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Do parents favour boys?

Evidence from schooling in Guinea-Bissau

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I dedicate this thesis to my parents.

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Abstract

This study is conducted in the Capital of Guinea-Bissau. The research analyzes gender bias in education on ethnicity, religion and income. An exogenous shock at household level on food security is used for income. OLS and Fixed Effect models are estimated among four different age groups. Findings show the absence of gender gap in primary education, however opposite results emerge for older girls. The hypothesis behind this difference is the extension of compulsory education from 6^{th} to 9^{th} grade which is supported by the findings. The main conclusions shed light to the role of formal Institutions in correcting gender bias.

Keywords: Gender Gap, Education, Social norms, Institutions

1 Introduction

The study is conducted in the African Republic of Guinea-Bissau, one of the poorest and most fragile countries in the world. Traditions and customs influence the stage of life, household structure and daily activities in the whole country. Patriarchal rules justify males primary power and decisions over household members[1]. Women are traditionally responsible for domestic duties and custody of children. The facts described above may lead to the conclusion that women in these societies have less opportunity than men, first among all education. This said, the primary question of interest is whether gender gap in the Capital of Guinea-Bissau, Autonomous Sector of Bissau, exists. The role of ethnicity and religion is further explored as well as household income heterogeneity. Lastly, the focus moves towards the role of formal Institutions embodied by the educational reform implemented in 2011 which extended primary compulsory education from 6^{th} to 9^{th} grade.

Data used for this study has been collected in the Autonomous Sector of Bissau in June 2017 in the framework of the project "Strategy to accelerate the reduction of maternal, neonatal and child mortality in Guinea-Bissau, Autonomous Sector of Bissau" by ONG VIDA and NOVAFRICA. The 2009 population Census reports that more than twenty ethnic groups coexist in the country and more than one religion is professed among the population[2]. This makes Autonomous Sector of Bissau an ideal context to investigate on the heterogeneity of ethnicity and religion. The

[1]Article 1674 of Civil Code states that the family structure is based on Patriarchal Model whereby the husband is the Head of the household and he can represent the wife in public.

[2]Refer to *Recenseamento geral da população e habitação Guiné-Bissau : III RGPH/2009* issued by Instituto Nacional de Estatística e Censos and Ministério da Economia, do Plano e Integração Regional in 2009.

difficulty in separating economic factors from culture and social norms within societies, have prevented economists from addressing culture (Fernandez and Fogli 2009), however the latter is key for explaining a variety of socio-economic outcomes (Guiso, Sapienza, and Zingales 2006). The paper aims at enriching existing literature on gender bias in education by exploring intra-household educational preferences by social norms and income. Additionally, the study contributes to research on schooling in SAB which lacked comprehensive household data sets.

OLS and Fixed Effect models are estimated to analyze the existence of gender bias on educational outcomes among different age groups and hetereogeneity of education on ethnicity, religion and income. To analyze educational outcomes on households economic conditions, an exogenous income shock has been used. In particular, the shock refers to self-reported data on food security at household level in the previous twelve months. Findings show that there is no gender gap in primary education, however gender differences exist for the group aged from twenty to twenty-five years old. Results for ethnicity and religion reinforce this outcome, i.e. social norms do not influence compulsory education. Additionally, socio-economic conditions are proven not to be a determinant for gender bias for mandatory schooling.

The hypothesis behind the absence of gender bias in younge cohorts is the change in the legislation under the educational reform of 2011 which extended compulsory primary education from 6^{th} to 9^{th} grade. Findings on the outcomes of the reform prove indeed that young girls under the new rule are more likely to complete 9^{th} grade. The main conclusions shed light to the role of formal Institutions in correcting gender bias. From the findings gender gap in education is indeed evident when education is no longer mandatory and decisions on continuing studying are not anymore binding from the law.

The reminder of the paper is organized as follows *Section2* provides literature review on existing studies on gender bias and education, intra-households preferences on human capital allocation andself-insurance strategies among constraint families in developing countries. *Section 3*, *Section 4* and *Section 5* describes data, presents the estimation strategy and reports the main econometric results respectively. *Section 6* describes the limitation of the model and *Section 7* concludes by proposing some policy implications.

2 Literature Review

Empirical research has always addressed potential gender inequalities on education, health and labor opportunities. In developing countries, these outcomes have proven to exist with long-term consequences on economic growth (Dollar and Gatti 1999). Among poor households, the level of economic risk, characterized by inadequate capital and insurance markets, conditions demographic decisions and allocation of resources among members in households. Collective models are used to capture differences arising within households and identify the drivers of inequalities among individuals (McElroy and Horney 1981).

Existing literature identifies potential source of discrimination from parental preferences, cultural values and socio-economic factors. In first place, parents have preferences over their children and the respective level of investment may depend on factors such as gender, age, birth order, relationship to household head (Ota and Moffatt 2007). Human capital investment may be concentrated on few children rather than distributed equally across members (Dahan and Tsiddon 1998) and sibling sex composition may determine differences in health and education outcomes (Garg and Morduch 1996). With respect on schooling, gender differences are related to parental preferences, differences in return and opportunity cost of education. When women are discriminated in the labour-market, monetary benefits to invest in female education are lower than for boys since schooling is not perceived as a valuable investment. Gender bias within families is indeed stronger when the latter has an impact on future household labour supply patterns (Li and Wu 2011). Additionally, the quality of schooling for girls is on average lower compared to boys due to time spent for housework with long-term consequences on educational returns (Glick and Sahn 2000). In second place, intra-households inequalities are proven to be driven by social values and cultural bias. Institutional and legal norms such as laws, type of marriage, inheritance and access to common property resources varying according to location, ethnicity and religion (Duflo and Udry 2004) may help explaining variations on gender (Chiappori, Fortin, and Lacroix 2002). Social values influence Institutional settings under which roles, rights and obligations are clearly differentiated among females and males (Pande and Astone 2007). In African societies, religion continues to play an important role in socio-economic and political life. Religion may

justify norms restricting women mobility and limiting opportunities to work (Field, Jayachandran, and Pande 2010). In polygamous societies, discrimination against un-favored wives and their children may result in heavier domestic workloads, poorer levels of education, nutrition and health care (Brown 1996). Lastly, inequalities within families may be driven by socio-economic conditions (Fuwa et al. 2006). Children may serve as incomplete insurance good within household as alternative to savings and borrowing when the possibility for risk diversification is little (Pörtner 2001). Empirical findings show indeed that income does have a direct and significant effect on children outcomes. All studies are associated by potential endogeneity of income which is a threat to establish causality. To overcome this problem, studies have exploited exogenous income variability such as macroeconomic crises (Thomas et al. 2004), commodity price changes (Edmonds and Pavcnik 2005), shocks on production (Beegle, Dehejia, and Gatti 2006) or target policy reforms (Duflo, 2000).

3 Data

Data used in this study have been collected in the framework of the project "Strategy to accelerate the reduction of maternal, neonatal and child mortality in Guinea-Bissau, Autonomous Sector of Bissau" by Mattia Fracchia, Teresa Molina and Pedro Vicente. The surveys were conducted by a team of enumerators with the collaboration of the author and colleagues. Households living in the Autonomous Sector of Bissau (ASB) have been interviewed from the 1^{st} of July to 30^{th} of August of 2017. The survey was conducted among 2147 households, with a total of 15583 individual observations. Household demographic data have been collected by community health Agents under the supervision of ONG VIDA within ASB. In addition, two households per community health Agent have been randomly selected and interviewed by enumerators. The collection process and sample size allows to have a representative sample for household living in SAB.

The survey specifically identifies household members as individual who eat from the same pan. Households in Guinea-Bissau are indeed extended families. They can be vertically extended (three or more generations live in the same household), horizontally extended (siblings with their spouses and their children living together) or a combination of both types. Individuals who do not share family ties may also live in the same household. The questionnaire was tailored to

obtain information on household and individual characteristics. In the first part of the interview, each household head was interviewed on general information such as language spoken, ethnicity, religion professed, accommodation facilities, assets and aggregate consumption. Afterwards, household members living in the household were interviewed on information regarding education, housework and employment.

3.1 Educational variable and age groups

Under the legislation of Guinea-Bissau, primary education is declared universal and compulsory until 9^{th} grade, free until 6^{th} class. Primary school (ensino basico) lasts from 1^{st} grade to 9^{th} grade, subdivided into three sub-cycles[3]. After completing 9^{th} grade, students have access to secondary education (ensino secundário) or vocational education, both lasting three years. A variety of variables have been used in this paper referring to Guinean educational system. The variable *Years of Education* accounts for individuals highest level of education. *Attendance* is a dummy variable for students attending any type of educational Institution during 2016-2017. Dummy variables for *Completed* 4^{th}, *Completed* 6^{th}, *Completed* 9^{th}, *Vocational Education* and *Higher Education* are constructed. The variable *Years Behind* accounts for the years students are behind the grade they should be according to their age[4].

Four different age groups have been identified among individuals from six to twenty five years old. *Group 1* represents children between six and eleven years completing First Cycle (4^{th} grade). *Group 2* define teenagers from twelve to fifteen years old completing Second Cycle (6^{th} grade). Compulsory education lasts until 9^{th} for both groups. *Group 3* accounts for teenagers from sixteen to nineteen years old. *Group 4* represents individuals aged between twenty to twenty-five years. Compulsory education lasted until 6^{th} grade. The Ministry of Education reformed the educational system in 2011. The Reform *Lei de Bases do Sistema Eudcativo* extended compulsory primary education from 6^{th} grade to 9^{th} grade. Assuming that the reform has been implemented in September 2012, the first group of students experiencing the extension of compulsory education from 6^{th} to 9^{th} grade was aged seventeen in June 2017[5]. The variable *Reform* is used to identify

[3] The first cycle is from 1^{st} to 4^{th} grade, the second from 5^{th} to 6^{th} grade and third from 7^{th} to 9^{th} grade.

[4] Years Behind = abs[(age-years of education)-6], where years of educations are restricted between zero and nine (compulsory primary education) and respective age from six to sixteen years old(corresponding age for primary education)

[5] Assuming that the cohort of Student in 6^{th} grade in 2012 were twelve years old.

students under the new legislation and compare education gap before and after the implementation of the Law, focusing on girls around the age of those who were affected.

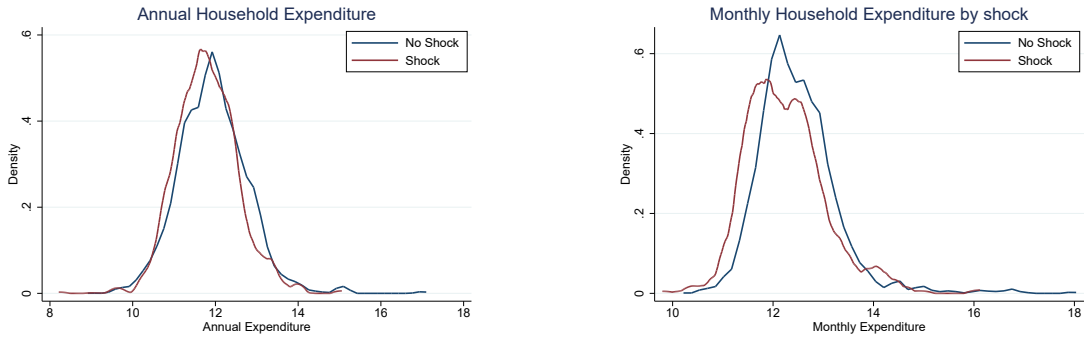
3.2 Income

The variable *Monthly Expenditure* from the survey is used as proxy for household income. It gathers information on household monthly expenditure[6]. *Annual Expenditure* is also calculated[7]. All values of expenditure are in CFA franc, where 1CFA is 0,002€; however for ease of interpretation a log transformation is used. Two variables from the survey are analyzed and used as proxy for household income shock. The first question of the survey was "How many times, if any, a member of the household did not have enough food to eat in the previous twelve months?" The available answers were "Many times (5 or 6 times)", "Sometimes (2 or 4 times)", "Only once" and "Never". A dummy variable *No Annual Shock* was created taking value one for household answering "Only once" and "Sometimes", i.e. families not experiencing a shock in the previous year. The second question was "Did the household worry of not having enough food in the previous thirty days?". The available answers were "Never", "Rarely (1 to 2 times), "Sometimes (3 to 10 times)" and "Frequently" (10 times). A dummy variable *No Monthly Shock* was created taking value one for household answering "Never" and "Rarely". No differences are found on annual income distributions for households experiencing a shock compared to the other group and information on the timing and nature of annual shocks is not available. Nevertheless, for shock experienced in the previous months information on consumption is available and household distributions on expenditure differ among the two groups [8]. Given that the decrease in consumption is correlated with a shock in the short term, it is assumed that the same has occured in the long term. Low levels of food consumption are treated as a proxy for income shock in households from the Autonomous Sector of Bissau. Empirical findings indicates indeed that households in developing countries are able to mitigate adverse effects of income shock to limit consumption

[6]The value must satisfy the following condition : rent, credit for mobile ,alcoholic beverages, food and beverage, food outside home ,electricity and water less than Monthly expenditure. The question of the survey was asked to the head of the household.

[7]Weekly expenditure on food and beverages, alcoholic beverages, food outside home, electricity and water, transport have been transformed in monthly expenditure. Semiannual expenditure on clothing, school, university, house improvements, health, and ceremonies has been transformed in monthly expenditure. Both monthly expenditure are summed and multiplied for 12 months.

[8]The question on monthly expenditure accounts for the previous month, May 2017.



(A) Annual Expenditure

(B) Monthly Expenditure

FIGURE 1: Household Expenditure by shock

risk and adopt strategies against income fluctuations (Alderman and Paxson 1992). Additionally, available data on Guinea-Bissau prove that food security is not a concern for households[9].

4 Estimation Strategies

The first OLS specification used for gender differences on educational variables is the following:

$$y_i = \alpha + \beta_1 Female_i + \delta \mathbf{E}_i^{'} + \lambda \mathbf{R}_i^{'} + \sigma \mathbf{X}_i^{'} + \epsilon_i \tag{1}$$

y_i is educational outcome (years of education, completed 4^{th} grade, completed 6^{th} grade, completed 9^{th} grade, whether children continue studying after reaching compulsory 9^{th} grade, attendance and number of years behind grade given student's age). i are identifiers for individuals. $Female_i$ is a dummy variable for gender, taking value one if the individual is female. β_1 is the coefficient of interest. $\mathbf{E}_i^{'}$ is a vector for ethnicity, $\mathbf{R}_i^{'}$ is a vector for religion and $\mathbf{X}_i^{'}$ is a vector of individual characteristics[10]. Dummies for age are included. Robust standard errors are used to correct for heteroscedascity.

Data is available is at individual level allowing for the estimation of a Fixed Effect model used to correct for households unobserved characteristics :

$$y_{ih} = \alpha + \beta_1 Female_{ih} + \delta \mathbf{W}_{i_h}^{'} + \mathbf{C}_h + \epsilon_{ih} \tag{2}$$

[9]Refer to Enquête de suivi Alimentaire et de la Nutrition Guinée Bissau issued by World Food Program, Food and Agriculture Organization of United Nations and the Government of Guinea-Bissau in 2017.

[10]Dummy if the individual is the son/daughter of head of household, individuals' number of siblings, dummy if the individual is the 1^{st} child born within the household, dummy if the individual is the last child born in the household, dummy for literate mother, dummy for literate father, dummy for mother living in the house, dummy for father living in the house, years of education of household head and age of household head.

y_{ih} is educational outcome. i are identifiers for individuals. h identifies households[11]. β_1 is the coefficient of interest. $\mathbf{W}_{i_h}^{'}$ is a vector of individual characteristics[12]. Dummies for age are included. Robust standard errors are used to correct for heteroscedascity.

To investigate the role of ethnicity and religion on education within the sample, two models are used. In the first place, OLS model (1) with interactions between gender, ethnicity and religion[13] . Next, FE Model (2) is estimated conditional on ethnicity and religion. Due to lack of heterogeneity for specific variables, different controls have been used for each ethnic and religious group and corresponding age groups.

The second line of research is on gender differences in education by income[14]. The following OLS Reduced Form is estimated to capture the effect of households income shocks on education outcomes :

$$y_i = \alpha + \beta_1 Female_i + \beta_2 NoShock_i + \beta_3 NoShock_i * Female_i + \delta \mathbf{E}_i^{'} + \lambda \mathbf{R}_i^{'} + \sigma \mathbf{W}_i^{'} + \epsilon_i \quad (5)$$

y_i is educational outcome. β_3 is the coefficient of interest. Refer to Model (1) for $\mathbf{E}_i^{'}$, $\mathbf{R}_i^{'}$ and $\mathbf{X}_i^{'}$. The variable $NoShock_i$ refers to household that did not suffer income shock in the previous twelve months. Model (2) conditioned on income shock is estimated to control for household unobserved characteristics.

[11] Fixed effect model is also used for nuclear families within households : children having the same mother and some father, children with the same mother and different fathers, children with the same mother, but no father living in the household. The comparison is among siblings living in the same house.

[12]Dummy if the individual is the son/daughter of head of household, individuals' number of siblings, dummy if the individual is the 1^{st} child born within the household, dummy if the individual is the last child born in the household, dummy for literate mother, dummy for literate father, dummy for mother living in the house, dummy for father living in the house.

[13]

$$y_i = \alpha + \beta_1 Female_i + \beta_2 Ethinicty * Female_i \delta \mathbf{E}_i^{'} + \lambda \mathbf{R}_i^{'} + \sigma \mathbf{X}_i^{'} + \epsilon_i \quad (3)$$

$$y_i = \alpha + \beta_1 Female_i + \beta_3 Religion * Female_i \delta \mathbf{E}_i^{'} + \lambda \mathbf{R}_i^{'} + \sigma \mathbf{X}_i^{'} + \epsilon_i \quad (4)$$

[14]An Instrumental Variable approach would be ideal to correct for endogeneity between income and education. Available data do not include household income variation and the variables from the survey for income shock have been proven to be weak instruments. Household monthly expenditure has been instrumented with variables on household shock. First stage results : *No Monthly Shock* coefficient is 0.1461 at 1% and F statistics is 18.22; *No Annual Shock* coefficient is 0.0870 at 1% and F statistics is 17.98.

To account for the effect of Institutions on educational outcomes, the following Fixed Effect model is estimated :

$$y_{ih} = \alpha + \beta_1 Female_{ih} + \beta_2 Reform_{ih} + \beta_3 Reform * Female_{ih} + \delta \mathbf{W}_{i_H}^{'} + \mathbf{C}_h + \epsilon_{ih} \quad (6)$$

y_{ih} is a dummy variable for completed 9^{th} grade. β_3 is the coefficient of interested capturing differences between female and male affected by the reform[15]. Robust standard errors are used to correct for heteroscedascity. As explained in *Section 3*, the variable *Reform* identifies the treated group affected by the new legislation. It is assumed that treatment assignment is random at the threshold for treatment, for this model individuals younger than seventeen years old. Students above and below the threshold are assumed to have similar characteristics, except for the treatment. The procedure therefore allows to compare education gap before and after the implementation of the Law, focusing on girls around the age of those who were affected by the new rule.

5 Results

5.1 Descriptive Statistics

Descriptive statistics of sample characteristics are depicted in Table 7 in the Appendix. 71% of household heads are male. On average, head of households are 45 years old and have completed 8.6 years of education. The average number of members in households is 8.9

For the ease of interpretation, seven different ethnicity were grouped and used for the analysis. 21.1% are Felupe; 20.4% are Balanta, 19.5% are Papeis, 13.5% are Fula, 13.6% are Mandinga and 11.8% are from other ethnicity. On religion, 51.1% of households are Christians, 32.8% are Muslims, 9.5% declares of not professing any religion, 4.7% are Animist and 1.9% profess more than one religion within household.

On educational variables, students are on average 2.42 years behind the grade thy should attend. Average years of education for *Group 1* are 2.06 and 17.4% of children have completed 4^{th} grade. *Group 2* average years of education is 5.32, teenagers completing 6^{th} are 48.1%. Among *Group 3*, years of school completed are 7.92, 43% completed 9^{th} grade and 25.9% continue in higher education. Average years of education for *Group 4* is 9.73, among them 67% completed 9^{th} and

[15]For $\mathbf{W}_{i_h}^{'}$ refer to Model (2).

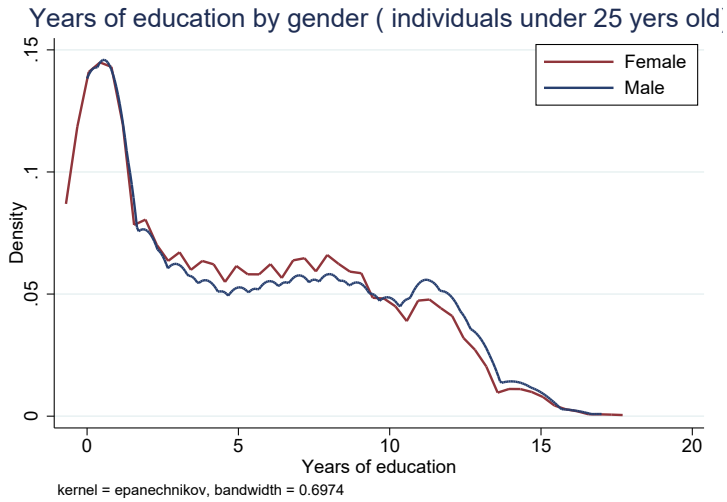


FIGURE 2: Years of education by gender

58% continue studying after 9^{th} grade; 45.7% continue higher education and 1.9% in vocational education. Figure 2 depicts gender differences in education highlighting the change in trend on educational outcomes between female and male after 9^{th} grade.

5.2 Results on gender differences

This section reports OLS and FE estimates on effect of being female on a set of educational outcomes. Results are depicted in Table 1. OLS Model exhibits positive correlation between being female and years of schooling and the probability of completing 4^{th} grade in *Group 1*. Also for *Group 2* a positive association is found between the probability of completing 6^{th} grade and gender of 7.79%, all else constant. For oldest cohort (from twenty to twenty-five), the probability of completing 9^{th} grade is negatively correlated with being female by 5.15%, all else constant. When controlling for household unobserved characteristics, fixed effect results show no significant difference between education and gender for youngest cohort. On average, inequality between female and males living in the same household are not found for *Group 1* and *Group 2*. For *Group 3* gender is not relevant for Educational outcome, however the sign changes compared to the previous groups. Lastly, for *Group 4* the coefficients of interest are negative and statistically different from zero. Ceteris paribus, a female have 0.54 years of education less than a male in the same age group. Additionally, girls are less likely to complete 9^{th} grade by 11.68% compared to boys, all else constant. To note, compulsory education for this group lasted until 6^{th} grade.

The coefficient for completed 6^{th} show no gender differences on schooling between females and males.

TABLE 1: OLS and FE regressions on educational outcomes

	OLS	OLS	OLS	OLS	FE	FE	FE	FE
6 to 11 years old	Years	Enrollment	4^{th}	Years behind	Years	Enrollment	4^{th}	Years behind
Female	0.1178**	-0.0032	0.0534***	-0.0435	0.0384	0.0264	0.0412	0.0063
	(0.06)	(0.02)	(0.02)	(0.05)	(0.10)	(0.03)	(0.03)	(0.10)
Observations	1543	1542	1543	1221	1617	1616	1617	1274
R^2adjusted	0.479	0.111	0.301	0.139	0.596	0.158	0.370	0.217
12 to 15 years old	Years	Enrollment	6^{th}	Years behind	Years	Enrollment	6^{th}	Years behind
Female	0.2069*	0.0092	0.0779**	-0.1624	0.0609	0.0056	0.0892	0.0528
	(0.12)	(0.02)	(0.03)	(0.11)	(0.26)	(0.03)	(0.07)	(0.24)
Observations	842	842	842	779	886	886	886	822
R^2 adjusted	0.305	0.059	0.207	0.266	0.254	0.018	0.225	0.256
16 to 19	Years	Enrollment	9^{th}	Years behind	Years	Enrollment	9^{th}	Years behind
Female	0.2743	0.0212	0.0274	-0.3644*	-0.2529	-0.0291	-0.0621	-0.4053
	(0.18)	(0.03)	(0.03)	(0.20)	(0.34)	(0.06)	(0.07)	(0.48)
Observations	780	779	780	401	828	827	828	432
R^2 adjusted	0.177	0.029	0.114	0.201	0.186	0.033	0.115	0.354
20 to 25 years old	Years	Enrollment	9^{th}	6^{th}	Years	Enrollment	9^{th}	6^{th}
Female	-0.2653	0.0265	-0.0515*	-0.0085	-0.5358*	0.0608	-0.1168***	-0.0033
	(0.18)	(0.03)	(0.03)	(0.01)	(0.30)	(0.05)	(0.04)	(0.02)
Observations	221	200	223	499	957	954	957	957
R^2adjusted	0.221	0.233	0.406	0.180	0.067	0.140	0.065	0.040
Age dummies	YES	YES	YES	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES	YES	YES	YES

Note: * p<0.10, ** p<0.05, *** p<0.01. Controls used for OLS model are dummy if the individual is the son/daughter of head of household, individuals' number of siblings, dummy if the individual is the 1^{st} child born within the household, dummy if the individual is the last child born in the household, dummy for literate mother, dummy for literate father, dummy for mother living in the house, dummy for father living in the house, years of education of household head and age of household head. Controls for FE model are the same of OLS with exclusion of years of education of household head and age of household head. Robust standard errors in parenthesis to correct for heteroscedascity.

Outcomes on housework, labor market and marriage have been also investigated to have a broader picture on girls. Table 2 shows results for *Group 2*, *Group 3* and *Group 4*. Girls between twelve and fifteen years old are 40% more likely than boys to accomplish housework duties. For older cohorts, girls are less likely to have an occupation compared to boys by 3% in *Group 3* and this difference increases to 8% for *Group 4*. These results suggest that gender gap exist from the age of sixteen years old both in education and labor market, however several reasons may explain the latter outcome. Female might be indeed disadvantaged because of fewer opportunities in the labour market (Jensen 2012), but also the social context may influence their choices(Malhotra and Mather 1997). On marriage, not significant results are found. Model (1) has been also estimated for Families living within the same households. Results are exhibited in Table **??** in *Appendix*.

TABLE 2: FE model on housework, labour market and marriage

12 to 15 years old	Housework	Occupation
Female	0.3851***	-0.0115
	(0.03)	(0.01)
Observations	698	842
R^2 adjusted		
16 to 19 years old	Occupation	Marriage
Female	-0.0398**	-0.0041
	(0.02)	(0.01)
Observations	787	828
R^2 adjusted		
20 to 25 years old	Occupation	Marriage
Female	-0.0784***	0.0081
	(0.02)	(0.01)
Observations	920	957
R^2 adjusted		
Age dummies	YES	YES
Controls	YES	YES

Note: * p<0.10, ** p<0.05, *** p<0.01. Controls for FE model : dummy if the individual is the son/daughter of head of household, individuals' number of siblings, dummy if the individual is the 1^{st} child born within the household, dummy if the individual is the last child born in the household, dummy for literate mother, dummy for literate father, dummy for mother living in the house, dummy for father living in the house. Robust standard errors in parenthesis to correct for heteroscedascity.

Results are in line with the previous findings at household level. No differences are found until the age of nineteen, while the opposite is true for girls aged between twenty and twenty-five. These girls were less likely to complete 9^{th} compared to male brothers living in the same house. On average, being female in *Group 4* decreases the probability of completing 9^{th} class by 21,76% compared to male siblings. Results from OLS and FE estimation suggest that in the Autonomous Sector of Bissau on average, gender discrimination against girls in age to complete compulsory education does not exist and differences on gender arise at the end of primary education.

5.3 Ethnicity and religion

To account for social norms and cultural values on educational outcomes, heterogeneity on ethnicity and religion specific of the ASB is investigated. OLS results are depicted in Table 10 in *Appendix* . Not systematic differences are found among ethnicity and religion. For this reason, only OLS results for *Years of Education* are reported to show how the model were estimated. The most interesting results is for Balanta ethnicity. A positive correlation are found between female Balanta until fifteen years old and years of education compared to males in the same ethnic

group. However, when comparing female Balanta with other ethnicity, a negative correlation on the variable of interest is found. On average, years of education are negatively correlated with being a female Balanta compared to other ethnicities by 0.725 for *Group 2* and 0.814 years of education for *Group 3*. Available information says that Balanta individual's life is marked by initiated rites of passage from early childhood up to fifteen years old and later around heighten to twenty years old. These factors may explain the negative correlation which emerges in *Group 2* and *Group 4*. Additionally, Balanta are organized in egalitarian societies, hence females might be involved in the ceremonies common to all members of Balanta communities. On religion, not significant results are found. Fixed Effect Model (2) conditioned on ethnicity and religion has been estimated to correct for household unobserved characteristics. When controlling for household characteristics, the OLS results are no longer significant.

TABLE 3: FE estimation : Years of education

6 to 11 years old	Felupe	Balanta	Papeis	Cristians	Muslims	Without
Female	0.0565	-0.2536	0.0819	0.0507	0.2412	-0.2257
	(0.22)	(0.24)	(0.20)	(0.13)	(0.19)	(0.27)
Observations	307	342	330	810	536	159
R^2adjusted	0.716	0.573	0.705	0.701	0.497	0.708
12 to 15 years old	Felupe	Balanta	Papeis	Cristians	Muslims	Without
Female	1.0006**	-0.4496	-0.6598	-0.2171	0.2531	-1.8344**
	(0.43)	(0.39)	(0.70)	(0.35)	(0.40)	(0.72)
Observations	159	158	209	418	302	96
R^2 adjusted	0.764	0.485	0.372	0.389	0.358	0.698
16 to 19 years old	Felupe	Balanta	Papeis	Cristians	Muslims	Without
Female	-0.4912	0.1350	0.4769	0.0366	-0.2856	-0.6521
	(0.75)	(0.72)	(0.75)	(0.46)	(0.62)	(1.03)
Observations	180	169	161	410	276	81
R^2adjusted	0.464	0.629	0.431	0.260	0.177	0.589
20 to 25 years old	Felupe	Balanta	Papeis	Cristians	Muslims	Without
Female	-0.9178*	-0.8106	0.5818	-0.3679	-0.2250	-0.4035
	(0.50)	(0.51)	(0.65)	(0.44)	(0.67)	(0.75)
Observations	221	200	223	499	276	115
R^2 adjusted	0.221	0.233	0.406	0.180	0.047	0.292
Age dummies	YES	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES	YES

Note: * p<0.10, ** p<0.05, *** p<0.01. For controls, please refer to *Sectionsection 4*
Robust standard errors in parenthesis to correct for heteroscedascity.

Felupe society is characterized by small households founding their subsistence economy on farming and self-sufficient production. Communities are heterogeneous on social, economic

and religion structure. Some groups organize themselves by defining egalitarian responsibilities according to age and gender; others have a strong hierarchical social structure which conditioned the division of labor between female and male. In the past, males migrated to the ASB to complete their studies while females worked as housekeepers. Students living in SAB come back to their own villages when labor force is needed for cashew nuts harvest (Bayan 2015). According to results in Table 3 on average, a Felupe girl between twelve and fifteen years old has one year more of education compared to a Felupe boy in the same cohort. For *Group 4* the opposite is true, where females aged between twenty and twenty-five years old have 0.917 years of education less than males in the same cohort. No general conclusion can be drawn on existantance of gender bias among Felupe ethnicity, however results are in line with previous findings[16].

5.4 Income

This section reports OLS results on potential gender differences driven by income, depicted in Table 4. The variable *No Annual Shock* identifies households which are food secure, i.e. did not report to have experienced an income shock in the previous twelve months. *No Annual Shock* has been chosen because households decisions on education are assumed to be taken yearly. Differences on education among female and male living in the same households are not found for *Group 1*, *Group 2* and *Group 3* suggesting that income is not a determinant for gender difference on compulsory education. For *Group 4*, being a female from a wealthier household is positively correlated with studying, all else constant. However, the positive correlation between *No Annual Shock* and *Working* may suggest that households less likely to work are also more likely to be exposed to a shock. This potential source of exogeneity is corrected when controlling for households unobserved characteristics through the Fixed Effect model (5). Table 12 in the *Appendix* show that for *Group 1*, *Group 2*, *Group 3* there is not gender gap on the educational variables of interest. For *Group 4* gender bias exist and is driven by income. On average, females from food secure households are more likely to be enrolled at school than boys. The coefficient for *Female* in food secure household is statistically different from female experiencing a shock.

[16]Please refer to Table 11 in the *Appendix* for T test on education variables for Felupe Ethnic group.

TABLE 4: OLS Reduced Form : Gender difference by income

6 to 11 years old	Years	Enrollment	4^{th}	Behind	
Female	0.0335	-0.0108	0.0290	0.0564	
	(0.11)	(0.03)	(0.03)	(0.09)	
No Annual Shock	-0.1047	0.0095	-0.0165	0.0718	
	(0.09)	(0.02)	(0.03)	(0.07)	
No Annual Shock*Female	0.1079	0.0062	0.0319	-0.1232	
	(0.13)	(0.03)	(0.04)	(0.11)	
Observations	1521	1520	1521	1201	
R^2 adjusted	0.475	0.109	0.298	0.144	

12 to 15 years old	Years	Enrollment	6^{th}	Behind	Housework
Female	0.1968	-0.0056	0.0839	-0.0024	0.3503***
	(0.22)	(0.03)	(0.06)	(0.19)	(0.06)
No Annual Shock	0.1060	-0.0163	0.0350	-0.0129	0.0279
	(0.18)	(0.02)	(0.05)	(0.16)	(0.06)
No Annual Shock*Female	0.0091	0.0211	-0.0063	-0.2494	0.0477
	(0.26)	(0.03)	(0.07)	(0.23)	(0.07)
Observations	831	831	831	770	657
R^2 adjusted	0.304	0.059	0.206	0.273	0.193

16 to 19 years old	Years	Enrollment	9^{th}	High school	Working
Female	0.3624	-0.0095	0.0117	0.0658	-0.1054***
	(0.30)	(0.05)	(0.06)	(0.06)	(0.03)
No Annual Shock	-0.1254	0.0018	-0.0612	0.0018	-0.0590*
	(0.27)	(0.04)	(0.05)	(0.05)	(0.03)
No Annual Shock*Female	-0.1152	0.0455	0.0280	-0.0756	0.0722*
	(0.36)	(0.05)	(0.07)	(0.07)	(0.04)
Observations	769	768	769	769	738
R^2adjusted	0.175	0.029	0.113	0.115	0.025

20 to 25 years old	Years	Enrollment	9^{th}	University	Working
Female	-0.5474*	-0.0784	-0.0972**	-0.0278	-0.0293
	(0.31)	(0.05)	(0.05)	(0.04)	(0.04)
No Annual Shock	0.0396	-0.1110**	-0.0258	-0.0094	0.0863**
	(0.28)	(0.05)	(0.04)	(0.03)	(0.04)
No Annual Shock*Female	0.5104	0.1653**	0.0756	0.0577	-0.0728
	(0.38)	(0.07)	(0.06)	(0.05)	(0.05)
Observations	901	898	901	901	868
R^2adjusted	0.149	0.070	0.097	0.050	0.057
Age dummies	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES

Note: * p<0.10, ** p<0.05, *** p<0.01. Controls for OLS model: dummy if the individual is the son/daughter of head of household, individuals' number of siblings, dummy if the individual is the 1^{st} child born within the household, dummy if the individual is the last child born in the household, dummy for literate mother, dummy for literate father, dummy for mother living in the house, dummy for father living in the house. Robust standard errors in parenthesis to correct for heteroscedascity.

TABLE 5: FE estimation: Gender difference by income (20 to 25 years old)

	No Shock	Shock	No Shock	Shock	No Shock	Shock	No Shock	Shock	No Shock	Shock
	Years	Years	Enrollment	Enrollment	9^{th}	9^{th}	Continuing	Continuing	Vocational	Vocational
Female	-0.4703	-0.8093	0.1570**	-0.0592	-0.0971*	-0.1590**	-0.0906	-0.1750**	-0.0133	-0.0172
	(0.36)	(0.52)	(0.07)	(0.07)	(0.05)	(0.07)	(0.06)	(0.08)	(0.02)	(0.02)
Observations	601	347	600	345	601	347	601	347	601	347
R^2adjusted	0.062	0.171	0.167	0.156	0.072	0.148	0.091	0.138	0.052	0.071
Age dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Note: * p<0.10, ** p<0.05, *** p<0.01. Controls for FE model : dummy if the individual is the son/daughter of head of household, individuals' number of siblings, dummy if the individual is the 1^{st} child born within the household, dummy if the individual is the last child born in the household, dummy for literate mother, dummy for literate father, dummy for mother living in the house, dummy for father living in the house. Robust standard errors in parenthesis to correct for heteroscedascity.

To test differences for coefficient *Female* of both models, the following approach is used (Clogg, Petkova, and Haritou 1995) :

$$Z = \frac{\beta_1 + \beta_2}{\sqrt{se(\beta_1)^2 + se(\beta_2)^2}} \tag{7}$$

5.5 The role of Institutions

Previous results drove to the conclusion that gender differences among children and teenagers in age to complete primary education does not exist by ethnicity, religion and income. However, the opposite is found for older cohorts aged from twenty to twenty-five years old. The hypothesis behind the nonexistent gender bias in the youngest cohort is the change in the legislation under the educational reform of 2011 which extended compulsory primary education from 6^{th} to 9^{th} grade. To assess this hypothesis, three groups of people are chosen to compare the effect of the reform on the variable *Completed* 9^{th}. Results from OLS and FE model are depicted in Table 6 for different age range. Girls in *Group 3* under the new legislation are more likely to complete 9^{th} grade compared to males not affected by the reform by by 11.15%. Results confirm the initial assumption on the role of Institution on closing the gender gap on education and support previous findings. This outcome suggests that the reform improved female conditions.

TABLE 6: OLS and FE estimation : Dependent variable *Completed* 9^{th}

	OLS	OLS	OLS	FE	FE	FE
	14 to 21	15 to 20	16 to 19	14 to 21	15 to 20	16 to 19
Female	-0.0385	-0.0366	-0.0248	-0.1191**	-0.1437**	-0.2120**
	(0.03)	(0.04)	(0.05)	(0.05)	(0.06)	(0.09)
Female*Reform	0.1041**	0.1047*	0.0972	0.1602**	0.1523*	0.3235**
	(0.04)	(0.05)	(0.07)	(0.07)	(0.08)	(0.14)
Reform	0.0341	0.0589	0.0810	-0.0055	0.0254	0.0418
	(0.05)	(0.06)	(0.09)	(0.07)	(0.09)	(0.19)
Age	0.2617***	0.5674***	0.3306	0.3234***	1.0311***	0.5121
	(0.08)	(0.18)	(0.60)	(0.11)	(0.27)	(1.08)
Age^2	-0.0042*	-0.0127**	-0.0056	-0.0061**	-0.0263***	-0.0107
	(0.00)	(0.01)	(0.02)	(0.00)	(0.01)	(0.03)
Observations	1521	1133	780	1604	1200	828
R^2 adjusted	0.269	0.184	0.117	0.283	0.219	0.145
Age dummies	YES	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES	YES

Note: * p<0.10, ** p<0.05, *** p<0.01. Controls for OLS model : dummy if the individual is the son/daughter of head of household, individuals' number of siblings, dummy if the individual is the 1^{st} child born within the household, dummy if the individual is the last child born in the household, dummy for literate mother, dummy for literate father, dummy for mother living in the house, dummy for father living in the house, years of education of household head and age of household head. Controls for FE model : same of OLS with exclusion of years of education of household head and age of household head. Robust standard errors in parenthesis to correct for heteroscedascity.

6 Limitations and further research

Limitations are described in this section.The variable *Years of Education* refers to the individual highest level of education attained, however information on individuals length of studies is not available. Data indeed suggest that on average students fall behind in school and further research may aim at explaining what determines this outcome. The variable *Housework* accounts for domestic duties for collection of wood and water, cooking and cleaning occupations, however data on female care of children and elderly within households is not available. These factors may help understanding female time allocation among activities. On the models, the following limitations are encountered. The fixed effect model (2) has been estimated to capture differences within families and to capture differences among siblings living in the same house. Results, however do not add much information on findings from Fixed Effect model at household level. Further research could be addressed toward polygamous households and resources allocation among their members. OLS model 6 on gender difference by income may not be robust enough to capture differences in educational outcomes among constraint households. As already mention, data on household income variation is not available and potential available instruments are weak to estimate a 2SLS model. For these reasons, causality between household income variation and educational outcomes on gender cannot be established. Additionally, the OLS reduced form relies on the variable *No Annual Shock* which is a proxy for household income shock. Information on the timing, the intensity and the cause of the shock is unknown, limiting the interpretation of the results. Moreover, the variable used is a self-reported which may limit reliability of estimation.
Results suggest that there is not gender gap among students between six and fifteen years old. Individuals in this group are the ones attending compulsory education, but households can choose between public and private education. Research could be extended toward this direction and capture parental preferences on allocation of resources among members within the household. Do parents have different preferences over public or private schooling ? Is the choice conditioned by children gender? Lastly, more knowledge on ethnicity would be essential for the understanding of cultural norms and social values, which may not be captured in this paper.

7 Conclusion

Results from this study are summarized in this section. Differences on education by gender have not been found for children between six and nineteen years old. This finding is supported by results on ethnicity, religion and household income. Hence, social norms, cultural values and socio-economic conditions are not determinants for gender bias in primary education in ASB. Opposite results are found among the cohort of students from twenty to twenty-five years old. In this group, results exhibits that girls are less likely to work compared to boys, however inference on the reasons cannot be established. Female might be indeed disadvantaged because of fewer opportunities in the Labour Market (Jensen 2012), but also the social context may influence their choices(Malhotra and Mather 1997). Findings suggest that gender differences on education emerges when education is no longer mandatory and decisions on continuing studying are not anymore binding from the law. The hypothesis on the role of Institutions on correcting gender bias is confirmed. Results show indeed that the reform had a positive impact on female education, increasing girls probability to complete 9^{th} grade. From these finding, girls seem to perform better when they under the protection of the law and there is optimism for the enforcement of the legislation. These results suggest that polices on schooling should be fostered encouraging young generations to continue studying after primary education. In particular, Institutions may promote access to secondary education and training programs with repercussion on future labor market opportunities. Finally, education should be considered as a mean to create opportunities and foster human capital development for long-term growth.

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A Appendix

TABLE 7: Summary statistics

Variable	Mean	Std. Dev.	N
Household Head			
Male	0.713	0.452	2,152
Age	44.951	12.012	2125
Years of education	8.584	4.980	2,148
Ethnicity			
Felupe	0.211	0.408	15493
Balanta	0.204	0.403	15493
Papeis	0.195	0.396	15493
Fula	0.135	0.342	15493
Other	0.136	0.343	15493
Mandinga	0.118	0.323	15493
Religion			
Cristian	0.511	0.5	15493
Muslim	0.328	0.47	15493
Without	0.095	0.294	15493
Animist	0.047	0.212	15493
More than one	0.019	0.136	15493
6 to 11 (Group 1)			
Years of education	2.063	1.57	2291
Enrollment	0.869	0.34	2289
Completed 4^{th}	0.174	0.379	2291
12 to 15)Group 2)			
Years of education	5.327	2.135	1414
Enrollment	0.926	0.261	1413
Completed 4^{th}	0.790	0.406	1414
Completed 6^{th}	0.481	0.5	1414
16 to 19 (Group 3)			
Years of education	7.926	2.670	1504
Enrollment	0.818	0.386	1503
Completed 6^{th}	0.837	0.369	1504
Completed 9^{th}	0.429	0.495	1504
Continuing studying	0.270	0.444	1504
20 to 25 (Group 4)			
Years of education	9.730	3.348	2304
Enrollment	0.526	0.5	2299
Completed 9^{th}	0.678	0.460	2304
Continuing studying	0.589	0.492	2304
Years behind	2.421	2.251	4032

TABLE 8: FE regression at familiar level

6 to 11 years old	Years	Enrollment	Complete 4^{th}	Years behind
Female	0.1522	0.0692**	0.0220	-0.0242
	(0.13)	(0.03)	(0.04)	(0.12)
Observations	1024	1024	1024	790
R^2adjusted	0.656	0.209	0.413	0.236

12 to 15 years old	Years	Enrollment	Complete 6^{th}	Years behind
Female	-0.3449	0.0091	0.0213	0.3206
	(0.32)	(0.05)	(0.09)	(0.28)
Observations	501	501	501	465
R^2adjusted	0.296	0.022	0.241	0.210

16 to 19 years old	Years	Enrollment	Complete 9^{th}	Years behind
Female	-0.5334	0.0174	-0.1429	-0.0522
	(0.60)	(0.10)	(0.11)	(0.94)
Observations	408	407	408	214
R^2adjusted	0.199	0.077	0.216	0.456

20 to 25 years old	Years	Enrollment	Complete 9^{th}	Completed 6^{th}
Female	-0.7857	0.0797	-0.2176***	0.0094
	(0.53)	(0.11)	(0.08)	(0.04)
Observations	392	390	392	392
R^2 adjusted	0.089	0.166	0.122	0.049
Age dummies	YES	YES	YES	YES
Controls	YES	YES	YES	YES

Note: Note: * p<0.10, ** p<0.05, *** p<0.01. Controls : dummy for child of household head and oldest child. Robust standard errors in parenthesis to correct for heteroscedascity

TABLE 9: FE estimation: Labor Market and Marriage

16 to 19 years old	No Shock	Shock	No Shock	Shock
	Working	Working	Marriage	Marriage
Female	-0.0062	0.0614	-0.0094	0.0093
	(0.03)	(0.04)	(0.01)	(0.04)
Observations	517	262	541	275
R^2 adjusted	0.061	0.240	0.049	-0.013

20 to 25 years old	No shock	Shock	No shock	Shock
	Working	Working	Marriage	Marriage
Female	-0.0656	-0.0121	0.0316	-0.0064
	(0.05)	(0.05)	(0.02)	(0.02)
Observations	576	335	601	347
R^2 adjusted	0.097	0.045	0.071	0.039
Age dummies	YES	YES	YES	YES
Controls	YES	YES	YES	YES

Note: * p<0.10, ** p<0.05, *** p<0.01. Controls for FE model : dummy if the individual is the son/daughter of head of household, individuals' number of siblings, dummy if the individual is the 1^{st} child born within the household, dummy if the individual is the last child born in the household, dummy for literate mother, dummy for literate father, dummy for mother living in the house, dummy for father living in the house. Robust standard errors in parenthesis to correct for heteroscedascity.

TABLE 10: OLS estimation.Years of education

6 to 11 years old	Felupe	Balanta	Papeis	Cristians	Muslims	Without
Female	0.0781	0.1424**	0.0853	0.0414	0.1565**	0.1155*
	(0.07)	(0.06)	(0.07)	(0.08)	(0.08)	(0.06)
Female*Ethnicity	0.2069	-0.1153	0.1584	0.1507	-0.1189	0.0214
	(0.15)	(0.16)	(0.14)	(0.12)	(0.12)	(0.19)
Observations	1543	1543	1543	1543	1543	1543
R^2 adjusted	0.479	0.478	0.479	0.479	0.478	0.478

12 to 15 years old	Felupe	Balanta	Papeis	Cristians	Muslims	Without
Female	0.1406	0.3384**	0.1929	0.3095*	0.0969	0.2048
	(0.13)	(0.13)	(0.14)	(0.17)	(0.14)	(0.13)
Female*Ethnicity	0.3732	-0.7251**	0.0585	-0.2140	0.3248	0.0183
	(0.29)	(0.33)	(0.28)	(0.24)	(0.26)	(0.37)
Observations	842	842	842	842	842	842
R^2 adjusted	0.306	0.309	0.304	0.305	0.306	0.304

16 to 19 years old	Felupe	Balanta	Papeis	Cristians	Muslims	Without
Female	0.2494	0.2023	0.2074	0.0656	0.4532**	0.2639
	(0.20)	(0.20)	(0.20)	(0.26)	(0.20)	(0.19)
Female*Ethnicity	0.1189	0.3407	0.3348	0.4177	-0.5454	0.0970
	(0.41)	(0.43)	(0.39)	(0.35)	(0.38)	(0.54)
Observations	780	780	780	780	780	780
R^2 adjusted	0.176	0.177	0.177	0.177	0.178	0.176

20 to 25 years old	Felupe	Balanta	Papeis	Cristians	Muslims	Without
Female	-0.2964	-0.0870	-0.3435	-0.4340	-0.2596	-0.2058
	(0.22)	(0.21)	(0.22)	(0.30)	(0.20)	(0.20)
Female*Ethnicity	0.1333	-0.8136*	0.3295	0.3183	-0.0207	-0.4749
	(0.39)	(0.43)	(0.41)	(0.37)	(0.47)	(0.55)
Observations	907	907	907	907	907	907
R^2 adjusted	0.144	0.147	0.144	0.145	0.144	0.144
Age dummies	YES	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES	YES

* p<0.10, ** p<0.05, *** p<0.01.Robust Standard error in parenthesis to correct for heteroscedascity.

Note: * p<0.10, ** p<0.05, *** p<0.01. Controls for OLS model : dummy if the individual is the son/daughter of head of household, individuals' number of siblings, dummy if the individual is the 1^{st} child born within the household, dummy if the individual is the last child born in the household, dummy for literate mother, dummy for literate father, dummy for mother living in the house, dummy for father living in the house, years of education of household head and age of household head.

TABLE 11: Years of Education for Felupe Ethnicity

	Sample		**Male**		**Female**		
Age	N.	Mean	N.	Mean	N.	Mean	Diff/(s.e)
6 to 11	437	2.27	206	2.12	231	2.41	0.23***
							(0.12)
12 to 15	269	5.89	134	5.52	135	6.25	0.68***
							(0.22)
16 to 19	345	8.81	156	8.94	189	8.71	-0.24***
							(0.25)
20 to 25	506	10.8	233	11.1	273	10.5	-0.54*
							(0.23)

* p<0.10, ** p<0.05, *** p<0.01. Controlling for age

TABLE 12: FE estimation: gender difference by income

6 to 11 years old	No shock	Shock	No Shock	Shock	No Shock	Shock	No Shock	Shock
	Years	Years	Enrollment	Enrollment	Complete 4^{th}	Complete 4^{th}	Years Behind	Years Behind
Female	0.1181	-0.0247	0.0412	0.0012	0.0532	0.0297	0.0038	-0.1327
	(0.12)	(0.21)	(0.03)	(0.05)	(0.03)	(0.05)	(0.09)	(0.13)
Observations	1105	489	1104	489	1105	489	1105	489
R^2adjusted	0.649	0.524	0.171	0.183	0.418	0.297	0.153	0.216

12 to 15 years old	No Shock	Shock	No Shock	Shock	No Shock	Shock	No Shock	Shock	No Schock	Shock
	Years	Years	Enrollment	Enrollment	Complete 6^{th}	Complete 6^{th}	1cYears Behind	Years Behind	Housework	Housework
Female	0.2672	-0.6054	0.0377	-0.0778	0.1496*	-0.0672	-0.0467	0.2115	0.6201***	0.2195
	(0.28)	(0.53)	(0.04)	(0.07)	(0.09)	(0.10)	(0.29)	(0.48)	(0.10)	(0.26)
Observations	596	275	596	275	596	275	551	258	464	222
R^2 adjusted	0.287	0.265	0.006	0.102	0.198	0.335	0.212	0.404	0.622	0.315

16 to 19 years old	No Shock	Shock	No Shock	Shock	No Shock	Shock	No Shock	Shock	No Shock	Shock
	Years	Years	Enrollment	Enrollment	Complete 6^{th}	Complete 6^{th}	Complete 9^{th}	Complete 9^{th}	Continuing	Continuing
Female	-0.3000	-0.1187	0.0238	-0.0808	-0.0069	0.0093	-0.0218	-0.1602	-0.1130	0.0713
	(0.45)	(0.51)	(0.07)	(0.09)	(0.06)	(0.09)	(0.09)	(0.11)	(0.09)	(0.10)
Observations	541	275	541	274	541	275	541	275	541	275
R^2 adjusted	0.250	0.317	0.081	0.125	0.185	0.152	0.148	0.207	0.208	0.239
Age dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

* p<0.10, ** p<0.05, *** p<0.01 *Group 1*: 6-11 years old

Note: * p<0.10, ** p<0.05, *** p<0.01. Controls for FE model : dummy if the individual is the son/daughter of head of household, individuals' number of siblings, dummy if the individual is the 1^{st} child born within the household, dummy if the individual is the last child born in the household, dummy for literate mother, dummy for literate father, dummy for mother living in the house, dummy for father living in the house. Robust standard errors in parenthesis to correct for heteroscedascity.