

Women's Empowerment and Gender bias in schooling decision: Evidence from DHS monogamous households¹

(Preliminary version)

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Abstract: This paper uses Demographic and Health Surveys (DHS) from 22 sub-Saharan African countries to highlight the link between mothers' empowerment and schooling decisions in monogamous households. Based on the collective model of Chiappori (1988, 1992), the analysis starts with the argument that altruistic fathers and mothers have different effects on the education of their sons and daughters as a result of differences in their preferences and/or in the children's human capital technologies. In our empirical analysis, we define a proxy for women's empowerment using information provided by DHS surveys: education, labor market participation outside the household (self employed and employed), participation in decisions-making process, attitude toward gender inequality and mother's age. The results suggest that empowering mothers could lead to improving children's and especially girls' school attendance.

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1. INTRODUCTION

Gender equality and equity in education are part of the Millennium Development Goals and constitute one of six objectives of the program “Education for All” signed by 164 governments at the World Forum on Education in Dakar in 2000; however, despite major progress, equal participation of girls and boys in schooling remains a challenge in sub-Saharan Africa. This region has low enrolment rates and strong gender disparities in education.

The inequality in levels of education of girls and boys is closely related to poverty; however, unequal treatment is not explained exclusively by poverty. In sub-Saharan Africa, the inequality in levels of education of girls and boys generally reflects broader disparities within a society. These disparities are mainly the result of social standards – represented by gender³ – that guide behavior and determine the roles of women (girl-children) and men (boy-children) in the family, the household, and the society. The aim of this paper is to examine the aspect of gender bias in education due to gender relations in the household. With this intention, the paper examines the influence of mothers’ empowerment on schooling decisions and gender differences in schooling decisions.

There is a very large body of literature on determinants of schooling in developing countries. Models of education demand, derived from this literature, are generally based on quantity-quality models that describe households’ simultaneous decisions regarding fertility and investment in the quality of children (Becker and Lewis, 1973, Becker and Tomes, 1976, Becker and Tomes, 1986). The schooling decision is studied within the framework of the traditional unitary household model, which ignored the “gendered” nature of the decision-making process in households. The unitary model attributes no importance to the way that income, roles, and leisure are distributed among family members. It does not satisfy the basic principle of the neoclassical theory of *methodological individualism*, the notion that all economic models must find their meaning in individual behavior. It supposes a common family income where all sources of revenue are added, while empirical studies reject this hypothesis. We face common preferences, while empirical analysis reveals the existence of a preference for gender of offspring, affecting the behavior of the household. For example, Thomas (1994, 2004) finds that children’s health achievement is linked to educational attainment and non labor income of the parent of the same sex as the child. King and Lillard (1987) find that among the Chinese in Malaysia, mother’s education has a positive effect on boys’ and girls’ schooling but father’s education affects only sons’ attainment. Recent works of Whittington et al. (2008) use contingent valuation and found that wives were significantly more likely than husbands to allocate vaccines to their daughters rather than to their sons. In a general way, analyses reveal

³ “Gender” refers to a set of implicit and explicit rules governing relations between men and women, giving them distinct values, roles, attitudes, work, and obligations.

that women and girls encounter more difficulties than men and boys, partly because they have less decision-making power.

Developed since 1980, collective models of household preserve intra-family differences and show how gender relations affect decisions regarding allocation of resources, distribution of roles, and labor supply in the family. Among these models, one considers household decisions to be the result of household members' engaging in cooperative Nash bargaining (Manser and Brown, 1980, McElroy and Horney, 1981, McElroy, 1990) and another as Pareto-efficient outcomes reached through collective decision-making processes among individuals of divergent preferences (Chiappori, 1988, 1992). Non cooperative models of the household have also been used but have led to non-Pareto optimal results (Udry 1996; Bergtröm, 1996).

All these models assume that household allocation outcomes are the result of a bargaining process in which household members – generally parents – seek to allocate resources they control to goods they individually prefer. Literature based on new models of the household reveals that improvements in women's status, particularly in terms of their position within the household, will enhance child survival and improve the schooling chances of children, especially girls. For instance, Thomas (1990) shows that unearned income controlled by mothers has stronger impacts on family health than income under a father's control. Hodinott and Haddad (1995) found that children in Cote d'Ivoire are in a favorable situation when the mother controls an important part of the resources. Despite their methodological contribution, there is very little literature about collective models of the household and education demand of children. For a non exhaustive list, we can cite the works of Emerson and Portela (2001) for Brazil, Park (2007) for Indonesia, Roushdy (2004) for Egypt, and Koissy-Kpein (2008) for Côte d'Ivoire, Guinea, and Ghana. Authors confirm rejection of the income pooling hypothesis and the bargaining process for schooling decisions.

In this paper, education of children is characterized as a public good within marriage, and we suppose that husband and wife may value the schooling of boys and girls differently. To compare across time and countries, the paper uses Demographic and Health Surveys (DHS) from 22 sub-Saharan African countries (For 6 countries, we use data on two years) to highlight the link between mothers' empowerment and schooling decisions. The second section presents a conceptual framework to understand the schooling decision in the household and the gender bias in this decision. Section 3 presents a discussion about the definition and measure of women's empowerment. Section 1 presents a basic model of a bargaining process in schooling of children. Sections 4 and 5 present the empirical framework including the presentation of the data, and the results of estimation. The results suggest that empowering mothers leads to improvement in schooling, and especially girls' participation at school.

2. BARGAINING OVER BOYS AND GIRLS: CONCEPTUAL FRAMEWORK

Our analysis starts with an illustration of the argument that altruistic fathers and mothers may have different impacts on their sons' and daughters' outcomes because of differences in their preferences and/or differences in the children's human capital technologies. The collective model of Chiappori (1988, 1992) is appropriate because it leaves the underlying nature of the allocation process within the household unspecified but assumes that resource allocations are Pareto efficient. We have a set of weights such that a general household's utility function can be represented by a linear combination of father's and mother's utilities, where the weights on each person's utility reflect his or her bargaining power in the household. The model supposes that each half of the couple is characterized by his or her own utility function and that spouses are not altruistic toward their partner but only toward their children. The problem of the parents can be written as maximization of a social function of well-being:

$$\underset{C_m, C_f, q_b, q_g}{\text{Max}} \quad W = \pi(W_m, I_m; E_m) U_m(C_m, q_b, q_g) + (1 - \pi(W_m, I_m; E_m)) U_f(C_f, q_b, q_g) \quad (1.1)$$

$$\text{Subject to the budget constraint: } C_m + C_f + p_{sb} S_b + p_{sg} S_g = W_m + I_m + W_f + I_f \quad (1.2)$$

Where U_m and U_f represent the utilities of the mother (m) and the father (f), which are quasi concave, twice differentiable, and increasing in each argument. Component C_m and C_f represent the mother's and the father's consumption; q_b and q_f represent the average quality of boys and girls. A child's average quality is determined by the quality production function $q_i = Q_i(S_i, h_i)$, where S_i represents the schooling attendance of child i , and h_i represents a vector of other qualities such as ability and health. Component π represents the function of distribution, a weighting factor contained in $[0,1]$. It generally depends on all variables that can affect the distribution of power within the household: prices, incomes (W_m and I_m), assets, sex-ratio, property rights, and education. Here, we suppose that π depends on a set of indicators of mother's empowerment in the household (E_m). This enables locating the exit from negotiation between the father and mother. The preferences of the mother are imposed in a dictatorial way in the household if $\pi = 1$.

The Lagrangian of the problem is as follows:

$$\begin{aligned} L_{(C_m, C_f, S_b, S_g)} = & \left[\pi(W_m, I_m; E_m) * U_m(C_m, Q_b, Q_g) - (1 - \pi(W_m, I_m; E_m)) * U_f(C_f, Q_b, Q_g) \right] \\ & - \lambda (C_m + C_f + p_{sb} S_b + p_{sg} S_g - (W_m + I_m + W_f + I_f)) \end{aligned} \quad (1.3) \quad \text{The}$$

first order conditions give:

$$\frac{\partial L}{\partial C_m} = \pi(W_m, I_m; E_m) * \frac{\partial U_m}{\partial C_m} - \lambda = 0 \quad (1.4)$$

$$\frac{\partial L}{\partial C_f} = (1 - \pi(W_m, I_m; E_m)) * \frac{\partial U_f}{\partial C_f} - \lambda = 0 \quad (1.5)$$

$$\text{So } \pi(W_m, I_m; E_m) * \frac{\partial U_m}{\partial C_m} = (1 - \pi(W_m, I_m; E_m)) * \frac{\partial U_f}{\partial C_f} \Rightarrow \frac{\partial U_m / \partial C_m}{\partial U_f / \partial C_f} = \frac{(1 - \pi(W_m, I_m; E_m))}{\pi(W_m, I_m; E_m)} \quad (1.6)$$

Relation (1.6) shows how the preferences of the parents interact with their decision-making power. The ratio of the marginal utility of the mother to the marginal utility of the father is a decreasing function of π . This implies that, for the same level of well-being, a rise in the level of consumption of the father will coincide with a decrease in the mother's bargaining power.

Concerning education demand, the first order conditions give:

$$\frac{\partial L}{\partial S_b} = \pi(W_m, I_m; E_m) * \frac{\partial U_m}{\partial S_b} + (1 - \pi(W_m, I_m; E_m)) * \frac{\partial U_p}{\partial S_b} - \lambda p_{sb} = 0 \quad (1.7)$$

$$\frac{\partial L}{\partial S_g} = \pi(W_m, I_m; E_m) * \frac{\partial U_m}{\partial S_g} + (1 - \pi(W_m, I_m; E_m)) * \frac{\partial U_p}{\partial S_g} - \lambda p_{sg} = 0 \quad (1.8)$$

(1.4) in (1.7) or (1.8) implies that

$$\pi(W_m, I_m; E_m) * \frac{\partial U_m}{\partial S_i} + (1 - \pi(W_m, I_m; E_m)) * \frac{\partial U_p}{\partial S_i} - \pi(W_m, I_m; E_m) * \frac{\partial U_m}{\partial C_m} p_{si} = 0; \text{ for } i = b, g \quad (1.9)$$

$$\text{And } \underbrace{\pi(W_m, I_m; E_m) \frac{\partial U_m}{\partial S_i} + (1 - \pi(W_m, I_m; E_m)) \frac{\partial U_f}{\partial S_i}}_B = \underbrace{\pi(W_m, I_m; E_m) \frac{\partial U_m}{\partial C_m}}_A p_{s_i} \quad (j = g, b) \quad (1.10)$$

Relation (1.10) implies that at the optimum, the marginal cost in terms of consumption (A) is equal to the marginal benefit of investment in education (B). Marginal benefit increases with parental weighted preferences for schooling. The marginal cost of schooling increases with the costs of schooling of girls (or boys) and weighted preference for consumption.

At the optimum, the net marginal gain of educational investment, which is equal to the difference between the marginal benefit of educational investment and the marginal cost of educational investment, is null.

The educational demand function of child i can be: $S_i = (X_i, \pi(W_m, I_m; E_m))$ for $i = g, b$ (2.11) with X_i representing a set of characteristics of child i such as age, rank among children, and sex.

Several cases explain gender bias in schooling, i.e., $S_g < S_b$:

- Where parents have no preference for the gender of offspring and get the same level of satisfaction from the schooling of children, i.e.

$$\frac{\partial U_m}{\partial S_g} = \frac{\partial U_m}{\partial S_b} = \frac{\partial U_f}{\partial S_g} = \frac{\partial U_f}{\partial S_b},$$

$$S_g < S_b \text{ if } \pi * \frac{\partial U_m}{\partial S_g} + (1 - \pi) * \frac{\partial U_p}{\partial S_g} - \pi * \frac{\partial U_m}{\partial C_m} p_{sg} < \pi * \frac{\partial U_m}{\partial S_b} + (1 - \pi) * \frac{\partial U_p}{\partial S_b} - \pi * \frac{\partial U_m}{\partial C_m} p_{sb}$$

to simplify, we have $-p_{sg} < -p_{sb}$ or $p_{sg} > p_{sb}$, so girls are less educated in this case because of the higher costs of schooling than those for boys.

- Where parents prefer boys. The parents get more important satisfaction from education of boys and devote more resources to the schooling of boys than to that of girls.

- The most interesting case for our analysis is that where a father prefers sons ($\frac{\partial U_f}{\partial S_b} > \frac{\partial U_f}{\partial S_g}$) and a mother prefers daughters $\frac{\partial U_m}{\partial S_g} > \frac{\partial U_m}{\partial S_b}$. Indeed, studies conducted

in demography, sociology and anthropology have revealed differences in preference for the gender of offspring. For instance, authors have noted that parents with boys are less likely to want another child, while the reverse is true for parents with girls, who expect to have a boy (Anderson et al., 2004; Quintero Gonzalez & Koestner, 2005; Dahl & Moretti, 2008). Dahl and Moretti (2008) use data from China, Vietnam, Mexico, Kenya, and the USA. They talk about boys' polarization and note that pregnant women have a higher probability of being married before delivery if the child is a boy, lower probability of divorce, and in case of divorce, the father has a greater probability of seeking custody of children if they are mainly boys. Authors reveal for Kenya that mothers with girls have a higher probability to be in polygamous household. For Brazil, USA, and Ghana, Thomas (1990, 1994) shows that the mother has a greater influence on girls' nutritional status, while the father has a greater influence on boys' nutritional status. King and Lillard (1987) found the same results for Malaysia, and Koissy-Kpein (2008) for Côte d'Ivoire, Ghana, and Guinea, and these authors conclude that mothers have a preference for girls' schooling.

- For the same level of costs of schooling ($p_{sg}=p_{sb}$), we have

$$\pi * \left[\frac{\partial U_m}{\partial S_g} - \frac{\partial U_m}{\partial S_b} \right] < (1 - \pi) * \left[\frac{\partial U_p}{\partial S_b} - \frac{\partial U_p}{\partial S_g} \right]. \text{ This means that bargaining power of}$$

the mother is lower than the bargaining power of the father. Consequently, girls are less educated because of the mother's power in the household decision-making process.

- If we slacken the hypothesis of identical costs, the schooling of girls could be more expensive for the mothers. Thomas (1990) suggests that mothers prefer girls in terms of care and food because girls help with domestic tasks. In this context, the loss caused by schooling can be heavier for mothers. Parish and Willis (1993) note that the mother "sacrifices" some of her daughters to provide a better education to the others.

The collective model indicates that the relative position of mothers within the family, especially in terms empowerment, could explain the differences in educational investment between girls and boys. The conceptual framework also suggests that if the mother has a preference for schooling of all the children, her relative position in decision making process, her bargaining power or empowerment could be favorable to boys and girls schooling. The difficulty is providing a measure of women's empowerment in a household. Various authors have argued that women's empowerment cannot be measured directly, but only through proxies such as health, educational level, and knowledge (Ackerly, 1995). Economists tend to focus on assets (Thomas et al., 1997; Quisumbing, 1994), unearned income (Schultz, 1990; Thomas, 1990), transfer payments and welfare receipts (Lundberg et al., 1997), or labor income⁴ (Koissy-Kpein, 2008). Thomas et al. (1997) use assets at marriage because in some parts of Indonesia (for example), spouses can take what they brought into the marriage with them in case the marriage dissolves. Koissy-Kpein (2008) uses labor income because the report "Engendering Development" (World Bank, 2001) indicates that women have weaker decision-making power in the household because of their limited capacity to act independently (particularly if they are not actively participating in the job market). Authors have generally found that women's relative advantage in assets or income share leads to benefits for sons, but not necessarily for daughters (Hoddinott & Haddad, 1995, for Cote d'Ivoire; Thomas et al., 1997, for Indonesia; Koissy-Kpein, 2008, for Guinean monogamous household). The level of education has also been used as a proxy for bargaining power (Thomas, 1994; Gertler & Glewwe, 1992; Tansel, 1997; Glick & Sahn, 2000). Koissy-Kpein (2008) uses the following proxies related to education: education of the mother, education of the mother compared with that of the father, education of the mother compared with that of the father and/or the other wives in polygamous households. Analysts also note the effect of marriage market conditions, summarized by sex ratio⁵ (ratio of males to females computed by age and others factors like region of residence, employment status) or laws governing divorce (Lundberg, Pollak, & Wales, 1997; Chiappori, Fortin, & Lacroix, 2002; Koissy-Kpein, 2008). However, sex ratio seems debatable, especially in countries where polygamy has a legal status or is tolerated. Koissy-Kpein (2008) also uses, for Guinean polygamous household, mothers' rank in polygamous unions as proxy for the marriage market.

3. DISCUSSION ABOUT WOMEN EMPOWERMENT

Literally, empower somebody means to give somebody the power or authority to do something, to give somebody more control over their own life or the situation they are in. When talking about women's empowerment, the literature reveals the complexity of this term as demonstrated by a number of definition and discussions (Kabeer, 2001, Malhotra et al., 2002, Smith et al., 2003 for a discussion). The first and the main thought we must have is that

⁴ The author uses IV-estimation to correct the problem of endogenous labor income.

⁵ Sex ratio is the usual distribution factor in economic analysis, but analysts doubt the relevance of sex ratio as a measure of external opportunities for remarriage.

women's empowerment is multidimensional (economic, socio-cultural, familial/interpersonal, legal, political, psychological) and concerns various interdependent level⁶, i.e. the household, the community and broader arenas (See Malhotra et al., 2002)⁷. In the literature, the most often terms include in the definition of women's empowerment are: options, choices, control and power. "Empowerment" is often related to: women's status, autonomy, bargaining power, domestic economic power, authority, valuation, women's well-being, gender equality/equity, agency, patriarchy, and so forth (Malhotra et al., 2002, for a discussion). Malhotra et al. (2002) show how the varieties of terminology used are different, even if it is hard to draw a clear demarcation between them. As an example, in their discussion some authors treat the terms interchangeably (Mason and Smith, 2000), others authors consider autonomy and empowerment as more or less equals terms (Jejeebhoy, 2000), even if there is a debate that autonomy refers to independence while empowerment refers to the power relationship with others in interdependence (Govindasamy & Malhotra, 1996), others consider all the terms identical since they refer to women's control vis-à-vis family, community, and society (Koissy-Kpein, 2008).

Malhotra and his co-authors show two important points to distinguish the concept of empowerment from the others:

1/ "dynamic process": means we have a progression from one state (inequality) to another (equality). Indeed, women may become empowered in some aspects of their lives, in a period of time, and change may occur and modify the balance of power. Jejeebhoy (2000, cited by Malhotra & al., 2002) describes empowerment as a changing factor which is not easily measurable. To stay in the idea of a dynamic, Kabeer (2001) suggest that empowerment entails a process of change and talk about a "*process by which those who have denied the ability to make choices acquire such ability*"

2/ "agency": means that women "*must be significant actors in the process of change that is being described and measured*". Here, "agency" represents the ability to formulate strategic choices – which implies alternatives (Kabeer, 2001)-, to control resources and decisions that affect important life outcomes. If at the macro level, "agency" emphasizes the importance of participation and social inclusion, at the micro level "agency" presents women as the agents of their own live.

Moser (1989) defines empowerment as "the capacity of the women to increase their own autonomy and their internal force," which is identified as "the right to make choices in the life and to influence the direction of the changes via the capacity to acquire control on the material and nonmaterial resources." This definition combines the three essential ideas of choice,

⁶ The dimensions are interdependent since change in each may contribute to change in the others.

⁷ Despite the fact that the definition of empowerment involves an analysis at the macro, middle and micro level, our discussion will close as possible to what happens in the household (even if the different level are interdependent), so as not to stray too far from our preceding discussion.

control, and power. Kishor and Subaiya (2008) present empowerment like “power to achieve goals and ends”. According to the authors, women’s empowerment denotes “women’s increased control over their own lives, bodies and environments”. With these two latter definitions, we have the idea of dynamic since we move between two situations with the “increase” term employed, and the two definitions clearly presents women as agent of their own destiny. The most completed definition come from Kabeer (2001) who suggests *“the expansion in people’s ability to make strategic life choices in a context where this ability was previously denied to them”*.

In the economic literature, all the terms seem employed interchangeably and whatever the term used, it is mainly considered in both absolute and relative to men’s or the husband. Anderson and Eswaran (2009) define female autonomy as an ability to make choices/decisions within the household relative to their husbands. “Autonomy”, “bargaining power”, “status”, “empowerment” and so forth seem identical in the discussions.

According to the marriage market theory of Becker (1991), individuals marry because they expect that the output for a couple is at least equal to single output. According to the new collective models of the household, the decisions in the household and the output are results of the bargaining power of the member in the household (or member of the union). The bargaining power of the member within the household (or the union) is perceived as resulting from his threat point, which is his vulnerability in case of disagreement with his partner. Consequently, the more an individual is vulnerable or the lower the ability to act independently outside the household, the more he will make concessions to get along with his partner; and the more bargaining power, the lower the decisions of the household away from his preference. The World Bank report titled “Engendering Development” (2001) suggests that women in the household have less bargaining power because of their lower capacity to act independently from the couple. For instance, if a woman has no better alternative than to stay with her husband, she will have no interest in disagreeing with him in the decision-making process. In the new collective models of the household, woman is present as an “agent” in the sense that she has a voice, she can make choice, and she can impose her preferences and influence decisions within the household.

Agency also reveals a “power within” and encompasses a range of purposive actions including bargaining, negotiation, manipulation, and so forth (Kabeer, 2001), that we found in the new collective models.

The models also capture the dynamic part since the threat point and the incidence in the decision making process may change and move from a situation to another situation. As an example, the bargaining power of a woman, in the household decision making process, may increase (decrease) if she has a pay rise (loses her job, or has a co-spouse).

The decision-making process and the bargaining power is not really static in the models since the threat point, the function of distribution or weighting factors depend of the prices and income, assets, sex-ratio, legislation and so forth, and these components are not statics but may vary over the time or from a state to another. Another example comes from the partisans

of the non cooperative outcome within the marriage in case of disagreement. We can move to cooperation to non cooperation due to the possibilities of controlling own earnings. They clearly show that the decision making process in dynamic.

In our opinion, what Malhotra and his co-authors consider as statics may change at any time, may increase or decrease to suit changes in mentalities, legislation, societies, culture or also because of policy interventions. So the others terms (autonomy, status, power, bargaining power, and so forth) may include a dynamic that allows moving from an unequal situation to a more equal one.

When we talk about “bargaining power” or weighting factor, the term includes “agency” but also reveals a “dynamic process”. The main difference between “bargaining power” (power or weighting factor) and empowerment comes to the fact that empowerment suggest that people were disempowered and can move from this weakness state to a better one. Kabeer (2001) stresses this difference when saying: *“people who exercise a great deal of choice in their lives may be very powerful, but they are not empowered... because they were never disempowered in the first place”*. The fact remains that “bargaining power” suggests both a move disempowerment to empowerment, and also a move from empowerment to disempowerment. So, bargaining power can be equivalent to empowerment in the first case, i.e. when the “bargaining power” refers to an increase in the ability to make choices. We do not say that empowerment means bargaining power, since we are aware that empowerment can not be clearly defined. Kabeer (2001) note that for feminists, the value of the concept of empowerment is lies precisely in its *“fuzziness”*. However, we argue that the two terms are practically close.

Measuring empowerment is as challenging as defining it. Agarwal (1997), Kabeer (2001) and also Malhotra and al. (2002) discuss the difficulties and the complexity in measuring this process. The ideal would be to capture all the dimensions as the micro, meso and macro level, also taking into account the multidisciplinary nature of the problem, but this is hardly operationalized. In reality the process can only be measured through proxies and the traditional indicators used in the literature, and particularly in economic literature, are: education, employment, control of resources, and marriage market conditions. Authors also refer to questions about elements such as physical abuse, freedom of movement, decision making with regard to purchases, visits, and so forth (Smith et al., 2003 ; Durrant & Sathar, 2000; Jejeebhoy, 1998). Jejeebhoy (1998) notes that women who are beaten up are most likely to be the most powerless; they have little autonomy, in particular in terms of decision-making, mobility, control over resources, or taking care of themselves or their infants. Jejeebhoy (1998), for India, and Roushdy (2004), for Egypt, find that domestic violence affects the autonomy of women, but also, the care and the nutritional status of children. Durrant and Sathar (2000) consider the effect of external environment and community and show, for Pakistan, that control of resources and absence of *pardah* and domestic violence decrease the risk of infant mortality. Folbre (1997) insists that property rights and low security of land rights for women imply that women depend on their (male) husbands or their parents for access to land (ownership).

Malhotra and his co-authors define all these elements as “*enabling factors*” or “*sources*” to foster an empowerment process rather than part of empowerment itself.

Data limitations also present an important constraint in terms of both measurement and comparability of women’s empowerment. In recent years, data collection methods have become more sophisticated, and they provide important guidance for future efforts at measuring women’s empowerment (Malhotra et al., 2002). The Demographic and Health Surveys (DHS) surveys provide an original women’s questionnaire which capture original information about various dimensions of the decision making process in the household, gender-role attitudes, women’s control over resources, and women’s access to mass media.

4. DATA AND EMPIRICAL FRAMEWORK

4.1. DATA

The Demographic and Health Surveys (DHS) program was originally developed by the U.S. Agency for International Development (USAID). Since 1984, the program collects, analyzes, and disseminates accurate and representative data by means of more than 200 surveys in more than 75 countries. The DHS surveys are among the best concerning developing countries. They are organized with the support of ICF Macro, based in the United States. DHS samples are representative at national and sub national levels.⁸ DHS surveys provide cross-country comparable data because their methodologies and questionnaires are standardized. The surveys offer detailed information on various subjects, including education, health, and so forth, as well as an original women’s questionnaire. In the latter, questions asked to women between 18 and 49 years old provide interesting information on: reproductive behavior, contraception, Antenatal, delivery and postpartum care, breastfeeding and nutrition, AIDS and other sexually transmitted infections, husband's background, women’s control over resources within the household through labor activity and decisions about how is spending their own money, their role and the degree of control over the decision making in the household, wife beating, frequency of reading newspaper or magazine, listening to radio, watching TV, and so forth.

The paper is based on information about current school participation of children between the ages of 7 and 18 who live with their two parents in monogamous households. The children were asked if they “attended school during current school year”. The responses are “no”, “yes”, or “attended at some times”. In our analysis, a child currently attends school if he participates diligently in school.

The analysis concerns children with a mother between 18 and 49 years and 22 African countries (with 2 years for some of them): Benin (2001, 2006) Burkina Faso (2003), Cameroon (2004), Democratic Republic of the Congo (RDC, 2007), Ethiopia (2005) Ghana (2003, 2008), Guinea

(2005), Kenya (2003, 2008-2009), Lesotho (2004), Liberia (2007), Madagascar (2003-04, 2008-09), Malawi (2000, 2004), Mali (2006), Mozambique (2003), Namibia (2006-07), Niger (2006), Nigeria (2003, 2008), Senegal (2005), Tanzania (2004-05), Uganda (2006), Zambia (2007) and Zimbabwe (2005-06)

Table 3, in appendix presents the statistics concerning school participation of the children according to the country and the gender. It is mainly countries of West Africa which have the lower participation rates. In five countries, we note very lower participation rate (less than 50%): Burkina Faso, Guinea (for girls), Mali, and Niger and Ethiopia. The statistics suggest in 19 out of 28 cases higher participation rates of boys compare to girls. It is in Benin (2001) that the gap is the higher (10.9%). This gap reduces to attend 7.6% in 2006. In Liberia and Malawi (2000) we do not find difference between the participation rates according to the gender of the children. Then in seven cases, the participation rate of girls are higher compare to boys: Lesotho, Madagascar (2003-2004, 2009), Malawi (2004), Namibia (2006-2007), Tanzania and Zimbabwe. Note that these statistics are not representative of the country in the sense that they only concern the children of the household head living with their two parents, who have a mother who answered the woman questionnaire.

4.2. EMPIRICAL FRAMEWORK AND MEASURE OF MOTHER'S EMPOWERMENT

In section 2, the educational demand function is: $S_i = (X_i, \pi(W_m, I_m; E_m))$ for $i = g, b$. (2.11)

Let suppose S_i^* , a latent variable observable only if child i currently attends school, we can write

$$(2.11) \text{ as: } S_i^* = X_i' \beta_1 + \text{empowerment}_m \beta_2 + u_i \text{ and } S_i = \begin{cases} 1 & \text{if } s_i^* > 0 \\ 0 & \text{if } s_i^* \leq 0 \end{cases}$$

Where: X represents a set of characteristics with β the associated parameters. These characteristics are those traditionally used in the analysis of the demand for education: sex, age, residence, number of brothers and sisters, father's and mother's education and household wealth. For each country, a wealth index, computed using information about household ownership of various assets and characteristics of the household dwelling, is provided in the survey. In our work, each household is assigned to the bottom 40 percent, the middle 40 percent and the top 20 percent of the households (Filmer and Pritchett, 2001).

We pay special attention to the component *Empowerment*. Since concretely measure of empowerment is impossible, we simply consider how the information provide by the DHS can be compiled to propose « enabling factors ». Kishor and Subaiya (2008) defines three sets of women's empowerment variables defined as evidence of empowerment: Women's participation in decision-making, and two measures of attitude towards gender equality i.e. attitude toward wife beating and the right of wives to refuse their husbands sex. The two latter

⁸ <http://www.measuredhs.com/>

evidence represent for Kishor and Subaiya (2008) the “women’s acceptance of gender role norms that endorse the control of women by men”.

In our analysis, the indicators used as enabling factors are:

- i. The mother’s education.
- ii. Mother’s age. We expect a lower bargaining power of young wife in the household. As an example Clark (2004), Bruce and Clark (2003), and Clark et al. (2006) note that young married women may use condoms more rarely because of a lack of bargaining power in their marriage.
- iii. Women’s labor activity. In DHS, women were asked if they “*currently working*”, then, if they “*work at home or away*”; and finally if they “*work for husband or for a family members*”, “*work for someone else*” or if they are “*self employed*”. Basu (2006) stresses that the say a woman has in the household matters is determined by her earnings but her work activity itself is an outcome of their existing bargaining power. That means that the final decision concerning the different choice in the household is determined by the mother’s income, but the fact to work itself is probably the best outcome of her bargaining power, so one of the best “enabling factors”. Even if any contribution to income generating potentially increases women’s autonomy (Anderson and Eswaran, 2009), it is difficult to talk about autonomy or empowerment when a woman works for her husband or a parent. According to Anderson and his co-author, women working on their husband farms appear to exercise no control over the income they help generating; they are comparable to women who are housewives. In these cases, on the contrary, we can face a relationship of dependence. Kantor (2003) for India and Anderson and Baland (2002) for Kenya stress that it is when the income is possessed by women that it contributes to their autonomy. Some authors reveal that the terms on which people gain access to resources are as important as the resources themselves. Kabeer (2001) considers that women who work for a parent or a husband do not enter in the process of empowerment, since empowerment entails a change in the terms on which resources are acquired as much as an increase in access to resources. According to Kantor (2003), home based work did not empower women. So we considers a in our analysis three groups: self employed, employed outside the household for a non member and the others. Labor activity can be endogenous compared to the schooling decision; however our tentative of instrumentation were unsuccessful.
- iv. We also add indicators of women’s empowerment in the neighborhood: the average level of education of all the women of 18-49 years old and the participation rate in labor (outside the household) of women between 18-49 years.

For the two elements below, indexes are computed from a set of variables based on information provide by the DHS women's questionnaire.

- v. Women's participation in decision making regarding various points. The question asked for all women is: *"Who in your family has final say on the following decisions: Your own health? / Large household purchases? / Household purchases for daily needs? / Visit to family and (or) relatives? / Meals to be cooked each day? / For using contraception?"* The responses are coded as: *"respondent alone"*, *"husband/partner alone"*, *"respondent and husband/partner"*. For each question, we construct a dummy for decision made mainly for the mother, mainly for the husband, or joint decision with the partner. One point is assigned when the mother contribute to the decision making process i.e. if she decides alone or with her husband/partner. Then we sum all the points to obtain an index of mother's participation in decision making process.
- vi. Mother's attitude towards gender equality i.e. attitude toward wife-beating and the right of wife to refuse sex with their husband. Kishor and Subaiya (2008) note that acceptance of wife beating and the view that women do not have the right to refuse sex to their husbands do not necessarily indicate that women approve wife-beating, but are indicative of women's acceptance of lower status compare to men. It suggests acceptance of norms that give men the right to *"discipline"* women with force. The presumption behind this two interrogations is that truly empowered women would not accept such obvious inequalities in power (Kishor and Subaiya, 2008). The first set of questions asked is: *"Sometimes a husband is annoyed or angered by things that his wife does. In your opinion, is a husband justified in hitting or beating his wife in the following situations: if she goes out without telling him?/ if she neglects the children?/ if she argues with him?/ if she refuses to have sex with him?/ if she burns the food?"*. For the second set, the question asked to all women is: *"husbands and wives do not always agree on everything. Please tell me if you think a wife is justified in refusing to have sex with her husband when: She knows her husband has a sexually transmitted disease? / She knows her husband has sex with other women? / She has recently given birth? / She is tired or not the mood?"*. One point is assigned if the mother does not find justification (at each question) to wife beating, by the same way, one point is assigned if whenever she finds that woman can refuse sex to her husband. We construct an index by adding all the points.

Table 4 in appendix presents some statistics concerning proxies used for mother's empowerment. We first note the lower education level of the mothers in our countries. In only two countries, Zimbabwe and Namibia, we note more than seven years of education on average, in six cases, we note more than six years and in thirteen countries we note less than 3 years of education on average. Concerning the mother's labor activity outside the household, the statistics suggest an important part of mother's self employed and a very

fewer part of them engaged as employed. For some countries, we have a very fewer part of mothers working outside the household for a non member, that means that most of them are either housewife, or employed for relative or their husbands. As an example in Ethiopia 10.1% of the mothers in the sample are self employed and 3.6% are employed. Concerning the indexes for mother's participation in decision making process (index 1) and mother's attitude toward gender equality (index 2), the statistics suggest that in 18 over 28 cases the mother's take part in most than three (over six) elements of decision making process concerning herself on average. In twenty two cases, the mothers have on average 5 points at least for the attitude toward gender inequality. Note the paradoxical situation in Benin (2001) where the gap between girls and boys is higher but the index 2 concerning gender inequalities is also higher on average (6.264).

5. RESULTS AND DISCUSSION

Table 1 and table 2 respectively present the results of the Probit estimation for boys' and girls' participation in school. The components for mother's empowerment are: education, age, labor activity outside the household, participation in decision making process and attitude toward gender inequality, the average level of education of all the women of 18-49 years old and the participation rate in labor (outside the household) of women between 18-49 years.

The results suggest that children, both boys and girls, have a greater probability of attending school when mothers are educated, except in some cases for boys in Ethiopia, Ghana, Kenya, Liberia, Mali, Nigeria 2003, Senegal Zimbabwe (2006) and boys and girls in Burkina, Ethiopia, Ghana (2008), Kenya, Nigeria 2003, Zambia, Zimbabwe, where the component is not significant. Note that for these exceptions cite above, it is not the mother's education which account but the level of education of the women in the neighborhood which has a positive and significant impact on children education, even if the mother's education appears non significant.

Concerning our gender comparison, the effect of mother's education on school participation is higher for girls' participation compared with that of boys in Benin (2001, 2006), Cameroon, Congo Rep., Ghana 2003, Guinea, Liberia, Madagascar (2004, 2009), Malawi 2004, Mali, Mozambique, Nigeria 2008, Senegal, Uganda , representing 15 out of the 28 cases in the analysis. Consistent with the works of (Thomas, 1994, Thomas et al., 1997) and (Koissy-Kpein, 2007), we can talk about a mother's preference for girls' schooling in these countries. Koissy-Kpein (2007) found that one additional year of a mother's education has a greater impact on girl's participation in school in Côte d'Ivoire and Guinea but not in Ghana. Glick and Sahn (2000) also reveal this higher impact in Guinea. The results also reveal that a large number of educated women in the neighborhood is an excellent signal to girls' education since in 19 out of 28 countries the impact of the component is higher on girls' schooling compare to boys' one.

Concerning mother's activity outside the household i.e. self-employed and employed we note that boys in Benin (2006), Cameroon, Namibia, Nigeria 2008, and girls in Benin (2006), Ghana (2008), Malawi 2004, Namibia have a higher probability to attend school when their mothers are self-employed. However, boys in Congo rep., Guinea and girls in Ghana (2003), Niger and Zimbabwe have a lower probability to attend school when the mothers are self employed. Concerning the mothers' activity as employed, we note that boys in Benin (2001), Kenya (2003) and Malawi, and girls in Congo rep, Ghana 2008, Tanzania have a higher probability to attend school when their mother are employed outside the household. For boys in Nigeria and Madagascar (2004), and girls in Guinea, Nigeria 2008 and Madagascar (2009), the probability is lower comparing to the others children when the mothers are employed outside the household. These results suggest that mother's labor activity as self employed or employed does not necessarily leads to better improvement of children. The results show how it is hard to define a unique rule since differences appear even between same countries according to the year of study. Note that our work, due to difficulties to find pertinent instruments, does not allow taking account the probable endogeneity of labor activity outside the household, the differences may also come from this.

The boy's participation in schooling is an increasing component of the large number of women working outside the household in the community in Benin 2009, Ethiopia, Kenya, Madagascar 2009, Mali, Niger, Senegal, Tanzania, Uganda, Nigeria, representing 11 out of 28 countries. The schooling participation decreases in Malawi and Mozambique. For the girls, participation in schooling is an increasing component of the large number of women working outside the household in the community in Benin 2006, Cameroon, Ethiopia, Kenya, Madagascar 2009, Niger, Nigeria, Senegal, Zimbabwe, representing only 9 out of 28 countries. The women's rise in the community is favorable to both girls and boys, and probably mainly to boys.

Concerning women's participation in decision making process and women's attitude toward gender inequality, the coefficient are either significant and positive or non significant, suggesting that women's ability to formulate strategic choice, to participate the ability to be an actor of their own live, their social inclusion is favorable to children's participation at school. The results also reveal that the women's rejection of wife-beating and acceptance of any right of wife to refuse sex with their husband that means women's rejection of any lower status compare to men is favorable to children's participation at school.

The component "women's participation in decision making process" is significant for boys in Benin (2001, 2006), Ethiopia, Liberia, Madagascar (2004, 2009), Malawi (2000), Mali, Nigeria (2003, 2008), Tanzania, Uganda, Zambia; representing 13 out of 28 countries. The component is significant for girls in Benin (2006), Burkina, Ethiopia, Kenya (2009), Liberia, Madagascar (2009), Mali, Nigeria (2003, 2008), Tanzania, Zambia, representing 11 out of 28 countries. The effect of this component is higher for girls compare to boys in Benin (2006), Ethiopia, Liberia, Nigeria, Zambia, Kenya (2009) and Burkina Faso.

The component "women's attitude toward gender inequality" is significant for boys in Benin (2001, 2006), Ghana (2003), Kenya (2009), Senegal, Mozambique representing only 6 out of 28

countries. The component is not significant for boys in Zimbabwe, suggesting that women's rejection of any gender inequality in this country leads to lower schooling of boys. The component is significant for girls in Benin (2001, 2006), Guinea, Liberia, Mozambique, Nigeria (2003, 2008), Senegal, and Uganda, representing 9 out of 28 countries.

We pay particular attention to these two components "women's participation in decision making process" and "women's attitude toward gender inequality". Since education plays an important part in both schooling decision of children but also on these components, we try to show how index 1 and index 2 affect the schooling decision when the mothers have never been at school (Tables 3 and 4). The result suggest that in 11 out of 28 countries for boys (Benin, Cameroon, Ethiopia, Liberia, Madagascar 2009, Malawi 2000, Mali, Nigeria, Tanzania) and 6 out of 28 countries for girls (Benin, Ghana 2003, Kenya 2009, Mozambique, Senegal, Zambia), the "women's participation in decision making process" have a positive and significant effect on schooling in the family where the mother is not educated. Concerning attitude toward gender inequality, in 12 out of 28 countries for boys and in 6 out of 28 cases for girls, the schooling participation increases when the mother does not find any justification to gender inequality, even if the mother is not educated. The boys seem favored and the coefficients continue to be significant in some countries and new cases of significance appear compared to tables 1 and 2.

Then, concerning the mother's age, an unique rule is also difficult to define, in some cases, the school participation increases with the mother's age like for boy's in Mozambique, Nigeria (2008), or for girl's in Cameroon, Kenya (2009), Mozambique, Nigeria (2008) and Senegal, suggesting a lower bargaining power of young wife in the household since the mother's in these countries have a preference for schooling. However, in some cases, the children's participation at school is a decreasing component of mother's age like for boy's in Benin (2001), Ghana (2003), or for boy's and girl's in Niger.

For the other results, we note that the children in urban areas have a higher probability of going to school than children in rural areas, except in some cases where the component is not significant. The results also suggest that father's education is an increasing component of participation in school, except for boys' participation in Ghana and boys' and girls' participation in Lesotho. Then, the children's participation in school is mainly an increasing component of household wealth. The richer the household, the more likely the children will attend school.

The effect of the mother's education on boys' participation is higher than that of the father's education in Guinea, Kenya (2009), Lesotho, Malawi (2000, 2004), Namibia, Zambia, representing 7 out of the 28 cases in the analysis. Concerning the girls' schooling, the effect of mother's education is higher than father's one in Benin (2001), Cameroon, Guinea, Lesotho, Madagascar (2009, 2004), Malawi (2000, 2004), Mozambique, representing 9 out of 28 cases.

Table 1 Probit estimation for boys' participation in school (mfx)

	Benin	Benin06	Burkina	Cameroon	Congo	Ethiopia	Ghana	Ghana 03	Guinea	Kenya	Kenya 09	Lesotho	Liberia	Madag. 09	Madag.
Index 1	0.0217*** (0.00770)	0.00925*** (0.00341)	0.00272 (0.00672)	0.00241 (0.00340)	0.000857 (0.00397)	0.0223*** (0.00548)	0.00587 (0.00814)	0.00663 (0.00642)	-0.000720 (0.00701)	0.00294 (0.00293)	0.00363 (0.00225)	0.00390 (0.00539)	0.0442*** (0.0163)	0.0117** (0.00544)	0.0164*** (0.00486)
Index 2	0.0159*** (0.00636)	0.0143*** (0.00254)	0.00570 (0.00539)	0.00305 (0.00271)	0.00400 (0.00343)	0.00285 (0.00368)	0.00154 (0.00558)	0.0154*** (0.00597)	0.00517 (0.00623)	-0.00124 (0.00229)	0.00632*** (0.00177)	0.00318 (0.00358)	0.00717 (0.00683)	0.000308 (0.00252)	-0.00213 (0.00365)
self-employed	0.0924 (0.0605)	0.0661** (0.0276)	-0.0152 (0.0475)	0.0285* (0.0170)	-0.0412** (0.0195)	-0.00383 (0.0300)	0.0846 (0.0588)	0.0593 (0.0624)	-0.109** (0.0432)	0.0128 (0.0129)	0.00237 (0.00870)	0.0185 (0.0184)	0.00599 (0.0409)	-0.0243 (0.0218)	0.0136 (0.0210)
employed	0.193*** (0.0718)	0.102 (0.0924)	-0.0154 (0.124)	-0.0137 (0.0453)	-0.0482 (0.0788)	0.00378 (0.0548)	0.0532 (0.0515)	0.0495 (0.0887)	0.0350* (0.0211)	-0.00262 (0.0174)	0.0332 (0.0321)	0.0332 (0.0987)	-0.139 (0.0987)	-0.104** (0.0459)	-0.0225 (0.0372)
Mother's educ.	0.0155* (0.00860)	0.0159*** (0.00472)	0.0250*** (0.00813)	0.00794*** (0.00297)	0.00834*** (0.00275)	0.00335 (0.00522)	0.00102 (0.00358)	0.00574 (0.00420)	0.0207** (0.0106)	0.000621 (0.00228)	0.00399** (0.00157)	0.0147*** (0.00406)	0.00405 (0.00318)	0.0119*** (0.00223)	0.00609*** (0.00224)
Mother's age	-0.00587** (0.00257)	0.000405 (0.00114)	0.000170 (0.00223)	4.38e-05 (0.00108)	-0.00118 (0.00143)	0.00226 (0.00147)	-0.00168 (0.00206)	-0.00749*** (0.00251)	-0.00171 (0.00241)	0.00160 (0.00105)	0.000243 (0.000645)	-0.00258 (0.00205)	0.00179 (0.00262)	-0.000776 (0.000989)	-0.00100 (0.00123)
Women's educ.	0.0416*** (0.0157)	0.0555*** (0.00693)	0.0791*** (0.0149)	0.0105*** (0.00347)	0.0105** (0.00468)	0.0508*** (0.00921)	0.0109** (0.00548)	0.0247*** (0.00670)	0.0905*** (0.0181)	0.0158*** (0.00309)	0.0108*** (0.00223)	0.0275*** (0.00955)	0.00882 (0.00973)	0.0249*** (0.00387)	0.0310*** (0.00435)
Women's labor	0.000659 (0.00163)	0.00180*** (0.000524)	-0.000507 (0.00136)	0.000594** (0.000295)	0.000644 (0.000433)	0.00177*** (0.000510)	0.000230 (0.000928)	-0.00129 (0.00116)	0.00108 (0.00118)	0.00103*** (0.000246)	-0.000165 (0.000155)	0.000288 (0.000525)	0.000836 (0.000693)	0.00256*** (0.000586)	0.000288 (0.000467)
age	0.208*** (0.0314)	0.123*** (0.0142)	0.195*** (0.0279)	0.0866*** (0.0131)	0.175*** (0.0166)	0.282*** (0.0177)	0.119*** (0.0240)	0.332*** (0.0292)	0.195*** (0.0319)	0.0861*** (0.0115)	0.0515*** (0.00818)	0.140*** (0.0201)	0.555*** (0.0486)	0.173*** (0.0124)	0.129*** (0.0146)
age2	-0.911*** (0.128)	-0.539*** (0.0584)	-0.972*** (0.117)	-0.395*** (0.0532)	-0.656*** (0.0678)	-1.016*** (0.0713)	-0.556*** (0.0961)	-1.306*** (0.118)	-0.742*** (0.131)	-0.404*** (0.0466)	-0.218*** (0.0331)	-0.649*** (0.0797)	-2.798*** (0.223)	-0.876*** (0.0508)	-0.643*** (0.0601)
father's educ	0.0247*** (0.00480)	0.0163*** (0.00224)	0.0288*** (0.00520)	0.00888*** (0.00201)	0.0153*** (0.00201)	0.0190*** (0.00324)	0.000391 (0.00264)	0.00960*** (0.00304)	0.0168*** (0.00364)	0.00728*** (0.00170)	0.00236** (0.00109)	0.00174 (0.00296)	0.0107*** (0.00308)	0.0160*** (0.00181)	0.0134*** (0.00193)
Middle Hh	0.116*** (0.0275)	0.0846*** (0.0120)	0.174*** (0.0243)	0.0327** (0.0137)	0.0601*** (0.0156)	0.202*** (0.0156)	0.0782*** (0.0262)	-0.000387 (0.0354)	0.121*** (0.0276)	0.0363*** (0.0110)	-3.13e-05 (0.00895)	0.0741*** (0.0186)	0.0685** (0.0342)	0.0936*** (0.0110)	0.0526*** (0.0139)
Richest Hh	0.207*** (0.0447)	0.139*** (0.0188)	0.372*** (0.0429)	0.0430** (0.0194)	0.0830*** (0.0250)	0.313*** (0.0233)	0.0839*** (0.0318)	-0.0364 (0.0659)	0.215*** (0.0482)	-0.0107 (0.0266)	-0.0174 (0.0242)	0.123*** (0.0201)	0.155*** (0.0489)	0.142*** (0.0177)	0.0556** (0.0249)
urban	0.0316 (0.0337)	-0.00805 (0.0139)	-0.00788 (0.0528)	-0.000638 (0.0146)	0.00527 (0.0219)	-0.0327 (0.0394)	-0.0439 (0.0368)	0.0824** (0.0383)	0.138*** (0.0418)	0.0218 (0.0149)	-0.00527 (0.0133)	-0.0202 (0.0327)	0.00693 (0.0403)	0.0268 (0.0211)	-0.0363** (0.0142)
Older sisters	0.0309 (0.0192)	0.0103 (0.00860)	0.0264 (0.0162)	0.00772 (0.00730)	-0.00813 (0.00856)	0.00760 (0.00987)	0.0132 (0.0157)	0.0260 (0.0189)	0.0206 (0.0212)	-0.00684 (0.00674)	0.00201 (0.00421)	0.00135 (0.0114)	-0.0494*** (0.0167)	-0.00447 (0.00646)	0.00364 (0.00793)
Older brothers	-0.0247* (0.0142)	-0.00835 (0.00695)	-0.0533*** (0.0128)	-0.00702 (0.00621)	-0.0244*** (0.00722)	-0.0581*** (0.00834)	-0.0244* (0.0126)	0.0115 (0.0168)	0.00679 (0.0160)	-0.00213 (0.00534)	-0.00447 (0.00345)	0.00538 (0.0100)	-0.0178 (0.0162)	0.00130 (0.00582)	0.00176 (0.00680)
Younger sisters	-0.0140 (0.0129)	-0.00942 (0.00582)	-0.0218* (0.0122)	0.0154*** (0.00553)	0.00654 (0.00683)	0.00818 (0.00730)	0.00296 (0.0111)	-0.0362*** (0.0139)	-0.00362 (0.0139)	0.0108** (0.00493)	0.00380 (0.00296)	-0.0362*** (0.00902)	0.0240 (0.0156)	-0.00986** (0.00476)	-0.0107** (0.00542)
Younger brothers	-0.0265** (0.0125)	-0.0111* (0.00572)	-0.00238 (0.0115)	0.00425 (0.00512)	0.00620 (0.00662)	-0.00818 (0.00701)	0.00813 (0.0109)	-0.00177 (0.0133)	-0.0210 (0.0138)	0.00926** (0.00457)	0.00191 (0.00273)	-0.0151* (0.00907)	-0.00339 (0.0150)	-0.0161*** (0.00458)	-0.00254 (0.00537)
Observations	1,368	4,708	2,561	2,191	3,155	5,951	1,076	1,388	1,644	2,423	2,382	1,816	1,684	6,969	2,854
Pseudo R-squared	0.210	0.196	0.249	0.256	0.160	0.215	0.120	0.189	0.230	0.318	0.302	0.229	0.295	0.266	0.365

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table 1 Probit estimation for boys' participation in school (mfx)

	Malawi 00	Malawi	Mali	Mozambique	Namibia	Niger	Nigeria 03	Nigeria 08	Senegal	Tanzania	Uganda	Zambia	Zimbabwe
Index 1	0.00877*** (0.00310)	-0.00546 (0.00345)	0.0195*** (0.00496)	-0.000744 (0.00440)	-0.00540 (0.00647)	0.000992 (0.00687)	0.0119** (0.00516)	0.0150*** (0.00269)	-0.00196 (0.00788)	0.0119*** (0.00419)	0.00624** (0.00273)	0.00898* (0.00492)	0.00484 (0.00583)
Index 2	-0.00197 (0.00245)	-0.000719 (0.00277)	-0.00116 (0.00388)	0.00616* (0.00331)	-0.00425 (0.00469)	-0.00176 (0.00505)	0.00303 (0.00397)	-0.00137 (0.00205)	0.0170*** (0.00530)	-0.00371 (0.00340)	0.00125 (0.00193)	0.000976 (0.00301)	-0.00644* (0.00347)
self-employed	0.00344 (0.0115)	0.0253* (0.0131)	0.0278 (0.0206)	0.00192 (0.0226)	0.0709*** (0.0197)	-0.0183 (0.0259)	0.0101 (0.0217)	0.0178* (0.0103)	0.0131 (0.0259)	-0.0266 (0.0235)	-0.00712 (0.0189)	0.0102 (0.0170)	-0.000711 (0.0174)
employed	-0.0440 (0.0563)	0.0833*** (0.0183)	0.0581 (0.0931)	-0.00920 (0.0685)	0.00923 (0.0273)	0.00687 (0.147)	-0.266*** (0.0822)	-0.0567* (0.0344)	-0.0417 (0.0832)	0.0706 (0.0523)	-0.0130 (0.0344)	-0.0848 (0.0530)	0.0136 (0.0308)
Mother's educ.	0.0155*** (0.00230)	0.00949*** (0.00242)	0.00438 (0.00544)	0.0193*** (0.00491)	0.00830** (0.00365)	0.0223*** (0.00713)	0.00457 (0.00322)	0.00584*** (0.00161)	-0.000499 (0.00650)	0.00634** (0.00260)	0.00392** (0.00196)	0.0118*** (0.00286)	0.000906 (0.00287)
Mother's age	-0.000438 (0.000940)	-0.000174 (0.00104)	-0.00164 (0.00170)	0.00236* (0.00129)	0.00320 (0.00198)	-0.00388* (0.00213)	-0.000942 (0.00172)	0.00213** (0.000834)	0.00186 (0.00247)	0.00176 (0.00159)	-0.000845 (0.000821)	0.000186 (0.00149)	-0.000216 (0.00161)
Women's educ.	0.0208*** (0.00430)	0.0272*** (0.00438)	0.0891*** (0.0115)	0.0498*** (0.00810)	0.0352*** (0.00668)	0.0547*** (0.0139)	0.0190*** (0.00432)	0.0394*** (0.00218)	0.0815*** (0.0126)	0.0452*** (0.00516)	0.0272*** (0.00349)	0.0184*** (0.00567)	0.0160** (0.00623)
Women's labor age	4.00e-06 (0.000277)	-0.00059** (0.000255)	0.00113*** (0.000362)	-0.000932** (0.000431)	0.000270 (0.000482)	0.00111** (0.000488)	0.00285*** (0.000433)	0.000858*** (0.000234)	0.00309*** (0.000637)	0.000817* (0.000441)	0.00113** (0.000497)	0.000419 (0.000384)	-0.000125 (0.000308)
age2	0.137*** (0.0115)	0.142*** (0.0124)	0.219*** (0.0205)	0.236*** (0.0168)	0.121*** (0.0216)	0.204*** (0.0283)	0.0836*** (0.0197)	0.108*** (0.0103)	0.211*** (0.0285)	0.365*** (0.0173)	0.113*** (0.0103)	0.228*** (0.0166)	0.0957*** (0.0174)
father's educ	-0.576*** (0.0469)	-0.621*** (0.0505)	-0.926*** (0.0845)	-0.972*** (0.0685)	-0.556*** (0.0885)	-0.986*** (0.119)	-0.358*** (0.0791)	-0.477*** (0.0420)	-0.988*** (0.117)	-1.487*** (0.0707)	-0.491*** (0.0426)	-0.913*** (0.0675)	-0.472*** (0.0690)
Middle Hh	0.0106*** (0.00172)	0.00930*** (0.00190)	0.0304*** (0.00345)	0.0281*** (0.00343)	0.00697** (0.00294)	0.0297*** (0.00505)	0.0136*** (0.00211)	0.0168*** (0.00114)	0.0320*** (0.00452)	0.00875*** (0.00239)	0.00987*** (0.00148)	0.00738*** (0.00250)	0.00808*** (0.00262)
Richest Hh	0.0194 (0.0191)	0.0649*** (0.0112)	0.120*** (0.0183)	-0.0225 (0.0170)	-0.0208 (0.0253)	0.0429* (0.0259)	0.0922*** (0.0195)	0.101*** (0.0106)	0.0427 (0.0305)	0.0614*** (0.0156)	0.0213** (0.00926)	0.0339** (0.0172)	0.0411*** (0.0157)
urban	0.0202 (0.0255)	0.0792*** (0.0150)	0.281*** (0.0311)	0.0137 (0.0334)	-0.182*** (0.0650)	0.308*** (0.0399)	0.0605* (0.0312)	-0.0589** (0.0250)	0.0420 (0.0566)	0.0946*** (0.0225)	0.0116 (0.0175)	0.0661*** (0.0250)	0.00677 (0.0370)
Older sisters	0.0365** (0.0167)	-0.0185 (0.0268)	0.0628** (0.0258)	-0.0526** (0.0236)	0.00557 (0.0247)	0.00610 (0.0418)	0.0144 (0.0215)	-0.0204 (0.0134)	0.0331 (0.0332)	-0.00434 (0.0267)	0.0184 (0.0199)	-0.0279 (0.0238)	0.0464* (0.0267)
Older brothers	-0.00655 (0.00718)	-0.00411 (0.00774)	0.00984 (0.0124)	-0.0120 (0.0105)	0.00960 (0.0127)	0.0230 (0.0151)	0.0348*** (0.0125)	0.00462 (0.00656)	-0.00469 (0.0139)	-0.00669 (0.00945)	0.00150 (0.00531)	-0.0219** (0.00924)	0.0103 (0.0110)
Younger sisters	-0.0130** (0.00597)	-0.0124* (0.00665)	-0.00471 (0.00991)	-0.0184** (0.00882)	-0.0139 (0.0122)	0.0138 (0.0123)	0.0172* (0.00899)	0.00508 (0.00487)	-0.00378 (0.0125)	-0.0280*** (0.00802)	0.00157 (0.00496)	-0.0119 (0.00893)	-0.0101 (0.00855)
Younger brothers	0.00559 (0.00515)	0.00400 (0.00576)	0.00640 (0.00840)	-0.00344 (0.00719)	0.00476 (0.0105)	-0.00443 (0.0114)	-0.000906 (0.00893)	0.00737* (0.00442)	-0.00189 (0.0121)	0.00233 (0.00711)	0.00110 (0.00391)	0.0110 (0.00746)	0.00410 (0.00784)
Observations	3,814	3,645	4,367	3,321	975	2,581	1,862	8,487	2,076	3,277	2,924	2,107	1,644
Pseudo R-squared	0.168	0.160	0.200	0.184	0.243	0.202	0.286	0.375	0.181	0.233	0.259	0.214	0.220

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2 Probit estimation for girls' participation in school (mfx)

	Benin	Benin 06	Burkina	Cameroon	Congo	Ethiopia	Ghana	Ghana 03	Guinea	Kenya	kenya09	Lesotho	Liberia	Madag. 09	Madag.
Index 1	0.00858 (0.0102)	0.00984** (0.00461)	0.0239*** (0.00746)	0.000747 (0.00341)	0.00553 (0.00478)	0.0363*** (0.00590)	-0.000775 (0.00870)	0.000105 (0.00715)	0.00683 (0.00788)	-0.000484 (0.00255)	0.00629*** (0.00226)	-0.00478 (0.00362)	0.0563*** (0.0174)	0.0134*** (0.00514)	0.00282 (0.00464)
Index 2	0.0175** (0.00833)	0.0200*** (0.00345)	-3.67e-05 (0.00589)	-0.00267 (0.00276)	-0.00427 (0.00414)	-0.00184 (0.00396)	-0.00221 (0.00576)	0.00466 (0.00665)	0.0249*** (0.00706)	-0.00117 (0.00189)	-0.00273 (0.00180)	0.00230 (0.00239)	0.0147** (0.00682)	0.00128 (0.00248)	-0.000344 (0.00354)
self-employed	0.0340 (0.0778)	0.0691** (0.0349)	-0.0301 (0.0540)	-0.00970 (0.0152)	0.0139 (0.0251)	0.0127 (0.0307)	0.171** (0.0793)	-0.0880* (0.0503)	0.0447 (0.0534)	0.0128 (0.0115)	0.0120 (0.00854)	0.0157 (0.0116)	0.0674 (0.0436)	0.00836 (0.0233)	-0.00464 (0.0196)
employed	0.148 (0.149)	-0.106 (0.143)		0.0156 (0.0440)	0.163*** (0.0528)	-0.0365 (0.0572)	0.0800** (0.0396)	-0.0200 (0.109)	-0.386*** (0.119)	-0.00453 (0.0235)	-0.0114 (0.0181)	0.00501 (0.0209)	-0.152 (0.0925)	-0.103** (0.0441)	-0.00498 (0.0339)
Mother's educ.	0.0472*** (0.0111)	0.0184*** (0.00538)	0.0126 (0.00859)	0.0101*** (0.00290)	0.0119*** (0.00325)	0.00452 (0.00520)	-0.00142 (0.00394)	0.0105** (0.00434)	0.0249*** (0.00917)	0.00306 (0.00190)	-0.000363 (0.00156)	0.00527* (0.00282)	0.00584* (0.00349)	0.0184*** (0.00225)	0.0128*** (0.00228)
Mother's age	0.00218 (0.00340)	-0.00170 (0.00155)		0.00232** (0.00111)	0.000652 (0.00175)	0.00191 (0.00159)	0.00177 (0.00227)	-0.00359 (0.00281)	-0.00104 (0.00283)	-0.000147 (0.000914)	0.00154** (0.000697)	-0.00197 (0.00134)	-0.000539 (0.00255)	-0.00149 (0.000981)	-0.00179 (0.00116)
Women's educ.	0.0592*** (0.0178)	0.0280*** (0.00829)	0.115*** (0.0166)	0.0201*** (0.00366)	0.0423*** (0.00585)	0.0723*** (0.0101)	0.0172*** (0.00606)	0.0197*** (0.00711)	0.0961*** (0.0185)	0.0197*** (0.00308)	0.0191*** (0.00250)	-0.00317 (0.00610)	0.0143 (0.00989)	0.0214*** (0.00386)	0.0240*** (0.00411)
Women's labor	-0.000967 (0.00211)	0.00139* (0.000763)	0.000820 (0.00141)	0.000657** (0.000304)	-0.00102 (0.000523)	0.00199*** (0.000535)	0.000210 (0.00106)	-0.000723 (0.00126)	0.000126 (0.00130)	0.000931*** (0.000230)	-0.000127 (0.000147)	-9.04e-05 (0.000349)	-0.000297 (0.000723)	0.00196*** (0.000543)	0.000622 (0.000447)
age	0.152*** (0.0417)	0.126*** (0.0191)	0.232*** (0.0321)	0.0817*** (0.0137)	0.247*** (0.0207)	0.325*** (0.0199)	0.125*** (0.0247)	0.385*** (0.0324)	0.209*** (0.0392)	0.0769*** (0.0112)	0.0506*** (0.00842)	0.103*** (0.0130)	0.598*** (0.0506)	0.147*** (0.0124)	0.115*** (0.0145)
age2	-0.788*** (0.175)	-0.582*** (0.0799)	-1.066*** (0.135)	-0.416*** (0.0562)	-1.016*** (0.0853)	-1.223*** (0.0816)	-0.584*** (0.0979)	-1.580*** (0.133)	-0.897*** (0.167)	-0.361*** (0.0464)	-0.236*** (0.0346)	-0.454*** (0.0521)	-2.955*** (0.232)	-0.782*** (0.0510)	-0.584*** (0.0605)
father's educ	0.0234*** (0.00590)	0.0260*** (0.00274)	0.0265*** (0.00595)	0.00954*** (0.00203)	0.0177*** (0.00240)	0.0122*** (0.00339)	0.00528* (0.00279)	0.0139*** (0.00315)	0.0207*** (0.00415)	0.00602*** (0.00145)	0.00255** (0.00107)	0.00205 (0.00201)	0.00610** (0.00306)	0.0152*** (0.00179)	0.00965*** (0.00190)
Middle Hh	0.222*** (0.0363)	0.154*** (0.0160)	0.154*** (0.0272)	0.0261* (0.0145)	0.0809*** (0.0185)	0.217*** (0.0168)	0.0562* (0.0321)	0.0871** (0.0349)	0.157*** (0.0328)	0.0118 (0.00995)	0.0107 (0.00834)	0.0143 (0.0125)	0.0298 (0.0359)	0.0958*** (0.0108)	0.00749 (0.0145)
Richest Hh	0.251*** (0.0615)	0.199*** (0.0247)	0.284*** (0.0523)	0.0366* (0.0213)	0.0592* (0.0351)	0.373*** (0.0241)	0.0138 (0.0520)	0.0241 (0.0595)	0.267*** (0.0592)	-0.0651* (0.0339)	-0.0190 (0.0218)	0.0583*** (0.0128)	0.128*** (0.0495)	0.136*** (0.0160)	0.00127 (0.0269)
urban	0.0150 (0.0417)	0.0602*** (0.0183)	0.0652 (0.0557)	0.0175 (0.0155)	-0.0391 (0.0266)	-0.116*** (0.0410)	-0.0444 (0.0402)	-0.00584 (0.0424)	0.175*** (0.0490)	0.00191 (0.0140)	-0.0392** (0.0189)	0.00610 (0.0169)	0.0311 (0.0397)	0.0179 (0.0208)	-0.00684 (0.0142)
Older sisters	0.0513** (0.0241)	0.0194* (0.0113)	0.0151 (0.0179)	0.0195** (0.00830)	-0.0162 (0.0110)	-0.00871 (0.0107)	-0.0203 (0.0161)	0.00831 (0.0207)	0.0279 (0.0224)	0.00405 (0.00612)	0.00155 (0.00474)	0.00618 (0.00786)	-0.0101 (0.0186)	0.00466 (0.00664)	0.0112 (0.00726)
Older brothers	-0.0129 (0.0161)	0.00593 (0.00878)	-0.0187 (0.0136)	-0.00625 (0.00662)	-0.0245*** (0.00836)	-0.0200** (0.00884)	0.0168 (0.0145)	-0.00129 (0.0181)	-0.00767 (0.0180)	-0.00338 (0.00465)	0.00295 (0.00398)	-0.00585 (0.00608)	-0.0122 (0.0170)	0.00764 (0.00579)	0.00261 (0.00632)
Younger sisters	-0.0257 (0.0173)	-0.0305*** (0.00819)	0.00385 (0.0142)	0.0173*** (0.00553)	-0.0129 (0.00824)	-0.00685 (0.00781)	-0.00962 (0.0109)	-0.0474*** (0.0147)	-0.0117 (0.0170)	0.00356 (0.00418)	0.00394 (0.00293)	-0.00535 (0.00566)	0.00923 (0.0169)	-0.0132*** (0.00469)	-0.0151*** (0.00524)
Younger brothers	-0.0329* (0.0176)	-0.0119 (0.00791)	-0.0455*** (0.0135)	0.00982* (0.00534)	-0.0123 (0.00795)	-0.00878 (0.00756)	-0.0248** (0.0101)	-0.0466*** (0.0145)	-0.0352** (0.0157)	-0.00498 (0.00393)	0.00174 (0.00289)	-0.000771 (0.00618)	-0.0153 (0.0159)	-0.0120*** (0.00453)	-0.0134** (0.00544)
Observations	1,062	3,875	2,094	2,100	2,917	5,257	1,012	1,139	1,550	2,168	2,316	1,716	1,567	6,361	2,653
Pseudo R-squared	0.280	0.206	0.269	0.328	0.216	0.235	0.169	0.243	0.281	0.450	0.377	0.200	0.294	0.291	0.331

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table 2 Probit estimation for girls' participation in school (mfx)

	Malawi 00	Malawi	Mali	Mozambique	Namibia	Niger	Nigeria 03	Nigeria 08	Senegal	Tanzania	Uganda	Zambia	Zimbabwe
Index 1	0.00379 (0.00307)	-0.000733 (0.00334)	0.0193*** (0.00536)	0.00484 (0.00520)	-0.00374 (0.00511)	0.00415 (0.00720)	0.0181*** (0.00560)	0.0185*** (0.00310)	-0.00744 (0.00837)	0.0104** (0.00416)	0.00211 (0.00317)	0.0144*** (0.00537)	0.00266 (0.00497)
Index 2	0.00384 (0.00241)	-0.00465* (0.00264)	0.00340 (0.00411)	0.00822** (0.00398)	-0.00139 (0.00360)	0.00705 (0.00532)	0.00894** (0.00445)	0.00437* (0.00235)	0.0249*** (0.00582)	-0.00332 (0.00331)	0.00383* (0.00217)	0.00272 (0.00327)	-0.00459 (0.00288)
self-employed	-0.000916 (0.0114)	0.0205* (0.0124)	0.0327 (0.0220)	0.0298 (0.0297)	0.0280* (0.0163)	-0.0497* (0.0276)	-0.00833 (0.0228)	0.00398 (0.0118)	-0.0178 (0.0284)	-0.0194 (0.0240)	-0.0181 (0.0204)	0.0235 (0.0184)	-0.0492*** (0.0169)
employed	0.0378 (0.0368)	-0.0110 (0.0398)	-0.0900 (0.105)	-0.109 (0.0898)	0.00519 (0.0205)	0.130 (0.167)	0.00459 (0.0814)	-0.150*** (0.0431)	-0.106 (0.0955)	0.129*** (0.0333)	-0.0400 (0.0529)	0.000509 (0.0374)	0.00862 (0.0257)
Mother's educ.	0.0143*** (0.00231)	0.0119*** (0.00236)	0.0231*** (0.00591)	0.0334*** (0.00594)	0.00576** (0.00267)	0.0218*** (0.00689)	0.00368 (0.00341)	0.00994*** (0.00177)	0.0148** (0.00711)	0.00431* (0.00255)	0.00937*** (0.00226)	0.00424 (0.00312)	0.00214 (0.00245)
Mother's age	-0.000883 (0.000943)	-0.00127 (0.000978)	0.00106 (0.00182)	0.00337** (0.00158)	-0.00121 (0.00145)	-0.00505** (0.00229)	-0.000454 (0.00190)	0.00217** (0.000951)	0.00458* (0.00256)	-0.000295 (0.00156)	0.00130 (0.000962)	0.00146 (0.00164)	-0.000614 (0.00133)
Women's educ.	0.0242*** (0.00430)	0.0315*** (0.00416)	0.106*** (0.0118)	0.0755*** (0.00972)	0.0215*** (0.00492)	0.0699*** (0.0140)	0.0387*** (0.00486)	0.0482*** (0.00246)	0.0912*** (0.0129)	0.0512*** (0.00522)	0.0340*** (0.00395)	0.0307*** (0.00619)	0.0199*** (0.00551)
Women's labor	0.000410 (0.000281)	-0.000708*** (0.000241)	-0.000284 (0.000402)	-0.000202 (0.000531)	-0.000258 (0.000341)	0.00149*** (0.000536)	0.00294*** (0.000489)	0.000999*** (0.000267)	0.00118* (0.000683)	0.000517 (0.000454)	0.000411 (0.000585)	0.000142 (0.000412)	0.000479* (0.000275)
age	0.142*** (0.0120)	0.156*** (0.0126)	0.179*** (0.0240)	0.307*** (0.0218)	0.107*** (0.0182)	0.122*** (0.0296)	0.107*** (0.0221)	0.124*** (0.0122)	0.169*** (0.0304)	0.348*** (0.0178)	0.126*** (0.0118)	0.272*** (0.0185)	0.0558*** (0.0153)
age2	-0.629*** (0.0496)	-0.696*** (0.0522)	-0.802*** (0.102)	-1.308*** (0.0917)	-0.477*** (0.0751)	-0.600*** (0.126)	-0.464*** (0.0897)	-0.559*** (0.0504)	-0.905*** (0.127)	-1.460*** (0.0729)	-0.564*** (0.0491)	-1.170*** (0.0768)	-0.310*** (0.0620)
father's educ	0.0112*** (0.00175)	0.00530*** (0.00179)	0.0291*** (0.00342)	0.0326*** (0.00415)	0.00827*** (0.00226)	0.0281*** (0.00486)	0.0178*** (0.00235)	0.0158*** (0.00124)	0.0351*** (0.00481)	0.00798*** (0.00241)	0.0104*** (0.00164)	0.0150*** (0.00273)	0.00664*** (0.00222)
Middle Hh	0.0169 (0.0194)	0.0443*** (0.0109)	0.0768*** (0.0202)	0.0147 (0.0198)	-0.0391* (0.0202)	0.0807*** (0.0290)	0.0472** (0.0227)	0.121*** (0.0119)	0.0123 (0.0331)	0.0810*** (0.0151)	0.0367*** (0.0103)	0.0227 (0.0188)	0.0174 (0.0137)
Richest Hh	-0.00761 (0.0281)	0.0738*** (0.0139)	0.186*** (0.0373)	0.0779** (0.0355)	-0.114** (0.0540)	0.174*** (0.0443)	-0.0134 (0.0396)	-0.0135 (0.0258)	0.0289 (0.0592)	0.128*** (0.0194)	0.0119 (0.0209)	0.0653** (0.0296)	0.0468** (0.0213)
urban	0.00827 (0.0180)	-0.0334 (0.0277)	0.0709** (0.0277)	-0.0118 (0.0283)	0.0341* (0.0184)	0.125*** (0.0415)	-0.0372 (0.0231)	-0.0474*** (0.0150)	0.0177 (0.0361)	-0.0162 (0.0269)	-0.0655* (0.0380)	-0.0209 (0.0252)	-0.0231 (0.0300)
Older sisters	-0.000582 (0.00724)	0.0116 (0.00786)	0.0264** (0.0133)	-0.0311*** (0.0120)	0.00241 (0.00990)	0.0570*** (0.0162)	0.0305** (0.0139)	0.0181** (0.00701)	0.0183 (0.0148)	-0.00232 (0.00929)	-0.0151** (0.00618)	-0.0202** (0.0102)	-0.0107 (0.00872)
Older brothers	0.00497 (0.00623)	-0.00101 (0.00679)	-0.000217 (0.0103)	-0.0196* (0.0101)	0.00515 (0.00930)	0.00372 (0.0130)	0.0226** (0.00980)	-0.00207 (0.00547)	-0.0124 (0.0130)	-0.0114 (0.00782)	-0.00839 (0.00547)	-0.0101 (0.00990)	-0.0126* (0.00746)
Younger sisters	0.00460 (0.00509)	-0.00876 (0.00550)	0.00981 (0.00905)	-0.00590 (0.00901)	0.0102 (0.00772)	-0.0153 (0.0121)	0.000141 (0.0101)	0.00929* (0.00515)	0.0150 (0.0129)	0.00149 (0.00693)	0.00415 (0.00451)	0.0200** (0.00785)	-0.0113* (0.00679)
Younger brothers	0.00965* (0.00517)	-0.00563 (0.00561)	-0.00102 (0.00893)	-0.0116 (0.00907)	0.000587 (0.00788)	-0.0196* (0.0113)	0.0121 (0.00935)	0.00617 (0.00501)	0.0332*** (0.0121)	-0.000878 (0.00698)	0.00500 (0.00454)	0.0136* (0.00809)	-0.00376 (0.00640)
Observations	3,562	3,488	3,832	3,003	972	2,260	1,663	7,533	1,927	3,035	2,744	2,134	1,519
Pseudo R-squared	0.192	0.190	0.203	0.240	0.282	0.235	0.379	0.434	0.207	0.263	0.293	0.223	0.274

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

6. CONCLUSION

This paper uses DHS monogamous household data to highlight the link between mothers' empowerment and schooling decision, especially gender bias in schooling decision. The paper begins by illustrating the decision-making process concerning girls' and boys' schooling and considers a case in which father and mother bargain concerning sons and daughters according to their preferences. The assumptions of this model imply that less schooling of girls may be the result of lower empowerment of mothers in the decision-making process. We make a discussion about the mothers' empowerment and then, we define a measure of mothers' empowerment using enabling factors such as mother's education, mother's age, mother's participation in labor activity, mother's participation in decision making process in the household, mother's attitude toward gender inequality, women's education and women's participation in labor activity in the community. The results of our estimations suggest that better empowered mothers' leads to a greater probability of attending school for boys and girls. We note great differences among countries and among years for the same countries, suggesting that the effect of empowerment is dynamic and depend on the society. We also note differences among gender. These differences do not allow to systematically conclude that lower schooling of girls is due to lower empowerment of the mothers in all the countries, however, we have some cases where empower women would be more favorable to girls than boys.

Our analysis is limited by the fact that it does not take into account dynamics of and changes in mothers' empowerment. For instance, Jejeebhoy (1991) notes a dynamic relationship between the status of women and reproductive behavior in India at two successive stages. However, our conclusions can be justified by the fact that we have analyzed the decisions at a particular moment, taking into account empowerment at this time.

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Appendix

Table 3. School rates for children between 7 and 18 years old in monogamous households

	boys		girls	
	n	mean	n	mean
Benin 2001	2,037	0.657	1,505	0.548
Benin 2006	6,874	0.717	5,271	0.641
Burkina Faso 2003	3,540	0.368	2,907	0.357
Cameroon 2004	3,244	0.858	3,011	0.823
Congo rep 2007	4,199	0.781	3,812	0.709
Ethiopia 2005	7,645	0.492	6,621	0.461
Ghana 2008	3,376	0.83	2,971	0.819
Ghana 2003	1,912	0.702	1,552	0.697
Guinea 2005	2,272	0.594	2,030	0.492
Kenya 2003	3,066	0.853	2,728	0.836
Kenya 2009	2,921	0.91	2,749	0.888
Lesotho 2004	2,620	0.79	2,483	0.891
Liberia 2007	2,399	0.616	2,207	0.615
Madagascar 2009	8,900	0.727	8,005	0.74
Madagascar 2003-2004	3,642	0.764	3,253	0.789
Malawi 2000	4,895	0.84	4,519	0.84
Malawi 2004	4,748	0.825	4,390	0.838
Mali 2006	5,596	0.489	4,873	0.443
Mozambique 2003	4,819	0.755	4,247	0.691
Namibia 2006-2007	1,500	0.855	1,470	0.873
Niger 2006	3,541	0.426	3,012	0.363
Nigeria 2003	2,522	0.783	2,228	0.737
Nigeria 2008	11,133	0.725	9,550	0.706
Senegal 2005	3,030	0.565	2,764	0.529
Tanzania 2005	4,306	0.753	3,869	0.763
Uganda 2006	3,819	0.873	3,530	0.856
Zambia 2007	2,781	0.836	2,705	0.811
Zimbabwe 2006	2,369	0.852	2,201	0.859

Table 4 Proxies for Mother's empowerment (Mean)

	Index 1	Index 2	self employed	employed	mother's education	mother's age
Benin 2001	3.084	6.264	0.907	0.024	1.63	36.6
Benin 2006	3.571	6.479	0.913	0.012	1.409	36.437
Burkina Faso 2003	2.205	5.629	0.901	0.024	0.938	36.682
Cameroon 2004	3.346	6.828	0.719	0.056	5.16	36.476
Congo rep 2007	3.037	5.016	0.767	0.024	4.69	36.81
Ethiopia 2005	3.048	4.226	0.101	0.036	1.338	35.702
Ghana 2008	3.221	6.366	0.895	0.048	4.605	37.674
Ghana 2003	3.366	6.737	0.88	0.059	4.258	37.746
Guinea 2005	3.244	4.241	0.882	0.013	1.156	36.352
Kenya 2003	3.497	6.039	0.6	0.095	6.176	36.066
Kenya 2009	4.363	3.474	0.504	0.114	6.417	36.556
Lesotho 2004	3.792	6.865	0.365	0.12	6.713	37.257
Liberia 2007	2.656	5.272	0.729	0.034	3.054	36.969
Madagascar 2009	4.017	5.601	0.83	0.068	4.407	36.542
Madagascar 2003-2004	4.886	7.988	0.653	0.112	6.376	36.754
Malawi 2000	2.439	7.056	0.63	0.033	3.02	36.142
Malawi 2004	2.478	7.201	0.514	0.042	3.168	35.855
Mali 2006	1.653	4.376	0.463	0.01	0.961	35.861
Mozambique 2003	3.593	6.34	0.768	0.046	1.994	36.078
Namibia 2006-2007	3.604	6.584	0.246	0.284	7.055	38.058
Niger 2006	1.546	4.896	0.479	0.009	1.04	35.94
Nigeria 2003	2.355	5.688	0.667	0.061	4.303	36.895
Nigeria 2008	2.29	5.639	0.588	0.067	4.986	36.544
Senegal 2005	2.056	5.35	0.539	0.025	1.406	37.724
Tanzania 2005	3.056	6.624	0.8	0.033	4.647	36.955
Uganda 2006	2.826	5.128	0.883	0.046	3.357	36.283
Zambia 2007	3.149	4.948	0.547	0.083	5.616	35.538
Zimbabwe 2006	4.056	5.895	0.373	0.092	7.032	36.381

Note: Index 1 concerns “mother’s participation in decision making process” and index 2 “mother’s attitude toward gender equality”

Table 5 Probit estimation for boys' participation in school (mfx)

	Benin	Benin06	Burkina	Cameroon	Congo	Ethiopia	Ghana	Ghana 03	Guinea	Kenya	Kenya 09	Lesotho	Liberia	Madag. 09	Madag.
Index 1	0.0272*** (0.00976)	0.0139*** (0.00452)	0.00682 (0.00663)	0.0263** (0.0126)	0.00871 (0.00916)	0.0233*** (0.00578)	0.00568 (0.0147)	0.0166 (0.0107)	0.000744 (0.00783)	0.0158 (0.0113)	0.0110 (0.0136)	0.105 (0.0780)	0.0434* (0.0222)	0.0238* (0.0134)	0.0191 (0.0240)
Index 2	0.0186** (0.00803)	0.0174*** (0.00334)	0.00297 (0.00531)	-0.0107 (0.00990)	0.000248 (0.00801)	0.00291 (0.00390)	-0.0140 (0.00966)	0.0171* (0.00908)	0.00794 (0.00692)	0.000363 (0.00873)	0.0439*** (0.00938)	-0.00274 (0.0388)	-0.00224 (0.00873)	0.00434 (0.00606)	-0.0179 (0.0138)
self-employed	0.101 (0.0741)	0.0946*** (0.0352)	-0.0526 (0.0512)	0.0712 (0.0585)	0.00679 (0.0486)	-0.0173 (0.0322)	0.257* (0.135)	-0.0789 (0.0858)	-0.114** (0.0522)	0.0414 (0.0500)	-0.104 (0.0604)	0.0640 (0.239)	0.0433 (0.0564)	-0.101 (0.0618)	0.102 (0.115)
employed	0.220* (0.122)	0.139 (0.133)	0.111 (0.266)		-0.0745 (0.214)	0.0269 (0.0642)	0.0283 (0.165)				-0.236 (0.162)	-0.0137 (0.688)	-0.172 (0.139)	-0.304** (0.128)	-0.488*** (0.126)
Mother's age	-0.00522 (0.00319)	0.00162 (0.00150)	0.000508 (0.00217)	-0.00761** (0.00377)	-0.00566* (0.00339)	0.00416*** (0.00154)	-0.00377 (0.00359)	-0.00923** (0.00403)	-0.00237 (0.00268)	0.00942** (0.00391)	-0.000811 (0.00361)	0.00925 (0.0221)	0.00496 (0.00325)	0.00391* (0.00233)	0.00408 (0.00519)
Women's educ.	0.0488** (0.0223)	0.0847*** (0.00991)	0.0861*** (0.0160)	0.0396** (0.0155)	0.0257** (0.0118)	0.0716*** (0.0120)	0.00992 (0.0108)	0.0407*** (0.0124)	0.105*** (0.0215)	0.0345** (0.0134)	0.0585*** (0.0130)	-0.119 (0.0892)	0.0254* (0.0138)	0.0796*** (0.0110)	0.106*** (0.0216)
Women's labor	-0.00159 (0.00226)	0.00227*** (0.000687)	0.000311 (0.00140)	0.00237** (0.00103)	0.000140 (0.00105)	0.00211*** (0.000539)	-0.000181 (0.00183)	-0.00289 (0.00193)	0.000717 (0.00133)	0.00286*** (0.000967)	-0.000590 (0.000885)	-0.00112 (0.00653)	-0.000116 (0.000936)	0.00622*** (0.00151)	0.000247 (0.00254)
age	0.257*** (0.0407)	0.163*** (0.0187)	0.158*** (0.0274)	0.275*** (0.0497)	0.242*** (0.0394)	0.256*** (0.0188)	0.133*** (0.0414)	0.283*** (0.0500)	0.200*** (0.0358)	0.140*** (0.0450)	0.187*** (0.0436)	0.455** (0.202)	0.531*** (0.0611)	0.261*** (0.0321)	0.339*** (0.0666)
age2	-1.116*** (0.168)	-0.713*** (0.0771)	-0.795*** (0.115)	-1.141*** (0.202)	-0.899*** (0.160)	-0.924*** (0.0753)	-0.579*** (0.166)	-1.091*** (0.204)	-0.771*** (0.147)	-0.639*** (0.182)	-0.677*** (0.176)	-2.172** (0.857)	-2.670*** (0.279)	-1.282*** (0.133)	-1.687*** (0.282)
father's educ	0.0255*** (0.00694)	0.0224*** (0.00319)	0.0362*** (0.00578)	0.0215** (0.00891)	0.0230*** (0.00470)	0.0252*** (0.00390)	0.00309 (0.00483)	0.0175*** (0.00523)	0.0166*** (0.00429)	0.0347*** (0.00924)	0.00847 (0.00631)	0.115 (0.0763)	0.0137*** (0.00404)	0.0158*** (0.00542)	0.0509*** (0.0112)
Middle Hh	0.139*** (0.0348)	0.101*** (0.0161)	0.170*** (0.0238)	0.0688 (0.0542)	0.119*** (0.0351)	0.197*** (0.0168)	0.119** (0.0515)	-0.0256 (0.0639)	0.131*** (0.0310)	0.199*** (0.0413)	0.0559 (0.0667)	0.194 (0.195)	0.0215 (0.0440)	0.150*** (0.0306)	0.155*** (0.0599)
Richest Hh	0.283*** (0.0600)	0.175*** (0.0274)	0.372*** (0.0484)		0.185** (0.0884)	0.281*** (0.0282)		-0.0459 (0.140)	0.216*** (0.0625)	0.127 (0.108)	-0.420** (0.187)		0.0708 (0.0776)	0.200** (0.0912)	-0.0221 (0.166)
urban	0.0762* (0.0435)	-0.00123 (0.0184)	-0.0150 (0.0531)	0.0465 (0.0561)	-0.0331 (0.0538)	-0.0206 (0.0454)	-0.0113 (0.0784)	0.0866 (0.0765)	0.161*** (0.0486)	0.129** (0.0517)	0.0136 (0.0780)		0.0467 (0.0543)	0.0574 (0.0749)	-0.0444 (0.0676)
Older sisters	0.0331 (0.0247)	0.00657 (0.0115)	0.0223 (0.0159)	0.0581* (0.0306)	-0.0320 (0.0208)	0.000481 (0.0105)	0.0306 (0.0276)	-0.0100 (0.0318)	0.0308 (0.0242)	-0.0360 (0.0258)	0.0552** (0.0253)	0.252 (0.160)	-0.0322 (0.0208)	0.0184 (0.0161)	-0.0800*** (0.0302)
Older brothers	-0.0339* (0.0178)	-0.0149 (0.00927)	-0.0448*** (0.0130)	-0.0245 (0.0228)	-0.0496*** (0.0178)	-0.0599*** (0.00884)	-0.0351* (0.0208)	0.0247 (0.0266)	0.00553 (0.0177)	-0.0289 (0.0205)	0.00301 (0.0195)	-0.0300 (0.133)	-0.00681 (0.0209)	-0.0263* (0.0143)	-0.00691 (0.0285)
Younger sisters	-0.0199 (0.0165)	-0.00929 (0.00767)	-0.0251** (0.0121)	0.00896 (0.0209)	-0.00679 (0.0165)	0.00897 (0.00764)	-0.0115 (0.0188)	-0.0910*** (0.0234)	-0.000745 (0.0153)	0.0442** (0.0192)	0.0434** (0.0176)	-0.120 (0.119)	0.0285 (0.0202)	0.00461 (0.0120)	-0.0428* (0.0235)
Younger brothers	-0.0357** (0.0159)	-0.0171** (0.00756)	-0.00109 (0.0114)	0.00534 (0.0196)	-0.00433 (0.0155)	-0.00896 (0.00734)	-0.0296 (0.0191)	-0.0103 (0.0221)	-0.0235 (0.0154)	0.00531 (0.0180)	-0.00988 (0.0147)	0.160 (0.136)	0.00409 (0.0192)	-0.0279** (0.0115)	-0.0317 (0.0231)
Observations	1,024	3,697	2,249	573	846	4,922	501	686	1,404	693	610	67	976	1,807	533
Pseudo R-squared	0.157	0.156	0.200	0.139	0.117	0.173	0.0941	0.145	0.171	0.236	0.166	0.336	0.248	0.169	0.300

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table 1 Probit estimation for boys' participation in school (mfx)

	Malawi 00	Malawi	Mali	Mozambique	Namibia	Niger	Nigeria 03	Nigeria 08	Senegal	Tanzania	Uganda	Zambia	Zimbabwe
Index 1	0.0128*	-0.00587	0.0161***	-0.000109	0.0321	0.00670	0.0279**	0.0253***	5.98e-05	0.0169*	0.0113	0.0151	0.0271
	(0.00714)	(0.00754)	(0.00525)	(0.00760)	(0.0247)	(0.00701)	(0.0110)	(0.00562)	(0.00924)	(0.00903)	(0.00845)	(0.0187)	(0.0193)
Index 2	0.00192	0.000179	0.000298	0.0147***	-0.0214	-0.00175	0.00103	0.00155	0.0166***	-0.00415	0.00520	0.0280**	0.0156
	(0.00554)	(0.00577)	(0.00413)	(0.00571)	(0.0169)	(0.00517)	(0.00820)	(0.00415)	(0.00602)	(0.00714)	(0.00557)	(0.0122)	(0.0127)
self-employed	-0.00106	0.0357	0.0274	-0.0197	0.0433	-0.0164	0.000514	0.0348*	0.0136	-0.120**	-0.00623	-0.0623	0.118*
	(0.0255)	(0.0282)	(0.0221)	(0.0398)	(0.104)	(0.0266)	(0.0401)	(0.0204)	(0.0295)	(0.0479)	(0.0664)	(0.0720)	(0.0607)
employed	-0.296	0.0637	0.0977		-0.427**	-0.137	-0.562***	-0.0393	0.0434		0.0198	-0.164	-0.219
	(0.217)	(0.0718)	(0.113)		(0.185)	(0.148)	(0.157)	(0.0952)	(0.101)		(0.0804)	(0.208)	(0.357)
Mother's age	0.000764	-0.00273	-0.00137	0.00490**	0.00950	-0.00421*	0.000367	0.00595***	0.00462*	0.00312	-0.00340	0.0117**	-0.00345
	(0.00201)	(0.00207)	(0.00180)	(0.00209)	(0.00800)	(0.00215)	(0.00333)	(0.00164)	(0.00279)	(0.00308)	(0.00240)	(0.00580)	(0.00699)
Women's educ.	0.0340***	0.0531***	0.107***	0.0843***	0.132***	0.0425***	0.0416***	0.0810***	0.0960***	0.0526***	0.0830***	0.0577***	-0.00774
	(0.0102)	(0.00986)	(0.0134)	(0.0153)	(0.0305)	(0.0144)	(0.00996)	(0.00523)	(0.0159)	(0.0109)	(0.00989)	(0.0219)	(0.0254)
Women's labor	0.000326	-0.000840	0.00117***	-0.000881	0.00385	0.000786	0.00487***	0.00179***	0.00332***	0.00160*	0.00268*	0.00143	-0.000966
	(0.000625)	(0.000566)	(0.000382)	(0.000769)	(0.00237)	(0.000495)	(0.000909)	(0.000488)	(0.000708)	(0.000891)	(0.00157)	(0.00172)	(0.00118)
age	0.213***	0.221***	0.216***	0.332***	0.0702	0.197***	0.129***	0.120***	0.232***	0.463***	0.203***	0.403***	0.278***
	(0.0261)	(0.0269)	(0.0219)	(0.0298)	(0.0909)	(0.0294)	(0.0400)	(0.0220)	(0.0334)	(0.0366)	(0.0282)	(0.0708)	(0.0756)
age2	-0.887***	-0.937***	-0.913***	-1.366***	-0.367	-0.946***	-0.508***	-0.499***	-1.072***	-1.853***	-0.867***	-1.720***	-1.241***
	(0.107)	(0.110)	(0.0901)	(0.122)	(0.366)	(0.124)	(0.161)	(0.0899)	(0.138)	(0.148)	(0.114)	(0.289)	(0.307)
father's educ	0.0199***	0.00993**	0.0351***	0.0505***	-0.00232	0.0350***	0.0350***	0.0370***	0.0389***	0.0175***	0.0143***	0.00889	0.0134
	(0.00393)	(0.00401)	(0.00432)	(0.00640)	(0.0170)	(0.00624)	(0.00479)	(0.00268)	(0.00663)	(0.00509)	(0.00426)	(0.00965)	(0.00956)
Middle Hh	0.0709	0.0706***	0.113***	-0.0290	-0.181*	0.0369	0.164***	0.209***	0.0241	0.0584*	0.0267	0.198***	0.0932*
	(0.0484)	(0.0231)	(0.0192)	(0.0283)	(0.104)	(0.0260)	(0.0387)	(0.0237)	(0.0358)	(0.0324)	(0.0289)	(0.0636)	(0.0565)
Richest Hh	0.0850	0.0625	0.318***	0.0318		0.304***	0.0650	-0.0422	0.0218	0.145**	0.126***		-0.906***
	(0.0600)	(0.0506)	(0.0359)	(0.0710)		(0.0430)	(0.0902)	(0.0760)	(0.0772)	(0.0642)	(0.0425)		(0.0216)
urban	0.0873**	-0.0153	0.0249	-0.142***	0.0653	0.0417	0.0409	-0.0448	0.0416	0.0397	-0.0443	-0.106	0.288***
	(0.0417)	(0.0620)	(0.0282)	(0.0431)	(0.109)	(0.0426)	(0.0436)	(0.0298)	(0.0392)	(0.0675)	(0.0963)	(0.131)	(0.0420)
Older sisters	-0.0147	0.0174	0.0125	-0.0161	0.0360	0.0223	0.0713***	0.00176	-0.0165	0.0188	0.0253	-0.142***	0.143***
	(0.0166)	(0.0175)	(0.0134)	(0.0188)	(0.0461)	(0.0154)	(0.0267)	(0.0142)	(0.0162)	(0.0208)	(0.0165)	(0.0423)	(0.0403)
Older brothers	-0.0272**	0.0178	-0.00503	-0.0272*	-0.103**	0.0106	0.0201	0.00667	-0.00160	-0.00786	0.0113	-0.125***	0.00255
	(0.0135)	(0.0149)	(0.0106)	(0.0157)	(0.0487)	(0.0128)	(0.0177)	(0.01000)	(0.0142)	(0.0165)	(0.0148)	(0.0390)	(0.0287)
Younger sisters	0.00364	0.0208*	0.00641	-0.00314	-0.00910	-0.0116	-0.00586	0.00550	-0.00534	0.00718	0.00462	0.0473	0.0296
	(0.0116)	(0.0123)	(0.00894)	(0.0124)	(0.0459)	(0.0117)	(0.0186)	(0.00901)	(0.0139)	(0.0148)	(0.0119)	(0.0310)	(0.0284)
Younger brothers	0.0327***	-0.00462	0.00417	0.0135	-0.0272	-0.00220	0.0206	0.0177**	0.0187	0.0118	0.0202*	0.0262	0.00978
	(0.0119)	(0.0125)	(0.00850)	(0.0133)	(0.0484)	(0.0106)	(0.0165)	(0.00870)	(0.0127)	(0.0158)	(0.0116)	(0.0331)	(0.0243)
Observations	1,503	1,407	3,704	1,623	172	2,211	915	3,890	1,616	1,093	1,044	322	199
Pseudo R-squared	0.0956	0.0933	0.155	0.131	0.270	0.145	0.273	0.260	0.136	0.177	0.216	0.211	0.283

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6 Probit estimation for girls' participation in school (mfx)

	Benin	Benin 06	Burkina	Cameroon	Congo	Ethiopia	Ghana	Ghana 03	Guinea	Kenya	kenya09	Lesotho	Liberia	Madag. 09	Madag.
Index 1	0.00910 (0.0121)	0.0145*** (0.00561)	0.0227*** (0.00725)	0.0199 (0.0133)	0.00138 (0.0108)	0.0326*** (0.00613)	0.00111 (0.0159)	0.00791 (0.0123)	0.00594 (0.00826)	0.0140 (0.0154)	0.0310** (0.0139)	-	0.0845*** (0.0248)	0.0302** (0.0130)	0.0224 (0.0199)
Index 2	0.0195** (0.00968)	0.0217*** (0.00415)	-0.00269 (0.00573)	-0.00808 (0.0104)	-0.0177 (0.00943)	0.00156 (0.00411)	0.00512 (0.00949)	0.00673 (0.0110)	0.0273*** (0.00730)	-0.0149 (0.0113)	-0.00540 (0.0104)	-	0.0120 (0.00878)	-0.000246 (0.00658)	-0.0122 (0.0145)
self-employed	0.101 (0.0880)	0.0715* (0.0412)	-0.0287 (0.0546)	0.00606 (0.0642)	0.0258 (0.0546)	0.00673 (0.0326)	0.293** (0.148)	-0.223*** (0.0796)	0.0543 (0.0564)	0.0773 (0.0657)	0.0774 (0.0570)	-	0.0991* (0.0602)	0.0491 (0.0681)	0.0960 (0.0996)
employed	0.207 (0.189)	-0.0176 (0.193)		-0.197 (0.341)	0.265 (0.211)	-0.0628 (0.0635)		-0.111 (0.262)	-0.380*** (0.0649)	-0.475*** (0.155)	-0.0171 (0.193)	-	-0.0892 (0.153)	0.0866 (0.134)	-0.123 (0.301)
Mother's age	0.00466 (0.00400)	-0.00169 (0.00188)	-0.00170 (0.00242)	0.00514 (0.00405)	0.00531 (0.00382)	0.00319** (0.00162)	0.00184 (0.00389)	0.000435 (0.00480)	0.000235 (0.00294)	0.00284 (0.00511)	0.00720* (0.00412)	-	0.00154 (0.00330)	0.000966 (0.00243)	-0.00567 (0.00443)
Women's educ.	0.0526** (0.0223)	0.0540*** (0.0114)	0.123*** (0.0175)	0.0512*** (0.0147)	0.0640*** (0.0135)	0.0969*** (0.0126)	0.0379*** (0.0118)	0.0565*** (0.0133)	0.112*** (0.0214)	0.122*** (0.0183)	0.107*** (0.0156)	-	0.0249* (0.0144)	0.0603*** (0.0116)	0.0873*** (0.0196)
Women's labor	-0.00297 (0.00258)	0.00184** (0.000921)	0.000539 (0.00142)	0.000815 (0.00116)	-0.000774 (0.00116)	0.00214*** (0.000561)	0.00200 (0.00203)	-0.000476 (0.00229)	0.000736 (0.00139)	0.00290** (0.00128)	-0.00190** (0.000897)	-	-0.000925 (0.000980)	0.00257* (0.00147)	0.00167 (0.00221)
age	0.154*** (0.0500)	0.151*** (0.0237)	0.206*** (0.0312)	0.175*** (0.0574)	0.268*** (0.0472)	0.284*** (0.0208)	0.162*** (0.0431)	0.396*** (0.0577)	0.244*** (0.0424)	0.184*** (0.0673)	0.161*** (0.0491)	-	0.571*** (0.0640)	0.215*** (0.0346)	0.227*** (0.0661)
age2	-0.839*** (0.213)	-0.699*** (0.0994)	-0.950*** (0.132)	-0.824*** (0.239)	-1.061*** (0.195)	-1.065*** (0.0851)	-0.707*** (0.170)	-1.635*** (0.240)	-1.056*** (0.182)	-0.863*** (0.280)	-0.722*** (0.198)	-	-2.822*** (0.292)	-1.151*** (0.146)	-1.154*** (0.285)
father's educ	0.0257*** (0.00770)	0.0345*** (0.00362)	0.0280*** (0.00651)	0.0197** (0.00908)	0.0244*** (0.00513)	0.0150*** (0.00400)	0.00753 (0.00496)	0.0148*** (0.00541)	0.0217*** (0.00471)	0.0363*** (0.0101)	0.00811 (0.00664)	-	0.00757* (0.00399)	0.0296*** (0.00578)	0.0295*** (0.0101)
Middle Hh	0.253*** (0.0432)	0.163*** (0.0199)	0.140*** (0.0262)	0.0830 (0.0593)	0.163*** (0.0401)	0.210*** (0.0178)	0.0728 (0.0650)	0.0692 (0.0664)	0.167*** (0.0348)	0.0868 (0.0639)	0.104* (0.0615)	-	0.0346 (0.0488)	0.179*** (0.0322)	0.00699 (0.0620)
Richest Hh	0.306*** (0.0880)	0.205*** (0.0360)	0.256*** (0.0563)	0.339*** (0.0857)	0.114 (0.154)	0.357*** (0.0289)	-0.212 (0.249)	0.122 (0.139)	0.289*** (0.0717)	-0.0189 (0.189)	-0.326* (0.188)	-	0.136* (0.0723)	0.229*** (0.0829)	-0.0808 (0.145)
urban	0.0512 (0.0493)	0.0711*** (0.0222)	0.0302 (0.0559)	0.0771 (0.0613)	-0.183*** (0.0598)	-0.122*** (0.0424)	-0.0788 (0.0979)	-0.0703 (0.0818)	0.153*** (0.0549)	0.0962 (0.0755)	-0.0546 (0.0894)	-	-0.000598 (0.0549)	-0.0268 (0.0805)	-0.0174 (0.0639)
Older sisters	0.0473* (0.0275)	0.0220 (0.0139)	0.0151 (0.0174)	0.0811** (0.0324)	-0.0245 (0.0246)	-0.00825 (0.0112)	-0.0304 (0.0275)	-0.00828 (0.0374)	0.0459* (0.0245)	-0.00603 (0.0346)	0.0222 (0.0285)	-	-0.0500** (0.0246)	-0.00587 (0.0177)	0.0301 (0.0268)
Older brothers	-0.0229 (0.0184)	0.00523 (0.0106)	-0.0236* (0.0133)	-0.0194 (0.0249)	-0.0218 (0.0197)	-0.0144 (0.00914)	0.0406* (0.0244)	0.00555 (0.0309)	-0.00332 (0.0189)	-0.00646 (0.0244)	-0.00125 (0.0232)	-	-0.00803 (0.0226)	0.0159 (0.0147)	-0.0351 (0.0246)
Younger sisters	-0.00980 (0.0203)	-0.0299*** (0.0100)	0.00213 (0.0139)	0.0397* (0.0225)	-0.0267 (0.0177)	-0.00515 (0.00813)	-0.0274 (0.0191)	-0.0648** (0.0259)	-0.0118 (0.0181)	0.00285 (0.0264)	0.00398 (0.0178)	-	-0.000960 (0.0233)	0.00301 (0.0130)	-0.0647*** (0.0235)
Younger brothers	-0.0259 (0.0210)	-0.0179* (0.00969)	-0.0372*** (0.0130)	0.0186 (0.0219)	-0.0149 (0.0176)	-0.00217 (0.00782)	-0.0460** (0.0184)	-0.0684*** (0.0254)	-0.0334** (0.0164)	-0.0589** (0.0246)	-0.0256 (0.0173)	-	-0.0156 (0.0203)	-0.00557 (0.0118)	-0.0590** (0.0231)
Observations	770	3,020	1,852	547	803	4,285	486	544	1,294	538	556	41	877	1,652	504
Pseudo R-squared	0.186	0.165	0.211	0.125	0.120	0.185	0.149	0.184	0.224	0.357	0.222	1	0.248	0.173	0.196

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table 2 Probit estimation for girls' participation in school (mfx)

	Malawi 00	Malawi	Mali	Mozambique	Namibia	Niger	Nigeria 03	Nigeria 08	Senegal	Tanzania	Uganda	Zambia	Zimbabwe
Index 1	-0.00468 (0.00734)	0.00166 (0.00771)	0.0193*** (0.00557)	0.000875 (0.00860)	-0.0226 (0.0272)	0.00336 (0.00695)	0.0351** (0.0137)	0.0355*** (0.00617)	-0.00475 (0.00967)	0.0301*** (0.0102)	0.0228** (0.0106)	0.0410** (0.0191)	0.0162 (0.0250)
Index 2	-0.00131 (0.00562)	-0.00900 (0.00590)	0.00308 (0.00432)	0.0128* (0.00674)	0.00121 (0.0162)	0.00547 (0.00515)	0.00938 (0.0102)	0.00216 (0.00464)	0.0271*** (0.00657)	-0.00933 (0.00760)	-0.00268 (0.00687)	0.0209* (0.0120)	-0.00498 (0.0149)
self-employed	0.00908 (0.0274)	0.0229 (0.0292)	0.0410* (0.0230)	-0.00862 (0.0512)	-0.0269 (0.105)	-0.0485* (0.0267)	-0.0541 (0.0503)	0.0171 (0.0225)	-0.0402 (0.0323)	-0.0525 (0.0564)	0.00441 (0.0827)	0.0699 (0.0771)	-0.269*** (0.0914)
employed	-0.0538 (0.156)	-0.0751 (0.101)	0.0155 (0.134)		-0.262 (0.230)	0.144 (0.182)	-0.563*** (0.132)	-0.125 (0.0995)	-0.126 (0.109)	0.0351 (0.329)	0.00889 (0.129)	0.259*** (0.0648)	
Mother's age	0.00192 (0.00215)	-0.00313 (0.00211)	0.00198 (0.00189)	0.00401 (0.00249)	0.00727 (0.00770)	-0.00415* (0.00218)	6.19e-05 (0.00423)	0.00402** (0.00179)	0.00610** (0.00283)	0.00157 (0.00335)	0.00112 (0.00302)	0.00292 (0.00577)	-0.00360 (0.00825)
Women's educ.	0.0485*** (0.0106)	0.0636*** (0.00959)	0.122*** (0.0129)	0.149*** (0.0177)	0.0874*** (0.0277)	0.0640*** (0.0141)	0.116*** (0.0134)	0.0970*** (0.00580)	0.114*** (0.0169)	0.0756*** (0.0116)	0.0921*** (0.0121)	0.0886*** (0.0252)	0.0874*** (0.0324)
Women's labor	0.000350 (0.000677)	-0.00104* (0.000558)	-0.000378 (0.000414)	0.000190 (0.000955)	0.00438** (0.00193)	0.00130** (0.000509)	0.00568*** (0.00113)	0.00175*** (0.000550)	0.00157** (0.000753)	0.000682 (0.00101)	-0.000609 (0.00213)	0.00149 (0.00169)	0.00310* (0.00168)
age	0.241*** (0.0290)	0.246*** (0.0289)	0.161*** (0.0255)	0.396*** (0.0384)	0.400*** (0.0956)	0.106*** (0.0286)	0.143*** (0.0515)	0.111*** (0.0261)	0.186*** (0.0350)	0.482*** (0.0405)	0.275*** (0.0345)	0.429*** (0.0750)	0.0536 (0.0822)
age2	-1.086*** (0.120)	-1.084*** (0.121)	-0.720*** (0.109)	-1.695*** (0.164)	-1.693*** (0.391)	-0.518*** (0.122)	-0.660*** (0.213)	-0.474*** (0.111)	-0.984*** (0.148)	-1.977*** (0.164)	-1.221*** (0.141)	-1.772*** (0.321)	-0.413 (0.329)
father's educ	0.0204*** (0.00411)	0.00747* (0.00403)	0.0422*** (0.00437)	0.0485*** (0.00721)	0.0470*** (0.0173)	0.0249*** (0.00564)	0.0304*** (0.00560)	0.0322*** (0.00270)	0.0471*** (0.00710)	0.0223*** (0.00558)	0.0285*** (0.00542)	0.0352*** (0.0102)	0.0213* (0.0119)
Middle Hh	0.131*** (0.0438)	0.0687*** (0.0237)	0.0716*** (0.0206)	0.0171 (0.0321)	-0.176* (0.0933)	0.0833*** (0.0274)	0.117** (0.0515)	0.192*** (0.0265)	0.0135 (0.0371)	0.123*** (0.0343)	0.0921*** (0.0335)	0.0123 (0.0726)	-0.000500 (0.0861)
Richest Hh	0.00951 (0.0766)	0.0695 (0.0466)	0.187*** (0.0434)	0.0990 (0.0846)		0.166*** (0.0454)	0.0437 (0.100)	0.140 (0.0923)	0.0810 (0.0764)	0.249*** (0.0527)	0.150** (0.0718)		-0.259 (0.479)
urban	0.120*** (0.0384)	-0.0566 (0.0738)	0.0500* (0.0294)	-0.0758 (0.0489)	0.190** (0.0775)	0.113*** (0.0420)	-0.116** (0.0526)	-0.0721** (0.0293)	-0.0225 (0.0421)	-0.0402 (0.0669)	-0.0333 (0.0992)	-0.283** (0.138)	-0.0966 (0.324)
Older sisters	-0.0141 (0.0174)	0.0151 (0.0175)	0.0227 (0.0141)	-0.0259 (0.0207)	0.129** (0.0584)	0.0497*** (0.0155)	0.0538* (0.0314)	0.0318** (0.0138)	0.0176 (0.0168)	-0.00204 (0.0222)	-0.0189 (0.0208)	-0.0668 (0.0434)	0.0142 (0.0474)
Older brothers	-0.00149 (0.0147)	0.00189 (0.0156)	-0.00227 (0.0107)	-0.0346** (0.0170)	-0.00680 (0.0492)	-0.00288 (0.0128)	0.0292 (0.0206)	-0.000605 (0.0108)	-0.00409 (0.0147)	-0.00953 (0.0177)	-0.0115 (0.0176)	-0.0690** (0.0351)	-0.0327 (0.0425)
Younger sisters	0.000819 (0.0119)	-0.0268** (0.0123)	0.00992 (0.00951)	-0.0150 (0.0155)	0.0208 (0.0401)	-0.0169 (0.0117)	-0.0190 (0.0238)	0.0105 (0.0103)	0.0119 (0.0146)	-0.00482 (0.0156)	-0.00786 (0.0146)	-0.00887 (0.0304)	-0.0515 (0.0370)
Younger brothers	0.0254** (0.0129)	-0.0135 (0.0126)	-0.00124 (0.00936)	-0.0194 (0.0155)	0.0303 (0.0467)	-0.0210* (0.0108)	0.0259 (0.0208)	0.0111 (0.0101)	0.0395*** (0.0137)	0.0134 (0.0161)	0.00210 (0.0147)	-0.0337 (0.0320)	-0.0378 (0.0301)
Observations	1,379	1,349	3,232	1,418	168	1,901	776	3,350	1,501	988	931	308	169
Pseudo R-squared	0.130	0.127	0.158	0.156	0.343	0.148	0.359	0.315	0.166	0.221	0.252	0.228	0.278

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1