Land Redistribution

A Population Stabilisation Strategy?

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The current preoccupation with debates on family planning vis-a-vis *development has meant a neglect of issues of equity and the nature of development strategies. This neglect becomes particularly problematic as theoretical models based on industrial societies are uncritically applied to a labour surplus agrarian society. This paper focuses on one such neglected aspect, the nature of land distribution. The authors argue that in a predominantly agricultural setting land ownership plays an important role in fertility decisions made by individual parents.*

WHILE there prevails a broad overall consensus that population control – euphemistically termed population stabilisation in recent discourse – is an important goal for Indian society [Government of India 1992; Gowarikar 1992], strategies for achieving this goal remain hotly contested.[1] India was the first country in the world to introduce an official family planning programme in 1951 and has consistently supported government provision of family planning services in order to reduce unwanted fertility. Moreover, the family planning programme has also tried to motivate couples to have fewer children through high profile propaganda.

In contrast to this family planning approach, proponents of the demand side approach to fertility control suggest that fertility will automatically decline once economic development takes place. At the 1974 population conference organised in Bucharest by the United Nations, Karan Singh, who was then India's minister of health, first coined the famous slogan, 'Development is the best contraceptive'. From that point onwards it has been frequently argued that as the country develops and undergoes a variety of structural transformations, parents will seek smaller families, resulting in fertility decline. This approach assumes that decline in infant mortality associated with development will reduce families' need to produce large numbers of children such that they are able to achieve their desired family size. Moreover, prosperity is expected to reduce parental reliance on children and thereby decrease the need for large families to provide old age security.

However, given the relatively slow pace of economic growth in the 1970s, many proponents of the development approach switched gears and began emphasising the importance of family planning programmes. For example, the same Karan Singh began advocating strong governmental action during the emergency period of 1976-77 and created a climate within which forced sterilisation campaigns took place. In this preoccupation with family planning *vis-a-vis* development, very little attention has been directed to issues of equity and the nature of development strategies. This neglect becomes particularly problematic as theoretical models based on industrial societies are uncritically applied to a labour-surplus agrarian society [Repetto 1979]. This paper focuses on one such neglected aspect, the nature of land distribution. We argue that in a predominantly agricultural setting, land ownership plays an important role in fertility decisions made by individual parents. However, whereas other scholars [Cain 1985; Mamdani 1972; Nadkarni 1976] have suggested that land ownership, by increasing demand for child labour increases fertility, we argue that land ownership and associated concerns regarding land fragmentation lead to lower fertility.

In spite of urbanisation and slow growth of non-agricultural employment, in 1992, of the total 340 million Indian workers, 138 million were employed as farmers and another 82 million were farm workers [Sen 1996]. Thus, about 65 per cent of the Indian labour force relies on agriculture as the main source of livelihood. Farm sizes are fairly small, however, and have continued to shrink over the past 40 years. Sharma (1994) found that as of 1983, about 63 per cent of the farmers cultivated farms of 2.5 acres or less. Of these, nearly two-thirds had farms of one acre or less. However, these farms occupied only about 12.5 per cent of the total farmland, leaving the rest in the hands of larger farmers. Increasing land fragmentation and the slow pace of land reforms in the 1980s and early 1990s has resulted in even smaller farm sizes.

Given the inheritance laws governing the Hindu united family (HUF) property as well as the Muslim personal laws, inherited land must be divided equally between all children. While the implementation of this law usually excludes female children [Agarwal 1986], considerable fragmentation of land seems to take place with the division of ancestral property over generations. In the absence of non-agricultural employment opportunities and small farm sizes, it is reasonable to expect that the concern for land fragmentation is likely to motivate parents to have fewer children. In field work carried out by one of the authors in Uttar Pradesh villages, villagers repeatedly mentioned the importance of having small families as a way of enhancing economic well being of farmers. One informant pointed out:

> My uncle has only one son. We are four brothers. When the 'batwara' [division] took place, my uncle and my father each received four acres of land. But now my cousin has four acres, I have only one. It is difficult to make ends meet.

In spite of the prima facie evidence cited above suggesting the importance of land ownership patterns in determining fertility behaviour, few theoretical formulations have attempted to take land into account. Current theories seem to assume that land is simply another form of wealth and hence no special attempt is required for incorporating land ownership in theoretical models [Becker 1981; Lee and Bulatao 1983]. The relationship between family income and fertility is well established [Krishnaji 1983; Rodgers 1989] with higher income households preferring smaller families. Two causal mechanisms for this inverse relationship have been identified. Richer families have lower reliance on children as sources of old age security [Cain 1985]. Richer parents also have a greater desire to invest in child quality rather than quantity through increased investments in children's education [Becker 1981].

However, we argue that land is quite distinct from Unit Trust certificates or gold. It is a repository of wealth as well as a productive resource. Moreover, individual parents are also not free to dispose of it in any way they desire. For example, if inheritance laws dictate that ancestral land cannot be sold at will without taking into consideration the rights of children, the trade-off between current consumption and childbearing assumed in neo-classical economic models advanced by the Chicago school economists (Becker, Willis, etc) are inapplicable to land-based wealth. Similarly, parental decisions regarding investments in children's future well-being must deal with constraints posed by the lack of land. The

growth of non-agricultural employment in rural areas has been quite slow [Sen 1996] with about 60 per cent of rural individuals with education of matriculation and above continuing to work as self-employed farmers [Vaidyanathan 1994]. Thus, parents seeking to enhance child quality, i e, children's future productivity, must take into account constraints poses by land availability.

Moreover, where as income and wealth have been shown to have a monotonically increasing inverse impact on fertility [Krishnaji 1983; Rodgers 1989], we suggest that the relationship between land ownership and fertility is non-linear. While a desire to avoid excessive land fragmentation is likely to reduce fertility for small farmers, this consideration may not be very important in the fertility decisions of large farmers. Large farmers have more land to divide up. Additionally, given the land ceiling legislation, they may not see a great deal of benefit in preserving farm size by reducing fertility. Thus, we argue that land ownership has a curvilinear relationship with fertility. Landless workers have no land to divide, hence their fertility decisions are governed by factors besides land ownership. On the other hand, large farmers have large enough farms not to worry about property division. Hence, it is primarily small farmers who worry about land fragmentation associated with high fertility.

Land, Child Labour and Fertility

The few fertility studies that have explicitly focused on the importance on land *per se*, rather than the wealth it represents, tend to emphasise that farm households have increased demands for child labour, which reduces the cost of children and increases parental desire to have large families [Cain 1985; Mamdani 1972; Nadkarni 1976]. However, given the pervasiveness of rural underemployment in India, this explanation deserves greater scrutiny. Do children contribute significantly to household income, above and beyond what they consume? Moreover, do they contribute more in farm households than among the landless?

Research on children's time use indicates substantial underemployment for children and further suggests that when children do participate in the labour force, they often substitute for adult work hours. For example, in detailed examination of time use of adults and children in six West Bengal villages, Maharatna (1997) found that young male children (aged 5-9) engage in productive work for less than one-and-a-half hours per day during the peak season, amounting to only about a sixth of the adult male labour time. Work participation by male children during the slack period, as well as that by young female children throughout the year is considerably lower. Moreover, there is also considerable underemployment among adults. Thus, even when children work, they probably replace activities that adults in their family are quite capable of performing. Similar results have been shown for Bangladesh by Cain (1977). In addition, if there is genuine demand for child labour in a well functioning labour market, it should not be associated with land ownership or farm size. If there is demand for child labour, children of landless families would work for wages on neighboring farms.[2]

Note that this land-labour requirement hypothesis implies that land ownership would be positively related to fertility. In contrast, our land fragmentation hypothesis outlined above suggests a negative relationship.

In this paper we use data from the National Family Health Survey (NFHS, 1992-93) in India to present our results of the impact of land distribution on fertility. The NFHS covers 89,777 randomly interviewed ever-married women between the ages of 13 and 49 from 25 states and Union Territories in India, the largest state covered being Uttar Pradesh. These data mainly provide demo-graphic and health information for the res-pondents

Table 1: Definitions of Variables Used in the Analysis

Variable	Definition
Births in last 5 years	Live births to respondent in last 5 years prior to interview (Dependent Variable)
Landless farmer	Household owning no irrigated or unirrigated land*
Sub-marginal farmer	Household owning 0-1 acres of irrigated or unirrigated land*
Marginal farmer	Household owning 1-2.5 acres of irrigated or unirrigated land*
Small farmer	Household owning 2.5-5 acres of irrigated or unirrigated land*
Medium farmer	Household owning 5-15 acres of irrigated or unirrigated land*
Large farmer	Household owning over 15 acres of irrigated or unirrigated land*
Wife's education	5 dummy variables, coded as Not educated, 0-5 years, 6-8 years, 9-10 years and over 11 years of education
Husband's education	Similar to wife's education, 5 dummy variables, coded as Not educated, 0-5 years, 6-8 years, 9-10 years and over 11 years of education
Age of woman	20-49 years of age
Age of woman squared	Square of age of woman variable
Religion	3 variables, coded as Hindu, Muslim or belonging to other religion
Caste	3 variables coded as belonging to dominant caste, scheduled caste and scheduled tribe
Condition of house	3 variables coded as 'kachcha', semi-'pucca' and 'pucca' house
No of assets in house	Index calculated based on possession of household assets such as sewing machine, clock/watch, sofa set, radio, bicycle, motorcycle and car (Base: Assets not requiring use of electricity)

Base sample: Currently married women in rural areas.

Table 2: Descriptive Statistics

Variable	Mean	Standard Deviation
Children ever born in last 5 years	0.780	0.888
Total land owned (irrigated and unirrigated)		
No land (landless) (omitted category)	0.327	0.469
0 - 1 acres (sub-marginal farmer)	0.259	0.438
1 - 2.5 acres (marginal farmer)	0.108	0.310
2.6 - 5 acres (small farmer)	0.145	0.352
6 - 15 acres (medium farmer)	0.120	0.325
More than 15 acres (large farmer)	0.041	0.199
Wife's education		
Not educated (omitted category)	0.708	0.455
0 - 5 years of education	0.133	0.339
6 - 8 years of education	0.081	0.272
9 - 10 years of education	0.052	0.222
Over 11 years of education	0.026	0.160
Husband's education		
Not educated (omitted category)	0.401	0.490
0 - 5 years of education	0.197	0.398
6 - 8 years of education	0.148	0.355
9 - 10 years of education	0.145	0.352
Over 11 years of education	0.109	0.312
Age of woman	31.561	8.164
Religion		
Hindu (omitted category)	0.843	0.364
Muslim	0.101	0.301
Other religion	0.056	0.231
Caste		
Main caste (omitted category)	0.761	0.427
Scheduled caste	0.132	0.338
Scheduled tribe	0.107	0.310
Condition of house		
Kachcha (omitted category)	0.581	0.493
Semi-pucca	0.296	0.456
Pucca	0.123	0.329
No of assets in house	1.539	1.431

Total sample size = 50,975 currently married rural women, weighted by all India weight.

and their children, although some amount of socio-economic information that is sufficient for the purpose of this study is also available. More importantly, the large size of the sample is suitable for any all-India analysis.

For this paper we restrict our sample to currently married women between the ages of 20 and 49 years of age. The age limitation is important given that we are mainly interested in women's fertility in the last five years. Hence, we drop all women under the age of 20 as they would have been too young to have children during a portion of the last five years. This restriction reduces the sample size by about 10 per cent. Since almost all childbearing in India occurs within marriage, limiting the data to currently married women is also important. Further as the main argument rest on household ownership of land, we restrict analysis to rural areas and to households owning up to 200 acres of land.

Our main dependent variable is children ever born in the last five years prior to interview. The sample population consists of 50,975 currently married women between the ages of 20 and 49 in rural India. The primary independent variable is household ownership of land including both irrigated and unirrigated land. Respondents are classified into categories of landless (no land), sub-marginal (owning 0-1 acre), marginal (1-2.5 acres), small (2.5-5 acres), medium (5-15 acres) and large farmers (over 15 acres). The analysis also controls for other measures of women's socio-economic status such as woman's age, her education, husband's education, religion, caste, state of residence, condition of house and ownership of other household assets. All variables are described in detail in Table 1 and means and standard deviations are presented in Table 2.

In addition to controlling for age and education, we also control for two other markers of household socio-economic status: the condition of the house and an index based on ownership of household assets. House condition is divided into 'kachcha', semi-pucca and pucca, with kachcha being treated as the omitted category. The possessions index is based on the ownership of such household assets as sewing machine, clock/watch, sofa set, radio, bicycle, motorcycle and car. We have not included assets that rely on availability of electricity facility in the villages (such as fan, refrigerator, TV, VCR and water pump), and hence are not true measures of wealth of the household. Past research suggests that such index of possessions is a good proxy of a household's permanent income [Desai 1992; Knodel et al 1992].

The dependent variable for this analysis, number of children ever born in the last five years, is a count of the number of births to women in the sample.[3] The five-year observation period also imposes an upper limit on the number of births that could take place in this period. Thus, this variable is not normally distributed but is truncated at both ends. We analyse it using the Tobit model [Tobin 1958; Maddala 1992; Amemiya 1972] which addresses the problem of truncation by estimating the following equation:

$yi^* = B'x_i + e_i$,
$yi = 0$ if $yi^* \leq 0$,
$yi = yi^*$ if $yi^* > 0$ and $yi^* < 5$
$yi = 4$ if $yi^* \geq 4$

For the results presented above, we specified the lower limit to be 0 and upper limit to be 4. This analysis was repeated using other functional forms such as the Poisson distribution and ordered probit with very similar results.

The NFHS consists of 25 separate state surveys and hence to estimate a combined regression for all states, the data have been weighted by the all India weight calculated as a part of the sampling procedure with state level dummy variables for 25 states and Union Territories included in the analysis.

Results presented in Model 1 in Table 3 show that, as compared to the omitted category landless labourers, landed families have smaller families and this effect is statistically significant in all but one categories. However, the effect of land ownership in this analysis may well be a proxy for family income. Landowning households are usually richer than landless households and the inverse relationship between income and fertility is well established [Krishnaji 1983]. Since the NFHS did not collect data on income it is not possible to control for it directly. However, we use two different markers of family wealth. The first measures the types of consumer goods possessed by the household while the second indexes the type of the house the household lives in.

Including these two measures of family financial status reduces the coefficients for land ownership in Model 2. But this decline is mostly at the upper end of the land distribution. As the coefficient for medium farm size declines from –0.045 to –0.007, it stops being statistically significant while the coefficients for sub-marginal and marginal farms remain relatively unchanged and continue to stay statistically significant. This finding supports our expectation of a curvilinear relationship between farm size and fertility with submarginal and marginal farmers feeling the greatest constraint of land availability on their fertility decisions.

Since the mean number of children born in the past five years per woman is 0.78, a coefficient of -0.08 for marginal farmers represents about 10% decline in fertility.[4]

TABLE 3: TOBIT REGRESSION MODEL OF IMPACT OF LAND OWNERSHIP ON FERTILITY

Independent Variables	Model 1 Coefficient	Model 1 Std Error	Model 2 Coefficient	Model 2 Std Error
Total land owned (irrigated and unirrigated)				
No land (landless) (omitted category)				
0 - 1 acres (sub-marginal farmer)	-0.058***	0.017	-0.054***	0.017
1 - 2.5 acres (marginal farmer)	-0.097***	0.023	-0.083***	0.023
2.6 - 5 acres (small farmer)	-0.037*	0.021	-0.014	0.021
6 - 15 acres (medium farmer)	-0.045**	0.022	-0.007	0.023
More than 15 acres (large farmer)	-0.024	0.034	-0.037	0.035
Wife's Education				
Not educated (omitted category)				
0 - 5 years of education	-0.100***	0.020	-0.071***	0.021
6 - 8 years of education	-0.141***	0.025	-0.086***	0.026
9 - 10 years of education	-0.121***	0.032	-0.039	0.032
Over 11 years of education	-0.164***	0.043	-0.056	0.044
Husband's Education				
Not educated (omitted category)				
0 - 5 years of education	-0.090***	0.018	-0.065***	0.018
6 - 8 years of education	-0.081***	0.020	-0.043**	0.020
9 - 10 years of education	-0.115***	0.021	-0.059***	0.022
Over 11 years of education	-0.202***	0.025	-0.124***	0.026
Age of woman	0.170***	0.008	0.166***	0.008
Age squared	-0.005***	0.000	-0.005***	0.000
Religion				
Hindu (omitted category)				
Muslim	0.355***	0.021	0.367***	0.021
Other Religion	0.046	0.034	0.049	0.034
Caste				
Main caste (omitted category)				
Scheduled caste	0.102***	0.019	0.090***	0.019
Scheduled tribe	0.027	0.022	0.006	0.022
Condition of house				
Kachcha (omitted category)				
Semi-pucca			-0.047***	0.016
Pucca			-0.099***	0.023
Consumption index – no of assets in house			-0.054***	0.006
Number of cases	51078		50975	

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Sample: Currently married women in rural areas, weighted by all India weight.
Dependent variable – Children ever born in last 5 years.

This is a small but important effect. A comparison of coefficients for education variables with those for land variables indicates the strength of this relationship. Holding other variables constant, the difference in fertility between landless farmers and farmers with 1-2.5 acres of land is approximately as large as the difference in fertility between uneducated women and women with 6-8 years of education. Thus, if we consider increased investment in women's education as an important dimension of population policy [Caldwell 1980; Gowarikar 1992; Mason 1984; United Nations 1994], evidence from the NFHS suggests that redistribution of land may be an equally important policy instrument that has been hitherto ignored.

Conclusions

In an era of market reforms, land reforms have been largely abandoned as they are seen to be part of the old socialist ideology geared towards redistribution of resources. Concerns regarding low productivity of marginal farms have added to this disenchantment. Our findings however suggest that land ownership patterns have considerable impact on the incentive structures surrounding fertility control. In this paper we have shown that rural fertility is closely linked to land ownership. Our results also suggest that this fertility depressing effect of land ownership is limited to households with small farms. If market reforms for other sectors involve getting prices and incentives right, doesn't the same argument apply to population control?

Institutional reforms which encourage voluntary fertility control should be encouraged as long as they are ethically justifiable and desirable in their own right. It is exactly this argument which has catapulted investments in women's education as an important population policy instrument. The data presented here suggest that, by the same token, redistribution of land – seen as being desirable in its own right through numerous legislations passed by various central and state governments – deserves greater implementation effort since it also affects fertility. It is not necessary to provide very large plots of land to the landless in order to affect fertility. Even small farms provide farmers with a stake in the future and reduce fertility without increasing the fertility of large farmers from whom this land must be taken. Thus, from both the population policy as well as social equity perspective, the redistribution of land through strict enforcement of existing legislation paints a win-win scenario.

Notes

1 See different approaches represented by Bose (1996), Visaria and Visaria (1995), papers in Gowarikar (1992).

2 In addition to children's economic contributions to the household through labour, it is also important to take into account their consumption. Several studies have carefully tried to measure children's consumption as well as production and results are far from unidirectional. For a survey of these studies see Krishnaji (1983) and Cassen (1982).

3 33 per cent of women in this sample did not have any births in the past five years.

4 It is important to note that the biggest predictor of fertility differentials across the country is the state of residence. This finding underscores the importance of regional development in shaping fertility patterns.

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