# Impact of divorce on children's educational attainment: Evidence from Senegal 

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#### Abstract

Divorce is common enough in Senegal, as well as in many countries in sub-Saharan Africa. To our knowledge, this is the first paper to study the impact of divorce on children's educational outcomes in a developing country, while controlling for family-level characteristics using sibling fixed effects. Contrary to findings on divorce in developed countries, we find that selection into divorce is positive: Mothers who divorce are more educated than their counterparts, and more likely to come from a better-off background. Despite this positive selection into divorce, it seems that children of divorced parents still suffer from their divorce. Using a sibling fixed-effect approach, we do not find any link between divorce and the likelihood to have attended primary school. However, divorce when a child is aged 10 to 14 decreases the likelihood that this child attends secondary school with respect to the likelihood that her/his older siblings attended secondary school. This age range corresponds to the period during which most transitions from primary school to secondary school happen.


JEL Classification: J12, I25, 055
Keywords: Divorce, Education, Senegal.

[^0]
## 1 Introduction

Divorce can be frequent in developing countries, and especially in West Africa. In 2006, in Senegal, $10 \%$ of women older than 15 and $13 \%$ of women older than 30 have divorced at least once. Despite divorces being common in Africa (Clark and Brauner-Otto [2015]), their effects in developing countries have scarcely been studied in the economic literature. Divorce can have consequences for both ex-spouses as well as for their children, as the economic literature has suggested in the case of developed countries. Some researchers have argued that there is a negative causal effect of divorce (Halla et al. [2016], Gruber [2004]) whereas others suggested that this relationship is due at a high extent to selection into divorce (Björklund and Sundström [2006], Cherlin et al. [1991], Piketty [2003]) or that the impact of divorce depends on the level of conflict prior the divorce (Amato et al. [1995]). Data limitations have been the main factor that prevented the analysis of the effects of divorce in developing countries. For instance, the Demographic and Health Surveys record what the current marital status of respondents is and whether they have been married more than once. However, the reason why the last marriage ended is not known (widowhood or divorce). The date of the end of that previous union is also unknown. In this paper, we rely on the survey Pauvreté et Structure Familiale (PSF) (De Vreyer et al. [2008]), a survey which includes these two pieces of information.

In most African countries, including Senegal, consequences of a divorce for children could be especially significant given the fact that customary divorce rules include neither provision for child support, nor clear rules on child custody (Lagoutte et al. [2014]). In Senegal, while in the case of legal divorces, child support can be provided, in the case of customary divorces or of a repudiation of the woman by her husband, decisions affecting the children are decided by their father. Only legally registered marriages can be legally ended, and women tend to be the ones filling for legal divorce. Several studies, such as Dial [2008] and Lagoutte et al. [2014], conclude that women living in urban areas, and educated women are more likely than their poorer and rural-dwelling counterparts to ask for a divorce, but that poorer women also get divorced. As men should provide for their wives ${ }^{1}$, a divorce is likely to decrease a woman's financial resources and hence to be an emotional shock and an economic shock. In that context, consequences of a divorce on children's welfare could differ from consequences of divorces in developed countries. The only paper (Gnoumou Thiombiano et al. [2013]), to our knowledge, to focus on children whose parents divorced in an African country, show that these children are at higher risk of dying before they reach the age of 5 , and are less likely to attend primary school that their counterparts.

[^1]The key issue is to distinguish between selection into divorce and the causal effect of divorce. As divorce is potentially affecting a specific kind of families, the threat to capture a selection effect instead of a causal effect is particularly accurate. It is difficult to judge ex ante what the impact of divorce could be. On the one hand, in Senegal children whose parents divorce are more often the children of educated parents, and, as such, should be more likely to attend school (Dumas and Lambert [2011]). Women are often the ones initiating a divorce, so it is unlikely that the consequences of a divorce would always be negative for them: Lambert et al. [2017] finds that divorced women are not worse-off than ever-married women in terms of consumption. On the other hand, it is unclear whether women take into account the consequences of a divorce in terms of child outcomes, especially as there is uncertainty over child custody. In our study, we focus on children of divorced mothers as we are sure to match the children to the divorce date of their biological parents. Polygyny is widespread in Senegal, and our data does not allow us to easily identify which children were affected by a divorce when the father divorced one of his wives.

In this study, we use sibling-analysis to document the effects of divorce in Senegal. We use the second wave of the survey PSF (Pauvreté et Structure Familiale), that was conducted in 2011. The quality of the data enables us to have information on all the siblings, including children who are not living with their mother. Residence and custody of the children are outcomes of divorce, hence it matters that we use extensive information not only on household members, but on children living elsewhere. We exploit the variation in the age at divorce among the siblings. This method controls for the potential bias of unobserved and invariant characteristics within the family. Such characteristics include the education levels of the parents, their preferences for their children education: these factors also determine educational outcomes, hence the use of sibling fixed effects.

We find that divorce does not affect the probability to attend formal school. However, it reduces the likelihood to have a secondary education. This effect seem to come from children that were between 10 and 14 years old when their parents divorced: this age range corresponds to the window during which most transitions from primary to secondary school happen. There is no evidence of heterogeneous effects with respect to gender.

While sibling-level analysis may not allow us to identify a causal effect of divorce, it allows us to control for unobserved selection factors ${ }^{2}$. We plan to explore channels that could explain our results. Our data allows us to look at migration decisions and at educational facilities in current and previous place of residence, custody at the time of survey, and at whether the mother has

[^2]remarried.
This paper makes three contributions to the literature. First, this is one of the first papers to study the impact of divorce on children educational attainment in a developing country, and it also the first one that controls for unobservable family constant characteristics - factors that are likely to explain much of the selection into divorce. This adds to the literature on divorce in Africa that shows how frequent divorce is (Clark and Brauner-Otto [2015]). Second, we contribute to the (broader) literature on marital shocks and the channels that mediate their impact. The impact of widowhood has already been studied in the context of Africa (for instance, Chapoto et al. [2011](Zambia) and Van de Walle [2013] (Mali)). In the context of Senegal, Lambert et al. [2017] find that widowhood is not neutral for women's well-being and that poor women are more vulnerable to dissolution and remarriage. Third, this paper also expands the literature on the determinants of children's educational outcomes in West Africa (Dumas and Lambert [2011], Andre and Demonsant [2014]).

The rest of the paper is organized as follows. Section 2 presents elements of context about divorce in Senegal. In section 3, we present the data used. In section 4 we discuss the sibling fixed-effect identification strategy. Section 5 shows the results. Section 6 includes discussion of heterogeneous effects and robustness checks. Section 8 concludes.

## 2 Context: Divorce and Education in Senegal

### 2.1 Divorce and its consequences for children

Since 1973, according to the Code Sénégalais de la Famille, a legal marital dissolution must be pronounced, even when the marriage has not been legally registered (Lagoutte et al. [2014]). Despite being unlawful, repudiation is still practised in Senegal, as well as divorce under customary laws. Most divorces belong to the former category. According to Dial [2008], civil registers are not linked to registers in the mosques, as mosques do not necessarily transfer marriage registrations to the town hall, thus making the access to legal divorces more difficult. Men and women can apply for a legal divorce, but women are more likely to be the ones asking for a divorce ${ }^{3}$. In the case of legal divorces, women make up $75 \%$ of claims introduced to tribunals (Lagoutte et al. [2014]). In rural areas, repudiation is common. The practice seems to be stable in the time in Senegal, as highlighted by the figure 2. This in line with Clark and Brauner-Otto [2015].

Repudiation can only be pronounced by the husband, and he can retain custody of children, if he wishes so, as soon as the children are weaned. In the case of a legal divorce, child support ${ }^{4}$

[^3]Figure 1: Children's place of residence


Note: Left panel: Residence place of boys whose parents divorced. Right panel: Residence place of girls whose parents divorced.
can be ordered by the judge, who also decides on the children's residence, and declares one parent to be the main care-giver. However, child support is not necessarily paid by the children's father. In the case of customary divorce or repudiation, the children's situation depends on their father's willingness to contribute to their living expenses. Lambert et al. [2017], quoting interviews with women, stress that women are often worried that their children could be taken away from them, should they divorce their husbands. Hence, it is likely that outcomes of a divorce for children - in terms of place of residence, main care-giver - may not be fully anticipated or controlled by women.

Child fostering is also a current practice, which exists in families without marital dissolution as well. Hence, some children do not live with their parents, and are fostered, usually to their grand-parents, aunts, uncles or older siblings, as shown in figure 1.

Remarriage tend to happen quickly after a divorce, mostly because social norms dictate that child-bearing age women should be married. Two years after their divorce, half of the individuals have remarried (Lambert et al. [2017]).

### 2.2 Education in Senegal

The schooling system in Senegal includes formal schools and Qur'Anic schools (Andre and Demonsant [2014]). Primary and secondary schools are either "French schools" or "French-Arabic schools", named after the main language(s) of instruction. After completing secondary school, it is possible to complete one's education at university ${ }^{5}$.

Figure 3 represents the share of people who have any kind of formal schooling (left panel) and in case of a divorce for a serious illness Lagoutte et al. [2014].
${ }^{5}$ Attending a university or a post-secondary institution is rare in Senegal. For each birth cohort, less than $2 \%$ of men attended university; the share of women who attended university is even lower. We do not study the impact of divorce on transitions into university, as the sample size would be extremely small.

Figure 2: Trends in divorce


Note: All women (PSF2). This figure represents the fraction of women whose last union ended because of a divorce. We can only identify why a marriage/relationship ended for the last relationship. It is hence a lower bound on the share who women who have ever divorced.
who attended secondary school (right panel). Whichever the education variable considered, we see that the share of people with that level of education has increased over time. In the case of primary education, the share of men and women who have attended formal school is similar for the cohorts born after 1990, and roughly equal to $80 \%$ for these cohorts. For secondary education, women are less slightly likely than men to have attended secondary school, and the share of people who attended secondary school is around $40 \%$ of those born in 1995. This share has increased sharply for both genders after 1985. To look at these time trends, we only kept cohorts which completed their education decisions.

In figure 4, we look at the likelihood of these two educational outcomes as a function of age. Left panel shows the share of children who have any formal schooling (whether or not they are enrolled at the time of the survey). Right panel shows the share of children who have attended, or are attending, secondary school. We study the likelihood to have attended formal school at age 7 and age 10. Children are supposed to be enrolled in primary school at $7^{6}$, but as seen in the graph, children join primary school till the age of 10 . In the case of secondary school, children transition from primary school to secondary school between 11 and 15 . Due to sample size constraints, we

[^4]Figure 3: Trends in education


Note: Left panel: Share of respondents (PSF2) who have attended any kind of formal schooling. Right panel: Share of respondents (PSF2) who have attended secondary school. The sample is restricted to respondents between 10 and 70 (for the left panel) and to respondents between 16 and 70 for the right panel.

Figure 4: Age of entry in formal school


Note: Left panel: Share of children (PSF2) who have attended any kind of formal schooling. Right panel: Share of children (PSF2) who have attended secondary school.
use 14 as a threshold in our main specification and we look at specifications with different cut-offs as robustness checks (to be completed).

## 3 Data and sample

### 3.1 Dataset: Pauvreté et structure familiale

We use the survey Enquête Pauvreté et Structure Familiale ${ }^{7}$. The first wave of the survey was conducted in 2006-2007 and the second in 2011, and is described in detail in De Vreyer et al. [2008]. The survey recorded very detailed information on past marital life. The number of previous dis-

[^5]solutions is known, as well as the reason of the last marital break-down. For individuals surveyed during the second wave, we know what the date at which the previous union began. This is one of the reasons we chose to work with the second wave, when a natural choice could have been the first wave which is nationally representative. The most important reason for our choice is the size of the sample, since in 2011, 28376 individuals were surveyed when only 1750 households, and 14450 individuals were surveyed in 2006.

The PSF survey has furthermore the advantage that information is registered on children who are live with their parents as well as on those who do not, provided that they are younger than 25 year old. More specifically, each individual in the household is asked to indicate which children living in the household are his or her own, and to list her/his children living elsewhere. For the children living elsewhere, the adult is asked about their place of residence and their educational attainment, as well as a few other pieces of information. This is crucial in a context where children are often fostered to other members of the family (and may not live with either of their biological parents). Very few datasets collect these pieces of information.

### 3.2 Sample

To build the sample, we include all the children of the mothers interviewed in the survey in 2011. We chose this sample (and not the children of fathers for instance) to avoid duplicated observations - children who would be recorded by the mother and the father. A second reason for this choice is that identifying the children of a divorced couple is difficult when the children's father had several spouses at the time of the divorce, as we only have information on the father's divorce date, but we do not know which of this then-wives he divorced from ${ }^{8}$.

As shown in Table 1, there are 536 children (younger than 25) whose mother has divorced in the PSF data. Among them, more than one third are not living with their mother. Children who are not living with their mother at the time of the survey are more likely to have a divorced mother than the children living with their mother, which is not surprising. The fact that there are fewer children in the higher age categories is partly due to the fact that the individuals have to have reached a given age at the time of the survey, which constitutes an additional condition to be met. Some children have parents that will divorce later but have not divorce yet, so are include in the sample of children whose parents have not divorced.

Since our main strategy relies on sibling fixed effects, the sample of interest includes children who have at least one sibling and whose educational outcome is known ${ }^{9}$. The outcomes we are interested in are having attended school - looking at children older than 7 and older than 10 -

[^6]and having a secondary education, a variable that is defined for children older than 14 years old. Based on these variables, our samples of interest will be respectively composed of 4292 children older than 7 - among them 238 have a divorced mother, 3568 children older than 10 -among them 201 have a divorced mother, and 2527 children older than 14 - among them 149 children have a divorced mother (Table 2) ${ }^{10}$.

In table 3, we compare the individual characteristics of children, depending on whether their mother has divorced. Children of divorced mothers are more likely to be enrolled in school. It is not surprising as divorced mothers are more likely to be educated than their counterparts who did not divorce.

[^7]Table 1: Number of observations

| Variables | Coresiding Children |  | Not Coresiding |  | All Children |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Share | N | Share | N | Share | N |
| Mother has not divorced | 0.96 | 7,489 | 0.85 | 1,077 | 0.94 | 8,566 |
| Mother has divorced | 0.04 | 340 | 0.15 | 196 | 0.06 | 536 |
| Mother has not divorced (7+) | 0.95 | 4,638 | 0.86 | 1,001 | 0.93 | 5,639 |
| Mother has divorced (7+) | 0.05 | 243 | 0.14 | 167 | 0.07 | 410 |
| Occured before being 4 years old | 0.51 | 175 | 0.43 | 84 | 0.48 | 259 |
| Occured between 5 and 9 | 0.31 | 104 | 0.34 | 66 | 0.32 | 170 |
| Occured between 10 and 14 | 0.00 | 38 | 0.02 | 25 | 0.01 | 63 |
| Occured between 15 and 25 | 0.07 | 23 | 0.11 | 21 | 0.08 | 44 |

Note: The table displays the number of children, according to whether they live with their mother. The sample corresponds to all the children of the women surveyed in 2011. Children are younger than 25 , so they either live in the household, or were declared as living elsewhere by their mother.

Source: PSF 2011.

### 3.3 Determinants

Table 4 presents the characteristics associated with the likelihood to have divorced at least once. Women who have divorced are more educated in average and belongs to wealthier household, which is in line with the results of the qualitative surveys earlier mentionned.

We perform also a multivariate analysis in the table 5. Primary school increases significantly the likelihood of divorce, as well as having a self-employed or state-employed father. This is not surprising in a context where the husband provides a significant portion of the financial support. As the divorce results in economic shock for women, women who tend to divorce are more educated. Father's status is also a proxy for social class and how empowered women are. In addition, the number of older brothers and sisters of the wife increases also the probability of divorce. This could be due to their financial help in the event of divorce. Social norms seem also at play: divorce is more common among the Poular.

Table 2: Number of families

| Variables | Non divorced | Divorced |
| :--- | :---: | :---: |
|  | N | N |
| At least 2 siblings over 6, info. on primary educ | 4,292 | 238 |
| At least 2 siblings over 9, info. on primary educ. | 3,568 | 201 |
| At least 2 siblings over 14, info. on secondary educ. | 2,527 | 149 |

Note: The table displays the number of children in families made up of at least two full-siblings, for whom the relevant outcome is known at the time of the survey. Children are younger than 25 , so they either live in the household, or were declared as living elsewhere by their mother.
Source: PSF 2011.

Table 3: Education characteristics

| Variables | Divorce | No Divorce | Difference |
| :---: | :---: | :---: | :---: |
| Children older than 7 years old |  |  |  |
| Child ( $\geqslant 7$ ) ever attended school | 0.70 | 0.66 | $\begin{aligned} & -0.05^{*} \\ & (0.09) \end{aligned}$ |
| Children older than 10 years old |  |  |  |
| Child ( $\geqslant 10$ ) ever attended school | 0.69 | 0.66 | $\begin{gathered} -0.03 \\ (0.25) \end{gathered}$ |
| Child ( $\geqslant 7$ ) ever attended school | 0.70 | 0.66 | $\begin{aligned} & -0.05 * \\ & (0.09) \end{aligned}$ |
| Children older than 14 years old |  |  |  |
| Child ( $\geqslant 7$ ) ever attended school | 0.67 | 0.65 | $\begin{gathered} -0.03 \\ (0.45) \end{gathered}$ |
| Child ( $\geqslant 10$ ) ever attended school | 0.67 | 0.65 | $\begin{gathered} -0.03 \\ (0.45) \end{gathered}$ |
| Child ( $\geqslant 14$ ) no formal education | 0.32 | 0.34 | $\begin{gathered} 0.03 \\ (0.42) \end{gathered}$ |
| Child ( $\geqslant 14$ ) primary education | 0.24 | 0.28 | $\begin{gathered} 0.04 \\ (0.18) \end{gathered}$ |
| Child ( $\geqslant 14$ ) secondary or higher education | 0.40 | 0.36 | $\begin{gathered} -0.05 \\ (0.17) \end{gathered}$ |

Note: The table presents the educational characteristics of the children, depending on whether their mother has divorced or not. In the first panel, we present results for children who are 7 years old or older at the time of the survey. In the second panel, we focus on the children who are above 10 years old and in the third, on children who are above 14 years old. The third column presents the difference in means.
Sample: Children under 25 years old in PSF 2011, either surveyed themselves in the households or declared as non coresiding by their mother.

Source: PSF 2011.

Table 4: Divorced mothers v. never divorced mothers

| Variables | Ever <br> Divorce | Never <br> Divorce | Diff. |
| :--- | :---: | :---: | :---: |
| Education | 0.58 | 0.66 | $0.08 * * *$ <br> Mother - No education |
| Mother - Primary education | 0.27 | 0.17 | $-0.09 * * *$ <br> $(0.00)$ |
| Mother - Secondary or higher | 0.12 | 0.09 | $-0.03 * * *$ <br> $(0.01)$ |
| Mother - No information on education | 0.03 | 0.07 | $0.04^{* * *}$ <br> $0.00)$ |
| Household Consumption |  |  | 0.00 |
| Alim Mother Hh | 180379.59 | 169086.77 | -11292.82 |
| Non Alim Mother Hh | 263138.68 | 178973.82 | $-84164.86^{*}$ <br> $(0.05)$ |
| Family structure |  |  | $0.34)$ |
| Age | 41.43 | 38.40 | $-3.02 * * *$ |
| Number of women | 730 | 5397 | 6127 |

Note: The table presents characteristics of women according to their divorce status. The sample corresponds to all women surveyed in 2011.
Source: PSF, 2011.

Table 5: Logit: Women's propensity to divorce

|  | All Sample |  |  |
| :---: | :---: | :---: | :---: |
|  | Has divorced | Has divorced | Has divorced |
| Education (ref. no education) |  |  |  |
| Primary education | 0.73 (0.10)*** | 0.57 (0.10)*** | 0.47 (0.11)*** |
| Secondary or higher | 0.58 (0.13)*** | 0.42 (0.14)*** | 0.28 (0.15)* |
| Religion (ref. Mourid muslim) |  |  |  |
| Other muslim group | 0.01 (0.10) | -0.11 (0.11) | -0.11 (0.10) |
| Other religion | -0.10 (0.20) | -0.17 (0.20) | -0.16 (0.20) |
| Religion unknown | -0.21 (0.38) | -0.05 (0.39) | -0.10 (0.39) |
| Ethnic group (ref. Wolof) |  |  |  |
| Serere | 0.04 (0.14) | 0.04 (0.15) | 0.07 (0.15) |
| Poular | 0.12 (0.11) | 0.16 (0.11) | 0.16 (0.11) |
| Other ethnic group | -0.02 (0.13) | 0.06 (0.14) | 0.06 (0.14) |
| Family structure |  |  |  |
| Age | 0.01 (0.00)*** | 0.01 (0.00)*** | 0.01 (0.00)*** |
| Number of older brothers |  | 0.01 (0.03) | 0.01 (0.03) |
| Number of older sisters |  | -0.02 (0.03) | -0.02 (0.03) |
| Father's occupation (ref. Inactivity) |  |  |  |
| Farmer |  |  | 0.07 (0.13) |
| Independent or informal employee |  |  | 0.38 (0.15)*** |
| State-employed or employer |  |  | 0.48 (0.16)*** |
| Occupation unknown |  |  | 0.46 (0.21)** |
| Constant | -2.83 (0.12)*** | -2.43 (0.41)*** | -2.69 (0.43)*** |
| Region FE | No | Yes | Yes |
| Mean of dependent variable | 0.12 | 0.12 | 0.12 |
| Standard deviation of dependent variable | 0.33 | 0.33 | 0.33 |
| N | 6072 | 5830 | 5830 |
| R | 0.02 | 0.02 | 0.03 |
| Chi2 | 94.47 | 100.15 | 119.58 |

Note: The dependent variable is whether a woman's last marriage ended by a divorce. The sample corresponds to all women surveyed in 2011.
Standard errors are clustered at the level of the household. Significance levels are denoted as follows: $+\mathrm{p}<0.15$, * $\mathrm{p}<0.10$, ** $\mathrm{p}<0.05$, *** $\mathrm{p}<0.01$.

## 4 Methodology

Our identification strategy is to use sibling fixed effects. Björklund and Sundström [2006] use sibling fixed effects, relying on the contrast between experiencing a parental divorce younger or older than 18. Le Forner uses the same specification, but distinguishes between different age groups at the time of divorce. Another identification strategy has consisted in using scores pre and post divorce to disentangle the effect of parental separation from the impact of conflictuality within families (Piketty [2003], Ribar et al.). Data limitation prevents us from implementing this strategy.

We use a sibling fixed effect analysis, with age groups based on the age until which children are likely to enter primary and secondary school. We hence contrast educational outcomes for children than experienced a parental divorce before the age of 10 (14) and after, 10 (14) being the age at which virtually all children, if they are to attend primary (secondary) school, should have been enrolled.

Our main specification is a linear probability model ${ }^{11}$

$$
\text { school }_{i f}=\sum_{j=1}^{n} \alpha_{j} * \text { AgeGroupDivorce }_{j i}+\beta_{1} * \text { BirthYear }_{i}+X_{i}^{\prime} * \beta_{2}+\gamma_{f}+\epsilon_{i}
$$

- AgeGroupDivorce: age when parents divorced (number of groups depends on the specification chosen)
- BirthYear: birth year of the child (controls for time trends)
- $\gamma_{f}$ : mother fixed effect
- $X_{i}$ : other controls : gender, birth birth.

Children's birth year allows us to control for time trends in education (see figure 3). Children's birth order is likely to influence their educational outcomes (Dumas and Lambert [2011]).

As we compare siblings who experienced the divorce of their parents at different ages, and use siblings whose parents did not divorce to assess the effect of gender, birth order and birth year. We exclude older and younger half-siblings of the children whose parents divorced, in order not to introduce variation within families in exposure to divorce. We also exclude the families in which there was a marital dissolution: children whose mother was widowed are excluded from

[^8]the sample. The reason is that it allows us to have a sample made up only of full siblings, instead of having half-siblings in the case of children of widows, but not in the case of divorcees ${ }^{12}$.

## 5 Results

### 5.1 Between families estimates

Table 6 shows that educational attainment of children of divorced mothers are not different that their counterparts who did not experience any family breakdown ${ }^{13}$.

Table 6: Naive estimate - Divorce v. no divorce

|  |  | (2) |  |
| :---: | :---: | :---: | :---: |
|  | Child ( $\geqslant 7$ ) ever attended school | Child ( $\geqslant 10$ ) ever attended school | Child ( $\geqslant 14$ ) secondary or higher education |
| Mother has divorced | -0.00373 | -0.0160 | -0.0163 |
|  | (0.0314) | (0.0348) | (0.0407) |
| Mother controls |  |  |  |
| Mother - primary education | 0.341*** | 0.352*** | 0.327*** |
|  | (0.0168) | (0.0177) | (0.0272) |
| Mother - secondary or higher education | 0.387*** | 0.389*** | 0.531*** |
|  | (0.0204) | (0.0215) | (0.0386) |
| Individual controls |  |  |  |
| Child is a girl | 0.0179 | 0.0130 | -0.0334** |
|  | (0.0133) | (0.0146) | (0.0167) |
| Birth rank |  |  |  |
| Second child | -0.0115 | -0.00912 | 0.0188 |
|  | (0.0157) | (0.0174) | (0.0211) |
| Third child | 0.0163 | 0.0111 | 0.0229 |
|  | (0.0176) | (0.0195) | (0.0248) |
| Fourth and more | 0.0215 | 0.0269 | 0.0554** |
|  | (0.0182) | (0.0201) | (0.0229) |
| Constant | 0.477*** | 0.476*** | 0.192*** |
|  | (0.0380) | (0.0385) | (0.0353) |
| Birth year FE | Yes | Yes | Yes |
| Number of observations | 5,111 | 4,303 | 3,185 |
| Note: <br> Significance levels are denoted as follows: * $\mathrm{p}<0.10$, ${ }^{* *} \mathrm{p}<0.05$, *** $\mathrm{p}<0.01$. Robust standard errors in parentheses (clustered at the mother level). |  |  |  |

### 5.2 Sibling fixed effects

Table 7 shows that the likelihood to have attended school is not significantly different between siblings who experienced a parental divorce at different ages. A child who was younger than 6 at the time of the survey is not disadvantaged in terms of school access. The coefficient is positive, but insignificant, when we consider the whole sample of children. Focusing on the sample of children whose mother has divorced, the coefficient is positive and significant. However the significance disappears when adding siblings fixed effects, suggesting that the positive and significant coefficient associated to divorce was capturing the effect of an unobservable variable that is

[^9]controlled for with the fixed effects. Several factors could be at play: the mother's income, her socio-economic status, her preferences with respect to sending her children to formal school.

Taking into account that in Senegal, children can enroll at school for the first time until 10 years old, we provide also the results for children over 10 years old (table 8). We see that results are similar to those seen when looking at children older than 7 . There is no significant difference in probability to attend school according to the age of the child at divorce of the mother.

However, the age at divorce seem to have an impact on the probability to attend secondary schools, as shown in table 9. To be younger than 14 at time of divorce decreases the likelihood to attend secondary school. On the sample of children whose mother has divorced, the coefficient is significant at the $5 \%$ level and at $1 \%$ level when we control for birth order. The magnitude of this association is sizeable: it decreases the probability to attend school by 36 percentage points. Decomposing the timing of the shock between experiencing a familial breakdown younger than age 10 and experiencing it between 10 and 14 years old, we see that to be hit by a parental divorce between 10 and 14 years old what is linked with a decrease in the probability to attend secondary school. The coefficient is also significant when we consider the whole sample of children. Divorce seems therefore particularly harmful when it happens to children between 10 and 14. One hypothesis that we would like to explore is that when divorce occurs at a younger age, parents have time to cope with the shock and so .

## 6 Heterogeneity and Robustness

### 6.1 Girls and Boys

Table 10 shows results of regressions using interactions between age at divorce and a dummy indicating whether the child is a girl. Once we control for sibling fixed effects, we do not find that the impact of divorce differs across gender.

### 6.2 Sample selection

To implement our strategy, we have to focus on a specific sample, which is made up of the families for which information is collected on more than two children. We perform a balancing test to compare these families with the other families affected by a divorce that do not meet the sample selection criteria ${ }^{14}$. We test for differences at the mother level and at the children level (table 11 and table 12) considering the information available at 6 years old on the schooling status ${ }^{15}$. When

[^10]Table 7: Having attended school ( $\geqslant 7$ years old)

|  | LPM | LPM | LPM | LPM with SFE | LPM with SFE | LPM with SFE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Panel A: All children |  |  |  |  |  |  |
| Age at divorce |  |  |  |  |  |  |
| 0-6 y.o. | $\begin{gathered} 0.0586 \\ (0.0409) \end{gathered}$ | $\begin{gathered} 0.0647 \\ (0.0409) \end{gathered}$ |  | $\begin{gathered} 0.0598 \\ (0.0388) \end{gathered}$ | $\begin{gathered} 0.0613 \\ (0.0382) \end{gathered}$ |  |
| 0-4 y.o. |  |  | 0.0798* |  |  | 0.0712 |
|  |  |  | (0.0477) |  |  | (0.0454) |
| 5-6 y.o. |  |  | 0.0388 |  |  | 0.0446 |
|  |  |  | (0.0666) |  |  | (0.0654) |
| Individual controls |  |  |  |  |  |  |
| Child is a girl | 0.0157 | 0.0153 | 0.0152 | 0.00865 | 0.00830 | 0.00828 |
|  | (0.0140) | (0.0140) | (0.0140) | (0.0120) | (0.0120) | (0.0120) |
| Mother controls |  |  |  |  |  |  |
| Mother - primary education | 0.338*** | 0.341*** | 0.341*** |  |  |  |
|  | (0.0183) | (0.0184) | (0.0184) |  |  |  |
| Mother - secondary or higher education | 0.372*** | 0.378*** | 0.378*** |  |  |  |
|  | (0.0227) | (0.0226) | (0.0226) |  |  |  |
| Constant | 0.468*** | 0.461*** | 0.461*** | 0.484*** | 0.505*** | 0.505*** |
|  | (0.0396) | (0.0402) | (0.0402) | (0.0331) | (0.0336) | (0.0336) |
| Birth year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Birth order FE | No | Yes | Yes | No | Yes | Yes |
| Number of observations | 4,663 | 4,663 | 4,663 | 4,663 | 4,663 | 4,663 |
| Number of families |  |  |  | 1,377 | 1,377 | 1,377 |

Panel B: All children whose parents divorced
Age at divorce

| $0-6$ y.o. | $0.160 * *$ | $0.180 * * *$ | 0.0532 | 0.107 |
| :---: | :---: | :---: | :---: | :---: |
|  | $(0.0699)$ | $(0.0672)$ | $(0.0914)$ | $(0.0921)$ |


| 0-4 y.o. | $0.251 * * *$ | 0.202 |
| :--- | :---: | :---: |
|  | $(0.0828)$ | $(0.134)$ |
| $5-6$ y.o. | 0.0875 | 0.0802 |
|  |  | $(0.0808)$ |
| $(0.0886)$ |  |  |
| vidual controls |  |  |
| hild is a girl | -0.0244 | -0.0247 |
|  | -0.0294 | -0.0201 |


| Child is a girl | $\begin{aligned} & -0.0244 \\ & (0.0560) \end{aligned}$ | $\begin{gathered} -0.0247 \\ (0.0548) \end{gathered}$ | $\begin{aligned} & -0.0294 \\ & (0.0555) \end{aligned}$ | $\begin{aligned} & -0.0201 \\ & (0.0627) \end{aligned}$ | $\begin{aligned} & -0.0397 \\ & (0.0571) \end{aligned}$ | $\begin{aligned} & -0.0418 \\ & (0.0570) \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mother controls |  |  |  |  |  |  |
| Mother - primary education | $\begin{aligned} & 0.252 * * * \\ & (0.0825) \end{aligned}$ | $\begin{aligned} & 0.256 * * * \\ & (0.0875) \end{aligned}$ | $\begin{aligned} & 0.248 * * * \\ & (0.0882) \end{aligned}$ |  |  |  |
| Mother - secondary or higher education | $\begin{aligned} & 0.390 * * * \\ & (0.0864) \end{aligned}$ | $\begin{aligned} & 0.393 * * * \\ & (0.0876) \end{aligned}$ | $\begin{aligned} & 0.397 * * * \\ & (0.0905) \end{aligned}$ |  |  |  |
| Constant | $\begin{gathered} 0.495 * * * \\ (0.160) \end{gathered}$ | $\begin{gathered} 0.552 * * * \\ (0.151) \end{gathered}$ | $\begin{gathered} 0.569 * * * \\ (0.150) \end{gathered}$ | $\begin{gathered} 0.610 * * * \\ (0.154) \end{gathered}$ | $\begin{gathered} 0.681 * * * \\ (0.134) \end{gathered}$ | $\begin{gathered} 0.697 * * * \\ (0.130) \end{gathered}$ |
| Birth year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Birth order FE | No | Yes | Yes | No | Yes | Yes |
| Number of observations | 238 | 238 | 238 | 238 | 238 | 238 |
| Number of families |  |  |  | 90 | 90 | 90 |

Note:
Sample includes children whose biological parents divorced (listed by the mother) and children whose mother did not experience any marital dissolution (widowhood or divorce).
Robust standard errors in parentheses (clustered at the mother level, except for models (5) and (6)). Significance levels are denoted as follows: * $\mathrm{p}<0.10$, ** $\mathrm{p}<0.05$, *** $\mathrm{p}<0.01$.
looking at the characteristics of the mothers, the only significant difference is on age. Women who do not have two children over 6 years old are younger on average, which is not surprising. But this

Table 8: Having attended school ( $\geqslant 10$ years old)

|  | LPM | LPM | LPM | LPM with SFE | LPM with SFE | LPM with SFE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Panel A: All children |  |  |  |  |  |  |
| Age at divorce |  |  |  |  |  |  |
| 0-9 y.o. | $\begin{aligned} & -0.0155 \\ & (0.0466) \end{aligned}$ | $\begin{aligned} & -0.00810 \\ & (0.0471) \end{aligned}$ |  | $\begin{gathered} 0.0213 \\ (0.0469) \end{gathered}$ | $\begin{gathered} 0.0207 \\ (0.0465) \end{gathered}$ |  |
| 0-5 y.o. |  |  | $\begin{gathered} 0.0603 \\ (0.0520) \end{gathered}$ |  |  | $\begin{gathered} 0.0642 \\ (0.0493) \end{gathered}$ |
| 6-9 y.o. |  |  | $\begin{aligned} & -0.0826 \\ & (0.0698) \end{aligned}$ |  |  | $\begin{aligned} & -0.0399 \\ & (0.0710) \end{aligned}$ |
| Individual controls |  |  |  |  |  |  |
| Child is a girl | $\begin{aligned} & 0.00654 \\ & (0.0155) \end{aligned}$ | $\begin{aligned} & 0.00579 \\ & (0.0155) \end{aligned}$ | $\begin{aligned} & 0.00579 \\ & (0.0155) \end{aligned}$ | $\begin{aligned} & -0.00617 \\ & (0.0132) \end{aligned}$ | $\begin{aligned} & -0.00683 \\ & (0.0132) \end{aligned}$ | $\begin{aligned} & -0.00647 \\ & (0.0132) \end{aligned}$ |
| Mother controls |  |  |  |  |  |  |
| Mother - primary education | $\begin{aligned} & 0.340 * * * \\ & (0.0196) \end{aligned}$ | $\begin{aligned} & 0.343 * * * \\ & (0.0196) \end{aligned}$ | $\begin{aligned} & 0.341 * * * \\ & (0.0196) \end{aligned}$ |  |  |  |
| Mother - secondary or higher education | $\begin{aligned} & 0.380 * * * \\ & (0.0233) \end{aligned}$ | $\begin{aligned} & 0.387 * * * \\ & (0.0233) \end{aligned}$ | $\begin{aligned} & 0.388 * * * \\ & (0.0234) \end{aligned}$ |  |  |  |
| Constant | $\begin{aligned} & 0.473 * * * \\ & (0.0398) \end{aligned}$ | $\begin{aligned} & 0.466 * * * \\ & (0.0408) \end{aligned}$ | $\begin{aligned} & 0.466 * * * \\ & (0.0409) \end{aligned}$ | $\begin{aligned} & 0.487 * * * \\ & (0.0333) \end{aligned}$ | $\begin{aligned} & 0.514 * * * \\ & (0.0345) \end{aligned}$ | $\begin{aligned} & 0.514 * * * \\ & (0.0344) \end{aligned}$ |
| Birth year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Birth order FE | No | Yes | Yes | No | Yes | Yes |
| Number of observations | 3,868 | 3,868 | 3,868 | 3,868 | 3,868 | 3,868 |
| Number of families |  |  |  | 1,187 | 1,187 | 1,187 |
| Panel B: All children whose parents divorced |  |  |  |  |  |  |
| Age at divorce |  |  |  |  |  |  |
| 0-9 y.o. | $\begin{gathered} 0.0792 \\ (0.0895) \end{gathered}$ | $\begin{gathered} 0.0919 \\ (0.0824) \end{gathered}$ |  | $\begin{gathered} 0.00522 \\ (0.103) \end{gathered}$ | $\begin{aligned} & -0.0159 \\ & (0.104) \end{aligned}$ |  |
| 0-5 y.o. |  |  | $\begin{aligned} & 0.241 * * \\ & (0.0997) \end{aligned}$ |  |  | $\begin{gathered} 0.258 \\ (0.166) \end{gathered}$ |
| 6-9 y.o. |  |  | $\begin{aligned} & -0.00337 \\ & (0.0942) \end{aligned}$ |  |  | $\begin{aligned} & 0.0291 \\ & (0.106) \end{aligned}$ |
| Individual controls |  |  |  |  |  |  |
| Child is a girl | $\begin{aligned} & -0.0101 \\ & (0.0659) \end{aligned}$ | $\begin{aligned} & -0.00899 \\ & (0.0647) \end{aligned}$ | $\begin{aligned} & -0.00790 \\ & (0.0628) \end{aligned}$ | $\begin{aligned} & -0.0831 \\ & (0.0696) \end{aligned}$ | $\begin{gathered} -0.0846 \\ (0.0601) \end{gathered}$ | $\begin{aligned} & -0.0770 \\ & (0.0584) \end{aligned}$ |
| Mother controls |  |  |  |  |  |  |
| Mother - primary education | $\begin{aligned} & 0.254 * * \\ & (0.102) \end{aligned}$ | $\begin{aligned} & 0.264 * * \\ & (0.109) \end{aligned}$ | $\begin{aligned} & 0.228^{* *} \\ & (0.112) \end{aligned}$ |  |  |  |
| Mother - secondary or higher education | $\begin{aligned} & 0.368 * * * \\ & (0.0912) \end{aligned}$ | $\begin{aligned} & 0.375 * * * \\ & (0.0946) \end{aligned}$ | $\begin{gathered} 0.401 * * * \\ (0.104) \end{gathered}$ |  |  |  |
| Constant | $\begin{gathered} 0.482 * * * \\ (0.169) \end{gathered}$ | $\begin{gathered} 0.514 * * * \\ (0.165) \end{gathered}$ | $\begin{gathered} 0.544 * * * \\ (0.158) \end{gathered}$ | $\begin{gathered} 0.622^{* * *} \\ (0.146) \end{gathered}$ | $\begin{gathered} 0.716 * * * \\ (0.138) \end{gathered}$ | $\begin{gathered} 0.705^{* * *} \\ (0.134) \end{gathered}$ |
| Birth year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Birth order FE | No | Yes | Yes | No | Yes | Yes |
| Number of observations | 201 | 201 | 201 | 201 | 201 | 201 |
| Number of families |  |  |  | 77 | 77 | 77 |

Note:
Sample includes children whose biological parents divorced (listed by the mother) and children whose mother did not experience any marital dissolution (widowhood or divorce).
Robust standard errors in parentheses (clustered at the mother level, except for models (5) and (6)). Significance levels are denoted as follows: * $\mathrm{p}<0.10$, ** $\mathrm{p}<0.05$, *** $\mathrm{p}<0.01$.
difference in age does not go along with a difference in household consumption. Such a difference would been more worrying. At the children level, there is a higher probability for the child to be

Table 9: Having attended or attending secondary school ( $\geqslant 14$ years old)

|  | LPM | LPM | LPM | LPM with SFE | LPM with SFE | LPM with SFE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Panel A: All children |  |  |  |  |  |  |
| Age at divorce |  |  |  |  |  |  |
| 0-14 y.o. | $\begin{aligned} & -0.0431 \\ & (0.0516) \end{aligned}$ | $\begin{aligned} & -0.0309 \\ & (0.0520) \end{aligned}$ |  | $\begin{gathered} -0.105 \\ (0.0655) \end{gathered}$ | $\begin{gathered} -0.103 \\ (0.0640) \end{gathered}$ |  |
| 0-9 y.o. |  |  | $\begin{aligned} & 0.000207 \\ & (0.0610) \end{aligned}$ |  |  | $\begin{gathered} -0.0313 \\ (0.0665) \end{gathered}$ |
| 10-14 y.o. |  |  | $\begin{gathered} -0.0974 \\ (0.0792) \end{gathered}$ |  |  | $\begin{aligned} & -0.208 * * \\ & (0.0937) \end{aligned}$ |
| Individual controls |  |  |  |  |  |  |
| Child is a girl | $\begin{aligned} & -0.0307 * \\ & (0.0183) \end{aligned}$ | $\begin{aligned} & -0.0318 * \\ & (0.0183) \end{aligned}$ | $\begin{aligned} & -0.0323 * \\ & (0.0183) \end{aligned}$ | $\begin{gathered} -0.0462 * * \\ (0.0187) \end{gathered}$ | $\begin{gathered} -0.0469 * * \\ (0.0187) \end{gathered}$ | $\begin{aligned} & -0.0466 * * \\ & (0.0186) \end{aligned}$ |
| Mother controls |  |  |  |  |  |  |
| Mother - primary education | $\begin{aligned} & 0.332 * * * \\ & (0.0306) \end{aligned}$ | $\begin{aligned} & 0.335^{* * *} \\ & (0.0307) \end{aligned}$ | $\begin{aligned} & 0.335^{* * *} \\ & (0.0308) \end{aligned}$ |  |  |  |
| Mother - secondary or higher education | $\begin{aligned} & 0.503 * * * \\ & (0.0439) \end{aligned}$ | $\begin{aligned} & 0.511 * * * \\ & (0.0431) \end{aligned}$ | $\begin{aligned} & 0.512 * * * \\ & (0.0429) \end{aligned}$ |  |  |  |
| Constant | $\begin{aligned} & 0.249 * * * \\ & (0.0361) \end{aligned}$ | $\begin{aligned} & 0.237 * * * \\ & (0.0390) \end{aligned}$ | $\begin{aligned} & 0.236 * * * \\ & (0.0390) \end{aligned}$ | $\begin{aligned} & 0.283 * * * \\ & (0.0351) \end{aligned}$ | $\begin{aligned} & 0.307 * * * \\ & (0.0382) \end{aligned}$ | $\begin{aligned} & 0.302 * * * \\ & (0.0377) \end{aligned}$ |
| Birth year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Birth order FE | No | Yes | Yes | No | Yes | Yes |
| Number of observations | 2,735 | 2,735 | 2,735 | 2,735 | 2,735 | 2,735 |
| Number of families |  |  |  | 921 | 921 | 921 |

Panel B: All children whose parents divorced
Age at divorce

| $0-14$ y.o. | -0.143 | -0.129 |
| :--- | :---: | :---: |
|  | $(0.120)$ | $(0.114)$ |


| $-0.348 * *$ | $-0.362 * * *$ |
| :---: | :---: |
| $(0.135)$ | $(0.115)$ |

0-9 y.o.

| -0.0896 |  | $-0.298 *$ |
| :---: | :---: | :---: |
| $(0.127)$ |  | $(0.174)$ |
| -0.176 |  | $-0.349 * * *$ |
| $(0.126)$ |  | $(0.113)$ |
|  |  |  |
| -0.00291 | -0.0934 | -0.107 |
| $(0.0785)$ | $(0.0740)$ | $(0.0690)$ |
|  |  |  |
|  |  | -0.104 |
|  |  |  |
|  |  |  |


| Mother controls |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mother - primary education | $\begin{gathered} 0.181 \\ (0.123) \end{gathered}$ | $\begin{gathered} 0.184 \\ (0.120) \end{gathered}$ | $\begin{gathered} 0.185 \\ (0.122) \end{gathered}$ |  |  |  |
| Mother - secondary or higher education | $\begin{gathered} 0.470 * * * \\ (0.110) \end{gathered}$ | $\begin{gathered} 0.479 * * * \\ (0.110) \end{gathered}$ | $\begin{gathered} 0.488 * * * \\ (0.105) \end{gathered}$ |  |  |  |
| Constant | $\begin{aligned} & 0.288 * \\ & (0.162) \end{aligned}$ | $\begin{gathered} 0.403 * * * \\ (0.138) \end{gathered}$ | $\begin{gathered} 0.399 * * * \\ (0.137) \end{gathered}$ | $\begin{gathered} 0.626 * * * \\ (0.130) \end{gathered}$ | $\begin{gathered} 0.786 * * * \\ (0.108) \end{gathered}$ | $\begin{gathered} 0.766 * * * \\ (0.115) \end{gathered}$ |
| Birth year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Birth order FE | No | Yes | Yes | No | Yes | Yes |
| Number of observations | 149 | 149 | 149 | 149 | 149 | 149 |
| Number of families |  |  |  | 59 | 59 | 59 |

Note:
Sample includes children whose biological parents divorced (listed by the mother) and children whose mother did not experience any marital dissolution (widowhood or divorce).
Robust standard errors in parentheses (clustered at the mother level, except for models (5) and (6)). Significance levels are denoted as follows: * $\mathrm{p}<0.10$, ** $\mathrm{p}<0.05$, *** $\mathrm{p}<0.01$.
already married, since children are older on average, and a lower probability to have attended secondary education. The fact that the two samples differ only on these variables suggest that we

Table 10: Heterogeneity across gender

|  | Child ever attended school ( $\geqslant 7$ y. o.) |  | Child attended secondary school ( $\geqslant 14$ y.o.) |  |
| :---: | :---: | :---: | :---: | :---: |
| Age at divorce |  |  |  |  |
| 0-6 y.o. | $\begin{aligned} & 0.124_{* *} \\ & (0.0497) \end{aligned}$ | $\begin{aligned} & 0.103^{* *} \\ & (0.0420) \end{aligned}$ |  |  |
| 0-14 y.o. |  |  | $\begin{gathered} -0.0647 \\ (0.0738) \end{gathered}$ | $\begin{gathered} -0.143 \\ (0.107) \end{gathered}$ |
| Child is a girl | $\begin{gathered} -15.56 * * * \\ (5.783) \end{gathered}$ | $\begin{gathered} -23.25 * * * \\ (4.967) \end{gathered}$ | $\begin{aligned} & -20.62^{*} \\ & (10.67) \end{aligned}$ | $\begin{gathered} -24.54 * * \\ (11.23) \end{gathered}$ |
| $\begin{gathered} \text { Girls } \\ \text { Girl } \times 0-6 \text { y.o. } \end{gathered}$ | $\begin{aligned} & -0.125^{*} \\ & (0.0744) \end{aligned}$ | $\begin{gathered} -0.0880 \\ (0.0703) \end{gathered}$ |  |  |
| Girl $\times 0-14$ y.o. |  |  | $\begin{gathered} 0.0593 \\ (0.0983) \end{gathered}$ | $\begin{gathered} -0.00800 \\ (0.112) \end{gathered}$ |
| Girl $\times$ Birth year | $\begin{gathered} 0.00831 * * * \\ (0.00222) \end{gathered}$ | $\begin{aligned} & 0.0180 * * * \\ & (0.00268) \end{aligned}$ | $\begin{aligned} & 0.00833^{* *} \\ & (0.00395) \end{aligned}$ | $\begin{aligned} & 0.0146 * * * \\ & (0.00499) \end{aligned}$ |
| Boy $\times$ Birth year | $\begin{aligned} & 0.000497 \\ & (0.00220) \end{aligned}$ | $\begin{aligned} & 0.00633 * * \\ & (0.00253) \end{aligned}$ | $\begin{gathered} -0.00201 \\ (0.00387) \end{gathered}$ | $\begin{gathered} 0.00235 \\ (0.00497) \end{gathered}$ |
| Birth rank |  |  |  |  |
| Second child | $\begin{gathered} -0.0212 \\ (0.0162) \end{gathered}$ | $\begin{gathered} -0.0541 * * * \\ (0.0165) \end{gathered}$ | $\begin{gathered} -0.0191 \\ (0.0245) \end{gathered}$ | $\begin{aligned} & -0.0512^{*} \\ & (0.0261) \end{aligned}$ |
| Third child | $\begin{aligned} & 0.00935 \\ & (0.0191) \end{aligned}$ | $\begin{gathered} -0.0528^{* *} \\ (0.0217) \end{gathered}$ | $\begin{aligned} & -0.00629 \\ & (0.0298) \end{aligned}$ | $\begin{aligned} & -0.0516 \\ & (0.0364) \end{aligned}$ |
| Fourth and more | $\begin{gathered} 0.0205 \\ (0.0210) \end{gathered}$ | $\begin{gathered} -0.0660^{* *} \\ (0.0296) \end{gathered}$ | $\begin{gathered} 0.0310 \\ (0.0296) \end{gathered}$ | $\begin{gathered} -0.0371 \\ (0.0491) \end{gathered}$ |
| Mother controls |  |  |  |  |
| Mother - primary education | $\begin{aligned} & 0.340 * * * \\ & (0.0184) \end{aligned}$ |  | $\begin{aligned} & 0.347 * * * \\ & (0.0305) \end{aligned}$ |  |
| Mother - secondary or higher education | $\begin{aligned} & 0.379 * * * \\ & (0.0226) \end{aligned}$ |  | $\begin{aligned} & 0.521 * * * \\ & (0.0457) \end{aligned}$ |  |
| Constant | $\begin{gathered} -0.429 \\ (4.381) \end{gathered}$ | $\begin{gathered} -11.93 * * \\ (5.029) \end{gathered}$ | $\begin{gathered} 4.290 \\ (7.695) \end{gathered}$ | $\begin{aligned} & -4.246 \\ & (9.883) \end{aligned}$ |
| Number of observations | 4,663 | 4,663 | 2,674 | 2,674 |
| Number of families |  | 1,377 |  | 901 |

Note:
Sate: divorce).
Robust standard errors in parentheses (clustered at the mother level, except for models (5) and (6)). Significance levels are denoted as follows: * $\mathrm{p}<0.10$, ${ }^{* *} \mathrm{p}<0.05$, ${ }^{* * *}$ $\mathrm{p}<0.01$.
do not introduce a worrying selection by using siblings fixed effects, comparatively to the general population of children of divorced women.

### 6.3 Discussion

With the sibling fixed effect, we control for unobservable family-level characteristics that remain constant over siblings. To claim that results are causal, it should be verified that the timing of the divorce is exogenous and that selection into divorce is not driven by variables that also affect the children's educational ability, such a disability.

We would have a problem of omitted variable bias if difference in ability between siblings were

Table 11: Characteristics of divorced mothers, depending on having at least 2 siblings over 6 or not

| Variables | 2 siblings over 6 | Not the case | Diff. |
| :---: | :---: | :---: | :---: |
| Mother's Age | 40.11 | 33.96 | $\begin{array}{r} -6.15 * * * \\ (0.00) \end{array}$ |
| Education |  |  |  |
| Primary education | 0.26 | 0.33 | 0.07 |
|  |  |  | (0.22) |
| Secondary or higher | 0.13 | 0.16 | 0.03 |
|  |  |  | (0.46) |
| Father's occupation |  |  |  |
| Farmer | 0.31 | 0.25 | -0.06 |
|  |  |  | (0.26) |
| Independant or informal employee | 0.22 | 0.29 | 0.07 |
|  |  |  | (0.18) |
| State-employed or employer | 0.24 | 0.25 | 0.01 |
|  |  |  | (0.82) |
| Occupation unknown | 0.05 | 0.10 | 0.05 |
|  |  |  | (0.18) |
| Household Consumption |  |  |  |
| Alim Mother Hh | 173494.52 | 197288.07 | 23793.55 |
|  |  |  | (0.46) |
| Non Alim Mother Hh | 137910.17 | 309664.97 | 171754.79 |
|  |  |  | (0.36) |
| Number of mothers | 93 | 197 | 290 |

$\overline{\text { Note: } \text { The table presents the average characteristic of divorced mothers with children, depending on whether they }}$ have at least 2 children older than 6 years. The third column presents the difference in means.
Sample: Women surveyed in 2011 and having children under 25 years old of a previous divorce. Source: PSF, 2011.

Table 12: Characteristics of children whose mother divorced, depending whether they belong to a family with at least 2 siblings older than 6

| Variables | 2 siblings <br> over 6 | Not the case | Diff. |
| :---: | :---: | :---: | :---: |
| Child is a girl | 0.46 | 0.49 | 0.03 |
|  |  |  | (0.44) |
| Child is married | 0.09 | 0.02 | $-0.07 * * *$ |
|  |  |  | (0.00) |
| Child ( $\geqslant 7$ ) ever attended school | 0.65 | 0.65 | -0.01 |
|  |  |  | (0.92) |
| Child ( $\geqslant 10$ ) ever attended school | 0.63 | 0.63 | -0.00 |
|  |  |  | (0.99) |
| Child ( $\geqslant 14$ ) no formal education | 0.35 | 0.20 | -0.15** |
|  |  |  | (0.04) |
| Child ( $\geqslant 14$ ) primary education | 0.22 | 0.31 | 0.10 |
|  |  |  | (0.14) |
| Child ( $\geqslant 14$ ) secondary or higher education | 0.40 | 0.43 | 0.03 |
|  |  |  | (0.69) |
| Number of children | 252 | 284 | 536 |
| Note: The table presents the average characteristic of children who o a family with at least 2 siblings older than 6 . The third column pr Sample: Children of divorced mother, younger than 25 years old in $P$ | mother divorced nts the difference 2011. They eithe ource: PSF, 2011 ource. psr, 201 | epending <br> live in the hou | er they belong hold and were |

causing divorce, and difference in schooling. We do not believe that it is a plausible threat, as we are not aware of any qualitative work mentioning disabilities of children as a cause of divorce, and as it never came up as a cause of divorce in qualitative interviews in Senegal. Differences in permanent characteristics of each child are unlikely to bias our results, especially as negative consequences exist only for children who experience the divorce of their parents when they were between 10 and 14 years old. If divorces were caused by the disability of the youngest child, we would expect to see effects on the likelihood to attend primary school, rather than on the likelihood to attend secondary school.

We control for birth cohort to avoid capturing a time trend in education and we control for timeinvariant family characteristics. However, there may be time-varying events that affect younger children more, and that drive up the likelihood of a divorce. For instance, the economic situation could be different for two siblings at the same age, for instance if the divorce follows economic hardship. It is difficult to build retrospective information on the economic situation of a household for each sibling. The fact that divorce characterizes wealthier women alleviates the threat according to which a deterioration in the economic situation of the household could drive the divorce and the decrease in the probability to go to secondary school.

A more serious issue is whether the differences in results for primary school and secondary
school can be interpreted as differences that are linked to the differences between primary and secondary school ${ }^{16}$ or to the fact that families which experience a family breakdown when a child is younger than 6 and another older are different from families which experience a divorce when a child is younger than 14 and another is older. We discussed sample selection in the previous section. Divorced mothers who have two children older than 14 are not different from mothers who have younger children, but we plan to study the length of marriage, and whether families which broke down after a long marriage are different from families in which the divorce happened after a short marriage. We think that studying the mobility and remarriage decisions taken after a divorce, as well as family budgets could help us shed light on this question.

Furthermore, the strategy does not allow us to differentiate between, on the one hand, how the divorce itself affects the children and, on the other hand, how conflict within the household (even before the divorce happens) affects them. What we attribute to the divorce could be due to a difference in levels of conflict within families ${ }^{17}$.

## 7 Channels

To be completed. Among the channels that could determine the failure to transition into secondary school: place of residence and access to secondary school, financial constraints (school fees etc.), marriage outcomes (especially for girls), whether the mother remarries or not.

## 8 Conclusion

In this paper, we analyze the link between divorce and children's educational outcomes. Using an unique dataset that records information on children belonging to the household where their mother surveyed as well as those living elsewhere, we show that divorce is correlated with a lower probability to attend secondary school, even once the influence of observable and unobservable characteristics common to the siblings has been removed. Not all the endogeneity problem is removed, since they could still remain differences in unobservable characteristics between siblings as well as selection into divorcing at a specific time. Further work on that topic will focus on exploring these issues and understanding the channels which mediate the effects of a divorce.

Our results suggests that there is a link between divorce and education in the context of Senegal. This result could have policy implications, depending on the channels that explain the negative effect of a divorce on secondary school attendance. A possible set of policies would be informa-

[^11]tion campaigns supporting marriage registration and legal divorce, which may allow women to get more child support. Qualitative interviews in Senegal have shown that women are not well informed of what they can legally get in case of divorce, and that it prevents them to ask divorce even in difficult circumstances such as intimate partner violence. If the shock of divorce is temporary, it could lessen the impact of shock to allow pupils whose parents divorce to retake entrance exams once their family has higher income available for education expense. More broadly, this paper adds to the literature on the adverse effects of family breakdown on children's outcomes in sub-Saharan Africa, may it be because of parental death or of a divorce, and may support the introduction of policies supporting single parents and their children.

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A Appendix

Table 13: Characteristics of divorced mothers, depending on having at least 2 siblings over 14 or not

| Variables | 2 siblings over 14 | Not the case | Diff. |
| :---: | :---: | :---: | :---: |
| Age | 43.21 | 34.19 | $\begin{array}{r} -9.03 * * * \\ (0.00) \end{array}$ |
| Education |  |  |  |
| Primary education | 0.25 | 0.32 | 0.07 |
|  |  |  | (0.31) |
| Secondary or higher | 0.16 | 0.15 | -0.01 |
|  |  |  | (0.84) |
| Father's occupation |  |  |  |
| Farmer | 0.32 | 0.26 | -0.07 |
|  |  |  | (0.33) |
| Independant or informal employee | 0.20 | 0.28 | 0.09 |
|  |  |  | (0.19) |
| State-employed or employer | 0.23 | 0.25 | 0.02 |
|  |  |  | (0.81) |
| Occupation unknown | 0.04 | 0.10 | 0.06 |
|  |  |  | (0.13) |
| Household Consumption |  |  |  |
| Alim Mother Hh | 199794.27 | 187145.20 | -12649.08 |
|  |  |  | (0.74) |
| Non Alim Mother Hh | 139268.31 | 281062.48 | 141794.18 |
|  |  |  | (0.56) |
| Number of mothers | 56 | 234 | 290 |

Note: The table presents the average characteristic of divorced mothers with children, depending on whether they have at least 2 siblings over 14 years, or not. The third column presents the difference in means. Sample: Women surveyed in 2011 and having children under 25 years old of a previous divorce. Source: PSF, 2011.

Table 14: Characteristics of children whose mother divorced, depending whether they belong to a family with at least 2 siblings older than 14

| Variables | 2 siblings over 14 | Not the case | Diff. |
| :---: | :---: | :---: | :---: |
| Child is a girl | 0.45 | 0.48 | 0.03 |
|  |  |  | (0.49) |
| Child is married | 0.14 | 0.02 | -0.11*** |
|  |  |  | (0.00) |
| Child ( $\geqslant 7$ ) ever attended school | 0.65 | 0.65 | 0.00 |
|  |  |  | (0.95) |
| Child ( $\geqslant 10$ ) ever attended school | 0.65 | 0.61 | -0.04 |
|  |  |  | (0.44) |
| Child ( $\geqslant 14$ ) no formal education | 0.35 | 0.25 | -0.10 |
|  |  |  | (0.14) |
| Child ( $\geqslant 14$ ) primary education | 0.22 | 0.28 | 0.06 |
|  |  |  | (0.36) |
| Child ( $\geqslant 14$ ) secondary or higher education | 0.40 | 0.42 | 0.02 |
|  |  |  | (0.77) |
| Number of children | 149 | 387 | 536 |

Note: The table presents the average characteristic of children of divorced mothers, depending on whether they belong to family of at least 2 siblings over 14 years, or not. The third column presents the difference in means. Sample: Children of divorced mother, under 25 years old in PSF 2011, either surveyed themselves in the households or declared as non coresiding by their mother. Source: PSF, 2011.


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[^1]:    ${ }^{1}$ Lagoutte et al. [2014] stress that the "défaut d'entretien par le mari" (husband failed to support his wife economically) is grounds for divorce.

[^2]:    ${ }^{2}$ Some studies (Piketty [2003]; Voena [2015]) use the impact of a reform in the divorce law to assess the impact of access to divorce. No major divorce reform has been implemented in Senegal during our study period, and moreover, in a setting in which most divorces take place outside the legal framework, it is unlikely that law changes would inform us on the consequences of divorce for the average divorce in a family.

[^3]:    ${ }^{3}$ Men retain the possibility of polygyny, which can be seen as an alternative to getting a divorce.
    ${ }^{4}$ Alimony can be provided if the husband filed for divorced under the motive he does not get along with his wife, or

[^4]:    ${ }^{6}$ Some children attend pre-school, hence they appear as having attended formal school.

[^5]:    ${ }^{7}$ Momar Sylla and Matar Gueye of the Agence Nationale de la Statistique et de la Démographie of Senegal (ANSD), and Philippe De Vreyer (University of Paris-Dauphine and IRD-DIAL), Sylvie Lambert (Paris School of Economics-INRA) and Abla Safir (now with the World Bank) designed the survey. The data collection was conducted by the ANSD.

[^6]:    ${ }^{8}$ We nevertheless intend to look a children of divorced fathers in the future
    ${ }^{9}$ In section 6, we test whether these families are different from families that do not enter our sample.

[^7]:    ${ }^{10}$ We remind you that the numbers listed in Table 1 and Table 2 cannot be straightforwardly compared, since the first one lists number of children according to their age at divorce, whereas the second one uses the age at the time of the survey.

[^8]:    ${ }^{11}$ We specify our model as a linear probability model rather than as a logit model, despite having a binary dependent variables. Our models include fixed effects, and as logit models with fixed effects keep only observations for which there is variation in the outcome variable within the fixed effects, hence in our case, all families in which children all attended school or did not attend school are dropped from the sample. Hence, it becomes difficult to estimate birth order and birth year effects.

[^9]:    ${ }^{12}$ Results including widows in the sample are available from the authors. Results do not change significantly from excluding them.
    ${ }^{13}$ We exclude from our sample children whose mother have been widowed at least once her life, and children whose mother divorced but who did not experience the divorce.

[^10]:    ${ }^{14}$ Criteria are listed in subsection 3.2.
    ${ }^{15}$ Tables for the secondary education are available in the Appendix:table 13 and table 14

[^11]:    ${ }^{16}$ For instance, secondary school being more expensive, often located further away from home than primary schools.
    ${ }^{17}$ We plan to look at the impact of the entry of a new wife in the household to look at conflicts.

