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Fostering, Child Welfare, and Ethnic Cultural Values

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Abstract

This article examines the interdependence of the fostering status of children, their school attendance and their labour supply in host families in Niger. We appreciate the ethnic cultural heritage of fostering, a phenomenon assumed to be rooted in the long run and transmitted along generations. The focus is on the effects of fostering on children's outcomes. We specify a simultaneous equations model with three outcomes for children (school attendance, hours of market work and hours of domestic work) and a treatment variable (fostering). The results show that foster children are more likely to attend school and to have longer hours of domestic work than biological children. Importantly, we find evidence of a schooling fostering for boys and a domestic fostering for girls. All in all, ethnic inherited values and behaviours are found to have an important role in perpetuating fostering institution and on children's welfare.

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1 Introduction

Upbringing children by people other than their biological parents, known as child fostering, is a frequent phenomenon in West Africa.[1] Ethnographic and historical studies provide evidence of a geographical widespread, outside the West African frontiers, of such a traditional community arrangement based on child relocation.[2] However child fostering in West African countries reveals some cultural specific features which make it interesting to study. First, the importance of kinship in West African society must be emphasized.[3] Children do not only belong to their biological parents but they rather belong to a lineage or kinship group. Child fostering is sometimes a means to strengthen these ties and ensure maximum survival of the group (Isiugo-Abanihe, 1985). Second, as argued by Serra (2009), child fostering is efficient in raising and training children for adult life in the specific context of West African societies. In particular, she refers to the extensive agricultural practices and to the lack of individual land property rights that imply no specific skills transmittable to following generations working the land. She further refers to the one-season agricultural practices in West Africa that encourages fostering given that siblings are required to develop distinct fields of expertise. Third, the social status of women in Sub-saharan Africa is largely dependent on her success in reproduction and child fostering can help to offset demographic imbalances (Akresh, 2009; Vandermeersch, 2002). These factors combined with deeply rooted cultural traditions and social norms enable perpetuating child fostering. According to Zimmerman (2003), fostering is an intuitive response to market imperfections and a feature of the institutional environment.

The household non-traditional kinship arrangements through fostering embed social, emotional and economic relationships and thus constitute a very powerful mechanism to enforce informal transactions. Child fostering is primarily seen as an investment in human capital (Akresh, 2009). Sending and host families pool resources for children education to allow them mainly to acquire formal education (Ainsworth, 1996; Akresh, 2009; Lloyd and Blanc, 1996). Nevertheless, fostering one's own children includes informal forms of human capital such as developing the moral character of difficult children to allow them acquiring better discipline (Goody, 1982; Silk, 1987). The economic literature gives further motives to children fostering the households' willingness (i) to risk sharing (Akresh, 2009) and (ii) to labour sharing of domestic chores or market work to render assistance and help foster parents (Ainsworth, 1996). Consequently, fostering affects the behaviour of family members, children and adults, in both sending and host families, concerning childbearing, childcare and rearing, the education of children and the labour supply of both children and adult women within the host family. In addition, the intrinsic qualities of generosity and altruism of the household head may have an

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[1]The Demographic and Health Surveys (DHS) reports from 14 West African countries over the 2005-2014 period show that the share of households with at least one foster child under 18 ranges from 15.1% in Cap Verde to 37.5% in Sierra Leone.

[2]See, for instance, Bodenhorn (2000) for Alaska, Leinaweaver (2007) for Peru, Walmsley (2008) for Ecuador, Goody (1996) for China, and Doyle Jr (2007) for the US.

[3]Most fostering in West Africa takes place within the kinship framework in order to strengthen family ties (Okore, 1977).

important role in explaining fostering. As mentioned by Cox and Fafchamps (2007), altruism is found to be stronger among genetically related individuals. Foster and Rosenzweig (2001), using data from rural South Asia, find that having a long history of giving transfers increases the household's propensity to make an additional transfer. Thus when households care about each other, they stand to gain more from self-enforcing mutual insurance arrangements than they would otherwise, and this increases the scope for cooperation. Becker (1981) presents the postulate of a "taste for own children" according to which parents prefer own children because they have genes in common and people are able to observe some characteristics of own children at birth or during infancy. Similarly, the higher familiarity and degree of altruism among members of the same family explains why children of siblings and other relatives are more frequently fostered than unrelated children.

This article examines the determinants of fostering-in in Niger and assesses its impacts on foster children's labour supply and schooling in an empirical novel way. It draws on two main literatures. The first literature examines the welfare of foster versus biological children in host families. Using data from South Africa, Zimmerman (2003) shows that fostering facilitates investment in children's human capital and reduces the risk of not attending school for foster children with respect to the situation where they stay with their biological families. He shows limited evidence, observable only for girls, to support the need for domestic labour from fostering-in. Cichello (2003) uses panel data from the KwaZulu-Natal Income Dynamics Study (KIDS) and examines the impact of child fostering on educational investments. He finds that children fostered to close relatives do not suffer from lower enrolment in schools compared to biological children but for those fostered to distant or non-relatives he finds a non long term negative impact on their human capital accumulation. Serra (2009) proposes a theoretical framework to study welfare, such as nutrition, health, schooling, and work of foster children. By allowing for positive externalities of fostering and asymmetric motives for fostering-in (labour) and fostering-out (human capital), her theoretical model predicts that school-age children fostered to a better-off household improve their human capital. The model contributes to explaining why some households may foster in and out simultaneously and finds that fostering may secure benefits to the child, his parents, and the foster parents which represents a Pareto improving institution. According to Serra (2009), fostering provides better educational prospects to children whose options would be very limited otherwise. Kana et al. (2010) develop a theoretical model based on Serra (2009) which aims to exploring the effects of informal child fostering arrangements on the welfare of the children involved. The innovative feature of their model is the inclusion of a child's nutrition status as a determinant of the child's school performance. They found, in a context where Hamilton (1963)'s rule applies, that placing children under the care of non-parents needs not make these children worse off. Marazyan (2011) finds evidence of a positive effect of the sibship extension to additional foster children in Indonesia on children's school enrolment. She argues that, given that grandchildren fostering is associated with positive transfers from biological to host parents, this effect is due to a release of liquidity constraints in

the host household or to the uncommon preferences of host grandparents. Beck et al. (2015) describe the selection into fostering of households and children in Senegal and examine the impact of fostering on the welfare of children measured through their school enrolment, market and domestic work. The results suggest that, on average, education and labour outcomes of foster children are similar to those of their host siblings. In particular, foster girls do not seem to be overloaded with domestic tasks compared to their host sisters. This first literature partly fails to explain child fostering and jointly to explore the impact of fostering on children's schooling, market work and domestic work.

The second literature sustains the potential influence of cultural and social values on kinship arrangements through fostering. Goody (1982) indicates, for instance, that child fostering in West African countries is positively correlated with the degree of occupational diversification and socio-political stratification of the ethnic group. While recent economic literature presents evidence of the historical origins of cultural differences and of a persistent component of inherited cultural and social values for various outcomes, limited information exists on the influences of social background and cultural heritage on child fostering.[4] Putnam (2000) analyses trends in social capital in the United States and shows that the levels of social capital of both US immigrants and their ancestors at home countries are perfectly correlated. Algan and Cahuc (2010) use inherited family values as an instrument for family values in the source country of US immigrants. Fernández (2007) and Fernández and Fogli (2009) use attitudes toward women's work and fertility from the country of ancestry as cultural proxies to study the work and fertility behaviour of second-generation American women. Guiso et al. (2008) develop a theoretical framework to analyse the determinants of investment in social capital and conclude that social capital can be accumulated and transmitted. Nunn and Wantchekon (2011) combine contemporary household survey data with historic data on slave shipments by ethnic group and show that individuals whose ancestors suffered the slave trade have lower levels of trust in neighbors, relatives and local government. Tabellini (2010) uses data from regions of Europe and finds that culture, measured by indicators of individual values and beliefs such as trust and respect for others, affects economic development. In a recent study, Nollenberger et al. (2016) use math test scores of second-generation immigrants to analyse the effect of gender-related culture on the math gender gap. They conclude on the importance of the transmission of cultural beliefs on the role of women in society in explaining the math gender-gap. This second literature is appropriate to analyse the child fostering phenomenon. The use of cultural and social values in economic studies in developing countries remains relatively scarce because of data issues, and the few existing studies concentrate rather on health outcomes.[5] In this article, we appreciate the cultural heritage of fostering and we assume that it is likely to be rooted in the long run and transmitted along generations. To our knowledge, child fostering has not been related to cultural and social values in the economic analysis.

This article contributes to the literature (i) by providing a simultaneous equations model to

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[4]See Fernández (2011) for a review of the literature.

[5]See, for instance, Hollard and Sene (2016).

jointly explain the foster status of children in host families and determine the impact of fostering on children's market labour, domestic work and school attendance and (ii) by evaluating the long-term cultural determinants of fostering-in. The data we use are drawn from the National Survey on Household Living Conditions and Agriculture (ECVM/A) administered in Niger in 2011. The data allow identifying the foster-in status of children and give information on children's school attendance and hours spent in market and domestic work. In order to deal with the endogeneity of fostering, we rely on inherited values for each ethnic group. To this end, we use data from the cross-cultural historically-based ethnic group sample compiled by Murdock and White (1969). In particular, we use inherited levels of community integration, and indicators for frequent interethnic violence and for great importance of foster parents. Niger is a good case study because the country reveals a relatively high share of about 20% of foster children (DHS, 2012). In 2013, in spite of the improvement in school enrolment over the decade, the gross primary and secondary school enrolment in Niger of 72% and 18% respectively remains far behind the average of Sub-Saharan African countries.[6] Furthermore, child work is widespread in Niger. In fact, 54% and 29% of Nigerien children aged 5-11 and 12-14, respectively, are engaged in market work (DHS, 2012).[7]

The remainder of this article is organised as follows. In the next section, we present the estimation strategy. The data and sample selection are described in section 3. Section 4 discusses the results and final section concludes.

2 Empirical Strategy

2.1 Base Specification

This article appreciates the cultural heritage of fostering and aims at detecting potential discrimination in schooling and labour supply between foster and biological children in host families. In particular, we consider three different outcomes for children: school attendance, the number of hours spent working in the labour market, and the number of hours spent performing domestic tasks. To this end, we specify a simultaneous four equations model with the previously mentioned outcomes and a treatment variable, i.e. fostering. This modelling strategy relies on the interdependence of children's labour supply and school attendance behaviours (Rosati and Rossi, 2003), and on the possible existence of unobservable variables that affect the three main outcomes and the probability of being fostered. This simultaneous modelling strategy represents a major contribution to the analysis of household kinship arrangements through fostering.

Modelling jointly the children's market labour, domestic work and school attendance further contributes to the empirical literature on child labour where market and domestic labour supply as well as school attendance have never been estimated allowing for correlation between

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[6]Source: World Bank. We note, that for 2011, the year of the survey we use in our empirical analysis, these rates were, respectively, 68.9% and 14.7%.

[7]Work includes economic activity for at least one hour (14 hours or more) for children aged 5-11 (12-14) and/or domestic task for 28 hours or more.

explanatory variables and disturbances in estimation of behavioral equations.[8] Since we do not observe fostering-out families we are not able to estimate the counterfactual labour supply and school attendance of fostered-in children in their biological families that would be necessary to properly evaluate the impact of fostering on child's welfare. Failure to obtain, at a time in a survey, information on the reasons a child is fostered-out by biological parents and on the child's welfare within the host family makes further the inclusion of education, domestic labour and market labour crucial to assess the child's welfare.

Fostering decision is treated as endogenous for the following reasons. At the household level there may exist some unobservable factors influencing simultaneously the decision to foster-in and the decision to send children to school, in absence of any data on the biological family of fostered-in children. If the foster parents motivation is market or domestic labour supply, fostering is clearly endogenous with respect to children labour supply. Unobserved child-level characteristics could also influence both decision to be fostered and any of the three outcomes analysed. For instance a good student may have more probability to be fostered and to be sent to school because of higher expected returns to schooling of both biological and foster families. Additionally the "good" child may feel in debt with the host family for their education provision and decides to supply more time for household production, comparing to biological children. As suggested in Goody (1982) and Zimmerman (2003), the "difficult" child can be also a good candidate for fostering to receive discipline by the host family. In this case bad behaviour at home may be correlated with school drop out representing an unobservable factor in our analysis. Foster children may also decide to work in the market in order to improve their bargaining status with respect to children living with their biological parents.

We allow thus children's school attendance, hours of market work and hours of domestic work to depend on fostering status, child level and household level characteristics. Since our dependent variables are binary or continuous variables with corner solutions, the specification is a nonlinear simultaneous equations model (Amemiya, 1979; Lee, 1982; Nelson and Olson, 1978) where fostering decision is the endogenous regressor. The three main equations are specified as a Probit model (for school attendance) and Tobit models (for hours spent on domestic tasks and hours spent on paid work). Consistent estimation of parameters in the three main equations are achieved under the assumption that a vector $\mathbf{Z_i}$ of exclusion restrictions in the fostering equation exists and is uncorrelated with the vector of error terms (Brundy and Jorgenson, 1971; Manski et al., 1981).

Let s_i denote school attendance, d_i hours of domestic labour supply, and m_i hours of market labour supply of the ith child. The dummy f_i identifies whether the child is foster or biological.

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[8]Zapata et al. (2011) and Emerson and Souza (2008) use a bivariate probability model to analyse child labour and schooling without considering the continuous nature of labour supply and hours devoted to domestic tasks.

The base model we estimate is the following:

$$s_i^* = \alpha_0 + \alpha_f f_i + \mathbf{C_i'}\alpha_C + \mathbf{H_i'}\alpha_H + u_i \tag{1.a}$$

$$d_i^* = \beta_0 + \beta_f f_i + \mathbf{C_i'}\beta_C + \mathbf{H_i'}\beta_H + e_i \tag{1.b}$$

$$m_i^* = \gamma_0 + \gamma_f f_i + \mathbf{C_i'}\gamma_C + \mathbf{H_i'}\gamma_H + v_i \tag{1.c}$$

$$f_i^* = \zeta_0 + \mathbf{Z_i'}\zeta_Z + \mathbf{C_i'}\zeta_C + \mathbf{H_i'}\zeta_H + w_i \tag{1.d}$$

with

$$s_i = \begin{cases} 1 & if\ s_i^* > 0 \\ 0 & otherwise \end{cases} \tag{2.a}$$

$$d_i = \begin{cases} d_i^* & if\ d_i^* > 0 \\ 0 & otherwise \end{cases} \tag{2.b}$$

$$m_i = \begin{cases} m_i^* & if\ m_i^* > 0 \\ 0 & otherwise \end{cases} \tag{2.c}$$

$$f_i = \begin{cases} 1 & if\ f_i^* > 0 \\ 0 & otherwise \end{cases} \tag{2.d}$$

where $\mathbf{C}$ and $\mathbf{H}$ denote control variables at the child level and the household level, respectively.

The error terms (u_i, e_i, v_i and w_i) are supposed to be drawn from a multivariate normal distribution with zero mean and the following 4x4 covariance matrix:

$$
\begin{array}{c}
\begin{array}{cccc} s_i & d_i & m_i & f_i \end{array} \\
\begin{array}{c} s_i \\ d_i \\ m_i \\ f_i \end{array}
\left[
\begin{array}{cccc}
\sigma_1^2 & \sigma_1\sigma_2\rho_{1,2} & \sigma_1\sigma_3\rho_{1,3} & \sigma_1\sigma_4\rho_{1,4} \\
 & \sigma_2^2 & \sigma_2\sigma_3\rho_{2,3} & \sigma_2\sigma_4\rho_{2,4} \\
 & & \sigma_3^2 & \sigma_3\sigma_4\rho_{3,4} \\
 & & & \sigma_4^2
\end{array}
\right]
\end{array}
$$

where $Var[u_i] = \sigma_1^2 = 1$, $Var[e_i] = \sigma_2^2$, $Var[v_i] = \sigma_3^2$ and $Var[w_i] = \sigma_4^2 = 1$. The covariance between two error terms is presented by $\sigma_k\sigma_l\rho_{k,l}$ where, for any $k \neq l$ and $k,l \in \{1,\ldots,4\}$, σ_k and σ_l indicate the standard deviations and $\rho_{k,l}$ indicates the correlation coefficients.

By letting the covariance matrix be unrestricted and estimating all its elements, the model allows for the simultaneity of the four decisions presented in equations (1.a - 1.d). Correlations of the errors of the market and domestic labour supply equations, schooling and fostering may reflect unobserved heterogeneity at the child and the household levels that are likely to influence the probability of fostering-in, and the hours of market and household labour.

Coefficients are estimated with a non-linear full-information maximum likelihood estimator (Amemiya, 1985) that allows also for non-zero correlations between error terms in the child's labour supply, school attendance and fostering equations.

2.2 Model with Selection into Market Work

In the equations (1.a - 1.d) labour supply for market and domestic work are both modelled by means of a Tobit specification. However, in the presence of a correlation between the error terms of the selection and the outcome equations, the labour supply should be estimated with Heckman (1979)'s selection model in order to correct for the selectivity bias. Rosati and Rossi (2003), for instance, highlight the importance of looking at the number of hours worked instead of the dichotomous household decision to send the child to school or to work, as two different and unrelated outcomes. In our framework, the dependent variable in the outcome equation is the weekly hours of labour performed by foster and biological children while the dependent variable in the selection equation is a variable that equals 1 when hours are positive and 0 otherwise. There is reason to believe that the correlation between the error terms of the selection equation and the labour supply equation is significant especially due to the fact that the number of censored observations is large in child labour analysis. For this reason, we also model market labour supply decision with two equations that separately represent the decision to work and the number of hours spent in market activities. Thus, we now consider market work participation equation in addition to the hours of work already specified in the equations system (1.a - 1.d).

Accordingly, the second system of equations we estimate is the following:

$$s_i^* = \alpha_0 + \alpha_f f_i + \mathbf{C_i'}\alpha_C + \mathbf{H_i'}\alpha_H + u_i \tag{3.a}$$

$$d_i^* = \beta_0 + \beta_f f_i + \mathbf{C_i'}\beta_C + \mathbf{H_i'}\beta_H + e_i \tag{3.b}$$

$$l_i^* = \eta_0 + \eta_f f_i + \mathbf{C_i'}\eta_C + \mathbf{H_i'}\eta_H + \mathbf{K_i'}\eta_K + \epsilon_i \tag{3.c}$$

$$m_i^* = \gamma_0 + \gamma_f f_i + \mathbf{C_i'}\gamma_C + \mathbf{H_i'}\gamma_H + v_i \tag{3.d}$$

$$f_i^* = \zeta_0 + \mathbf{Z_i'}\zeta_Z + \mathbf{C_i'}\zeta_C + \mathbf{H_i'}\zeta_H + w_i \tag{3.e}$$

with

$$s_i = \begin{cases} 1 & if \ s_i^* > 0 \\ 0 & otherwise \end{cases} \tag{4.a}$$

$$d_i = \begin{cases} d_i^* & if \ d_i^* > 0 \\ 0 & otherwise \end{cases} \tag{4.b}$$

$$l_i = \begin{cases} 1 & if \ l_i^* > 0 \\ 0 & otherwise \end{cases} \tag{4.c}$$

$$m_i = \begin{cases} m_i^* & if \ l_i = 1 \\ \cdot & if \ l_i = 0 \end{cases} \tag{4.d}$$

$$f_i = \begin{cases} 1 & if \ f_i^* > 0 \\ 0 & otherwise \end{cases} \tag{4.e}$$

Equation 3.c is the selection equation into market labour, where the latent variable l_i^* is related to vectors of explanatory variables. $\mathbf{K_i}$ is a vector of variables which appears only

in the selection equation and are referred to as exclusion restrictions serving to identify the parameters of the model. The error term of the selection equation is allowed to be correlated with the error terms of the remaining equations. The latent variable m_i^* is only observed if the selection indicator l_i is equal to one.

2.3 Ethnic Cultural Values and Fostering

As previously mentioned, we specify a joint model of the treatment (fostering-in) and three outcomes and estimate the model by Full Information Maximum Likelihood (FIML). The FIML estimation requires no exclusion restrictions but only the presence of different sets of exogenous regressors to avoid identification problems. This identification strategy is usually referred to as the identification by functional form. However, it is common practice to rely on exclusion restrictions to improve identification (Jones, 2007). To this end, we focus on cultural traditions and social norms that enable preserving and perpetuating child fostering in West Africa. In particular, we aim at using variables that affect current child's fostering status but have no direct effect on children's present-day school attendance nor on their domestic working hours and market labour supply. We thus ground this work on the postulate that current cultural values and behaviours are rooted in long-term history and inherited along the ethnic lines. For the purpose of our analysis, these elements are proxied by three variables. For each ethnic group, we consider the inherited level of community integration, the existence of permanent interethnic violence, and the situation according to which foster parents are the principal category of non-parental agent. These variables are considered to only affect children's outcomes via the child's fostering-in status. We argue that for each member of a given ethnic group, these values are inherited from his/her ethnic group ancestors and has no direct impact on the labour supply nor on the current school attendance of biological versus foster children. These variables are drawn from the Standard Cross-Cultural Sample (SCCS) by Murdock and White (1969), designed to map the territory of ethnic groups before the establishment of current borders. The SCCS provides data at the ethnic group level.

Inherited levels of community integration, the indicator of frequent interethnic violence and the indicator of foster parents being the principal category of non-parental agent are assumed to affect a household's current decision to foster-in but to be uncorrelated with our dependent variables, namely school attendance, hours of domestic work and hours of market work. We argue that individuals whose ancestors experienced high levels of community integration, frequent interethnic violence, and great importance for foster parents, have higher probabilities to perpetuate fostering. First, we consider that high levels of community integration affect child-fostering positively given that families from the same community will be tempted to encourage this practice in order to maintain good integration within the community. Indeed, Okore (1977) argues that most fostering in West Africa takes place within the kinship framework in order to strengthen family ties. Second, the incidence of interethnic violence plays a determinant role in explaining levels of trust and tolerance (Laurence, 2009). For instance, Varshney (2001)

analyses the roles of interethnic and intraethnic networks of civic engagement in ethnic conflict and argues that communal and ethnic organisations have a high level of trust among their members. Thus a long history of widespread interethnic violence that leads to ethnic conflicts is assumed to foster cohesion within the ethnic group (Rohner et al., 2013) and to affect positively fostering children within one's own ethnic group. Indeed, when people are part of a small ethnic group in presence of ethnic violence then levels of interethnic trust are clearly small. In this context, families are likely to rely on families belonging to the same ethnic group and to develop intraethnic social capital. People thus make use of children's fostering, which becomes strongly embedded in the population and persists along generations. The persistence of such a phenomenon is partly related to the fact that foster children, once they get better opportunities in life, are able to reciprocate with help for the family mainly in fostering other children (family or community related) later on. Third, we argue that the inherited great importance, for girls and boys, of foster parents is transmitted from ancestors and has a persistent component that makes fostering perpetuate through generations.

3 Data and Summary Statistics

3.1 Data and Sample Construction

The study carried out in this article is based on data from the National Survey on Household Living Conditions and Agriculture (ECVM/A) administered in Niger in 2011 by the National Institute of Statistics, with technical and financial support from the World Bank. Niger is a West African country, with a population of 17.6 million people, predominantly Muslim (80% of the population) and made up of over mostly seven ethnic groups, the largest being Haoussa (53.1%) followed by Djema (21.2%), Touareg (11%), Peul (6.5%), Kanuri (5.9%), Gurma (0.8%) and Toukou (0.4%). The country has the highest total fertility rate, averaging close to 7 children per woman in 2016, related to persistent practice of early marriage and childbearing. According to the World Bank, in 2011 poverty rate was 48.9% and enrolment rate in primary school was 66.4%.[9] The ECVM/A includes socio-demographic characteristics of household members, education and health, employment information, non labour income, ownership of assets, household expenditure, inter-households transfers, negative shocks and relative coping strategies and food security. The dataset allows to identify foster children and to observe child schooling, labour status and children's labour supply. It is thus appropriate for the scope of the analysis. A total of 3,968 households were interviewed, amounting to a national representative sample of 25,125 individuals.

To consider cultural variables, we match former (Murdock and White, 1969) and current ethnic groups (2011 ECVM/A) within Niger. This combination of datasets gives a final sample study composed of five ethnic groups.[10] We thus delimit five historical ethnic territories that

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[9]World Development Indicators 2011 and CIA World Factbook.
[10]This sample selection is driven by the fact that Arab (0.55%), Gourmantché (0.29%) and Kanouri (8.44%) ethnic groups are not found in the ethnographic data set.

correspond to the Djema, Haoussa, Peul, Touareg and Toukou ethnic groups from the 2011 ECVM/A and we use the level of community integration (on a scale of one to four) of each ethnic group of host families in our estimations.[11] We further use indicators of frequent interethnic violence and of foster parents being the principal category of non-parental agent.

3.2   Sample Selection and Summary Statistics

We reduce our sample to observations of children who live in households belonging to the five major ethnic groups. We drop observations of children living in households where the head is under 18 years old. After controlling for missing values and dropping orphans of both parents,[12] we are left with a sample of 8,443 children aged 5-17 who live in 2,709 households. Table 1 reports summary statistics on the whole sample and by child gender. A foster child is defined as an usual resident younger than 18 years old who lives without any of his/her biological parent although one of them at least is alive. No data about the biological families of foster children are available. Foster children represent 10.3% of the sample, 11.5% among girls and 9.1% among boys. Within the subsamples of foster and biological children, the girls count respectively for 54.3% and 47.8%. In the study sample, the majority of foster children are related to the household head. Only 0.2% of foster children are not related to the household head (Table 1).

The article evaluates the impact of fostering on three different outcomes: school attendance (s_i), domestic labour supply (d_i), and market labour supply (m_i). The survey provides information about education and school attendance for all individuals aged 4 years and more. We thus use children's school attendance during the year of the survey, i.e. 2010-2011, to compute the dummy s_i.[13] The statistics indicate that 45.5% of children in the sample are attending school in 2010-2011 and show that boys are sightly more likely to attend school than girls for both biological and foster children. Moreover, foster boys (girls) are more (less) likely to attend school than their biological counterparts (see Table 1). The survey further reports principal employment activities for individuals aged 5 years old and more. In particular, we use the number of declared working hours per day and the number of declared working days per week to calculate the weekly labour supply of children employed in the labour market (m_i). We also use information on children's time use to calculate the weekly hours of domestic work for children. In particular, the survey provides minutes per day and days during the past seven days collecting firework, fetching water, cooking, doing the laundry, ironing clothes, cleaning and shopping for the household. This allows us to calculate the weekly hours spent by each child in domestic tasks.

We observe high participation rates for both activities and, as observed in previous studies

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[11]For the aim of the applied analysis, the integration level was rescaled from the original scales of one to six because the data provides four levels over six in the case of Niger.

[12]Although comparing orphans with biological children might be of interest in its own right, one could argue that the decisions of whether to receive orphans is likely to be determined by different criteria than attempting to explain the decisions of families to receive children with at least one parent alive. Moreover, children's outcomes are likely to differ according to their status, i.e., biological, foster and orphan.

[13]Children are also asked to declare time spent studying but unfortunately there were too many missing values and zeros in this variable to include it in the estimations.

on different countries, boys are more likely to work in the market, especially when they are biological (45.1%) and girls in domestic tasks especially when they are foster (67.3%). Even if biological boys are more likely to participate in the labour market than foster boys, once they enter the labour market, they supply the same amount of hours per week. The results are different for the subsample of girls. In fact, participation in the labour market is higher for biological than foster girls and biological girls are also more likely to supply longer market working hours. Foster boys are asked to contribute more to domestic activities. Girls, foster and biological, seem to bear the burden of household chores; however for foster girls the incidence of domestic work is higher and the amount of weekly hours is quite relevant (9.6 hours per week). In equations systems (1.a - 1.d) and (3.a - 3.e) there are two sets of control variables: child's individual characteristics and household characteristics. Basic child level variables ($\mathbf{C_i}$) are age, age squared, and sex. Following Fafchamps and Wahba (2006), relative birth order among boys and relative birth order among girls are also included. The idea behind the inclusion of these variables is that birth order affects relative welfare weights among boys and girls of the same household leading to an increase (decrease) of workload (or probability of school attendance).

As to household characteristics ($\mathbf{H_i}$), the specification includes education related variables, variables related to the household head and his spouse, household composition, variables on economic status and rural residence. Zimmerman (2003) finds that family's preferences for education are important predictors for fostering-in since human capital investment is the main reason for foster out and households with high level of education have more probability to host foster children. However, we cannot use family education variables to instrument fostering since they are also good predictors for the outcomes, so we keep them as controls in the specification. Ability of the head to write (31% of our sample) and average years of compulsory education of female adults (1.2 on average) are included in vector $\mathbf{H_i}$. The traditional nature of the family is captured by the age of the household head (ranging from 18 to 95 years old) and by a dummy for families with a polygamous marriage (31.7%). The sample is characterised by high prevalence of complex families with high level of heterogeneity in household composition. Indeed, only 56% of children lives in nuclear families, the household size ranges from 2 to 30 members and the median household size is 8. For this reason a set of detailed variables on household composition are included in vector $\mathbf{H_i}$. In particular we specify the number of children by different ages and gender and the presence of a woman older than 59 years in the household. The family socioeconomic status is proxied by the share of employed adults, the log of labour income of the household head, the log of family non labour income and the net amount of inter-households transfers. For the last variable we compute the difference between incoming and outgoing monetary transfers.[14] On average, 62% of children live in households based in rural area where all the employed household members work in agricultural activities.

The exclusion restrictions used in the Heckman selection procedure (vector $\mathbf{K_i}$ in Equation 3.c) are, as established in the labour supply literature, proxies for the family wealth and in

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[14]This variable averages at 34,000 CFA francs (around 70 USD), ranging from 3,892.80 to 18,041.82 USD.

particular a dummy indicating dwelling ownership (83%) and the number of rooms of the dwelling. As to the exclusion restrictions for the fostering equations (vector $\mathbf{Z_i}$ in Equations 1.d and 3.e) we consider the level of community integration, the situation of permanent interethnic violence and the information on whether foster parents are the principal category of non-parental agent imputed in the sample by ethnographical sources (Murdock and White, 1969). The level of community integration level ranges from 1 to 4 and is, on average, 2.963. Moreover, 43.5% and 36.2% of children belong to ethnic groups who experienced violent interethnic violence and for whom foster parents have great importance, respectively.

4   Estimation Results

In what follows, we present the results of the simultaneous equations model designed to jointly determine the impact of fostering on children's market labour supply, domestic work and school attendance. We specify two different models. In the first model (Equations 1.a - 1.d), the system is composed by two Tobit models (for market and domestic labour supply) and two Probit models (for school attendance and the endogenous fostering variable). In the second model (Equations 3.a - 3.e), the market labour supply is modelled with a Heckman selection equation for market labour supply. In Section 4.1 we present estimations of the two models in the whole sample (Tables 2 and 3). Section 4.2 instead explores the potential heterogeneity in the effect of fostering status by child gender and age and by household composition (Table 4). Section 4.3 analyses the robustness of the results to the inclusion of variables related to historical regional prosperity in the fostering equation.

4.1   Child Fostering, Schooling and Children's Labour Supply

Table 2 presents the results of the FIML estimation of the four equations system (1.a - 1.d) that models child fostering status as endogenous. The estimations here are performed in the most general sample, that includes all children younger than 18 years old for whom the information on school attendance and labour supplies are provided from the data.

Foster children are here observed in the host families. The results show that fostering increases with the age of the household head and in female headed households. It also increases with the presence of an old woman in the household. These results suggest that the likelihood of hosting foster children is higher in families with older members who possibly have stronger traditional values or better economic conditions. Instead, having a high number of biological young boys seems to reduce the propensity to foster-in which is in line with the idea that fostering-in decision may be related to the composition of the family (Akresh, 2009). Additionally, consistently with the fact that the main motivation for fostering-out would be educational opportunities (Akresh, 2009; Lloyd and Blanc, 1996), fosterage is more common among urban communities.

The cultural determinants of fostering-in are the exclusion restrictions that improve the

identification of the impact of fostering on the child's human capital development. Estimations from the most general sample show first a relevant role of interethnic violence, consistently with previous findings suggesting that interethnic conflicts appear to strengthen within-ethnic group ties (Rohner et al., 2013) and kinship-based norms (Cassar et al., 2013). Fostering appears to be confirmed as an institution that reinforces traditional kinship ties since foster children, later in life, are able to reciprocate with help for the family, mainly by fostering other children or making monetary or in-kind inter-household transfers. Also the importance attributed to foster parents within ethnic groups significantly contributes to the child probability of being fostered-in. On the contrary, the level of community integration is a significant predictor of fostering only in few sub-samples. These three instruments together work remarkably well and consistently along different samples as exclusion restrictions. In order to test the validity of these exclusion restrictions, we estimate a system of simultaneous equations only for the three outcomes in a sample of households not engaged in fostering. In this estimation, we find that the exclusion restrictions have no direct impact on outcomes which means that their potential impact on outcomes is only through the fostering status. At the same time, the significant correlation, obtained in the base model, between the error terms in the fostering equation and in all the other equations shows the importance of treating fostering as an endogenous variable.[15]

As to the impact of fostering, our estimations seem to confirm predictions by Serra (2009) who describes fostering as a Pareto improving institution providing better educational prospects to children whose options would be very limited otherwise. Fostering parents are compensated with an additional help to perform domestic tasks. The foster status gives children higher probabilities to attend school (see Table 2) even though foster children are required to supply more hours of domestic activities. As to child labour, foster children are not treated differently with respect to biological ones. These results are in line with the theoretical predictions in Serra (2009) and with the previous evidence on motives and consequences of fostering for child welfare (Zimmerman, 2003). Interestingly, these results are at a distance from the majority of previous studies looking at the effect on schooling of foster children.[16] However, they are in line with other studies that claim the important role of the altruism of co-resident relatives, especially female household members (Ardington and Leibbrandt, 2010; Mangiavacchi et al., 2018).

The significant effect of fostering on children's activities is robust to the inclusion of additional variables at the child and household levels. Age is non linearly and positively related to all outcomes. As in Fafchamps and Wahba (2006), first-born girls are slightly less likely to attend school and to work in the labor market while they appear to help more in domestic chores. In contrast, for boys, the birth order significantly increases the number of hours spent working in the market. Concerning household variables, the head's literacy and the human capital of female household members are important determinants of school attendance. Interestingly, the education of the household head is not a significant determinant of the child labour,

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[15]This correlation is explained by the existence of unobservable factors affecting at the same time the probability of being fostered, the decision to attend school and the number of hours of market and domestic work.

[16]See, for instance, Yamano et al. (2006).

while the education of female household members prevents child labour both in the market and within the household (Edmonds, 2007). Table 2 shows that school attendance is not related to the number of siblings. However, considering that child contribution to household chores is observed in households with young children (especially boys), this suggests that children are asked to assist their parents in child care provision by substituting for them in housework and, to a lesser extent in market work (Fafchamps and Wahba, 2006). The household socio-economic status (measured with the share of employed among working-age members and the log of income earned by the household head) is an important determinant of school attendance and market work even though it does not significantly affect hours of domestic work. Local labour market and school supply conditions are likely to be captured by the rural residence dummy that significantly reduces school attendance and increases labour supply and, to a lesser extent, hours spent in domestic activities.

In spite of the high number of control variables included at the household level, there exists some unobservable factors influencing, with opposite signs, both labour supply and school attendance. In fact, we find a significant and negative correlation among error terms (see Table 2) as Rosati and Rossi (2003) and Emerson and Souza (2008), for instance. In contrast, concerning the relation between labour and domestic work, we find that the error terms are positively correlated (see error terms correlations in Table 2). It is important to note that the simultaneous estimation prevents from the loss of efficiency due to the presence of a correlation between unobserved variables.

Table 2 shows the results of the base model where the labour supply for market and domestic work are both estimated by means of a Tobit specification. However, there are reasons to believe that the correlation between the error terms of the selection equation and of the outcomes equations is not equal to zero especially for market work, motivating the use of the Heckman (1979)'s selection procedure. In our general sample, only 37% of children participate to the labour force and 52% report positive values of hours spent in domestic activities, although the participation rates vary substantially by sub-sample (Table 1). As to market work, girls (both foster and biological) are those with the lowest percentages, while almost half (45%) of the biological boys does some market related activity. In Table 3, we show estimations of the equations system (3.a - 3.e) where a selection equation for market work is estimated. It is further relevant to analyse the impact of the fostering status and all the individual and household child characteristics on the probability to be engaged in child labour. In fact, disentangling the decision to send children to work and the number of hours worked (estimations in Table 3) give some interesting insights. Actually, child age affects the decision to work but not the number of hours worked. The same is observed for variables related to the socio-economic status. Moreover, the error terms correlation with the schooling equation is now significant only for the selection equation and not for the number of hours of market work. the estimated coefficients of the three equations are consistent with the specification presented in Table 2. Importantly, the error terms correlation between the hours of market work and the decision to participate in

the labour market (i.e., selection equation) is not significant, showing no reason to opt for this model as a preferred specification. For this reason, we perform the robustness analysis over the first specifications, i.e., the base model or equations system (1.a - 1.d).

4.2 The Heterogeneous Effects of Fostering on Child's Welfare

So far, the empirical analysis is carried out on the total sample of children. In order to test the robustness of our analysis and to explore possible heterogenous effects of fostering on schooling and child labour due to sample selection, we estimate the base model presented in the equations system (1.a) - (1.d) over different sub-samples. The results are reported in Table 4.[17]

In Table 4 we consider heterogeneity at child level, related to gender and age. First the sample is split for boys and girls. Results for boys give a similar picture respect to the whole sample. However, when the estimations are restricted to the sample of girls, results show that foster girls have the same probability to attend school as biological ones, thus while no discrimination is at work, foster girls are not prioritised to access educational opportunities respect to biological girls. Foster girls are still required to do more domestic chores as in the main sample.

It is likely that our results are driven by the early marriage of girls and by the fact that labour of children aged 15-17 in developing countries reveals some economic and cultural aspects that make it well-tolerated with respect to that in developed countries. We thus estimate our model using the sample of children aged 5-14. Results are consistent also using this more restrictive age definition. As for older children, as expected, we find a weaker impact of fostering status on school attendance for children aged 15 to 17 and they still do as much labour as their biological co-resident children.

The effect of fostering may also be different depending on household composition especially in relation to domestic and market work hours. Since the literature suggests that polygamous and extended families may behave in a different way in terms of labour supply and fertility (Cox and Fafchamps, 2007; Jacoby, 1995), the model is estimated using alternative samples of children living in monogamous and nuclear families. For instance children living in families with a polygamous couple (30.76% of our sample) may behave in a different way in terms of schooling or labour supply since wives may represent a labour force source and imply a different intrahousehold allocation of time-use and children of different wives may have a different relative importance within the household (Jacoby, 1995).

Extended families are also different respect to nuclear families in terms of labour supply and intra-household decisions (Cox and Fafchamps, 2007). When these complex families are excluded from estimation, results confirm that fostered-in children have to do more house work than children living with their biological families even though they also have better educational

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[17]The robustness analysis is not performed over the second specification, i.e., equations system (3.a) - (3.e), because the selection term is, as in the total sample, not significant. Detailed estimation results are available upon request.

opportunities.

We also test whether our results are robust to the use of the sample of agricultural families. These families may hide some particular aspects related to household production that make them more likely to offer child labour (Beegle et al., 2006) or to ask for additional hours of domestic work to compensate for the fact that household members have to work in the fields. At the same time one-season agricultural practices in West Africa are identified as one of reasons that motivate fostering (Serra, 2009). Indeed, estimations show a slightly different behavior in terms of child labour supply for this sample. In particular, foster children are more likely to participate in the labour market and to work more than their biological co-residents, suggesting that labour fostering and education fostering co-exist in this specific sample (Table 4).

Given that the literature shows substantially different effects on child welfare when female members are decision-makers (Mangiavacchi et al., 2018), we test the model considering a sub-sample of female headed households (representing 11% of the sample).[18] We find that foster children are not requested to do more hours of domestic chores and that foster and biological children have equal chances to be educated. In contrast, the ability of writing and reading of the household head has no effect on the estimation results.

4.3   The Historical Impact

We have so far argued that cultural and social values have a persistent component which is passed down through generations and a cyclical component which may evolve over time. The long-term impacts of ethnographic variables may not be solely due to the persistence and transmission of social and cultural norms but also to the development of institutions (Benabou and Tirole, 2006). A potential mechanism underlying the effects found in our analysis is the greater historical prosperity (Lowes et al., 2017). This is why we perform some robustness tests to check whether the exclusion restriction condition holds. To satisfy the exclusion restriction condition, the level of community integration and the indicators of interethnic violence and foster parents importance should only affect children's outcome via the child's fostering-in status. This condition is not met if the exclusion variables affect education, hours of market labour and hours of domestic labour through other channels, namely local institutions or some historical variables.

Over the last two decades, a growing economic literature focused on the interaction between colonialism and development.[19] We identify historical variables through which anthropological variables may affect children's outcome. If the effect of fostering-in on children's outcome disappears with the inclusion of these historical variables, it is possible to conclude that the effects found in the previous estimations are mostly driven by the omission of these historical variables. The political and socio-economic history of Niger provides a good source of variation in these variables at the regional level. The introduction of historical data is in line with the fact that colonial investments introduced important differences among the districts of former

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[18]Note that for the sub-sample of female headed households, the model with selection (specification 2) is not estimated because of the lack of observations.

[19]See, for instance, Acemoglu et al. (2001), Banerjee and Iyer (2005), Huillery (2009), and Iyer (2010).

French West Africa (Huillery, 2009). To capture regional differences in economic and social development, we use data collected by Huillery (2009, 2011, 2014) for former French West African countries on public finance, pre-colonial and geographical data. The combination of historical data with the 2011 dataset gives a sample with 8 Nigerien regions. We link historical regional variables referring to the European colonisation in Niger, measured at the ethnicity level, with data from 2011, measured at the region level.[20]

After identifying former regions, we match them to the actual 2011 ECVM/A Nigerien regions and generate, at the region level, two main variables. First, we consider colonial economic conditions proxied by rainfalls given the influence of unfavourable weather conditions on agricultural crops. Thus, we make use of data on annual rainfalls defined by the average annual precipitation in the main town of each district from 1915-1975.[21] Second, in order to capture the pre-colonial economic prosperity and to seize the pre-colonial political and social organisation, we introduce in the vector $\mathbf{Z_i}$ an indicator of whether the region was a kingdom at the end of the nineteenth century as well as the population density in 1912 calculated as the local Nigerien population in 1912 divided by land area. At the individual level, the average annual precipitation for 1915-1975 is 467.3. Moreover, five out of eight regions were kingdoms at the end of the nineteenth century. In the sample study, 54% of individuals live in regions that were historically kingdoms. As shown in Table 5, the inclusion of these additional controls have a very limited impact. This reinforces our assumption that the levels of community integration, the indicator for frequent interethnic violence, and the indicator for high importance of foster parents are exogenous.

5 Conclusions

Upbringing children by people other than their biological parents, known as child fostering, in West Africa, is deeply rooted in the cultural traditions and social norms. Using a survey data set from Niger, we examine the relationship between children's fostering status, school attendance and (market and domestic) labour supply. Niger is an extremely poor country where school attendance is particularly low and child labour is very common. Fostering is a widespread phenomenon in Niger where about 20% of children under 15 are fostered (DHS, 2012). Household structure is very complex, with high incidence of polygamous and non nuclear households. In this context, we test whether the household non-traditional kinship arrangements through fostering are beneficial or, on the contrary, there is a discriminatory effect against non biological children.

In order to identify the effect of fostering on a child's welfare in host families, we apply an innovative empirical strategy for this literature focusing on the historical perpetuation of

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[20]In August 1960, Niger achieved independence from France. The country was colonised between 1922 and 1958. Between 1958 and 1960, Niger remained a semi-autonomous Republic within the French Community.

[21]Miguel et al. (2004) use data from 41 African countries during 1981-1999. They consider rainfall variation as an instrument for economic growth and find that growth is negatively related to civil conflict.

ethnic cultural values and social norms. In particular, we consider three different outcomes for children: school attendance, the number of hours spent working in the market, and the number of hours spent performing domestic tasks. We specify a simultaneous system of four equations that also includes an equation for the treatment variable, i.e. fostering. This empirical modelling strategy relies on the interdependence of children's labour supply and school attendance behaviours, and on the possible existence of unobservable variables that simultaneously affect the three main outcomes and the probability of being fostered. To obtain consistent estimations of the impact of fostering on the three outcomes, we use exclusion restrictions that ground on anthropological data. Considering that current cultural values and behaviours are rooted in long-term history and inherited along ethnic lines, we use, for each ethnic group, the level of community integration, the situation of permanent interethnic violence and the information on whether foster parents are the principal category of non-parental agent.

The results show that foster children are more likely to attend school and to contribute to household production compared to biological children. The estimated effects are stronger for boys than for girls and robust to different child age groups. The analysis that focuses only on monogamous and nuclear families suggests a consistent picture. On the contrary, children fostered to agricultural households are further engaged in market work. In addition, in the sample of female-headed households, foster children are positively discriminated since, compared to biological children, they are more likely to attend school and are equally engaged in market and domestic work. Estimations are robust to the choice of modelling labour supply with the Heckman's selection procedure and to the inclusion of a different set of exclusion restrictions related to regional historical economic prosperity. In line with previous studies on child labour, we confirm the importance of simultaneously modelling school attendance and labour supply since the correlation between error terms of these two equations is significant along different specifications and sample selections. On the contrary, the decision on the amount of hours spent performing domestic tasks is seldom correlated with the other outcomes.

Finally, our analysis shows that cultural and institutional variables are clearly relevant aspects that have to be considered in the implementation of economic and social policies and developing strategies. In particular, we underline the importance of targeted policies according to cultural specificities of ethnic groups and to the historical development of institutions at the region level within a country. Indeed, the cultural and historical variables introduced in our analysis to identify the effects of child fostering on children's outcomes are essential to better design the economic analysis of the fostering phenomenon.

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Table 1: Summary Statistics

	Total		Biological Children				Foster Children			
			Boys		Girls		Boys		Girls	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Male	0.516	0.500								
Dummy for foster child	0.103	0.304								
- Unrelated	0.002	0.050					0.023	0.149	0.025	0.158
- Related	0.998	0.050					0.977	0.149	0.975	0.158
Age in years	9.667	3.753	9.711	3.824	9.389	3.618	10.46	3.943	10.76	3.711
Outcome variables										
School attendance	0.460	0.498	0.466	0.499	0.445	0.497	0.495	0.501	0.493	0.500
Participation to Domestic Work	0.520	0.500	0.455	0.498	0.573	0.495	0.507	0.501	0.673	0.470
- Hours (conditional)	6.575	8.592	3.934	5.520	8.677	10.12	3.838	4.489	9.607	9.301
Participation to Market Work	0.369	0.483	0.451	0.498	0.294	0.456	0.382	0.486	0.240	0.427
- Hours (conditional)	38.45	19.08	41.73	18.38	33.81	18.77	40.85	21.50	27.10	16.15
Household characteristics										
Number of foster children	0.441	1.103	0.170	0.573	0.199	0.634	2.912	1.760	2.493	1.707
Number of girls aged 0-4	0.818	0.927	0.806	0.911	0.904	0.963	0.465	0.683	0.561	0.840
Number of girls aged 5-11	1.262	1.124	0.957	1.025	1.643	1.143	0.839	0.970	1.263	0.973
Number of girls aged 12-14	0.449	0.664	0.347	0.592	0.560	0.713	0.344	0.642	0.544	0.710
Number of girls aged 14-17	0.285	0.553	0.210	0.481	0.348	0.599	0.239	0.537	0.471	0.661
Number of boys aged 0-4	0.824	0.962	0.914	0.987	0.807	0.967	0.553	0.731	0.433	0.696
Number of boys aged 5-11	1.300	1.172	1.657	1.177	0.980	1.074	1.304	1.053	0.756	1.022
Number of boys aged 12-14	0.450	0.651	0.555	0.695	0.347	0.584	0.565	0.691	0.265	0.545
Number of boys aged 14-17	0.393	0.630	0.468	0.667	0.308	0.564	0.560	0.758	0.278	0.547
HH size	9.028	3.908	9.126	3.888	9.160	3.879	8.264	3.786	7.843	4.142
Polygamous marriage in HH	0.317	0.466	0.335	0.472	0.329	0.470	0.196	0.397	0.191	0.394
Nuclear HH	0.570	0.495	0.583	0.493	0.589	0.492	0.430	0.496	0.437	0.497
Female-headed HH	0.118	0.323	0.091	0.287	0.088	0.283	0.379	0.486	0.357	0.480
Head age in years	49.04	12.077	48.39	11.53	48.28	11.55	54.58	15.46	55.73	13.94
Years of education of female members	1.214	2.638	1.123	2.545	1.177	2.575	1.785	3.258	1.781	3.130
Employment ratio at HH level	0.764	0.286	0.774	0.281	0.765	0.285	0.727	0.307	0.703	0.316
HH head able to write	0.312	0.463	0.305	0.461	0.319	0.466	0.329	0.470	0.295	0.457
Rural area	0.624	0.485	0.663	0.473	0.622	0.485	0.437	0.497	0.465	0.499
Dwelling ownership	0.831	0.375	0.852	0.355	0.822	0.383	0.774	0.419	0.764	0.425
HH head labour income (log)	10.92	4.468	10.93	4.395	11.11	4.323	10.15	5.178	9.961	5.278
HH annual non labour income (log)	0.534	2.543	0.456	2.360	0.466	2.394	1.054	3.466	1.276	3.765
Net amount of transfers received	35.92	215.9	29.76	165.8	32.56	208.3	101.4	509.3	58.06	221.9
Observations	**8,443**		**3,961**		**3,613**		**398**		**471**	

Table 2: School Attendance, Domestic and Market Weekly Working Hours - Total Sample

	School Attendance		Hours of Domestic Work		Hours of Market Work		Foster Child	
Foster child	0.518***	(0.181)	11.800***	(2.133)	11.536	(8.090)		
Age in years	0.907***	(0.030)	4.986***	(0.300)	15.716***	(0.866)	0.013	(0.032)
Squared age	-0.042***	(0.001)	-0.160***	(0.013)	-0.489***	(0.040)	0.000	(0.002)
Girl's relative birth order	-0.247***	(0.056)	2.552***	(0.457)	-10.828***	(1.759)	0.202***	(0.067)
Boy's relative birth order	-0.016	(0.054)	-4.377***	(0.460)	9.714***	(1.596)	0.085	(0.068)
HH head able to write	0.295***	(0.048)	-0.254	(0.421)	-0.652	(1.762)	-0.009	(0.064)
HH head age	-0.006***	(0.002)	-0.037**	(0.016)	-0.065	(0.072)	0.014***	(0.003)
Household head is female	-0.128*	(0.076)	-1.924***	(0.657)	-10.093***	(2.901)	0.658***	(0.082)
Polygamous marriage in HH	0.032	(0.051)	-0.687	(0.429)	1.517	(1.796)	-0.076	(0.078)
Employment ratio at HH level	-0.376***	(0.084)	2.081***	(0.639)	53.883***	(3.183)	0.044	(0.106)
Presence of woman aged 60+	0.008	(0.082)	-1.344**	(0.653)	0.292	(2.902)	0.595***	(0.079)
Number of girls aged 0-4	0.019	(0.023)	0.183	(0.200)	-0.832	(0.879)	-0.053	(0.035)
Number of girls aged 5-11	-0.024	(0.022)	0.104	(0.159)	0.084	(0.770)	-0.026	(0.027)
Number of girls aged 12-14	0.011	(0.036)	0.111	(0.272)	-1.344	(1.242)	-0.081*	(0.044)
Number of girls aged 15-17	0.134***	(0.042)	-0.547**	(0.271)	-2.814**	(1.391)	0.060	(0.049)
Number of boys aged 0-4	0.026	(0.024)	0.237	(0.208)	0.308	(0.838)	-0.105***	(0.036)
Number of boys aged 5-11	-0.027	(0.021)	0.300**	(0.152)	1.249*	(0.675)	-0.048*	(0.027)
Number of boys aged 12-14	0.032	(0.039)	-0.805***	(0.272)	0.275	(1.312)	-0.077	(0.048)
Number of boys aged 15-17	0.054	(0.039)	-1.122***	(0.297)	2.593**	(1.284)	0.005	(0.053)
Years of education of female members	0.072***	(0.011)	-0.255***	(0.078)	-2.547***	(0.430)	0.012	(0.010)
HH head labour income (log)	-0.006	(0.005)	-0.000	(0.039)	-0.832***	(0.179)	0.006	(0.007)
HH annual non labour income (log)	0.015*	(0.009)	-0.068	(0.059)	-0.771*	(0.437)	-0.003	(0.009)
Net amount of transfers received	-0.000	(0.000)	-0.000	(0.001)	0.007**	(0.003)	0.000	(0.000)
Rural area	-0.743***	(0.054)	2.692***	(0.424)	35.675***	(2.144)	-0.230***	(0.074)
Constant	-3.479***	(0.190)	-33.492***	(2.076)	-164.812***	(6.746)	-2.413***	(0.265)
Exclusion restrictions								
Integration							-0.013	(0.054)
Interethnic violence							0.290***	(0.099)
Non-parental agency							0.346***	(0.132)
Error terms correlations								
Hours of Domestic Work	0.051**	(0.023)						
Hours of Market Work	-0.165***	(0.029)	0.099***	(0.024)				
Foster Child	-0.393***	(0.104)	-0.661***	(0.150)	-0.201*	(0.118)		
Observations	**8,443**		**8,443**		**8,443**		**8,443**	

Notes: (i) Standard errors in parenthesis are clustered at the household level; (ii) *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

**Table 3: School Attendance, Domestic and Market Weekly Working Hours - Total Sample
With Selection Correction for Market Work**

	School Attendance		Hours of Domestic Work		Hours of Market Work		Market Work		Foster Child	
Foster child	0.540**	(0.215)	11.509***	(2.737)	-3.461	(8.429)	0.491	(0.348)		
Age in years	0.905***	(0.031)	4.977***	(0.299)	0.148	(0.850)	0.515***	(0.030)	0.012	(0.032)
Squared age	-0.042***	(0.001)	-0.159***	(0.013)	0.041	(0.035)	-0.016***	(0.001)	0.000	(0.002)
Girl's relative birth order	-0.248***	(0.056)	2.562***	(0.460)	-5.482***	(1.178)	-0.286***	(0.060)	0.206***	(0.068)
Boy's relative birth order	-0.017	(0.054)	-4.376***	(0.460)	3.926***	(1.008)	0.292***	(0.059)	0.084	(0.068)
HH head able to write	0.296***	(0.048)	-0.257	(0.420)	-2.093*	(1.211)	0.045	(0.059)	-0.009	(0.064)
HH head age	-0.006***	(0.002)	-0.036**	(0.017)	0.051	(0.050)	-0.003	(0.003)	0.015***	(0.003)
Female-headed HH	-0.131*	(0.079)	-1.876***	(0.714)	0.495	(2.213)	-0.397***	(0.101)	0.660***	(0.083)
Polygamous marriage in HH	0.032	(0.051)	-0.693	(0.428)	-3.648***	(1.196)	0.146**	(0.066)	-0.085	(0.082)
Employment Ratio at HH level	-0.376***	(0.083)	2.065***	(0.639)	-3.992	(2.674)	1.942***	(0.107)	0.037	(0.107)
Presence of woman aged 60+	0.003	(0.084)	-1.297*	(0.712)	-2.942	(2.007)	0.037	(0.109)	0.597***	(0.079)
Number of girls aged 0-4	0.019	(0.023)	0.178	(0.200)	-0.182	(0.596)	-0.020	(0.030)	-0.055	(0.035)
Number of girls aged 5-11	-0.024	(0.022)	0.103	(0.160)	0.612	(0.492)	-0.015	(0.027)	-0.024	(0.028)
Number of girls aged 12-14	0.012	(0.036)	0.112	(0.272)	-1.165	(0.859)	-0.036	(0.046)	-0.081*	(0.045)
Number of girls aged 15-17	0.134***	(0.042)	-0.548**	(0.271)	-2.040**	(0.868)	-0.091*	(0.052)	0.058	(0.049)
Number of boys aged 0-4	0.026	(0.024)	0.235	(0.209)	-0.226	(0.571)	0.016	(0.030)	-0.104***	(0.036)
Number of boys aged 5-11	-0.026	(0.021)	0.299**	(0.152)	0.183	(0.503)	0.017	(0.025)	-0.046*	(0.027)
Number of boys aged 12-14	0.033	(0.039)	-0.809***	(0.273)	-0.526	(0.806)	0.021	(0.047)	-0.079	(0.050)
Number of boys aged 15-17	0.054	(0.039)	-1.123***	(0.296)	-0.114	(0.864)	0.087*	(0.048)	0.004	(0.054)
Years of education of female members	0.071***	(0.011)	-0.254***	(0.078)	-0.363	(0.373)	-0.073***	(0.013)	0.012	(0.010)
HH head labour income (log)	-0.006	(0.005)	0.001	(0.039)	-0.205	(0.126)	-0.027***	(0.006)	0.007	(0.007)
HH annual non labour income (log)	0.015*	(0.009)	-0.068	(0.059)	-0.558	(0.370)	-0.024*	(0.014)	-0.003	(0.010)
Net amount of transfers received	-0.000	(0.000)	-0.000	(0.001)	-0.002	(0.005)	0.000**	(0.000)	0.000	(0.000)
Rural area	-0.742***	(0.055)	2.682***	(0.431)	8.590***	(1.878)	0.944***	(0.076)	-0.221***	(0.082)
Dwelling ownership							0.470***	(0.094)		
Rooms number							0.002	(0.017)		
Constant	-3.471***	(0.193)	-33.448***	(2.065)	29.557***	(7.697)	-5.859***	(0.262)	-2.442***	(0.288)
Exclusion restrictions										
Integration									-0.015	(0.055)
Interethnic violence									0.330**	(0.145)
Non-parental agency									0.374**	(0.159)
Error terms correlations										
Hours of Domestic Work	0.052**	(0.023)								
Hours of Market Work	-0.055	(0.035)	-0.008	(0.035)						
Dummy for Market Work	-0.193***	(0.041)	0.122***	(0.033)	0.053	(0.068)				
Foster Child	-0.407***	(0.126)	-0.640***	(0.193)	0.024	(0.229)	-0.267	(0.188)		
Observations	**8,443**		**8,443**		**3,117**		**8,443**		**8,443**	

Notes: (i) Standard errors in parenthesis are clustered at the household level; (ii) *** p<0.01, ** p<0.05, * p<0.1.

Table 4: School Attendance, Domestic and Market Weekly Working Hours
Heterogeneity Analysis of Fostering at Child Level and Household Level

	Obs.	School Attendance		Hours of Domestic Work		Hours of Market Work		Exclusion variables					
								(1)		(2)		(3)	
CHILD LEVEL													
Boys	4,359	0.429**	(0.208)	10.176***	(1.465)	6.466	(8.604)	-0.047	(0.083)	0.330**	(0.137)	0.315	(0.198)
Girls	4,084	0.479	(0.307)	12.504***	(3.678)	6.853	(12.01)	-0.015	(0.057)	0.288**	(0.117)	0.408***	(0.149)
Age category 5-14	7,223	0.549**	(0.220)	10.853***	(2.565)	5.463	(10.93)	-0.002	(0.064)	0.336***	(0.116)	0.357**	(0.158)
Age category 15-17	1,220	0.647*	(0.388)	12.088***	(2.726)	0.266	(7.557)	-0.002	(0.091)	0.205	(0.154)	0.278	(0.200)
HOUSEHOLD LEVEL													
Monogamous	5,763	0.419**	(0.196)	14.384***	(1.904)	-3.217	(8.226)	-0.024	(0.062)	0.336***	(0.109)	0.390***	(0.150)
Nuclear	4,814	0.585**	(0.249)	16.084***	(1.784)	-3.635	(8.703)	0.235***	(0.071)	0.062	(0.118)	-0.180	(0.161)
Agricultural	5,748	0.920**	(0.242)	10.248***	(4.005)	18.014*	(9.568)	-0.003	(0.070)	0.282**	(0.124)	0.364**	(0.170)
Female-headed	996	1.019**	(0.453)	3.763	(17.39)	-22.030	(32.91)	-0.320	(0.262)	0.873***	(0.325)	1.273***	(0.396)
Educated-head	2,632	0.103	(0.236)	13.539***	(1.810)	-6.769	(7.480)	0.021	(0.076)	0.142	(0.166)	0.113	(0.209)

Notes: (i) The simultaneous equations system estimated, for the nine subsamples, is the one without selection-correction (1.a - 1.d) because the selection term is not significant for all subsamples but the subsample of girls for whom the results are similar in both specifications; (ii) The vectors of control variables are included in the estimations; (iii) Exclusion restriction variables 1, 2 and 3 denote, respectively, the level of community integration, an indicator for interethnic violence and an indicator for the importance of foster parents; (iv) Standard errors are in parentheses and clustered at the household level; (v) ***p <0:01, ** p < 0:05, * p < 0:1.

Table 5: Effect of Fostering on School Attendance, Domestic and Market Weekly Working Hours - Historical Variables Included

	Obs.	School Attendance		Hours of Domestic Work		Hours of Market Work	
Total sample	8,443	0.475***	(0.177)	11.960***	(2.056)	13.724	(8.843)
Boys	4,359	0.399*	(0.209)	10.166***	(1.450)	9.232	(9.970)
Girls	4,084	0.397	(0.292)	12.927***	(3.490)	6.039	(14.70)
Age category 5-14	7,223	0.497**	(0.206)	11.124***	(2.421)	9.272	(13.07)
Age category 15-17	1,220	0.691*	(0.376)	12.368***	(2.628)	-0.485	(7.909)
Monogamous	5,763	0.396**	(0.193)	14.597***	(1.858)	-1.014	(8.972)
Nuclear	4,814	0.532**	(0.246)	16.089***	(1.768)	-4.329	(8.946)
Agricultural	5,748	0.879***	(0.260)	10.688***	(3.788)	18.003	(11.86)
Female-headed	996	0.948**	(0.366)	8.403	(6.321)	-7.707	(24.60)
Educated-head	2,632	0.090	(0.235)	13.305***	(1.793)	-8.591	(8.086)

Notes: (i) The simultaneous equations system estimated, for the total sample and the nine sub-samples, is the one without selection-correction (1.a - 1.d) because the selection term is not significant for all subsamples but the subsample of girls for whom the results are similar in both specifications; (ii) The vectors of control variables are included in the estimations; (ii) Exclusion restriction variables (the level of community integration, an indicator for interethnic violence and an indicator for the importance of foster parents) and historical variables (precipitations, indicator for kingdom and population density in 1912) are also included; (iii) Standard errors are in parentheses and clustered at the household level; (iv) ***p <0:01, ** p < 0:05, * p < 0:1.