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THREE ESSAYS ON FAMILY, CULTURE AND DEVELOPMENT IN SUB-SAHARAN AFRICA

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Sigles et abbréviations

DHS:	Demographic and Health Surveys
EDS:	Enquêtes Démographiques et de Santé
EA:	Enumeration Area
INStaD-Bénin:	Institut National de la Statistique et de la Démographie du Bénin
Max:	Maximum
MCO:	Moindres Carrés Ordinaires
Min:	Minimum
Obs:	Observation
OLS:	Ordinary Least Squares
SES:	Socio Economic Status
STD:	Standard Deviation
UNICEF:	United Nations International Children's Emergency Fund

Résumé

Cette présente thèse, organisée en trois chapitres, traite de problématiques liées à la culture, la famille et le développement en Afrique sub-saharienne.

Les deux premiers chapitres traitent du confiage des enfants en Afrique. Dans le chapitre 1, que j'ai co-écrit avec Irène Dohouin, nous examinons les déterminants du confiage des enfants et les caractéristiques de l'enfant confié. À cet effet, nous utilisons les données d'une enquête que nous avons organisée et réalisée au Bénin en 2022 dans le cadre d'un projet portant sur les conditions de vie dans l'enfance et la qualité de vie à l'âge adulte. Les analyses montrent que le niveau d'éducation des parents et la perte d'un parent pendant l'enfance sont associés au confiage des enfants. En ce qui concerne le choix de l'enfant confié, les résultats montrent que les filles sont généralement les plus confiées et la probabilité d'être confié décroît strictement avec l'ordre de naissance de l'enfant dans la fratrie. Nous trouvons aussi qu'il existe une difference importante dans les raisons de confiage entre les filles et les garçons. En effet, les filles sont confiées en général pour aider dans les travaux domestiques tandis que les garçons sont confiés pour aller à l'école.

Le chapitre 2 est co-écrit avec Irène Dohouin, Raphael Godefroy et Joshua Lewis. Nous y analysons les effets de long terme du confiage des enfants. En utilisant les données collectées dans le cadre de l'enquête évoquée précédemment, nous montrons que les personnes adultes qui ont été confiées dans leur enfance sont moins susceptibles de fréquenter une école comparativement à leurs frères et soeurs non confiés. Nous montrons que cette

différence du niveau d'éducation s'est accrue après la réforme du système éducatif dans les années 1990 au Bénin. Toutefois, nous n'avons trouvé aucune évidence que le confiage a des effets négatifs à l'âge adulte. Au contraire, les résultats semblent montrer que les personnes confiées performent mieux sur le marché du travail relativement à leurs frères et soeurs non confiés. Nos résultats suggèrent que les coûts à long terme du placement des enfants peuvent être considérablement atténués grâce à des transferts compensatoires.

Dans le troisième chapitre, je m'intéresse à la comprehension du rôle de la culture dans l'assimilation économique des peuples africains en général, et des femmes en particulier. Pour ce faire, j'analyse la contribution de la langue parlée, une composante essentielle de la culture, à l'assimilation économique des femmes sur le marché du travail, et le cas échéant, la persistence de cette contribution dans les temps modernes. Pour répondre à cette question, je combine les données sur l'emploi des femmes provenant des Enquêtes Démographiques et de Santé (EDS), avec les données sur les langues et les ethnies africaines dans une regression par les Moindres Carrés Ordinaires (MCO). Les résultats montrent qu'il existe une association positive entre la similarité linguistique et l'assimilation économique des femmes sur le marché du travail dans les temps anciens (avant la colonisation). Toutefois, cette contribution historique de la similarité linguistique a disparu avec le temps. Les résultats montrent que c'est plutôt la qualité des institutions qui jouent un rôle préponderant dans l'assimilation économique des femmes de nos jours.

Mots-clés: Proximité linguistique, marché du travail, institution national, femmes, confiage, ordre de naissance, genre, Afrique, Bénin, échantillonnage, fertilité, enquète.

Abstract

This thesis, organized into three chapters, addresses issues related to culture, family and development in sub-Saharan Africa.

The first two chapters deal with childhood fostering in Africa. In chapter 1, co-authored with Irene Dohouin, we examine the determinants of child fostering across and within family in Bénin. In this purpose, we rely on a dataset that comes from a unique survey that we designed and conducted in Bénin in 2022 as part of a project on childhood living conditions and well-being in adulthood. We find that parental education is associated with child fostering. Indeed, less educated parents are more likely to foster one of their children. The fostered child is chosen according to his gender and his birth order, with daughters facing a high risk of fostering during childhood. Also, children who lost one of their parents during childhood are have a higher probability of being fostered than their other biological siblings. Importantly, we find an important gender difference in reasons of child fostering as boys are fostered for schooling whereas girls are fostered to help in domestic tasks. Furthermore, the probability to be fostered during childhood is steady decline by birth order.

Chapter 2, co-authored with Irene Dohouin, Joshua Lewis and Raphael Godefroy, studies the long run effect of childhood fostering. Using a dataset derived from the survey that I mentioned above, we estimate that adults who were fostered during childhood are significantly less likely to have attended school than their biological siblings. We show

that this difference in education achievement increased after the launch of an education reform in the 1990s. Nevertheless, along a range of socioeconomic outcomes, we find no evidence that childhood fostering had lasting negative impacts into adulthood. Indeed, we find some evidence that fostered siblings enjoyed slightly better labor market outcomes than their non-fostered siblings. Our results suggest that the long-term costs of childhood fostering may be substantially mitigated through compensating transfers.

The third chapter aims to understand the role of culture in the economic assimilation of African people in general, and for women in particular. Especially, I study the association between linguistic proximity and ethnic proximity in women labor market participation and I investigate whether this association persisted over a long period of times. By taking advantage of three different datasets and an OLS estimates that account for the geography of ethnic group's homeland, I find that linguistic proximity is strongly and significantly associated to the ethnic proximity in women historical labor market participation. I find also that there is no association between linguistic proximity and ethnic proximity in women labor market participation in modern days. This finding suggests that the historical relationship does not persist until today. Furthermore, I show evidence that ethnic group pairs inhabiting a high rule of law country are associated with a high degree of proximity in women labor market participation today. This last finding is suggestive of the important role of national institutions in driving economic assimilation across Africa.

Mots-clés: Linguistic proximity, Labor market, National institution, Women, Birth order, Gender, Africa, Bénin, Sampling, Child Fostering, Fertility, Survey.

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Chapter 1

Determinants of Child fostering: Evidence from a novel survey in Bénin

1.1 Introduction

Child fostering is the transfer of children from their biological parents to another home where they are raised and cared for by foster parents. The practice is widespread in developing countries namely in sub-Saharan Africa (Cotton, 2021).

Many studies aim to understand why this practice is used, and propose a wide variety of explanations (Bose-Duker et al., 2021). For instance, the seminal work of Ainsworth (1996a), who has developed an economic model that examines both demand and supply sides of child fostering market, gives support to domestic labour motives of child fostering, where children are sent out to other households to perform domestic tasks. Also, Serra (2009) argues that both labor and human capital motives may coexist in a context where biological parents send their children into a high socioeconomic status

household to enjoy a better educational attainment or a better social network. So, the foster parents receive the fostered children as they constitute an important source of labor force either for household work or various economic activities. Child fostering could then affect children's welfare in both positive and negative direction (Gibbison and Paul, 2005; Lachaud et al., 2016b; Sands et al., 2009).

Although research on the economic motives of the practice are documented in the literature, little attention has been given to the empirical determinants of child fostering. Research on the empirical determinants of child fostering are very rare particularly because of the non availability of a suitable dataset to address the question. The ideal dataset should contain for each children, detailed information on parent-child coresidence, duration of periods of nonresidence, reasons for parent-child separation, and details on the households that welcome the nonresident children. For the best of our knowledge, such a dataset does not exist for any country. For example, Cotton (2021) estimates prevalence of child fostering in Sub-Saharan Africa by using Demographic and Health Surveys (DHS) datasets on 36 countries in Sub-Saharan Africa. Although the DHSs are nationally representative, they provide limited information on child nonresidence. Respondents, namely women are asked about current coresidence with each of their living children, regardless of child's current age. This measure of child fostering presents several drawbacks. First, it is not suitable to measure child fostering for children aged 15 and more since they could reside elsewhere for other reasons (marriage, employment, etc.). Secondly, it does not tell anything about child nonresidence before or after the survey for children who currently co-reside with their mother. Most of works use surveys where child fostering data are collected almost in the same way as in DHSs (Akresh, 2009; Lachaud et al., 2016b).

The point of this paper is to address this gap. To do so, we analyze a unique dataset that comes from a survey that we designed and conducted in Benin in 2022. In this survey, we collected for *adult* respondents and their siblings, detailed information on their family backgrounds (birth order within their sibship, parental education, parental occupation,

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parental death during childhood, etc.), their socio-demographic characteristics (gender, age, marital status, etc). Importantly, for each sibship's member aged 15 and over, we ask retrospectively whether they have been fostered during childhood [1]. We collected also additional information on the reasons for fostering for the respondents. The richness of our dataset allows us to investigate the determinants of child fostering both across and within families.

We start by analyzing the predictors of child fostering decision across families. To do so, we define a family fostering status for each family as a dummy variable equal to 1 if at least one child from that sibship has been fostered out during childhood and we regress this variable on family background variables. We find that both maternal and paternal educational attainment are negatively and significantly associated with child fostering across families. About 10 percentage points increase in the proportion of mothers who complete primary education would be associated with 8 percentage points decline in the proportion of child fostering families [2]. We find similar results for father's educational attainment. In addition, we explore whether parental death during childhood is predictive of childhood fostering by defining a fostering dummy variable [3] and a parental death variable [4] for each individual in our sample. We find that individuals who lost one of their parents before age 15 are more likely to be fostered during childhood. The estimates are robust to family and individual controls and are particularly significant for individuals who lost their father.

We move further and investigate the within family determinants of childhood fostering. We focus mainly on the role of child's birth order and child's gender. In fact, aside from situations requiring child fostering (illness, divorce, or death (Cohen, 1985)), children are frequently sent to live with non-natal family members as part of a deliberate, and

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[1]Although we targeted adult respondents aged 18 and over, sometimes some of their siblings were under 15. However, the latter represents only 2% of our sample.

[2]Families that have fostered at least one child during his childhood.

[3]A dummy variable equal to 1 if individual have been fostered before age 15.

[4]A dummy variable equal to 1 if individual lost his father or her mother before age 15.

often mutually beneficial, arrangement between families (Madhavan, 2004; McDaniel and Zulu, 1996). Some authors underline that households that receive fostered children benefit from their labor force and from the social insurance of investing in non biological children (Bledsoe, 1990; Bradley et al., 1997). Since older children can perform tasks more easily than younger children, they are likely to be fostered. Then, one could expect child's birth order to be a key determinant in the choice of fostered child. Also, in developing countries, especially in Africa, gender norms prescribe domestic work as primarily the responsibility of women. Parents educate their children according to these norms so that girls acquire abilities to do domestic work as they grow up through education unlike boys. Caring for a fostered girl is then more beneficial than caring for a boy for the foster parents because they will benefit from labor of fostered girl (domestic works, selling in the market, etc.) in addition to the social insurance of investing in non biological children .To test empirically for this two factors, we run an OLS regression of the fostering dummy defined earlier for each individual on individual's birth order and gender while controlling either for family backgrounds or family fixed effects. We find that child's birth order has an important and significant effect on child's probability to be fostered in childhood, even within the same sibship. Indeed, relatively to the first child of a sibship, subsequent children are less likely to be foster and this decline is monotonic across birth order. This result remains robust to controls for children's individual characteristics, family backgrounds as well as family fixed effects. As child birth order is correlated with family size, controlling for family fixed effects allow us to cancel out the compound effect of family size on child fostering. Also, we find that child's gender is determinant for fostering and within the same sibship, girls are 4 percentage points more likely to be fostered than boys, which represents 25% of the sample mean.

We find also evidence for a significant gender difference in the reasons of childhood fostering. In fact, we find that 49% of men were fostered for schooling reason whereas only 24% of women were fostered for the same reason. Also, data show that women are three times more likely to be fostered than men when financial issues occur in their biological

family.

Taken together, the results of this paper suggest that households with lower socioeconomic status are more likely to supply for child fostering, particularly when they face a negative shock constraining the family's budget. This finding provides empirical support to the theoretical work of Serra (2009) on the potential labor-schooling motives of child fostering. Also, our results reveals an important within-family gender difference against girls with a potentially important implications either for contemporaneous or later-life inequality within families.

This paper makes three major contributions to the existing literature. Firstly, we contribute to the literature on child fostering by collecting a new and more suitable data to address the topic. Indeed, our paper is closely related to the work of Akresh (2009) who analyze child fostering patterns in Burkina Faso by collecting contemporaneous data on young children [5]. This study overcomes the limitation of the use of such data by asking about fostering retrospectively in adulthood. To the best of our knowledge, this is the first paper that studies child fostering by using data on adults who have already passed childhood and for whom the real fostering status is fully observed for each individual within each sibship. This allows us to provide, for the first time, direct estimates of the actual prevalence of the practice.

Secondly, this paper contributes to the literature on the determinants of child fostering in Africa. Previous studies highlight several predictors of child fostering decisions across households. These factors are mainly associated to the gender of household head, mother's place of residence, marital and work status (Isiugo-Abanihe, 1985b; Cotton, 2021; Beck et al., 2015). Our study add to this literature by emphasizing the role of parental education in fostering decisions. Relatedly, more educated parents are less likely to foster their children and fathers' education is more important than mothers' education.

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[5]Young children are still at risk of being fostered and then the real childhood fostering status is not observed for all of them at the time of data collection.

Additionally, we find that the death of one of the parents in the childhood is associated with child fostering whereas fathers' death is more important than mother death. The later is in the same line with the findings of Akresh (2009) and Grant and Yeatman (2014) who point out the role of income shock and remarriage.

Thirdly, the nature of our dataset allows us to study the within family characteristics of fostered child by comparing individuals within the same sibship. In general, previous studies focused on analyzing the characteristics of households that practice child fostering. However, Beck et al. (2015) analyze the characteristics of the fostered child in a descriptive perspective without accounting for family fixed effects. In this paper, we go further by showing that birth order and gender matter for the choice of the child to foster out.

The remainder of the paper proceeds as follows : section 1.2 describes the data; in section 1.3 we present and discuss the results ; section 1.4 concludes.

1.2 Data

1.2.1 Sample selection and summary statistics

The main database that we use in this paper comes from a field survey that we designed and carried out in Bénin (Western Africa) in 2022. It consisted in surveying households randomly drawn from Cotonou, the capital district of the country and two of neighboring municipalities which are Abomey-Calavi and Seme-Kpodji.

Cotonou also called Littoral department is composed of several ethnic groups living together. The Fon and relatives, the Adja and relatives and the Yoruba and relatives constitute the three important demographic ethnic groups. The Fon and relatives represent approximately 50% of the population. The populations of the Littoral are essentially

Christians (more than 50%), Muslim and adept at traditional religion. Cotonou appears as a place of work emptying of its population every evening towards the adjoining municipalities of Abomey-Calavi and Sèmè-Kpodji.

The survey sample consisted of 1300 households selected through a 2-stage sampling process and is provided by the National Statistical Agency of Benin(INStaD-Benin) from the 2013 general population and housing census database. The design is quite similar to the one which is used in the frame of the Demographic and Health Survey. At the first stage, 65 enumeration areas (EA) were selected proportionally to the size of each of the three districts. Secondly, we randomly selected 20 households within each enumeration area, for a total sample size of 1300 households.

The data collection process is described as follows. First, each household was visited by a team of one female enumerator and one male enumerator. At the first visit, the enumerators presented and explained the objectives of the survey to the household members [6] and then asked for their consents to participate in the project. Ultimately, 114 households refused to participate in the study, yielding a sample of 1186 households, corresponding to 91.2% of the baseline sample. After they give their consents, the household members were asked for the suitable moment to be addressed the survey questionnaires. Subsequently or during the following visits, enumerators started by addressing a household questionnaire to the head of household. The household questionnaire was designed to collect detailed information on the socio-demographic characteristics (age, gender, ethnicity, education, literacy, etc.) of all the household members regardless of their affiliation to the head of household as well as on the characteristics of household accommodation. After addressing the household questionnaire, we determined whether the household is eligible for individual interviews. Individual interviews consisted in the administration of a female eventually a male questionnaire to the head of household and eventually his spouse. Women's current age was targeted to determine the eligibility of the household

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[6]namely the head and his/her spouse

to undertake the individual questionnaire. When the head is a female, the household is eligible if she is 18-55 years old. When the head is a male, the household is eligible if his spouse is 18-55 years old. Households where there is no female, spouse are considered to be eligible if he is at least 18 years old. Ultimately, we identify 1029 eligible households to the individual survey. A man questionnaire was administered to the male respondents by the male enumerator and a woman questionnaire was administered to the female respondents by the female enumerator. In the individual questionnaire, respondents were asked questions about their fertility (age at first birth, number of children ever born), marital outcomes (age at first marriage, socioeconomic outcomes of their spouse), socioeconomic characteristics (education, labor market participation). Also, each questionnaire devoted a section for questions about respondents' siblings. In this part of the questionnaire, we collected information about respondent's birth order as well as detailed information on the respondents' siblings (brothers and sisters from the same father and same mother as the respondent). Furthermore, we devoted a section to the childhood living conditions of the respondents. In this section, we have collected information about the socioeconomic characteristics of the respondent's parents, we ask also child fostering, parental death or parental separation during childhood. The female and eventually the male respondents undertook the quiz in private and away from another person or eventually their spouse. The surveys were conducted in either French, Fon, Goun or Mina, according the language fluently spoken and understood by the respondent.

Table 1.1 presents some basic summary statistics for the sample. Overall, women are younger than men; and this difference is statistically significant. They have also about 3 fewer years of education relative to men. In the same vein, 42% of women have completed primary education whereas corresponding proportion is 72% for men. Also, 77% of women are currently married or living with a partner and 12% of those married women declared to be living in polygamous relationship. Furthermore, women in the sample got married and give first birth by 23 years old on average whereas the corresponding age is 27 years for men. The average women's fertility is around 3 children.

1.2.2   Child fostering pattern in Bénin

According to our data, 35% of families have at least one child fostered during childhood, which returns into 16% of individuals fostered during childhood. Girls are more fostered than boys. In fact, as we report in Table 1.1 , 17% of women were fostered whereas the corresponding proportion is 15% for men. Importantly, girls are fostered 1.5 years earlier than boys. Women were fostered at 7.5 years old and men at 9 years old on average. This is informative that respondents were fostered at a period they are supposed to be enrolled for primary education.

Furthermore, for the first time in the economic literature, our survey allows us to provide evidence for the reasons why the respondents were fostered as well as the parental affiliation with the welcoming households. As we report in Table 1.2, there is a clear gender difference in the reason of fostering. In fact, while 33% of fostered women were fostered to perform domestic works in the host family, only 12% of the fostered men were fostered for the same reason. In other words, girls are almost three times more likely to be fostered than boys to complete domestic tasks. Also, 49% of the fostered men were fostered for schooling reasons whereas the corresponding proportion is 24% for women. This means that half of the fostered boys are fostered to go to school while only a quarter of the fostered girls are fostered for the same reason. This is also informative that boys are twice more likely to be fostered for schooling reasons than girls. Moreover, 20% of women reported being fostered due to financial problems in the biological family and the corresponding proportion is only 7% for men. This is showing that women are three times more likely to be fostered than men when financial issues occur in their biological family.

In Table 1.3, we report the main parental affiliations with households where individuals have been fostered during childhood. It appears that in one third of cases, either the men or women have been cared for by their father's brother or sister. The corresponding proportion for mother's siblings are only 8% for men and 17% for women. A

potential explanation for this gap could be the fact that in Benin's traditional society, families are organized through patrilineal descent systems and children belong to their father's kinship which have more duties over them in terms of education or transmission of cultural values than their mother's kinship.

1.3   Specifications and empirical results

1.3.1   Parental educational attainment and child fostering

In this section, we analyze the characteristics of families who practice child fostering. We consider that a given family has practiced child fostering if at least one child from this family has been fostered during childhood. In the frame of our survey, this means that respondents or one of their siblings were reported to have been fostered during childhood. The family characteristics that we consider in this analysis include father's educational attainment, mother's educational attainment, the family size, and the type of parents' union (polygamous union or not). Parental educational attainment is measured by the completion of primary education. It is a dummy variable equal to 1 if respondent's father/mother complete primary education. The family size is proxied by the number of full siblings in the family including the respondents. We analyze the correlates of child fostering by running the following OLS regression:

$$Y_f = \alpha + X_f\beta + \varepsilon_f \tag{1.1}$$

where Y_f is dummy variable taking 1 if the family f has fostered out at least one child and X_f a vector for family characteristics.

Table 1.4 presents the results where we regress the dependent variable sequentially on the family backgrounds that we describe above. As we can observe, parental educa-

tional attainment appears as a key predictors of child fostering at family level. Indeed, both father's education and mother's education are negatively and significantly associated with child fostering. This is suggestive that less educated parents are more likely to foster out at least one of their children during childhood. Also, we find that family size and polygyny are both positively associated with child fostering, but estimates are insignificant.

1.3.2 Family shocks during childhood and child fostering

The existing literature on child fostering has pointed out the role of income shocks (Akresh, 2009) and remarriage (Grant and Yeatman, 2014) for fostering decision. While parental death could be an important source of negative income shock for the family, it can also return into the remarriage of the living parent. In this section, we investigate whether family shocks such as parental death experienced during childhood is associated with child fostering. To do so, we run OLS estimates of the following regression:

$$Y_{if} = \alpha + \beta_1 \times Father\_death_i + \beta_2 \times Mother\_death_i + X_i\Gamma + X_f\Delta + \varepsilon_{if} \qquad (1.2)$$

where Y_{if} is an indicator for whether individual i from family f was fostered out during childhood; $Father\_death_i$ (resp. $Mother\_death_i$) is a dummy variable that takes 1 if the father (resp. the mother) of individual i died before the individual was 15 years old. X_i is a vector of individual characteristics including birth order, gender and age while X_f is a vector of family background characteristics and include parent's educational attainment, the family size and a dummy for parental polygamous union. By definition, individuals who lost both parents before age of 15 were fostered during childhood. As a result, we restrict the sample to individuals who have lost no more than one parent before age of 15. Table 1.7 presents the estimates where we control sequentially for individuals characteristics and family background variables we discussed above. We find, in column 1, that both

parental deaths are positively associated with fostering during childhood. However, as we can observe in column 3, the positive association with the mother's death is no more significant once we add the additional controls. This result is suggestive that father's lost is more predictive of fostering during childhood, at least in the context of our study. In fact, there is potentially both economic and cultural explanation to support this finding. First, men are the first and the main financial resources provider for the family in most developing countries, namely in Bénin where women are specialized in domestic or low ranking activities. As a result, the potential decline in the family's income is more important in the case of the father's death than the mother's death. Secondly, this finding could be explained by the fact that traditional societies in Bénin are organized through patriarchal norms. Women marry through a patrilineal descent system and then children belong to their father and his kinship. Consequently, in the absence of the father, children are more likely to be kept from their mother and be educated by father's siblings, namely if their mother remarry. In opposite, in the absence of their mother, children reside mainly with their father.

1.3.3   Child's individual characteristics and child fostering

In this section, we analyze to what extent the birth order of the child matters in the choice of the child to foster out.

Table 1.5 presents the average of child fostering rate as well as the distribution of child fostering by birth order. There is a clear pattern of declining child fostering for high birth orders. However, these summary statistics can be misleading in that we are not controlling for family size, cohort effects, or any other socioeconomic backgrounds or demographic characteristics that may influence these statistics. As we argue in table 1.1, child fostering varies by child gender. Then, in the case where gender distribution varies across birth orders, not controlling for gender can lead to misleading interpretations.

Furthermore, one could imagine that child fostering differs across children's birth cohorts since the supply of education may increase over time, leading to a decrease in the cost of child's schooling in return. We need then to control for birth cohorts or age groups at least. As a result, we estimate the relationship between birth order and child fostering in a regression framework where we control both for individual characteristics and family backgrounds.

In table 1.6, we present estimates for the full sample (Columns 1-3), and both for female sample (columns 4-6) and male sample (columns 7-9). For each sample, we start by controlling for individual characteristics. Columns 1, 4, 5 show the results for the full sample, the female sample and the male sample respectively. Column 1 shows that relative to the first child, there is a decline in child fostering by birth order after controlling for individual characteristics although the estimates is insignificant for the second and the third birth order. In column 4, we observe that there is a steady decline in child fostering by birth order relatively to the first child among female siblings. The estimates is bigger and highly significant for each subsequent birth order . Concerning the male sample, we observe that there is no clear evidence that the subsequent sons are less likely to be fostered than the first-born son. The estimates for male sample are quite noisy. We move forward by adding family background controls to the previous regression. Family background controls include family size, father's educational attainment, mother educational attainment, and a dummy for whether the parents are involved in polygamous relationship. The results are presented in column 2, column 5 and column 8 for the full sample, the female sample and the male sample respectively. As we can observe, the pattern looks quite similar to what we observe in the previous regression either in term of magnitude or significance. These results are informative that family background is not a key determinant of choice of the child to foster out.

Moreover, the choice of the child fostered out could be a function of some unobservable characteristics that vary across families. For example, families where parents have

preference for sons could choose to foster daughters out in order to relax family's budget constraint to support sons schooling. In this case, if the gender is correlated the birth order, not controlling for these unobservable characteristics could be problematic. We account for this potential issue by controlling for family fixed effects instead of the family background characteristics that we discussed earlier. The hypothesis we make here is that the unobservable characteristics are constants within each family so that controlling for the family fixed effects will cancel them out of the estimates. Columns 3, 6, 9 show the results where we control for the family fixed effect for the full sample, the female sample and the male sample respectively. As we can observe, the probability to be fostered out is still decreasing by birth orders relatively to the first child, either for the full sample or the female sample. We do not find any change in the pattern of the male sample's regression comparatively to its previous version. These results is suggestive that birth order is a key determinant in the choice of child to be fostered out during childhood. This pattern is more important for girls than boys.

1.4   Conclusion

In this paper, we investigate the determinants of child fostering which is a widespread practice in Africa. By using a new dataset from Benin, we find that less educated parents are more likely to practice child fostering. Also, we document that individuals experiencing a family shock such as parental death in childhood is associated with being fostered out during childhood. Furthermore, we identity child's gender and child's birth order as keys determinant of the choice of child fostered out within a family.

Table 1.1: Summary statistics over the respondents

	Men		Women		Mean difference test	
	Mean	STD	Mean	STD	Difference	(p-value)
Age of respondents	40.51	(11.7)	36.47	(9.3)	4.04	(0.0000)
Primary	0.72	(0.5)	0.46	(0.5)	0.26	(0.0000)
Total Years of education	9.13	(5.3)	5.91	(5.2)	3.22	(0.0000)
Ever married	0.77	(0.4)	0.79	(0.4)	-0.02	(0.4305)
Age at marriage	26.93	(5.0)	22.90	(4.0)	4.03	(0.0000)
Polygynous union	-	(-)	0.12	(0.3)	-	(-)
Age at first birth	27.64	(5.1)	23.19	(4.2)	4.45	(0.0000)
Total fertility	3.08	(2.6)	2.92	(1.7)	0.16	(0.1798)
Child fostering	0.15	(0.4)	0.17	(0.4)	-0.07	(0.0029)
Age at fostering	9.04	(3.7)	7.54	(3.6)	1.50	(0.0014)

Note: Polygynous union is defined for women only here

Source: Author's calculation from survey data

Table 1.2: Reasons of Child fostering

	Men	Women
Give help to the host family in domestic tasks	0.12	0.33
Death/separation of parents	0.07	0.10
Scholing	0.49	0.24
Sickness	0.03	0.02
Financial problems in biological family	0.07	0.20
Host family have no child	0.00	0.02
Migration of parents	0.01	0.01
Other reasons	0.22	0.09

Source: Author's calculation from survey data

Table 1.3: Foster parents

	Men	Women
Father's brother/sister	0.32	0.33
Mother's brother/sister	0.08	0.17
Paternal grand_Parents	0.07	0.06
Maternal grand_parents	0.07	0.07
Father/Mother's cousin	0.05	0.03
Respondent's Brothers/Sisters	0.05	0.03
Other relative	0.11	0.08
Unrelated family	0.25	0.23

Source: Author's calculation from survey data

Table 1.4: Child fostering status and its correlates

	child fostering status (1)	child fostering status (2)	child fostering status (3)	child fostering status (4)
Mother education	-0.1526***	-0.1002***	-0.0960**	-0.0927**
	(0.0348)	(0.0387)	(0.0388)	(0.0389)
Father education		-0.0884***	-0.0872***	-0.0883***
		(0.0300)	(0.0300)	(0.0300)
Family_size			0.0103	0.0109
			(0.0070)	(0.0070)
Polygyny				0.0407
				(0.0263)
Observations	1,299	1,299	1,299	1,299
$MeanofDep.Var$	0.35	0.35	0.35	0.35

Notes: Robust standards errors in parentheses. The unit of observation is a respondent's family.

*** significant at 1%.

Table 1.5: Distribution of child fostering across birth order

	Mean	STD
First birth	0.183	(0.38)
Second birth	0.179	(0.38)
Third birth	0.173	(0.37)
Fourth birth	0.146	0.35
Fifth birth	0.131	(0.34)
Sixth birth	0.117	(0.32)
Whole sample	0.163	(0.36)

Source: Author calculation from field survey data

Table 1.6: Child fostering and birth order

	All siblings			Female siblings only			Male siblings only		
	Foster (1)	Foster (2)	foster (3)	Foster (4)	Foster (5)	Foster (6)	Foster (7)	Foster (8)	Foster (9)
second child	-0.0098	-0.0108	-0.0130	-0.0548***	-0.0531***	-0.0428**	-0.0051	-0.0029	-0.0049
	(0.0133)	(0.0133)	(0.0137)	(0.0155)	(0.0156)	(0.0180)	(0.0153)	(0.0154)	(0.0181)
third child	-0.0178	-0.0183	-0.0246	-0.0735***	-0.0720***	-0.0598**	0.0044	0.0101	-0.0150
	(0.0148)	(0.0148)	(0.0167)	(0.0199)	(0.0202)	(0.0256)	(0.0197)	(0.0198)	(0.0257)
fourth child	-0.0453***	-0.0462***	-0.0518***	-0.0816***	-0.0815***	-0.0675*	-0.0022	0.0058	-0.0507
	(0.0162)	(0.0164)	(0.0192)	(0.0280)	(0.0284)	(0.0344)	(0.0296)	(0.0283)	(0.0346)
fifth child	-0.0580***	-0.0619***	-0.0644***	-0.1222***	-0.1238***	-0.0895**	-0.0254	-0.0154	-0.0576
	(0.0184)	(0.0181)	(0.0233)	(0.0344)	(0.0348)	(0.0418)	(0.0452)	(0.0421)	(0.0460)
sixth child	-0.0795***	-0.0821***	-0.0840***						
	(0.0219)	(0.0208)	(0.0266)						
gender	-0.0216**	-0.0208*	-0.0401***						
	(0.0109)	(0.0109)	(0.0099)						
Age group. FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Family controls		Yes			Yes			Yes	
Family Fixed effects			Yes			Yes			Yes
Observations	5,009	5,009	4,880	2,551	2,551	2,160	2,458	2,458	2,100
	0.0058	0.0164	0.5350	0.0104	0.0196	0.6177	0.0004	0.0144	0.6112

Notes: Standards errors in parentheses are clustered at family level. The unit of observation is the respondents and their siblings. Foster is a dummy variable taking the value 1 if the individual was fostered out during childhood. Columns 1-3 contains estimates for all siblings, columns 4-6 contains estimates for female siblings, columns 7-9 contains estimates for male siblings. Even columns include family fixed effects. *** , ** , * significant at 1%, 5% and 10% respectively

Table 1.7: Parental death in childhood and child fostering

	fostered child (1)	fostered child (2)	fostered child (3)
Mother's death	0.1124*	0.1119*	0.0935
	(0.0576)	(0.0576)	(0.0587)
Father's death	0.0430*	0.0540**	0.0517**
	(0.0242)	(0.0246)	(0.0239)
Individual controls	No	Yes	Yes
Family controls	No	No	Yes
Observations	4,747	4,747	4,747
Mean of Dep. Var	0.16	0.16	0.16

Notes: Robust standards errors in parentheses. The unit of observation is individuals (respondents and their siblings). *** significant at 1%.

Chapter 2

The Long-Run Effects of Childhood Fostering:
Evidence from Bénin

2.1 Introduction

Child fostering is widely practiced in Sub-Saharan Africa. Across countries Sub-Saharan Africa, more than one quarter of households send a child out to be fostered (Roby, 2011). The practice has been linked to longstanding norms of communal responsibility for raising children, and is typically an informal arrangement, with children usually sent out to live with extended family members or family friends. Nevertheless, many policymakers have voiced concerns about the potential harmful consequences of this practice, and there is considerable debate regarding the impacts on fostered children.[1] This debate is largely due to the fact that, despite its ubiquity, we know almost nothing about the long-term consequences of childhood fostering.

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[1]See UNICEF (1999); Fafchamps and Wahba (2006); Zimmerman (2003); Akresh (2006).

This paper provides the first long-run assessment of childhood fostering on later-life outcomes. Our analysis is based on a unique survey of 5,533 adults from 1,299 biological families that we conducted in Benin in 2022. The survey provides detailed information on childhood fostering status along with a range of later-life socioeconomic outcomes. To the best of our knowledge, this is the first dataset that tracks outcomes for *all* biological siblings – both fostered and non-fostered – into adulthood. We combine these data with a family fixed effects regression framework to compare differences in later-life outcomes across adopted versus non-adopted siblings.

We find that childhood fostering is associated with significant decreases in education. In comparison to their biological siblings, fostered children are significantly less likely to report having attended school. Our preferred estimates imply that fostering led to a relative decrease of 6 percent in school attendance. The estimates are robust to various alternative specifications, including models that control flexibly for gender and birth order effects. The negative relationship between childhood fostering and school attendance is also stable across cohorts, despite major changes to the educational system.[2]

Despite the large contemporaneous impacts on schooling, we find *no* evidence that childhood fostering had negative effects on later-life socioeconomic outcomes. We find no negative relationship between childhood fostering status and subsequent employment outcomes in adulthood. The point estimates from these regressions are small and statistically insignificant. If anything, we find some evidence that fostered individuals enjoyed slightly better occupational outcomes than their non-fostered siblings. Similarly, we find no significant relationship between childhood fostering and subsequent fertility.

The insignificant effects found for the overall population may mask long-term economic costs of childhood fostering among particularly vulnerable subpopulations.[3] To

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[2]In 1993, the government of Benin enacted a series of educational reforms aimed at expanded access to school. Despite these reforms, we find similar estimates among cohorts that were or were not exposed to these reforms.

[3]Such a scenario could arise due to heterogeneous treatment effects, in which the long-run costs of fostering among one subpopulation are counteracted by the long-run benefits among a different subpop-

explore this possibility, we estimate the effects of childhood fostering among two groups that have been identified as particularly vulnerable to the practice: daughters and children from farm households.[4] For both subsamples, we estimate significant decreases in contemporaneous school attendance. Nevertheless, we find no negative impact of childhood fostering on any later-life socioeconomic outcomes. Indeed, we find *larger* economic gains associated with fostering for children from farm households. Thus, even among these vulnerable subpopulations, we find no long-run economic costs associated with childhood fostering.

The estimated effects of childhood fostering on later-life outcomes cannot be explained by selection effects related to unobservable within-family ability differences or cross-sibling spillover effects. We demonstrate that a standard within-family selection bias, in which fostering status is correlated with child ability, cannot simultaneously account for the negative relationship between fostering and education, and the non-negative effects of fostering on later-life economic outcomes. Similarly, we show that cross-sibling spillover effects cannot account for the slightly positive relationship between childhood fostering and later-life economic outcomes. In particular, if the decision to foster a child expands the resources available for non-fostered siblings, then our *relative* effects capture a lower-bound estimate of the economic gains from being fostered.

The non-negative effects of childhood fostering on subsequent labor market opportunities are striking, given that we also document a strong link between schooling and labor market outcomes among non-adopted siblings. Together, these findings suggest that fostered individuals received compensating transfers that allowed them to overcome initial educational deficits and achieve similar labor market outcomes to their non-fostered siblings. These transfers may have included direct financial payments or non-school human capital investments from either biological or adopting family members, as well as

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ulation.

[4]Policymakers and academics have voiced concern that child fostering is form of child labor, with daughters disproportionately affected (Ainsworth, 1996b; Roby et al., 2014). Meanwhile, farm households are particularly vulnerable to income uncertainty, a major driver of unplanned childhood fostering (**?**).

differences in the home environment or social networks between the two families.

Finally, we find that non-fostered and fostered siblings maintain strong social ties into adulthood. Indeed, we find that fostering status has no impact on the frequency of sibling-to-sibling interactions, even though fostered children are significantly less likely to live near their biological siblings.[5] These patterns are consistent with a social capital mechanism, in which non-fostered siblings differentially invest in their relationships with their adopted siblings, in part, to compensate for the burden incurred during childhood.

This paper contributes to the literature on child fostering in Sub-Saharan Africa. There is a large literature in anthropology and sociology that seeks to understand the causes and consequences of child fostering (see Ariyo et al., 2019, for a review). Most of this research is qualitative analysis, or assessments based on cross-household comparisons.[6] Most closely related to our paper is work by Akresh (2006) and **?** who use a similar within-biological family approach to study the effects of fostering on contemporaneous child outcomes in Burkina Faso and Senegal. We build on this research by providing the first assessment of the long-run effects of childhood fostering on adult outcomes.[7] Our results suggest that compensatory behavior may mitigate some of the short-run harms that have been documented in the literature. Moreover, our dataset spans an extended fifty year time horizon, allows us to assess the evolution of this practice and its interaction with evolving educational policy.

More broadly, this paper contributes to the literature on intra-household inequality. A number of researchers have studied the allocation of assets within households, and explored how within-household inequality can influence population-level measures of in-

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[5]Specifically, we find that fostered individuals are significant less likely to reside in Benin in adulthood.

[6]For example, a number of researchers have relied on comparisons of outcomes between fostered children and children in the receiving family (e.g., Case et al., 2000; Zimmerman, 2003). Nevertheless, these comparisons are hampered by unobservable differences in genetic or health endowments that may differ across the two groups of children.

[7]Given the often temporary nature of kinship arrangements, which may last for periods of several months to multiple years (Isiugo-Abanihe, 1985a), contemporaneous effects of fostering on school attendance may not reflect differences in completed schooling.

equality and poverty (see, Dercon and Pramila, 2000; Dunbar et al., 2015; Brown et al., 2019, for example). This research has been based exclusively on intact family units, which may not reflect the realities of kinship arrangements in many developing countries. Our findings highlight how widespread use of fostering can alter assessments of within-family inequality, with potentially important implications for policy evaluation.

2.2 Fostering in Sub-Saharan Africa

In Sub-Saharan Africa, the practice of fostering, in which parents send biological children out to live in another household is widespread. Rates of childhood fostering vary, but in most countries more than one in four households send a child out to be fostered (Roby, 2011). Early work by anthropologists found that in west and southern Africa, between 16 and 25 percent of children were fostered away from their biological family at any particular time (Page, 1989). The prevalence of fostering in Sub-Saharan Africa coincides with a longstanding tradition of communal responsibility for raising children (Bachan, 2014; Lachaud et al., 2016a). Fostering is usually arranged informally, with children typically sent out to extended family members or family friends without intervention from state authorities (Assim, 2013; Zimmerman, 2003). In some cases, when a child is fostered, a formal contract may be written that may specify whether the child will work or not, go to school, or learn a job, and whether there will be any form of monetary transfer between the biological and the fostering families. The duration of childhood fostering varies widely from a period of several months to many years (Isiugo-Abanihe, 1985a).

Researchers have identified a number of motivations for fostering. Fostering may be used as a coping mechanism, and parents may send a child to be fostered in response to a negative economic shock, conflict, or family breakdown (Goody, 1982; ?; ?). Many scholars view child fostering as a form of child domestic labor, and that remitting families send out children in an implicit exchange with the recipient family, or to obtain greater

social prestige or cement social ties (Ainsworth, 1996b; Roby et al., 2014). Relatedly, **?** shows that the gender composition of children among the biological family is linked to the practice of fostering.

Other research has emphasized the benefits of being fostered. Scholars have argued that fostering enables children to benefit from both formal and informal job training, and to access networks that may ultimately improve upward mobility (Goody, 1982; Isiugo-Abanihe, 1985a). Relatedly, when school access is limited, biological families may foster children to promote educational opportunities (Isiugo-Abanihe, 1985a; Zimmerman, 2003; **?**). This last mechanism suggests public policy that promote more widespread educational access would be expected to diminish the demand for fostering.

Child fosterage in Benin is a common practice. In our dataset, 35 percent of families fostered at least one children, and roughly 16 percent of adults report having been fostered during childhood. These numbers are consistent with the shares of young children who are reported not to live with their biological parents in successive waves of the Demographic and Health Surveys for Benin (Dohouin and Gbeholo 2023).

Despite the widespread practice, relatively few families foster *all* their children. Indeed, among families that fostered a child, just 12 percent send out all their children (in our sample of observations, in most cases, families in which all siblings were fostered lost one or both parents in childhood).

2.3 Data

We use an original dataset that derives from a survey that we designed, and that was conducted in Benin in 2022. Survey respondents are a random sample of 1,299 individuals who were between 16 to 85 years old at the time of the survey, and lived in one of three main cities in Benin. To identify information on *all* biological family

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members, respondents were asked a series of questions about themselves and all their biological siblings (who shared the same mother and father), regardless of whether they co-resided during childhood.[8] Importantly, given the strong kinship ties in these societies, and the fact that fostering primarily occurs among extended family or friends, respondents are typically well-informed about their biological siblings, regardless of fostering status.[9] We have information on 5,533 individuals, from 1,299 families.

The survey provides detailed information on childhood and adult outcomes for all biological siblings. For each child of the biological family, we have information on whether they were sent out to be fostered by age 15.[10] We also have information on whether each child attended school and their years of completed schooling. There is also information on various socioeconomic outcomes in adulthood including the main occupation of employment, marital status, and number of children. For respondents who themselves were fostered, there is additional information including the age at which they were fostered, the duration of foster care, and the reason for fostering. Finally, we observe socioeconomic variables during childhood including education levels of both (biological) parents and ethnic group. We restrict the sample to observations comprises individuals who are 15 or older and alive at the time of the survey.

These data provide a unique opportunity to assess the consequences of fostering in later-life. Nevertheless, two caveats should be emphasized. First, the information on sibling outcomes are reported by the respondent (not the sibling), and some particular outcomes may be subject to measurement error or omitted values. The main outcomes of interest: schooling, primary occupation, and fertility, are generally well measured, with non-response rates below 5 percent. Nevertheless, information on siblings age is

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[8]Unless otherwise mentioned, we refer to all members of a family, i.e. a respondent and his or her biological sisters and brothers, as the 'siblings' of the family, regardless of whether they were fostered. The data do not allow us to link children from polygynous families who share the same father but have different mothers.

[9]Non-response rates for sibling outcomes are consistently below 10 percent, and response rates do not differ systematic by fostering status.

[10]This age was selected to avoid issues related to teenage marriage. In our sample, nearly all fostered children are sent out by age 10.

generally less well measured.[11] Given this issue, our preferred empirical specifications rely on controls for sibling birth order (as opposed to age), although we also present estimates based on age controls as a robustness test. Second, the value for most variables are unknown for siblings who are deceased. Thus, the sample is based on comparisons across living siblings only. Nevertheless, the influence of selective mortality should be modest, given that the share of deceased siblings in less than 4 percent in the sample (see Table 2.1).

Our main analysis is based on all biological siblings from 1,299 families, who were aged 15 years or older and alive at the time of the survey. Table 2.1 reports descriptive statistics of the variables used in this paper. Table 2.2 provides summary statistics for respondents, who provided additional information on fostering practices.

2.4 Empirical Framework

Our empirical strategy is based on within-family fixed effects regressions, that compares outcomes of adopted children to their non-adopted biological siblings. Crucially, given that our dataset reports information for all siblings in adulthood, we are able to estimate these models both for contemporaneous childhood outcomes, as well as for later-life outcomes.

For any outcome of interest y_i, observed for adult i, the specification for the estimations is a variant of:

$$y_i = \alpha + c_f + \beta Fostered_i + \gamma z_i + e_i \tag{2.1}$$

[11]We have higher non-response rates for siblings ages, and also uncover evidence of 'heaping' of sibling ages at round numbers. This issue is not unique to our survey, and has been identified in other surveys conducted in low-income countries (Lyons-Amos and Stones, 2017; Fayehun et al., 2020).

where $Fostered_i$ is a dummy variable equal to 1 if and only if individual i was fostered by age 15, and where c_f are family fixed effects. Variable y_i is an outcome of interest for individual i, and z_i denotes a vector of control variables which include gender and either age fixed effects or birth order fixed effects. All estimations are in OLS, with robust standard errors. The coefficient of interest is β, which identifies within-family differences in outcomes across fostered and non-fostered siblings.

The *relative* outcome differences captured by β may not reflect causal effects of fostering due either to cross-sibling spillover or selective fostering. For example, if fostering a child enables families to increase investments in non-fostered children, the coefficient β would overstate the negative educational impact of fostering, relative to a counterfactual scenario in which no child were sent out. Relatedly, if unobservable child-specific attributes simultaneous affect parental decisions over which child to foster and their subsequent outcomes, our estimates of β will not reflect the causal impact of fostering on later-life outcomes. In principle, these two issues limit our ability to assign a causal interpretation to the estimates of β. In practice, however, it is unlikely that either issue can account for the empirical pattern that we document in the data. We discuss these issues at length in Section 2.5.2

2.5   Results

2.5.1   Contemporaneous Impacts of Fostering on Schooling

Table 2.3 reports the results of the OLS estimation of equation 2.1 where the dependent variable, *Went to school*, is a binary equal to 1 if and only if sibling i ever attended school. Columns 1 and 2 report results from models that do not control for family fixed effects, while columns 3 and 4 include family fixed effects.

Across the various specifications, we find a negative and statistically significant relationship between having been fostered and education. Column 1 reports the raw relationship between fostering and school attendance without any family-level controls. The estimate decreases by roughly one third when we include family-level controls for parental education and ethnicity and an indicator for polygynous marriage (col. 2). Our preferred specification that relies on within-family variation shows similar negative impacts of fostering on school attendance (cols. 3, 4). Notably, the inclusion of family fixed effects leads to a significant decrease in the point estimates, consistent with unobservable cross-family drivers of schooling that are systematically related to fostering practices.

The effect sizes on fostering in Table 2.3 are large in magnitude. Our preferred estimates (col. 4), imply that children who were fostered were 6 percent = (0.046/0.77) less likely to attend school than their non-fostered siblings. In comparison, the within-family gender-gap in school attendance is 16.6 percent = (0.128/0.77). Thus, fostered children experience a little less than half the education penalty of daughters.

Next, we use additional information on fostering that was reported by respondents to explore the sources of these educational disparities and to explore heterogeneity in the main effects. [12] We estimate versions of equation 2.1, where the treatment is equal to one if the respondent was a) fostered, b) fostered for educational purposes, c) fostered for other reasons, d) fostered at after age 7, or e) fostered by a close relative. Since respondents were interviewed in one of three major urban areas, they do not reflect a randomly selected individual from the population. As a result, these results should be interpreted with caution.[13] Nevertheless, the relative magnitude across different practices of fostering provides some insights into treatment heterogeneity.

Table 2.4 reports the results for the various treatments. Among the subset of

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[12]Information on fostering status is available for all biological siblings. Among respondents who were fostered, we obtained additional information on the reason for fostering, the age of fostering, and to whom they were sent.

[13]For example, the estimates based on respondents are likely to understate the negative impacts of fostering on education, given the strong urban-rural differences in schooling in Benin.

respondents, we find slightly negative but insignificant impacts of fostering on school attendance. Nevertheless, these average estimates mask considerable treatment heterogeneity. In particular, individuals who were fostered for educational purposes enjoyed significantly higher levels of schooling than their non-fostered siblings (cols. 3-4), while those fostered for other reasons experienced a significant educational penalty (cols 5-6). Indeed the magnitude of the estimates in col. 6 are nearly twice the size of the overall fostering impacts reported in Table 2.3 , col. 4.[14] Conditional on being fostered for non-educational purposes, we find similar negative effects for siblings fostered later in childhood (cols. 7-8). Similarly, we find no evidence that being fostered by a close family member mitigated the educational costs associated with childhood fostering (cols. 9-10).

Finally, we take advantage of our extended time horizon to assess the evolving impact of childhood fostering on schooling. In particular, we explore whether expansions in school access, following a series of educational reforms in the early 1990s, reduced the negative effects of fostering on school attendance.[15] Given the timing of these reforms, which began to take effect in 1994 (Gaye, 2003), we split the sample into individuals who were born before or after 1988, who were either young enough or too old to have benefited from the expansion in access. We then estimate versions of equation 2.1 for the two separate samples.

Table 2.5 reports the effects of fostering on school attendance separately for subsample of respondents born before or after 1988. The within-family estimates show systematic differences in the effects of fostering across the two cohorts, with *larger* negative estimates among post-1988 birth cohorts. These findings suggest that the expansion in educational access did not diminish the gap in school attendance between fostered and non-fostered

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[14]Comparing these estimates, it is clear that the non-significant average effects of fostering (cols. 1-2) likely reflect the fact that fostered respondents (who lived in cities in adulthood), were more likely to have been fostered for educational purposes, than the average fostered individual in the country.

[15]In 1993, the government of Benin undertook a series of reforms aimed at expanding access to education. The state sought to increase school access through a large-scale project of school building and teacher training. The focus of these investments was on primary school, and following the reforms, the number of primary classrooms increases by 58 percent from 1992 to 2000 (Gaye, 2003).

siblings. If anything, these reforms may have reinforced the educational disparities.

2.5.2 Impacts of Childhood on Later-Life Socioeconomic Outcomes

Effects on Employment, Fertility, and Migration

In Table 2.6, we report the results for the effects of childhood fostering on later-life socioeconomic outcomes. We report the estimates from equation 2.1 for three outcomes: whether the individual is employed in a salaried job, whether the individual currently resides outside of Benin, and the number of children.[16] We report the estimates separately for models without family fixed effects (cols. 1-2, 5-6, 9-10) and with family fixed effects (3-4, 7-8, 11-12).

We find no evidence that childhood fostering reduced the likelihood of obtaining a salaried job in adulthood. Although the baseline cross-family estimates are negative and significant, once we control for family fixed effects the sign of the estimates become statistically insignificant. Indeed, the results from our preferred specifications (cols. 2-3) and moderately positive, suggesting that individuals fostered during childhood were slightly *more* likely to work in a salaried job than their non-fostered siblings. Similarly, we find no significant differences in fertility across fostered and non-fostered siblings (cols. 11-12).

We find evidence that individuals who were fostered during childhood were more likely to reside outside of Benin in adulthood (cols. 7-8). The point estimates from these regressions are large in magnitude and highly significant, suggesting that individuals fostered in childhood were more than 75 percent more likely to emigrate by adulthood. Since we lack information on the destination country, it is impossible to assess whether

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[16]The sample is based on individuals aged 21 and older.

this emigration improved or harmed future economic opportunities. Nevertheless, these findings suggest that individuals who were fostered in childhood remained less likely to live near their biological siblings in adulthood.

The absence of persistent effects of fostering on later-life employment outcomes or fertility is striking, given that there is a strong empirical link between school attendance and both outcomes. Tables 2.7 (cols. 1-4) shows a strong positive relationship between school attendance and the probability of employment in a salaried job. Notably, we document significant positive estimates, even in models that control for family fixed effects. Similarly, we find a significant negative relationship between school attendance and subsequent fertility rates, even in within-family regressions (cols. 5-8).

Together, these findings suggest that fostered individuals were able to overcome the initial educational deficits and achieve similar labor market outcomes to their non-fostered siblings. In part, these patterns may reflect differences in the home environment or the labor market opportunity afforded by fostering families. Indeed, researchers have argued that fostering families provide improved household health and better access to employment opportunities (Goody, 1982; Isiugo-Abanihe, 1985a). Alternatively, the improved labor market outcomes may reflect transfers or investments from biological family members to compensate for the burden incurred by the fostered sibling. We assess this possibility in more detail in Section 2.5.2

Selection Effects and Cross-Sibling Spillover Effects

In this section, we explore the extent to which the previous estimates identify the causal impacts of fostering on later-life outcomes. Specifically, we explore whether the *relative* within-family outcome differences may reflect either a) selection effects or b) cross-sibling spillover effects.

The estimates of β may be biased due to within-family selection effects. In par-

ticular, if decisions regarding which child to foster are correlated with unobservable child attributes that are relevant to future schooling or labor market outcomes, then the estimated effects will not be causal.

To assess the role of selection in driving the main estimates, we consider a simplified version of the within-family estimator for both the contemporaneous schooling effects, S_i, and the long-run labor market effects, Y_i according to the following expressions:[17]

$$S_i = \alpha_0 + \alpha_1 Fostered_i + u_i$$

$$Y_i = \beta_0 + \beta_1 Fostered_i + \epsilon_i$$

where decisions over which child to be fostered may be correlated with unobservable child attributes, $\text{cov}(Fostered_i, u_i) \neq 0$ and $\text{cov}(Fostered_i, \epsilon_i) \neq 0$, which are positively correlated, $\text{cov}(u_i, \epsilon_i) > 0$.[18]

Negative selection into fostering cannot account for the *relative* within-family differences in long-run outcomes. In particular, if families disproportionately send lower ability children to be fostered, $\text{cov}(Fostered_i, u_i) < 0$, then the estimates of both α_1 and β_1 would be downward biased. In this scenario, our negative contemporaneous estimates may overestimate the schooling costs associated with fostering, but our modestly positive estimates of β_1 capture a lower bound for the *positive* returns to being fostered in childhood.

Positively selected into fostering, $\text{cov}(Fostered_i, u_i) > 0$, may cause the estimates of α_1 and β_1 may be upward biased. In this scenario, the true long-run employment impacts of fostering may be negative, even though the estimates are modestly positive. Even if this were the case, we can rule out the potential that fostering exacerbates within-family inequality. Given that the insignificant (and modestly positive) estimates show that, on

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[17]To simplify notation, we exclude family fixed effects and other covariates from the regressions.

[18]This last assumption implies that unobservable child attributes that increase educational attainment are also beneficial in the labor market.

average, fostered children enjoyed slightly better labor market outcomes than their non-fostered siblings. Thus the results imply that the practice of fostering compensated for underlying differences in labor market opportunities across siblings, equalizing outcomes in later-life.

The main long-run effects also cannot be attributed to cross-sibling spillover effects. In particular, if the decision to foster a child expands the resources available for non-fostered siblings, then our estimates would reflect a lower-bound estimate for the economic benefits associated with childhood fostering. To the extent that these estimates are slightly positive, we can infer that the long-term economic impacts of childhood fostering are non-negative.

Effects of Childhood Fostering on Vulnerable Subpopulations

The absence of long-run economic effects of childhood fostering in the overall population may mask significant costs among particular subpopulations. This scenario could arise in the presence of heterogeneous treatment effects, in which the benefits among certain fostered children (i.e. those sent out for educational purposes) counteract the harms among others. Indeed, the results in Table 2.4 show widely differing effects of the practice on education.

To assess whether heterogeneous treatment effects may be masking long-run costs among subpopulations, we focus on two groups that have been identified as vulnerable to the practice: daughters and children from farm households. There is widespread concern among policymakers and academics that fostering may be used as a source of child domestic labor, in which daughters are disproportionately sent out to work in exchange for financial or non-pecuniary transfers to the biological family (Ainsworth, 1996b; Roby et al., 2014). Similarly, unplanned fostering in response to negative income shocks is a widespread phenomenon (Goody, 1982; Beck et al., 2015; Akresh, 2009), that may be

particularly disruptive to the children who are sent out. Given that farm household are disproportionately exposed to these shocks, children from these families may be more likely to suffer the costs associated with unplanned child fostering.

Table 2.8 reports the estimates for childhood fostering, in which we allow the main effect to differ by gender. We estimate larger negative effects of childhood fostering on school attendance for daughters, although we cannot reject equality in the estimates (cols. 1-2). Meanwhile, we find that childhood fostering had no negative long-run impacts on daughters. The point estimates for salaried work, emigration, and fertility are very similar across the two groups. For both males and females, the estimates imply that childhood fostering led to a modest increase in the probability of salaried work, an increase in the likelihood of emigration, and no impact on fertility.

Table 2.9 reports the estimates for childhood fostering among farm families. We find significant decreases in school attendance among fostered siblings. Nevertheless, fostered siblings enjoyed a significant *higher* probability of working in a salaried job in adulthood. In fact, these estimates are significantly larger than those found for the overall population. We also find that childhood fostering is associated with a significant increase in emigration, but had no impact on fertility.

Taken together, these results suggest the average non-negative impacts of childhood fostering in the overall population extend even to subpopulations that have been thought to be particularly vulnerable to the practice.

Fostering and Inter-sibling Interactions

To conclude the empirical analysis, we explore the impact of childhood fostering on sibling social ties in adulthood. We construct two binary outcome variables that

are defined for the non- respondent sibling only.[19] For any non-respondent sibling i, the variable *Talked within a month* is equal to 1 if and only if i spoke to the respondent sibling of the family at least once in the month before the interview. Similarly, the variable *Met within a month* is equal to 1 if and only if i met with the respondent sibling of the family at least once in the month before the interview. To assess the role of childhood fostering status on inter-sibling interactions, we estimate versions of equation 2.1 for these outcomes variables.[20]

Table 2.10 reports the results. We find no evidence that childhood fostering decreased sibling-to-sibling interactions in adulthood. Across the various specifications, the estimates for both outcomes are consistently small and statistically insignificant. These patterns are striking, given the higher rates migration among fostered siblings (Table 2.6, cols 7-8). Thus, despite greater physical distance, on average, it appears that fostered siblings maintained equally strong social ties to their non-fostered siblings.

These results are consistent with a compensatory social capital mechanism. Non-fostered siblings appear to have differentially sought to maintain ties with their fostered siblings. In part, these social investments may reflect an effort to compensate for the burden that fostered siblings incurred during childhood. These findings align with the non-negative impacts of fostering on later-life labor market, which may also partially reflect compensating investments and transfers from the biological family.

2.6   Conclusion

This paper draws on a novel dataset of biological siblings in Benin to provide the first long-term assessment of consequences of childhood fostering. We find that fostered children experienced significantly lower rates of school attendance than their non-fostered

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[19]Given the construction of the dataset, which is based solely on information provided by the respondent sibling, we are unable to identify interaction between two non-respondent siblings.

[20]To avoid issues related to co-residence, we restrict the sample to individuals 20 years and older.

siblings. Despite these educational deficits, we find no differences in long-term socioeconomic outcomes between fostered and non-fostered siblings. We also find high levels of social interactions between the two groups, despite greater physical distance. Taken together, our findings suggest that the immediate educational costs associated with childhood fostering may be largely mitigated through within-family transfers and investments.

Table 2.1: Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Fostered as a child	5009	.161	.368	0	1
Alive	5533	.962	.192	0	1
Age in years	5151	37.29	12.199	0	85
Individual is 21 or older	5151	.921	.27	0	1
Father went to school	5533	.495	.5	0	1
Mother went to school	5533	.286	.452	0	1
Ethnic group: Fon	5533	.447	.497	0	1
# Siblings (including self)	5533	5.123	1.972	1	14
Birth rank	5532	3.068	1.849	1	14
Female	5533	.502	.5	0	1
Went to school	5320	.777	.417	0	1
Salaried job	5252	.154	.361	0	1
Lives outside Bénin	4007	.134	.34	0	1
# Children	5273	2.712	2.22	0	20
Talked with respondent sibling last month	4021	.745	.436	0	1
Met with respondent sibling last month	4021	.439	.496	0	1
Number of families in the sample	5533	.235	.424	0	1
Number of families in the sample	1299				
# Families with one or more fostered siblings	451				
# Families with all siblings fostered	54				

Notes: The dataset derives from a survey of a random sample of 1299 respondents who were asked questions about themselves and all their biological siblings, conducted in Bénin in 2022. We count as missing the value of the variable Fostered for individuals under 15, or for whom age is missing or who are deceased. # Siblings counts all children from the same biological parents. Age is not defined for deceased individuals. The variables *Lives outside Bénin*, *Talked with respondent sibling last month* and *Met with respondent sibling last month* are not defined for the respondent sibling.

Table 2.2: Summary statistics for the subsample of respondent siblings

Variable	Obs	Mean	Std. Dev.	Min	Max
Fostered as a child	1299	.216	.411	0	1
Fostered for education	1299	.072	.258	0	1
Fostered for other reasons	1299	.144	.351	0	1
Fostered at 7 years old or more	1299	.144	.351	0	1
Fostered at aunt, uncle or grandparent's	1299	.129	.335	0	1
Age in years	1299	38.257	10.607	16	85
Individual is 21 or older	1299	.985	.123	0	1
Father went to school	1299	.5	.5	0	1
Mother went to school	1299	.297	.457	0	1
Ethnic group: Fon	1299	.464	.499	0	1
# Siblings (including self)	1299	4.259	1.919	1	14
Birth rank	1299	2.457	1.54	1	9
Female	1299	.557	.497	0	1
Went to school	1299	.788	.409	0	1
Salaried job	1299	.115	.32	0	1
# Children	1299	2.988	2.108	0	18

Notes: This table presents summary statistics for the respondent sibling only, which provides details on the justification for fostering, the fostering family and the age at which fostering started. See Table 2.1 for more information on the other variables.

Table 2.3: **Effect of being fostered on education**

| | Dependent variable: *Went to school* | | | |
	(1)	(2)	(3)	(4)
Fostered	-0.131***	-0.093***	-0.045**	-0.046**
	(0.016)	(0.015)	(0.018)	(0.018)
Female	-0.151***		-0.128***	
	(0.012)		(0.011)	
Other covariates	No	Yes	No	No
Age × Sex FE	No	Yes	No	Yes
Birth order × Sex FE	No	Yes	No	Yes
Family FE	No	No	Yes	Yes
R2	0.048	0.193	0.596	0.618
# Observations	4723	4723	4723	4723
Mean Dep.	.77	.77	.77	.77

NOTES. This table reports the OLS estimation of the coefficients of a binary variable equal to 1 if and only if individual i went to school on a binary variable equal to 1 if and only if individual i was fostered as a child, and on control variables indicated at the bottom of each column. *Other covariates* are: dummy variables for each parents' education level, dummy variables for the family's ethnic group. The sample of observations comprises all siblings of a given family older than 21 at the time of the survey. Standard errors in parentheses. ***, **, * denote significance at the 1%, 5%, and 10% level.

Table 2.4: **Effect of being fostered on education, using information from respondents**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
					Dependent variable: *Went to school*					
Respondent & Fostered	-0.002 (0.024)	-0.024 (0.027)								
Resp. & Fostered for education			0.164*** (0.041)	0.174*** (0.043)						
Resp. & Fostered for other reasons					-0.088*** (0.030)	-0.130*** (0.032)				
Resp. & Fostered at 7 years old or more							0.018 (0.029)	0.002 (0.031)		
Resp. & Fostered at aunt, uncle or grandparent's									-0.026 (0.032)	-0.034 (0.034)
Female	-0.130*** (0.011)		-0.131*** (0.011)		-0.128*** (0.011)		-0.131*** (0.011)		-0.130*** (0.011)	
Respondent		0.014 (0.013)		-0.003 (0.012)		0.027** (0.012)		0.009 (0.012)		0.013 (0.012)
Other covariates	No	No	No	No	No	No	No	No	No	No
Age × Sex FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Birth order × Sex FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Family FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.594	0.617	0.596	0.619	0.595	0.619	0.594	0.617	0.595	0.617
# Observations	4744	4744	4744	4744	4744	4744	4744	4744	4744	4744
Mean Dep.	.77	.77	.77	.77	.77	.77	.77	.77	.77	.77

NOTES. This table reports the OLS estimation of the coefficients of a binary variable equal to 1 if and only if individual i went to school on a binary variable equal to 1 if and only if individual i is the respondent sibling and i was fostered under various conditions, and on control variables indicated at the bottom of each column. *Other covariates* are: dummy variables for each parents' education level, dummy variables for the family's ethnic group. The sample of observations comprises all siblings of a given family older than 21 at the time of the survey. Standard errors in parentheses. ***, **, * denote significance at the 1%, 5%, and 10% level.

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Table 2.5: **Effect of fostering on schooling for cohorts before and after 1987**

	Born before 1988						Born in 1988 or later					
	Dependent variable: *Went to school*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Fostered	-0.137*** (0.023)	-0.091*** (0.022)	-0.090*** (0.022)	-0.045 (0.030)	-0.052* (0.030)	-0.043 (0.030)	-0.118*** (0.026)	-0.084*** (0.024)	-0.091*** (0.024)	-0.078** (0.039)	-0.066* (0.040)	-0.075* (0.039)
Female	-0.179*** (0.016)			-0.156*** (0.016)			-0.101*** (0.015)			-0.085*** (0.018)		
Other covariates	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No	No
Age x Sex FE	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No
Birth order x Sex FE	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Family FE	No	No	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
R2	0.056	0.204	0.185	0.656	0.671	0.658	0.035	0.129	0.121	0.595	0.617	0.601
# Observations	2982	2982	2982	2982	2982	2982	2048	2048	2048	2048	2048	2048
Mean Dep. Var.	.74	.74	.74	.74	.74	.74	.84	.84	.84	.84	.84	.84

NOTES. This table reports the OLS estimation of the coefficients of the regression of individual i's probability to have attended school, on a binary variable equal to 1 if and only if individual i was fostered as a child, on the interaction of both, and on covariates, separately on two subsamples. The first subsample comprises all individuals born before 1987. The second subsample comprises all individuals born in 1988 or later. *Other covariates* are: dummy variables for each parents' education level, dummy variables for the family's ethnic group, and a dummy variable indicating whether the individual's father was polygynous. Robust standard errors in parentheses. ***, **, * denote significance at the 1%, 5%, and 10% level.

Table 2.6: **Effect of being fostered on labor and family outcomes**

	Salaried job				Lives outside Bénin				# Children			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Fostered	-0.061***	-0.039***	0.018	0.014	0.039**	0.032*	0.093***	0.097***	0.148*	0.015	0.169	-0.068
	(0.013)	(0.013)	(0.019)	(0.019)	(0.018)	(0.018)	(0.028)	(0.028)	(0.087)	(0.071)	(0.123)	(0.110)
Female	-0.135***		-0.142***		-0.021*		-0.002		0.073		0.048	
	(0.011)		(0.012)		(0.012)		(0.011)		(0.063)		(0.064)	
Other covariates	No	Yes	No	No	No	Yes	No	No	No	Yes	No	No
Age × Sex FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Birth order × Sex FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Family FE	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
R2	0.037	0.111	0.399	0.436	0.003	0.047	0.613	0.634	0.001	0.401	0.507	0.643
# Observations	4667	4667	4667	4667	3434	3434	3434	3434	4695	4695	4695	4695
Mean Dep.	.16	.16	.16	.16	.13	.13	.13	.13	2.9	2.9	2.9	2.9

NOTES. This table reports the OLS estimation of the coefficients of the regressions of three outcomes on a binary variable equal to 1 if and only if individual i was fostered as a child, and on control variables indicated at the bottom of each column. *Other covariates* are: dummy variables for each parents' education level, dummy variables for the family's ethnic group. When the dependent variable is either the probability to have a salaried job or the number of children, the sample of observations comprises all siblings of a given family older than 21 at the time of the survey. When the dependent variable is the probability to live outside of Bénin, the sample of observations comprises all siblings of a given family older than 21 at the time of the survey, except the sibling who replied to the survey, who lives in Bénin by construction. Standard errors in parentheses. ***, **, * denote significance at the 1%, 5%, and 10% level.

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Table 2.7: **Effect of education on labor and family outcomes**

	Salaried job				Lives outside Bénin				# Children			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Went to school	0.171***	0.140***	0.069***	0.076***	-0.027*	-0.008	-0.015	-0.016	-1.062***	-0.489***	-0.418***	-0.133
	(0.013)	(0.014)	(0.019)	(0.019)	(0.014)	(0.016)	(0.018)	(0.019)	(0.075)	(0.065)	(0.098)	(0.088)
Female	-0.110***		-0.132***		-0.024**		-0.002		-0.088		-0.003	
	(0.011)		(0.012)		(0.012)		(0.011)		(0.062)		(0.062)	
Other covariates	No	Yes	No	No	No	Yes	No	No	No	Yes	No	No
Age × Sex FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Birth order × Sex FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Family FE	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
R2	0.068	0.129	0.402	0.439	0.002	0.046	0.609	0.630	0.041	0.406	0.507	0.641
# Observations	4688	4688	4688	4688	3453	3453	3453	3453	4716	4716	4716	4716
Mean Dep.	.16	.16	.16	.16	.13	.13	.13	.13	2.9	2.9	2.9	2.9

NOTES. This table reports the OLS estimation of the coefficients of the regressions of three outcomes on a binary variable equal to 1 if and only if individual i went to school, and on control variables indicated at the bottom of each column. *Other covariates* are: dummy variables for each parents' education level, dummy variables for the family's ethnic group. When the dependent variable is either the probability to have a salaried job or the number of children, the sample of observations comprises all siblings of a given family older than 21 at the time of the survey. When the dependent variable is the probability to live outside of Bénin, the sample of observations comprises all siblings of a given family older than 21 at the time of the survey, except the sibling who replied to the survey, who lives in Bénin by construction. Standard errors in parentheses. ***, **, * denote significance at the 1%, 5%, and 10% level.

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Table 2.8: **Effect of being fostered by sex**

	Went to school		Salaried		Lives outside Benin		# Children	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Fostered	-0.068**	-0.066**	0.011	0.020	0.079**	0.077**	0.164	-0.093
	(0.026)	(0.027)	(0.023)	(0.024)	(0.031)	(0.031)	(0.129)	(0.117)
Male	0.120***		0.187***		-0.002		-0.050	
	(0.012)		(0.015)		(0.012)		(0.069)	
Male & Fostered	0.050	0.044	0.025	0.021	0.030	0.042	0.011	0.057
	(0.032)	(0.033)	(0.035)	(0.036)	(0.035)	(0.036)	(0.182)	(0.167)
Other covariates	No	No	No	No	No	No	No	No
Age × Sex FE	No	Yes	No	Yes	No	Yes	No	Yes
Birth order × Sex FE	No	Yes	No	Yes	No	Yes	No	Yes
Family FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.596	0.618	0.414	0.443	0.613	0.634	0.507	0.643
# Observations	4723	4723	4723	4723	3434	3434	4695	4695
Mean Dep.	.77	.77	.23	.23	.13	.13	2.9	2.9

NOTES. Standard errors in parentheses. ***, **, * denote significance at the 1%, 5%, and 10% level.

Table 2.9: **Effect of education for individuals whose parents were farmers**

	Went to school			Salaried			Lives outside Benin			# Children		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Fostered	-0.072**	-0.064*	-0.094**	0.063**	0.085***	0.052	0.115***	0.119**	0.119**	0.204	-0.055	-0.076
	(0.036)	(0.038)	(0.042)	(0.031)	(0.033)	(0.035)	(0.043)	(0.046)	(0.051)	(0.214)	(0.173)	(0.189)
Male	0.151***			0.176***			-0.002			-0.088		
	(0.022)			(0.022)			(0.020)			(0.119)		
Male & Fostered			0.075			0.082			-0.001			0.053
			(0.054)			(0.057)			(0.057)			(0.267)
Other covariates	No	No	No	No	No	No	No	No	No	No	No	No
Age × Sex FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Birth order × Sex FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Family FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.621	0.666	0.667	0.403	0.475	0.476	0.642	0.689	0.689	0.474	0.657	0.657
# Observations	1500	1500	1500	1500	1500	1500	1102	1102	1102	1486	1486	1486
Mean Dep.	.66	.66	.66	.18	.18	.18	.15	.15	.15	3.0	3.0	3.0

NOTES. Standard errors in parentheses. ***, **, * denote significance at the 1%, 5%, and 10% level.

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Table 2.10: **Effect of being fostered on siblings interactions**

	Talked with resp. sibling last month						Met with resp. sibling last month					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Fostered	0.044**	0.055***	0.074***	0.008	0.008	0.040	0.018	0.020	0.041	-0.015	-0.019	0.003
	(0.020)	(0.021)	(0.021)	(0.032)	(0.033)	(0.043)	(0.024)	(0.025)	(0.025)	(0.034)	(0.036)	(0.046)
Female	-0.012			-0.009			0.001			0.012		
	(0.015)			(0.015)			(0.017)			(0.016)		
Same-sex siblings		0.050***	0.050***		0.059***	0.069***		0.048***	0.048***		0.048***	0.046**
		(0.015)	(0.015)		(0.016)	(0.018)		(0.018)	(0.018)		(0.017)	(0.019)
Respondent was fostered			-0.091***						-0.100***			
			(0.020)						(0.022)			
Other covariates	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No	No
Age × Sex FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Birth order × Sex FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Family FE	No	No	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
R2	0.001	0.059	0.065	0.573	0.600	0.575	0.000	0.053	0.059	0.642	0.665	0.665
# Observations	3444	3444	3444	3444	3444	2755	3444	3444	3444	3444	3444	2755
Mean Dep.	.74	.74	.74	.74	.74	.74	.43	.43	.43	.43	.43	.43

NOTES. This table reports the OLS estimation of the coefficients of the regressions of two outcomes on a binary variable equal to 1 if and only if individual i was fostered as a child, and on control variables indicated at the bottom of each column. *Other covariates* are: dummy variables for each parents' education level, dummy variables for the family's ethnic group. The dependent variables are the probability to have met or talked with the sibling who replied to the survey in the month preceding the survey. The sample of observations comprises all siblings of a given family older than 21 at the time of the survey, except the sibling who replied to the survey. Standard errors in parentheses. ***, **, * denote significance at the 1%, 5%, and 10% level.

Chapter 3

Understanding ethnic similarity in women's labor market participation in Africa: the role of linguistic proximity and national institution

3.1 Introduction

What are ethnic level consequences of linguistic proximity on economic assimilation and how persistent are they over times ? There is a growing literature on the leading role of ethnic heterogeneity for economic development (Alesina and La Ferrara (2005) for a review). More interest is being given to the linguistic dimension of ethnic diversity (Fenske and Kala (2021); Desmet et al. (2020); Desmet et al. (2012)). The literature documents the role of linguistic proximity in shifting trade (Falck et al. (2012) ; Hutchinson (2005)), affecting market integration (Fenske and Kala (2021)) and political economy outcomes (Desmet et al. (2020) ; Desmet et al. (2012)). However, only aggregate level analysis (country, region or city) are provided for most of studies. In addition, the potential association between linguistic proximity and economic assimilation receive little attention. Economic assimilation is defined as the extent to which people from different cultural or ethnic groups tend to share similar economic outcomes to natives. Economic assimilation

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is crucial for communities since it helps to reduce social inequality. Economic assimilation is even crucial for Africa because of its high ethnic diversity that has been documented as one of the most important causes of its underdevelopment (Easterly and Levine, 1997; Alesina et al., 1999)

In this paper, I design an ethnic-pair level analysis to investigate the association between linguistic proximity and economic assimilation in Africa. Especially, I study the link between linguistic proximity and ethnic proximity in women's labor market participation, both in historical and modern days. To do so, I combine individual-level data from Demographic and Health Surveys (DHS) from 26 countries, ethnographic data from ethnographic atlas, and africa's language family trees from the Glottolog (Hammarström et al., 2021). Linguistic proximity between two ethnic groups is defined as the degree to which their native languages belong to the same language's family or the extent to which their native languages are derived from a common ancestor. I compute linguistic proximity by using a distance metric based on the total number of branches shared by any two ethnic languages from the Glottolog languages trees. Furthermore, I compute for each ethnicity-pair, an index that represents the historical proximity in women labor market participation by using relevant information from the ethnographic atlas. Moreover, I aggregate data on women's labor market participation from DHS to ethnic-level index by using a regression approach that captures ethnic fixed effects. I calculate ethnic proximity in contemporaneous women's labor market participation by using a distance metric based on the absolute difference of the ethnic fixed effects. Then, I investigate the association between linguistic proximity and ethnic proximity in women's labor market participation by running OLS estimates both for the whole ethnic-pair sample and for alternative radii around ethnic groups' homeland. I supplement the baseline estimates with some robustness checks by controlling for a set of geographic controls that take their relevance from the existing literature.

First, I find that linguistic proximity is highly, significantly and positively asso-

ciated with historical proximity in labor market participation, even after controlling for geography. The estimates remain stable across different specifications. The full sample estimates show that a one SD increase in linguistic proximity is associated with 0.28 point increase of ethnic proximity in historical labor market participation, which represents an 18% increase from the sample mean. This result is suggestive that ethnic groups that are linguistically closer to each other tend to share similar historical characteristics regarding woman labor market participation.

My second findings is that linguistic proximity has no association with ethnic proximity in labor market participation today. In other words, sharing similar linguistic background does not matter for ethnic similarity in women market participation today. This result is suggestive that the historical strong association that I describe earlier doesn't persist until today, even for ethnic groups that are geographically closer to each other.

Furthermore, I investigate what could explain change in ethnic proximity in labor market participation today. To do this, I take advantage of the growing literature on the role of the quality of national institution for economic development. Since national institutions vary at country-level, I start by adding to my baseline specification a dummy variable taking the value 1 for ethnic group pairs that belong to the same country. I find interestingly that ethnic groups that inhabit the same country share higher similarity in terms of women's labor market participation. Indeed, being in the same country increase women labor market similarity by 24% relative to the whole sample mean. The effect is much larger for ethnic group pairs that are geographically closer to each other. The magnitude corresponds to 27% and 37% of sample mean for the within 1000km radii and the within 500km radii sample respectively. This results is suggestive that there is at least one countrywide characteristic that is playing a greater role in explaining ethnic similarity in women labor market participation. Moving forward, I define a dummy variable for a country being a high rule of law country. By interacting the late dummy variable with the within country ethnic group pair dummy, I find that ethnic group pairs that inhabit

high rule of law countries are more similar than those inhabiting low rule of law countries. This finding is suggestive that ethnic groups living in a country with good institution are more assimilated in term of women labor market participation.

This paper contributes to three strands of the economic literature. Firstly, I contributes to the literature that investigate the causes of economic assimilation. Indeed, there is a large body of research that investigate the causes of economic assimilation among individuals. For example, Meng and Gregory (2005) show that interethnically married immigrants earn higher incomes than endogamously married immigrants as they benefit from their partner's social network. Gathmann and Keller (2018) shows that faster access to citizenship enhances the economic assimilation of immigrant women especially in the labor market. Moreover, most of studies on the topic focus on economic assimilation of immigrants in the context of high-SES countries and hence their findings cannot be generalized necessary to the low-SES. However, in this paper I focus on assimilation of different ethnic groups historically living across Africa.

Secondly, the paper contributes to the literature on role of national institutions in driving economic outcomes. A strand of the economic literature focuses on the effect of institution on economic development (Glaeser et al., 2004). However, little is known about the role of national institutions for economic assimilation. This paper aims to fill this gap. In fact, I document that ethnic group pairs inhabiting the same country with better rule of law display a higher degree of proximity in women labor market participation today.

Thirdly, I contribute to the literature on cultural persistency. Indeed, there is a growing literature on the role of culture and its persistent effect on economic outcomes. Alesina et al. (2013) show that the use of plow in agriculture generates a comparative advantage for men relative to women and this advantage persist until today. Teso (2019) shows that atlantic slave trade generated a systematic drop in (men to women) sex ratios leading women to become more active in the labor market. Moreover, this pattern persists until today. Nunn and Wantchekon (2011) show that the slave trade lead to a culture

of mistrust which in turn is linked to Africa's underdevelopment. The large majority of these papers have found evidence of cultural persistency. By contrast, I do not find any evidence of persistency in the effect of linguistic proximity on ethnic proximity in women's labor market participation.

The remainder of this article is organised as follows. In section 3.2, I describe the data. In section 3.3, I present the econometric specification and in section section 3.4, the estimation results. Finally, I discuss and conclude.

3.2   Data

3.2.1   Constructing ethnic pair linguistic proximity

I measure the linguistic similarity between two ethnic groups by the degree of similarity between the languages spoken by the two ethnic groups. To assess that degree of similarity, I rely on the language family tree provided by the Glottolog project (Hammarström et al., 2021). Glottolog provides a worldwide catalogue of languages, language families and dialects with a particular focus on the less known languages. Each language belongs to a family tree so that I am able to identify not only the number of branches that define each language, but also the total number of branches shared by any pair of languages. I first match the ethnicity of each respondents in DHS data with the language spoken by her ethnic group. Whereas this matching task easy for certain ethnic groups (because the ethnic group name coincide with the language name), it requires additional researches (internet, wikipedia, online libraries) for others (since there is no link between the two name). Subsequently, following a large number of other studies (Gomes, 2020; Fenske and Kala, 2021), I compute the ethnic pair linguistic proximity by using a metric based on the number of branches shared between any two languages and the total number of branches that identify the two ethnic groups from the Glottolog tree diagrams. The

proximity between two languagues a and b, is defined as follows:

$$LP_{ab} = \frac{\mu_{ab}}{\mu_a + \mu_b}$$

where μ_{ab} is the total number of branches shared by languagues a and b; μ_a, the total number of branches that define the languague a and μ_b, the total number of branches that define the languague b according the Glottolog tree diagrams. For example, let's consider Kikuyu and Luo, two ethnic groups living in modern Kenya and speaking respectively kikuyu and dholuo language. Kikiyu languague is from niger-congo language family whereas dholuo language is from nilotic language family. Then, they didn't share any branche. Kikuyu language is defined by 11 branches and Dholuo language is defined by 4 branches. Consequently, the linguistic proximity between kikuyu ethnic group and luo ethnic group equals 0.

3.2.2 Constructing Proximity in women's historical labor market participation

I define the proximity in women's historical labor market participation as the relative similarity in the extent to which women participate more to labor market relatively to men according to historical data. To do so, I rely on *ethnographic atlas* database. Widely used in the literature of comparative development of Africa, *Ethnographic atlas* is a worldwide ethnicity level database generated from the work of Murdock (1967). It contains relevant ethnographic information for more than 1200 ethnic groups. Information on a large number of ethnic groups, namely the african ethnic groups, were recorded during the first half of the twentieth century (Alesina et al., 2013). However, the data captures as much as possible characteristics of the ethnic group prior the contact of Europeans. The Ethnographic atlas contains around one hundred variables where each of them describes specific ethnographic characteristics of tribes. In the most of cases, those variables are

related to cultural (eg. Premarital sexual practices (v78)) and economic practices (eg. the use of plough in agriculture (v39)).

In this paper, I base my analysis of the similarity in women's historical labor market participation on information on the gender-based division of labor in agriculture reported in the Ethnographic Atlas (v54). Ethnic groups are classified into one of the following categories based on the relative participation in agriculture by gender: (1) males only, (2) males appreciably more, (3) equal participation, (4) females appreciably more, and (5) females only. I compute the similarity in women's historical labor market participation between two ethnic groups a and b as follows:

$$HLMP_{ab} = -|C_a - C_b|$$

where $HLMP_{ab}$ is the ethnic proximity in historical women's labor market participation, C_a and C_b is ranged from 1 to 5 and corresponds to one of the five categories describe above. By doing so, I obtain, for each ethnic pair, a similarity index that increases in the extent to which the ethnic groups of the pair are closer to each other.

3.2.3 Ethnic proximity in women's contemporaneous labor market participation

To compute women's contemporaneous labor market participation at the ethnicity-level, we take advantage of the Demographic and Health Surveys (DHS). The DHS have been conducted in developing countries since the 1980s through a partnership between the US Agency for International Development (USAID) and the statistics agency of the concerned countries. The surveys consist primarily in interviewing a nationally representative sample of women aged from 15 to 49 by collecting relevant data on their socio-demographic and economic characteristics (eg. age, marital status, lifetime fertility, labor market par-

ticipation status, etc.), household outcomes (eg. bargaining power) as well as the own ethnic group. Our analyses is based on 56 DHS surveys from 26 african countries.

For the purposes of our study, we rely mainly on the labor market participation status and the ethnic group variable. The labor market participation variable is an individual-level dummy variable that takes the value of 1 if the interviewee declares to be currently working and 0 otherwise. To answer our research question, we need to realize a certain number of technical tasks. First, we need to compute an ethnic group level index for women's contemporaneous labor market participation since the unit of analysis in our context is a pair of ethnic groups and the DHS data are individual-level data. [1] To solve this concern, we compute women's contemporaneous labor market participation as the ethnic fixed effect of the following regression:

$$y_{iect} = \gamma_0 + \gamma_1 age_i + \gamma_2 age_i^2 + \alpha_{ec} + \lambda t + \epsilon_{iect} \tag{3.1}$$

where y_{iect} is a dummy variable taking 1 if respondent i from ethnic group e, living in country c, interviewed in year t is currently working and 0 otherwise, age_i is the current age of the respondents, α_{ec} is a country-ethnic fixed effect and λt is a surveys year fixed effect. I only use the age of the individual as explanatory variable to ensure the exogeneity of the right-hand variable. Indeed, apart from the age and the ethnic group of the individual, the large majority of the characteristics in the DHS are endogeneous. I added age_i^2 to control for concavity of labor market participation over the lifecycle. I control also for survey-year fixed effect to account for any time-varying changes λt that could affect women participation to labor market.

The country-ethnicity effect α_{ec} is then the index of women's contemporaneous

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[1]We could solve that challenge from several manners. We could define the ethnicity-level women's contemporaneous labor market participation as the within ethnicity sample mean of the individual labor market participation. If this manner is very simplistic, its relevance rely on the strong hypothesis that all the variation in the decision of participating to the labor market is due to the woman ethnic background. This hypothesis cannot be relevant since woman labor market participation could be explained by age, education, the country state institutional reform that could enhance participation in labor market, etc.

labor market participation for ethnicity e in the country c. I use to compute the ethnic proximity in women's labor market participation as follows:

$$CLMP_{ece'c'} = -|\alpha_{ec} - \alpha_{e'c'}|$$

where $CLMP_{ece'c'}$ is women's labor market proximity between ethnicity e in country c and ethnicity e' in country c', α_{ec} et $\alpha_{e'c'}$ are the country-ethnicity fixed effect obtained from the equation 3.1.

3.2.4   Descriptive Analysis

Table 3.1 presents summary statistics for my sample which consists of 38626 pairs of ethnic groups. The linguistic proximity index is ranged from 0 to 0.5 and its mean over the whole sample is 0.085. I compute also the sample mean over the 1000Km and 500Km radii and as we can see, the sample mean is increasing as soon as the geographic distance between ethnic groups decrease. This is informative that there is a geographic sorting between ethnic groups that share similar languages. I compute also similar statistics for ethnic proximity in historical labor market participation and ethnic proximity in women's labor market participation today. The whole sample mean is respectively -1.552 and -0.212. Furthermore, the mean over the 1000Km and 500Km radii's sample show that the proximity in women's labor market participation increase as the geographic distance between ethnic groups decrease.

3.3 Econometric Specification

To measure the effect of linguistic proximity on the similarity in labor market participation, I estimate the following baseline equation:

$$LMP_{ee'} = \beta_0 + \beta_1 LPee' + \beta_2 DIST_{ee'} + \beta_2 DIST_{ee'}^2 + \epsilon_{ee'} \tag{3.2}$$

$LMP_{ee'}$ refers to the main outcomes of the study ie the historical proximity in labor market participation and the contemporanous proximity in labor market participation between ethnic groups e and e', $LP_{ee'}$ is the linguistic proximity between ethnic groups e and e' and $DIST_{ee'}$ is the geographic distance between the ethnic group e and e', $\epsilon_{ee'}$ accounts for any other unobservables that could affect the main outcomes. We control for the geographic distance between ethnicities since one could imagine that geographic distance and linguistic distance are highly correlated so that any variation of labor market proximity explained by the linguistic proximity is the result of the geographic proximity[2]
.

I run an OLS regression on the whole ethnic group pair sample to estimate the coefficient β_1 and I cluster the standard errors at ethnic family pair level (Cameron et al., 2011)[3]. β_1 is the coefficient of interest showing the marginal effect of linguistic proximity on the proximity in the labor market outcomes at ethnicity pair level. We expect that coefficient to be positive. Indeed, higher linguistic proximity between ethnicities enhances the sharing of information (Gomes, 2020) and of similar cultural beliefs that could result in similar labor market participation. Due to various possible endogeneity concerns (reversal causality and omitted variables bias), giving a causal interpretation to β_1 is not straightforward. Moreover, I run the same regression for differents radii around the centroid of each ethnic group and I control also for proximity in various geographic characteristics

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[2]there is a geographic sorting of ethnic group that share similar languagues
[3]ethnic families are provided by the seminal ethnographic work of Murdock (1967)

of ethnic group homeland (agricultural suitability index, tse-tse suitability index, malaria suitability index)

3.4 Results

3.4.1 Linguistic proximity and Ethnic proximity in historical labor market participation

Baseline results

Table 3.2 presents the results of the estimation of the baseline equation (equation 3.2) where the dependent variable is the ethnic proximity in women's historical labor market participation (subsection 3.2.2). I start by running the regression using only the linguistic proximity as explanatory variable and I add sequentially the geographic distance variable. The estimate in column 1 shows that linguistic proximity has a positive and statistically significant effect on proximity in women's historical labor market participation. In other words, ethnic groups that are linguistically similar are more likely to share the same historical labor market participation categories. In particular, one standard deviation increase in linguistic proximity results in 0.28 increase in the proximity of historical labor market participation, which represents 18 percent of the historical proximity sample mean and 19 percent of the historical proximity standard deviation. [4].Furthermore, the results (in column 2 and column 3) show that the positive effect that I found is not due to the geographic proximity between ethnic groups. Table 3.3 shows the results from the complete specification in column 3 in table 3.2 for 500 Km and 250 Km radii around each ethnic group. The estimates are similar to the baseline estimates in table 3.2 in terms

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[4]The first result is obtained by multiplying the estimated coefficient in column 1 by the standard deviation of the linguistic proximity for the whole sample: $2.50 \times 0.112 = 0.28$. The second results is obtained by dividing the first result by the absolute sample mean of dependent variable: $0.28 \times 1.552 = 0.18$, The third one is obtained by dividing the first result by the standard deviation of dependent variable.

of the sign and the statistical significance even though the magnitude decreases slightly. This evidence is consistent with the fact that similar linguistic ethnic groups split historically from the same ancestor and then borrow similar cultural values or similar economic behaviour from that ancestor. It could also be explained by the well-known evidence in the ethnic network literature that individuals are more prone to sharing information and cultural values with those who are linguistically closer to them (Gomes, 2020; Larson and Lewis, 2017; Pongou, 2009).

Adding other controls variables as robustness checks

The positive and significant effect of linguistic proximity showed in tables 3.2 and 3.3 could suffer from bias issues although we control for geographic proximity between ethnic homeland. Indeed, the estimates could be driven by the lack of sufficient additional controls (ecological and geography controls). In fact, the literature on african comparative development provides strong evidence that women from ethnic groups inhabiting TseTse-suitable areas are more likely to participate heavily in agriculture (Alsan, 2015). Then, if TseTse fly suitability accounts for the split of ethnic languagues in a certain manner, controlling for the differences in ethnic homeland suitability for TseTse fly will improve the consistency of our estimates. Furthermore, the literature on ethnic network has documented the strong role of malaria for the emergence and the persistence of ethnolinguistic diversity in Africa (Cervellati et al., 2019). Then, if malaria accounts for the importance of women's historical participation in agriculture in a certain extent, controlling for differences in malaria suitability across ethnic homeland will improve our estimates. For those reasons, I run the complete specification of the equation 3.2 and I control sequentially for ethnic homeland differences in TseTse fly suitability, ethnic homeland differences in malaria suitability and ethnic homeland differences in agricultural suitability [5].

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[5]I get TseTse fly suitability from Alsan (2015), The malaria suitability index is provided by Kiszewski et al. (2004) whereas the agricultural suitability index comes from the Food and Agricultural Organization (FAO)

Table 3.4 shows the results of the estimation. Column 1-3 present the estimates over the whole sample whereas colums 4-6 and columns 7-9 show the results for 1000Km radus and 500Km radus. Respectively, as we can seen, the estimates are similar to those of Table 3.2 and 3.3. Consequently, the effect of linguistic proximity on the proximity in historical women's labor market participation is not driven by any of the three additionnal controls that I use.

3.4.2 Linguistic proximity and Ethnic proximity in women labor market participation today

In this section, I investigate the persistence of the effect of linguistic proximity on historical proximity in women labor market participation. Especially, I examine whether the positive effect that I find for historical data still remains when I switch to the contemporaneous data.

Baseline results

Table 3.5 presents the results from the estimation of equation 3.2 where I control sequentially for geographic distance and the additional variables discussed in section 3.4.1. Estimates show that there is no association between linguistic proximity and proximity in women's contemporaneous labor market participation. Indeed, the estimates of the main coefficient β_1 are statistically insignificant in columns 1 to 6. Furthermore, we investigate the association among ethnic groups that are geographically closer to each other. Table 3.6 shows the estimates of the complete specification (column 6 of Table 3.5) for ethnic groups that are within 1000Km and 500km radus from each other. The results show that there is no association between linguistic proximity and proximity in labor market participation for women today, even for ethnic groups that are geographically closer to each other. In other words, the association that we find when using historical data does not persist

until today. This results is in contrast with the findings in the growing literature on the persistence of cultural attitudes on economic outcomes over long periods of time (Alsan, 2015; Alesina et al., 2013; Grosjean, 2011).

What explains Ethnic proximity in in women labor market participation today?

I find in the subsection 3.4.2 that linguistic proximity does not matter for Ethnic proximity in women's labor market participation in current times. Then, a normal question we should ask is to know what is associated with the Ethnic proximity in women labor market participation that we observe today. To investigate this question, I rely on the literature on the role of national institutions in driving economic outcomes. Indeed, A large number of studies document the role of national institutions in shifting comparative development (Glaeser et al., 2004; Rodríguez-Pose, 2013; Michalopoulos and Papaioannou, 2013). However, there is no consensus about the underlined role of national institution. In this section, we hypothesize that national borders, which are drawn by Europeans in a systematic manner and put heterogeneous ethnic groups in the same countries, could be a potential explanation.

To test this hypothesis, I start by adding to the full econometric specification (Column 6 in table 3.5), a dummy variable that accounts for within-country ethnic group pairs. Table 3.7 show the results of the estimation. Column 1 presents estimates when using the whole sample whereas column 2 and column 3 presents the results by distance. The results show that two ethnic groups that belong to the same country are more likely to share strong similarity in terms of women labor market participation. In fact, a pair of ethnic groups that fall in the same country is associated with an increase in the proximity in women's labor market participation by 5 percentage points which corresponds to 24%, 27% and 34% of the sample mean over the whole sample, the 1000Km radii sample and the 500Km sample respectively.

Furthermore, I investigate what could be the country-level characteristics which could explain the positive association that I observe.To do this, I use the worldwide countries governance indicators provided by the World Bank. The World Bank computes 6 types of governance indicators [6]. In my exercise, I rely on the Rule of law index. The rule of law index captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence (World Bank, 2021). It is calculated each year and ranges from -2.5 to 2.5 with high values corresponding to better institutional outcomes. Table 3.8 presents estimates similar to those in table 3.7 where the within country ethnic pair is interacted with a dummy for whether a country has strong institutions. The later dummy is defined as follows: First, I compute for each country, the sample mean of the rule of law index over the period 2000-2018. Then, I consider a country to have strong rule of law if the index mean is higher than the median of the sample mean that I get from the first step. The results show that ethnic groups that belong to better rule of law countries share more similarities regarding women's labor market participation than other ethnic group pairs. Indeed, ethnic group pairs that belong to countries with strong institutions are associated significantly with a 7 percentage points increase in women labor market proximity, corresponding to 33% of the sample mean. Moreover, ethnic groups residing in countries with weaker institutions also share such similarities but the magnitude of the effect is much lower and less significant[7].

3.5   Conclusion

Economic assimilation is an important target of the ethnically diverse communities in general and particular in Sub-Saharan Africa. In this paper, I investigate the poten-

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[6]More details on the World Bank Governance Indicators (WGI) could be find here: https://info.worldbank.org/governance/wgi/Home/Documents.

[7]The magnitude is around 0.35 point (ie approximatively a half of the total effect that I find for high rule of law countries ethnic groups)

tial association between linguistic proximity and economic assimilation, in women labor market participation in the specific context of africa's ethnic groups as well as the persistence of this association over time. The results show that linguistic proximity is strongly associated to the ethnic proximity in women's historical labor market participation. Interestingly however, there is no association between linguistic proximity and ethnic proximity in women labor market participation in modern times, which suggests that this historical relationship does not persist until today. Moreover, this paper show evidence that ethnic group pairs inhabiting in countries with stronger institutions are associated with a high degree of proximity in women's labor market participation today. This finding highlights the important role of national institutions in driving economic assimilation across Africa.

Table 3.1: **Descriptive statistics of the main variables of the study**

VARIABLES	All Sample	Within 1000km	Within 500km
Sample mean of lingustic proximity	0.085	0.125	0.156
	(0.112)	(0.140)	(0.148)
Sample mean of hist. women labor	-1.552	-1.283	-1.214
	(1.454)	(1.366)	(1.329)
Sample mean of modern women labor	-0.212	-0.171	-0.157
	(0.161)	(0.138)	(0.142)

Standard deviations in parentheses

Table 3.2: **Linguistic proximity and proximity in historical labor market participation for women: Whole Sample**

	Dependent variable: *women's historical labor market proximity*		
	(1)	(2)	(3)
Linguistic Proximity	2.500***	2.121***	2.115***
	(0.526)	(0.519)	(0.523)
Geographic distance		-0.0143***	-0.0181*
		(0.00434)	(0.0101)
sq. Geographic distance			7.32e-05
			(0.000147)
Observations	38,226	38,226	38,226
R^2	0.039	0.055	0.055

NOTES. This table reports the OLS estimation of the coefficients of women's historical labor market proximity between ethnic group pair ee' and a polynomial function of geographical distance between ethnic group e's homeland ethnic group e''s homeland. Clustered standard errors in parentheses.

***, **, * denote significance at the 1%, 5%, and 10% level.

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Table 3.3: Linguistic proximity and proximity in historical labor market participation for women: 1000Km radii and 500Km radii

	Dependent variable: *women's historical labor market proximity*	
	(1)	(2)
	1000Km radii	500Km radii
Linguistic Proximity	1.827***	1.420***
	(0.436)	(0.395)
Geographic Distance	-0.108**	-0.152
	(0.0451)	(0.145)
sq. Geographic distance	0.00961**	0.00988
Observations	6,751	2,354
R^2	0.041	0.039

NOTES. This table reports the OLS estimation of the coefficients of women's historical labor market proximity between ethnic group pair ee' on linguistic proximity between ethnic group pair ee' and a polynomial function of geographical distance between ethnic group e's homeland ethnic group e''s homeland for subsamples of ethnic group pairs geographically distant from 1000km (column1) and 500Km (column2) respectively. Clustered standard errors in parentheses. ***, **, * denote significance at the 1%, 5%, and 10% level.

Table 3.4: **Linguistic proximity and proximity in historical labor market participation for women: Robustness checks**

Dependent variable: *women's historical labor market proximity*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Whole sample			1000Km radii			500Km radii		
Linguistic proximity	2.111***	2.059***	2.010***	1.694***	1.695***	1.713***	1.346***	1.351***	1.342***
	(0.522)	(0.525)	(0.521)	(0.423)	(0.425)	(0.427)	(0.381)	(0.380)	(0.381)
geographic distance	-0.000160*	-0.000138	-0.000117	-0.000789*	-0.000794**	-0.000807**	-0.00122	-0.00120	-0.00116
	(9.65e-05)	(8.51e-05)	(8.58e-05)	(0.000410)	(0.000405)	(0.000408)	(0.00134)	(0.00133)	(0.00134)
sq. geographic distance	5.30e-09	1.97e-09	4.41e-10	7.27e-07**	7.31e-07**	7.30e-07**	8.95e-07	8.78e-07	8.49e-07
	(1.28e-08)	(1.06e-08)	(1.31e-08)	(3.39e-07)	(3.35e-07)	(3.33e-07)	(2.26e-06)	(2.26e-06)	(2.26e-06)
TSI proximity	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ASI proximity	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
MS proximity	No	No	Yes	No	No	Yes	No	No	Yes
Observations	38,226	38,226	38,226	6,751	6,751	6,751	2,354	2,354	2,354
R^2	0.056	0.064	0.066	0.049	0.049	0.050	0.046	0.046	0.046

NOTES. This table reports the OLS estimation of the coefficients of women's historical labor market proximity between ethnic group pair ee' on linguistic proximity between ethnic group pair ee', a polynomial function of geographical distance between ethnic group e's homeland ethnic group e''s homeland and additional controls. Cols 1-3, cols 4-9 reports the results for the whole sample and for alternatives radii, respectively. Additional controls includes ethnic proximity in agricultural suitability, ethnic proximity in tse-tse fly suitability and ethnic proximity in suitability for malaria. Clustered standard errors in parentheses. ***, **, * denote significance at the 1%, 5%, and 10% level.

Table 3.5: **Linguistic proximity and Proximity in contemporaneous labor market participation for women: Whole Sample**

	(1)	(2)	(3)	(4)	(5)	(6)
	Dependent variable: *women's contemporaneous labor market proximity*					
	Without additional controls			With additional controls		
Linguistic proximity	0.00232 (0.0430)	-0.0621 (0.0609)	-0.0615 (0.0600)	-0.0798 (0.0596)	-0.0742 (0.0498)	-0.0727 (0.0498)
Geographic distance		-0.00193** (0.000771)	-0.00180* (0.00102)	-0.00147 (0.000943)	-0.000873 (0.000876)	-0.00106 (0.000898)
sq. Geographic distance			-2.38e-06 (1.79e-05)	-8.06e-06 (1.81e-05)	-1.34e-05 (1.68e-05)	-1.20e-05 (1.72e-05)
ASI proximity				Yes	Yes	Yes
TSI proximity				No	Yes	Yes
MS proximity				No	No	Yes
Observations	18,189	18,189	18,189	18,189	18,189	18,189
R^2	0.000	0.028	0.028	0.036	0.062	0.063

NOTES. This table reports the OLS estimation of the coefficients of women's contemporaneous labor market proximity between ethnic group pair ee' on linguistic proximity between ethnic group pair ee' and a polynomial function of geographical distance between ethnic group e's homeland ethnic group e''s homeland. Cols 1-3 and cols 4-6 reports estimates without and with additional controls respectively. Additional controls includes ethnic proximity in agricultural suitability, ethnic proximity in tse-tse fly suitability and ethnic proximity in suitability for malaria. Clustered standard errors in parentheses. ***, **, * denote significance at the 1%, 5%, and 10% level.

Table 3.6: **Linguistic proximity and Proximity in contemporaneous labor market participation for women: Alternatives radii**

| | Dependent variable: *women's contemporaneous labor market proximity* | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
	1000Km radii			500Km radii		
Linguistic proximity	-0.00998	-0.0123	-0.0146	-0.0479	-0.0486	-0.0489
	(0.0480)	(0.0480)	(0.0476)	(0.0473)	(0.0495)	(0.0498)
geographic distance	-0.00267	-0.00195	-0.00128	0.00608	0.00624	0.00726
	(0.00626)	(0.00635)	(0.00659)	(0.0169)	(0.0167)	(0.0169)
sq. geographic distance	-0.000143	-0.000183	-0.000230	-0.00214	-0.00214	-0.00225
	(0.000564)	(0.000568)	(0.000587)	(0.00326)	(0.00326)	(0.00328)
ASI proximity	Yes	Yes	Yes	Yes	Yes	Yes
TSI proximity	No	Yes	Yes	No	Yes	Yes
MS proximity	No	No	Yes	No	No	Yes
Observations	3,079	3,079	3,079	1,244	1,244	1,244
R^2	0.006	0.007	0.007	0.006	0.006	0.006

NOTES. This table reports the OLS estimation of the coefficients of women's contemporaneous labor market proximity between ethnic group pair ee' on linguistic proximity between ethnic group pair ee' and a polynomial function of geographical distance between ethnic group e's homeland ethnic group e''s homeland for alternatives radii. Additional controls includes ethnic proximity in agricultural suitability, ethnic proximity in tse-tse fly suitability and ethnic proximity in suitability for malaria. Clustered standard errors in parentheses. ***, **, * denote significance at the 1%, 5%, and 10% level.

Table 3.7: **Proximity in contemporaneous labor market participation for women: Test for national institutions**

	Dependent variable: *women's contemporaneous labor market proximity*		
	(1) Whole sample	(2) 1000Km radii	(3) 500Km radii
Linguistic proximity	-0.0220 (0.0595)	0.0307 (0.0453)	-0.0182 (0.0467)
within_country dummy	0.0513*** (0.0174)	0.0474*** (0.0163)	0.0546*** (0.0185)
geographic distance	0.000787 (0.00121)	5.59e-05 (0.00963)	-0.0102 (0.0171)
sq. geographic distance	-3.64e-05* (2.17e-05)	3.03e-06 (0.000870)	0.00109 (0.00339)
ASI proximity	Yes	Yes	Yes
TSI proximity	Yes	Yes	Yes
MS proximity	Yes	Yes	Yes
Observations	11,707	2,001	802
R^2	0.068	0.037	0.045

NOTES. This table reports the OLS estimation of the coefficients of women's contemporaneous labor market proximity between ethnic group pair *ee'* on linguistic proximity between ethnic group pair *ee'*, a polynomial function of geographical distance between ethnic group *e*'s homeland ethnic group *e'*'s homeland and a dummy equal to 1 if an ethnic group pair belongs to the same country. Clustered standard errors in parentheses. ***, **, * denote significance at the 1%, 5%, and 10% level.

Table 3.8: **Proximity in contemporaneous labor market participation for women: Test for national institutions**

	Dependent variable: *women's contemporaneous labor market proximity*		
	(1) Whole sample	(2) 1000Km radii	(3) 500Km radii
linguistic proximity	-0.0238	0.0271	-0.0210
	(0.0598)	(0.0454)	(0.0459)
within_high institution	0.0662***	0.0628***	0.0782***
	(0.0211)	(0.0222)	(0.0237)
within_low institution	0.0392**	0.0360**	0.0346*
	(0.0191)	(0.0163)	(0.0183)
geographic distance	0.000785	3.43e-05	-0.00986
	(0.00121)	(0.00945)	(0.0175)
sq. geographic distance	-3.66e-05*	2.00e-05	0.00107
	(2.16e-05)	(0.000864)	(0.00342)
geography controls	Yes	Yes	Yes
Observations	11,707	2,001	802
R^2	0.069	0.040	0.057

NOTES. This table reports the OLS estimation of the coefficients of women's contemporaneous labor market proximity between ethnic group pair ee' on linguistic proximity between ethnic group pair ee' and a polynomial function of geographical distance between ethnic group e's homeland ethnic group e''s homeland. Clustered standard errors in parentheses. ***, **, * denote significance at the 1%, 5%, and 10% level.

Table 3.9: List of countries in the sample

Number	Countries	Survey rounds
1	ANGOLA	2016
2	Bénin	1996, 2001, 2006, 2012
3	BURKINA-FASO	1998, 2003, 2010
4	CENTRAL AFRICAN REP.	1996
5	COTE D'IVOIRE	2012
6	CAMEROON	2004
7	DEMOCRATIC REP. CONGO	2007, 2014
8	REPUBLIC OF CONGO	2012
9	ETHIOPIA	2016
10	GABON	2000, 2012
11	GHANA	1993, 1998, 2003, 2008, 2014
12	GUINEE	1999, 2005, 2012
12	GAMBIE	2013
13	KENYA	2014
14	LIBERIA	2013
15	MALI	2006, 2013
16	MOZAMBIQUE	2011
17	MALAWI	2000, 2004, 2010, 2016
18	NAMIBIA	2000, 2006, 2013
19	NIGER	1998, 2006, 2012
20	NIGERIA	2008, 2013
21	SENEGAL	1997, 2005, 2011
22	TCHAD	2004, 2014
23	TOGO	1998, 2013
24	UGANDA	2011, 2016
25	SOUTH AFRICA REP.	1998
26	ZAMBIA	2011, 2007, 2014

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