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Women's empowerment and educational equity: Analyzing gendered household education expenditures in Cameroon

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Abstract

This study investigates the effect of women's participation in household decision-making on educational inequalities in Cameroon. Drawing on data from the fourth Cameroonian household survey conducted in 2014 (Ecam4) by the National Institute of Statistics, the analysis employs a two-stage Heckman selection model to examine the relationship between women's decision-making power, measured through their educational attainment, and household expenditure on girls' education. The results reveal that the gender of the child significantly shapes the distribution of education spending, with boys often receiving a larger share. While women's involvement in household decision-making shows no significant impact on overall education expenditure across all children, a disaggregated analysis presents a different picture. At the secondary school level, women's participation in decision-making has a positive and significant effect on household spending for girls, suggesting that maternal influence becomes more pronounced as children progress to higher levels of schooling. Moreover, the interaction between women's decision-making power and girls' education expenditure shows that such participation increases investment in girls' education by 17.5%. These findings emphasize that empowering women within households has the potential to reduce gender disparities in education, particularly at the secondary level, where inequalities are often most entrenched. By strengthening women's decision-making role, policymakers can promote more equitable educational investment, ultimately contributing to long-term progress in narrowing gender inequality.

Keywords: Cameroon, Children's gender, Education expenditure, Inequality, Women's bargaining power, Gender disparities in education, Household expenditure, Gender equity in schooling.
JEL Classification: A26; B54; I29.

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Contents

Contribution of this paper to literature

This study contributes to the existing literature by providing evidence on the role of women's decision-making in shaping educational expenditure in Cameroon. The paper's primary contribution is finding that women's participation significantly increases spending on secondary school girls. This study documents a 17.5% rise in girls' education investment.

1. Introduction

Since the work of Schultz (1983); Becker and Romer (1986); Lucas (1988); Barro (1991) and Barro (1996) contemporary economic analysis of human capital investment has been at the heart of growth strategies in most developing countries. Based on the theory of human capital, which was formed by analogy with investment theory, human capital is a material good that can advance and sustain productivity, innovation, and employability (Gurgand, 2005; Kassé, 2003; Lucas, 1988; Romer, 1986). Nevertheless, education remains the linchpin. It is seen as an investment that rational agents seek to make as profitable as possible, in the knowledge of costs, gains, and the probability of access to employment (Becker, 1964; Koissy-Kpein, 2007). The international community has shown a real interest in this subject. Through several declarations and conventions[1] on the "right to education" and the "right to equality", it has made education a fundamental right. Reiterated in the 2000-2015 Millennium Development Goals and the 2015-2030 Sustainable Development Goals, the latter emphasizes in the fourth, fifth, and tenth goals the importance of reducing inequalities within and between countries and ensuring equitable access to quality education for all individuals (United Nations, 2018).

However, many economic analyses (Anderson & Hsiao 1982; Boly, 2017; Pilon, 1995) following the works of Becker (1964) have been based on the unitary model approach, which initially treats the household made up of several decision-makers as a single decision-making cell. This assumes that resources are pooled, that the individuals in the managed household have the same preferences, and that there is a homo economicus individual[2] called the "head of household" who makes the decisions, so that the decisions made within the household are made in such a way that everyone in the household benefits from the same level of well-being. This being the case, the interest of individuals in investing or not in education has been linked not only to the weight of financial constraints but also to the decision-making behavior of the homo economicus individual. Consequently, differential factors of access to education were not only linked to the household environment in relation to the head of household, such as relationship to the head of household, gender of the head of household, marital status, religion, level of education, activity status, type of household, and gender of the child (Pilon, 1995; Wakam, 2003). But also, certain factors linked to social and economic contexts, such as language and insecurity.

However, with recent developments in family economics, particularly the theoretical advances made in the field of household economic representation (Arrow, 1951; Becker, 1981) the evidence has rejected the pooling hypothesis and demonstrated that household resources are not equitably distributed (Amita & Basu, 2006; Borooah & McKee, 1993; Findlay & Wright, 1996; Haddad, Hoddinott, & Alderman, 1994; Haddad & Kanbur, 1990; Lazear & Michael, 1986; Lise & Seitz, 2011). And consequently, educational opportunities within the household. Moreover, some empirical studies on this subject, focusing on children, have found that their well-being depends on their gender and the sharing of "power" within the household (Attanasio & Lechene, 2002; Duflo, 2003, 2006; Gertler & Alderman, 1989; Haddad et al., 1994; Koné, 2002; Lucas, 1988; Lundberg, Pollak, & Wales, 1997; A. R. Quisumbing & Maluccio, 2000; Thiombiano, 2014; Thomas, 1990) and that there is intra-household inequality in the distribution of resources (Bargain, Lacroix, & Tiberti, 2018; Brown, Lacroix, & Tiberti, 2017; Chiappori & Donni, 2006; Fialová & Mysíková, 2021; Klasen & Lahoti, 2021). From there, non-unitary household models have thus been seen to be more appropriate in explaining the living standards gap encountered within households.

In this model, developed from the work of Manser and Brown (1980); McElroy and Horney (1981) and Lundberg and Pollak (1996) the household is seen as a place of multiple interests, implying that the individuals in the household have either non-convergent (non-cooperative or strategic models) or convergent (cooperative or collective models) interests; based on the theoretical postulate that each individual in the household must be characterized by his or her own preferences, and that within the household, a vast majority of economic activity takes place and an inestimable number of decisions are made concerning: labour force participation, education, spending, resource accumulation, investment, marriage, and fertility (Chiappori & Donni, 2006; Donni, 2011). Based on this approach, studies in both developed and developing countries have shown that women's participation in household decision-making has positive effects on the well-being of the household and children in particular (Adhikari, 2015; Duflo, 2012; Gnoumou, 2014; Haddad, Hoddinott, & Alderman, 1997; Qian, 2008; Quisumbing, 2003; Yusof, 2015).

And not only the concept of women's empowerment, which is generally understood as women's ability to formulate, negotiate, and realize their preferences, has thus been highlighted (Ghuman, Lee, & Smith, 2006; Smith, Ramakrishnan, Ndiaye, Haddad, & Martorell, 2003). But also, women's perception of the opportunity cost of their children, which may not be the same for boys and girls. Moreover, despite the growing number of studies on women's empowerment and children's well-being (infant mortality, health, and nutrition), little research has examined the association between women's empowerment and children's education. Research using various measures of women's status, such as women's share of household income, their level of education, or the fact that they are heads of household, has shown that women's status has positive effects on school enrollment. And furthermore, it leads to reduced inequalities in spending on education between girls and boys within a household (Afridi, 2010; Alderman & King, 1998; Xiaohui Hou, 2016; Luz & Agadjanian, 2015; Saleemi & Kofol, 2022).

That said, despite all that has been done, the unitary model has proved inadequate in explaining analyses based on "gender" (Chiappori & Donni, 2006; Chiappori & Meghir, 2015; De Vreyer & Lambert, 2018; Koissy-Kpein, 2007). Particularly regarding inequalities in access to children's education and the decision-making process regarding investment in education within households, the collective model approach aims to address this shortcoming by assisting in the implementation of economic policies targeted at individuals and gender (Echeverría, Menon, Perali, & Berges, 2019).

[1] The 1948 Universal Declaration of Human Rights, article 26, and the 1989 International Convention on the Rights of the Child, article 28.
[2] A homo-economicus individual performs a cost-benefit calculation to maximize household utility and make efficient use of household resources.

This is because, despite the significant progress made following the various programs set up to promote quality education for all and to reduce gender inequalities, inequalities in access to education are still being felt around the world. Some 258 million children, adolescents, and young people are not in school (UNESCO Institute for Statistics, 2019). And in Africa, particularly Sub-Saharan Africa, discrimination based on gender, geographical isolation, wealth, disability, and religion continues to accentuate inequalities in education. In 2000, these inequalities represented around 24% of the world's population. By 2018, they had risen to 38%. And because of the incidence of extreme poverty, inequality, and the recent health crisis, the net out-of-school rate for children, teenagers, and young people of primary and secondary school age continues to rise. That is, 31% in 2018 and over 40% in 2022 (UNESCO Institute for Statistics, 2019, 2022). And where the risk of being excluded from the education system continues to grow for these disadvantaged people.

In the light of the above, and within the context of Cameroon, where these educational inequalities are felt (Figure 1), Our aim in this study, while highlighting the collective model approach, is to examine whether, in households where women participate in decision-making, educational expenditure affects the decision-making process in terms of investment in education. More specifically, we want to examine whether the intra-household distribution of education expenditure between boys and girls depends on women's bargaining power. To this end, this paper will be organized according to four points. In section 2, a literature review will present the theoretical principles of demand within the framework of the "unitary" model, then the "collective" model, and an empirical review of the study. Section 3 describes the study's methodological framework. Section 4 presents and discusses the main results. Section 5 concludes.

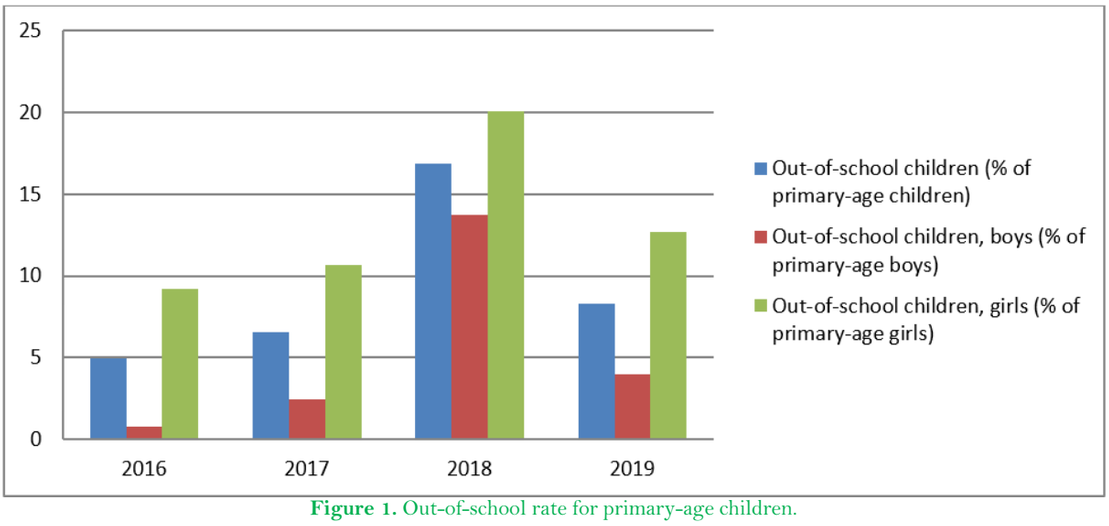

Figure 1. Out-of-school rate for primary-age children.

2. Literature Review

2.1. Demand for Education in the Collective Model

Children's schooling is an investment in human capital, determined by the decision to send their children to school and the incentives parents must bear the costs (Pilon, 1995). Households spend on education when they expect returns on education in the form of wages or income earned in the future. Households therefore, invest in children's education if the return on investment exceeds the costs. However, labor market conditions may differ for men and women. This means that returns on investment in education for boys and girls vary.

In the collective (or cooperative) model, consumption expenditure assumes that resource allocation within the household is Pareto-optimal. The household's objective function is then written as a weighted sum of individual utilities. Following the model developed by Browning and Chiappori (1998) we consider a household with two individual decision-makers: a man(h) and a woman(f) whose respective utility functions are u_h and u_f . These functions depend respectively on the consumption of strictly private goods by the man,C_h , and the woman,C_f , and on the consumption of public goods M. Here, we will assume that the education of children is considered a public good for the spouses insofar as consumption by one does not alter that of the other. We also assume that everyone's utility depends on his partner's consumption of goods. This introduces a very general form of altruism, but also externalities in consumption (Chiappori & Donni, 2006). Thus, we can write:

$$U_i = U(C_h, C_f, M) \quad (1)$$

With $i = h, f$

$$Max\varphi * U_f(q_f, q_h, M) + (1-\varphi) * U_h(q_h, q_f, M) \quad (2)$$

With$0 \leq \varphi \leq 1$;φ the woman's bargaining power and$(1-\varphi)$ the man's bargaining power.

2.2. Exploring The Impact of Women's Empowerment on Educational Equity: A Review of Gender Dynamics and Household Decision-Making

In the 1980s, the question of access to education became the focus of attention in the context of the analysis of educational demand (De Vreyer, Lambert, & Magnac, 1996). And the studies that have tackled it have done so along the lines of how school systems function. In particular, the evolution of school enrolments (by level and by gender) and the evaluation of the system's internal performance (dropouts, repetition, exam success rates, etc.). However, these statistics were silent on the individual and family characteristics of pupils. This was because they were based on the unitary household model approach and concerned only children in school, thus ignoring all those who were not or were no longer at school. As a result, they were in no way able to address the question of educational demand at family level, and in terms of family determinants of schooling (Pilon, 1995). But in the 90s, with the growth of studies devoted to the demand for education and especially following the works of Becker (1981), which analyzes the

behavior of individuals in decision-making processes, while emphasizing the rational behavior of everyone. Most studies have focused on the problem of under-schooling, particularly among girls.

Indeed, because women today are more educated than they were decades ago, and education is considered one of the determinants of women's decision-making within the household (Albert & Escardíbul, 2017; Gnoumou, 2014; Rashid & Islam, 2012). Studies carried out across different countries have shown how improving women's access to household resources and participation in household decision-making has enabled them to make important choices. Furthermore, it has increased their empowerment (Alkire et al., 2013; Prata, Sreenivas, & Gerdts, 2017; Pratley, 2016; Upadhyay, Gipson, & Hindin, 2014).

However, research highlighting the relationship between schooling and gender has shown that several factors on both the supply and demand sides could be at the root of the discrimination observed in favor of female children within a household. Moreover, since recent developments in family economics, the relationship between women's empowerment, their decision-making within the household, and children's well-being has been widely debated in the literature (Fremeaux, 2013; Hentati, 2015). And several studies have shown how women's participation leads to changes in household consumption expenditure shares, especially in favor of children's well-being in terms of health, access to education, and nutrition (Afridi, 2010; Prata et al., 2017; Pratley, 2016; Soiliou & Roushdy, 2009). However, a controversy has arisen in the literature about whether, if women were able to make more decisions within the household, they would make decisions aimed at reducing observed gender inequalities in terms of access to education, nutrition.

As it happens, some studies carried out (Koissy-Kpein, 2007; Malapit & Quisumbing, 2015; Mansuri, 2006; O'Hara & Clement, 2018; Saleemi & Kofol, 2022; Vaz, Pratley, & Alkire, 2015) have shown that women's bargaining power, even when favorable to educational investment, does not necessarily lead to a redistribution in favor of girls and therefore has no effect on reducing inequalities in access to education.These include studies by Mansuri (2006) in Pakistan. Where, after demonstrating the positive effects of temporary economic migration by low-skilled workers from developing to industrialized countries on human capital accumulation, she found a very significant reduction in gender inequalities in access to education. She found that in female-headed households, there was no protective effect on girls' school performance. On the contrary, she found that being headed by a woman seemed to protect boys to the detriment of girls.

Koissy-Kpein (2007) who starts from the framework of a "classic" household, made up of father, mother, and children (girls and boys), bases his analysis on a logic rooted in the life cycle and proposes several hypotheses. Firstly, he assumes that everyone in the household lives in two periods: adulthood and retirement for parents, and childhood and adulthood for children. Secondly, assuming that there is a parent-child contract such that, in the first period, altruistic parents have an income that they devote to consumption and investment in their children's human capital, and in the second period, parents who have left the labour market benefit from financial transfers, the greater the educational investment received in the first period. Thirdly, by assuming that within the household, there are two types of goods: private goods assimilated to parental consumption and public goods linked to the quality of children or to their capital investment. And fourthly, educational investment depends solely on household resources. Consequently, the analysis is based on the absence of school credit. Furthermore, Heckman (1979) two-stage estimation procedure enabled him to identify both the elements that motivate participation and those that motivate spending decisions, and Blundell and Smith (1986) procedure to remedy the correlation problem that may exist in the model. Their empirical analysis, based on surveys in Ghana, Guinea, and Côte d'Ivoire, shows that the bargaining power of mothers, even when favorable to educational investment, does not necessarily lead to a redistribution in favor of girls.

Also, some works felt that there was insufficient evidence to support the confirmation that women's empowerment, measured by their participation in household decisions, reduces gender inequalities (Saleemi & Kofol, 2022). These include Vaz et al. (2015) and O'Hara and Clement (2018) who have in their studies shown how women who have been discriminated against might, in turn, discriminate against or not favor other girls and women in their decisions. And consequently, do not reduce gender inequalities. These studies join that of Malapit and Quisumbing (2015) carried out in the context of Northern Ghana; Quisumbing and Maluccio (2003) in the context of Ethiopia, who showed a negative effect of women's bargaining power on girls' education spending.

Moreover, Subramanian and Deaton (1991); Lancaster, Maitra, and Ray (2008); Azam and Kingdon (2013) following the work of Kingdon (2005); Khan (2008); Aslam (2009); Aslam and Kingdon (2008); Zimmerman (2012); Jayasundera (2012) and Nordman and Sharma (2016) have all shown that there is a bias in favour of men in education spending across age groups that differs by location and ethnicity, and furthermore these biases believe with age.

In addition, several studies have revealed the positive effect of women's participation in decision-making on reducing inequalities in access to education. These include studies by Afridi (2010) in India. Whereby apprehending the measure of women's empowerment based on their level of education and independence showed that the empowerment of mothers is associated with a reduction in the gap in the standard of living that exists between their sons and daughters. On the other hand, he found that improving the education of both father and mother increased the educational level of girls more than boys. And that an increase in the mother's level of education is associated with a marked reduction in the difference in educational attainment between sons and daughters.

In the same vein, Keita (2011) analyzed the impact of women's bargaining power on education spending in Mali. His starting point was the fact that, in terms of household decision-making, the unitary model and the collective model are the subject of much debate in the literature regarding their relevance and realism. Within the framework of the collective model, he tested the hypothesis that the bargaining power associated with individuals in the household has no effect on the structure and distribution of educational expenditure within the household. However, his results showed that women's decision-making power had a significantly different influence on education spending than men's. Keita therefore questioned the validity of this hypothesis. As a result, Keita has questioned the relevance of the unitary model in the analysis of household expenditure choices relating to investment in children's human capital.

Luz and Agadjanian (2015) in Mozambique show that women's decision-making autonomy is positively associated with the probability of girls' enrolment in elementary school. Furthermore, Saleemi and Kofol (2022) in their study carried out in Pakistan, test in the context of Pakistan, on a sample of children of primary school age (5-10 years) and secondary school age (11-16 years) and using (Heckman, 1979) selection method whether households where women participate in decisions concerning children's education leads to reduced inequalities in spending on

education between boys and girls in the household. And they find that in households where women participate in decision-making, a higher share of education expenditure goes to girls when the distance to school is not long.

Nordman and Sharma (2016) in India, using a collective household model that endogenizes women's bargaining power, assess the effect of women's bargaining power on the share of education expenditure in the household budget. Find that women's bargaining power has a positive and significant effect on the share of the household budget devoted to education. It is positively (negatively) associated with education expenditure in urban (rural) areas. Depending on the different ethnic groups in urban areas, they also find a positive effect of women's bargaining power on girls' education spending, and a negative effect in rural areas. This result is in line with those of Menon, Van Der Meulen Rodgers, and Nguyen (2014) in Viet Nam; Rangel (2006) who, in Brazil, shows a positive effect of women's bargaining power on education spending by first-born girls; Quisumbing and Maluccio (2003) in Bangladesh show a positive effect on girls' spending and Xiaohui Hou (2016).

3. Methodology

3.1. Study Data and Variables

3.1.1. Nature and Sources of Data

The data used in this study originate from the fourth Cameroon Household Survey (ECAM 4). They were collected by the National Institute of Statistics (INS) through a questionnaire comprising 17 sections, two of which were optional. This database (BD) is subdivided into three parts: an ECAM-Household BD, which includes only the Head of Household (CM); an ECAM-Individual BD, which considers each household member; and an ECAM-Product BD, providing detailed information on how products are acquired by each household and the total amount spent on each product. Since one of the specific features of the collective model is the integration of each household member in decision-making processes within the household, the ECAM-Individual database will be used in our analyses. There are three reasons for this choice: first, this database allows us to identify the individual characteristics of each household member (residence status, gender, age, relationship with the head of household, marital status, etc.); second, it provides information on annual or daily expenditure by consumption item (health, education, rent, etc.) and by individual; third, it offers detailed information on the expenditure of each individual within the household, including expenditure on both public and private consumer goods.

Thus, our study is based on a sample of individuals living in households with children attending school. With a database of 46,559 individuals living in 10,303 households, made up of 48.91% males and 51.09% females, and a predominantly young population with an average age of 23, 15,805 individuals living in 6,353 households were identified as having the characteristics of the study sample, compared with 30,754 individuals living in 3,950 households with children not attending school (see Table A1). However, only primary and secondary school children will be included in the specificity analyses. Here, we define out-of-school children as those not attending school but of school age. Table A1 presents reasons for school non-attendance by age group. Younger children (0–5 years) are mostly out of school for being too young, while among ages 5–18, cost, illness, and distance are key factors. For adults (18+), tradition, employment, and "other reasons" dominate, especially beyond 23 years.

Table A2 shows school attendance by gender and education level. Boys slightly outnumber girls across all levels, with the largest gap at primary. Overall, 8,162 boys and 7,642 girls are enrolled, indicating relatively balanced but male-leaning participation. Also, according to gender, we note that girls are systematically more disadvantaged than boys. In particular, 16,127 female children compared with 14,591 male children.

Nevertheless, three types of households were identified in the database. These are unipersonal households, single-parent households, and nuclear households, which are made up of either a male spouse or a female spouse[3] or one, two, three or four female spouses. We note that the study sample includes more than 50% of monogamous nuclear households. That is, 56.65%. Also, many households are headed by a man. That is over 71.1%. However, in this study, children considered to be participants in the education system are those with education expenses greater than 0. These expenses will be observable only in households whose parents are willing to participate in their children's schooling.

[3] The household structure was only observed in polygamous households where the wife was considered the head of household.

Table 1. Descriptive statistics for the study sample.

Variable	Observation	Frequencies	Percentage	Mean	Std. Dev.	Min.	Max.
Presentation of the study sample							
Sex							
Male	46553	22768	48.91	0.489	0.5	0	1
Female	46553	23785	51.9	0.511	0.5	0	1
Age	46559	-	-	22.667	18.995	0	99
Age group							
[0-3]	46559	4070	8.74	0.087	0.282	0	1
[3-5]	46559	4561	9.80	0.098	0.297	0	1
]5-11]	46559	7989	17.16	0.172	0.377	0	1
]11-18]	46559	7251	15.57	0.156	0.363	0	1
]18-23]	46559	4242	9.11	0.091	0.288	0	1
[23 and +]	46559	18446	39.62	0.396	0.489	0	1
Household characteristics							
Household size	46559	10303	22.13	0.221	0.415	0	1
Number of households with children in school	10303	6353	61.66	0.617	0.486	0	1
Gender of child attending school							
Girls in school	15805	7643	48.36	0.483	0.5	0	1
Boys in school	15805	8162	51.64	0.516	0.5	0	1
Children in school (Yes=1)	46559	15809	100	0.34	0.474	0	1
Individuals enrolled by age group							
Individuals aged [0-3]	15809	3	0.01	0	0.014	0	1
Individuals aged [3-5]	15809	1398	3.00	0.088	0.284	0	1
Individuals aged [5-11]	15809	6568	14.11	0.415	0.493	0	1
Individuals aged [11-18]	15809	5784	12.42	0.366	0.482	0	1
Individuals aged [18-23]	15809	1859	3.99	0.118	0.322	0	1
Individuals aged [23 and +]	15809	197	0.42	0.012	0.111	0	1
Individuals enrolled by level of education and age group							
Individuals aged [0-3] preschoolers	15808	3	0.01	0.000	0.014	0	1
Individuals aged [3-5] preschoolers	15808	844	1.81	0.053	0.225	0	1
Individuals aged [3-5] in primary school	15808	554	1.19	0.035	0.184	0	1
Individuals aged [5-11] preschoolers	15808	125	0.27	0.008	0.089	0	1
Individuals aged [5-11] enrolled in primary school	15808	6108	13.12	0.386	0.487	0	1
Individuals aged [5-11] enrolled in junior high school	15808	334	0.72	0.021	0.144	0	1
Individuals aged [11-18] in primary school	15808	1725	3.70	0.109	0.312	0	1
Individuals aged [11-18] enrolled in junior high school	15808	3155	6.78	0.2	0.4	0	1
Individuals aged [11-18] enrolled in upper secondary school	15808	864	1.86	0.055	0.227	0	1
Individuals aged [11-18] in higher education	15808	40	0.09	0.003	0.05	0	1
Individuals aged [18-23] attending primary school	15808	35	0.08	0.002	0.047	0	1
Individuals aged [18-23] enrolled in junior high school	15808	375	0.81	0.024	0.152	0	1
Individuals aged [18-23] enrolled in upper secondary school	15808	1020	2.19	0.065	0.246	0	1
Individuals aged [18-23] in higher education	15808	429	0.92	0.027	0.162	0	1

Variable	Observation	Frequencies	Percentage	Mean	Std. Dev.	Min.	Max.
Individuals aged [23 and +] enrolled in junior high school	15808	20	0.04	0.001	0.036	0	1
Individuals aged [23 and +] enrolled in upper secondary school	15808	72	0.15	0.005	0.067	0	1
Individuals aged [23 and +] with tertiary education	15808	105	0.23	0.007	0.081	0	1
household type							
One-person household	46559	1872	4.02	0.04	0.196	0	1
Single-parent household	46559	12972	27.86	0.279	0.448	0	1
Nuclear household	46559	31715	68.12	0.681	0.466	0	1
household type by marital status							
One-person household	46559	1872	4.02	0.04	0.196	0	1
Single-parent household	46559	12972	27.86	0.279	0.448	0	1
Nuclear household with a male spouse	46559	818	1.76	0.018	0.131	0	1
Nuclear household with a female partner	46559	26377	56.65	0.567	0.496	0	1
Nuclear household with two female spouses	46559	3343	7.18	0.072	0.258	0	1
Nuclear household with three wives as partners	46559	845	1.81	0.018	0.133	0	1
Nuclear household with four wives as partners	46559	332	0.71	0.007	0.084	0	1
Gender of head of household							
Male head of household	10303	7323	.711	0.711	0.453	0	1
Female head of household	10303	2980	.289	0.289	0.453	0	1
Gender of spouse of head of household							
Male spouse of household head	5900	137	0.29	0.023	0.151	0	1
Spouse of head of household	5900	5763	12.38	0.977	0.151	0	1
Sex of head of household educated	.						
Male Head School-educated household	10303	218	0.47	0.711	0.453	0	1
Female head of household	10303	102	0.22	0.289	0.453	0	1
Gender of spouse of head of household educated							
Male spouse of Head of Household educated	5900	-	-	0.023	0.151	0	1
spouse of the Head of Household in school	5900	80	1	0.977	0.151	0	1
Activity income per individual	46559	-	-	21311031	4.744	0	2.000
Household income	46559	-	-	1.493	1.531	0	3.000

Thus, out of a total of 15,809 children enrolled in school, we still note a bias in favor of men, with 8,162 boys enrolled versus 7,643 girls. However, these reasons and findings do not point us in the direction of factors that might explain the existence of gender gaps in education spending.

3.1.2. Variable Definition

Table 1 shows the descriptive statistics of the study variables. In this study, to test whether households where women participate in child-rearing decisions incur more equal expenditure on boys' and girls' education, three types of variables will be addressed at this level. Firstly, the dependent variable is represented here by "education expenditure." The choice of this variable is due to the objective of this study, which is to examine whether the intra-household distribution of education expenditure between boys and girls depends on women's bargaining power, thus necessitating education expenditure. This variable is made up of the amount of enrollment fees, school fees, PTA/PTA fees, and others. According to official school ages by education level in Cameroon, children aged 4 to 5 are considered to be enrolled in pre-primary education; children aged 6 to 11 are considered to be enrolled in primary education; children aged 12 to 18 are considered to be enrolled in secondary education; and children aged 19 to 23 are considered to be enrolled in tertiary education (UNESCO Institute for Statistics, 2022).

Education expenditure is a function of the class attended, the school and socio-economic factors on the one hand, and parents' motivation to participate in their children's schooling on the other, as highlighted by Patel, Saxena, and Kumar (2007). And we find in the database that education expenditure is greater than zero, representing children in school, and education expenditure is equal to zero for children of school age who are not in school, and children who have never been to school. However, the logarithm of education expenditure will be used in this study.

Secondly, the independent variable whose main variable used is the woman's bargaining power. Given the overlapping nature of the keywords (opportunity, choice, control, and power), a diversity of viewpoints develops around the concept of women's empowerment. It most often refers to women's ability to make decisions and influence their own well-being and that of their families (Malhotra, Schuler, & Boender, 2002). This definition is in line with that proposed by Kabeer (2001) who suggests that women's empowerment refers to the development of individuals' ability to make strategic life choices in a context where this ability was previously denied to them. In this study, women's participation in household decision-making is used as an indicator of empowerment. There are several reasons for this choice. These include: the difficulties encountered when using indirect measures, which make it difficult to separate the causal factors and consequences of empowerment (Branisa, Klasen, & Ziegler, 2013; Ferrant & Tuccio, 2015; Saleemi & Kofol, 2022; Sundström, Paxton, Wang, & Lindberg, 2017); and because studies have consistently found that three factors, including women's participation in the labor market, women's education and household decision-making, influence women's empowerment (Phan, 2016).

So, it turns out that the distribution of household decision-making power often reflects a balance of power within the household and has important implications for the well-being of household members (Haddad & Potvin, 2008; Lamidi, 2016). Indeed, in literature, two types of measurement have been proposed as indicators of women's decision-making power. Direct measures, captured from a set of questions that were asked to women (Allendorf, 2007; Connelly, Roberts, & Zheng, 2010; Hou, 2015; Hou & Ma, 2012; Mabsout & Van Staveren, 2010). And indirect measures including several indicators have been used to capture women's decision-making power (Branisa et al., 2013; Ferrant & Tuccio, 2015; Sundström et al., 2017). Thus, Basu (2006) and Doss (2013) uses the woman's level of education relative to that of the man as an indicator of decision-making power. Quisumbing (1994) and Thomas, Contreras, and Frankenberg (1999) propose the proportion of assets contributed by the woman at marriage. Frankenberg and Thomas (2001) consider the social status of the woman's parental family. However, the most criticized measure is that proposed by Hoddinott and Haddad (1995); Lancaster, Maitra, and Ray (2004); Koissy-Kpein (2007) and Yusof and Duasa (2010). It refers to the share of women's income in total household income.

Given that we do not have direct questions in our database that capture women's participation in household decision-making, and that the indicator "share of income" has been criticized as a measure in developing countries on the grounds that most women in these countries would have bargaining power equal to their income-generating activities due to their limitations in such activities (Basu, 2006). So, in this study, the indicator used to measure women's empowerment is "level of education". Yet this variable is seen as a factor influencing women's participation in decision-making within the household (Gnoumou, 2014). And it has been proven in the literature that consumption decisions frequently include measures of women's education. For educated women, it is thought that they consume different goods and categories of goods than uneducated women. Additionally, education affects a woman's external possibilities and, therefore, her bargaining power.

But then again, it has been shown that the higher a woman's level of education relative to that of the man, the greater her chances or possibilities of making decisions within the household (Afridi, 2010; Doss, 2013; Gnoumou, 2014). Thus, on this basis, we generated a dummy variable "woman's bargaining power" which takes the value 0 when the woman (female head of household or female spouse) has a lower level of education than the man, and 1 if the woman has a level of education equal to or higher than that of the man. In total, 76.26% of women were identified as having bargaining power, and it turns out that women likely to have more bargaining power are found in monogamous nuclear households (see Table A3).

And then, to observe the relevance of our "bargaining power" variable (see Table A4), a correlation analysis was carried out between the "bargaining power" variable and the factors that determine women's participation in household decision-making. These include age; education; father's education; economic activity; individual income from economic activity; socio-professional category; place of residence; and household standard of living (Gnoumou, 2014; Jayasundera, 2012; Lamidi, 2016; Thomas & Frankenberg, 2003). Table A4 presents the proportion of women with bargaining power across different household types. The results indicate that women in single-parent households (23.71%) and nuclear households with a female partner (39.02%) are more likely to have decision-making power compared to those in one-person (3.72%) or male-partner households (1.24%). Overall, bargaining power is highest in nuclear female-partner households (56.65%).

And from the results Table 2, we find that bargaining power is significantly correlated at 10% with income, age, place of residence, socio-professional category, and significantly uncorrelated with father's education. It is uncorrelated and insignificant with standard of living.

Table 2. Correlation analysis of bargaining power.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Trading power	1.000						
(2) Individual income	0.003	1.000					
	(0.563)						
(3) Age	0.039*	0.039*	1.000				
	(0.000)	(0.000)					
(4) Place of residence	0.054*	0.000	-0.010*	1.000			
	(0.000)	(0.915)	(0.028)				
(5) Standard of living	-0.003	-0.002	-0.004	-0.202*	1.000		
	(0.497)	(0.667)	(0.334)	(0.000)			
(6) Socio-professional category	0.045*	-0.021*	-0.140*	0.317*	-0.086*	1.000	
	(0.000)	(0.003)	(0.000)	(0.000)	(0.000)		
(7) Father's education	-0.248*	-0.018	-0.268*	-0.203*	0.042*	-0.206*	1.000
	(0.000)	(0.124)	(0.000)	(0.000)	(0.000)	(0.000)	

Note: - Standard errors in parentheses, * p<0.1 respectively are the significant levels at 1%, 5% and 10%.

And finally, as control variables, we will briefly consider: household income, which is a factor determining children's enrollment in school; household size; number of children enrolled in the household; sex ratio[4] of children enrolled in the household, which seeks to capture the sex ratio of children enrolled in school; place of residence, which generally reflects special inequalities, as it is a factor affecting individuals' chances of gaining access to an organization of production and the equitable distribution of goods in the national space; the household's standard of living (poor or non-poor); the gender of the head of household; the number of children in the household; age; the number of members of the household who work; the religion of the head of household; the parents' occupational status (working or non-working); the family relationships, which are factors influencing the decision to send children to school; and the type of household, which informs us about the structure of the household (monogamous or polygamous family).

As for the selection variables, we could have simply used the reasons given for not sending children to school. However, due to the lack of information in the database to capture these reasons, we opted for other variables that can influence the decision to send a child to school. These include kinship, household type, household income, and household size. The choice of the kinship variable was made under the Pareto-efficient hypothesis of the managed collective model. Where Gupta (2017) demonstrates the inefficiency of the Pareto hypothesis in consumption (expenditure) decisions of households with other related individuals. For the household type variable, in family economics this variable is found to be determinant in children's spending decisions. Marital status has been shown to play an important role in children's household spending (DeLeire & Kalil, 2005; Hentati, 2015; Manning & Lichter, 1996). Household income is recognized as the variable that influences the decision to send children to school within the household (Pilon, 1995).

3.2. Estimation Technique

Finally, to analyze the effects of women's participation in decision-making on education spending on girls and boys, we will first estimate a selection model to limit the selection bias arising from the fact that the phenomenon under study is observed under certain conditions[5] . Thus, using the two-stage estimation procedure proposed by Heckman (1979) which will enable us to identify both the elements that motivate participation in schooling and those that motivate educational expenditure decisions, and consider the possibility of correlation between the unobservable terms of the participation equation and the expenditure equation. We will therefore formalize the econometric equation itself, which will enable us to determine whether women's bargaining power influences education spending in favor of girls.

Given our context and our database, three types of equations will be formalized. One provides an overview of the relationship between bargaining power and expenditure on children's education at all levels. The second pertains to expenditure on primary-school children. The third concerns spending on children in secondary school (lower secondary and upper secondary). In contrast to studies that focus solely on official ages to estimate educational attainment, this study focuses exclusively on children's educational attainment. This choice is due to our database including children of different ages by level of education. Furthermore, by focusing our analyses on official ages by level of education in Cameroon, our sample will be reduced by more than 50% from an estimated study sample of 15,804 school-going individuals.

According to Heckman's selection equation. We assume that in a household t parents decide to spend $Depeduc_i$ on the child's schooling i given by the equation:

$$Depeduc_{i,t,j} = \rho_1 X_t + \rho_2 C_{i,t,j} + \rho_3 Typemenage_t + \rho_4 Lien\_parenté_t + \rho_5 \text{lnrevenu} + \rho_6 \text{Membre\_actifmenage} + \varepsilon_t \quad (1)$$

With X_t the socio-demographic characteristics of the t household (household size, number of children in the household, parents' employment status, religion of the head of household, area of residence, household standard of living, sex ratio of girls to boys in the household, number of working members of the household, sex of the head of household); $C_{i,t}$ the socio-demographic characteristics of the child i in the household t (age, sex,); $Typemenage_t Lien\_parenté_t$ lnrevenu and Membre_actifmenage represent respectively the type of household, the child's relationship, the logarithm of household income and the number of active members in the household t . Of these four variables, household type and child relationship are uncorrelated with each other (Table A5) but are all

[4] The sex ratio is represented here as the ratio of school-going boys to school-going girls in a household, multiplied by 100. A value of over 100 would mean that more boys than girls attend school in the household. And less than 100 means that, within the household, more girls than boys attend school.
[5] For our dependent variable (education expenditure), missing values represent either school-age children who are not in school, or children who have never been to school.

more correlated with the motivation to participate in schooling than with the decision to spend on education. And ε_t the error term, which follows a normal distribution N (. σ1).

On the other hand, considering the probability of schooling in our selection equation, there are two possibilities given by Equation 2.

$$Depeduc_{i,t,j} = \begin{cases} Depeduc_{i,t,j}=\rho_1 X_t+\rho_2 C_{i,t,j}+\rho_3 Typemenage_t+\rho_4 Lien\_parenté_t+ \\ \rho_5 \text{lnrevenu} +\rho_6 \text{Membre\_actifmenage} + \varepsilon_t>0 \\ Depeduc_{i,t,j}=\rho_1 X_t+\rho_2 C_{i,t,j}+\rho_3 Typemenage_t+\rho_4 Lien\_parenté_t+ \\ \rho_5 \text{lnrevenu} +\rho_6 \text{Membre\_actifmenage} + \varepsilon_t\leq 0 \end{cases} \quad (2)$$

With $Depeduc_{i,t} = 1$ if the parent participates in the child's schooling. And $Depeduc_{i,t} = 0$ if the parent is not involved in the child's schooling.

However, according to the education expenditure of each child and the education expenditure of girls, we find that the variables kinship ties; single-parent households; households in which men are considered spouses; and monogamous nuclear households are positively correlated and significant at the level of single-parent households. Additionally, the decision to spend on education is favorable on the one hand to children and girls living in single-parent households; unipersonal households (female heads who attend school); households where men are considered spouses; and monogamous nuclear households, and on the other hand to children and girls who are related to the head of household (Tables A5 and A6). In contrast to the decisions concerning boys' education expenditure, the variables kinship; single-parent households; households with male spouses; and monogamous nuclear households are found to be uncorrelated and significant in single-parent households. More specifically, boys in these households are found to be disadvantaged and much more expressive in single-parent households (Table A7).

To this end, educational expenditure is only observed when the child is participating in the schooling system. Given that children of different ages are found at different levels of education, the econometric equation considers the index, which captures the level of education. Then, following the model developed by Saleemi and Kofol (2022) the equation itself, which captures the effects of women's participation in decision-making on education spending, is given by Equation 3.

$$Depeduc_{i,t,j}(Depeduc = 1) = \beta_0 + \beta_1 fille_{i,t,j} + \beta_2 \theta_{M,t} + \beta_4 \theta_{M,t} * fille_{i,t,j} + \beta_5 X_t + \beta_6 C_{i,t,j} + \mu_t \quad (3)$$

With the variable sex of children in school, which is a dummy variable that is either girl or boy; the coefficient estimate β_4 which captures the impact of women's participation in decision-making on girls' education expenditure; $\theta_{M,t}$ captures the woman's bargaining power; $C_{i,t,j}$ are the characteristics of the child i of educational level j and living in the household t ; X_t the socio-economic characteristics of the household, t μ_t the error term and $j = 1,2,3$ assuming that we will have at the end 3 equations of the econometric Equation 3.

4. Results and Discussion

As per the result, the first line of Table 3 shows that the gender of the child in school has a significant effect on the distribution of education expenditure within the household, and that girls who are generally in school receive a 23.9% lower share of education expenditure than boys who are in school. By level of education, we find that unlike secondary-school girls, primary-school girls receive lower shares of education expenditure than boys. That is, 36.3% versus 10.9% respectively. What's more, when we estimate the effect of women's bargaining power on the share of education expenses for all children in school (primary, secondary, and tertiary), we find that women's involvement in household decision-making had no significant effect on the distribution of children's education expenses. But when we estimate the results separately for primary and secondary school children, we find that women's involvement in household decision-making had significant effects on education expenditure.

When analyzing the relationship between women's bargaining power and the sex of the child enrolled in school, we assessed the effect of women's participation in decision-making on household expenditure shares for girls' education. Overall, women's participation in household decision-making has a positive and significant effect at the 10% level on girls' share of education expenditure. This indicates that women's involvement in decision-making increases girls' share of education expenditure by 17.5%. By level of education, we find that for primary school children, women's involvement increases girls' share of primary school expenditure by 26.9%. Conversely, for secondary school children, women's involvement in household decision-making was not favorable to secondary school girls; instead, it resulted in a 10.1% increase in the share of secondary school boys. These results further explain the findings related to the sex ratio. A positive and significant sex ratio suggests an increase in the woman's threat point, implying that household decisions are aligned with the woman's preferences.

Thus, our results seem to diverge from the literature. On the one hand, we found that women's participation in household decision-making is favorable to girls and therefore helps to reduce the educational inequalities that exist between boys and girls in Cameroonian households. This result thus corroborates studies conducted by Afridi (2010); Luz and Agadjanian (2015) and Saleemi and Kofol (2022). On the other hand, when we estimate the results separately for primary and secondary school children, we find women's participation in household decision-making is favorable for primary school girls and but favorable for secondary school boys. As a result, it turns out that women's bargaining power, while favorable to girls' investment in education, does not necessarily lead to a redistribution in favor of secondary school girls. Table A8 presents the correlation between girls' educational expenditure and household selection factors. The results show weak but significant correlations between expenditure and household structure, such as negative associations with one-person and polygynous households, while revenue and active household membership exhibit positive correlations. These patterns suggest that household composition and economic activity influence spending on girls' education.

What's more, when we examined the control variables, we found that the religion of the head of household, the number of working members in the household, the rural area, and the number of children in the household are factors that do not favor children's education.

Table 3. Two-stage Heckman results.

Log education expenditure	All children	Primary school children	Secondary school children
Schoolchildren (Girls=1)	-0.239*** (0.083)	-0.363*** (0.077)	0.109** (0.05)
Women's bargaining power (Yes=1)	-0.032 (0.16)	-0.705** (0.325)	0.367*** (0.134)
Bargaining power of woman*daughter (Yes=1)	0.175* (0.096)	0.269*** (0.091)	-.0101* (0.056)
Assets	0.302*** (0.055)	0.167** (0.075)	0.225*** (0.06)
Gender of head of household			
Female head of household	0.223*** (0.028)	0.194*** (.037)	0.101*** (0.033)
Father's education (Yes=1)	0.654*** (0.065)	0.503*** (0.081)	0.432*** (0.082)
Household standard of living			
Not poor	0.004 (0.046)	0.014 (0.057)	0.034 (0.055)
Religion of head of household	-0.106*** (0.015)	-0.125*** (0.018)	-0.027 (0.018)
Number of working household members	-0.003 (0.009)	-0.005 (0.012)	-0.018* (0.01)
Place of residence Rural	-0.855*** (0.05)	-1.006*** (0.067)	-0.256*** (0.058)
Number of children in household	-0.092*** (0.009)	-0.09*** (0.014)	-0.04*** (0.01)
Age	0.133*** (0.005)	-0.027*** (0.01)	0.055*** (0.009)
Sex ratio	0.00041* (.00022)	0.001** (0.00027)	-0.0001 (0.00024)
Constant	9.1*** (0.326)	12.123*** (0.589)	9.602*** (0.375)
Selection equation			
Household type			
Single-parent household	1.396*** (0.229)	4.603*** (0.094)	1.156*** (0.305)
Nuclear household with a male partner	1.417*** (0.24)	4.542 -	1.256*** (0.318)
Monogamous nuclear household	1.366*** (0.229)	4.588*** (0.092)	1.126*** (0.304)
Nuclear household with two spouses	1.181*** (0.233)	4.489*** (0.1)	0.862*** (0.31)
Nuclear household with three wives	1.047*** (0.242)	4.329*** (0.123)	.822** (.322)
Nuclear household with four spouses	0.901*** (0.249)	4.322*** (0.134)	.377 (.342)
Relationship to head of household	0.07*** (0.004)	.055*** (.004)	.068*** (.005)
Household size	0.056*** (0.003)	.052*** (.003)	.016** (.006)
Log Household income	0.017*** (0.005)	.017*** (.006)	.046*** (.004)
Constant	-3.129*** (0.234)	-6.523*** (0.114)	-3.314*** (0.31)
Lambda	-0.696*** (0.142)	-0.852*** (0.252)	-0.383*** (0.137)
Comments	20291	18886	17983
Selected observations	3641	2236	1333

Note: - Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1 respectively are the significant levels at 1%, 5% and 10%.

On the other hand, economically active parents, female-headed households, and educated fathers do favor children's schooling. Following the selection equation, we also find that household type, household size, household income, and relationship to the head of household have positive and significant effects on spending on children's education. This implies that they influence parents' motivation to participate in the children's school system.

5. Conclusion

Inscribed in the context of the collective model, which highlights the influence of individual preferences (parents) in the decision to invest in children within households, this article examines the effect of women's participation in household decision-making on educational inequalities in Cameroon. The analysis utilizes data from the fourth Cameroonian household survey conducted by the National Institute of Statistics in 2014 (Ecam4). Heckman's two-stage selection model was employed to analyze the interaction between women's decision-making power and educational spending on girls. Women's decision-making power was measured by women's level of education. The study considered various control variables, including the number of children attending school in the household; the sex ratio; the area of residence; the household's standard of living (poor or non-poor); the gender of the head of household; the number of children in the household; age; the number of working members in the household; the religion of the head of household; and the parents' employment status (working or non-working). Additionally,

household type; relationship to the head of household; income; and household size were used as selection variables affecting parents' decision to send their children to school.

Our results show that the gender of the child attending school has a significant effect on the distribution of education expenditure within the household, and that girls attending school generally receive a lower share of education expenditure than boys attending school. On the other hand, we find that women's involvement in household decision-making has no significant effect on the distribution of child-rearing expenditure. However, when we estimate the results separately for primary and secondary school children, we find that women's involvement in household decision-making has a significant effect on education expenditure. Regarding the interaction between women's decision-making power and education spending on girls, we observe that women's participation in household decision-making increases girls' share of education spending by 17.5%. Consequently, women's involvement in household decision-making helps to reduce gender inequality. Additionally, by level of education, the results reveal that for primary school children, women's involvement in household decision-making increases primary school girls' share of expenditure by 26.9%. However, this was not the case for secondary school girls. For secondary school boys, the increase is 10.1%.

So, given that women today are better educated than they were decades ago, and that the vision of the role played by women in society has changed, this study, like many others, has shown the importance of women holding decision-making power in households. Especially as women's decision-making power is associated with girls' school enrollment and is important for policy design. Consequently, given that in today's societies, individuals are governed by future utility-maximizing behaviors, emphasis must be placed on empowering women for the intergenerational transfer of gender equality in education. Therefore, women's empowerment is a key element in policies to combat gender inequality.

References

Adhikari, R. (2015). Effect of women's role on household decision making on institutional delivery of the recent child in Nepal. *Journal of Multidisciplinary Studies*, *2*(1), 1–10.

Afridi, F. (2010). Women's empowerment and the goal of parity between the sexes in schooling in India. *Population Studies*, *64*(2), 131–145.

Albert, C., & Escardíbul, J. O. (2017). Education and the empowerment of women in household decision-making in Spain. *International Journal of Consumer Studies*, *41*(2), 158-166. https://doi.org/10.1111/ijcs.12326

Alderman, H., & King, E. M. (1998). Gender differences in parental investment in education. *Structural Change and Economic Dynamics*, *9*(4), 453–468. https://doi.org/10.1016/S0954-349X(98)00040-X

Alkire, S., Meinzen-Dick, R., Peterman, A., Quisumbing, A., Seymour, G., & Vaz, A. (2013). The women's empowerment in agriculture index. *World Development*, *52*, 71–91. https://doi.org/10.1016/j.worlddev.2013.06.007

Allendorf, K. (2007). Do women's land rights promote empowerment and child health in Nepal? *World Development*, *35*(11), 1975-1988. https://doi.org/10.1016/j.worlddev.2006.12.005

Amita, S., & Basu, K. (2006). Gender bias in intra-household allocation: A study of rural households in India. *Review of Development Economics*, *10*(1), 1–18.

Anderson, T. W., Hsiao, C. (1982). Formulation and estimation of dynamic models using panel data. *Journal of Econometrics*, *18*(1), 47–82. https://doi.org/10.1016/0304-4076(82)90095-1

Arrow, K. J. (1951). *Social choice and individual values*. New York: John Wiley & Sons.

Aslam, M. (2009). Education gender gaps in Pakistan: Is the labor market to blame? *Economic Development and Cultural Change*, *57*(4), 747–784.

Aslam, M., & Kingdon, G. G. (2008). Gender and household education expenditure in Pakistan. *Applied Economics*, *40*(20), 2573–2591. https://doi.org/10.1080/00036840600970252

Attanasio, O., & Lechene, V. (2002). Tests of income pooling in household decisions. *The Review of Economic Studies*, *69*(4), 883–916.

Azam, M., & Kingdon, G. G. (2013). Are girls the fairer sex in India? Revisiting intra-household allocation of education expenditure. *World Development*, *42*, 143-164. https://doi.org/10.1016/j.worlddev.2012.09.003

Bargain, O., Lacroix, G., & Tiberti, L. (2018). *Validating the collective model of household consumption using direct evidence on sharing*. IZA Discussion Paper No. 11653.

Barro, R. J. (1991). Economic growth in a cross section of countries. *Quarterly Journal of Economics*, *106*(2), 407–443.

Barro, R. J. (1996). *Determinants of economic growth: A cross-country empirical study*. NBER Working Paper No. 5698.

Basu, K. (2006). Gender and say: A model of household behaviour with endogenously determined balance of power. *The Economic Journal*, *116*(511), 558-580. https://doi.org/10.1111/j.1468-0297.2006.01092.x

Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis with special reference to education*. New York: National Bureau of Economic Research.

Becker, G. S. (1981). *A treatise on the family*. Cambridge, MA, USA: Harvard University Press.

Becker, G. S., & Romer, P. M. (1986). A reformulation of the economic theory of fertility. *Quarterly Journal of Economics*, *101*(1), 1–25.

Blundell, R. W., & Smith, R. J. (1986). An exogeneity test for a simultaneous equation Tobit model with an application to labor supply. *Econometrica*, *54*(3), 679–685. https://doi.org/10.2307/1911314

Boly, D. (2017). *Contextual and individual effects of inequalities in primary schooling in the city of Ouagadougou*. ODSEF Research Report No. 32, Demographic and Statistical Observatory of the Francophone World, Université Laval.

Borooah, V. K., & McKee, P. M. (1993). Intra-household income transfers and implications for poverty and inequality in the UK. In J. Creedy (Ed.), Taxation, Poverty and the Distribution of Income. In (pp. 137–156). Aldershot, UK: Edward Elgar.

Branisa, B., Klasen, S., & Ziegler, M. (2013). Gender inequality in social institutions and gendered development outcomes. *World Development*, *45*, 252-268. https://doi.org/10.1016/j.worlddev.2012.12.003

Brown, M., Lacroix, G., & Tiberti, L. (2017). Validating the collective model of household consumption using direct evidence on sharing. *Journal of Development Economics*, *125*, 1–17.

Browning, M., & Chiappori, P.-A. (1998). Efficient intra-household allocations: A general characterization and empirical tests. *Econometrica*, *66*(6), 1241–1278.

Chiappori, P.-A., & Donni, O. (2006). Fertility and education decisions and child-care policy effects in a collective model. *Journal of Population Economics*, *31*(4), 1–28.

Chiappori, P. A., & Meghir, C. (2015). Intrahousehold inequality. In A. B. Atkinson & F. Bourguignon (Eds.), Handbook of income distribution. In (Vol. 2, pp. 1369–1418). Netherlands: Elsevier.

Connelly, R., Roberts, K., & Zheng, Z. (2010). The impact of circular migration on the position of married women in rural China. *Feminist Economics*, *16*(1), 3–41.

De Vreyer, P., & Lambert, S. (2018). *By ignoring intra-household inequality, do we underestimate the extent of poverty?* PSE Working Papers Halshs No. 01724194.

De Vreyer, P., Lambert, S., & Magnac, T. (1996). Educating children: A look at household behaviour in Côte d'Ivoire. EPEE Research Document. In (pp. 99–13). France: Université d'Évry – Val d'Essonne.

DeLeire, T., & Kalil, A. (2005). *Expenditure patterns by marital status: Cohabiting couples spend differently*. Princeton University, USA: Center for Research on Child Wellbeing.

Donni, O. (2011). Collective decisions, household production, and labor force participation. *Journal of Applied Econometrics*, *33*(7), 1064–1080.

Doss, C. (2013). Intrahousehold bargaining and resource allocation in developing countries. *The World Bank Research Observer*, *28*(1), 52–78. https://doi.org/10.1093/wbro/lkt001

Duflo, E. (2003). Grandmothers and granddaughters: Old-age pensions and intrahousehold allocation in South Africa. *World Bank Economic Review*, *17*(1), 1–25.

Duflo, E. (2006). The impact of income on nutrition: Evidence from South Africa. *Journal of Development Economics*, *81*(1), 1–26.

Duflo, E. (2012). Women's empowerment and economic development. *Journal of Economic Literature, 50*(4), 1051–1079.
Echeverría, L., Menon, M., Perali, F., & Berges, M. (2019). *Intra-household inequality and child welfare in Argentina (Working Paper No. 241)*. Center for Distributive, Labor and Social Studies (CEDLAS), National University of La Plata, Argentina.
Ferrant, G., & Tuccio, M. (2015). South–South migration and discrimination against women in social institutions: A two-way relationship. *World Development, 72*, 240-254. https://doi.org/10.1016/j.worlddev.2015.03.002
Fialová, K., & Mysíková, M. (2021). Intra-household distribution of resources and income poverty and inequality in Visegrád countries. *International Journal of Social Economics, 48*(6), 914–930.
Findlay, R., & Wright, G. (1996). Intrahousehold allocation and the theory of targeting. *Journal of Development Economics, 51*(1), 1–19.
Frankenberg, E., & Thomas, D. (2001). *Measuring power*. Food Consumption and Nutrition Division Discussion Paper, No. 113. International Food Policy Research Institute (IFPRI), Washington, DC, USA.
Fremeaux, N. (2013). Women's empowerment and household expenditure patterns: Evidence from Senegal. *Journal of Development Studies, 49*(10), 1394–1410.
Gertler, P. J., & Alderman, H. (1989). *Intrahousehold resource allocation: An overview*. Policy Research Working Paper No. 1255. The World Bank.
Ghuman, S. J., Lee, H. J., & Smith, H. L. (2006). Measurement of women's autonomy according to women and their husbands: Results from five Asian countries. *Social Science Research, 35*(1), 1-28. https://doi.org/10.1016/j.ssresearch.2004.06.001
Gnoumou, T. B. (2014). Gender and household decision-making in Burkina Faso. *Cahiers Québécois de Démographie, 43*(2), 249-278.
Gupta, I. (2017). *Household decision-making and kinship: A collective model approach*. New York: Oxford University Press.
Gurgand, M. (2005). The demand for education. In Economics of Education. In (pp. 33–52). Paris, France: The Discovery.
Haddad, L., Hoddinott, J., & Alderman, H. (1994). *Intrahousehold resource allocation: An overview*. Policy Research Working Paper No. 1255. The World Bank.
Haddad, L., Hoddinott, J., & Alderman, H. (1997). *Intrahousehold resource allocation in developing countries: Models, methods, and policy*. Baltimore, MD, USA: Johns Hopkins University Press.
Haddad, L., & Kanbur, R. (1990). How serious is the neglect of intra-household inequality? *The Economic Journal, 100*(402), 866–881.
Haddad, L., & Potvin, P. (2008). Social transfers, household expenditure patterns, and child welfare in South Africa. *African Development Review, 20*(2), 213–248.
Heckman, J. J. (1979). Sample selection bias as a specification error. *Econometrica, 47*(1), 153–161. https://doi.org/10.2307/1912352
Hentati, M. (2015). The impact of women's decision-making power on household spending patterns in Tunisia. *Feminist Economics, 21*(2), 1–25.
Hoddinott, J., & Haddad, L. (1995). Does female income share influence household expenditures? Evidence from Côte d'Ivoire. *Oxford Bulletin of Economics and Statistics, 57*(1), 77–96. https://doi.org/10.1111/j.1468-0084.1995.tb00028.x
Hou, X. (2015). Women's decision-making power and utilization of maternal health services: Results from the Pakistan Demographic and Health Survey. *Pakistan Development Review, 54*(4), 791–806.
Hou, X. (2016). How does women's decision-making power affect budget share, nutrition and education in Pakistan? *Journal of Family and Economic Issues, 37*(1), 115-131. https://doi.org/10.1007/s10834-015-9439-2
Hou, X., & Ma, N. (2012). The effect of women's decision-making power on maternal health services uptake: Evidence from Pakistan. *Health Policy and Planning, 28*(2), 176–184.
Jayasundera, R. R. (2012). *Improvements in women's status, decision-making and child nutrition: Evidence from Bangladesh and Indonesia*. USA: University of Southern California.
Kabeer, N. (2001). Reflections on the measurement of women's empowerment. In A. Sisask (Ed.), Discussing Women's Empowerment: Theory and Practice, Sida Studies No. 3. In (pp. 17–57). Stockholm: Swedish International Development Cooperation Agency.
Kassé, M. (2003). *Economics of education (Internship report, Faculty of Economics and Management, Cheikh Anta Diop University of Dakar, 21)*. . Dakar, Senegal: Abdou Aziz Diouf, ISE III.
Keita, M. (2011). *Influence of intra-household bargaining on education expenditures in households in Mali*. MPRA Paper No. 57592, University Library of Munich, Germany. Dakar, Mali.
Khan, S. (2008). Gender issues in household allocation of educational expenditure: Evidence from Pakistan. *The Lahore Journal of Economics, 13*(2), 67–80.
Kingdon, G. G. (2005). Where has all the bias gone? Detecting gender bias in the household allocation of educational expenditure in India. *Economic Development and Cultural Change, 53*(2), 409–451.
Klasen, S., & Lahoti, R. (2021). How serious is the neglect of intra-household inequality in multidimensional poverty and inequality analyses? Evidence from India. *Review of Income and Wealth, 67*(3), 705–731. https://doi.org/10.1111/roiw.12491
Koissy-Kpein, S. A. (2007). Gender and demand for education in sub-Saharan Africa. Unpublished Doctoral Dissertation, University of Nantes, Nantes, France.
Koné, Z. (2002). *Intrahousehold resource allocation in Côte d'Ivoire: Social norms, separate accounts, and consumption choices*. NBER Working Paper No. 10498.
Lamidi, E. O. (2016). Multilevel analysis of state variations in women's participation in household decision-making in Nigeria. *Journal of International Women's Studies, 17*(1), 186-201.
Lancaster, G., Maitra, P., & Ray, R. (2004). Endogenous intra-household balance of power and its impact on expenditure patterns: Evidence from India. *Economica, 73*(291), 435–460.
Lancaster, G., Maitra, P., & Ray, R. (2008). Household expenditure patterns and gender bias: Evidence from India. *Oxford Bulletin of Economics and Statistics, 70*(1), 1–22.
Lazear, E. P., & Michael, R. T. (1986). Estimating the personal distribution of income with adjustment for within-family variation. *Journal of Labor Economics, 4*(3), 216–239.
Lise, J., & Seitz, S. (2011). Consumption inequality and intra-household allocations. *Review of Economic Studies, 78*(1), 328–355.
Lucas, J. R. E. (1988). On the mechanics of economic development. *Journal of Monetary Economics, 22*(1), 3-42. https://doi.org/10.1016/0304-3932(88)90168-7
Lundberg, S., & Pollak, R. A. (1996). Bargaining and distribution in marriage. *Journal of Economic Perspectives, 10*(4), 139–158.
Lundberg, S., Pollak, R. A., & Wales, T. J. (1997). Do husbands and wives pool their resources? Evidence from the UK child benefit. *Journal of Human Resources, 32*(5), 463–480.
Luz, L., & Agadjanian, V. (2015). Women's decision-making autonomy and children's schooling in rural Mozambique. *Demographic Research, 32*, 775-796. https://doi.org/10.4054/DemRes.2015.32.25
Mabsout, R., & Van Staveren, I. (2010). Disentangling bargaining power from individual and household level to institutions: Evidence on women's position in Ethiopia. *World Development, 38*(5), 783-796. https://doi.org/10.1016/j.worlddev.2009.11.011
Malapit, H. J. L., & Quisumbing, A. R. (2015). What dimensions of women's empowerment in agriculture matter for nutrition in Ghana? *Food Policy, 52*, 54–63. https://doi.org/10.1016/j.foodpol.2015.02.003
Malhotra, A., Schuler, S. R., & Boender, C. (2002). *Measuring women's empowerment as a variable in international development. In background paper prepared for the World Bank Workshop on Poverty and Gender: New Perspectives* (Vol. 28). Washington, DC: The World Bank.
Manning, W. D., & Lichter, D. T. (1996). Parental cohabitation and children's economic well-being. *Journal of Marriage and Family, 58*(4), 998–1010. https://doi.org/10.2307/353986
Manser, M., & Brown, M. (1980). Marriage and household decision-making: A bargaining analysis. *International Economic Review, 21*(1), 31–44.
Mansuri, G. (2006). *Migration, school attainment, and child labor: evidence from rural Pakistan*. World Bank Policy Research Working Paper, No. 3945
McElroy, M. B., & Horney, M. J. (1981). Nash-bargained household decisions: Toward a generalization of the theory of demand. *International Economic Review, 22*(2), 333–349.
Menon, N., Van Der Meulen Rodgers, Y., & Nguyen, H. (2014). Women's political participation and economic empowerment: The case of Vietnam's communes. *World Development, 54*, 18–31.
Nordman, C. J., & Sharma, S. (2016). The power to choose: Gender balance of power and intra-household educational spending in India. *World Development, 88*, 369–382.
O'Hara, C., & Clement, F. (2018). Power as agency: A critical reflection on the measurement of women's empowerment in the development sector. *World Development, 106*, 111-123. https://doi.org/10.1016/j.worlddev.2018.02.002

Patel, A., Saxena, D. B., & Kumar, A. (2007). Parents' participation and its impact on school education: A study of primary schools in India. *International Journal of Educational Development, 27*(2), 125–136.
Phan, L. (2016). Measuring women's empowerment at household level using DHS data of four Southeast Asian countries. *Social Indicators Research, 126*(1), 359-378. https://doi.org/10.1007/s11205-015-0876-y
Pilon, M. (1995). The determinants of schooling of children aged 6 to 14 in Togo in 1981: Contributions and limitations of census data. *Cahiers Des Sciences Humaines, 31*(3), 697-718.
Prata, N., Sreenivas, A., & Gerdts, C. (2017). Women's empowerment and family planning: A review of the literature. *Journal of Family Planning and Reproductive Health Care, 43*(3), 184–190.
Pratley, P. (2016). Associations between quantitative measures of women's empowerment and access to care and health status for mothers and their children: A systematic review of evidence from the developing world. *Social Science & Medicine, 169*, 119–131. https://doi.org/10.1016/j.socscimed.2016.08.001
Qian, N. (2008). Missing women and the price of tea in China: The effect of sex-specific income on sex imbalance. *The Quarterly Journal of Economics, 123*(3), 1251–1285.
Quisumbing, A. R. (1994). Intergenerational transfers in Philippine rice villages: Gender differences in traditional inheritance customs. *Journal of Development Economics, 43*(2), 167–195.
Quisumbing, A. R. (2003). *Household decisions, gender, and development: A synthesis of recent research.* Washington, D.C: International Food Policy Research Institute.
Quisumbing, A. R., & Maluccio, J. A. (2000). *Intrahousehold allocation and gender relations: New empirical evidence.* World Bank Policy Research Working Paper No. 2267.
Quisumbing, A. R., & Maluccio, J. A. (2003). Resources at marriage and intrahousehold allocation: Evidence from Bangladesh, Ethiopia, Indonesia, and South Africa. *Oxford Bulletin of Economics and Statistics, 65*(3), 283–327.
Rangel, M. A. (2006). Alimony rights and intrahousehold allocation of resources: Evidence from Brazil. *The Economic Journal, 116*(513), 627–658.
Rashid, M., & Islam, M. (2012). Women s participation in family decision making in Dumki Upazila of Patuakhali District. *The Agriculturists, 9*(1-2), 137-142. https://doi.org/10.3329/agric.v9i1-2.9488
Romer, P. M. (1986). Increasing returns and long-run growth. *Journal of Political Economy, 94*(5), 1002-1037. https://doi.org/10.1086/261420
Saleemi, S., & Kofol, C. (2022). Women's participation in household decisions and gender equality in children's education : Evidence from rural households in Pakistan. *World Development Perspectives, 25*, 100395. https://doi.org/10.1016/j.wdp.2022.100395
Schultz, T. W. (1983). The economic importance of human capital in modern production. *American Economic Review, 53*(5), 1–17.
Smith, L. C., Ramakrishnan, U., Ndiaye, A., Haddad, L. J., & Martorell, R. (2003). *The importance of women's status for child nutrition in developing countries.* Washington, D.C: International Food Policy Research Institute.
Soiliou, N., & Roushdy, R. (2009). Intrahousehold resource allocation in Egypt: Women's empowerment and investment in children. *Middle East Development Journal, 1*(1), 105–121. https://doi.org/10.1142/S1793812009000036
Subramanian, S., & Deaton, A. (1991). Gender effects in Indian consumption patterns. *Sarvekshana, 14*(4), 1–12.
Sundström, A., Paxton, P., Wang, Y. T., & Lindberg, S. I. (2017). Women's political empowerment: A new global index, 1900–2012. *World Development, 94*, 321–335.
Thiombiano, M. (2014). Intra-household allocation and child well-being in Burkina Faso. *African Development Review, 26*(2), 173–189.
Thomas, D. (1990). Intra-household resource allocation: An inferential approach. *The Journal of Human Resources, 25*(4), 635–664. https://doi.org/10.2307/145670
Thomas, D., Contreras, D., & Frankenberg, E. (1999). *Distribution of power within the household and child health.* RAND Labor and Population Program Working Paper Series, No. 99-10.
Thomas, D., & Frankenberg, E. (2003). Economic shocks, wealth, and welfare. *Journal of Human Resources, 38*(2), 280–321.
UNESCO Institute for Statistics. (2019). *New methodology shows that 258 million children, adolescents and youth are out of school.* UIS Fact Sheet No. 56.
UNESCO Institute for Statistics. (2022). *244 million children won't start the new school year.* USA: UNESCO Institute for Statistics.
United Nations. (2018). *The sustainable development goals report 2018.* USA: United Nations.
Upadhyay, U. D., Gipson, J. D., & Hindin, M. J. (2014). Women's empowerment and fertility: A review of the literature. *Social Science & Medicine, 115*, 111–121.
Vaz, A., Pratley, P., & Alkire, S. (2015). Measuring women's autonomy in Chad using the relative autonomy index. *Feminist Economics, 22*(1), 264-294. https://doi.org/10.1080/13545701.2015.1108991
Wakam, J. (2003). Household demographic structure and children's schooling in Cameroon. In G. Pison, K. Hill, F. B. Kamdem, & T. Locoh (Eds.), Education, family and demographic dynamics. In (pp. 183–217). Paris, France: CICRED.
Yusof, N. (2015). Household decision-making in Malaysia: The ethnic dimension. *Social Indicators Research, 124*(1), 283–293.
Yusof, S. A., & Duasa, J. (2010). Household decision-making and expenditure patterns of married men and women in Malaysia. *Journal of Family and Economic Issues, 31*(3), 371–381.
Zimmerman, L. (2012). Reconsidering gender bias in intrahousehold allocation in India. *Journal of Development Studies, 48*(1), 151–163.

Appendices

Table A1. Individuals not attending school by age group and reason for attendance.

Variable	Obs	Freq	Gender		Mean	Std. dev	Min.	Max.
			Male	Female				
Out-of-school individuals by age group and reasons								
Individuals [0-3] not enrolled due to high cost	30720	20	11	9	0.001	0.026	0	1
Individuals [0-3] not attending school due to illness	30720	6	3	3	0	0.014	0	1
Individuals [0-3] not in school because away from school	30720	5	2	3	0	0.013	0	1
Individuals [0-3] not in school because too young	30720	1246	654	592	0.041	0.197	0	1
Individuals [0-3] not in school due to tradition	30720	13	5	8	0	0.021	0	1
Individuals [0-3] not attending school for other reasons	30720	2771	1377	1393	0.09	0.286	0	1
Individuals [3-5] out of school due to high cost	30720	94	49	45	0.003	0.055	0	1
Individuals [3-5] not attending school due to illness	30720	21	6	15	0.001	0.026	0	1
Individuals [3-5] not in school because far from school	30720	49	22	27	0.002	0.04	0	1
Individuals [3-5] not in school because too young	30720	1819	980	839	0.059	0.236	0	1
Individuals [3-5] not in school due to tradition	30720	39	19	20	0.001	0.036	0	1
Individuals [3-5] not attending school for other reasons	30720	1117	585	532	0.036	0.187	0	1
Individuals [5-11] out of school for elevate cost	30720	96	45	51	0.003	0.056	0	1
Individuals [5-11] not in school because apprentices/Employees	30720	25	13	12	0.001	0.029	0	1
Individuals [5-11] not attending school due to illness	30720	33	15	18	0.001	0.033	0	1
Individuals [5-11] not in school because far from	30720	66	38	28	0.002	0.046	0	1

school								
Individuals [5-11] not in school because too young	30720	415	195	220	0.014	0.115	0	1
Individuals [5-11] not in school due to tradition	30720	110	40	70	0.004	0.06	0	1
Individuals [5-11] not attending school for other reasons	30720	676	339	337	0.022	0.147	0	1
Individuals [11-18] out of school for eleve cost	30720	73	27	46	0.002	0.049	0	1
Individuals [11-18] not attending school because apprentices/employed	30720	30	17	13	0.001	0.031	0	1
Individuals [11-18] out of school due to illness	30720	27	15	12	0.001	0.03	0	1
Individuals [11-18] not in school because away from school	30720	55	22	33	0.002	0.042	0	1
Individuals [11-18] not in school because too young	30720	32	20	12	0.001	0.032	0	1
Individuals [11-18] not in school due to tradition	30720	165	42	123	0.005	0.073	0	1
Individuals [11-18] not attending school for other reasons	30720	1085	466	619	0.035	0.185	0	1
Individuals [18-23] out of school due to high cost	30720	57	20	37	0.002	0.043	0	1
Individuals [18-23] not in school because apprentices/employed	30720	12	3	9	0	0.02	0	1
Individuals [18-23] not attending school due to illness	30720	13	9	4	0	0.021	0	1
Individuals [18-23] not in school because far from school	30720	36	7	29	0.001	0.034	0	1
Individuals [18-23] not in school because too young	30720	11	1	10	0	0.019	0	1
Individuals [18-23] not in school due to tradition	30720	173	29	144	0.006	0.075	0	1
Individuals [18-23] not attending school for other reasons	30720	2081	902	1179	0.068	0.251	0	1
Individuals [23 and +] out of school due to high cost	30720	393	161	232	0.013	0.112	0	1
Individuals [23and+] not in school because apprentices/ employees	30720	87	35	52	0.003	0.053	0	1
Individuals [23 and +] not attending school due to illness	30720	61	27	34	0.002	0.045	0	1
Individuals [23 and +] not in school because away from school	30720	372	153	219	0.012	0.109	0	1
Individuals [23 and +] not in school because too young	30720	38	17	21	0.001	0.035	0	1
Individuals [23 and +] not in school due to tradition	30720	2368	639	1729	0.077	0.267	0	1
Individuals [23 and +] not attending school for other reasons	30720	14930	7581	7348	0.486	0.5	0	1

Table A2. Gender of individuals by level of education.

Gender of children attending school	Study level					
	Out of school	Primary	Secondary 1st cycle	Secondary 2nd cycle	Superior	Total
Boys in school	478	4338	1992	1050	304	8162
Girls in school	494	4082	1890	906	270	7642
Total	972	8420	3882	1956	574	15804

Table A3. Gender of individuals attending school by age group and level of education.

Scilarized individual by levelgroup	Individual level of education					
	Out of school	Primary	Secondary 1st cycle	Secondary 2nd cycle	Superior	Total
garcon_[0-3[_scola_prescolaire	1	0	0	0	0	1
girl_[0-3[_scola_preschool	2	0	0	0	0	2
boy_[3-5]_scola_preschool	417	0	0	0	0	417
girl_[3-5]_scola_preschool	427	0	0	0	0	427
garcon_[3-5]_scola_primaire	0	269	0	0	0	269
fille_[3-5]_scola_primaire	0	285	0	0	0	285
garcon_]5-11]_scola_prescolarise	60	0	0	0	0	60
fille_]5-11]_scola_prescolarise	65	0	0	0	0	65
garcon_]5-11]_scola_primaire	0	3073	0	0	0	3073
fille_]5-11]_scola_primaire	0	3033	0	0	0	3033
garcon_]5-11]_scola_secondaire1	0	0	176	0	0	176
fille_]5-11]_scola_secondaire1	0	0	158	0	0	158
garcon_]11-18]_scola_primaire	0	976	0	0	0	976
fille_]11-18]_scola_primaire	0	749	0	0	0	749
garcon_]11-18]_scola_secondaire1	0	0	1592	0	0	1592
fille_]11-18]_scola_secondaire1	0	0	1561	0	0	1561
garcon_]11-18]_scola_secondaire2	0	0	0	431	0	431
fille_]11-18]_scola_secondaire2	0	0	0	433	0	433
garcon_]11-18]_scola_superieur	0	0	0	0	21	21
fille_]11-18]_scola_superieur	0	0	0	0	19	19
garcon_]18-23]_scola_primaire	0	20	0	0	0	20
fille_]18-23]_scola_primaire	0	15	0	0	0	15
garcon_]18-23]_scola_secondaire1	0	0	212	0	0	212

fille_]18-23]_scola_secondaire1	0	0	163	0	0	163
garcon_]18-23]_scola_secondaire2	0	0	0	581	0	581
fille_]18-23]_scola_secondaire2	0	0	0	439	0	439
garcon_]18-23]_scola_superieur	0	0	0	0	227	227
fille_]18-23]_scola_superieur	0	0	0	0	202	202
garcon_]23 et +[_scola_secondaire1	0	0	12	0	0	12
girl_]23 and +[_scola_secondary1	0	0	8	0	0	8
garcon_]23 et +[_scola_secondaire2	0	0	0	38	0	38
girl_]23 and +[_scola_secondary2	0	0	0	34	0	34
garcon_]23 et +[_scola_superieur	0	0	0	0	56	56
fille_]23 et +[_scola_superieur	0	0	0	0	49	49
Total	972	8420	3882	1956	574	15804

Table A4. Proportion of women with bargaining power.

	Women's bargaining power		
	No	**Yes**	**Total**
One-person household	139 0.30%	1733 3.72%	1872 4.02%
Single-parent household	1935 4.16%	11037 23.71%	12972 27.86%
Nuclear household with a male partner	242 0.52%	576 1.24%	818 1.76%
Nuclear household with a female partner	8211 17.64%	18166 39.02%	26377 56.65%
Nuclear household with two female spouses	376 0.81%	2967 6.37%	3343 7.18%
Nuclear household with three female spouses	125 0.27%	720 1.55%	845 1.81%
Nuclear household with four female spouses	27 0.06%	305 0.66%	332 0.71%
Total	11055 23.74%	35504 76.26%	46559 100.00%

Table A5. Correlation table between relationship, household type, household income and number of active household members.

Variables	**(1)**	**(2)**	**(3)**	**(4)**
(1) Parent_link	1.000			
(2) Type_menage2	-0.072*	1.000		
	(0.000)			
(3) ln revenue	0.023*	0.203*	1.000	
	(0.000)	(0.000)		
(4) Number of active members	0.165*	0.469*	0.167*	1.000
	(0.000)	(0.000)	(0.000)	

Note: - Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1 respectively are the significant levels at 1%, 5% and 10%.

Table A6. Correlation table between boys' education expenditure and selection factors (relationship and household type).

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Educational expenses	1.000										
(2) Relationship	-0.012	1.000									
	(0.119)										
(3) One-person household	0.040*	-0.178*	1.000								
	(0.000)	(0.000)									
(4) Single-parent household	-0.023*	0.191*	-0.127*	1.000							
	(0.003)	(0.000)	(0.000)								
(5) A Male spouse	-0.005	0.003	-0.027*	-0.083*	1.000						
	(0.553)	(0.532)	(0.000)	(0.000)							
(6) A Female spouse	-0.010	-0.076*	-0.234*	-0.710*	-0.153*	1.000					
	(0.191)	(0.000)	(0.000)	(0.000)	(0.000)						
(7) Two female spouses	0.041*	-0.039*	-0.057*	-0.173*	-0.037*	-0.318*	1.000				
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)					
(8) Three female spouses	0.017*	-0.015*	-0.028*	-0.084*	-0.018*	-0.155*	-0.038*	1.000			
	(0.034)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)				
(9) Four female spouses	0.003	-0.015*	-0.017*	-0.053*	-0.011*	-0.097*	-0.024*	-0.012*	1.000		
	(0.690)	(0.001)	(0.000)	(0.000)	(0.014)	(0.000)	(0.000)	(0.013)			
(10) log revenue	0.005	0.023*	-0.072*	-0.141*	-0.016*	0.059*	0.118*	0.050*	0.090*	1.000	
	(0.621)	(0.000)	(0.000)	(0.000)	(0.011)	(0.000)	(0.000)	(0.000)	(0.000)		
(11) Active member	0.015*	0.165*	-0.301*	-0.165*	0.018*	-0.028*	0.315*	0.304*	0.266*	0.167*	1.000
	(0.055)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	

Note: - Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1 respectively are the significant levels at 1%, 5% and 10%.

Table A7. Correlation between each child's education expenses and selection factors (relationship and household type, household income and number of active household members).

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Educational expenditure	1.000										
(2) Relationship	0.012	1.000									
	(0.119)										
(3) One-person household	-0.040*	-0.178*	1.000								
	(0.000)	(0.000)									
(4) Single-parent household	0.023*	0.191*	-0.127*	1.000							
	(0.003)	(0.000)	(0.000)								
(5) A male spouse	0.005	0.003	-0.027*	-0.083*	1.000						
	(0.553)	(0.532)	(0.000)	(0.000)							
(6) A female spouse	0.010	-0.076*	-0.234*	-0.710*	-0.153*	1.000					
	(0.191)	(0.000)	(0.000)	(0.000)	(0.000)						
(7)Two female spouses	-0.041*	-0.039*	-0.057*	-0.173*	-0.037*	-0.318*	1.000				
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)					
(8)Three female spouses	-0.017*	-0.015*	-0.028*	-0.084*	-0.018*	-0.155*	-0.038*	1.000			
	(0.034)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)				

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(9)Four female spouses	-0.003	-0.015*	-0.017*	-0.053*	-0.011*	-0.097*	-0.024*	-0.012*	1.000		
	(0.690)	(0.001)	(0.000)	(0.000)	(0.014)	(0.000)	(0.000)	(0.013)			
(10) lnrevenue	-0.005	0.023*	-0.072*	-0.141*	-0.016*	0.059*	0.118*	0.050*	0.090*	1.000	
	(0.621)	(0.000)	(0.000)	(0.000)	(0.011)	(0.000)	(0.000)	(0.000)	(0.000)		
(11) Active member	-0.015*	0.165*	-0.301*	-0.165*	0.018*	-0.028*	0.315*	0.304*	0.266*	0.167*	1.000
	(0.055)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	

Note: - Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1 respectively are the significant levels at 1%, 5% and 10%.

Table A8. Correlation table between girls' education expenditure and selection factors (relationship and household type).

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Educational expenditure	1.000										
(2) Relationship	0.012	1.000									
	(0.119)										
(3) One-person household	-0.040*	-0.178*	1.000								
	(0.000)	(0.000)									
(4) Single-parent household	0.023*	0.191*	-0.127*	1.000							
	(0.003)	(0.000)	(0.000)								
(5) A male spouse	0.005	0.003	-0.027*	-0.083*	1.000						
	(0.553)	(0.532)	(0.000)	(0.000)							
(6) A female spouse	0.010	-0.076*	-0.234*	-0.710*	-0.153*	1.000					
	(0.191)	(0.000)	(0.000)	(0.000)	(0.000)						
(7) Two female spouses	-0.041*	-0.039*	-0.057*	-0.173*	-0.037*	-0.318*	1.000				
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)					
(8) Three female spouses	-0.017*	-0.015*	-0.028*	-0.084*	-0.018*	-0.155*	-0.038*	1.000			
	(0.034)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)				
(9) Four female spouses	-0.003	-0.015*	-0.017*	-0.053*	-0.011*	-0.097*	-0.024*	-0.012*	1.000		
	(0.690)	(0.001)	(0.000)	(0.000)	(0.014)	(0.000)	(0.000)	(0.013)			
(10) log revenue	-0.005	0.023*	-0.072*	-0.141*	-0.016*	0.059*	0.118*	0.050*	0.090*	1.000	
	(0.621)	(0.000)	(0.000)	(0.000)	(0.011)	(0.000)	(0.000)	(0.000)	(0.000)		
(11) Active member	-0.015*	0.165*	-0.301*	-0.165*	0.018*	-0.028*	0.315*	0.304*	0.266*	0.167*	1.000
	(0.055)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	

Note: - Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1 respectively are the significant levels at 1%, 5% and 10%.