Poverty, Risk, Aspirations and Childbearing

Sajeda Amin * and John B. Casterline **

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* Senior Associate
Policy Research Division, Population Council
One Dag Hammarskjold Plaza
New York, New York 10017
samin@popcouncil.org

** Professor of Sociology and Demography
Pennsylvania State University
University Park, Pennsylvania 16802
jcasterline@pop.psu.edu

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ABSTRACT

This paper explores how risk and vulnerability associated with poverty affect demographic behavior, and in particular how they affect the propensity for demographic change. The paper draws on two established strains in the existing literature that have not been effectively incorporated in research on poverty and population processes. The first is the theory of risk and fertility put forward by Mead Cain (1983). The paper expands the scope and applicability of Cain's work by drawing on more recent theory about social influence and social interaction. In particular, we explore how social networks provide social resources to households that reduce risk and perceptions of vulnerability, and how social networks facilitate the adoption of innovative behaviors, in so doing conditioning the effects of poverty on decisions about childbearing. In considering the association between economic status and fertility, we argue that it is essential to distinguish fertility desires from the implementation of those desires. The former reflect strategizing about fertility that is embedded in larger strategizing about the future well-being of individuals and households. For multiple reasons, this strategizing need not result in a sharp and monotonic association between fertility aspirations and household economic status.

I. Introduction

After several decades of relative neglect, economic status (and, specifically, poverty) has become a dominant concern in population research on developing countries. Of concern is economic status as both cause and consequence of demographic outcomes, and at the macro and micro level. The most active streams of work have examined (i) macro-level impacts of demographic change on economic growth (e.g. "demographic gift") and (ii) micro-level effects of household economic status on various demographic variables (fertility, health/mortality, geographic mobility). There is also continuing work at a lower level of intensity on (iii) micro-level effects of demographic variables (number of births, adult health/mortality) on household economic status. Our aim in this paper is to enrich the second stream of work, on micro-level effects of economic status on demographic outcomes. By far the largest contribution to this literature in recent years in the case of developing countries has been the numerous analyses of DHS data that have examined associations between household assets ("wealth index") and various outcomes.

In the recent empirical work that examines the association between household economic status and reproductive outcomes, in our view the theoretical foundation for this work is too often undeveloped. Our concern is both the conceptualization of economic status, and the conceptualization of the effect of economic status on fertility. Our aim in this paper is to suggest directions that both might be strengthened.

On the matter of conceptualizing economic status, there is now a large body of literature, particularly in economics and development, which can enrich the interpretation of household wealth measures as indicators of economic status. This literature also points to other aspects of economic status that we believe deserve more attention in research on fertility, and we discuss these. This element of our discussion might be labelled "beyond the DHS wealth index". While not always articulated in the recent literature, we sense that demographers view poverty as simply a matter of a lack of crucial resources at the household level. Undoubtedly the presence or absence of resources accounts for a large portion of the observed differentials in health/mortality according to household wealth, although one

suspects the story is more complex. But almost certainly "poverty as a lack of resources" is an inadequate conceptual starting-point for considering the poverty-fertility association.

Any effort to conceptualize the effect of household economic status on fertility must begin with recognition that fertility patterns reflect both *fertility desires* and the *success in implementing* those desires (i.e. via contraception or induced abortion). This is a very familiar dichotomy in research on fertility: demand for children and deliberate fertility regulation; or, in the Easterlin Synthesis Framework, motivation to regulate fertility and the costs of regulation. While these distinctions are familiar, they have not effectively informed recent considerations of how household economic status (and poverty in particular) might affect fertility.

The conceptualization that we propose in this paper posits that household economic resources are closely linked with the *capacity to implement* fertility desires. In this respect, it is appropriate to conceptualize poverty as a lack of resources. Here theory about poverty and fertility closely parallels theory about poverty and health/mortality. To be sure, in neither case can effects of poverty (on fertility regulation, on health production) be reduced to nothing more than expressions of resource deprivation (at the household level, and corresponding deficits at the community level). Other factors – knowledge, attitudes – that are in part a function of economic status also contribute to the generation of observed differentials.

The relationship of household economic resources to *fertility desires* is more complex and is the main focus of this paper. We make two major points. First, a lack of resources is but one of the aspects of poverty that affects fertility desires. For this reason, demographic research would be strengthened if it incorporated the richer and more variegated understandings of poverty that are accepted in the economic development literature. Second, to the extent fertility desires reflect an active strategizing about reproduction that, in turn, is embedded in a more encompassing strategizing about individual and household well-being, there is no reason to expect a simple monotonic association between household economic circumstances and fertility desires.

The remainder of the paper is structured as follows. In the next section, we present DHS estimates of differentials in basic reproductive variables (attitudes and behaviours), as an empirical back-drop to the remainder of the paper, which considers why such observed differentials might be large or small and how research on the poverty-fertility nexus might be strengthened. In Section III, we review conceptualizations of poverty that have emerged in the development literature during the past two decades, with particular attention to those conceptualizations that we believe would improve research on fertility. In Section IV, we tackle head on the question of how household economic status might bear on reproductive attitudes and behaviours, developing at greater length the argument sketched in the previous paragraph. Our argument leans heavily on dimensions other than household material resources *per se*; in particular, we stress perceptions and aspirations, and we argue for the conditioning influence of social capital. In the concluding section, we consider the implications for future research, including future data collection activities.

2. Household assets indicators: concepts and empirical results

The Demographic and Health Surveys [DHS] do not routinely collect information on income and consumption (the latter captured via expenditures). In this the DHS follows the practice of demographic surveys during the past three decades. Occasionally a few items are included on household expenditures, but the inquiry is not rigorous. The lack of systematic measurement of income and consumption has long been considered an important limitation of these surveys from the standpoint of research on the linkages between poverty and population process. The DHS surveys do, however, collect information on the ownership of a moderately long list of household assets, as well as information on the quality of household facilities (electricity, source of drinking water, type of toilet facilities). From this information various indicators of household wealth can be constructed (e.g. via principal components analysis). What such indicators represent has been a subject of some debate in the literature. Montgomery *et al.* (2000) conclude that while asset holdings are only weakly predictive of per capita consumption per adult, they can be employed as valid proxies for household standard of living when analyzing large samples and provided that certain other key confounding variables are controlled. Filmer and Pritchett (2001) are more enthusiastic about the value of household wealth indicators, among other points arguing that asset holdings are reasonably coherent with current expenditures. They also demonstrate predictive power in analysis of children's school enrolment. Citing analysis of Guatemalan data, Rutstein and Johnson (2004) report that indicators derived from ownership of household assets mimic per capita expenditure well and perform better than total household expenditure.

One argument in favour of asset-based indicators revolves around the old debate about the relative merits of measuring income versus expenditures. Measurement of expenditures came out ahead in this debate, partly on grounds of practicality in the field but also for more fundamental reasons. A substantial literature documents that household consumption expenditure varies much less over time than income. Apparently households have various means of protecting themselves from swings in income that could threaten consumption. These include formal and informal mechanisms of social protection, insurance and credit (Townsend 1994; Alderman and Paxson 1994). Thus cross-sectional household asset

indicators capture variation that is due in part to mechanisms households deliberately employ to shield themselves from consumption threats. For this reason, one should regard asset-based indicators of poverty as reflecting in part household-level strategizing to cope with risk.

Following the methodological work of Montgomery et al. (2000) and Filmer and Pritchett (2001), the DHS has now institutionalized a "household wealth index". (The DHS follows Filmer and Pritchett in constructing the index via principal components analysis.) This index is now commonly included among the short list of basic background variables in the tables in DHS main reports. It has also been used in some multi-country tabulations of household wealth differentials in demographic and health outcomes according to household wealth (e.g. http://poverty.worldbank.org/library/view/15080). Among reproductive variables, the outcomes examined include the total fertility rate [TFR], the adolescent fertility rate, and use of modern contraception. Left unexamined are differentials in fertility desires according to household wealth, of central importance for this paper, as argued in the Introduction. Furthermore, we are not aware of a systematic effort to obtain household wealth differentials in reproductive variables that are adjusted for the effects of other associated socioeconomic variables, such as type of place of residence (urban vs. rural) and the educational attainment of the respondent and/or her husband. Without doubt household wealth is correlated empirically with these other socioeconomic variables, which themselves are known to have effects on reproductive attitudes and behaviours.

Lacking the tabulations that we seek as a backdrop to this paper, we have carried out logistic regressions on two key reproductive variables: the desire to have no more children, and use of modern contraception. The analysis is restricted to women with two or three living children. The regressions include additive effects of the woman's age, whether she has two vs. three children, the woman's educational attainment, and urban vs. rural residence. This model begs the question of how the various socioeconomic variables, including household wealth, are jointly determined. Models that are more realistic about the causal relationships among these variables are certainly in order. We employ this very simple model for heuristic purposes, believing that differentials according to household wealth that are adjusted for confounding variables are an improvement over unadjusted differentials. The DHS household wealth index is broken into quintiles and entered into the regressions as a categorical

predictor. From these regressions, we calculate adjusted differences between the highest and lowest quintiles of household wealth. This exercise is conducted for 51 countries, using the most recent DHS survey. The results are graphed in Figure 1, for the desire to have no more children and use of modern contraception, respectively. (The full set of predicted values and the statistical test of the household wealth indicator are contained in Appendix Table 1.)

Figure 1 shows a great deal of intriguing variation – between fertility desires and behaviours, among countries, and among regions. We think it would be informative to carry this empirical analysis of DHS data much further. For now we will confine our comments on Figure 1 to a few rather general points that are especially striking and/or germane to the argument in this paper. It should be kept in mind that Figure 1 displays differences in predicted probabilities between women in the wealthiest and poorest quintiles of household wealth.[1]

A first conclusion from Figure 1 is that the difference in use of modern contraception is usually larger than the difference in fertility desires. The exceptions to this rule – Haiti, Pakistan, Vietnam, Jordan, Krygyz Republic, Central African Republic, Ethiopia, Mozambique – have nothing obvious that they share in common, except the very low use of modern contraception in several of the African countries. While the differences in contraceptive use equal or exceed 0.10 (i.e. 10 percentage point gap) in roughly one-half of the countries (24 countries), the differentials in the desire to terminate childbearing exceed 0.10 in about one-fifth of the countries (10 countries). The differences in use are often at least twice as great as the differences in desires, and in some countries larger by a factor of three or more. Stepping back and considering the results for all 51 countries for fertility desires alone, one might question whether household wealth – economic status – has much to do with fertility.

Second, while contraceptive use in the wealthiest quintile always exceeds use in the poorest quintile (albeit in some countries by a tiny amount), there are instances in which the proportion desiring no more children in the wealthiest quintile falls short of the proportion

[1] We will interpret Figure 1 under the assumption that the range of sub-group average values for these two variables – whose means are proportions, bounded by 0 and 1 – are roughly the same, and therefore it is appropriate to compare the absolute values of the predicted differences.

desiring no more in the poorest quintile. There are 15 instances of the latter, i.e. almost one-third of the countries. Ten of these 15 countries are African; evidently fertility demand is positively associated with household wealth in many African societies, net of other basic socioeconomic variables. (The latter is an important qualifier – without adjustments for type of place and schooling, most of these differences are positive, i.e. a larger fraction of the wealthy wish to have no more children.)

A final comment on Figure 1 is that no regional patterns are readily apparent, with the exception of somewhat smaller differences in contraceptive use between the wealthiest and poorest in Africa. In general contraceptive prevalence is low in these African societies, thereby leaving less scope for substantial differentials (according to household wealth or any socioeconomic variable).

In our view, the most important finding in Figure 1 is that the difference in modern contraceptive use usually exceeds the difference in fertility desires. This is, in fact, a finding that was anticipated in the discussion in the Introduction. Subsequent sections of this paper will, among other aims, further develop our argument about why fertility desires are often not sharply differentiated according to the economic status of the household.

3. What does it mean to be poor?

Writings on contemporary poverty vary considerably in the aspects of poverty that receive emphasis. Poverty is seldom viewed merely as a dearth of resources. In this section we explore several notions of poverty that may directly or indirectly influence childbearing decisions. Factors such as social cohesion and the structure of social networks influence risk levels and coping strategies associated with poverty and, as it happens, also have effects on fertility.

In reviewing the various perspectives on poverty that have been adopted by economists during the past two decades, it is useful to think about vulnerability to poverty as a joint function of the degree of risk *per se* and of the capacity to cope with that risk (Alwang *et al.* 2002). This is the distinction between *ex ante* and *ex post* strategies that is fundamental in this literature. Another important distinction that is common to varied notions of poverty is income risk versus consumption risk. In most impoverished settings, the poor face a high level of environmental or other risks that cause their income to fluctuate. Households and individuals pursue anticipatory (*ex ante*) strategies to prevent income shocks, including occupational diversification, crop diversification and land diversification in agricultural economics, and purposive migration of household members to locales where threats to income are lower (Alderman and Paxson 1992). Note that income risk is not limited to production failure and environmental risk. All households, but the poor to a greater degree, are threatened by predatory risks -- land-grabbing, extortion, theft and robbery. Predatory risks are especially high in communities that lack social cohesion.

An important point here is that strategies for managing income risk *ex ante* can have implications for strategies for coping with outcomes *ex post*, i.e. once a serious economic setback has occurred. Migration provides a straightforward example—individuals may migrate away from high risk areas, such as drought- or flood-prone villages, to urban areas where wages will be higher and more stable; but this removes these individuals from community and social networks that they might turn to in times of crisis.

Savings or inter-temporal smoothing of consumption is another important *ex ante* coping strategy. The ability to save enough to protect from large downward income shocks depends critically on level of assets or stocks of capital, i.e. on poverty. As such the rich and poor will differ in their propensity to save (Alderman and Paxson 1992). This variation in the capacity to save is compounded by differential access to formal savings institutions. Both factors – low capacity to save, inadequate access to trustworthy savings institutions – result in low savings among the poor. There is some recent evidence that the latter is of more importance than sometimes recognized. In a review of informal safety nets, Morduch (1999) argues that the extension of safe saving facilities to the poor can generate considerable savings. The experience of a new NGO showed that offering nothing but saving facilities to poor households led to the generation of substantial savings. The implication is that lack of access to safe savings is a major reason why savings are so low among the poor.

Because the poor have more limited access to formal institutions, various forms of informal mechanisms assume greater importance. These informal mechanisms can take different forms but usually are grounded in localized social networks. For example, in some societies the poor pool resources via rotating savings groups, thereby circumventing the household-level resource bind. Aspiring savers enter a social arrangement for a limited period during which members regularly contribute to a common pool, with members then taking turns receiving payouts. Such groups depend critically on shared confidence that each member will not renege on the promise to continue payments into the pool even after they have received their allotment. Clearly the establishment and maintenance of such groups depends on a minimal degree of social cohesion, and such groups will function more effectively in settings where social cohesion is higher.

Contrasted to *ex ante* coping strategies, there is a distinct set of *ex post* factors that determine the ability of households to cope with income shocks after the experience of the shock. These are also related to access to markets of various sorts, such as land, labor, and credit. There is evidence from rural poor settings that household consumption streams tend to be much less volatile than income streams (Townsend 1994, Amin *et al.* 2003); in effect, short-term household income *per se* does not determine levels of consumption. Households are able to smooth consumption in the face of income shocks because of various relationships

among households. Households share risk by borrowing and lending, by exchanging labor, by exchanging gifts and through other types of safety nets that have the effect of spreading consumption risks across households within a community (Alderman and Paxson 1992, Townsend 1994, Morduch 1999). Risk-sharing arrangements can be formal or informal. The poor lack access to formal credit markets because borrowing from formal institutions requires collateral in the form of physical assets. Hence the poor rely more on informal sources of credit, such as family and friends.

Townsend's (1994) study of villages in semi-arid areas of India found evidence of considerable risk insurance across households. Cain (1981) compared the semi-arid drought prone Indian villages studied by Townsend, to a flood prone and similarly high risk village in Bangladesh, and argued that the particular way in which households smooth consumption is also relevant and varies by social setting— in the absence of credit markets, households in rural Bangladesh frequently resorted to distress sale of land, a response that set them further down the spiral of poverty. In the Indian villages credit was more readily available to help poor households tide over income shortfalls. This comparison led Cain to posit that the absence of credit markets led to higher fertility in Bangladesh relative to the villages in India.

In general, when it comes to coping with risk *ex post*, the poor have relatively limited access to formal insurance mechanisms that might be invoked at times of economic distress, and the capacity of less formal mechanisms for consumption smoothing should not be exaggerated. Poor households in localized communities will tend to suffer income shocks simultaneously (i.e. as a result of environmental conditions and/or market breakdowns), and this limits their capacity to cope *ex post* through various risk-sharing arrangements. But households can adopt anticipatory (*ex ante*) strategies of self-insurance to guard against income shocks and smooth consumption shocks. Cain (1979) describes high fertility as self-insurance mechanism against income shocks in the high risk setting of rural Bangladesh, with the risks being first and foremost environmental in nature. In this setting, all socioeconomic classes recognize childbearing as an important strategy for dealing with economic vulnerability. Cain also describes a class of risks that is specific to women, derived from the patriarchal gender system that, among other things, leads to women's exclusion from labor markets. Because of these exclusions, women are strongly motivated to have children so that

at a later stage in life, when they may find themselves widowed, they will have mature sons without whom they would lose most forms of entitlement in their marital home.

In recent years, microfinance institutions have proliferated in many impoverished settings. These institutions rely on group lending where members who cannot put up collateral cross-insure each other and enforce repayment. The success of micro-finance institutions relies considerably on group cohesion, with the groups serving as a form of social capital. Microcredit groups can also play an important role in bringing about other forms of social change among their members and in the community in general. There is now growing evidence that women who join microcredit groups are significantly more likely to adopt various forms of innovations including the adoption of modern contraception (Steele *et al.* 2001). In general, studies of the impact of micro-credit program usually find a strong impact of the programs on contraceptive behaviour but not on fertility.

Ray (1998) suggests that in addition to being credit constrained and unable to save, the poor are also more risk averse. As a result they may engage in behaviours that lead them to insure more than the rich. This may be one reason why poverty leads to higher fertility and to less efficient investments in general. Morduch (1999) and others find evidence of this in differentials across economic strata in the propensity to adopt agricultural innovation. In the same vein, Bannerjee (2001) argues that the poor are relatively risk averse, for the simple reason that any particular economic setback is more consequential for the poor. In effect, the poor have more to lose from most income threats (environmental condition or market breakdown).

To recapitulate, a major theme in the recent literature in economics is that poverty is a function of absent or deficient access to markets. Access to markets may be formal or informal. The poor usually have less access to formal markets for capital, insurance, credit and labor, but they may have substantial access to more informal markets. As a result, in many settings the poor are relatively more reliant on informal rather than formal mechanisms to cope with economic distress. An important point is that these informal mechanisms draw heavily on social capital, and hence in strategizing to preserve and advance their households' economic fortunes, the poor may be relatively more reliant than the wealthy on factors such as

social connectedness and community trust. Indeed, their relative lack of access to formal markets compels the poor to rely more on social institutions for income generation in the first place, making them fundamentally different and not "just like everyone else except that they have less money" (Banerjee 2002). Of course the wealthy also rely on social institutions, but this is less likely to be a matter of simple subsistence. In addition, the lack of access to political power -- the inability of the poor to voice needs and collectively demand access to resources -- are also emerging themes in the literature on poverty (Narayan 2002).

How, then, might we link this more multi-dimensional understanding of poverty to fertility desires and fertility outcomes? The most interesting conceptual issues concern fertility desires, which we take as a reflection of individuals' strategizing about childbearing in the context of their strategizing about a broader array of valued goals (economic, health, social). A desire to limit fertility (e.g. to two or three children) presumes, therefore, that (i) other valued goals have been articulated and, crucially, (ii) are regarded as realizable, and, further, that (iii) having fewer children is believed to improve the chances of realizing these goals. That is, this is in part a matter of discrepancies between what individuals want and what they have, which Ray (2004) terms "the aspirations gap". Ray argues that either a small or a large gap can discourage actions to close the gap, the former because there is not much to gain and the latter because success seems unachievable (a kind of demoralization or resignation).

Given the three-part conditionality in the previous paragraph and the earlier discussion of the various dimensions of poverty, there is no reason to expect a simple and strong effect of household economic status (and, in particular, poverty) on fertility desires (viewing these as expressions of fertility strategizing). To make this concrete, one can imagine settings in which the desire to limit fertility is highest among the middle economic strata and lower among both the wealthy and the poor. In all strata the fertility desires reflect strategizing that is heavily informed both by economic aspirations (to maintain or improve their status, intra- and inter-generationally) and assessments of the feasibility of achieving those aspirations (i.e. Ray's "aspirations gap"). Yet the wealthy and the poor arrive at roughly the same juncture for radically different reasons -- the wealthy more able to afford children (although of course in moderation) and the poor depending on children (again, in moderate numbers) for various risk

insurance purposes (in the short- and longer-term). For neither group, according to this logic, is restricting childbearing to a small number of children a step towards closing a meaningful portion of an "aspirations gap". Hence, in this hypothetical setting fertility desires would show a weak association with household economic status, despite the fact that in all economic strata these desires are thoroughly informed by forward-looking strategizing about how to achieve economic (and other) aspirations.

This is but one illustration. We can also imagine contrasting settings in which -- also as an outcome of strategizing about how to achieve economic goals (and how to avoid economic distress) -- fertility desires align closely with economic status, with the poor desiring markedly larger numbers of children than the wealthy. This might be due to the poor seeing considerable value in childbearing as part of a larger strategy for dealing with environments of risk, as discussed above. And/or it might reflect a lack of belief on the part of the poor that severely limiting their childbearing will improve to any significant extent their economic prospects; i.e., their aspirations gap is so wide that actions such as restricting childbearing seem rather pointless. The wealthy, in contrast, may want to limit themselves to just a few children in order to preserve family wealth inter-generationally (less dilution through inheritance) and in order to facilitate their taking advantage of emerging economic opportunities (via better educated children and investments of financial capital in economic ventures other than children).

The general point is that if one embeds childbearing in larger household-level strategies to deal with economic threats and opportunities, both *ex ante* and *ex post*, then the expected association between economic status and fertility desires is by no means sharp nor even monotonic. And this is, in fact, the picture that emerges from our analysis of DHS data (as presented in Figure 1 and discussed in Section 2).

4. Social capital

Much of the existing research on poverty and fertility implicitly treats households as autonomous units that must fend for themselves, with perhaps some recourse to public and private social and health services (micro-credit, schools, reproductive health services, and so forth). We include in this characterization most of the existing research that uses the DHS household wealth index. This is a behavioral model that neglects numerous social connections which serve as resources both *ex ante* (as households strategize to make themselves less vulnerable to damaging shocks) and *ex post* (as households cope with various kinds of setbacks), as described in the previous section. Bourdieu effectively captures the implicit model in this existing body of work:

> The social world is accumulated history, and if it is not to be reduced to a discontinuous series of instantaneous mechanical equilibria between agents who are treated as interchangeable particles, one must reintroduce into it the notion of capital and with it, accumulation and all its effects. Capital is . . . . what makes the games of society -- not least, the economic game -- something other than simple games of chance offering at every moment the possibility of a miracle. Roulette, which holds out the opportunity of winning a lot of money in a short space of time, and therefore of changing one's social status quasi-instantaneously, and in which the winning of the previous spin of the wheel can be staked and lost at every new spin, gives a fairly accurate image of this imaginary universe of perfect competition or perfect equality of opportunity, a world without inertia, without accumulation, without heredity or acquired properties, in which every moment is perfectly independent of the previous one, every soldier has a marshal's baton in his knapsack, and every prize can be attained, instantaneously, by everyone, so that at each moment anyone can become anything. Capital, which, in its objectified or embodied forms, takes time to accumulate and which, as a potential capacity to produce profits and to reproduce itself in identical or expanded form, contains a tendency to persist in its being, is a force inscribed in the objectivity of things so that everything is not equally possible or impossible. (Bourdieu 1986)

This is the introduction to Bourdieu's case for what he terms "cultural capital" and "social capital", the latter defined as "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition." Bourdieu argues that a person's social capital is determined by the size of his/her relationship network, the sum of its cumulated resources (both cultural and economic), and how successfully (quickly) s/he can set them in motion. In

its key features, this notion of social capital is essentially the same as Coleman's (1988, 1990) that has become a central organizing concept in research on poverty in the U.S. and in developing countries (e.g. Narayan and Pritchett 1999).

Bourdieu sets the stage for a consideration of social capital in a manner that is particularly helpful for our discussion: by subsuming all the types of capital under a more general concept, he reveals the imbalance in examining just one type and neglecting the others. The DHS household wealth index captures the accumulation of economic capital. Might social capital also be relevant to research on poverty and fertility? Might social capital (in its variants) advance our understanding of the observed associations between household assets (economic capital) and reproductive attitudes/behaviours?

There are several reasons to answer this question in the affirmative. In doing so, we make social capital more specific and concrete through the concepts of *social learning* and *social networks*. "Social learning" refers to informational gains through social interaction; i.e., knowledge is the resource acquired socially. Knowledge is defined broadly to include everything from technical knowledge to behavioral norms. An important form of social learning is observing the experiences of other persons: what choices others have made when faced with certain predicaments, and the consequences of those choices. This form of social learning does not require a mutually recognized interpersonal relationship, indeed it can occur at a distance. Social learning is a complex behavioral and cognitive process that encompasses both the social aspects of information acquisition and the filtering or distillation of that information into terms that are meaningful to individual choice (Carley 2001).

Social learning is a pervasive feature of social experience but especially salient in circumstances of risk and uncertainty, and this is what makes the concept of social learning of particular value when attempting to understand poverty and fertility interrelations. Social learning can inform economic aspirations (Ray 2003) and childbearing aspirations (Casterline 2001). Further, social learning will inform individuals' perceptions of their environments of risk and their consequent vulnerability (economic and otherwise); hence, individuals with apparently identical household economic circumstances – as represented by the assets they possess – may assess their future risks quite differently (differential assessments that may, in

fact, be correct). Similarly, through social learning individuals can learn about alternative means for regulating fertility and the costs/benefits of these alternatives (Montgomery and Casterline 1996). Finally, social learning will inform individuals' awareness of resources for coping with distress (economic and reproductive). The important point here is that if individuals learn from – borrow from – the attitudes and experiences of others, this undermines any strict mechanical relationship between their own household economic situation and other choices they make, including reproductive choices.

"Social network" refers to a set of concrete interpersonal connections among persons. These connections can be the conduit for the transfer of various kinds of resources, including knowledge (hence "social learning" and "social networks" are not separable concepts). In this discussion, the concept of social network subsumes local community organizations. Such organizations – formal and informal, voluntary and involuntary – have received enormous attention in recent years in the poverty and development literature. "Social network" also subsumes those social connections based on kinship. In terms of the association between household economics and fertility, social networks can serve two important types of functions – *ex ante* and *ex post*, respectively -- as discussed in Section 3: first, they can provide protection against distress via various income-sharing and consumption-smoothing mechanisms; second, they can provide resources for coping with distress once it occurs, both economic and reproductive distress. Concerning the latter, we note that in some societies the adoption/fostering of children is a mechanism for coping with childbearing shortfalls and excesses.

Having defined and briefly reviewed two facets of social capital (social learning and social networks), we can ask how these might bear on the association between household economic circumstances and fertility. It seems likely that, on balance, social learning and social networks attenuate the relationships that might otherwise be observed. In its various forms, social capital tends to offset and counter-act the effects of household-level economic capital on reproductive strategizing and on reproductive outcomes: economic and fertility aspirations will align less perfectly with household economic circumstances; individuals' perceptions of risk (and the attendant senses of vulnerability) will not be driven solely by

household circumstances, instead will be informed by assessments of group-level risk; and coping tactics will exploit extra-household resources.

Hence, we should not expect to observe the stark effects of household wealth on reproduction that would hold in a hypothetical society in which households acted in isolation from each other. We must, however, qualify this generalization (that social capital softens the impact of poverty on fertility) by making it contextually-specific. The character of social capital varies from society-to-society, and among various sub-groups within any given society. Consider the role of social capital in the formation of aspirations (economic and reproductive), and suppose that upward mobility aspirations and small-family desires are strongly correlated. In some settings social learning might result in more confidence about prospects for upward mobility among the non-poor and excessive pessimism about economic prospects among the poor; everything else being equal, this would amplify the association between economic circumstances and fertility. Or consider the role of social capital in determining the availability of social services. For this purpose, in some settings social networks among the non-poor may be more efficient in linking individuals to reproductive health services than comparable networks among the poor. Or consider the role of social capital in coping with distress. In some settings the net gain in coping resources acquired socially by the non-poor may be much more consequential than those acquired socially by the poor.

Economic and social capital will often be positively associated – those who possess more of one also possess more of the other. In itself, this positive association should result in the two forms of capital reinforcing each other. But at issue is not the simple association between the two forms of capital, rather the proportionate effect of the available social capital on household-level strategizing (about economics and about reproduction). Equivalent amounts of social capital might have quite varying effects on the decisions of the poor and non-poor. A concrete illustration makes this point. Suppose that beliefs about the association between family size and children's later socioeconomic prospects are acquired through social learning. Suppose, further, that the poor average about five children and the wealthy average about three children. For the poor, a relatively vague belief acquired through social learning that children from smaller families have better chances of socioeconomic success in later life

might lead to a decline in average number of children desired from five to three (40% reduction), i.e. down to a moderate size that still allows most couples to have children of both sexes. Equivalent beliefs acquired through social learning might have no impact on the wealthy; rather, they might require relatively firm evidence of improved socioeconomic prospects for their children before they would aspire to stop at two children on average (33% reduction) Hence, the same amount of social learning might have different proportionate impacts on fertility desires of the poor and the wealthy. This is a simple hypothetical, for the purpose of making the more general point: the poor and non-poor can differ both in their access to social capital and in the (per unit) effect of social capital on their strategizing about fertility.

6. Conclusion

As is apparent, our aim in this paper has not been to provide a comprehensive review of existing theory and empirical research on the nexus of poverty and fertility. Our more modest ambition has been to highlight important omissions in existing work and, in particular, promising directions for extending and enriching research on this topic. To this end, we think two concepts are central: social capital and aspirations gaps.

When reading the recent literature on poverty in low-income countries, we find increasing emphasis on the role of social capital in determining the risk of impoverishment and the means for coping with impoverishment. Poverty as simply a lack of resources is seldom the exclusive focus in this literature. Social capital has, of course, been central to fertility theories as well during the past decade or two. Thus, social capital, variously defined, is an important point of convergence between theories of poverty and fertility. The specific aspect of social capital that is stressed in recent research on both poverty and fertility is the social cohesion of the household's immediate environment. This social cohesion is most directly characterized in terms of social networks of knowledge-sharing (with knowledge broadly defined to include, for example, perceptions of vulnerability to economic shocks and notions about the costs/benefits of children), income support, and the provision of *ex post* support during times of economic distress. The latter can be regarded as informal insurance mechanisms.

By no means do we entirely dismiss the role of household-level resources in determining fertility (both aspirations and outcomes). We argue that resources *per se* have a more direct and dominant influence on fertility control behaviours (i.e. the implementation of fertility desires) as compared to their influence on fertility desires. Hence a fertility measure such as use of modern contraceptive technology is expected to be more sharply patterned according to household wealth than measures of fertility desires. This is in fact what DHS data show: contraceptive use in country-after-country is higher among women in the wealthiest households as compared to women in the poorest households, whereas the rich-

poor gap in fertility desires is less consistent in direction (in some societies the most affluent desire larger numbers of children on average) and smaller in magnitude.

Turning to aspirations (economic and fertility) and the "aspirations gap", we believe that the relationship between economic and childbearing aspirations – and, in particular, what this implies for the association between economic status and fertility – needs to be reconceptualized. Here our argument is heavily influenced by a recent piece by the development economist Debraj Ray (2004) in which he argues that poverty is both a cause and an effect of an "aspirations failure". Aspirations are, of course, a central element in most fertility models (i.e. fertility demand/desires/motivation), but the likely effect of household economic status – and poverty in particular -- has been under-developed. Ray argues for macro and individual level effects of poverty and aspirations. Further exploration of these ideas and their specific application to decisions about fertility can yield important results.

Finally, these arguments need to be validated empirically. Our review suggests that in order to advance our understanding of the nexus of poverty and fertility, certain data investments would be constructive. First, the list of economic variables needs to be expanded:

1. In addition to static descriptions of current status, there should also be some effort to capture *poverty dynamics* by recording the recent history of changes in economic status. For this purpose poverty surveys make use of several types of indicators, for example questions on periods of shortage during the past year as well as questions on changes in asset-holding.

2. Some effort to capture *economic vulnerability*. In so doing, it would be helpful to distinguish income versus consumption risk.

3. Further to point #2, measurement of *perceptions of risk* and, if this can be managed, *risk aversion* would be of special relevance for research on the poverty-fertility association.

4. A concise effort to measure *economic aspirations* would be very much in order. Crucial dimensions of this include optimism-pessimism about the achievability of these aspirations, and, from a more negative perspective, the extent of felt anxiety and distress about future economic prospects.

It should be clear from the above that we also place some premium on the measurement of social capital. To this end there are now some relatively well-established measurement devices:

5. Social networks – composition, and resources exchanged.

6. Participation in local organizations, formal and informal.

7. Trust in local social capital and the concrete extent of reliance.

When it comes to fertility data, we would like to see more explicit inquiry about how fertility aspirations relate to other individual and household aspirations:

8. Exploration of reproductive goals and how they are perceived to bear on the achievement of other valued goals.

While we feel progress can be made on all of these fronts in structured survey inquiry, clearly some of these issues naturally lend themselves to qualitative investigation as well. This is particularly the case for subjective factors related to risk, aspirations and coping strategies. There is some evidence, for example, that perceptions of risk can be at odds with reality, and yet these perceptions may have a major determining role in anticipatory behaviours such as fertility. These are subtle matters of the human psyche, and no doubt much can be learned through skillful semi-structured and unstructured interviewing. In such interviews, how individuals jointly strategize about childbearing in relation to other facets of individual and household well-being could be carefully explored.

We believe it is accurate to say that there has been very little qualitative investigation of this kind during the past decade or so. Strangely, rigorous qualitative work on fertility was largely left behind once societies began to experience significant fertility decline, as if qualitative work could inform the field about high fertility regimes but not about regimes in mid-decline (or post-decline). Hence we are largely in the dark about how individuals in those societies with intermediate levels of fertility – India, Indonesia, Bangladesh, Egypt – strategize about fertility in relation to other domains of their lives, including most especially economic domains. A large fraction of humanity resides in such societies. We can imagine reproductive-age adults in these societies weighing the advantages and disadvantages of

having two versus three versus four children, with concerns about economic survival and success always looming nearby. This is an important opportunity for enriching demography with strong social science research.

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Appendix: Recent births, current use of modern contraception and proportion who want no more children among women with 2 or 3 children, predicted values estimated from regression by asset quintiles, Most Recent DHS Surveys.

	Lowest quintile	Second quintile	Third quintile	Fourth quintile	Highest quintile	p-values
Latin America						
Bolivia						
mean number births last 5 years	0.814	0.748	0.688	0.632	0.581	0.000**
currently using modern contraception	0.153	0.195	0.245	0.302	0.366	0.000**
do not desire more children	0.849	0.824	0.795	0.763	0.729	0.001**
Brazil						
mean number births last 5 years	0.403	0.380	0.358	0.338	0.318	0.000**
currently using modern contraception	0.743	0.788	0.827	0.860	0.888	0.000**
do not desire more children	0.934	0.936	0.939	0.941	0.944	0.471
Colombia						
mean number births last 5 years	0.417	0.412	0.408	0.403	0.399	0.429
currently using modern contraception	0.665	0.701	0.734	0.765	0.794	0.004*
do not desire more children	0.864	0.869	0.873	0.877	0.881	0.362
Dominican Republic						
mean number births last 5 years	0.412	0.417	0.421	0.426	0.430	0.358
currently using modern contraception	0.791	0.806	0.820	0.834	0.846	0.166
do not desire more children	0.851	0.853	0.854	0.856	0.858	0.711
Guatemala						
mean number births last 5 years	0.929	0.882	0.838	0.796	0.757	0.038
currently using modern contraception	0.069	0.135	0.249	0.412	0.598	0.000**
do not desire more children	0.473	0.551	0.626	0.695	0.757	0.000**
Haiti						
mean number births last 5 years	0.954	0.943	0.932	0.922	0.911	0.627
currently using modern contraception	0.249	0.254	0.259	0.264	0.269	0.739
do not desire more children	0.646	0.665	0.684	0.702	0.720	0.246
Nicaragua						
mean number births last 5 years	0.567	0.545	0.523	0.502	0.482	0.005*
currently using modern contraception	0.581	0.664	0.738	0.800	0.851	0.000**
do not desire more children	0.724	0.744	0.763	0.781	0.798	0.043
Peru						
mean number births last 5 years	0.572	0.559	0.546	0.533	0.521	0.086
currently using modern contraception	0.443	0.495	0.547	0.599	0.648	0.000**
do not desire more children	0.784	0.785	0.786	0.787	0.788	0.897
North Africa						
Egypt						
mean number births last 5 years	0.710	0.700	0.690	0.679	0.670	0.070
currently using modern contraception	0.593	0.620	0.646	0.671	0.696	0.000**
do not desire more children	0.674	0.691	0.708	0.724	0.739	0.005*
Morocco						

mean number births last 5 years	1.121	1.082	1.044	1.008	0.973	0.030
currently using modern contraception	0.315	0.357	0.402	0.449	0.496	0.003*
do not desire more children	0.335	0.366	0.399	0.432	0.467	0.028
South Central Asia						
Bangladesh						
mean number births last 5 years	0.562	0.557	0.551	0.545	0.540	0.305
currently using modern contraception	0.526	0.532	0.538	0.544	0.550	0.420
do not desire more children	0.721	0.726	0.730	0.735	0.740	0.463
India						
mean number births last 5 years	0.518	0.508	0.497	0.487	0.477	0.001**
currently using modern contraception	0.257	0.328	0.407	0.492	0.577	0.000**
do not desire more children	0.627	0.686	0.738	0.785	0.825	0.000**
Kazakhstan						
mean number births last 5 years	0.248	0.213	0.183	0.157	0.135	0.000**
currently using modern contraception	0.517	0.542	0.567	0.591	0.615	0.088
do not desire more children	0.742	0.763	0.782	0.800	0.817	0.111
Kyrgyz Republic						
mean number births last 5 years	0.505	0.482	0.459	0.438	0.418	0.024
currently using modern contraception	0.551	0.556	0.561	0.566	0.571	0.754
do not desire more children	0.530	0.521	0.511	0.502	0.493	0.615
Nepal						
mean number births last 5 years	0.757	0.711	0.667	0.625	0.587	0.000**
currently using modern contraception	0.292	0.359	0.432	0.508	0.583	0.000**
do not desire more children	0.730	0.766	0.798	0.827	0.853	0.000**
Pakistan						
mean number births last 5 years	0.957	1.017	1.081	1.149	1.222	0.001**
currently using modern contraception	0.020	0.030	0.044	0.065	0.094	0.020
do not desire more children	0.161	0.199	0.244	0.296	0.353	0.002*
Uzbekistan						
mean number births last 5 years	0.654	0.635	0.617	0.599	0.582	0.059
currently using modern contraception	0.579	0.586	0.592	0.599	0.605	0.627
do not desire more children	0.573	0.571	0.570	0.568	0.567	0.924
South East Asia						
Indonesia						
mean number births last 5 years	0.418	0.402	0.388	0.373	0.359	0.001**
currently using modern contraception	0.575	0.626	0.674	0.718	0.759	0.000**
do not desire more children	0.578	0.623	0.666	0.707	0.744	0.000**
Philippines						
mean number births last 5 years	0.772	0.737	0.703	0.671	0.640	0.000**
currently using modern contraception	0.309	0.327	0.346	0.365	0.385	0.038
do not desire more children	0.718	0.698	0.678	0.656	0.635	0.018
Vietnam						
mean number births last 5 years	0.454	0.432	0.410	0.390	0.370	0.001**
currently using modern contraception	0.587	0.606	0.625	0.643	0.661	0.052
do not desire more children	0.816	0.846	0.871	0.893	0.911	0.000**

Sub Saharan Africa						
Benin						
mean number births last 5 years	1.221	1.203	1.185	1.168	1.150	0.210
currently using modern contraception	0.036	0.046	0.057	0.072	0.089	0.065
do not desire more children	0.089	0.095	0.102	0.110	0.118	0.309
Burkina Faso						
mean number births last 5 years	1.149	1.131	1.114	1.096	1.080	0.094
currently using modern contraception	0.028	0.040	0.058	0.082	0.115	0.000**
do not desire more children	0.068	0.070	0.072	0.073	0.075	0.727
Cameroon						
mean number births last 5 years	1.009	1.006	1.003	1.000	0.997	0.835
currently using modern contraception	0.011	0.018	0.028	0.043	0.067	0.038
do not desire more children	0.102	0.099	0.097	0.094	0.092	0.754
Central African Republic						
mean number births last 5 years	1.035	1.009	0.983	0.958	0.934	0.056
currently using modern contraception	0.007	0.009	0.012	0.017	0.023	0.469
do not desire more children	0.096	0.085	0.075	0.067	0.059	0.114
Chad						
mean number births last 5 years	1.293	1.292	1.290	1.288	1.286	0.891
currently using modern contraception	0.001	0.002	0.004	0.007	0.012	0.012
do not desire more children	0.031	0.032	0.034	0.035	0.037	0.707
Comoros						
mean number births last 5 years	1.093	1.114	1.135	1.156	1.178	0.413
currently using modern contraception	0.056	0.066	0.078	0.092	0.108	0.180
do not desire more children	0.139	0.139	0.139	0.140	0.140	0.981
Cote d'Ivoire						
mean number births last 5 years	1.123	1.059	0.999	0.943	0.889	0.022
currently using modern contraception	0.002	0.007	0.026	0.093	0.278	0.000**
do not desire more children	0.138	0.141	0.144	0.148	0.152	0.833
Ethiopia						
mean number births last 5 years	1.098	1.094	1.089	1.085	1.081	0.685
currently using modern contraception	0.026	0.035	0.046	0.062	0.082	0.005*
do not desire more children	0.343	0.319	0.295	0.272	0.250	0.022
Gabon						
mean number births last 5 years	0.831	0.822	0.813	0.805	0.796	0.584
currently using modern contraception	0.047	0.050	0.052	0.055	0.058	0.816
do not desire more children	0.191	0.186	0.181	0.176	0.171	0.651
Ghana						
mean number births last 5 years	0.867	0.865	0.863	0.860	0.858	0.875
currently using modern contraception	0.111	0.134	0.161	0.193	0.228	0.020
do not desire more children	0.265	0.251	0.238	0.226	0.214	0.331
Guinea						
mean number births last 5 years	1.030	1.033	1.036	1.039	1.042	0.824
currently using modern contraception	0.006	0.013	0.025	0.048	0.091	0.000**
do not desire more children	0.075	0.085	0.096	0.109	0.122	0.081

Kenya						
mean number births last 5 years	0.924	0.903	0.882	0.862	0.842	0.075
currently using modern contraception	0.279	0.324	0.372	0.423	0.475	0.000**
do not desire more children	0.481	0.489	0.498	0.507	0.515	0.462
Madagascar						
mean number births last 5 years	1.182	1.133	1.086	1.041	0.997	0.000**
currently using modern contraception	0.028	0.048	0.082	0.134	0.214	0.000**
do not desire more children	0.292	0.314	0.337	0.360	0.384	0.035
Malawi						
mean number births last 5 years	1.179	1.172	1.164	1.157	1.150	0.398
currently using modern contraception	0.211	0.232	0.254	0.278	0.302	0.004*
do not desire more children	0.408	0.405	0.401	0.398	0.395	0.675
Mali						
mean number births last 5 years	1.267	1.268	1.270	1.271	1.273	0.892
currently using modern contraception	0.036	0.045	0.056	0.069	0.086	0.005*
do not desire more children	0.077	0.073	0.070	0.066	0.063	0.351
Mozambique						
mean number births last 5 years	1.058	1.050	1.042	1.034	1.026	0.717
currently using modern contraception	0.041	0.040	0.040	0.039	0.039	0.955
do not desire more children	0.108	0.098	0.089	0.081	0.074	0.331
Namibia						
mean number births last 5 years	0.789	0.757	0.727	0.698	0.669	0.033
currently using modern contraception	0.178	0.276	0.400	0.539	0.672	0.000**
do not desire more children	0.490	0.559	0.626	0.688	0.744	0.000**
Niger						
mean number births last 5 years	1.420	1.419	1.419	1.418	1.417	0.964
currently using modern contraception	0.014	0.021	0.031	0.045	0.066	0.008*
do not desire more children	0.013	0.015	0.018	0.021	0.025	0.154
Nigeria						
mean number births last 5 years	1.188	1.198	1.209	1.219	1.229	0.567
currently using modern contraception	0.035	0.042	0.049	0.058	0.068	0.154
do not desire more children	0.030	0.035	0.039	0.044	0.050	0.201
Rwanda						
mean number births last 5 years	1.224	1.231	1.239	1.247	1.255	0.486
currently using modern contraception	0.017	0.028	0.045	0.073	0.114	0.001**
do not desire more children	0.368	0.352	0.336	0.320	0.305	0.100
Senegal						
mean number births last 5 years	1.168	1.157	1.147	1.136	1.126	0.475
currently using modern contraception	0.013	0.020	0.031	0.047	0.071	0.001**
do not desire more children	0.047	0.040	0.034	0.028	0.024	0.063
South Africa						
mean number births last 5 years	0.452	0.443	0.433	0.424	0.415	0.213
currently using modern contraception	0.398	0.512	0.625	0.726	0.807	0.000**
do not desire more children	0.713	0.731	0.747	0.763	0.779	0.044
Tanzania						

mean number births last 5 years	1.054	1.013	0.974	0.936	0.900	0.023
currently using modern contraception	0.066	0.093	0.129	0.177	0.237	0.003*
do not desire more children	0.214	0.218	0.222	0.226	0.230	0.787
Togo						
mean number births last 5 years	1.105	1.085	1.065	1.046	1.026	0.113
currently using modern contraception	0.036	0.047	0.060	0.076	0.096	0.014
do not desire more children	0.115	0.123	0.131	0.139	0.148	0.256
Uganda						
mean number births last 5 years	1.370	1.352	1.335	1.318	1.302	0.188
currently using modern contraception	0.137	0.162	0.191	0.224	0.260	0.013
do not desire more children	0.300	0.314	0.328	0.342	0.357	0.224
Zambia						
mean number births last 5 years	1.278	1.232	1.188	1.145	1.104	0.001**
currently using modern contraception	0.103	0.156	0.230	0.325	0.438	0.000**
do not desire more children	0.204	0.226	0.250	0.276	0.303	0.034
Zimbabwe						
mean number births last 5 years	0.901	0.849	0.800	0.753	0.709	0.001**
currently using modern contraception	0.473	0.538	0.602	0.662	0.718	0.001**
do not desire more children	0.413	0.425	0.438	0.450	0.463	0.432
West Asia						
Armenia						
mean number births last 5 years	0.106	0.109	0.113	0.116	0.119	0.183
currently using modern contraception	0.183	0.203	0.224	0.247	0.271	0.007*
do not desire more children	0.947	0.936	0.924	0.910	0.893	0.003*
Jordan						
mean number births last 5 years	1.626	1.545	1.468	1.395	1.325	0.000**
currently using modern contraception	0.362	0.384	0.405	0.427	0.450	0.039
do not desire more children	0.300	0.324	0.348	0.374	0.400	0.016
Turkey						
mean number births last 5 years	0.380	0.367	0.355	0.343	0.332	0.063
currently using modern contraception	0.391	0.425	0.459	0.494	0.529	0.001**
do not desire more children	0.827	0.834	0.840	0.846	0.852	0.392
Yemen						
mean number births last 5 years	1.442	1.388	1.337	1.287	1.239	0.003*
currently using modern contraception	0.006	0.012	0.024	0.048	0.091	0.000**
do not desire more children	0.218	0.226	0.234	0.243	0.251	0.467

Figure I: Regression adjusted difference in proportions highest and lowest quintiles among women with two or three children: use of modern contraception and desire for more children