

# **Sterilization dominance and alternative contraceptive choices in India: An appraisal of the social and economic impact**

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## **Extended abstract**

### **1. Introduction**

After decades of family planning interventions, sterilization continues to be the most dominant contraceptive method in the world, especially in some of the most populous countries including China, India and Brazil – with prevalence rates between 33% and 40% for married women in fertile ages. Even more impressive, the proportion of women relying on sterilization within all contraceptive users achieves the highest value – 66% - in India (UN, 2009).

This paper addresses the poverty-wealth impact on fertility choices, particularly the effect in the option for others contraceptive methods as alternative to the female sterilization, the most usual one in India.

### **2. Data and Methods**

Data for this study are drawn from the 2005-06 National Family Health Surveys focusing on a sample of married and fecund women who reported using a method within the five years preceding the survey. The survey information, on the family resources, describes the present-day situation in the household but not any prior condition. Therefore, the poverty-wealth dimension, resulting from the NFHS-3 data, can be related only with current contraceptive options. There are two kinds of issues: since the wealth is not a fixed characteristic during all family life-cycle, it is not possible to project the current economic situation into the past and made association with former decisions regarding contraception; on the other hand, there are also endogeneity problems, as the household wealth can be as well a consequence from the reproductive choices. In order to address these difficulties we use a five-year window, assuming no significant change in household asset within the last 5 years. The data set includes only the not sterilized women and recently sterilized women. Furthermore, since the research focus was the wealth effects in contraceptive options, we select only fecund sexually active married women.

### *Variables*

The following variables were included in the analysis: region (North, East, Northeast, West, Central, South), residence (urban or rural), religion (Hindu, Muslim or other religious affiliation), caste/tribe (scheduled caste, schedule tribe, other backward class and none of them), women and the husband individual characteristics, as age, education (no education, primary, secondary, higher) and occupation (the combination of the initial categories in the NHFS is different according with the gender and was based on the similarity of the effects over the contraceptive methods option). Moreover, we added the couple offspring dimension and composition, exposure to family planning messages from the mass media (on radio, television and newspapers) and the person that decides on women healthcare (herself, partner, both or someone else), the household structure (nuclear or non-nuclear), and who has the final say in health care (the someone else category)

### *Methods*

We implemented different variants of the multinomial logistic regression: the choice between different contraceptive methods, particularly the factors impacting the option for temporary methods (traditional or modern) as an alternative to sterilization (taken as the reference category). In order to understand the wealth effect in reproductive choices, we estimate different models.

In the first essays the poverty-wealth effect is modeled by means of linear effects. According with this assumption, we estimated 3 models. In the first model all independent variables are categorical except wealth that is metric. In the second model, we add the community effect (for PSU) by means of a multilevel model with random effects. In the third model, in order to control for the community wealth level, we introduce the PSU mean wealth index in the upper level of the model and the individual wealth position was taken by the difference between the average PSU level and the individual initial wealth score in the lower level. Complementarily, we model the wealth impact in the contraceptive choices but, now, the effects are not necessarily linear: the poverty-wealth dimension is used as a categorical independent variable. We, then, estimated a fourth model with all explanatory variables in categories and only the individual level of analysis. The fifth model adds the community (PSU), in a new multilevel model (only with intercept).

### **3. Results**

Table 1 –Multinomial models for contraceptive choices (ExpB for traditional methods and other modern methods versus sterilization)

	MODELS FOR LINEAR WEALTH EFFECTS						MODELS FOR NON-LINEAR WEALTH EFFECT				
	Model 1		Model 2		Model 3			Model 4		Model 5	
	Trad.vs St.	Mod. vs St.	Trad.vs St.	Mod. vs St.	Trad.vs St.	Mod. vs St.		Trad.vs St.	Mod. vs St.	Trad.vs St.	Mod. vs St.
<b>Wealth index</b>	1,09	<b>1,41*</b>	1,00	<b>1,30*</b>	1,01	<b>1,22*</b>	<b>Wealth index</b> (ref: Poorest)				
							Poorer	<b>0,85*</b>	0,93	<b>0,80*</b>	0,91
							Middle	<b>0,85*</b>	1,05	<b>0,71*</b>	0,93
							Richer	0,90	<b>1,41*</b>	0,82	1,20
							Richest	1,16	<b>1,94*</b>	0,87	<b>1,49*</b>
<b>Caste (ref: None of them)</b>											
Caste_caste	<b>1,23*</b>	1,13	0,96	1,01	0,96	1,02		<b>1,23*</b>	1,12	0,96	0,99
Caste_tribe	<b>0,72*</b>	0,94	<b>0,48*</b>	<b>0,79*</b>	<b>0,48*</b>	<b>0,81*</b>		<b>0,70*</b>	0,90	<b>0,47*</b>	<b>0,76*</b>
Caste_obc	1,00	0,96	0,87	0,95	0,86	0,96		1,01	0,96	0,87	0,94
<b>Female education (ref: No education)</b>											
Primary	<b>0,82*</b>	1,11	0,85	1,11	0,85	1,11		<b>0,83*</b>	1,13	0,87	1,13
Secondary	1,18	<b>1,37*</b>	1,10	<b>1,43*</b>	1,10	<b>1,42*</b>		<b>1,19*</b>	<b>1,39*</b>	1,11	<b>1,47*</b>
Higher	<b>1,64*</b>	<b>2,09*</b>	<b>1,48*</b>	<b>2,23*</b>	<b>1,47*</b>	<b>2,19*</b>		<b>1,59*</b>	<b>2,19*</b>	<b>1,46*</b>	<b>2,36*</b>
<b>Female occupation (ref: Not working)</b>											
Prof., Tech.,Manag.,Cleric.	0,73	0,82	0,78	<b>0,71*</b>	0,78	<b>0,72*</b>		<b>0,73*</b>	0,81	0,77	<b>0,71*</b>
Sales, Services,Manual	<b>0,69*</b>	<b>0,82*</b>	0,85	<b>0,79*</b>	0,86	<b>0,79*</b>		<b>0,69*</b>	<b>0,81*</b>	0,86	<b>0,78*</b>
Agric-employee	<b>0,80*</b>	<b>0,60*</b>	0,85	<b>0,62*</b>	0,86	<b>0,63*</b>		<b>0,80*</b>	<b>0,59*</b>	<b>0,85*</b>	<b>0,61*</b>
<b>Husband education (ref: No education)</b>											
Primary	0,98	0,94	0,97	1,02	0,97	1,02		1,01	0,96	0,99	1,04
Secondary	1,18	<b>1,19*</b>	<b>1,23*</b>	<b>1,23*</b>	<b>1,23*</b>	<b>1,24*</b>		<b>1,23*</b>	<b>1,24*</b>	<b>1,27*</b>	<b>1,28*</b>
Higher	1,03	<b>1,32*</b>	<b>1,43*</b>	<b>1,53*</b>	<b>1,43*</b>	<b>1,55*</b>		1,06	<b>1,41*</b>	<b>1,46*</b>	<b>1,62*</b>
Husband Occupation (ref: Agric., Services, manual)											
NotW,Prof,Tech,Man,Cleric,Sal	1,04	1,11	1,06	1,06	1,06	1,06		1,04	<b>1,12*</b>	1,05	1,07
Religion (red: Hindu)											
Muslim	<b>3,60*</b>	<b>5,31*</b>	<b>3,56*</b>	<b>5,16*</b>	<b>3,56*</b>	<b>5,21*</b>		<b>3,68*</b>	<b>5,39*</b>	<b>3,63*</b>	<b>5,21*</b>
Other	1,25	<b>1,26*</b>	0,97	<b>1,16*</b>	0,98	<b>1,15*</b>		1,24	<b>1,27*</b>	0,98	1,19
Heard FP on radio last months (ref: No)											
Yes	<b>1,32*</b>	<b>1,31*</b>	<b>1,26*</b>	<b>1,18*</b>	<b>1,26*</b>	<b>1,18*</b>		<b>1,32*</b>	<b>1,31*</b>	<b>1,28*</b>	<b>1,18*</b>
Heard FP on TV last months (ref: No)											
Yes	<b>0,73*</b>	1,07	<b>0,81*</b>	1,11	<b>0,81*</b>	1,11		<b>0,75*</b>	1,10	<b>0,82*</b>	<b>1,14*</b>
Heard FP newspaper last months (ref: No)											
Yes	1,14	1,12	1,14	1,10	1,15	1,10		1,11	1,12	1,12	1,11
Final say on respondents health care (ref: Both)											
Herself	0,87	0,92	<b>0,81*</b>	<b>0,88*</b>	<b>0,81*</b>	<b>0,88*</b>		<b>0,88*</b>	0,92	<b>0,82*</b>	<b>0,88*</b>
Husband	1,01	0,98	1,00	0,97	1,00	0,97		1,01	0,98	1,00	0,97
Else	0,93	0,86	0,92	0,86	0,92	0,86		0,94	0,87	0,93	0,87

P < 0.05

As we can see, the first multinomial logistic model – only at individual level – reveals that wealth has no significant effect on the choice between sterilization and traditional contraceptive methods, but wealth is positively associated with the preference for other modern birth control methods over sterilization. The second model – a multilevel one – confirms the previous analysis, but the likelihood for the other modern methods preference reduces compared with the model without community context: the effect shrinks from 41% to 30%. In the third model – multilevel with the community wealth being controlled as well – the results are also in the same line. No significant consequence for the option between traditional and sterilization, but a positive impact on the preference for other modern methods rather being sterilized, but the effect is even lower than before. When the poverty-wealth dimension of the individuals' community is controlled for, the effect of the individual wealth situation within the community has a significant impact, but almost half of the one found in the first model including community effects.

In the two last models, wealth is taken as a categorical variable, so the estimated effects over contraceptive choices are not necessarily linear. In the first model - a single level one - we can see that the poverty-wealth dimension has significant impact on the contraceptive method choice. If compared with the poorest women, the poorer and the intermediate ones have similar behavior regarding birth control options: they have higher chances to prefer sterilization over traditional methods, but they do not differ significantly from the poorest ones regarding the use of other modern methods. On the contrary, the women in the last two wealth quintiles do not differ from the poorest ones in the use of traditional methods, but have increased odds to prefer other modern methods over sterilization. The gradient between the two extreme wealth positions is very strong: the richest women have a higher tendency to choose other modern methods over sterilization by a factor of two. However, when the community context is introduced in the model, the impact differs: the chances to use traditional methods instead of sterilization, in the poorer and intermediate quintiles, are lower than in the previous model; and, the wealth effect on the option between sterilization and other modern methods is significant only for the women in the upper quintile, even so, the effect is rather smaller than in the previous model (only more 50% chances instead of being multiplied by a factor of almost 2).

For the other socioeconomic factors, the multilevel approach provides different estimates, but globally the results are rather robust for the independent variables. In addition, the models for non-linear wealth effects have also very similar effects for the other independent variables, both for the single and the multilevel models.

#### **References:**

UN Population Division (2009). *World Contraceptive Use 2009* (POP/DB/CP/Rev2009).