and paid occupations. The National Population Policy adopted by the Government of India in 2000 (Ministry of Health and Family Welfare, 2000) explicitly recognized the importance of women's paid employment in achieving the goal of stabilizing the population and introduced specific measures for paid employment and self-employment. Since women's participation in rural areas is higher, policy makers have traditionally concentrated their intervention there with the objective of improving female work conditions.

Public programmes for economic development aim at alleviating rural poverty by subsidizing the acquisition of productive assets and skills that the poor can use to increase their earning capacity. The main one is the Integrated Rural Development Programme (IRDP) started in the 80s. Some of these programmes have a purely female target. For example, the Development of Women and Children of Rural Areas (DWCRA), a sub-scheme of IRDP, started in 1982-83, provides opportunities of self-employment for female members of rural families below the poverty line⁶. TRYSEM (Training of Rural Youths for Self Employment) is a specifically employment oriented programme under the more general Employment Guarantee Scheme (EGS).

Since 1985-86 two schemes have been implemented under the Rural Landless Employment Guarantee Programme (RLEGP): the first is the Sanjay Gandhi Niradhar Yojana (SGNY), to provide houses free of cost to the homeless families of rural, hilly and slum areas; the second is the Indira Awaas Yojana (IAY), with the objective of providing subsidies for the construction of houses for members of Scheduled Castes/Scheduled Tribes, to freed bonded labourers and also to the rural poor below the poverty line.

The NFHS-2 collects information on each of these programmes at a village level, recording the number of people in the village who have benefited from each of them in the year preceding the survey. The most widely available rural development programmes, as reported by the respondents to the Village Questionnaire, are the IAY and the IRDP. DWCRA, the programme with a female target, covers only 23 per cent of the total population (see Table 1).

INSERT TABLE 1 HERE

4 The Family Planning programme (FP)

As to demographic policies, women aged 15 to 49 are the specific target of Family Planning programmes (FP). Even if the main objective of FP programmes is demographic, indirect effects on women's economic conditions through maternal and child health improvements are to be expected.

The FP Programme⁷ in India has undergone important changes in recent years and particularly during the 1990s. At the beginning in 1952, it was primarily a clinic-based family planning programme monitoring the family on the basis of family planning targets to achieve a couple's participation rate in the health system of 60 per cent. After the adoption of the "extension approach" in 1963 and subsequent integrations with the mother and child health programme, the activities of the programme broadened significantly. In addition to family planning, the programme provided a variety of services to mothers and children, including antenatal, delivery, and postnatal care, the immunization of children against various vaccine-preventable diseases, and counselling on mother and child health problems and nutrition. In the 70s and 80s the central administration gave local health workers targets for the number of women they were to sterilize each month. This FP programme was then accused of using unacceptable methods to induce people to be sterilized and to fulfil administrative targets even after the so-called "emergency period" imposed by President Indira Gandhi in 1976-77 (see Saavala, 1999).

The International Conference on Population and Development in 1994 in Cairo marked the abolition of the target-oriented approach. The programme was gradually reoriented towards the Reproductive and Child Health Programme that includes instructions relating to sexually transmitted diseases and infections of the reproductive tract. After some initial experiments in a few selected districts, in 1996 the "target-free" approach was implemented throughout the

country and was renamed the Community Needs Assessment. This approach modified the system of monitoring the programme. From then on, a home visit programme has been implemented, in which trained FP workers give advice on a series of matters, not only concerning reproductive health, but also nutrition, disease prevention, sanitation and child care (Ministry of Health and Family Welfare, 1998).

The NFHS includes several questions on the quality of care, of health and family welfare services provided by the public sector and the private sector. The success of FP programmes in the period we analyse is particularly evident in States with demographic and social indicators below the Indian average. Taking as an example one of the most underdeveloped States, Uttar Pradesh, in 2005⁸, 53 per cent of women aged 20-24 were married by age 18, an indicator that was equal to 64 per cent in 1999. In the same period, the total fertility rate dropped from 4.06 to 3.82 and the median age at first birth has increased from 18.8 to 19.4 years. The percentage of married women with two living children, who do not want any more children, has risen from 45 to 64. As far as maternal and reproductive health is concerned, antenatal care has increased from 35 to 67 per cent of births in the preceding three years, and from 29 to 64 in rural areas. This fact, together with the increase in institutional deliveries has led to a decrease in infant mortality from 89 to 73 per 1000 births in the past five years.

The FP Programme in India is still being reformed. The recent National Population Policy, released in February 2000, stresses the commitment to reproductive and child health with the statement that “the overriding objective of economic and social development is to improve the quality of lives that people lead, to enhance their wellbeing, and to provide them with opportunities and choices to become productive assets in society” (Ministry of Health and Family Welfare, 2000).

5 A baseline theoretical model

We fit our model to the issue of women's empowerment in developing countries. We use a household model with home production, where decision-making is in the hands of two partners⁹. We adopt a "collective approach"¹⁰, according to which the two partners have two distinct utility functions, $U_i(.)$, with $i=1,2$, that they maximize as a weighted average with weights representing the balance of power in the household. Since our focus is on female participation in the labour market, we assume that men always work in the market¹¹, the partners consume a bundle of domestic (X_d) and market (X_m) goods, and the woman has to distribute her working time between hours of domestic activities, H_d , market work, H_m , and leisure, L . We identify domestic work with time spent providing food and preparing meals, preventing and curing diseases of all the family members, and time spent looking after children.

The woman (1) and the man (2) value the two goods in the same way, but the woman has also her leisure L in her utility function. The man's leisure is assumed to be zero. The husband is only indirectly interested in his wife's time, since the household needs to consume at least a minimum level of domestic goods, which he is not able to produce himself being specialized in market labour¹².

Under these hypotheses the household utility to be maximized is simply:

$$\text{Max } U = \Theta U_1(X,L) + (1 - \Theta) U_2(X) \quad (1)$$

where $0 < \Theta < 1$ is a coefficient that is positively related to the power of the wife¹³.

To begin with, imagine a situation of underdevelopment where women are forced to allocate all their time to domestic work. To give an example, suppose that a couple is not able to

control fertility, that the health of the household members is continuously at risk, that water and food is difficult to provide and to transform into safe drinks and meals. In one word, home production technology is very poor. As a result, the woman will be overburdened by domestic tasks, and all her time will be barely sufficient to provide her family and herself with the means to survive. The man gives the household a labour income Y , used to buy market goods. We call this period 1.

Period 1: no choice

In period 1 a woman in the household has no choice over the way she can use her time. She has to produce a given minimum amount of domestic goods, $X_{d,\min}$, for her own and her family's survival. This activity will take all her time T , she will have no alternative, and her power will be null, that is $\Theta = 0$. Hence, in the beginning the household preference coincides with the husband's preference. If $X_d = f(H_d)$ is the domestic production function, we assume that at time 1 the wife will have to produce survival $X_{d,\min}=f(T)$. The household will consume also some market goods, that is $X_m = Y$ (see Fig. 1).

Suppose the government decides to intervene to improve a households' welfare with a family planning policy that sends family planning workers to visit families and give them advice on health, fertility, child care and other related matters. This implies a sudden improvement in domestic technology that gives the woman an opportunity to employ her time resources more efficiently, and, consequently, a certain degree of control over them. We call this period 2.

INSERT FIGURE 1

Period 2: the participation decision

At time 2, after this exogenous shock, the domestic production function becomes $X_d = g(H_d)$ with $g'(H_d) > f'(H_d)$ for all H_d . At this point, since now producing at least the survival $X_{d,\min}$ no longer involves all her time, we assume that the woman acquires some degree of freedom over her time allocation, that is

$$\Theta > 0 \text{ if } H_{d,\min} < H_d < T.$$

The utility maximization (1) is now subject to the new domestic production function constraint:

$$X_d = g(H_d) ; g' > 0 ; g'' < 0 ; g'(H_d) > f'(H_d) \text{ for all } H_d ; X_{d,\min} = f(T) = g(H_{d,\min}); \quad (2)$$

the consumption constraint

$$X = X_d + X_m; \quad (3)$$

the time constraint

$$T = H_d + H_m + L; \quad H_{d,\min} < H_d < T; \quad (4)$$

and the budget constraint

$$X_m = WH_m + Y; \quad (5)$$

where H_m is hours of the woman's market work and W is the real hourly female wage prevailing on the market.

Depending on the woman's tastes and the market wage, two situations may occur. Figure 1 shows the first one, a case of no participation¹⁴, according to which the woman maximizes

her utility by specializing in domestic work ($H_m=0$).¹⁵ The second case is illustrated in Figure 2. In this case, for a given wage, the woman's tastes are such that it becomes convenient to enter the labour market. She will decide to participate and contribute to the household income. According to our assumption of women's empowerment through the control of monetary resources, her bargaining power will increase further¹⁶ thus inducing an increase in Θ .

INSERT FIGURE 2

The first order conditions of the maximization of $U_1(\cdot)$ with respect to H_m and H_d are:

$$\frac{U_L}{U_X} = W \quad (6)$$

and

$$\frac{U_L}{U_X} = g'(H_D) \quad (7)$$

where (6) corresponds to Pareto efficiency in the consumption allocation. From (6) and (7) the equilibrium condition of equality of the marginal product of household production and the wage rate¹⁷ is derived.

For empirical purposes, we adopt a static utility comparison framework. In this theoretical context, the woman works if the indirect utility of working for the market is greater than the indirect utility derived from specializing in domestic work. We want to measure how much of the outcome will depend on the exogenous change in domestic technology and in the woman's bargaining power. If the effect will be such as to override the threshold given by her reservation wage, she will maximise her utility by working outside the home.

In other words we assume her indirect utilities to be:

$$v_{\text{work}}(W, Y, \Theta), v_{\text{not work}}(W, Y, \Theta)$$

Since our data do not contain information on wages and incomes, we are compelled to use a reduced form specification. W will depend on the usual set of individual characteristics of the woman I , such as age and education, Y will depend on her partner's characteristics P , including education and position in the labour market, Θ will depend on some indicators of public policies that improve domestic technology and the employment probability (FP and GP). The decision to participate will also be affected by other observable household variables H , such as the number and age of children, the household size, and wealth. The above assumptions imply that each indirect utility depends on the following set of variables:

$$v=v(I, P, H, FP, GP)$$

In conclusion, to observe a woman working, for example, means that:

$$\max(v_{\text{work}}, v_{\text{not work}}) = v^*_{\text{work}},$$

where v^* is an equilibrium solution.

The empirical part of this paper will focus on the following testable predictions:

- 1) the participation decision is significantly affected by domestic productivity enhancing demographic policies (FP);
- 2) the participation decision is significantly affected by employment policies (GP);

- 3) demographic policies have an impact on the probability of women finding employment that is at least as large as that of governmental economic programmes.

6 Data and variables

The micro data we use are drawn from the National Health Family Survey, 1998-1999 (NFHS-2). This survey¹⁸ is designed to provide state and national estimates of fertility, the practice of family planning, infant and child mortality, mother and child health, and the utilization of health services provided to mothers and children. In addition, the survey provides indicators of the quality of health and family welfare services, women's reproductive health problems, and domestic violence, and includes information on the status of women, their education, work and standard of living.

The NFHS-2 is a household survey with a sample size of around 92500 households and 90300 ever-married women in the age group 15–49. The sample covers more than 99 per cent of India's population living in all 26 Indian states.

The sample size for each state was drawn separately for urban and rural samples in proportion to the size of the state's urban and rural populations¹⁹. In all states a uniform sample design different for rural and urban areas was adopted. For the creation of the rural sample a two-stage procedure was adopted: in the first stage some villages were selected as Primary Sampling Units (PSUs), following a PPS approach (probability to be selected proportional to population size); in the second stage households were randomly selected within each PSU. In urban areas, a three-stage procedure was followed. In the first stage wards were selected with PPS sampling; in the second, from each sample ward one Census

Enumeration Block (CEB) was randomly selected, and in the third stage households were randomly selected within each sample CEB. On average, 30 households were initially targeted for selection in each selected enumeration area.

NFHS-2 used three types of questionnaires: the Household Questionnaire, the Woman's Questionnaire, and the Village Questionnaire. The Household Questionnaire listed all usual residents in each sample household plus any visitors who stayed in the household the night before the interview. For each listed person in the household, the survey collected basic information on the relationship to the household head, age, sex, marital status, religion, caste/tribe, education, and occupation. The Household Questionnaire also collected information on indicators of household wellbeing such as the main source of drinking water, type of toilet facility, source of lighting, type of cooking fuel, ownership of house, ownership of agricultural land, ownership of livestock, and ownership of other selected items. In addition, the household questionnaire included very detailed information on household members' health.

Information on age, sex, and marital status of household members was used to identify eligible respondents for the Woman's Questionnaire. Eligible women for the Woman's Questionnaire are defined as all ever-married women aged 15–49 who were usual residents of the sample household or visitors who stayed in the sample household the night before the interview. The Women's Questionnaire collected information on the following topics: background characteristics, reproductive behaviour and intentions, quality of care, sources of family planning, antenatal, delivery, and postpartum care, breastfeeding and reproductive health, knowledge of AIDS. The Woman's Questionnaire also investigated the status of women in the household asking about their treatment, gender roles, their autonomy and the violence perpetrated against them. Questions are also asked about the women's husbands.

The Village Questionnaire collected information from the *sarpanch* (village head), other village officials, or other knowledgeable persons in the village on the availability of various facilities and services in the village (such as health and education facilities, electricity and telephone connections, and others). One important set of questions regarded the distance of the village from various types of facilities including: Primary Health Centres, sub centres, hospitals, and dispensaries or clinics and the presence in the village of services such as schools (of different levels) and *anganwadi* (a nursery school for children aged 3–6 years). The Village Questionnaire also collected information about development and welfare programmes operating in the village.

Among eligible women we select only married women that amount to a sample of around 85000 observations. This is standard practice in the literature on female participation in the developed world, on the assumption that married women have utility functions and budget constraints different from the no-longer married and the never married single women, who behave similarly to their male counterparts. The NFHS sample does not include never married single women, but only the no-longer married group formed by widowed, divorced and deserted women. It is anyway necessary to leave them out, since this group is traditionally worlds apart from the married women's group²⁰. The sample includes married women with and without children, since the latter represent a target for a FP visit as potential mothers.

The dataset we construct includes relevant information collected from the Woman Questionnaire supplemented with information at a household level and, for rural India, at a village level. The dataset includes, together with the women's background characteristics, information on the dimension and composition of the household, on other household components, including occupation and household wealth²¹. Moreover, our data set contains detailed information on family planning services provided to the household and, at a village

level, on the coverage of governmental programmes for the economic development of rural areas.

6.1 Definition of the dependent variable

In order to make a contribution to assessing female labour market conditions in developing countries, we construct three variables of female employment probability.

The first is a binary dependent variable based on the question “Are you currently employed?”

We concentrate our analysis on women who are currently employed because we have observed that only a low percentage of women (less than 3 per cent, mostly seasonal workers) was working during the year but was currently not working. About 33 per cent of married women was currently employed at the time of interview.

As we assume that the empowerment process speeds up women’s increasing control over monetary resources, the mere state of being employed does not necessarily improve a woman’s condition, since a large share of female workers is unpaid. Only 62 per cent of the employed women of our sample are paid in cash. Our second dependent variable, therefore, is a multinomial variable with three states: not working, working unpaid and working paid.

A further distinction is related to the duration of work. Permanent jobs are more probably related to women’s empowerment. A distinction between “all year” and “occasional” activities is therefore necessary, since a high percentage of employed women (more than 33 per cent) does not work all the year, but is engaged in seasonal or occasional activities. In other words, we divide the better-off category of paid workers into those who are engaged in seasonal or occasional activities and those who are employed all year. Thus, the third specification is a multinomial variable with four states: no work, work unpaid, seasonal work paid, all year work paid.

Looking at the distinction between urban and rural areas, we observe that the percentage of women at work is higher in rural areas (39 per cent against 22 per cent). In rural areas they are also more likely to work as unpaid workers or to be paid in kind (56 per cent in rural areas against 12 per cent in urban areas) and to be employed seasonally (36 per cent in rural areas against 22 per cent in urban areas).

6.2 Constructing exogenous FP indicators and comparable GP variables

Having assessed the relevance of FP in relaxing the burden of women's reproductive and health care roles, we ask whether there is any evidence of a positive impact of these programmes on women's position in the labour market. Using the survey micro data for all Indian States, we focus on the relation between FP programmes and women's employment probability. Information on FP comes from the Women's Questionnaire.

The survey contains information on several FP services provided by public and private health centres. Most of this information, however, is demand-driven, like, for example, the number of times a woman went to the hospital for FP advice. We do not use these indicators, since they would be endogenous to women's choices. We use, instead, as an indicator of the exposition to FP programmes, the passive event of having received at least one visit from an FP worker in the previous twelve months. Consistently with the aim of the FP programme, this indicator should be exogenous to women's choices (IIPS and ORC Macro, 2000, ch. 9). 13 per cent of women aged 15-49 received at least one visit (indeed, three visits on average²²) which is an impressive result considering the huge Indian population. During these contacts the FP workers monitor various aspects of the health of women and children, provide information related to health and family planning and to the supply of public services,

counsel and motivate women to adopt appropriate health and family planning practices. We construct a dummy variable (FPVISIT) which is equal to one if a woman has received a visit in the last 12 months.

Once the impact of FPVISIT on the probability of being employed has been measured, we then try to compare this effect with that of GP. These variables, recording income support and labour policies, are grouped together in the Village Questionnaire, where a village head (*sarpanch*) is asked about the number of persons in the village receiving a specific benefit. To make the comparison we transform FPVISIT into two new variables. The first is given value one if a woman lives in a village where an FP worker has visited at least one woman (even if not herself).

To compare coefficients, we also build a dummy for each welfare programme with the same criterion, that is the programme dummy is given value one if a woman lives in a village where there is at least one beneficiary of the programme. The second variable is the ratio of the number of women who received a visit in the village over the total number of people in the village sample. This ratio is based on the sample values representative of the village-universe. For the GP variables we build the ratio of the real number of people in the village who benefited from each specific programme over the village *de jure*²³ population.

7 Results

We estimate logit and multinomial logit specifications of women's employment probability for all states of India, distinguishing between urban and rural India (see Table A1 to A4 in the Appendix for the descriptive statistics of all the variables used in the model). For rural India, we also conduct a separate analysis exploiting the additional village information. As we have seen in the data section, for rural India the NFHS provides variables on the number of

beneficiaries of a set of governmental programmes whose effects we want to compare with those of FP programmes²⁴.

We first present our results on the impact on participation of FP for all India and urban and rural India. We then compare the impact of FP with that of GP in rural India.

7.1 The employment probability and FP

We start with the impact of FP, and then compare it with that of other control variables that help to determine women's participation according to well-established theory and empirical observation. Table 2 reports the marginal effect of FPVISIT (the dummy variable which is equal to one if a woman has received a visit in the last 12 months) on the probability of working of married women aged 15-49 in all Indian states.

INSERT TABLE 2

The coefficient is highly significant, and the marginal effect amounts to a more than 3 percentage point increase in the probability of being currently employed. The distinction between urban and rural areas reveals that the effect is significant for rural India only.²⁵ We distinguish, among working women, those paid in cash from those unpaid, since the latter are quite a relevant number, as the descriptive analysis has shown. The marginal effects derived from this multinomial logit (see Table 2, Multinomial Logit 1) show that the most significant effect of FPVISIT is to be found on the probability of "working paid", that is, an FP contact has a positive impact on the probability of the woman earning her own money (about 3 percentage points increase in probability for all India). Again, this is only significant for rural India, where an FPVISIT increases the probability of "working paid" by about 2 percentage

points. A further partition of paid work into occasional (or seasonal) and permanent (all year), demonstrates that the largest impact of FP is to be found on permanent work (see Table 2, Multinomial Logit 2, rural India) that is the best of power enhancing states in our view. Some results concerning the other control variables (see Table 3) are worth commenting on for the differences in labour conditions with respect to developed countries.

INSERT TABLE 3

As far as schooling is concerned, female employment is negatively correlated with years of education, with a higher negative effect in rural areas.²⁶ Mahendra (2004) uses the household sample of the NFHS-2 survey to study the association between female work participation and the level of schooling. His sample is larger than ours, including all women (married and unmarried, with children and without) aged 15-59.²⁷ The negative relation with schooling is confirmed in rural areas, but he finds a positive, but much less significant, association in urban areas. This result might be due to the presence of young unmarried women without children and older women with adult children. For our sample of married women 15-49 drawn from the women's sample (therefore less numerous) the association remains negative in urban areas as well, but the marginal effect is lower than in rural areas. This is a major difference from married women participation in developing countries, where education has always been considered the primary condition by which to achieve autonomy. Our results reject this hypothesis for Indian mothers, thus suggesting other important roles of mothers' education in Asian societies, such as improving their children's welfare and education (Behrman, Foster, Rosenzweig and Vashishtha, 1999). Several studies failed to find evidence of a positive link between women's education and female autonomy, casting doubt on one of the major pathways through which the former was supposed to reduce fertility (see, for

example, Jeffery and Basu, 1996, Jeffery and Jeffery, 1996).²⁸ No doubt the role of education for development is fundamental. Various studies have shown the positive effect of maternal education on child health and survival (among these, Dreze and Murthi, 2001). Analyzing the data of NFHS-1, 1992-93, Govindasamy and Ramesh (1997) found that a mother's education continues to be a powerful, positive and significant predictor of the utilization of child health care services in India, even after controlling for a number of other demographic, socioeconomic and spatial variables. Mothers' education is also found to reduce the gender discriminatory practices among mothers of children seeking medical treatment during the post-neonatal and later childhood period (Ghosh, 2004, on NFHS-2).

As to the effects of religion we find that, with respect to Hindu, Muslim women have a lower probability of working, whereas Christian women have a higher one.

In India low-caste households and tribal minorities²⁹ suffer disproportionately from poverty and discrimination, even if after independence the untouchables have been abolished as a caste by the constitution with norms that protect Scheduled Castes (SC) and Scheduled Tribes (ST). In our results, women in SC and ST have a much higher probability to work. In particular, women of ST in rural areas have a probability that is five times that of women of SC. This is in line with the evidence emerging from other studies. Deshpande (2007) shows that, over the period of the liberalization of the Indian economy, there has been a decline in the proportion of women belonging to SC and ST who declare they are not working. The same trend is not clearly visible for the other castes. However, Kijima's study (2006) shows that SC and ST are much poorer than non-SC/ST, and this is partly due to geographical differences (especially for ST that live in the most unreachable areas of the country) and partly to the fact that they are still disadvantaged in obtaining well paid jobs.³⁰

Turning to the impact of the presence of children in the household, the effect of the number of woman's small children is negative, but only for children up to the age of two; children

aged 3 to 5 do not influence their mothers' employment state, whereas older children have a positive impact. The negative effect of small children, however, is relatively small (minus 6 percentage points) as compared to that of FPVISIT (plus 3 percentage points, see Table 2) and to the effect that, on the whole, emerges from studies on developed countries. The result that children from 3 to 5 do not impede women's work could also be explained by the fact that more than two-thirds of rural residents live in villages that have an *anganwadi* (a nursery school for children aged 3 to 6).³¹ The presence of older children (6-14) has a positive impact on women's occupation (one percentage point increase) since they can contribute substantially to household work.

Indian households are often composed of more than one family nucleus. 34 per cent of all households of the survey belong to this category.³² It is therefore reasonable to ask if the employment status of a woman in a multi-nuclear household depends not only on her own children, but also on other women's children residing in the same household. In order to test for the hypothesis that all children present in the household may have an impact on each residing woman's employment we have introduced some variables measuring the number of children of mothers other than the ones interviewed. Our test rejects this hypothesis, indicating that only their own children matter for a woman's choices. Since only their own small children (0-2) impede entry into the labour market, the reason is probably to be found in breast-feeding. Children 3-5 may be looked after by other members of the household or may be minded in outside nurseries (*anganwadi*).

A husband's professional position should capture the effect of his partner's income. In fact, all types of husband's employment positions reduce a woman's probability of working, in line with the evidence for many developed countries like the South European ones. Only one husband's state has a positive impact, that of a self-employed husband in agriculture, with the obvious implication that wives are involved in the family farm activity.

The coefficient of the wealth index³³ is negative, large and highly significant, thus suggesting that in wealthier Indian households women tend to stay home.

7.2 Comparing the impact on women's employment of FP with that of GP in rural India

We now compare the FP effect with that of GP, with particular attention to policies promoting female employment.

Table 4 and 5 report the marginal effects of FP and of GP on women's employment probability. As explained in the data section, we have constructed two new FP variables for comparison purposes. FPVISIT now has two different meanings: 1) a dummy, taking value one if the woman lives in a village where there has been at least one visit of a FP worker; 2) the percentage of the number of women visited by FP workers over the total village population. The GP variables are constructed in the same way, so that the coefficients are comparable. The tables also report the marginal effects of the dummies for the presence of nurseries (*anganwadi*) and primary schools, since these are relevant public facilities for women's employment. It is interesting to note that *anganwadi* workers not only provide child care services but also engage in the promotion of family planning among parents of preschool-age children.³⁴ The results of the logit (see Table 4) show that the marginal effect of FPVISIT appears to be relatively high. Taking the dummy measures (col. 1), FPVIST has the largest marginal effect, increasing the probability of employment by more than 5 percentage points, an even larger effect than that shown in Table 2. This result could be interpreted in this way: a woman, who lives in a village where FP workers have made some visits, benefits from positive externalities due to the diffusion of FP information, even if she

has not been contacted personally. This fact increases the effect of FPVISIT with respect to the variable that took account only of visited women (Table 2).

The presence of facilities for prime-age children has a positive effect: nursery facilities increase the employment probability by around 3 percentage points, thus contributing to explain why children 3-5 do not affect their mothers' participation (see Table 3). The presence of a primary school in the village also has a positive impact, as it is reasonable to expect.

Turning now to the comparison of the impact of FPVISIT with respect to GP, we find that some GP have a positive impact and some have a negative impact on women's employment (see Table 4 col.1). For example, IRDP (Integrated Rural Employment Program) TRYSEM (Training of Rural Youth for Self-Employment), NREP (National Rural Employment Program) all have a negative impact, as if they were supporting mainly the husbands' employment, thus increasing partner's income and generating a negative income effect on female participation.³⁵

It is probably for this reason that more specific GP for women's employment have been introduced more recently. We find, however, that the effect of one of these, the Development of Women and Children in Rural Areas (DWCRA), is not significant.

To check this result, we use another specification that takes into account the percentage of beneficiaries in the village. Since the FPVISIT variables in col. 2 of Table 4 are continuous, they provide additional information (with respect to the dummy of col. 1) on the programme coverage by village. It is therefore reasonable to expect different relative magnitudes and significance of the marginal effects with respect to col. 1. In fact, the marginal effects are no longer larger for FPVISIT and, in particular, the effect of DWCRA becomes significant and larger than that of FPVISIT. Summing up all the GP marginal effects, the total impact amounts to 1.45, nearly identical to the coefficient of FPVISIT (1.5). This result suggests that

the total impact of the various GP on women's employment is *just* the same as that of FP, whose effect should be regarded as operating much more indirectly, through the improvement of domestic production technology.

INSERT TABLE 4 HERE

The problem is that some GP, supporting household incomes and male employment, may have a discouraging effect on women's participation. Specific female oriented employment measures merely counterbalance these negative outcomes.

In order to assess the role of the different GP for paid and unpaid work, we estimate the Multinomial logit 1 for this specification also (see Table 5). The specification with the dummies for the presence of beneficiaries in the village confirms that FPVISIT is significant, especially for paid work, and DWCRA is not. The specification with beneficiaries in percentage of village population shows that the externality effects of both programmes are positive on the state of working, with a higher probability for the DWCRA programme. However, while the effect of FPVISIT is very similar for paid and unpaid work, for DWCRA we observe a larger effect on unpaid work.

INSERT TABLE 5 HERE

8 CONCLUSIONS

Our analysis of the effect of family planning on women participation has shown that demographic and health policies may have empowering consequences for women's conditions in developing countries.

Our household model in the collective framework predicts that an exogenous improvement in household production technology due to FP gives a woman a chance to choose whether to participate in the labour force. Our econometric evidence for India does not reject this hypothesis, showing a positive impact of an exogenous FP scheme (the family planning worker visit) on the probability of women finding employment. Coherently with the hypothesis that the model fits a primitive stage of development, the effect is significant only for rural India, indicating that in urban areas the technological improvement in household production has already produced its effects. Our results also show that the largest positive impact of FP in rural India is to be found on permanent paid work, as opposed to occasional and unpaid work, suggesting a potential empowering feedback of demographic measures. The FP effect is robust on the introduction of income and labour market programmes (GP), some of them directly aimed at reducing women's vulnerability. Moreover, the comparison between the GP and FP effects on women's employment in rural India shows that the impact of GP altogether is just the same as that of FP. The problem is that some GP, which support household income and male employment, may have a discouraging effect on women's participation. We find that more specifically female oriented employment measures merely counterbalance these negative outcomes.

If we believe that women's empowerment is closely related to their earning capacity stemming from a permanent paid job, the contribution of FP programmes has to be regarded as a successful, albeit indirect, intervention in this direction. As to public income support and employment policies, they must be carefully studied with an eye to intra-household

dynamics, in order to avoid disincentive effects on female participation that could counterbalance the positive effects of specific measures for increasing female employment.

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TABLE 1: Income support and Labour Market Programmes for Rural Development.

Percentage of beneficiaries over total *de jure* population

| Category | Acronyms | Percentage |
|--|----------|------------|
| Integrated Rural Development Programme | IRDP | 55.9 |
| Development of Women and Children of Rural Areas | DWCRA | 23.1 |
| Employment Guarantee Scheme | EGS | 9.5 |
| National Rural Employment Programme | NREP | 12.4 |
| Training of Rural Youths for Self Employment | TRYSEM | 8.9 |
| Sanjay Gandhi Niradhar Yojana | SGNY | 11.7 |
| Indira Awas Yojana | IAY | 61.5 |

Source: NFHS-2, 1998-99

TABLE 2

MARGINAL EFFECTS OF A FP VISIT

ON THE PROBABILITY OF WORKING OF MARRIED WOMEN AGED 15-49

(marginal effects*100)

All Indian States

LOGIT

| | Working | Observations |
|-------|---------|--------------|
| TOTAL | 3.29*** | 82238 |
| URBAN | 1.40 | 25533 |
| RURAL | 2.57*** | 56705 |

MULTINOMIAL LOGIT 1

| | Not working | Working unpaid | Working paid | Observations |
|-------|-------------|----------------|--------------|--------------|
| TOTAL | -3.26*** | 0.55* | 2.72*** | 82225 |
| URBAN | -1.31 | 0.56* | 0.75 | 25528 |
| RURAL | -2.42*** | 0.53 | 1.89*** | 56697 |

MULTINOMIAL LOGIT 2

| | Not working | Working unpaid | Working paid | Observations | |
|-------|-------------|----------------|--------------|--------------|-------|
| | | | Occasionally | All year | |
| TOTAL | -0.32*** | 0.56** | 0.65*** | 1.97*** | 82222 |
| URBAN | -1.21 | 0.57* | 0.67* | -0.03 | 25527 |
| RURAL | -2.39*** | 0.55 | 0.49* | 1.35*** | 56695 |

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

The results of the complete specification of Multinomial logit 1 are reported in Tables A5 and A6 of the Appendix. The complete results of the other specifications are available on request.

Data source: NFHS-2, 1998-99

TABLE 3

MARGINAL EFFECTS OF WOMEN'S AND FAMILY CHARACTERISTICS ON THE PROBABILITY
OF WORKING OF MARRIED WOMEN AGED 15-49 – LOGIT

(marginal effects*100)

All Indian States

| | Working | | |
|--|--------------|--------------|--------------|
| | <i>TOTAL</i> | <i>URBAN</i> | <i>RURAL</i> |
| <i>Education</i> | | | |
| Woman's years of education | -4.39*** | -2.71*** | -4.55*** |
| Woman's years of education sq. | 0.37*** | 0.26*** | 0.34*** |
| <i>Religion caste and tribe</i> | | | |
| Muslim | -9.17*** | -4.43*** | -10.10*** |
| Christian | 10.4*** | 6.44*** | 12.40*** |
| Scheduled caste | 3.35*** | 1.22 | 4.58*** |
| Scheduled tribe | 18.5*** | 8.55*** | 21.80*** |
| <i>Children in the household</i> | | | |
| Own children aged 0-2 | -6.66*** | -5.12*** | -7.25*** |
| Own children aged 3-5 | 0.24 | -0.08 | 0.33 |
| Own children aged 6-14 | 1.07*** | 0.92*** | 0.94*** |
| Other children in the family aged 0-2 | 0.29 | 0.06 | 0.27 |
| Other children in the family aged 3-5 | 0.33 | 2.25*** | -0.39 |
| Other children in the family aged 6-14 | 0.55* | 1.07** | 0.20 |
| <i>Husband's employment position</i> | | | |
| Professional | -2.00* | -3.65** | -0.801 |
| Salesman | -8.15*** | -8.40*** | -7.54*** |

| | | | |
|------------------------------|----------|----------|----------|
| Self-employed in agriculture | 3.86*** | 2.06 | 4.72*** |
| Skilled blue collar | -5.65*** | -6.59*** | -4.08*** |
| Unskilled blue collar | -8.39*** | -4.45*** | -9.40*** |
| Wealth index | -10.5*** | -8.49*** | -11.7*** |

*Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$*

The complete results of this specification are available on request.

Data source: NFHS-2, 1998-99

TABLE 4

COMPARING THE EFFECTS OF FP VISIT WITH GP - LOGIT

Dependent variable: work/no work

(marginal effects*100)

| | Rural India | |
|--|----------------|---------------------------|
| | <i>Dummies</i> | <i>Beneficiaries</i> |
| | | (% of village population) |
| | (col.1) | (col.2) |
| <i>Family Planning</i> | | |
| FPVISIT | 5.54*** | 1.50*** |
| <i>Prime age facilities</i> | | |
| Nursery and FP centre | 2.73*** | 2.33***+ |
| Primary school in village | 3.61*** | 3.87***+ |
| <i>GP-Welfare and Labour Market programmes</i> | | |
| IRDPA | -1.66** | -0.80*** |
| NREP | -4.66*** | -0.71* |
| TRYSEM | -4.31*** | -3.70*** |
| EGS | 3.26*** | 2.02*** |
| DWCRA | 0.24 | 2.61*** |
| IAY | 0.54 | 0.40 |
| SGNY | 4.15*** | 1.63*** |
| <i>Observations</i> | 51754 | 51740 |

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; +:dummy

The complete results of this specification are available on request

Data source: NFHS-2, 1998-99

TABLE 5

COMPARING THE EFFECTS OF FP VISIT WITH GP – MULTINOMIAL LOGIT

(marginal effects*100)

Rural India

MULTINOMIAL LOGIT 1

| Type of FP and GP var.: | <i>Dummies</i> | | | <i>Beneficiaries (% of village population)</i> | | |
|---|----------------|----------|--------------|--|----------|----------|
| | | Working | | | Working | Working |
| Dependent variable states: | Not working | unpaid | Working paid | Not working | unpaid | paid |
| <i>Family Planning</i> | | | | | | |
| FPVISIT | -5.26*** | 0.38 | 4.88*** | -1.41*** | 0.74*** | 0.67*** |
| <i>Prime age facilities</i> | | | | | | |
| Nursery and FP centre+ | -2.47*** | 0.92** | 1.55*** | -2.18*** | 0.40 | 1.78*** |
| Primary school in village + | -3.45*** | -0.24 | 3.69*** | -3.67*** | -0.36 | 4.02*** |
| <i>GP -Welfare and Labour Market programmes</i> | | | | | | |
| IRDP | 1.30** | -1.82*** | 0.52 | 0.69*** | -0.83*** | 0.14 |
| NREP | 4.37*** | -3.09*** | -1.27** | 0.58* | -0.21 | -0.365 |
| TRYSEM | 4.22*** | -2.82*** | -1.40*** | 3.63*** | -1.60*** | -2.03*** |
| EGS | -3.32*** | 2.26*** | 1.05 | -1.87*** | 0.97*** | 0.90*** |
| DWCRA | -0.13 | -0.46 | 0.59 | -2.36*** | 1.47*** | 0.89*** |
| IAY | -0.51 | 0.44 | 0.07 | -0.37 | 0.05 | 0.31* |
| SGNY | -4.04*** | 1.58** | 2.47*** | -1.56*** | 0.58** | 0.98*** |
| <i>Observations</i> | | 51746 | | 51732 | | |

*Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; +:dummy*

The results of the complete specification of this model are reported in Table A7 of the Appendix.

Data source: NFHS-2, 1998-99

Table A1

Descriptive statistics of dependent variables for married women aged 15-49 (percentages in parenthesis)

All India

| | No work | Work | | |
|---|---------|-------------|---------------|-----------|
| | 56349 | 28498 | | |
| Woman is currently working | (66.41) | (33.59) | | |
| | No work | Unpaid work | Paid work | |
| | 56349 | 10724 | 17761 | |
| Woman is currently working as paid worker | (66.42) | (12.64) | (20.94) | |
| | | | Seasonal paid | All year |
| | No work | Unpaid work | work | paid work |
| | 56349 | 10724 | 5389 | 12369 |
| Woman is currently working as seasonal worker | (66.43) | (12.64) | (6.35) | (14.58) |

Urban India

| | No work | Work | | |
|---|---------|-------------|---------------|-----------|
| | 20436 | 5868 | | |
| Woman is currently working | (77.69) | (22.31) | | |
| | No work | Unpaid work | Paid work | |
| | 20436 | 726 | 5137 | |
| Woman is currently working as paid worker | (77.71) | (2.76) | (19.53) | |
| | | | Seasonal paid | All year |
| | No work | Unpaid work | work | paid work |
| | 20,436 | 726 | 979 | 4157 |
| Woman is currently working as seasonal worker | (77.71) | (2.76) | (3.72) | (15.81) |

Rural India

| | No work | Work | | |
|---|---------|-------------|---------------|-----------|
| | 35913 | 22630 | | |
| Woman is currently working | (61.34) | (38.66) | | |
| | No work | Unpaid work | Paid work | |
| | 35913 | 9998 | 12624 | |
| Woman is currently working as paid worker | (61.35) | (17.08) | (21.57) | |
| | | | Seasonal paid | All year |
| | No work | Unpaid work | work | paid work |
| | 35913 | 9998 | 4410 | 8212 |
| Woman is currently working as seasonal worker | (61.36) | (17.08) | (7.53) | (14.03) |

Table A2

All India summary statistics for the sub sample of married women aged 15-49

| Variables | Obs. | Mean | Std. Dev. | Min | Max |
|---|-------|---------|-----------|-------|------|
| <i>Household's characteristics</i> | | | | | |
| Woman is the household head | 84862 | 0.02 | 0.14 | 0 | 1 |
| Age of the household head | 84844 | 45.52 | 13.54 | 2 | 95 |
| Household size | 84862 | 6.82 | 3.63 | 1 | 46 |
| Wealth index | 84862 | 0.02 | 1.00 | -1.53 | 2.79 |
| <i>Children in the household</i> | | | | | |
| Own children aged 0-2 | 84408 | 0.36 | 0.55 | 0 | 4 |
| Own children aged 3-5 | 84408 | 0.38 | 0.59 | 0 | 6 |
| Own children aged 6-14 | 84408 | 1.05 | 1.21 | 0 | 7 |
| Own children aged 15-17 | 84408 | 0.25 | 0.50 | 0 | 4 |
| Other children in the family aged 0-2 | 84408 | 0.19 | 0.51 | 0 | 6 |
| Other children in the family aged 3-5 | 84408 | 0.16 | 0.50 | 0 | 7 |
| Other children in the family aged 6-14 | 84408 | 0.39 | 0.99 | 0 | 16 |
| Other children in the family aged 15-17 | 84408 | 0.17 | 0.47 | 0 | 5 |
| <i>Woman's characteristics</i> | | | | | |
| Woman's age | 84862 | 31.03 | 8.63 | 15 | 49 |
| Woman's age sq. | 84862 | 1037.46 | 559.31 | 225 | 2401 |
| Woman's years of education | 84825 | 3.99 | 4.76 | 0 | 22 |
| Woman's years of education sq. | 84825 | 38.55 | 61.24 | 0 | 484 |
| Woman is Muslim | 84657 | 0.12 | 0.32 | 0 | 1 |
| Woman is Christian | 84657 | 0.05 | 0.23 | 0 | 1 |
| Woman is in a scheduled caste | 84255 | 0.17 | 0.38 | 0 | 1 |
| Woman is in a scheduled tribe | 84255 | 0.12 | 0.32 | 0 | 1 |
| Woman is currently working | 84847 | 0.3 | 0.5 | 0.0 | 1 |
| <i>Husband's characteristics</i> | | | | | |
| Husband's age | 84555 | 36.97 | 9.82 | 15 | 97 |

| | | | | | |
|--|-------|---------|--------|-----|------|
| Husband's age sq. | 84555 | 1463.42 | 781.20 | 225 | 9409 |
| Husband's years of education | 84693 | 6.58 | 5.08 | 0 | 30 |
| Husband years of education sq. | 84693 | 69.06 | 75.32 | 0 | 900 |
| <i>Husband's employment position (base cat. No work)</i> | | | | | |
| Professional | 83981 | 0.13 | 0.34 | 0 | 1 |
| Salesman | 83981 | 0.11 | 0.31 | 0 | 1 |
| Self-employed in agriculture | 83981 | 0.36 | 0.48 | 0 | 1 |
| Skilled blue collar | 83981 | 0.22 | 0.41 | 0 | 1 |
| Unskilled blue collar | 83981 | 0.10 | 0.30 | 0 | 1 |
| Other position | 83981 | 0.05 | 0.22 | 0 | 1 |
| <i>Geographic characteristics (base cat. South)</i> | | | | | |
| Urban area | 84862 | 0.31 | 0.46 | 0 | 1 |
| North | 84862 | 0.23 | 0.42 | 0 | 1 |
| Centre | 84862 | 0.18 | 0.39 | 0 | 1 |
| East | 84862 | 0.18 | 0.38 | 0 | 1 |
| Northeast | 84862 | 0.12 | 0.32 | 0 | 1 |
| West | 84862 | 0.11 | 0.32 | 0 | 1 |
| <i>Programmes</i> | | | | | |
| Woman received a FP worker visit | 84860 | 0.11 | 0.31 | 0 | 1 |

Data source: NFHS-2, 1998-99.

Note: North: Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Rajasthan; Centre: Madhya Pradesh, Uttar Pradesh; East: Bihar, Orissa, West Bengal; Northeast: Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim; West: Goa, Gujarat, Maharashtra; South: Andhra Pradesh, Karnataka, Kerala, Tamil Nadu.

Table A3

Urban India summary statistics for the sub sample of married women aged 15-49

| Variables | Obs. | Mean | Std. Dev. | Min | Max |
|---|-------|---------|-----------|-------|------|
| <i>Household's characteristics</i> | | | | | |
| Woman is the household head | 26308 | 0.02 | 0.12 | 0 | 1 |
| Age of the household head | 26301 | 45.61 | 12.92 | 16 | 95 |
| Household size | 26308 | 6.39 | 3.38 | 1 | 41 |
| Wealth index | 26308 | 0.90 | 0.91 | -1.42 | 2.79 |
| <i>Children in the household</i> | | | | | |
| Own children aged 0-2 | 26188 | 0.31 | 0.53 | 0 | 4 |
| Own children aged 3-5 | 26188 | 0.32 | 0.55 | 0 | 4 |
| Own children aged 6-14 | 26188 | 0.97 | 1.15 | 0 | 7 |
| Own children aged 15-17 | 26188 | 0.26 | 0.53 | 0 | 3 |
| Other children in the family aged 0-2 | 26188 | 0.14 | 0.45 | 0 | 5 |
| Other children in the family aged 3-5 | 26188 | 0.12 | 0.43 | 0 | 6 |
| Other children in the family aged 6-14 | 26188 | 0.30 | 0.87 | 0 | 13 |
| Other children in the family aged 15-17 | 26188 | 0.13 | 0.41 | 0 | 5 |
| <i>Woman's characteristics</i> | | | | | |
| Woman's age | 26308 | 32.26 | 8.31 | 15 | 49 |
| Woman's age sq. | 26308 | 1109.63 | 551.75 | 225 | 2401 |
| Woman's years of education | 26291 | 6.82 | 5.26 | 0 | 22 |
| Woman's years of education sq. | 26291 | 74.18 | 79.48 | 0 | 484 |
| Woman is Muslim | 26267 | 0.15 | 0.36 | 0 | 1 |
| Woman is Christian | 26267 | 0.06 | 0.24 | 0 | 1 |
| Woman is in a scheduled caste | 26205 | 0.14 | 0.35 | 0 | 1 |
| Woman is in a scheduled tribe | 26205 | 0.06 | 0.24 | 0 | 1 |
| Woman is currently working | 26304 | 0.22 | 0.42 | 0 | 1 |
| <i>Husband's characteristics</i> | | | | | |

| | | | | | |
|--|-------|---------|--------|-----|------|
| Husband's age | 26274 | 38.03 | 9.37 | 15 | 95 |
| Husband's age sq. | 26274 | 1534.40 | 756.80 | 225 | 9025 |
| Husband's years of education | 26244 | 9.02 | 4.93 | 0 | 30 |
| Husband years of education sq. | 26244 | 105.72 | 86.81 | 0 | 900 |
| <i>Husband's employment position (base cat. No work)</i> | | | | | |
| Professional | 25913 | 0.25 | 0.43 | 0 | 1 |
| Salesman | 25913 | 0.20 | 0.40 | 0 | 1 |
| Self-employed in agriculture | 25913 | 0.05 | 0.23 | 0 | 1 |
| Skilled blue collar | 25913 | 0.31 | 0.46 | 0 | 1 |
| Unskilled blue collar | 25913 | 0.09 | 0.28 | 0 | 1 |
| Other position | 25913 | 0.07 | 0.26 | 0 | 1 |
| <i>Geographic characteristics (base cat. South)</i> | | | | | |
| North | 26308 | 0.27 | 0.44 | 0 | 1 |
| Centre | 26308 | 0.13 | 0.34 | 0 | 1 |
| East | 26308 | 0.12 | 0.33 | 0 | 1 |
| Northeast | 26308 | 0.09 | 0.29 | 0 | 1 |
| West | 26308 | 0.19 | 0.39 | 0 | 1 |
| <i>Programmes</i> | | | | | |
| Woman received a FP worker visit | 26307 | 0.09 | 0.29 | 0 | 1 |

Data source: NFHS-2, 1998-99.

Note: North: Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Rajasthan; Centre: Madhya Pradesh, Uttar Pradesh; East: Bihar, Orissa, West Bengal; Northeast: Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim; West: Goa, Gujarat, Maharashtra; South: Andhra Pradesh, Karnataka, Kerala, Tamil Nadu.

Table A4

Rural India summary statistics for the sub sample of married women aged 15-49

| Variables | Obs. | Mean | Std. Dev. | Min | Max |
|---|-------|---------|-----------|-------|------|
| <i>Household's characteristics</i> | | | | | |
| Woman is the household head | 58510 | 0.02 | 0.14 | 0 | 1 |
| Age of the household head | 58499 | 45.49 | 13.80 | 2 | 95 |
| Household size | 58510 | 7.02 | 3.72 | 1 | 46 |
| Wealth index | 58510 | -0.38 | 0.75 | -1.53 | 2.71 |
| <i>Children in the household</i> | | | | | |
| Own children aged 0-2 | 58177 | 0.38 | 0.56 | 0 | 4 |
| Own children aged 3-5 | 58177 | 0.41 | 0.61 | 0 | 6 |
| Own children aged 6-14 | 58177 | 1.09 | 1.24 | 0 | 7 |
| Own children aged 15-17 | 58177 | 0.24 | 0.49 | 0 | 4 |
| Other children in the family aged 0-2 | 58177 | 0.21 | 0.54 | 0 | 6 |
| Other children in the family aged 3-5 | 58177 | 0.18 | 0.53 | 0 | 7 |
| Other children in the family aged 6-14 | 58177 | 0.43 | 1.03 | 0 | 16 |
| Other children in the family aged 15-17 | 58177 | 0.19 | 0.49 | 0 | 5 |
| <i>Woman's characteristics</i> | | | | | |
| Woman's age | 58510 | 30.48 | 8.72 | 15 | 49 |
| Woman's age sq. | 58510 | 1005.11 | 559.70 | 225 | 2401 |
| Woman's years of education | 58490 | 2.71 | 3.90 | 0 | 22 |
| Woman's years of education sq. | 58490 | 22.54 | 42.08 | 0 | 484 |
| Woman is Muslim | 58346 | 0.11 | 0.31 | 0 | 1 |
| Woman is Christian | 58346 | 0.05 | 0.22 | 0 | 1 |
| Woman is in a scheduled caste | 58006 | 0.18 | 0.39 | 0 | 1 |
| Woman is in a scheduled tribe | 58006 | 0.14 | 0.35 | 0 | 1 |
| Woman is currently working | 58499 | 0.39 | 0.49 | 0 | 1 |
| <i>Husband's characteristics</i> | | | | | |

| | | | | | |
|--|-------|---------|--------|-----|-------|
| Husband's age | 58237 | 36.49 | 9.97 | 15 | 97 |
| Husband's age sq. | 58237 | 1431.30 | 789.84 | 225 | 9409 |
| Husband's years of education | 58405 | 5.49 | 4.75 | 0 | 30 |
| Husband years of education sq. | 58405 | 52.62 | 62.95 | 0 | 900 |
| <i>Husband's employment position (base cat. No work)</i> | | | | | |
| Professional | 58024 | 0.08 | 0.28 | 0 | 1 |
| Salesman | 58024 | 0.07 | 0.26 | 0 | 1 |
| Self-employed in agriculture | 58024 | 0.50 | 0.50 | 0 | 1 |
| Skilled blue collar | 58024 | 0.18 | 0.38 | 0 | 1 |
| Unskilled blue collar | 58024 | 0.10 | 0.30 | 0 | 1 |
| Other position | 58024 | 0.04 | 0.20 | 0 | 1 |
| <i>Geographic characteristics (base cat. South)</i> | | | | | |
| North | 58510 | 0.22 | 0.41 | 0 | 1 |
| Centre | 58510 | 0.21 | 0.40 | 0 | 1 |
| East | 58510 | 0.20 | 0.40 | 0 | 1 |
| Northeast | 58510 | 0.13 | 0.34 | 0 | 1 |
| West | 58510 | 0.08 | 0.27 | 0 | 1 |
| <i>Prime age facilities</i> | | | | | |
| Primary school in the village | 58510 | 0.90 | 0.30 | 0 | 1 |
| Anganwadi in the village | 58343 | 0.67 | 0.47 | 0 | 1 |
| <i>Family Planning</i> | | | | | |
| Woman received a FP worker visit (dummy) | 58509 | 0.12 | 0.32 | 0 | 1 |
| FP worker visit in the village (dummy) | 58510 | 0.67 | 0.47 | 0 | 1 |
| FP visit percentage of beneficiaries | 58510 | 2.16 | 2.87 | 0 | 22.86 |
| <i>GP- Welfare and Labour Market Programmes</i> | | | | | |
| IRDP (dummy) | 55822 | 0.60 | 0.49 | 0 | 1 |
| NREP (dummy) | 56018 | 0.13 | 0.33 | 0 | 1 |
| TRYSEM (dummy) | 56532 | 0.23 | 0.42 | 0 | 1 |
| EGS (dummy) | 56273 | 0.09 | 0.29 | 0 | 1 |

| | | | | | |
|---|-------|------|------|---|-------|
| DWACRA(dummy) | 56252 | 0.23 | 0.42 | 0 | 1 |
| IAY (dummy) | 57040 | 0.64 | 0.48 | 0 | 1 |
| SDNY (dummy) | 55800 | 0.09 | 0.29 | 0 | 1 |
| IRDP percentage of beneficiaries in the village | 55822 | 0.92 | 1.95 | 0 | 48.00 |
| NREP percentage of beneficiaries in the village | 56018 | 0.14 | 0.96 | 0 | 18.52 |
| TRYSEM percentage of beneficiaries in the village | 56532 | 0.13 | 1.18 | 0 | 60.61 |
| EGS percentage of beneficiaries in the village | 56273 | 0.13 | 1.46 | 0 | 75.76 |
| DWACRA percentage of beneficiaries in the village | 56238 | 0.19 | 0.85 | 0 | 19.60 |
| IAY percentage of beneficiaries in the village | 57040 | 0.52 | 1.92 | 0 | 90.91 |
| SDNY percentage of beneficiaries in the village | 55786 | 0.10 | 0.97 | 0 | 100 |

Data source: NFHS-2, 1998-99.

Note: North: Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Rajasthan; Centre: Madhya Pradesh, Uttar Pradesh; East: Bihar, Orissa, West Bengal; Northeast: Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim; West: Goa, Gujarat, Maharashtra; South: Andhra Pradesh, Karnataka, Kerala, Tamil Nadu.

Table A5

MARGINAL EFFECTS OF THE PROBABILITY OF WORKING OF
MARRIED WOMEN AGED 15-49– MULTINOMIAL LOGIT - All India

marginal effects*100 - standard errors in italics

| | Not | Working | Working |
|---------------------------------------|---------------|----------------|----------------|
| <i>Household's characteristics</i> | working | unpaid | paid |
| Woman is the household head | -7.69*** | 4.45*** | 3.24*** |
| | <i>-0.01</i> | <i>0.01</i> | <i>0.01</i> |
| Age of the household head | 0.08*** | -0.02*** | -0.06*** |
| | <i>0.0002</i> | <i>-0.0001</i> | <i>-0.0001</i> |
| Household size | 0.76*** | 0.53*** | -1.29*** |
| | <i>0.001</i> | <i>0.001</i> | <i>-0.001</i> |
| Wealth index | 9.36*** | -3.26*** | -6.10*** |
| | <i>0.003</i> | <i>-0.002</i> | <i>-0.003</i> |
| <i>Children in the household</i> | | | |
| Own children aged 0-2 | 6.14*** | -1.82*** | -4.32*** |
| | <i>0.004</i> | <i>-0.002</i> | <i>-0.003</i> |
| Own children aged 3-5 | -0.34 | -0.21 | 0.55* |
| | <i>-0.003</i> | <i>-0.002</i> | <i>0.003</i> |
| Own children aged 6-14 | -1.28*** | -0.27*** | 1.55*** |
| | <i>-0.002</i> | <i>-0.001</i> | <i>0.002</i> |
| Own children aged 15-17 | -1.02*** | -0.13 | 1.15*** |
| | <i>-0.004</i> | <i>-0.002</i> | <i>0.003</i> |
| Other children in the family aged 0-2 | -0.10 | -0.40* | 0.501 |
| | <i>-0.005</i> | <i>-0.002</i> | <i>0.005</i> |
| Other children in the family aged 3-5 | -0.10 | -0.50** | 0.61 |
| | <i>-0.005</i> | <i>-0.002</i> | <i>0.005</i> |

| | | | |
|---------------------------------------|----------|-----------|----------|
| Other children in the family aged 6- | | | |
| 14 | -0.52* | -0.44*** | 0.96*** |
| | -0.003 | -0.001 | 0.003 |
| Other children in the family aged 15- | | | |
| 17 | -0.58 | 0.02 | 0.56 |
| | -0.005 | 0.002 | 0.004 |
| <i>Woman's characteristics</i> | | | |
| Woman's age | -2.01*** | 0.38*** | 1.62*** |
| | -0.002 | 0.001 | 0.002 |
| Woman's age sq. | 0.02*** | -0.004*** | -0.02*** |
| | 0.00003 | -0.00002 | -0.00003 |
| Woman's years of education | 3.53*** | -0.55*** | -2.99*** |
| | 0.001 | -0.001 | -0.001 |
| Woman's years of education sq. | -0.29*** | -0.06 | 0.30*** |
| | -0.0001 | -0.0001 | 0.0001 |
| Woman is Muslim | 7.64*** | -1.49*** | -6.15*** |
| | 0.005 | -0.003 | -0.004 |
| Woman is Christian | -10.7*** | 5.63*** | 5.12*** |
| | 0.01 | 0.01 | 0.01 |
| Woman is in a scheduled caste | -4.54*** | -3.10*** | 7.64*** |
| | -0.005 | -0.002 | 0.004 |
| Woman is in a scheduled tribe | -19.0*** | 7.51*** | 11.50*** |
| | -0.007 | -0.004 | 0.006 |
| <i>Husband's characteristics</i> | | | |
| Husband's age | -0.26* | 0.05 | 0.21 |
| | -0.002 | 0.001 | 0.001 |
| Husband's age sq. | 0.004** | -0.001 | -0.003** |
| | 0.00002 | -0.00001 | -0.00002 |
| Husband's years of education | 1.32*** | 0.191*** | -1.52*** |

| | | | |
|--|----------|----------|-----------|
| | 0.001 | 0.001 | -0.001 |
| Husband years of education sq. | -0.03*** | -0.008* | 0.04*** |
| | -0.00008 | -0.00005 | 0.00007 |
| <i>Husband's employment position (base cat. No work)</i> | | | |
| Professional | 1.75 | 1.93** | -3.68*** |
| | 0.01 | 0.01 | -0.01 |
| Salesman | 5.88*** | 2.77*** | -8.65*** |
| | 0.01 | 0.01 | -0.01 |
| Self-employed in agriculture | -2.62** | 6.91*** | -4.29*** |
| | -0.01 | 0.01 | -0.01 |
| Skilled blue collar | 5.08*** | 0.06 | -5.14*** |
| | 0.01 | 0.01 | -0.01 |
| Unskilled blue collar | 7.83*** | -3.30*** | -4.53*** |
| | 0.009 | -0.005 | -0.008 |
| Other position | 5.97*** | 1.04 | -7.01*** |
| | 0.01 | 0.01 | -0.01 |
| <i>Geographic characteristics (base cat. South)</i> | | | |
| North | 12.7*** | 2.94*** | -15.6*** |
| | 0.005 | 0.003 | -0.003 |
| Centre | 12.4*** | -0.42 | -12.00*** |
| | 0.005 | -0.003 | -0.003 |
| East | 21.8*** | -7.72*** | -14.0*** |
| | 0.004 | -0.002 | -0.003 |
| Northeast | 15.2*** | -3.86*** | -11.40*** |
| | 0.004 | -0.003 | -0.003 |
| West | -4.72*** | 6.56*** | -1.84*** |
| | -0.007 | 0.005 | -0.005 |
| Urban area | 4.13*** | -7.20*** | 3.07*** |

| | | | |
|----------------------------------|----------|--------|---------|
| | 0.005 | -0.002 | 0.004 |
| <i>Programmes</i> | | | |
| Woman received a FP worker visit | -3.26*** | 0.55* | 2.72*** |
| | -0.006 | 0.003 | 0.005 |

Observations: 82225

LR chi2(74): 23986.39

Prob > chi2: 0.0000

Pseudo R2: 0.16

Note: *** p<0.01, ** p<0.05, * p<0.1; +:dummy.

North: Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab,
Rajasthan; Centre: Madhya Pradesh, Uttar Pradesh; East: Bihar, Orissa, West
Bengal; Northeast: Arunachal Pradesh, Assam, Manipur, Meghalaya,
Mizoram, Nagaland, Sikkim; West: Goa, Gujarat, Maharashtra; South:
Andhra Pradesh, Karnataka, Kerala, Tamil Nadu.

Data source: NFHS-2, 1998-99

Table A6

MARGINAL EFFECTS OF THE PROBABILITY OF WORKING OF MARRIED WOMEN AGED 15-49

MULTINOMIAL LOGIT - Urban and Rural India

marginal effects*100 - standard errors in italics

| Variables | Urban India | | | Rural India | | |
|------------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| | Not working | Working unpaid | Working paid | Not working | Working unpaid | Working paid |
| <i>Household's characteristics</i> | | | | | | |
| Woman is the household head | -6.94*** <i>-0.02</i> | 0.79 <i>0.01</i> | 6.15*** <i>0.02</i> | -8.87*** <i>-0.02</i> | 6.86*** <i>0.02</i> | 2.01 <i>0.01</i> |
| Age of the household head | -0.06** <i>-0.0003</i> | 0.02** <i>0.0001</i> | 0.04* <i>0.0002</i> | 0.15*** <i>0.0002</i> | -0.05*** <i>-0.0001</i> | -0.10*** <i>-0.0002</i> |
| Household size | 0.85*** <i>0.002</i> | 0.06 <i>0.001</i> | -0.91*** <i>-0.002</i> | 0.47*** <i>0.002</i> | 0.95*** <i>0.001</i> | -1.41*** <i>-0.001</i> |
| Wealth index | 8.21*** <i>0.004</i> | -0.78*** <i>-0.001</i> | -7.43*** <i>-0.004</i> | 11.2*** <i>0.004</i> | -5.30*** <i>-0.003</i> | -5.87*** <i>-0.004</i> |
| <i>Children in the household</i> | | | | | | |
| Own children aged 0-2 | 4.91*** <i>0.006</i> | -0.72*** <i>-0.002</i> | -4.19*** <i>-0.006</i> | 6.72*** <i>0.005</i> | -2.96*** <i>-0.003</i> | -3.76*** <i>-0.004</i> |
| Own children aged 3-5 | 0.05 <i>0.005</i> | -0.21 <i>-0.002</i> | 0.159 <i>0.005</i> | -0.53 <i>-0.004</i> | -0.29 <i>-0.003</i> | 0.82** <i>0.003</i> |
| Own children aged 6-14 | -0.87*** <i>-0.003</i> | -0.05 <i>-0.001</i> | 0.92*** <i>0.003</i> | -1.19*** <i>-0.003</i> | -0.49*** <i>-0.002</i> | 1.68*** <i>0.002</i> |
| Own children aged 15-17 | -0.85* <i>-0.005</i> | 0.05 <i>0.002</i> | 0.8 <i>0.005</i> | -0.70 <i>-0.005</i> | -0.31 <i>-0.003</i> | 1.02** <i>0.004</i> |
| Other children in the family aged | | | | | | |
| 0-2 | 0.35 <i>0.008</i> | 0.07 <i>0.002</i> | -0.421 <i>-0.008</i> | -0.32 <i>-0.006</i> | -0.80** <i>-0.004</i> | 1.12** <i>0.005</i> |

Other children in the family aged

| | | | | | | |
|-----|---------|-------|-------|-------|----------|-------|
| 3-5 | -1.83** | 0.35* | 1.48* | 0.47 | -1.09*** | 0.61 |
| | -0.008 | 0.002 | 0.008 | 0.006 | -0.004 | 0.005 |

Other children in the family aged

| | | | | | | |
|------|---------|--------|--------|--------|----------|---------|
| 6-14 | -1.02** | -0.12 | 1.14** | -0.22 | -0.75*** | 0.97*** |
| | -0.005 | -0.001 | 0.005 | -0.004 | -0.002 | 0.003 |

Other children in the family aged

| | | | | | | |
|-------|--------|-------|-------|--------|--------|-------|
| 15-17 | -0.29 | 0.25 | 0.04 | -0.56 | -0.08 | 0.63 |
| | -0.008 | 0.002 | 0.008 | -0.006 | -0.004 | 0.005 |

Woman's characteristics

| | | | | | | |
|-------------|----------|-------|---------|----------|---------|---------|
| Woman's age | -3.52*** | 0.21* | 3.32*** | -2.03*** | 0.60*** | 1.43*** |
| | -0.004 | 0.001 | 0.003 | -0.003 | 0.002 | 0.002 |

| | | | | | | |
|-----------------|---------|----------|----------|---------|----------|----------|
| Woman's age sq. | 0.04*** | -0.003* | -0.04*** | 0.03*** | -0.007** | -0.02*** |
| | 0.00005 | -0.00002 | -0.00005 | 0.00004 | -0.00003 | -0.00003 |

| | | | | | | |
|----------------------------|---------|---------|----------|---------|----------|----------|
| Woman's years of education | 2.49*** | -0.13** | -2.36*** | 3.86*** | -0.88*** | -2.98*** |
| | 0.002 | -0.001 | -0.002 | 0.002 | -0.002 | -0.001 |

| | | | | | | |
|--------------------------------|----------|---------|---------|----------|---------|---------|
| Woman's years of education sq. | -0.25*** | 0.002 | 0.24*** | -0.27*** | -0.02 | 0.29*** |
| | -0.0001 | 0.00004 | -0.0001 | -0.0002 | -0.0002 | 0.0001 |

| | | | | | | |
|-----------------|---------|----------|----------|---------|----------|----------|
| Woman is Muslim | 4.10*** | -0.53*** | -3.57*** | 8.86*** | -2.20*** | -6.66*** |
| | 0.007 | -0.002 | -0.007 | 0.007 | -0.005 | -0.005 |

| | | | | | | |
|--------------------|----------|--------|---------|----------|---------|---------|
| Woman is Christian | -6.96*** | -0.006 | 6.96*** | -12.9*** | 9.79*** | 3.14*** |
| | -0.01 | -0.004 | -0.01 | -0.01 | 0.01 | 0.01 |

| | | | | | | |
|-------------------------------|--------|----------|---------|----------|----------|----------|
| Woman is in a scheduled caste | -1.46* | -0.71*** | 2.17*** | -4.71*** | -5.30*** | 10.00*** |
| | -0.008 | -0.002 | 0.007 | -0.006 | -0.004 | 0.005 |

| | | | | | | |
|-------------------------------|----------|--------|---------|----------|----------|----------|
| Woman is in a scheduled tribe | -9.62*** | 0.93** | 8.69*** | -22.4*** | 12.20*** | 10.30*** |
| | -0.015 | 0.004 | 0.014 | -0.008 | 0.006 | 0.007 |

Husband's characteristics

| | | | | | | |
|---------------|-------|-------|--------|--------|-------|--------|
| Husband's age | 0.15 | 0.03 | -0.18 | -0.23 | 0.07 | 0.17 |
| | 0.003 | 0.001 | -0.003 | -0.002 | 0.001 | -0.002 |

| | | | | | | |
|--|-----------------|-----------------|-----------------|----------------|-----------------|-----------------|
| Husband's age sq. | 0.001 | -0.0007 | -0.0004 | 0.004* | -0.001 | -0.002 |
| | <i>0.00003</i> | <i>-0.00001</i> | <i>-0.00003</i> | <i>0.00002</i> | <i>-0.00002</i> | <i>-0.00002</i> |
| Husband's years of education | 0.86*** | 0.02 | -0.87*** | 1.33*** | 0.31*** | -1.64*** |
| | <i>0.002</i> | <i>0.001</i> | <i>-0.002</i> | <i>0.001</i> | <i>0.001</i> | <i>-0.001</i> |
| Husband years of education sq. | -0.009 | -0.003 | 0.01 | -0.042*** | -0.01 | 0.05*** |
| | <i>-0.00010</i> | <i>-0.00004</i> | <i>0.00010</i> | <i>0.00011</i> | <i>-0.00008</i> | <i>0.00009</i> |
| <i>Husband's employment position (base cat. No work)</i> | | | | | | |
| Professional | 3.64*** | -0.17 | -3.47*** | -0.53 | 4.55*** | -4.02*** |
| | <i>0.01</i> | <i>-0.01</i> | <i>-0.01</i> | <i>-0.02</i> | <i>0.02</i> | <i>-0.01</i> |
| Salesman | 7.10*** | 1.36* | -8.46*** | 5.20*** | 3.16** | -8.36*** |
| | <i>0.01</i> | <i>0.01</i> | <i>-0.01</i> | <i>-0.02</i> | <i>0.02</i> | <i>-0.01</i> |
| Self-employed in agriculture | -2.88 | 6.98*** | -4.10*** | -4.74*** | 9.84*** | -5.10*** |
| | <i>-0.02</i> | <i>0.02</i> | <i>-0.01</i> | <i>-0.01</i> | <i>0.01</i> | <i>-0.01</i> |
| Skilled blue collar | 6.00*** | -0.07 | -5.93*** | 3.59** | 0.27 | -3.85*** |
| | <i>0.01</i> | <i>0.005</i> | <i>-0.01</i> | <i>-0.02</i> | <i>0.01</i> | <i>-0.01</i> |
| Unskilled blue collar | 4.01*** | -0.33 | -3.68*** | 9.63*** | -6.18*** | -3.45*** |
| | <i>0.013</i> | <i>-0.005</i> | <i>-0.012</i> | <i>-0.013</i> | <i>-0.009</i> | <i>-0.010</i> |
| Other position | 6.09*** | -0.54 | -5.55*** | 4.35** | 2.95* | -7.30*** |
| | <i>0.01</i> | <i>0.00</i> | <i>-0.01</i> | <i>-0.02</i> | <i>0.02</i> | <i>-0.01</i> |
| <i>Geographic characteristics (base cat. South)</i> | | | | | | |
| North | 2.83*** | 0.28 | -3.11*** | 16.80*** | 3.71*** | -20.50*** |
| | <i>0.007</i> | <i>0.003</i> | <i>-0.007</i> | <i>-0.007</i> | <i>0.006</i> | <i>-0.003</i> |
| Centre | 5.18*** | -0.33 | -4.85*** | 16.30*** | -1.50*** | -14.80*** |
| | <i>0.008</i> | <i>-0.003</i> | <i>-0.007</i> | <i>-0.006</i> | <i>-0.005</i> | <i>-0.004</i> |
| East | 10.20*** | -1.52*** | -8.66*** | 29.90*** | -14.20*** | -15.70*** |
| | <i>0.006</i> | <i>-0.002</i> | <i>-0.006</i> | <i>-0.005</i> | <i>-0.003</i> | <i>-0.003</i> |
| Northeast | 2.05** | -0.15 | -1.89** | 21.80*** | -7.89*** | -13.90*** |

| | | | | | | |
|------|--------|---------|--------|-----------|----------|--------|
| | 0.009 | -0.003 | -0.009 | -0.006 | -0.004 | -0.004 |
| West | -0.38 | 0.89*** | -0.52 | -13.30*** | 13.10*** | 0.21 |
| | -0.008 | 0.003 | -0.007 | -0.010 | 0.009 | -0.006 |

Programmes

| | | | | | | |
|----------------------------------|--------|-------|-------|----------|--------|---------|
| Woman received a FP worker visit | -1.31 | 0.56* | 0.75 | -2.42*** | 0.53 | 1.89*** |
| | -0.009 | 0.003 | 0.009 | -0.007 | -0.005 | 0.005 |

| | | | | | | |
|--------------|---------|--|--|----------|--|--|
| Observations | 25528 | | | 56697 | | |
| LR chi2(72) | 3786.34 | | | 17441.30 | | |
| Prob > chi2 | 0.0000 | | | 0.0000 | | |
| Pseudo R2 | 0.1206 | | | 0.1649 | | |

Note: *** p<0.01, ** p<0.05, * p<0.1; +:dummy

North: Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Rajasthan; Centre: Madhya Pradesh, Uttar Pradesh; East: Bihar, Orissa, West Bengal; Northeast: Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim; West: Goa, Gujarat, Maharashtra; South: Andhra Pradesh, Karnataka, Kerala, Tamil Nadu.

Data source: NFHS-2, 1998-99.

Table A7

MARGINAL EFFECTS OF THE PROBABILITY OF WORKING OF MARRIED WOMEN AGED 15-49
COMPARING THE EFFECTS OF FP VISIT WITH GP – MULTINOMIAL LOGIT

Rural India

marginal effects*100 - standard errors in italics

| Type of FP and GP var.: | <i>Dummies</i> | | | <i>Beneficiaries (% of village population)</i> | | |
|-----------------------------|----------------|---------|---------|--|---------|------|
| | Not | Working | Working | Working | Working | |
| Variables | working | unpaid | paid | Not working | unpaid | paid |
| Woman is the household head | -9.36*** | 7.39*** | 1.97 | -9.83*** | 7.98*** | 1.85 |

| | | | | | | |
|---|----------|----------|----------|----------|----------|----------|
| | -0.02 | 0.02 | 0.01 | -0.02 | 0.02 | 0.01 |
| Age of the household head | 0.13*** | -0.04** | -0.08*** | 0.12*** | -0.04*** | -0.08*** |
| | 0.0002 | -0.0002 | -0.0002 | 0.0002 | -0.0002 | -0.0002 |
| Household size | 0.48*** | 0.95*** | -1.43*** | 0.48*** | 0.96*** | -1.44*** |
| | 0.002 | 0.001 | -0.001 | 0.002 | 0.001 | -0.001 |
| Wealth index | 11.10*** | -5.25*** | -5.87*** | 11.10*** | -5.12*** | -5.94*** |
| | 0.005 | -0.003 | -0.004 | 0.005 | -0.003 | -0.004 |
| <i>Children in the household</i> | | | | | | |
| Own children aged 0-2 | 6.43*** | -2.96*** | -3.48*** | 6.43*** | -2.94*** | -3.49*** |
| | 0.005 | -0.004 | -0.004 | 0.005 | -0.004 | -0.004 |
| Own children aged 3-5 | -0.82* | -0.299 | 1.11*** | -0.84* | -0.28 | 1.12*** |
| | -0.004 | -0.003 | 0.004 | -0.004 | -0.003 | 0.004 |
| Own children aged 6-14 | -1.35*** | -0.42** | 1.77*** | -1.37*** | -0.39** | 1.76*** |
| | -0.003 | -0.002 | 0.002 | -0.003 | -0.002 | 0.002 |
| Own children aged 15-17 | -0.80 | -0.21 | 1.01** | -0.85 | -0.16 | 1.01** |
| | -0.005 | -0.004 | 0.004 | -0.005 | -0.004 | 0.004 |
| Other children in the family aged 0-2 | -0.09 | -0.88** | 0.97* | 0.02 | -0.96** | 0.94* |
| | -0.006 | -0.004 | 0.006 | 0.006 | -0.004 | 0.006 |
| Other children in the family aged 3-5 | 0.33 | -1.01** | 0.67 | 0.46 | -1.13*** | 0.67 |
| | 0.006 | -0.004 | 0.006 | 0.006 | -0.004 | 0.006 |
| Other children in the family aged 6-14 | -0.17 | -0.70*** | 0.86*** | -0.22 | -0.68*** | 0.90*** |
| | -0.004 | -0.003 | 0.003 | -0.004 | -0.003 | 0.003 |
| Other children in the family aged 15-17 | -0.42 | -0.19 | 0.62 | -0.42 | -0.24 | 0.65 |
| | -0.006 | -0.004 | 0.005 | -0.006 | -0.004 | 0.005 |

Woman's characteristics

| | | | | | | |
|--|----------|----------|----------|-----------|----------|----------|
| Woman's age | -2.10*** | 0.63*** | 1.47*** | -2.07*** | 0.59*** | 1.48*** |
| | -0.003 | 0.002 | 0.002 | -0.003 | 0.002 | 0.002 |
| Woman's age sq. | 0.03*** | -0.007** | -0.02*** | 0.03*** | -0.006** | -0.02*** |
| | 0.00004 | -0.00003 | -0.00003 | 0.00004 | -0.00003 | -0.00003 |
| Woman's years of education | 3.81*** | -0.75*** | -3.06*** | 3.87*** | -0.80*** | -3.07*** |
| | 0.002 | -0.002 | -0.002 | 0.002 | -0.002 | -0.002 |
| Woman's years of education sq. | -0.27*** | -0.04** | 0.31*** | -0.28*** | -0.03* | 0.31*** |
| | -0.0002 | -0.0002 | 0.0001 | -0.0002 | -0.0002 | 0.0001 |
| Woman is Muslim | 7.72*** | -1.72*** | -6.00*** | 7.57*** | -1.50*** | -6.08*** |
| | 0.008 | -0.006 | -0.006 | 0.008 | -0.006 | -0.006 |
| Woman is Christian | -14.8*** | 10.80*** | 3.98*** | -14.90*** | 10.80*** | 4.06*** |
| | -0.01 | 0.01 | 0.01 | -0.01 | 0.01 | 0.01 |
| Woman is in a scheduled caste | -4.91*** | -5.40*** | 10.30*** | -4.69*** | -5.45*** | 10.10*** |
| | -0.007 | -0.004 | 0.006 | -0.007 | -0.004 | 0.006 |
| | - | | | | | |
| Woman is in a scheduled tribe | 21.70*** | 12.60*** | 9.13*** | -20.70*** | 11.90*** | 8.81*** |
| | -0.01 | 0.01 | 0.01 | -0.01 | 0.01 | 0.01 |
| <i>Husband's characteristics</i> | | | | | | |
| Husband's age | -0.22 | 0.11 | 0.1 | -0.28 | 0.14 | 0.13 |
| | -0.002 | 0.002 | 0.002 | -0.002 | 0.002 | 0.002 |
| Husband's age sq. | 0.004* | -0.002 | -0.002 | 0.004* | -0.002 | -0.002 |
| | 0.00002 | -0.00002 | -0.00002 | 0.00002 | -0.00002 | -0.00002 |
| Husband's years of education | 1.31*** | 0.38*** | -1.69*** | 1.35*** | 0.35*** | -1.70*** |
| | 0.002 | 0.001 | -0.001 | 0.002 | 0.001 | -0.001 |
| Husband years of education sq. | -0.04*** | -0.02** | 0.06*** | -0.04*** | -0.02* | 0.06*** |
| | -0.0001 | -0.0001 | 0.0001 | -0.0001 | -0.0001 | 0.0001 |
| <i>Husband's employment position (base cat. No work)</i> | | | | | | |
| Professional | -1.43 | 5.05*** | -3.63*** | -1.39 | 5.07*** | -3.68*** |
| | -0.02 | 0.02 | -0.01 | -0.02 | 0.02 | -0.01 |

| | | | | | | |
|---|----------|----------|-----------|----------|-----------|-----------|
| Salesman | 4.78*** | 3.18** | -7.96*** | 4.92*** | 3.07* | -7.99*** |
| | 0.02 | 0.02 | -0.01 | 0.02 | 0.02 | -0.01 |
| Self-employed in agriculture | -5.62*** | 10.50*** | -4.90*** | -5.50*** | 10.50*** | -4.97*** |
| | -0.02 | 0.01 | -0.01 | -0.02 | 0.01 | -0.01 |
| Skilled blue collar | 3.07* | 0.41 | -3.48*** | 3.10** | 0.33 | -3.42*** |
| | 0.02 | 0.01 | -0.01 | 0.02 | 0.01 | -0.01 |
| Unskilled blue collar | 9.65*** | -6.29*** | -3.35*** | 9.47*** | -6.27*** | -3.20*** |
| | 0.01 | -0.01 | -0.01 | 0.01 | -0.01 | -0.01 |
| Other position | 3.82** | 3.48** | -7.30*** | 3.76** | 3.55** | -7.31*** |
| | 0.02 | 0.02 | -0.01 | 0.02 | 0.02 | -0.01 |
| <i>Geographic characteristics (base cat. South)</i> | | | | | | |
| North | 17.4*** | 2.41*** | -9.80*** | 13.10*** | 6.67*** | -19.70*** |
| | 0.008 | 0.006 | -0.004 | 0.008 | 0.007 | -0.004 |
| Centre | 16.9*** | -2.99*** | -13.90*** | 12.40*** | 0.74 | -13.10*** |
| | 0.007 | -0.006 | -0.004 | 0.008 | 0.006 | -0.004 |
| | | - | | | | |
| East | 30.00*** | 15.20*** | -14.80*** | 27.50*** | -13.10*** | -14.40*** |
| | 0.005 | -0.004 | -0.004 | 0.006 | -0.004 | -0.004 |
| Northeast | 22.30*** | -9.53*** | -12.80*** | 19.40*** | -6.87*** | -12.50*** |
| | 0.006 | -0.005 | -0.004 | -0.007 | -0.006 | -0.004 |
| West | -9.69*** | 10.90*** | -1.23* | -9.77*** | 11.10*** | -1.36** |
| | -0.01 | 0.01 | -0.01 | -0.01 | 0.01 | -0.01 |
| <i>Prime age facilities</i> | | | | | | |
| Primary school in the village | -3.45*** | -0.24 | 3.69*** | -3.67*** | -0.36 | 4.02*** |
| | -0.007 | -0.006 | 0.005 | -0.007 | -0.006 | 0.005 |
| Anganwadi in the village | -2.47*** | 0.921** | 1.55*** | -2.18*** | 0.4 | 1.78*** |
| | -0.005 | 0.004 | -0.004 | -0.005 | 0.004 | -0.004 |
| <i>Family Planning</i> | | | | | | |
| FP worker visit in the village | -5.26*** | 0.38 | 4.88*** | | | |

| | | | | | | |
|---|----------|---------|----------|----------|----------|----------|
| (dummy) | | | | | | |
| | -0.005 | 0.004 | 0.004 | | | |
| FP visit percentage of beneficiaries | | | | -1.41*** | 0.74*** | 0.67*** |
| | | | | -0.001 | 0.001 | 0.001 |
| <i>GP- Welfare and Labour Market Programmes</i> | | | | | | |
| | | | | | | |
| | | - | | | | |
| IRDP (dummy) | 1.30** | 1.82*** | 0.52 | | | |
| | 0.005 | -0.004 | 0.004 | | | |
| | | | | | | |
| | | - | | | | |
| NREP (dummy) | 4.37*** | 3.09*** | -1.27** | | | |
| | 0.007 | -0.005 | -0.005 | | | |
| | | | | | | |
| | | - | | | | |
| TRYSEM (dummy) | 4.22*** | 2.82*** | -1.40*** | | | |
| | 0.006 | -0.004 | -0.005 | | | |
| EGS (dummy) | -3.32*** | 2.26*** | 1.05 | | | |
| | -0.009 | 0.007 | 0.007 | | | |
| DWACRA(dummy) | -0.133 | -0.46 | 0.59 | | | |
| | -0.006 | -0.004 | -0.005 | | | |
| IAY (dummy) | -0.51 | 0.44 | 0.07 | | | |
| | -0.005 | -0.004 | -0.004 | | | |
| SDNY (dummy) | -4.04*** | 1.58** | 2.47*** | | | |
| | -0.010 | 0.007 | 0.007 | | | |
| IRDP percentage of beneficiaries in the village | | | | 0.69*** | -0.83*** | 0.14 |
| | | | | 0.001 | -0.001 | 0.001 |
| NREP percentage of beneficiaries in the village | | | | 0.58* | -0.21 | -0.37 |
| | | | | 0.003 | -0.002 | -0.003 |
| TRYSEM percentage of beneficiaries in the village | | | | 3.63*** | -1.60*** | -2.03*** |
| | | | | 0.006 | -0.004 | -0.005 |
| EGS percentage of beneficiaries in the village | | | | -1.87*** | 0.97*** | 0.90*** |

| | | | | |
|---|----------|----------|---------|---------|
| | | -0.004 | 0.002 | 0.003 |
| DWACRA percentage of beneficiaries in the village | | -2.36*** | 1.47*** | 0.89*** |
| | | -0.004 | 0.003 | 0.003 |
| IAY percentage of beneficiaries in the village | | -0.37 | 0.05 | 0.31* |
| | | -0.002 | 0.002 | 0.002 |
| SDNY percentage of beneficiaries in the village | | -1.56*** | 0.58** | 0.98*** |
| | | -0.005 | 0.002 | 0.003 |
| Observations | 51746 | 51732 | | |
| LR chi2(90) | 16475.88 | 16544.16 | | |
| Prob > chi2 | 0.0000 | 0.0000 | | |
| Pseudo R2 | 0.1690 | 0.1697 | | |

Note: *** p<0.01, ** p<0.05, * p<0.1; +:dummy

North: Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Rajasthan; Centre: Madhya Pradesh, Uttar Pradesh; East: Bihar, Orissa, West Bengal; Northeast: Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim; West: Goa, Gujarat, Maharashtra; South: Andhra Pradesh, Karnataka, Kerala, Tamil Nadu.

Data source: NFHS-2, 1998-99.

Figure 1. Domestic technology improvement after an exogenous shock: From the no choice case (period 1) to the non-participation decision (period 2)

Figure 2. Domestic technology improvement after an exogenous shock: From the no choice case (period 1) to the participation decision (period 2)

Figure 1

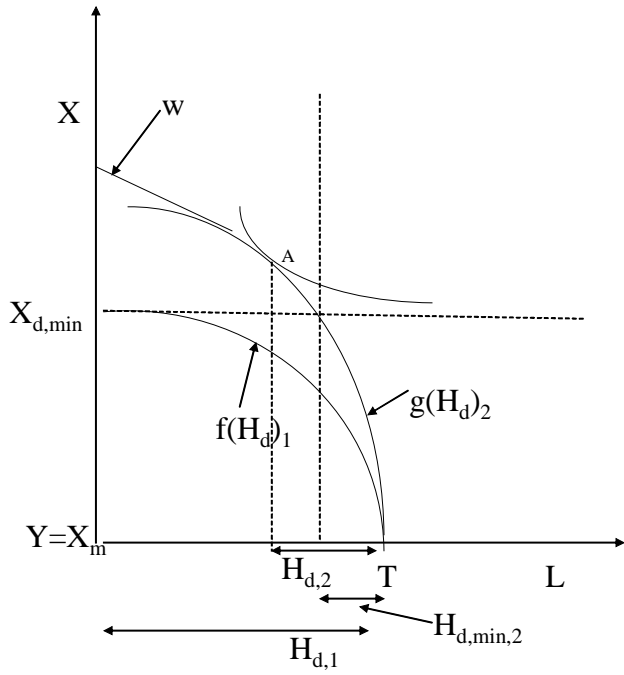
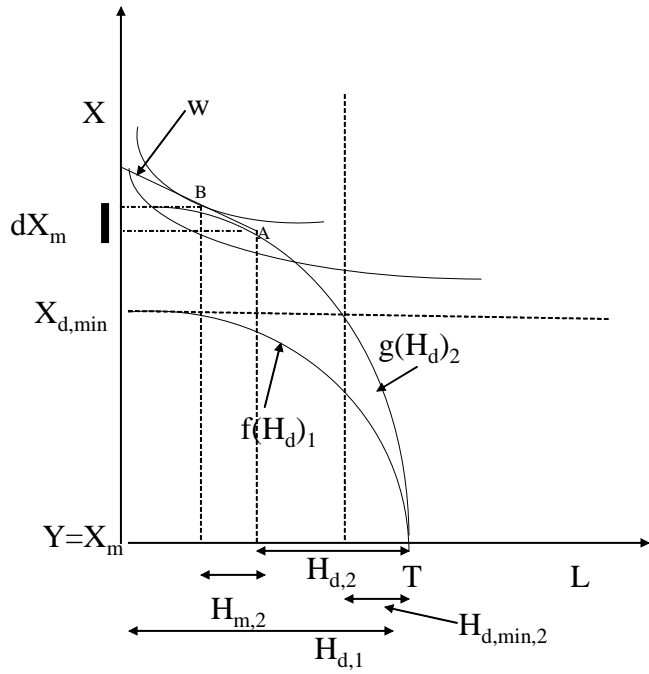


Figure 2



¹ For a discussion of these issues see Desai and Jain (1994).

² Francavilla and Giannelli (2007), show that, in India, if mothers work, it is more likely that their children will also work. The role of mothers' employment on the development of children is a controversial topic also for developed countries. Some studies show that a mothers' full time employment may have detrimental effects on the children's cognitive development (see, for example, Ruhm, 2004; Ermisch and Francesconi, 2004).

³ The authors argue that in low-income countries the "... growth in female employment opportunities, which may be difficult to effect via specific programmes, is not a necessary condition for achieving greater investment in schooling if schooling enhances women's productivity in the home production of human capital..." (p.683).

⁴ Mehra (1997), referring to Sen's capability approach writes: "Empirical data show that it has been relatively easier to expand women's capabilities than their opportunities. ... considerable progress has been made in improving women's capabilities in building their human capital through improvements in access to primary education and better health care." (p. 5).

⁵ For a discussion of employment programmes in India see Mahendra (2006).

⁶ Another policy relevant for women's empowerment is the 1993 Amendment to the Constitution of India that requires that the States reserve one-third of all positions of village chief to women. Chattopadhyay and Duflo, (2004) show that reservation affects policy decisions in ways that seem to reflect women's preferences better. For example, women complain more often than men about drinking water rather than about roads. In villages headed by women there is more investment in water and less investment in roads.

⁷ The actual name is “Family Welfare Programme”. We have called it FP for reasons of brevity, in order to make a clear distinction between demographic and economic welfare policies.

⁸ This statistics are drawn from some preliminary reports available for selected States of the new NFHS-3 survey held in 2005-06. The micro-data have not been released yet.

⁹ See, for example, Cigno (1991), ch. 2.

¹⁰ See the seminal contribution by Bourguignon and Chiappori (1992). For an extensive survey, see Del Boca and Flinn (2005).

¹¹ This is a realistic assumption. In our sample drawn from NFHS-2, 97 per cent of husbands work.

¹² Alternatively, it can be assumed that L enters directly the husband’s utility function, as in Basu (2006), if he draws utility from his wife’s leisure.

¹³ Browning and Gørtz (2006) call this the “Pareto weight”, that may depend on observable data such as relative wages and extra-household factors and unobservable data such as the degree of caring and the personalities of the two partners.

¹⁴ The origin of the y axis of Figures 2 and 3 is rescaled to the amount of market goods that a husbands’ labour income can buy.

¹⁵ In this case utility maximization occurs at the reservation wage $W_R = g'(H_d) > W$

¹⁶ Following Basu (2006), the model might be complicated by assuming that Θ is a positive function of WH_m , that is, not just participation, but also the number of hours that determine women’s decision power in the household. Since our empirical part focuses on the participation decision, this extension to Θ endogeneity goes beyond the scope of the present paper.

¹⁷ Supposing the price of X_m equals unity, then in monetary terms (6) and (7) yield

$w = p^* g'(H_D)$, that is, in equilibrium, the revenue of an extra hour of domestic work must equal its marginal cost. This relation is useful to impute a price p^* to domestic input in empirical work when time use data are available (see Apps and Rees, 1997).

¹⁸ The first survey was conducted in 1992-93, before the introduction of the FP programme we focus on.

¹⁹ The 1991 Census list of villages served as the sampling frame for rural areas. The 1991 Census list of wards served as the sampling frame for urban areas.

²⁰ Being no-longer married is a negative social stigma. In some rural areas of India, it is a common situation that if a husband dies, his widow is considered guilty of his death. In some of the most underdeveloped parts of rural India, if the widow hasn't got a son, the people think that she must die too, because she is useless. The law punishes severely the "Sati", a ferocious ceremony where a widow, usually very young, is burned alive on her husband's funeral pyre.

²¹ The selection of indicator variables to be included in the wealth index is relatively straightforward. Almost all household assets and utility services are included, including country-specific items. The reason for using a broad criterion rather than selected items is that the greater the number of indicator variables, the better the distribution of households, with fewer households being concentrated on certain index scores. Generally, any item that will reflect economic status is used. Two additional indicators are considered: whether there is a domestic servant and whether the household owns agricultural land. The first is constructed by examining the occupation of interviewed members who are not related to the head of the household. If the respondent or spouse works as a domestic servant and is not related to the head, then the household is considered to have a domestic servant. The second

is also based on interviewed members. If any interviewed member (whether related to the head or not) or interviewed member's spouse works his or her own or his or her family's land, then the household is considered to own agricultural land (Rutstein and Johnson, 2004, p.17).

²² The number of FP visits per woman, instead, might be endogenous if the woman asks the FP worker to visit her again. We therefore do not use this variable.

²³ Residing population.

²⁴ The NFHS-2 Village Questionnaire collected information from the *sarpanch*, other village officials, or other knowledgeable persons in the village on facilities and services in the village that can affect health and family planning. One important set of questions focuses on the distance of the village from various types of health facilities, the presence in the village of schooling facilities, including nurseries (*angawadi*).

²⁵ This might indicate that urban areas are in a more advanced stage of development. Studies on the impact of liberalization policies in India show that the increase in the GDP rate of growth was concentrated in urban areas, where inequality has also increased (Cornia, 2004).

²⁶ Our results do not change if we substitute years of education with the dummies for the level of educational attainment. However, the use of dummies reveals that the only positive association between female education and participation is to be found in urban areas for the levels of education higher than secondary.

²⁷ The author, however, does not control for the presence of children and other variables of household composition.

²⁸ Dreze and Murthi (2000), however, find strong empirical support for the negative association between education and fertility in India.

²⁹ The caste system is an expression of the Hindu religion embraced by 80 per cent of the population. Instead, around 50 million people are organised in tribal communities.

³⁰ Bhaumik and Chakrabarty (2006), for example, show that between 1987 and 1999 positive earning differentials between “upper” castes and SC/ST have declined, while they have increased between non-Muslims and Muslims. They also show that inter-caste and inter-religion differences in earnings can be explained to a great extent by differences in educational capital and returns on work experience. Other studies focus on the reasons why the incidence of poverty in SC and ST households is significantly higher than among non-scheduled households (see for example Gang, Sen and Su Youn, 2002).

³¹ See the NFHS report 1998/9, chapter 2 p. 46 and also the next paragraph.

³² Nuclear family households consist of an unmarried adult living alone or a married person or a couple and their unmarried children, if any.

³³ According to Filmer and Pritchett (2001) the principal components analysis is used to assign the indicator weights. This procedure first standardizes the indicator variables (calculating z-scores) and then calculates the factor coefficient scores (factor loadings). Finally, for each household, the indicator values are multiplied by the loadings and added to produce the household’s index value. In this process, only the first of the factors produced is used to represent the wealth index. The resulting sum is itself a standardized score with a mean of zero and a standard deviation of one. The wealth index does not produce results that are comparable to either an income or expenditure-based index since it takes into account almost all household assets and utility services.

³⁴ That’s why we have renamed the variable in Table 4 and 5 “Nursery and FP centre”. It can not be used with FPVISIT to measure the impact of FP since it might be endogenous to the woman’s employment choice.

³⁵ It could also be that if a husband receives a benefit from one programme this makes his wife ineligible for another one. These aspects, however, need to be further investigated.