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## Hopes, Dreams and Anxieties: India's One-Child Families

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### Abstract

While rapid fertility decline in India in the last two decades has received considerable attention, much of the discourse has focused on a decline in high parity births. However, this paper finds that, almost hidden from the public gaze, a small but significant segment of the Indian population has begun the transition to extremely low fertility. Among the urban, upper income, educated, middle classes, it is no longer unusual to find families stopping at one child, even when this child is a girl. Using data from the India Human Development Survey of 2004–2005, we examine the factors that may lead some families to stop at a single child. We conclude that the motivations for this very low fertility are likely to be a more extreme form of those for low fertility rather than reflecting the qualitative change in ideologies and worldviews that is hypothesized to accompany very low fertility during the second demographic transition.

### Keywords

India; Low Fertility; Middle Class; Demographic Transition; Education

### Introduction

The continuing global decline in fertility in the 21<sup>st</sup> century has led to mixed reactions. In developing countries, where fertility still remains above replacement level for the most part, there is a sigh of relief as population growth begins to moderate. In industrial societies, where below replacement fertility is rapidly becoming the norm, fears of shrinking population dominate. As we look at these ongoing parallel transitions – the first demographic transition in developing countries, and what is often called the the second demographic transition in industrialized countries – it is important to think about the relationship between the two. Unless we understand the forces that propel a nation from the first into the second demographic transition, it is difficult to foresee what might lie in the future for middle income countries whose Total Fertility Rate lies between 2 and 3. In the case of India, this is a particularly salient question because 9 out of 35 Indian states and Union Territories have a period TFR of less than 2 (Guilmoto and Rajan 2013) and given India's weight in the world's population projections (Bongaarts and Bulatao 2000), whether

this reflects the beginning of the march towards below replacement fertility or is simply a tempo effect will have a strong bearing on long term population projections<sup>1</sup>.

Our expectations of whether below replacement fertility in some parts of India, particularly in states like West Bengal, Tamil Nadu and Andhra Pradesh, reflects an end point or a continuing progression towards some families stopping at one child or even remaining childless will depend on our expectations regarding processes underlying this fertility change.

Two separate narratives describing the first and the second demographic transitions have been particularly influential (McNicoll 2009): (1) A narrative of the first demographic transition, in which fertility decline is associated with a movement from social regimes governed by kinship and family ties in which large families are beneficial, to social regimes in which social capital plays less of a role than human capital and parents choose to invest greater resources in fewer children; and (2) A narrative of the second demographic transition, in which fertility falls to below replacement levels in what have been called 'post-modern' societies when childrearing becomes an impediment to personal fulfillment.

If one subscribed to this notion of two separate ideological ruptures in the long march of demographic change, it would make very low fertility a highly unlikely phenomenon in developing societies like India that retain a strong family oriented culture even as they catapult into a global economy (Bhat 2009).<sup>2</sup> However, are these two transitions really so distinct? Do we need one set of theories to explain the first demographic transition and another set to explain the move to sub-replacement fertility?

In this paper, use the Indian case to state that perhaps the conventional distinction between the first and second demographic transitions is unduly artificial<sup>3</sup>. Perhaps the move from TFRs of 3+ to 2 children is often merely a less extreme version of the move from 3+ to 1 child. That is, in many contexts, the same forces that explain and predict the first demographic transition might be at play in further fertility declines that result in the prominence of a below replacement fertility. In contrast, current theories of the second demographic transition might apply much more powerfully to the situation of increasing and voluntary childlessness. In other words, intentionally giving up on childbearing altogether might reflect entry into the kind of post-modern world that Van da Kaa (1986) describes much more strongly than does choosing between stopping at one rather than two children.

To illustrate this proposition, we look at extremely low fertility in a small fraction of Indian society to see if its behavior is explained better by the processes that usually describe the first demographic transition or those that describe the second.

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<sup>1</sup>Indeed, Haub and Sharma (2015) believe that the country is almost at replacement level fertility already.

<sup>2</sup>For an interesting discussion of the way in which Indian society resolves the conflicting demands of modernity and tradition, see (Derne 2003).

<sup>3</sup>Doing his, we add to the emerging literature that challenges or modifies a universal theory of the second demographic transition for other parts of the world. For example, the emergence of extremely low fertility in Italy and Spain – some of the most conservative nations of Europe -- has proven to be somewhat of an impediment for theories that rely on a shift to post-modern values to explain low fertility (Chesnais 1996; Kertzer et al. 2009). Similarly, research on low fertility in Eastern and Central Europe suggests that there can be a diversity in routes to lowest low fertility (Sobotka 2008).

The demographic discourse on India has remained focused on the first demographic transition with relatively low expectations for below replacement fertility. Moreover scholars who have been at the forefront of predicting below replacement fertility in India (e.g. Dyson 2009), do so on the basis of their expectation of significant shifts in gender roles, while most of the recent social science literature documents the stubborn absence of such shifts (see, for example, the papers in Uberoi, 1993 and in Ravinder Kaur and Palriwala 2013) - the family remains at the nucleus of Indian social organization, gender roles continue to be highly traditional, marriage is still universal and relatively early, and strong son preference persists. If a significant cultural transformation and renegotiation of gender roles must precede below replacement fertility, this appears to be far in the future for India, particularly in the populous north-central states of Uttar Pradesh, Madhya Pradesh and Bihar (Desai et al, 2010).

However, if the path to below replacement fertility could be shown to also be paved by familiar economic forces rather than cultural shifts, perhaps we may see India experiencing below replacement fertility in the near rather than distant future. In this paper, we attempt such a reevaluation by looking at the emergence of a subgroup of the Indian population that seems to exhibit very low fertility. To do this, we compare families at different parities, those with one, two, or more than two children. We argue that low fertility in India is not because consumption or personal freedom are more valued than children but rather because children are highly valued. Small families tend to invest more in educational expenditures for their children expecting these higher expenditures to lead to greater social mobility.

## Prevalence of One-Child Families

Before we speculate about the reasons for an apparent increase in the popularity of the one child family in some segments of the population of India, we need to establish that this is a real phenomenon and that it reflects a conscious and deliberate choice. Table 1 based on fertility estimates from the 2001 and 2011 censuses clearly establishes that 9 out of 35 states and Union Territories have TFRs below 2 (Guilmoto and Rajan 2013); however, this does not distinguish between period and cohort fertility. Hence, we examine several different sources of data to see if there is any evidence of an emerging trend towards families with a single child.

The first question concerns the recency of the emergence of the one child family. If we find that a small but significant proportion of the Indian population has always had a tendency to very low fertility, then our observation is not a sign of future trends in this family type but instead evidence of greater population heterogeneity than is expected for developing countries. At the moment, we do expect population heterogeneity in developing countries, but at the high fertility end; we assume that there is a floor below which fertility does not fall for any group in countries still to complete the first demographic transition. That this assumption is not really justified is certainly known from historical studies of very low fertility groups – the aristocracy in several parts of historical Europe for example (Johansson 1987). However, historians continue to quibble about whether this phenomenon represented deliberately low childbearing, or constraints on natural fertility through greater delayed marriage and non-marriage among these elite groups, or even low fecundity brought about

by marriage patterns like the practice of inbreeding (on this last, see, for example, Kuper, 2009).

Our data do not allow us to go far back in time on this question, but Table 2, which includes information on proportions of one child families according to maternal age from National Family Health Survey I, conducted in 1992–93 and National Family Health Survey III, conducted in 2005–06 offers a clue.

By focusing on women with at least one child, we take into account primary sterility (ADD FN ON UNISA WORK). While some decline in proportions at higher parity may occur due to increases in the age at first birth, the median age at first birth in India remains quite low, at about 20 years as of years preceding NFHS-III survey in 2005–6. Hence, for women in their 30s, this compositional effect would vanish and the fact that the proportion of women aged 30–34 with just one living child has increased from 6% to 9% (with similar change observed for other ages) is indicative of a rising trend towards one child families that is deliberate. This increase is particularly large for couples with high levels of education. Among couples with secondary education or above for both partners, the proportion of 45–49 year old women with a single child rose from 3.5% to 6.7% between 1998–9 and 2005–6 (Pradhan and Sekhar 2014), precisely the group that is seen in the vanguard of fertility change.

In spite of the emerging phenomenon of one-child families in India, this is by no means a large group. However, as we hope to show, it is a very interesting group. The growing literature on the growth of a middle class in India (Fernandes 2000) would suggest that elite Indians live lives that are closer to a global middle class in the West and participate in the kind of ideational transformation reflected in the second demographic transition. We examine this expectation below and conclude that in fact there might be very different forces at work here.

## Data and Measurement

In order to understand the correlates of this emerging one child family, this paper analyses data from the India Human Development Survey of 2004–2005 (IHDS). This survey was organized by researchers from the University of Maryland and the National Council of Applied Economic Research, New Delhi (Desai et al. 2010). This is a nationally representative sample of 41,554 households and interviews with 33,583 ever-married women aged 15–49. The sample is spread over 1503 villages and 971 urban blocks in 33 states and union territories. The only union territories excluded are Andaman-Nicobar and Lakshadweep. The analytical sample consists of 33,524 women with a complete fertility history. Unlike the National Family Health Surveys, the IHDS is not primarily a fertility survey but contains extensive data on income, employment, structure of family life and investments in children, allowing us to test some arguments about differences in family lifestyles in families with different fertility patterns. At the same time, deeper analysis of fertility and mortality statistics from IHDS compare well with NFHS-III conducted around the same time (Desai et al. 2010).

Given our primary interest here in families that have voluntarily chosen to limit themselves to one child, we need to differentiate between families whose low fertility is deliberate and those whom we have caught at a juncture in life where their low fertility is unintentional, or a temporary phase in women who may yet go on to have large families. Hence we divide our sample, consisting of women with at least one child, into four categories:

1. Families with three or more children – those we define as large families (53%).
2. Families with two children who *appear* to have stopped (18%).
3. Families that have a single child and *appear* to have stopped having more children (5%).
4. Families with one or two children who are in the process of family building and may yet have another child or those whose childbearing is curtailed due to child mortality or is unduly low due to marital disruption – those whom we call censored (24%). These people may stop at one or two children or may go on to have more children. We acknowledge above that spousal death/separation or child death may lead to involuntary low family size. Our data show that about 8 % of both one child as well as higher fertility families have experienced a child death. Since small family size for these families could be involuntary, families with one or two children who have experienced a child death or do not have couples currently living together are included in the censored category.

Finally, we need to be sure that these one child families are not an unfortunate outcome of families ending up with fewer children than they would like; that is, they do not represent an unmet need for fertility. Hence, we try to establish the *wantedness* of the one child family by asking a series of questions about its bio-demographic and social correlates.

First, is this a tempo effect or a secondary infertility effect? Could it be that the one-child families have delayed the birth of the first child until it is too late to have a second birth, given the age specific curve of fecundity? Table 3 shows that women who begin childbearing after age 30 are far more likely to end up with a single child than women who begin childbearing early, lending some credence to the declining fecundity and secondary sterility argument. However, this group forms only 6% of the one-child families in the IHDS sample. The remaining 94% began childbearing well within their peak fecundity period and had an opportunity to go on to a second child if they chose to<sup>4</sup>.

Second, is this a parity specific tempo effect? That is, is our five year cut off merely too short a birth interval in today's world? IHDS data for the distribution of second birth intervals in our sample show that over 90% of the birth intervals fall within the 5 year cut off we use.

Third, responses to fertility preferences and contraceptive use remain subject to measurement error, particularly since the interview setting often precludes privacy. However,

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<sup>4</sup>Moreover, we do not have any evidence to suggest significant levels of secondary or acquired sterility in India. Childlessness levels are certainly well within the range expected for societies in which STIs or RTIs have not had a major impact on primary sterility and where virtually all childlessness is involuntary (see Pathak and Unisa, 1993). Agrawal and Unisa (2002) suggest that there may be emerging differentials in childlessness within the country, but we have not included childless women in this analysis.

a brief analysis of fertility preferences of women who have stopped at one child is instructive. About 73% of mothers with a single child said they did not want more children; 22% were sterilized. However, this decision remains contingent and about 27% said they may want another child at some point<sup>5</sup>.

### Characteristics of One-Child Families

Table 3 presents some descriptive statistics on families at different parities and provides the crux of the underpinnings and interpretations for the analyses that follow: these one-child families are overwhelmingly concentrated among the more privileged sections of Indian society: urban, upper caste, and upper class. The relationships with maternal education and with metro city residence are particularly striking and already anticipate our later explanation for this phenomenon. Thus, for example, while one-child families account for barely 5% of Indian families, they form 13% of families living in metro cities. Most interestingly, about 40% of the families who appear to have stopped at one child have stopped in spite of this child being a daughter.

A more interesting but also more ambiguous geographic distribution arises when we look at state level differences in the proportion of one-child families in Table 5. It appears that the highest levels of the one-child family exist in the Southern and Eastern (as well as the northeastern) parts of the country. Lest one thinks this is merely a consequence of lower average fertility in the South, it is interesting to compare state total fertility rates with the proportion of one-child families. A low TFR does not automatically lead to a higher proportion of one-child families. Punjab and Himachal Pradesh both have TFRs below 2 but only 3% of families seem to stop at one child. In contrast, Assam and West Bengal with TFRs of about 2.2 have 10–12% families who appear to have stopped at one child (on this regional variation, but using census data, see also Pradhan and Sekher, 2014)<sup>6</sup>.

This underlines the need to better understand the context of the one-child family in India. An assumption that the very small family norm has merely first taken hold in those parts of the country that have already gone through the first demographic transition is too simplistic. Instead, it is important to examine the factors associated with low fertility. The next two sections move in that direction.

### Motivation for a One-Child Family

What makes families restrict themselves to having a single child, particularly in a country where many women continue to have four or more children?<sup>7</sup> A better understanding of the

<sup>5</sup>While this figure does not imply that they will necessarily stop at one child, it nevertheless reflects a new kind of ambiguity – many more women than expected are now willing to even entertain the possibility of stopping at one.

<sup>6</sup>While West Bengal and Assam are not a separate focus of this paper, it is worth recording that these states seem to have a history of sub-populations with very low fertility and it is conceivable that the currently high levels of one child families reflect a continuation of that history as well as a new set of entrants motivated by other factors. The value of education is particularly high among the Bengali speaking populations of West Bengal and parts of Assam. More children in West Bengal receive private tutoring than any other state in the country (Pratham, 2005). Unfortunately the sample sizes in our data set are too small to do any state level analysis on West Bengal and Assam to complement the all-India picture in this paper. We did however do an analysis of the samples from West Bengal, Assam and the northeast together and the results were similar to the all-India results; hence, in the interests of parsimony, we present only the national findings here.

<sup>7</sup>NFHS-III documents that about half the women aged 40–44 have four or more children.

characteristics of these families and their lifestyles may shed light on the competing narratives of fertility decline discussed above.<sup>8</sup>

Much of the literature on fertility decline has focused on external and internal *constraints* to childbearing. We suggest here that it may be useful to flip this perspective and to consider that low fertility might be a response to new *opportunities* and to compare predictions based on constraints vis-à-vis predications based on new opportunities.

On very low fertility as a response to constraints on childbearing, the literature typically identifies three major reasons for a diminishing value of children: (a) Children are an impediment to women's employment, particularly employment in the formal sector; (b) The expenses related to childbearing and childrearing call for trade-offs between a better lifestyle and larger families; (c) The demands of childrearing put a break on individuals' (especially women's) ability to achieve personal growth and enjoy leisure time .

On the other hand, a smaller but nevertheless important literature on very low fertility as a response to new opportunities introduces a fourth explanation that emphasizes the same or even higher value of children, but with lower fertility being a result of increasing aspirations *for* children.

We now turn to the evidence in support of each of these possibilities in the context of the one child family in India. While looking at the contemporaneous experiences of families does not necessarily allow us to conclusively examine the initial motivations of individuals who chose different fertility behaviors, it at least allows us to identify correlations between family size and outcomes of interest and offers some clue as to the relevance of some of these theoretical arguments to the Indian context.

### **(a) Women's Workforce Participation and Childbearing**

The New Home Economics literature has strongly emphasized the conflict between time demands for rearing children and women's labor force participation (Mincer 1962; Leibowitz 1974; Becker 1976), and cross-national regressions in Western societies through much of the late 20<sup>th</sup> century have documented a negative relationship between women's work and fertility. While the debate about whether work leads to lower fertility or low fertility leads to increased labor force participation in industrial society has never been quite resolved (Lehrer and Nerlove 1986), as MacDonald (2000) notes, it may be precisely the greater gender equality of extra-domestic life, whereby attractive jobs are now also available to women, coupled with the continuing domestic gender inequality that lumps them with primary responsibility for childcare, that accounts for at least a part of women's reluctance to bear children in these societies.

However, this relationship is far from clear. In a once highly influential paper, Jaffe and Azumi (1963) highlighted the importance of considering the nature of work and suggested

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<sup>8</sup>It is important to note that these fertility decisions were taken 5–15 years before the survey while the outcomes of interest were measured for 2005. We seek to examine long-term consequences of fertility behavior and to see if these consequences provide us with a better understanding of the life-styles that are associated with families at different parities. Hence this long lag is more useful than a shorter lag. Nonetheless it is important to keep this temporal dimension in mind while interpreting the results.

that employment in cottage industries or other flexible kinds of self-employment would not make a serious dent in fertility due to the compatibility between this type of work and childrearing. Since then a number of studies have suggested that role incompatibility associated with work for pay rather than time demands on women is likely to be a greater impediment to fertility (Mason and Palan 1981; Lloyd 1991).

What can we infer from the Indian experience? Is low fertility in India associated with women's labor force participation, particularly participation in wage work? As some studies have noted (Gerson 1986), when faced with hard choices between work and motherhood, women may well choose to have a single child to satisfy their desire for children while limiting familial demands on their time.

The IHDS collected detailed data on women's and men's labor force participation, including work in various sectors of the economy (Desai et al. 2010). Table 5 shows predicted probabilities from logistic regressions of family size on women's labor force participation, separately for all work (including work on family farm and in family business) and for wage work. This regression controls for a variety of socio-economic background factors and place of residence.<sup>9</sup> In order to address the endogeneity of income, family income in this analysis excludes women's wage income. The results are intriguing. For all work, i.e. combining work on family farm, caring for livestock, and work in family business and wage work, women with a single child are actually *less* likely to be employed than women with larger families. Even when we restrict our focus to women engaged in wage work, where job conditions would place greater constraints on motherhood, we find few differences in women's labor force participation by family size.

This it seems unlikely that it is unlikely that a higher commitment to the work force is a motivating factor for women to have very low fertility. Note that had we found a relationship between the one child family and women's labor force participation, we could still not have established the temporal supremacy of the work-family or family-work linkage. But the absence of this relationship suggests that role incompatibility is unlikely to be an important motivating factor in families restricting themselves to one child.

### **(b) Consumption Aspirations and Family Size**

While the literature linking income, consumption and child bearing emerged with the work of Becker (Becker 1976) and colleagues in what came to be known as the Chicago-Columbia model (Pollak and Watkins 1993), for the current discussion it is the focus on the competition between childbearing and consumption based on relative income differences, first articulated by Easterlin (Easterlin 1966; Macunovich 1998) that is most relevant. Easterlin argued that for the same level of income, those who have higher consumption aspirations may be more likely to focus on material consumption at the expense of having a large family. Conversely those with high consumption aspirations may meet their

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<sup>9</sup>In this paper we consistently show predicted values from multiple regression or logistic regression for outcomes of interest. These regressions control for woman's age, education, place of residence, caste, household income and a dummy indicator for the state of residence. The results are predicted using STATA MARGINS command, holding all other variables at their mean value separately for urban and rural residents. Original regressions are presented in Appendix Tables 1–4.



consumption needs by curtailing fertility when faced with the prospect of low income generated by poor economic conditions.

This concept is intuitively appealing, and has sometimes been applied to developing countries (see, for example, Basu, 2002). We know that higher income leads to more consumption and we also have some evidence that higher income is associated with family lifestyles conducive to low fertility. But to understand the role of consumerism in generating a children vs. consumption trade off that leads to very low fertility as opposed to general fertility decline, we must examine the relationship between fertility and consumption, holding income constant. The IHDS is one of the few surveys to collect both income and consumption data and allows us to do just this.

The IHDS collected detailed data on household assets and amenities including type of housing and ownership of various consumer durables. A consumption index based on these goods has been created by adding up 23 assets and amenities (for a further description, see Desai et al, 2010). Since one-child families are concentrated at the upper end of the income distribution, it is not surprising that one-child families have more assets (9.7 of a total of 23) than larger families (7.8 assets). However, the theoretical argument hinges on comparing families at the same income level. The IHDS is unique in developing country surveys in collecting detailed income data from 56 sources of income including farming, livestock, business, wage labor, family and non-family transfers.

The results are presented in Table 6, which focuses on two dependent variables: the ownership of all consumer durables and amenities (on a scale from 0 to 23) and the ownership of any large items only (car, air conditioner, credit card, refrigerator, washing machine and computer). The results shows that while smaller families have somewhat higher consumption, this effect is relatively small in magnitude.<sup>10</sup>

One would expect that holding income constant, households that have fewer children would invest more in amenities that make their lives easier. Table 7 shows that households with smaller families do indeed own a larger number of assets and amenities. But the magnitude of this effect (additional 0.35 items on a scale that has a mean of 8.78) is very small. A comparison with the education effect will illustrate this point. Holding income and residence constant, households in which women have even one to four years of education own about 0.9 additional assets more compared to those where women have no education. College education is associated with nearly 5 additional assets. So a difference of 0.4 between different family compositions is extremely small, even if statistically significant. When we restrict our analysis to ownership of major assets, which is what upper class consumerism is really about, controlling for income, the difference between various family sizes is minuscule for rural areas and relatively small in size for urban areas. This suggests that one-child families, are not substantially more consumption focused than larger families.

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<sup>10</sup>Note that less than 2% of the IHDS families indicated that their annual income is less than the money invested in farming. These are mostly families with orchards and other large farmers whose incomes are often biannual. For this analysis, their income is set to zero and a dummy variable indicating income of less than zero is included. These farmers are actually somewhat better off than other farmers as shown by the positive coefficient for this variable.

### (C) Personal Aspirations and Family Size

Competition from material consumption possibilities is of course not the only form of consumption constraint on high fertility. Indeed, when Blake (1968) sought to understand the relationship between income and family size, she focused on the non-monetary dimension of consumption (Blake 1968). In an insightful article, Keyfitz (1986) went in further detail about some of the factors that might explain what he called the ‘family that does not reproduce itself’. Instead of discussing on the opportunity costs of children in the usual directly economic way he focused on the non-monetary attractiveness of other ways of spending one’s time and one’s money. He talked of the non-monetary but still crucial pleasures of leisure (eating out, holidays, television, all pursuits more or less incompatible with children) of course, but also of the world of work in the present day, where for the rich and educated it is not the monotony and onerousness of the assembly line that provides the wages but the social interactions and other comforts of the modern workplace that make the economic motive for work almost secondary (Keyfitz 1986).

More recent, more empirically grounded elaborations of this broad hypothesis focus on the increased non-material opportunity costs of children or what Van de Kaa (2001) calls a ‘post-modern’ set of values in which marriage and childbearing are but one of several ways of spending one’s time, energy and material resources (see also, Lesthaeghe and Surkyn 1986).

Our data do not allow us to check in any direct way that the one child family represents the Indian counterpart of such changed values in the very low fertility (and even the childless) family in contemporary Western Europe but several lines of, sometimes qualitative, enquiry suggest that this is not an implausible comparison.

Our findings suggest that this parallel would have to be modified for Indian conditions, at least thus far. Even if they subscribe to these post-modern aspirations, the cultural imperative to marry and procreate is still too strong to be rejected outright. As Ansley Coale noted a long time ago, some cultures are inherently geared to universal marriage and universal childbearing (Coale 1973). That statement would appear to be still true in India – the data on which this paper is based record 99% of women married at least once by the end of their reproductive lives, and record levels of childlessness that are still very close to those obtaining in societies where the only childlessness that exists is the result of involuntary infertility.

At the same time, a greater desire for leisure as well as greater intimacy in conjugal relationship might nevertheless motivate couples to have smaller families. These aspirations are difficult to measure within a survey and we make no claims that the results presented in this paper provide an exhaustive analysis of the possible linkages between leisure, conjugal intimacy and family size.

The overwhelmingly urban concentration of the one child family in India is certainly compatible with the competing goods hypothesis – it is the cities, especially in the neo-liberal economy of the nineties onwards, that provide the largest and most seductive non-material alternatives to children, alternatives moreover that require one to be unfettered by

children if one is to really exploit them. However, the centrality of the conjugal unit as a motivating force for a single child is not supported by the data. The prevalence of nuclear families among households with one, two, or more children is about 50% in our sample. This contradicts the expectation that intergenerational relations are less central to family functioning in the single child household than they are in higher fertility homes.

IHDS contains information on a few other indicators that are of potential interest here. Four indicators are analyzed in Table 7: (1) Hours of television watching per day among women in the household; (2) Whether the respondent and her husband go out to watch films or to fairs and other festivals (with or without children) as a couple without other extended family members; (3) An index measuring frequency of discussion between the couple about work and farm issues, politics and community events, and household expenditure; and, (4) Whether the respondent is able to visit her natal family at least once a month.

The results are intriguing. While education, income etc. have the expected relationship with these various indicators of personal freedom and expression, for virtually none of the outcomes studied do women with one child have a substantially greater amount of freedom or greater degree of conjugal intimacy than women with larger families. For one marker, the index measuring frequency of discussion between the couple, women with a single child in fact have a *lower* level of couple communication, suggesting that children possibly form an important topic of parental conversation and increase rather than decrease conjugal intimacy. While our markers of personal freedom are indeed superficial and may be subject to considerable measurement error, it is interesting that for none of these four markers do we see a large and substantial improvement in personal freedom with smaller families.

#### **(d) Aspirations for Social Mobility and Family Size**

The final argument emphasizes fertility limitation as a strategy for upwardly mobile families (Kasarda, Billy, and West 1986). Arguably its best-known formulation was presented by Greenhalgh (1988) in the Chinese context where she argued that the opening up of mobility opportunities increased the desire to invest in children and thus reduced fertility. Her arguments, distinct from the classic neo-classical economic approaches to the trade-off between child quality and quantity (Becker 1993; Schultz 1974), focus on the role of social and economic institutions in creating opportunities which can be exploited by parents to achieve social mobility.

Parental aspirations for children and social mobility have existed through the ages. How do they account for the recent emergence of the one child family in India? Our contention is that in modern India, the nature of economic development in recent decades has had much to do with the growing recourse to very low fertility that is the subject of this paper.

Two dimensions of the recent economic transformation are relevant for very low fertility as a route to social mobility. First, the growth of a new Indian middle class has a peculiar feature that is distinct from the growth of the middle classes in Europe and United States. The Western middle classes grew with an expansion of the salaried classes (Butler and Savage 1995). In contrast, the new Indian middle class is constrained by limited employment opportunities even as rewards to high skill jobs have increased tremendously (Desai and Das

2004). Increasing globalization has led to sharp increases in private sector salaries; the implementation of the Fifth and Sixth Pay Commission recommendations have also led to a tremendous growth in government worker salaries. At the same time, employment opportunities have not kept pace with the educational growth, increasing the competition for scarce jobs.

The second phenomenon of interest is a growing public recognition of the poor quality of education given in a wide range of educational institutions. When barely 50% of enrolled children are able to read (Pratham 2005), it is not surprising that parents seek alternatives to government schools. Private school enrollment and reliance on private tutoring have increased sharply in recent years (Kingdon 2007). These conditions may force upwardly mobile parents to restrict childbearing in order to invest in the education of a single child.

Table 8 shows the differences in total educational expenditure in the year prior to the survey for 30,285 children ages 6–14. In these regressions, in addition to parental characteristics and household income, we also control for child's grade, gender and age. Note that children who are not currently in school are dropped from this analysis, but with the sharp increase in school enrollment in the last decade, nearly 90% of the children aged 6–14 were enrolled in 2004–5 (Desai et al. 2010) and our sample remains large.

The results show a striking impact of family size on educational investments. Expenditure on children's education is higher by 40% in one-child families than in families with three or more children; two-child families fall in between. Children from one-child families are 1.56 times as likely to be in a private school as children from 3+ child families, while children from two child families are 1.4 times as likely to attend private school. Both these relationships are significant at the 0.001 percent level. When we interact being a single child with the gender of this child, the relationship is even more intriguing (tables not reported here). Any negative impact of being a girl is limited to girls in 2+ child families; among one-child families parents do not distinguish between boys and girls.

The magnitude of the relationship between family size and investments in children poses a striking contrast with the other relationships reported earlier. While one and two child families increase their consumption marginally and families are somewhat more likely to engage in pleasure activities such as family outings, these relationships are dwarfed in comparison to the large and statistically significant relationship between family size and investments in children.

It is not our intention to enter into the debate as to whether family size *causes* greater investments in children or vice versa (Cassen 1994; Johnson and Lee 1986). We seek to compare the life-styles of small and large families in India to see if these comparisons yield any insights into possible motivations that may affect Indian parents' family building strategies. In this context, the observation that the primary distinction between small and large families in India lies in investments in children's education is highly significant, a theme to which we return below.

But first, we try and place our study results in the context of the very low fertility literature on Europe and East Asia.

## Comparisons with Very Low Fertility in Europe

The existence and possible rise of the one child family in India bears comparison with the nature and causes of low and very low (or lowest low, see Kohler, Billari and Ortega 2002) fertility in other parts of the world. How does this segment of India's population fit into the concept of a second demographic transition that was first proposed by Van da Kaa (2001) and Lesthaeghe and Neels (2002) to understand and explain very low fertility in several parts of Europe? Without detailing the vast literature on low fertility in Europe (for an excellent synthesis see Koehler, Billari and Ortega 2006), three aspects of the European experience deserve attention:

### 1. Declining marriage and Rising Age at Childbearing

While there are important regional differences within the very low fertility experience of Europe, overall the literature contends that this very low fertility is primarily achieved by steadily rising ages at marriage and childbearing. This phenomenon has both biodemographic and behavioral implications. Delayed marriage and a correspondingly delayed first birth in countries where there is little childbearing outside marriage (as in Southern Europe) and a rising age at first births both outside as well as within marriage (as in Western and Northern Europe) may lead to some involuntary below replacement fertility due the typical age curve of fecundity (Sobotka 2008).

In our Indian case, as already discussed, such involuntary constraints on second and subsequent births are less plausible because 94% of these one child families have had their single births before a maternal age of thirty; thus making a desire for a second child relatively easy to fulfil.

For the same reason, we cannot conclude, as is done at least partially in understandings of lowest low fertility in Europe, that where fecundity constraints are less of a problem (and with modern technology they will become even more unimportant) this postponement effect is temporary and that period TFRs might be therefore understating cohort fertility. Population level TFRs might be understated for the country as a whole, but our sample of one child families has been deliberately chosen to represent largely (we think) those that have completed childbearing<sup>11</sup>.

Other aspects of family and reproductive life that seem to characterize the low fertility populations of Western, Northern and East-Central Europe include the kind of ideological transitions implicated in rises in cohabitation and declines in marriage, rises in divorce rates, rises in births outside formal marriage. On all these counts, Indian families including one-child families, seem to operate on a very different and much more conventional dynamic – there is much less evidence of the social and behavioral modernization than one would expect from India's educated middle class (Ravinder Kaur and Palriwala 2013). Although age at marriage is slowly inching up and the proportion of women who married before age 20 has declined from 58% in 2006 to 47% in 2012, the average age at marriage is still very

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<sup>11</sup>At the same time, it is true that we cannot assume that this will always be the case. As demonstrated for Iran for example (Abbasi-Shavazi, Hosseini-Chavoshi, and McDonald 2007), declines in fertility can sometimes be accompanied by significant increases in the first birth interval; if that is also beginning to happen in India, we may be underestimating cohort fertility.

low, only 21.2 in 2012 (Government of India 2013). As IHDS data show, about 95% of the marriages are arranged and almost all of them take place endogamously within caste, thereby privileging caste and extended kin networks over individual identities.

## ii. Increasing voluntary childlessness and very low fertility

The second population level explanation for very low fertility in Europe relates to a rise in zero parity women as well as a possibly increasing heterogeneity in fertility behavior – with those women who have a first child being likely to proceed to a second birth; that is, with parity progression ratios being much higher for second births than for first births. Again, this comparison is less relevant for our current paper because we are looking only at the one child families in the country, not at fertility distributions. However, this is a good place to reiterate that there is as yet no discernible trend towards childlessness in India, childlessness levels being fairly stuck at around 6% of married couples, a level believed to be associated with childlessness in natural fertility populations.

A deliberate retreat from childbearing is arguably the central component of the second demographic transition (SDT) in Europe and is what the theorizing on the STD is largely about. Indeed, the position taken in many recent elaborations of the STD in Europe is that the idea of the STD is not really about reproductive behavior, it is primarily about the profound changes in families and relationships, which in turn are an outcome of profound changes in attitudes and values that the region has experienced, and that the very low fertility outcomes there are merely a natural result of this rise in *post-modern* mentalities – greater secularization, individualization, post-materialism, and a tolerance and acceptance of an increasing diversity of lifestyle choices by others.

However, there is little evidence of sharp increases in individualistic attitudes or post-modern mentalities. While a growing literature on the Indian middle classes notes rising aspirations and consumerism, it also notes the continued hold of social institutions like caste and community on individual behaviors, particularly with regards to gender roles (Fernandes 2000, Ganguly-Scrase and Scrase 2009). Marriage remains almost universal and largely arranged by the extended family (Desai and Andrist 2010) and caste based inequalities continue to hold sway in the formation of the social networks and access to opportunities (Deshpande 2011, Thorat and Newman 2009). In spite of record levels of economic growth in the first decade of this century, the female labor force participation rate has stagnated (National Sample Survey Office 2013). Thus, it would be hard to argue that a rising tide of post-modern values shapes low fertility in India.

## iii. Role of structural constraints

The emergence of below replacement fertility in Southern, Eastern and Central Europe (Sobotka 2008, Caldwell and Schindlmayr 2003, Rindfuss, Guzzo, and Morgan 2003, Coleman 2004) has called into question some of the theorized drivers of the STD – increasing secularization, individualization and post-material personal aspirations. These theories are also incompatible with the finding that the most post-modern societies of Northern and Western Europe in fact have higher TFRs than do the less attitudinally advanced societies of Eastern and Central Europe. Indeed, Sobotka (2008) specifically asks

the question, “is sub-replacement fertility a necessary feature of the second demographic transition?” (pg. 180) and vice versa. He suggests that structural constraints associated with economic transformation may be at least partially responsible for this very low fertility even without significant attitudinal changes. Some of the recent literature on fertility decline during the recent recession also emphasizes the role of economic constraints even at below replacement level (Sobotka, Skirbekk, and Philipov 2011). These economic conditions may lead individuals to have fewer children than they would like because of *negative* pressures – most of these pressures are economic and structural and have to do with the economic uncertainties that make it difficult to establish the independent households needed to begin cohabitation and/or marriage and childbearing and the economic inability to afford children even after a household has been established.

Although economic constraints lie at the heart of our arguments regarding low fertility in India, these are constraints posed by growth rather than scarcity. As previous sections have tried to demonstrate, our one and two child families are less economically constrained than larger families because of their largely urban, educated and upper income situation<sup>12</sup>. What would lead these upper income households to limit fertility under conditions of economic growth? This is a topic to which we return below.

## Comparisons with very low fertility in East Asia

Not surprisingly, comparisons of the means of and motives for very low fertility in India may find more parallels with the extremely low fertility that several parts of East Asia have witnessed in recent decades. “Not surprisingly”, for both cultural as well as structural reasons: culturally, South and East Asia share many of the traditions and traditional constraints on individual behavior that are theorized to influence fertility; and economically, India in recent years has been seeing some of the same burst of economic growth that East Asia witnessed in the 1980s and 1990s and that both resulted from as well as resulted in the move to rapid fertility declines.

The empirical evidence however suggests that the parallels do not go as far as one might expect. Two aspects of low fertility in East Asia deserve attention:

### i. Decline in Marriage

As Jones (2007) suggests, the defining demographic feature of East Asia in the last few decades has been the revolution in marriage patterns – sharp increases in the age at marriage and in levels of non-marriage characterize almost all the very low fertility countries in this region. Given the continuing existence of strong social disapproval of procreation outside marriage, a certain amount of involuntary childlessness as well as very low fertility have to be an inevitable outcome of these changed marriage patterns, harking back to the role of delayed marriage and high levels of non-marriage in explaining the only moderate fertility of Northern Europe in the nineteenth century (Jones 2007).

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<sup>12</sup>And because the establishment of an independent household is culturally not a requirement for marriage and childbearing to occur.

This is not the case with India. Although marriage ages have risen, this increase is nowhere near as rapid and to as high ages as in East Asia. Mean age at effective marriage is about 21 years and 80% of the 15+ female population is married (Government of India 2013). So, as in the comparison with low fertility Europe, the one child family is unlikely to be an unplanned outcome of rising infecundity with age.

Closer attention to the reasons for nuptiality changes in East Asia allows us to refine the comparison. According to the review by Jones (2007), both non-marriage and delayed marriage as well as the very low fertility associated with both these trends do not seem to be flowing out of rising 'post-modernism' of the European kind. Nevertheless, they do seem to be strongly correlated with sharply increased levels of secondary and tertiary education and (especially) with increased levels of female labor force participation (Jones, 2007). A number of studies suggest that rising material aspirations related to a market friendly but family unfriendly work environment are likely to explain the aversion to high fertility in East Asia (MacDonald, 2000). Rising education is certainly implicated in later marriage in India, as well as with the propensity to stop at one child. But there is no corresponding implication of rising female labor force participation either before or after marriage in the delay in marriage or in the very low fertility of these women upon marriage. To the contrary, rising education, at least upto the secondary level, is associated with declining rather than increasing labor force participation on the part of women (Das and Desai 2003).

## ii. Heavy investments in children

Rising social and economic aspirations in East Asia have often been expressed through high levels of investments in children. While demographers, with few exceptions, have not taken the idea of the East Asian Tiger Mom very far in their analysis of lowest low fertility in East Asia, other disciplines have and there is no doubt that the greatly increased expense of rearing the ideal child in modern East Asia puts a serious brake on fertility, independently of the brakes exerted by women's material aspirations for themselves. Here we find considerable parallels with India where social mobility aspirations find an expression in heavy child specific investments and the curtailment of fertility.

At the end of this comparative section, we are left with the idea that the one child family in India is not explained by the changes in marriage and mean ages of childbearing seen in the very low fertility countries of Europe and Asia, or the changes in mentalities inherent in definitions of the Second Demographic Transition in Europe, or the changes in economic uncertainties as in Europe, or the changes in women's economic aspirations as in East Asia. However, there is great deal of similarity between East Asia and India in the increased resources needed to raise a child with a satisfactory potential future. In a society in which intergenerational expectations continue to be bidirectional, rearing such a child also means a marked rise in parental status and fortunes and, to that extent, the one child family is certainly an indicator of sharply rising social and economic aspirations.

## Discussion

In this paper we have looked at the differences in the lifestyles of Indian families at various levels of fertility. We have shown that holding income and education constant, families at



different parity levels do not differ substantially in women's labor participation, how much they consume or the amount of time they devote to pursuing individual activities. However, smaller families tend to invest more in their children than larger families, with the greatest financial investments in children's education being made by single child families.

We have tried to distinguish between families who are at parity one or two by accident and may yet move on to larger families and those who seem to remain at parities one and two by choice. But regardless of the initial motivation, we find that smaller families invest more in children's education than larger families. This suggests that the familial desire to invest in children's education and thereby enhance social mobility is very strong. Whether smaller families are causes or consequences of this thirst for child specific investments, the fact that the main substantial differences we see in familial lifestyles for different parities are those observable for *child* outcomes is highly significant. This suggests that as we look for the pathways to low fertility in societies with strong family ties, we may need to focus on parental aspirations for their children rather than for themselves.

These arguments are consistent with the literature on fertility as social mobility (Kasarda, Billy, and West 1986, Greenhalgh 1988) and suggest that below replacement fertility is feasible even without a significant attitudinal shift from material to higher order aspirations focusing on individual autonomy and self actualization - as suggested by Lesthaeghe and Neels (2002).

We propose that a narrative that sees the first demographic transition to replacement fertility as being distinctly different from the second demographic transition to below replacement fertility sits uneasily onto the experience of very low fertility in contemporary India. And so we theorize on two possible kinds of aspirations that exceed the reach of even the educated, urban, middle class family in India and may influence fertility behavior. Somewhat simplistically, we have separated these two sets of aspirations by the immediate objects of these aspirations,

In the first category are the aspirations for oneself, that is, the parental or fertility decision-making unit. These are those material and non-material desires for personal advancement and fulfillment that are hampered by children. The second category includes aspirations for social mobility through the advancement of one's children. This requires resources and, even for middle class families, larger families lead to a greater dilution of these resources.

In as much as our survey data lend themselves to examination of these competing motives, we find only a modest relationship between family size and markers of either personal consumption or personal fulfillment. Instead, the central finding seems to be that the emerging one child family in India, rather than resting on a base of greater parental desires and freedoms, seems to focus even more on investing in this single child. This may well be a response to the neo-liberal economic policies of the last twenty years and the rising opportunities and aspirations that this economy has engendered in one section of the population – that which is predominantly urban or semi-urban, educated and able and willing to exploit the special offers of the new global marketplace.

Children in these still atypical but growing one-child families appear to be highly advantaged. They are heavily invested in. They (boys as well as girls) are more likely to be sent to private schools, more likely to attend English medium schools, more likely to be aided by private tuition to supplement school learning, than their peers from larger families. At the same time, our results also suggest that the declining relevance of public schooling and increasing reliance on private education in India may be actively pushing the emergence of one or two child families.

At the end of the day, all these investments pay off, because children who attend private schools and obtain private tutoring are also more proficient when tested for schooling outcomes – they perform somewhat better on all kinds of tests of reading, writing and ‘rithmetic’ (Desai et al. 2009). We do not have data to check if they are also more emotionally and socially proficient, but they are certainly more suited to take advantage of the new opportunities in the economy.

This observation has important implications for fertility theories that have assumed a floor of two child families for the first demographic transition. The life style of the one-child families that we document is *an extension of the life style of two child families*. Both are more likely to invest in children’s education than larger families but parents of a single child are even more invested in this child than families with two children. This suggests that one need not look for the emergence of post-modern aspirations and ideologies for below-replacement families in countries like India. The motives underlying the first demographic transition do not respect the arbitrary floor of a TFR of 2 that demographers have set up.

Our results add to the growing body of literature on very low fertility that now notes *diverse* routes to low fertility. As we discussed above, this diversity is also implied in more recent understandings of sub-replacement fertility in parts of Europe and East Asia.

We are left with an important but not easily answered question. Do these one child families in India represent what Livi Bacci (1973) called the ‘forerunners’ of fertility decline in the rest of the population? That is, is this an idea that will catch on? Or do these families instead reflect a growing heterogeneity in the Indian population, with eventual average fertility being a balance of childbearing among these heavily motivated families and in the remaining bulk of the population that lacks the capacity to dream big dreams and is also hampered by cultural and institutional constraints on such dramatic fertility decline? Such heterogeneity would be analogous to the heterogeneity of career and fertility preferences underlying average low TFRs in western countries today (Hakim, 2003).

Reading the popular as well as intellectual discourse on the growing economic disparities in the country, one is tempted to focus on the second explanation above. That is, one is tempted to think of these one child families as a movement towards greater population heterogeneity. If social mobility is indeed a key motivating factor, increased investments in children are more likely to bear fruit for families that are already privileged; if low fertility becomes the norm rather than the exception, its impact on social mobility is likely to dampen.

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## Appendix

**Appendix Table 1**

Effect of Family size on Women's Employment, Results from Logistic Regression

	Any Work		Work for Pay	
	Including Family Farm			
	Odds Ratio	SE	Odds Ratio	SE
<b>Family size (3 or more children omitted)</b>				
One Child	0.67**	0.06	1.00	0.09
Two Children	0.86*	0.05	0.96	0.06
Censored with 1 or 2 Children	0.69**	0.04	0.97	0.07
<b>Age of the Mother (Under 25 omitted)</b>				

	Any Work		Work for Pay	
	Including Family Farm			
	Odds Ratio	SE	Odds Ratio	SE
26–29	1.45**	0.11	1.51**	0.13
30–34	2.22**	0.18	2.05**	0.18
35–39	2.53**	0.21	2.36**	0.22
40–44	2.32**	0.20	2.00**	0.19
45–49	2.14**	0.24	2.04**	0.25
<b>Maternal Education (None Omitted)</b>				
1–4 Std.	0.74**	0.06	0.63**	0.05
5–9 Std.	0.58**	0.03	0.43**	0.03
10–11 Std.	0.51**	0.04	0.35**	0.03
12 th or some college	0.67**	0.08	0.81	0.12
College Graduate	0.92	0.09	1.72**	0.20
Missing	1.36	0.21	0.78	0.16
<b>Caste/Religion (Forward Caste Hindu Omitted)</b>				
Other Backward Classes (Middle castes)	1.39**	0.08	1.51**	0.10
Scheduled Caste	1.24**	0.08	2.92**	0.21
Scheduled Tribe	2.31**	0.22	3.52**	0.32
Muslim	0.77**	0.06	0.97	0.09
Christian, Jain, Sikh and others	1.39**	0.16	1.34	0.22
<b>Place of Residence (Metro City Omitted)</b>				
Small-Med. Cities	1.66**	0.13	1.31**	0.13
Developed Villages	7.05**	0.60	1.92**	0.19
Less Developed Villages	10.02**	0.84	2.12**	0.22
<b>Other Family Income (Excluding women's own earnings)</b>				
Log of family Income	0.68**	0.02	0.53**	0.02
Negative Family Income	0.06**	0.02	0.00**	0.00
Constant	19.68**	7.16	12.68**	5.68
Log Likelihood Ratio (df 45)	4715			
N	30487		30487	

Note:

\*\*  
p <= 0.01

\*  
p <= 0.05

Regressions include dummy variables for state of residence.

Sample=Ever married women age 15–49 with at least one child.

Appendix Table 2

Effect of Family Size on Household Consumption

	No. of Assets Owned		Ownership of any Major Asset	
	OLS Coeff.	SE	(car, refrigerator, AC computer or credit card)	
			Odds Ratio	SE
<b>Family size (3 or more children omitted)</b>				
One Child	0.32 **	0.09	0.30 **	0.11
Two Children	0.43 **	0.06	0.29 **	0.07
Censored with 1 or 2 Children	0.06	0.06	0.13	0.08
<b>Age of the Mother (Under 25 omitted)</b>				
26–29	0.07	0.07	0.24 *	0.11
30–34	0.22 **	0.08	0.50 **	0.11
35–39	0.49 **	0.08	0.67 **	0.12
40–44	0.70 **	0.08	0.82 **	0.12
45–49	1.07 **	0.11	0.99 **	0.15
<b>Maternal Education (None Omitted)</b>				
1–4 Std.	0.83 **	0.08	0.80 **	0.11
5–9 Std.	1.76 **	0.06	0.99 **	0.07
10–11 Std.	3.14 **	0.08	1.70 **	0.09
12 th or some college	3.88 **	0.11	2.14 **	0.10
College Graduate	4.87 **	0.11	2.56 **	0.11
Missing	–0.21	0.16	0.23	0.25
<b>Caste/Religion (Forward Caste Hindu Omit.)</b>				
Other Backward Classes (Middle castes)	–0.54 **	0.06	–0.35 **	0.06
Scheduled Caste	–1.21 **	0.06	–0.59 **	0.08
Scheduled Tribe	–1.62 **	0.09	–0.74 **	0.15
Muslim	–0.51 **	0.07	–0.09	0.08
Christian, Jain, Sikh and others	0.13	0.14	0.11	0.12
<b>Place of Residence (Metro City Omitted)</b>				
Small-Med. Cities	–0.19 *	0.08	–0.52 **	0.09
Developed Villages	–1.80 **	0.09	–1.50 **	0.10
Less Developed Villages	–2.29 **	0.09	–1.96 **	0.12
<b>Family Income</b>				
Log of family Income	1.42 **	0.03	1.24 **	0.04
Negative Family Income	14.35 **	0.37	13.63 **	0.51
Constant	–6.45	0.42	–15.14	0.53
R Square	0.6301			

	No. of Assets Owned		Ownership of any Major Asset	
	OLS Coeff.	SE	(car, refrigerator, AC computer or credit card)	
			Odds Ratio	SE
Log Likelihood (df 45)				4324
N	30487			30487

Note:

\*\* p <= 0.01

\* p <= 0.05

Regressions include dummy variables for state of residence.

Sample=Ever married women age 15–49 with at least one child.

**Appendix Table 3**

Effect of Family Size on Women’s Autonomy and Leisure

	Hours of Watching TV		Visit Natal Family Monthly		Couple Communication Index		Go on Family Outings	
	OLS Coeff.	SE	Odds Ratio	SE	OLS Coeff.	SE	Odds Ratio	SE
<b>Family size (3 or more children omitted)</b>								
One Child	0.06	0.05	1.04	0.10	-0.17 **	0.05	1.15	0.10
Two Children	0.02	0.04	0.98	0.06	-0.02	0.04	1.23 **	0.07
Censored with 1 or 2 Children	0.00	0.03	1.30 **	0.08	-0.34 **	0.05	0.99	0.06
<b>Age of the Mother (Under 25 omitted)</b>								
26–29	0.04	0.04	1.05	0.08	-0.02	0.05	0.92	0.06
30–34	0.03	0.04	0.87	0.07	-0.02	0.05	0.89	0.06
35–39	0.07	0.04	0.84	0.08	-0.06	0.06	0.72 **	0.06
40–44	0.10 *	0.04	0.91	0.08	-0.01	0.06	0.64 **	0.05
45–49	0.15 *	0.06	0.79	0.10	0.08	0.07	0.57 **	0.06
<b>Maternal Education (None Omitted)</b>								
1–4 Std.	0.19 **	0.04	1.13	0.09	0.14 **	0.05	1.32 **	0.09
5–9 Std.	0.46 **	0.03	1.04	0.06	0.29 **	0.04	1.59 **	0.09
10–11 Std.	0.60 **	0.04	0.99	0.07	0.55 **	0.04	2.45 **	0.17
12 th or some college	0.61 **	0.06	1.26 *	0.14	0.77 **	0.07	3.64 **	0.44
College Graduate	0.56 **	0.05	1.31 **	0.13	0.93 **	0.06	6.41 **	0.65
Missing	-0.14 *	0.06	0.83	0.13	-0.04	0.13	0.73 *	0.11
<b>Caste/Religion (Forward Caste Hindu Omitted)</b>								
Other Backward Classes (Middle castes)	-0.05	0.03	1.05	0.06	-0.04	0.04	0.87 *	0.05
Scheduled Caste	-0.21 **	0.03	1.13	0.08	-0.19 **	0.04	0.92	0.05
Scheduled Tribe	-0.33 **	0.04	1.39 **	0.14	0.06	0.07	0.90	0.07



	Hours of Watching TV		Visit Natal Family Monthly		Couple Communication Index		Go on Family Outings	
	OLS Coeff.	SE	Odds Ratio	SE	OLS Coeff.	SE	Odds Ratio	SE
Muslim	-0.21 **	0.04	2.12 **	0.15	-0.41 **	0.05	0.57 **	0.04
Christian, Jain, Sikh and others	-0.09	0.06	1.44 **	0.16	-0.14 *	0.07	1.02	0.10
<b>Place of Residence (Metro City Omitted)</b>								
Small-Med. Cities	0.12 **	0.04	1.86 **	0.15	0.41 **	0.05	0.60 **	0.05
Developed Villages	-0.48 **	0.05	1.61 **	0.15	0.58 **	0.05	0.39 **	0.03
Less Developed Villages	-0.70 **	0.05	1.46 **	0.13	0.58 **	0.05	0.43 **	0.04
<b>Family Income</b>								
Log of family Income	0.31 **	0.01	0.91 **	0.02	0.09 **	0.02	1.22 **	0.03
Negative Family Income	3.15 **	0.16	0.58	0.19	0.92 **	0.21	6.53 **	1.95
Constant	-1.96 **	0.19	1.19	0.42	1.95 **	0.23	0.36 **	0.12
R Square	0.3368				0.1977			
Log Likelihood (df 45)			1676.9				2913.67	
N	29832		29449		29741		30330	

Note:

\*\*  
p <= 0.01

\*  
p <= 0.05

Regressions include dummy variables for state of residence.

Sample=Ever married women age 15–49 with at least one child.

#### Appendix Table 4

Effect of Family Size on Expenditure on Children's Education

	Log of Total Educational Expenditure		Enrollment in Private School	
	OLS Coeff.	SE	Odds Ratio	SE
<b>Family size (3 or more children omitted)</b>				
One Child	0.34 **	0.07	1.57 **	0.17
Two Children	0.24 **	0.03	1.43 **	0.08
Censored with 1 or 2 Children	0.21 **	0.06	1.62 **	0.14
Female Child	-0.14 **	0.02	0.78 **	0.03
Age of child in years	0.03 **	0.01	1.07 **	0.02
Standard attended by child	0.12 **	0.01	0.89 **	0.01
<b>Maternal Education (None Omitted)</b>				
1–4 Std.	0.11 *	0.04	1.28 **	0.11
5–9 Std.	0.37 **	0.03	2.12 **	0.11
10–11 Std.	0.71 **	0.04	4.01 **	0.31
12 th or some college	0.89 **	0.05	3.64 **	0.40
College Graduate	1.20 **	0.06	5.35 **	0.63

	Log of Total Educational Expenditure		Enrollment in Private School	
	OLS Coeff.	SE	Odds Ratio	SE
Missing	-0.06	0.06	1.18	0.16
<b>Caste/Religion (Forward Caste Hindu Omitted)</b>				
Other Backward Classes (Middle castes)	-0.08 **	0.03	0.88 *	0.05
Scheduled Caste	-0.26 **	0.03	0.59 **	0.04
Scheduled Tribe	-0.43 **	0.05	0.80 *	0.09
Muslim	-0.28 **	0.03	1.00	0.07
Christian, Jain, Sikh and others	0.08	0.05	1.58 **	0.20
<b>Place of Residence (Metro City Omitted)</b>				
Small-Med. Cities	-0.51 **	0.05	0.77 **	0.06
Developed Villages	-0.96 **	0.05	0.29 **	0.03
Less Developed Villages	-1.25 **	0.05	0.17 **	0.02
<b>Family Income</b>				
Log of family Income	0.19 **	0.01	1.48 **	0.04
Negative Family Income	2.10 **	0.16	75.41 **	25.84
Constant	5.31 **	0.19	0.05 **	0.02
R-Square	0.3458			
Chi Statistic (DF 43)			3724.33	
N	30285		30286	

Note:

\*\* p <= 0.01

\* p <= 0.05

Regressions include dummy variables for state of residence.

Sample=Children Ages 6–14 of ever-married women ages 15–49.

**Table 1**

Estimated TFR for 2001 and 2011

State	TFR		Change
	2011	2001	
Andaman & Nicobar	1.68	2.32	-0.6
Andhra Pradesh	1.79	2.31	-0.5
Arunachal Pradesh	3.29	3.92	-0.6
Assam	2.89	3.19	-0.3
Bihar	4.24	4.54	-0.3
Chandigarh	1.99	2.25	-0.3
Chhatisgarh	2.96	3.6	-0.6
Dadra & Nagar Haveli	3.07	3.61	-0.5
Daman & Diu	2.14	2.48	-0.3
Delhi	2.21	2.62	-0.4
Goa	1.54	1.79	-0.2
Gujarat	2.38	2.57	-0.2
Haryana	2.66	3.22	-0.6
Himachal Pradesh	1.99	2.39	-0.4
Jammu & Kashmir	NA	2.98	NA
Jharkhand	3.48	4.07	-0.6
Karnataka	2.04	2.4	-0.4
Kerala	1.58	1.7	-0.1
Lakshadweep	2.06	2.69	-0.6
Madhya Pradesh	3.17	3.86	-0.7
Maharashtra	2.16	2.56	-0.4
Manipur	2.48	2.59	-0.1
Meghalaya	4.34	4.45	-0.1
Mizoram	2.9	3.36	-0.5
Nagaland	2.82	3.16	-0.3
Odisha	2.36	2.82	-0.5
Puducherry	1.66	1.82	-0.2
Punjab	2.05	2.42	-0.4
Rajasthan	3.42	4.22	-0.8
Sikkim	1.87	3.03	-1.2
Tamil Nadu	1.62	1.85	-0.2
Tripura	2.21	2.48	-0.3
Uttar Pradesh	3.59	4.36	-0.8
Uttarakhand	2.58	3.63	-1
West Bengal	2.02	2.62	-0.6
INDIA	2.66	3.16	-0.5

Source: Guilmoto and Rajan, 2013.

**Table 2**

Proportion of Women with exactly one living child by Women's Age

Age	NFHS-1 (1992-93)	NFHS-III (2005-06)
20-24	0.36	0.41
25-29	0.13	0.17
30-34	0.06	0.09
35-39	0.04	0.06
40-44	0.03	0.05
45-49	0.03	0.04
Median Age at First Birth for women aged 15-49	19.6	20

Source: Calculated from published reports of National Family Health Surveys I and III

**Table 3**

Distribution of Different Socio Economic Groups by Family Size

	3 or more Children	Two Children	One Child	Censored	Row Total
<b>Woman's Age</b>					
20-24	13	2	3	82	100
25-29	39	13	6	42	100
30-34	54	24	7	15	100
35-39	65	23	5	7	100
40-45	70	20	5	6	100
45-49	72	18	5	5	100
<b>Years since Marriage</b>					
Less than 5	1	0	1	98	100
6-8	14	3	8	76	100
9+	62	21	5	12	100
<b>Age at First Birth</b>					
15-19	62	16	4	18	100
20-24	47	19	6	29	100
25-29	33	22	11	34	100
30-34	27	15	20	37	100
35-39	12	10	15	63	100
40-45	0	0	45	55	100
<b>Woman's Education</b>					
None	66	12	3	18	100
1-4 Class	55	19	5	21	100
5-9 Class	46	20	6	28	100
10-11 Class	31	28	7	33	100
12 & come College	17	27	12	44	100
College Graduate	12	29	16	43	100
Missing Data	68	6	4	22	100
<b>Place of Residence</b>					

	3 or more Children	Two Children	One Child	Censored	Row Total
Metro Area	37	25	13	25	100
Other Urban	45	21	6	27	100
Developed Villages	53	19	5	24	100
Less Dev. Villages	60	13	4	23	100
<b>Household Income Quintiles</b>					
Less than 1000 Rs.	59	16	4	20	100
Poorest	57	14	5	25	100
2nd Quintile	57	15	4	24	100
3rd Quintile	56	16	4	24	100
4th Quintile	52	19	6	24	100
Richest	42	24	8	25	100
All	53	18	5	24	100
Sample Size	15708	1689	5678	7416	30491

**Table 4**

## Distribution of Family Size by State

	Distribution of IHDS Sample(+)			
	3 or more Children	Two Children	One Child	Censored
Jammu & Kashmir	72	11	1	17
Himachal Pradesh	48	23	3	25
Uttarakhand	67	10	1	22
Punjab	51	21	3	24
Haryana	56	18	3	23
Delhi	49	26	8	17
Uttar Pradesh	67	7	3	24
Bihar	73	5	1	21
Jharkhand	61	10	3	25
Rajasthan	64	10	4	23
Chhattisgarh	57	10	5	27
Madhya Pradesh	63	12	3	22
Northeast	48	18	8	26
Assam	48	24	10	17
West Bengal	44	22	12	22
Orissa	54	16	4	26
Gujarat	47	23	6	25
Maharashtra, Goa	51	19	4	26
Andhra Pradesh	42	24	7	27
Karnataka	45	23	7	26
Kerala	24	41	8	27
Tamil Nadu	38	28	7	27
All India	53	18	5	24
Sample Size	15708	1689	5678	7416

**Table 5**

Predicted Probability of Women's Employment By Family Size

	Rural		Urban	
<b>Predicted Probability of Any Work for Mothers</b>				
3 or More Children	0.739		0.235	
Two Children	0.709		0.209	
One Child	0.655	**	0.171	**
Censored with 1 or 2 children	0.661	**	0.174	**
Sample Size	30487			
<b>Predicted Probability of Wage Work for Mothers</b>				
3 or More Children	0.227		0.095	
Two Children	0.220		0.092	
One Child	0.227		0.095	
Censored with 1 or 2 children	0.222		0.092	
Sample Size	30487			

Note:

\*\*  
P <= 0.05

Compared to families with 3 or more children.

Predicted Values from Logistic Regressions Controlling for Mother's Age, Education, Caste/Religion, Household Income excluding mother's wages, and Place and State of Residence Due to sample size constraints regressions combine urban and rural samples, but predicted values are calculated holding background variables at their urban and rural means separately. Full regression in Appendix Table 1.



**Table 6**

Predicted Consumption Behavior for Families at the Same Income Level

	Rural		Urban	
<b>Predicted Asset Ownership</b>				
3 or More Children	6.718		11.223	
Two Children	7.148	**	11.653	**
One Child	7.039	**	11.544	**
Censored with 1 or 2 children	6.777		11.282	
Sample Size	30487			
<b>Predicted Probability of Owning at least one large item</b>				
3 or More Children	0.013		0.228	
Two Children	0.018		0.283	**
One Child	0.018		0.285	**
Censored with 1 or 2 children	0.015		0.252	
Sample Size	30487			

Note: Predicted Values from Logistic Regressions Controlling for Mother's Age, Education, Caste/Religion, Household Income and Place and State of Residence. Full regression in Appendix Table 2.

**Table 7**

Predicted Leisure and Gender Related Outcomes by Family Size

	Rural		Urban	
<b>Predicted Hours of TV Watching for Women (+)</b>				
3 or More Children	1.020		2.243	
Two Children	1.036		2.258	
One Child	1.083		2.306	
Censored with 1 or 2 children	1.020		2.242	
Sample Size	29832			
<b>Frequent Visits to the Natal Family</b>				
3 or More Children	0.160		0.175	
Two Children	0.157		0.172	
One Child	0.165		0.182	
Censored with 1 or 2 children	0.199	**	0.217	**
Sample Size	29449			
<b>Index of Couple Communication</b>				
3 or More Children	3.530		3.699	
Two Children	3.515		3.684	
One Child	3.363	**	3.531	**
Censored with 1 or 2 children	3.190	**	3.359	**
Sample Size	29741			
<b>Probability of Going on a Family Outing</b>				
3 or More Children	0.424		0.679	
Two Children	0.475	**	0.722	**
One Child	0.458	**	0.708	
Censored with 1 or 2 children	0.421		0.676	
Sample Size	30330			

Note: Predicted Values from Logistic Regressions Controlling for Mother's Age, Education, Caste/Religion, Household Income and Place and State of Residence. Full regression in Appendix Table 3.

**Table 8**

## Predicted Investments in Children by Family Size

	Rural		Urban	
<b>Predicted Annual Expenditure on Children's Education (in Rupees)</b>				
3 or More Children	377		1059	
Two Children	480	**	1349	**
One Child	528	**	1484	**
Censored with 1 or 2 children	465	**	1306	**
Sample Size	30285			
<b>Predicted Probability of Children Attending Private School</b>				
3 or More Children	0.127		0.468	
Two Children	0.172	**	0.556	**
One Child	0.186	**	0.580	**
Censored with 1 or 2 children	0.191	**	0.588	**
Sample Size	30286			

Note: Predicted Values from Logistic Regressions Controlling for child's age, sex, standard, Mother's education, Caste/Religion, Household Income and Place and State of Residence. Full regression in Appendix Table 4.