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Working Paper

Childhood Determinants of Internal Youth Migration in Senegal

IZA Discussion Papers, No. 12988

Provided in Cooperation with:

IZA – Institute of Labor Economics

Suggested Citation: Herrera, Catalina; Sahn, David E. (2020) : Childhood Determinants of Internal Youth Migration in Senegal, IZA Discussion Papers, No. 12988, Institute of Labor Economics (IZA), Bonn

This Version is available at:

<https://hdl.handle.net/10419/215384>

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DISCUSSION PAPER SERIES

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Catalina Herrera Almanza
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FEBRUARY 2020

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ISSN: 2365-9793

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ABSTRACT

Childhood Determinants of Internal Youth Migration in Senegal*

BACKGROUND: Internal migration, mostly composed of young adults and the poor, constitutes the largest flow of people in developing countries. Few studies document the patterns and determinants of internal youth migration in sub-Saharan Africa. **OBJECTIVES:** This paper analyzes the socioeconomic determinants of the decisions among young adults to internally migrate in Senegal. We focus on whether their decisions to migrate are influenced by individual characteristics, as well as the circumstances in the households and communities where young adults grew up, and whether these factors are differentiated by gender. **METHODS:** Using a unique migration household survey in Senegal, we estimate multinomial logit models to analyze the role of childhood socioeconomic determinants in later youth migration decisions to rural and urban areas. **RESULTS:** We find that young people undertake mostly rural-to-rural and urban-to-urban migrations, and over half of them are temporary migrants. We also find that the determinants are heterogeneous by gender and destination. The higher the fathers' education, the more (less) likely are their daughters to move to urban (rural) areas. Young individuals who spend their childhood in betteroff households are more likely to move to urban areas. The presence of younger siblings during childhood increases the propensity of moving to rural areas. Access to primary schools from the childhood residence decreases the likelihood of migrating to urban areas for both men and women. **CONTRIBUTION:** We contribute to the sparse literature on internal youth migration in developing countries by highlighting the relevance of the family- and community-level characteristics during childhood in predicting later migration in life.

JEL Classification: O15, R23, J13, N37

Keywords: internal migration, youth, Senegal

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* This document is an output from a project funded by the UK Department for International Development (DFID) and the Institute for the Study of Labor (IZA) for the benefit of developing countries. The views expressed are not necessarily those of DFID or IZA.

1 **Introduction**

2 Internal migration, mostly composed of young adults and people from the lower end of the income
3 distribution, constitutes the largest flow of people in developing countries (UNDP, 2009).
4 Although recent empirical evidence has focused on the analysis of the determinants and impacts
5 of international migration, the study of internal migration has been far more limited, partly due to
6 the lack of reliable data and because it is less politically salient. Few empirical studies have
7 documented the drivers of internal youth migration in developing countries and whether these
8 determinants are differentiated by gender. In this context, family and social factors weigh in the
9 decisions of young adults to migrate. Households face labor and financial market constraints, and
10 migration can be a strategy to diversify income sources and cope with risks, compensating in some
11 cases for the absence of insurance markets (Rosenzweig and Stark, 1989; Stark, 1991; Giles,
12 2007). Families might encourage younger members to migrate, both sons and daughters, not only
13 because they have higher earnings potential in the destination locations, but also because they are
14 more likely to remit money (Taylor, 2001; Heckert, 2015). Furthermore, family and
15 socioeconomic circumstances during childhood can influence the probability of migrating later in
16 life (Abramitzky et al., 2013).

17 This paper analyzes the socioeconomic determinants of the decisions among young adults
18 to internally migrate in Senegal. We focus on whether the decision to migrate is influenced by
19 individual characteristics, as well as the circumstances in the households and communities where
20 young adults grew up, and whether these factors are differentiated by gender. The study of internal
21 youth mobility is particularly pertinent in Senegal, where, like much of sub-Saharan Africa, 64%
22 of the population is less than 25 years old, 59% of the population lives in rural areas, and internal

23 migration plays a critical role in the expansion of economic opportunity and social mobility (de
24 Brauw et al., 2014).¹

25 More broadly, the analysis of the socioeconomic determinants of internal migration is
26 critical in the context of developing countries, where rural-to-urban migration occurs in
27 conjunction with economic development as rural economies undergo structural transformation
28 (Taylor and Martin, 2001). Although internal migration is widespread in Africa, more than half of
29 the population still lives in rural areas, and given the large and positive income differentials
30 between urban and rural areas, rural-to-urban migration rates might be expected to be even higher
31 in the future (de Brauw et al., 2014). Furthermore, recent studies have highlighted that rural-to-
32 rural, and even the reverse urban-to-rural flows have gained traction as internal migration flows in
33 some francophone African countries (Beauchemin and Bocquier, 2004; Beauchemin, 2011).

34 Senegal follows several of these regional patterns of internal migration. Previous research
35 indicates that most of the internal migrants are young people, aged 15 to 34 years old, and the
36 majority of them migrate to look for employment opportunities (Ba et al., 2017). However, family
37 reasons such as marriage are the most important reasons for women's internal migration (Chort et
38 al., 2017). Most migration gravitates toward urban areas, especially to Dakar, which is not
39 surprising in light of the fact that there are large disparities in education and income between rural
40 and urban areas. For instance, in 2005, the poverty rate was 37% in urban areas and 59% in rural
41 areas. While the average years of education was 7.3 in urban areas, it was only 4.8 in rural areas.²

¹ According to the 2002 census, a date close to our study, 59% of the population lived in rural areas. More recent figures estimate that this percentage has decreased to 53% (World Bank, 2019).

² The average years of education is calculated among the population ages 15–19, and the data source is the 2005 Demographic Health Survey. We selected data in 2005 because it is a year close to our survey (2003). Nevertheless, more recent data in 2014 show that the average years of education has increased to 6.5 in rural areas, closing the gap with urban areas. However, the gap in poverty rates between rural and urban areas has been about the same (World Bank, 2019).

42 There is, however, also a considerable amount of rural-to-rural migration from semi-arid regions
43 (Middle Valley of the Senegal River) toward the Groundnut Basin (that is, mainly seasonal
44 migrants working in groundnut cultivation). Furthermore, while small in proportion to other
45 internal migration flows, there is even some urban to rural population movements, mainly in the
46 form of migrants who return to invest in the agricultural sector and who build homes in their
47 villages of origin (Ba et al., 2017).

48 Information on internal migration in sub-Saharan Africa is rare. Except for some recent
49 efforts,³ nationally representative household surveys usually do not include specialized migration
50 modules or specific information to assess migration patterns between rural and urban areas (de
51 Brauw et al., 2014). In this paper, we exploit a unique module of the 2003 *Education et Bien-être*
52 *des Ménages au Sénégal* (Education and Household Welfare in Senegal) survey, which was
53 specifically designed to understand migration decisions by asking retrospective questions to young
54 adults, aged 21 to 35 years. Using these household data, we employ a multinomial logit model to
55 empirically estimate whether young people decide to migrate to either rural or urban areas. In
56 addition to individual characteristics, such age, gender, and ethnicity, we include childhood
57 demographic characteristics, such as the number and gender of siblings, the role of the family's
58 financial constraints measured by the asset index of the household when the child was 10 years of
59 age, parents' education, and shocks, including the death of their father and/or mother. Furthermore,
60 we control for childhood residence characteristics such as access to education and health centers.

61 The remainder of this paper is organized as follows. In Section 2, we describe the
62 conceptual framework that guides our empirical approach. Section 3 describes the household
63 survey data, including a discussion on how we define and classify migrants and a description of

³ Some recent panel household surveys have tracked individuals and migrants, such as the Kagera Household Survey (Beegle et al., 2011), and the World Bank's Living Standards and Measurement Study Surveys, among others.

64 the patterns on internal mobility. We also describe our empirical strategy in this section. Section 4
65 presents the econometric results from the multinomial models that explain the determinants of
66 migration. Finally, Section 5 presents the discussion and conclusions.

67

68 **2. Conceptual Framework**

69 Most of the migration literature indicates that migrants are primarily young people (Lloyd, 2005;
70 Young, 2013), who seek to diversify and expand their economic opportunities, especially in
71 developing country contexts (McKenzie, 2008). Multiple individual, household, and contextual
72 factors encourage youth to migrate internally in search of opportunity, which makes the migration
73 process complex and context-specific (Massey et al., 1997; Heckert, 2015).

74 In contrast to earlier economic models of migration that analyze an individual's decision
75 to move as a function of their own expected net economic benefit, looking for opportunities to
76 improve their economic status (Harris and Todaro, 1970), a growing literature—the New
77 Economics of Labor Migration (NELM)—has modeled migration as both an individual and a
78 family decision, which not only maximizes income but also minimizes risks (Stark, 1991; Stark
79 and Bloom 1985; Taylor 2001). If migration is an investment decision whereby individuals incur
80 costs to generate higher incomes, youth have lower costs in moving and have higher lifetime
81 expected returns. This is not only based on their longer life expectancy, compared to older people,
82 but also because the opportunity cost of young people in the place of origin can be lower due to,
83 for example, high youth unemployment rates. On the other hand, if migration is a family decision
84 and perceived as a risk-coping mechanism, the choice of which household member migrates is
85 based on both earning potential and the individual's ability to be engaged in family insurance
86 arrangements. For instance, Rosenzweig and Stark (1989) show that Indian rural farm households

87 tend to engage in long-distance, marriage-cum-migration to cope with volatile profits. Also,
88 households might send young members to migrate, with the expectation that they will send
89 remittances back home (Heckert, 2015).

90 In this paper, we test the hypothesis of whether the decision to migrate is influenced by
91 individual characteristics as well as the circumstances in the households and communities where
92 young adults grew up, and whether these factors are differentiated by gender. Although we mostly
93 follow the NEML conceptual framework, which explains migration behavior by focusing on the
94 households' characteristics in a broader societal context (Taylor and Martin 2001; De Haas 2010,
95 Tegegne and Desta, 2016), we build on the work of Abramitzky et al. (2013), who underscores the
96 role of childhood conditions on later migration decisions. Using a novel data set of the age of Mass
97 Migration (1850-1913) from Norway to the United States, Abramitzky et al. (2013) find evidence
98 that economic and family conditions of an individual's household during childhood, particularly
99 parental wealth and gender composition of siblings, can shape the internal and international
100 migration decisions later in adult life. While some studies have analyzed the effect of individual
101 and household conditions, such as birth order and family size, on later economic outcomes such
102 as labor market performance (Psacharopoulos and Patrinos, 1997; Edmonds, 2006), there is little
103 evidence on how these conditions affect later internal migration decisions, and even less in the
104 context of developing countries.

105 Socioeconomic conditions during childhood, such as wealth and parents' levels of
106 education can shape youth migration; nevertheless, it remains an empirical question as to how, and
107 in what direction, these factors affect internal migration flows. On the one hand, we can expect
108 that better-off households will be less likely to encourage their children to migrate, since the higher
109 their assets, the better the potential economic opportunities within the community in which the

110 young adults reside as a children.⁴ On the other hand, we can expect that asset-poor households
111 are less able to finance the costs of migration, and thus, their members are less likely to migrate.⁵
112 Indeed, McKenzie et al. (2007) show that the probability of migrating from Mexico to the United
113 States has an inverse U-shaped relationship with wealth. This nonlinear effect is explained by the
114 heterogeneity of migration networks: in sending communities with smaller migration networks,
115 the costs of migrating are relatively high, and wealth is positively correlated with the likelihood to
116 migrate; once the migration networks are larger, the costs, and thus the importance of wealth on
117 the decision to migrate, decreases.

118 Along the same lines, if migration is considered a family decision, the education of the
119 father and mother are expected to influence a young person's decision to migrate (Smith and
120 Thomas, 1998; Quisumbing and McNiven, 2006). Parents' education can be a proxy for other
121 household assets, such as networks and family connections, that can increase the probability of
122 migrating. Although we would expect that the more educated the parents, the more information is
123 available about the net benefits of migration, thereby increasing the odds of leaving, the empirical
124 evidence is not conclusive on the direction of the effect of parents' education on migration of
125 family members (Pessino, 1991; Ezra et al., 2001).

126 Gender dynamics may also dictate whether youth migrate, their destination, and the extent
127 to which households invest in such decisions. There are reasons to believe that the drivers of
128 migration are different between women and men. Some empirical studies in developing countries
129 have shown that young women, unlike men, frequently move to marry (Smith and Thomas, 1998;

⁴ The land tenure systems in developing countries can affect the relationship between wealth and migration and, thus, shape youth migration decisions. For example, in the Philippines, young adults stay with their parents if they inherit land (Quisumbing and McNiven, 2006).

⁵ Mendola (2008) that poorer households in Bangladesh are only able to afford domestic migration while the better-off households can afford the costs of international migration.

130 Reed, 2010; Chort et al., 2017). Also, gender differences are expected when parents encourage
131 daughters, rather than sons, to migrate because of the expectation that the former are more likely
132 to remit (World Bank, 2007). It is also possible that parents provide less financial support to their
133 daughters than their sons, because the parents internalize that their daughters' migration returns
134 are lower than those of their sons (Heckert, 2015).

135 Furthermore, in Senegal, ethnicity plays an important role in female internal migration
136 (Brockerhoff et al.1993; Chort et al. 2017). Indeed, studies have shown that women's internal
137 migration patterns may be related to the different marital and cultural traditions across ethnic
138 groups (Brockerhoff et al., 1993). For instance, Serere, Diola, and to a lesser extent, Wolof (Oulof)
139 women are more likely to migrate for reasons related to work opportunities than are Toucouleur,
140 Peul, or Soninke women, who virtually never migrate except with their spouses or families (Sy,
141 1991). More broadly, recent evidence from developing countries shows that different ethnic groups
142 can have different preferences toward migration related to, for example, historical shocks,
143 geographical situations, and ethnic-specific languages, among other factors. Thus, these
144 differences can lead that some ethnic groups encourage mobility from the village of birth or origin
145 while other groups can deter such movements. These different ethnic preferences can be shared
146 through social norms, and therefore, are likely to affect the decision-making of the individuals
147 within the group (Auwalin, 2019). Therefore, we account for ethnicity as a factor that can
148 contribute to internal migration.

149 Gender can also shape migration decisions through issues related to birth order and norms
150 regarding division of household roles and time use, which can include the division of household
151 work and labor market activities, or even marriage practices and cultural norms that shape an
152 individual's migration decision. For instance, in the context of the migration from Norway to the

153 United States in the early 19th century, Abramitzky et al. (2013) show that men who had fewer
154 brothers and were the oldest in their families were less likely to migrate later in life, because the
155 eldest brother was the primary recipient of family inheritance. Younger brothers, having less
156 access to family resources, were more likely to migrate in search of better opportunities. In addition
157 to the household allocation of resources among siblings, there may also be a role played by rights
158 and tasks that relate to a child's birth order position relative to their siblings. For example, Protik
159 and Kuhn (2007) show that, for Bangladesh, the migration of older brothers decreases the
160 likelihood of sisters to marry and reside in places far from their parents. One explanation the
161 authors give is that, in order to ensure elderly care be provided by their daughters, parents might
162 prevent a marriage that involved migration. Furthermore, there could be a substitution of tasks
163 among siblings of the same gender that shapes migration choices. For example, younger sisters are
164 less likely to migrate, since they assume expanded responsibilities for performing household
165 chores when replacing older siblings, who have previously migrated (Smith and Thomas, 1998;
166 Quisibuing and McNiven, 2006).

167 Although the NELM conceptual framework focuses on household determinants of
168 migration, most of the movements of youth from rural to urban areas is driven by the unequal
169 distribution of opportunities between these two areas (McKenzie, 2008). Opportunities available
170 to youth migrants depend on the social and economic characteristics in the migrants' places of
171 origin (Heckert, 2015). Thus, our models account for whether the availability of community-level
172 social services during childhood can shape later-life migration decisions. Since public policy
173 determines the geographic distribution and disparity of social infrastructure, these variables help
174 us understand the role of government investments in migration choices.

175 Following this conceptual framework, we model young people’s decisions to migrate to
176 either rural or urban areas in Senegal as a function of their individual characteristics and their
177 childhood family and community circumstances prior to their departure. Our paper contributes to
178 the literature that explores the determinants and patterns of internal youth migration in developing
179 countries (Clark and Cotton, 2013; Beegle and Poulin, 2015; Heckert, 2015) by highlighting the
180 relevance of family- and community-level characteristics during childhood in predicting later
181 migration in life (Abramitzky et al., 2013). This analysis also contributes to the scant empirical
182 evidence on the determinants of female internal migration in developing countries (Assaad and
183 Arntz, 2005; Chort et al., 2017).

184

185 **3. Data and Methods**

186 **3.1 Data Sources and Descriptives**

187 The data we use in this paper comes from the 2003 Household Survey on Education and Welfare
188 in Senegal (EMBS). From 28 rural and 32 urban communities (communes), 1,820 households were
189 surveyed.^{6,7} The 2003 EBMS revisited children originally included in a 1995–96 survey: a
190 nationally representative, school-based survey known as PASEC (*Programme d’Analyse des*
191 *Systemes Educatifs de la CONFEMEN*). The PASEC survey administered tests of ability to a
192 sample of students (20 per school) in 2nd grade (CONFEMEN, 1999). The original PASEC cohort

⁶ EMBS was collected by the Centre de Recherches Economiques Appliquées (CREA), l’Université Cheikh Anta Diop (Senegal) and Cornell University.

⁷ Our household survey defines the rural and urban areas following the official definition by the Government of Senegal, specifically the *Agence Nationale de la Statistique et de la Demographie*, which designates certain administrative areas as a *commune de ville* or urban area. Thus, urban areas consist of localities erected in communes regardless of the number of inhabitants, while rural areas (*communautés rurales*) correspond to the rest of the territory (ILO, 2018). It is worth noting that a commune is the smallest administrative level in Senegal. This definition has been valid since 1976; therefore, it is consistent throughout the period of our analysis and does not affect our results.

193 was not a representative sample of all children in the country, because it was school-based; thus,
194 it excluded children who had never enrolled, or who dropped out of school during their first year
195 of enrollment. To address the selection problem of excluding non-enrollees, in 2003 we
196 enumerated all the children and their households in the 60 original PASEC communities included
197 in our survey. We then randomly selected households with children of similar ages as those
198 children included in the original 60 PASEC communities. The participants in the 2003 survey thus
199 included those who were originally part of the PASEC sample and those that were not because
200 they were not enrolled in school at the time of the PASEC survey, either due to delayed enrollment
201 or because they never entered school.

202 As discussed by Glick and Sahn (2009, 2010), despite these efforts to address the selection
203 problem of enrollment, the sample is not truly nationally representative since it is part of a cohort
204 study of young children. Any cohort study will lose its representativeness over time. To mitigate
205 this concern, as discussed above, we randomly selected into the sample new households and their
206 children to ensure that the sample is as close as possible to a random sample of the villages that
207 were initially randomly selected from throughout the country. Of course, the problem remains that
208 the selection of villages sampled in 2003 was based on a listing from eight years earlier, that is,
209 there may be new villages that were formed between 1995 and 2003, which would not be included
210 in the sample. Considering these concerns, we made a comparison of descriptive statistics from
211 the survey with other national surveys. This effort was quite encouraging, since it showed that for
212 a range of demographic characteristics, as well as other characteristics such as education, the
213 EBMS sample of 1,820 households is consistent with those of a nationally representative sample.⁸
214 Likewise, the characteristics of the EBMS population, in terms of religion and ethnicity, are also

⁸ For example, the net primary enrollment in our sample (primary enrollments of children 7–12) is 66 percent, compared with 63 percent for the country as whole in 2000 (World Bank, 2006).

215 reflective of the nation as a whole. One small difference is that the proportion of rural households
216 in the 2003 EMBS is 53.2%, which is close to, but smaller than the rural population at the national
217 level of 59% according to the 2002 Census.

218 In our analysis, we rely extensively on the migration module of the EMBS, which contains
219 information on the current residence, the birthplace, and the residence five years prior to the survey
220 (1998). It also provides the years of residence in the current location. In addition, this module has
221 retrospective questions for adults above the age of 21 (migrants and nonmigrants) about where
222 they lived, as well as the household and community characteristics when they were 10 years old.
223 These data are key components of our methodology, because we can observe the childhood
224 characteristics of both migrants and nonmigrants that we use to analyze migration decisions.

225 Defining a migrant in empirical work is not always straightforward and often made difficult
226 due to limitations of the available data. We define *migrants* as individuals who have lived outside
227 of their communities for at least one year, departing from their place of origin after they were 10
228 years old.⁹ Among our sample of 2,676 individuals who fall in the age group of 21 to 35 years old,
229 35% are defined as *migrants*; in other words, 937 individuals left their communities for at least for
230 one year after they were 10 years old. It is worth noting that we are accounting for the last move
231 prior to the individual being surveyed, and as such we calculate the age of departure by subtracting
232 the number of years of residence in the destination (current place) from the young migrant's current
233 age.¹⁰ The median age of departure among these young migrants is 20 years.

⁹This definition is similar to Heckert (2015) who, in the context of Haiti, defines a migrant as an individual whose departure is after of 10 years old and has been outside from the place of origin at least for three years.

¹⁰ In other words, this "age of departure" is the age of arrival in the last residence. Although it is reasonable to assume only one migration experience at these young ages, this approach does not account for the possibility that there might be more than one migration experience.

234 We use the age range, 21–35 years old, because previous studies of internal migration have
235 shown that internal flows are the highest for individuals in this age group, especially as they search
236 for employment and better economic prospects (Brockhoff et al., 1993; Ezra et al., 2001). This
237 cohort is especially important in terms of their experiences and recentness of their moves.¹¹

238 We also suspect that the recall data is more accurate for these younger adults than for older
239 individuals. Furthermore, we test whether our results change if we exclude the individuals who
240 migrated at younger ages, between 10 and 14 years old who represent 15% of the sample migrants.
241 It is plausible that for these individuals, parents might strongly influence or make their decisions
242 to migrate. If this is the case, the migration decision will be endogenous to other household-level
243 decisions, such as fertility. We find that our key results are not sensitive to the choice of including
244 these younger migrants (see Table A.2 in the Appendix).

245 Although most of the empirical studies of internal migration in developing countries have
246 focused on out-migration, especially from rural areas, they have neglected a careful examination
247 of different patterns or types of migration such as rural-to-rural or sequential migration. Mainly,
248 this omission has been justified by the lack of data, as documented in the case of West Africa by
249 Beauchemin and Bocquier (2004). Among the few studies in developing countries, Pessino (1991)
250 analyzed the determinants of different types of migration in Peru. Identifying the movements by
251 the degree of urbanization of the origin, the author finds that primary migrants, that is, people who
252 move for the first time, are more likely to come from rural areas whereas repeat or return migrants,
253 that is, those people who have made prior moves, come from urban areas. Reed et al. (2010), using

¹¹ To compare this number of internal migrants with other data sources in Senegal, we use the 2002 census and define an internal migrant as an individual that lives in a different region than the region of birth. We find that 21.65% of individuals, aged between 21 and 35, are internal migrants. Although this definition is different from the one used in this paper, the magnitude is comparable, as it does not include people that migrate and return within a shorter period of time, that is, our temporary migrants.

254 a household survey in Ghana, find that past and future mobility are positively and strongly
255 correlated, suggesting that previous mobility reduces the perceived cost of moving again. Another
256 important study that attempts to classify migrants is that of Juan and Kim (1979) who used census
257 data in the Philippines. The authors construct a comprehensive set of categories of migrants that
258 distinguishes migrants by various characteristics, including the number of moves and whether they
259 return to their birthplaces.

260 Building upon this previous work, and using the information from our survey on the place
261 of residence: (1) at the time of the survey (2003); (2) five years prior to the survey (1998); (3)
262 when individuals were 10 years old; and (4) when individuals were born, we first focus on the
263 periodicity of movements—that is, how many times the individual moves across these points in
264 time. We distinguish between primary (one move) and repeat migrants (two or more moves), as
265 well as return migrants. The latter category includes those whose second or third move involved
266 returning to their birthplace. To be included in the category of return migrants, by definition, they
267 have to report having lived at a location other than their birthplace either when they were 10 years
268 of age, in 1998, and/or at the time of the survey. In our sample, 25.4% are primary migrants, 3.0%
269 are secondary or tertiary migrants, and 11.9% are return migrants. A final and the largest group of
270 migrants—fully 59.6%—are those who we define as “temporary” migrants, but for whom we do
271 not have information on their migration, other than they were away from their birthplace for at
272 least one year. Thus, these individuals report that they were both residents in another location for
273 at least one year, but also that their birthplace is the same as their residence at the time of the
274 survey, and that they lived in their birthplace in 1998 as well as when they were 10 years old.¹²

¹² Juan and Kim (1979) (as explained in Bilsborrow (1984)) classify these persons as nonmigrants, because they report the same place of residence at all points of time that are included in the survey. We acknowledge that there may be some misreporting among this group—that is, that they made an error in reporting having lived elsewhere for more than one year. However, we expect that the vast majority answered that question correctly and are indeed return

275 Table 1 shows the distribution of migration by the urban/rural origin and destination of the
276 move, as well as the migration categories: primary, return, repeat, and temporary, discussed
277 previously. We find that two-thirds of the migrants moving from rural to urban areas are primary
278 migrants; this is consistent with the fact that most of the migrants in Dakar are more likely to be
279 permanent migrants (World Bank, 2006). Interestingly, we also find that almost 60% of the urban-
280 to-rural flows are of primary migrants. On the other hand, almost 60% of the rural-to-rural and
281 urban-to-urban migrants are temporary movers. Although our data do not allow us to capture trends
282 in migration, the descriptive statistics in Table 1 are consistent with other empirical evidence that
283 points out that rural-to-rural flows, and even the reverse urban-to-rural flows, have gained
284 prominence as internal migration movements in West Africa (Beauchemin and Bocquier, 2004;
285 Beauchemin, 2011).

286

287 <Insert Table 1 approximately here>

288

289 Table 2 summarizes the main socioeconomic characteristics of our sample. We include
290 temporary migrants in this table, and in the analysis that follows. Given that temporary migrants
291 can have different triggers to migrate internally from the rest of the migrants in the sample, we
292 tested that our main results are robust to excluding this group of temporary migrants from the
293 analysis (see Table A.3 in the Appendix).

294 Table 2 shows that our young migrants are mostly female. Women represent more than
295 two-thirds of the young migrants, compared to 53% in the nonmigrant group and 57% in the total

migrants, who happened not to live away from their place of birth in 1998 and when they were 10 years of age. In our analysis, we explore whether the results are sensitive to the inclusion or exclusion of these groups being characterized as migrants.

296 sample. The female overrepresentation in the group of young migrants can be explained
297 presumably by the association of migration and the decision to marry, as we will discuss further
298 in the next section.

299

300 <Insert Table 2 approximately here>

301

302 Our sample individuals have completed 4.3 years of schooling on average. Although the
303 school attainment is slightly higher for the nonmigrant group, compared with the migrant group,
304 this difference is statistically significant. We observe similar patterns regarding parents' education:
305 more than 70% of the migrants' fathers and 85% of their mothers did not go to school. Although
306 this situation is not appreciably different for nonmigrant young adults—68% of their fathers and
307 83% of their mothers did not go to school—the differences between these two groups are still
308 statistically significant.

309 Descriptive statistics on the access to social infrastructure when young migrants and non-
310 migrants were 10 years old indicate that migrants come from areas with less access to a nearby
311 primary school, to a secondary school, and to a hospital.¹³ Approximately 91% of the young people
312 had a primary school near their residence. However, this percentage is only 86% for the young
313 migrants. Similarly, 45% of young migrants came from a community with a secondary school
314 nearby while this percentage was almost 10 points higher for the nonmigrants. Access to health
315 services was also unequal between migrants and nonmigrants in their childhood residences. While
316 71% of the migrants had access to hospitals, this percentage was 83% for the nonmigrant
317 population.

¹³ We define secondary school access as the existence of the school within 5 kilometers of a lower- or upper-level secondary school.

318 As noted earlier, we create an asset index following standard procedures, using factor
319 analysis and the dwelling characteristics where the young adults lived at 10 years of age.¹⁴ While
320 40% of the migrant children came from the lowest quartile, this percentage was 31% among the
321 nonmigrant group. However, this difference seems to be smaller for the highest quartile. Overall,
322 we find that the nonmigrant's asset distribution, first order dominates that of the migrants.

323

324 **3.2 Empirical Strategy**

325 Empirical studies addressing the determinants of migration face the challenge of observing the
326 individual's migration at one point in time after this decision has been made. Furthermore, the
327 decision to migrate can be made jointly with other household decisions, such as investments in
328 education and resource allocation, raising potential problems of endogeneity between migration
329 and its determinants. In a regression model, endogeneity is defined as a situation in which the
330 residual or error term is not statistically independent from one or more covariates (Wooldridge,
331 2002). This issue can occur when there is potential reciprocal or simultaneous causation between
332 the dependent and independent variables in the regression model. To a certain extent, and
333 following other demographic research (for example, Robles and Oropresa, 2011), we address this
334 issue by using a survey that includes retrospective data on young migrants and nonmigrants aged
335 21 to 35. This retrospective information on household and community characteristics of
336 individuals, when they were 10 years old, allows us to estimate the impact of childhood
337 circumstances long before they migrate, thereby reducing concerns over simultaneous causation
338 or reverse causality. Nevertheless, we acknowledge that we are not able to strictly establish

¹⁴ We construct the asset index based on the floor material, the source of potable water, and the type of bathroom for the dwelling. These were the only characteristics available in the retrospective survey module.

339 causality of the migration determinants, but rather explain whether these childhood determinants
340 are associated with migration among young adults.

341 Following our conceptual framework, the decision to migrate and where to migrate are
342 jointly modeled using a multinomial logit model in which individuals can decide between staying
343 (not moving), migrating to a rural area, or migrating to an urban area. We empirically test whether
344 the decision to migrate is influenced by individual, household, or community characteristics and
345 circumstances of their origins—that is, where the migrants grew up. These characteristics and
346 circumstances are based on those that existed when the individuals were 10 years old. More
347 specifically, we estimate the following reduced form regression equation:¹⁵

348

$$349 \quad \text{Ln} \left[\frac{p(M_i^k_{k=1,2})}{p(M_i^k_{k=0})} \right] = \alpha + X_i \beta^k + E_i \delta^k + H_i \theta^k + C_i \rho^k + R_i \pi^k + \epsilon \varepsilon_i^k,$$

350

351 where M_i^k is the destination variable of individual i , k takes the value of 0 if the individual does not
352 migrate (the base case scenario), 1 if the individual migrates to a rural area, and 2 if the individual
353 migrates to an urban area. X_i represents individual characteristics such as age, ethnicity, and
354 gender.¹⁶ It is worth noting that in addition to running the models with a gender dummy variable,
355 we also account for differences in the determinants of migration by estimating separate models for
356 young women and men. We also control for E_i , the education of the individual's parents. We
357 exclude from the models any current individual's educational attainment because of its potential

¹⁵ Given that the independent variables are from the individual and not the destination choice, we are not required to implement a test of independence of irrelevant assumptions (IIA).

¹⁶ To mitigate concerns related to potential multicollinearity between ethnicity and other control variables, we have calculated the variance inflation factor (VIF), and it is less than 10, suggesting that this issue is not a concern. Our results are also robust to the exclusion of ethnicity as a control variable.

358 reversal causality with migration.¹⁷ Nevertheless, our results are qualitatively similar when we
359 include the individual's years of education in our models (see Table A.1 in the Appendix).

360 H_i represents the household characteristics when the individuals were 10 years old. To
361 measure the household's wealth and risk aversion, we include an asset index; as described earlier,
362 the index constructed was based on the dwelling conditions at age 10.¹⁸ We also include the
363 number and gender composition of the individual's siblings, while acknowledging that these
364 variables can be in part a function of household preferences for the quality and quantity of children.
365 Nonetheless, the question of whether the presence of younger or older male and female siblings
366 contributes to migration provides for interesting insights about these relationships, even if we
367 cannot draw strict causal inferences from the results. We also control by whether either one or both
368 parents had passed away by the time the individual was 10 years old. We capture this by including
369 a dummy variable that takes the value of 1 when the individual reports that their father, mother, or
370 both passed away by the time they were 10 years old.¹⁹

371 Finally, C_i represents the community-level characteristics when individuals were 10 years
372 old. We include dummy variables for the access to primary and secondary schools and to hospitals
373 when the young adults were 10 years old. For each one of these variables, access is defined as the
374 existence of the corresponding institution within 5 kilometers from the individual's residence when
375 they were 10 years old. Finally, we include R_i , a set of regional dummies corresponding to the
376 region of childhood residence, to control for social and economic characteristics that influence the

¹⁷ Using the 2003 EMBS data, we are not able to instrument the individual's education at the time of the survey, nor can we infer the education completed before the migration decision.

¹⁸ In our models, we tested for an inverse U-shaped relationship between the asset index and the probability of migration by introducing a quadratic term in our regressions, but we did not find any statistically significant result for this nonlinearity.

¹⁹ We could not try a separate dummy variable for each parent's death since the number of cases for either mother or father was too small.

377 costs of migration (for example, the distance to the capital, Dakar) that vary across regions, but
378 not over time.²⁰

379

380 **4. Results**

381 Table 3 presents the average marginal effects of our multinomial models. Panel A shows the
382 average marginal effects for all the individuals between 21 and 35 years, while Panels B and C
383 show the results for young men and women, respectively.

384

385 <Insert Table 3 approximately here>

386

387 **4.1 Individual Characteristics**

388 From the model that includes both men and women, the negative and significant gender variable
389 indicates that women are 7.2% more likely than men to move to rural areas, although no gender
390 difference exists for moves to urban areas. These results may reflect that young women often move
391 as a consequence of following their spouses. While we are unable to prove the causal effect of
392 marriage on female youth migration, we examined the relationship between the age of marriage
393 and the age of migration. First, we note that, on average, among married couples, men are 12 years
394 older.²¹ Second, we notice that 72 percent of the women who migrate were already married, in
395 contrast to only 31 percent of the male migrants. These descriptive findings are consistent with
396 empirical evidence in Senegal showing that typically marriage is the main reason for migration

²⁰ Our sample size is too small to accurately test the determinants of our models for each of the migration dyads: (1) rural-to-rural; (2) rural-to-urban; (3) urban-to-urban; and (4) urban-to-rural.

²¹ In the 2003 EMBS sample of married couples, the average woman's age is 38 while for men, it is 50 years old.

397 among women of reproductive age (Safir, 2009), and that short-distance rural-to-rural marriage-
398 related migrations are more frequent among women than men (Chort et al., 2017).

399 We also examine the marginal effect of age among the cohort of individuals between 21
400 and 35 years old, as shown in Panel A: being one year older increases the probability of migrating
401 to rural areas by 8.5% and decreases the probability of migrating to urban areas by 5%. While age
402 has no effect for men on the likelihood to migrate to urban areas, for women this effect varies with
403 their destination. As age increases, women are 10% more likely to migrate to rural areas and 6%
404 less likely to migrate to urban areas; however, this effect is nonlinear, as seen by the statistical
405 significance of the quadratic term, which indicates that the effect of age is not monotonic along
406 the age range of the women in our sample.

407 The results also show evidence that ethnicity influences the likelihood of migrating to rural
408 and urban areas.²² This effect is differentiated by gender. On the one hand, belonging to the Serere
409 group, relative to the Mendingue/Sose group that was excluded, decreases the likelihood of
410 migrating to urban areas by 17%. This marginal effect has a similar magnitude among women and
411 men. On the other hand, belonging to the Wolof group decreases only male migration to urban
412 areas by 11%, while belonging to the Poular group decreases only female migration to rural areas
413 by 8%. These results are in line with ethnographic evidence underlying the association between
414 ethnicity and migration, particularly for women, in West Africa (Bockefort et al., 1993).

415

416 **4.2 Demographic and Economic Household Characteristics**

417 Our results indicate that the children of fathers with more education are less likely to move to rural
418 areas and more likely to move to urban areas. Mother's education, however, is not statistically

²² In our models, we include a dummy variable for missing observations, given the substantial amount of misreporting of this variable in the sample (523 observations for nonmigrants and 253 for migrants).

419 significant in any of our models.²³ When examining the gender-disaggregated results, we observe
420 that the effect of the fathers' education on youth migration is larger and statistically more robust
421 for their daughters than it is for their sons.²⁴ This result may reflect the role of fathers in arranged
422 marriages, or perhaps in terms of promoting more educational opportunities for their daughters,
423 which often requires migrating to urban areas. In fact, these two mechanisms may be related:
424 greater education of the fathers, whether it be through ability, economic well-being, or more
425 expansive social networks, may enable them to find more favorable husbands for their daughters
426 who will move with their husbands to the city in pursuit of greater opportunities, or similarly, to
427 improve educational opportunities for their daughters, which requires schooling in urban areas. In
428 contrast, a father's education may discourage marriage arrangements in which daughters would
429 migrate to rural areas, where the returns to education are likely to be lower.²⁵

430 Our models also suggest that better living conditions during childhood, measured by the
431 dwelling asset index, are associated with the higher likelihood of migrating to urban areas while
432 decreasing the likelihood of migrating to rural areas; however, the latter effect is not statistically
433 significant.²⁶ The asset index does not have a differentiated effect by gender. The result might
434 suggest that young women and men who grew up in asset-poor households are less able to afford
435 the costs of migration to urban areas. We also test if there was a differentiated effect of the asset
436 index by rural or urban origin. A better-off asset position of the household in a rural origin

²³ We corroborate these results by estimating the same multinomial models and instead of parents' highest education, we include dummy variables for whether each of the parents has some level of education. Results are available upon request.

²⁴ The effect of the father's education on young males is significant only at 10%, and it is not robust to the specification of a father's literacy dummy variable.

²⁵ Some empirical studies in African countries have shown that father's education increases the education of both boys' and girls' schooling rather than mother's education (Tansel, 1997), and in some cases, paternal education can favor more girls' than boys' education (Glick and Sahn, 2000).

²⁶ This result is consistent with the fact that the asset distribution for migrants going to urban areas first order dominates the migrants going to rural areas.

460 areas, but it does not affect the likelihood of moving to urban areas. By gender, we find that loss
461 of a parent only affects female and not male migration, and this effect is only significant for those
462 women going to rural areas. Young people who have lost one or both parents are also more likely
463 to migrate, presumably reflecting weaker ties to their childhood places of residence.

464

465 **4.3 Community Characteristics**

466 The availability of social infrastructure, such as schools and hospitals, in the community where the
467 individual lived as a child, influences the probability of moving. Access to a primary school within
468 5 kilometers decreases the likelihood of moving to urban areas by 17.5%, but it does not affect the
469 probability of moving to rural areas. This marginal effect is of a similar magnitude for both men
470 and women. We also investigate whether the nearest primary school has a differentiated effect on
471 the likelihood to migrate based on whether the individual lived in a rural or urban area as a child.
472 To do so, we estimate models that include an interaction between the urban dummy and the nearest
473 primary school. We find that proximity to primary school decreases the probability of migrating
474 to urban areas only if the early childhood residence is in a rural area. Results are available upon
475 request.

476 Access to secondary school does not affect the decision to migrate in the aggregate sample;
477 however, when we examine the gender-disaggregated models, we find that a secondary school
478 within 5 kilometers actually increases the female probability of migration to urban areas by 10%.
479 We expect that this effect is mediated by the fact that access to secondary schools exposes girls
480 and their families to the potential of greater opportunities associated with education and increases
481 their openness to migrate in search of opportunity, whether in the labor market or in search of more
482 education. Proximity to a nearby hospital decreases the odds of migrating to rural areas only, but
483 again, this is only the case for potential women migrants.

484 In general terms, our results indicate that better access to social infrastructure during
485 childhood, particularly to primary schools and hospitals, deters later youth migration, consistently
486 with other empirical evidence in developing countries (Katz, 2000). However, there are potential
487 countervailing forces that could contribute to better social infrastructure, thereby encouraging
488 migration: that is, easier access to schools can also trigger migration if individuals who accumulate
489 more human capital in the presence of nearby schools migrate to other places to look for higher
490 returns to their capital accumulation. In fact, we find that women with access to secondary school
491 when they are 10 years of age are likelier to migrate to urban areas.

492 Finally, the dummy variable for whether the childhood residence was either rural or urban
493 corroborates the migration patterns described earlier: when the childhood residence is rural, the
494 likelihood to migrate to other rural areas increases by 15%; similarly, when the residence is urban,
495 the likelihood to migrate to urban areas increases by 7%.

496

497 **5. Discussion and Conclusions**

498 Our goal in this paper is to highlight the importance and magnitude of internal migration in Senegal
499 and to analyze the socioeconomic determinants of the decisions of young people to migrate
500 internally. We also examine whether these factors differ by gender. We focus on the role of
501 household and community characteristics during childhood, in the years prior to the decision to
502 migrate, using household survey data from Senegal that include retrospective information from the
503 time when individuals were 10 years old. Our multinomial logit model allows for individuals,
504 between 21 and 35 years, to decide between not migrating, or moving to rural or urban areas in
505 Senegal.

506 We find that more than a third of the individuals in our sample are migrants, and their
507 median age of departure is 20. Furthermore, we find that more than half of the total internal youth
508 migration is temporary and rural-to-rural or urban-to-urban, in contrast with the more widely
509 studied rural-to-urban permanent migration. Indeed, this finding highlights prior evidence from
510 documenting the relevance of these mobility patterns in francophone West Africa (Beauchemin
511 and Bocquier, 2004; Beauchemin, 2011).

512 Our findings suggest that the determinants of internal migration in Senegal are
513 heterogeneous by gender and differ for those leaving their childhood residence for an urban or
514 rural destination. Similar to Chort et al. (2017), we find that Senegalese women are more likely to
515 migrate for reasons related to marriage, something that has been documented in other sub-Saharan
516 African countries (Kudo, 2015). We also find that childhood socioeconomic conditions, such as
517 father's education, the demographic composition of the household, and access to educational
518 opportunities where individuals grew up, can shape later youth migration differently for women
519 and men. For example, fathers' education has a particularly important role in women's migration
520 choices: the more educated the father, the more (less) likely are the daughters to move to urban
521 (rural) areas. In our sample, 72 percent of the female migrants are married. This result could
522 suggest that father's education is influential in marriage arrangements and in the probability that a
523 daughter will marry someone and leave the childhood residence with her new husband in search
524 of greater economic opportunity in urban areas. These results are similar to those found by
525 Quisumbing and McNiven (2006) in the Philippines, where father's education increases the
526 probability of a daughter moving from the village, and interestingly, mother's education has the
527 opposite effect. However, this is only conjecture, as we do not have further information to
528 disentangle the role of marriage and economic opportunities in the decision to migrate.

529 Furthermore, our findings suggest that the presence of younger siblings during childhood
530 is associated with migration decisions. For instance, women with younger sisters (but not brothers)
531 are more likely to migrate, suggesting that younger female siblings act as substitutes in household
532 responsibilities. We also find that those who lived in households with a higher asset index, when
533 they were 10 years old, are more likely to migrate to urban areas. This may be because these young
534 women and men are able to finance the costs of migrating to urban areas and to reap the benefits
535 of better employment opportunities in the cities.

536 The characteristics of the community in which children reside also shape migration
537 decisions. Proximity to better social infrastructure during childhood, particularly primary schools
538 and hospitals, is generally associated with a lower probability of migrating. The one clear
539 exception is access to secondary schools, which in fact increases the probability of migration to
540 urban areas for young women. While proximity to secondary schools may mitigate the need to
541 migrate in search of more education, such accessibility is likely associated with higher schooling
542 attainment, especially for girls whose parents are more reluctant to send their daughters away to
543 boarding schools and/or reside with relatives in order to raise school attainment. These human
544 capital investments may subsequently encourage migration of young women to urban areas in
545 search of employment opportunities that utilize their human capital and education. Although we
546 are not able to test this empirically, it is plausible that access to secondary school is more relevant
547 for women than men, because education has a larger effect on female than male migration. Indeed,
548 Chort et al. (2017) show that years of schooling increases the likelihood of migrating to urban
549 areas, especially for women, suggesting that education can be a channel to promoting women's
550 migration, independent of the usual reason of migrating for family and marriage reasons.

551 Our findings motivate further research on the expected consequences of internal youth
552 migration for individuals, their households, and their communities. Even though migration can
553 expand labor market opportunities, some research has pointed out that young people are vulnerable
554 to negative migration experiences (Tienda et al., 2008; Heckert, 2015). Furthermore, while young
555 migrants can provide benefits to their households by sending remittances, the high costs of
556 financing migration and family disruptions could also negatively affect those households.²⁷
557 Similarly, while remittances can improve the economic conditions of the communities of origin,
558 migration can also be detrimental if the young, educated people leave their communities (as with
559 “brain drain”). Whether the benefits outweigh the costs of migration on individuals, households,
560 and communities remains an empirical question and cannot be answered generally. However,
561 future research can build on our findings by collecting long-term, longitudinal data, before and
562 after migration, thus allowing researchers to track the welfare consequences of internal migration
563 of young individuals, their households, and communities. This research can identify patterns and
564 circumstances which may enable policymakers to intervene to ensure the benefits of migration
565 outweigh its possible negative consequences.

566 While there is still much to be learned about the internal migration of young people in
567 Senegal, and more generally, in other developing countries, the high degree of mobility and the
568 recognition of certain factors that contribute to these population movements is important
569 knowledge for policymakers, both in terms of affecting and planning for the widespread migration.
570 While there remain many questions about the determinants of migration and how to cope with the
571 stresses on communities and households affected by these population movements, there is every
572 reason to expect that they will only accelerate in years to come. Indeed, in a country such as

²⁷ The literature on the effects of remittances on household welfare is vast in developing countries. For instance, see Binci and Gianelli (2018) for a review of the effects of remittances on education and child labor.

573 Senegal where the young population will have doubled by 2035, and more than half of the
574 population still lives in the rural areas, factors such as increasing land pressure, the adverse effects
575 of climate change, and rapid structural transformation to a more industrialized and service-oriented
576 economy can be expected to increase internal youth mobility in the country (de Brauw et al., 2014;
577 Ba et al., 2017).

578 Although our analysis sheds light on whether childhood conditions influence later youth
579 mobility, it does not establish causality between the socioeconomic factors when young migrants
580 were 10 years old and their later internal mobility decisions in Senegal. To provide such causal
581 empirical evidence, future research could leverage experimental methods, an emerging
582 methodology in migration research (McKenzie, 2015), to study specific policy instruments for
583 managing internal migration.

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TABLES

Table 1: Distribution of Migrants by Rural/Urban Birthplace and 2003 Residence

	Urban–Rural	Rural–Rural	Urban–Urban	Rural–Urban
Primary	60.6%	7.3%	26.2%	59.8%
Repeat	3.0%	0.5%	4.3%	8.3%
Return	1.5%	14.7%	14.5%	2.3%
Temporary	34.8%	77.5%	55.1%	29.5%
Total	100%	100%	100%	100%
N ^a	66	409	325	132

^a Refers to the total number of migrants by urban–rural destination.

Table 2: Socioeconomic Characteristics of Migrants and Nonmigrants

	Migrant	Non-migrant	Total
<i>Individual Characteristics in 2003</i>			
Percentage female	64%	53%	57%
Average age	27.79 (4.55)	26.40 (4.42)	26.90 (4.52)
Years of education	4.14 (4.61)	4.45 (4.25)	4.34 (4.38)
Ethnicity groups (%)*			
Wolof	29.4%	35.8%	33.5%
Poular	24.7%	20.0%	21.7%
Sose	13.8%	17.84%	15%
Serere	20.4%	16.2%	18.9%
Diola	8.2%	5.0%	6.2%
% whose Father has no education	73.1%	69.2%	70.6%
% whose Mother has no education	85.4%	82.7%	83.7%
<i>Characteristics at age of 10 years</i>			
Average number of older siblings	1.80 (2.01)	1.88 (2.05)	1.85 (2.04)
Average number of younger siblings	2.57 (2.09)	2.42 (2.10)	2.47 (2.10)
Access to primary school	86%	95%	91%
Access to secondary school	45%	55%	51%
Access to hospital	71%	83%	79%
<i>Distribution by asset quartiles</i>			
First	40.22%	31.5%	34.6%
Second	19.57%	18.1%	18.6%
Third	28.60%	25.6%	23.1%
Fourth	21.61%	24.8%	23.7%
N	855	1546	2401

Notes: Standard deviations in parenthesis. Other ethnicity and regional dummy variables are not shown. Individuals from other ethnicities represent 4% of the sample.

Table 3: Average Marginal Effects of Multinomial Logits by Rural and Urban Destination

	Panel A ALL		Panel B MEN		Panel C WOMEN	
	Rural	Urban	Rural	Urban	Rural	Urban
<i>Individual Characteristics</i>						
Gender	-0.072*** (0.015)	-0.009 (0.015)				
Age	0.085*** (0.024)	-0.052** (0.024)	0.061* (0.034)	-0.028 (0.037)	0.096*** (0.034)	-0.058* (0.031)
Age-squared	-0.001*** (0.000)	0.001** (0.000)	-0.001+ (0.001)	0.001 (0.001)	-0.002*** (0.001)	0.001** (0.001)
Wolof	-0.025 (0.033)	-0.049+ (0.032)	-0.026 (0.047)	-0.111** (0.046)	-0.029 (0.046)	-0.000 (0.044)
Poular	-0.016 (0.027)	-0.021 (0.032)	0.045 (0.034)	-0.054 (0.046)	-0.079** (0.040)	0.008 (0.045)
Serere	0.004 (0.035)	-0.167*** (0.042)	-0.030 (0.048)	-0.155*** (0.058)	0.033 (0.050)	-0.174*** (0.059)
Diola	-0.027 (0.042)	-0.006 (0.044)	0.020 (0.055)	-0.013 (0.063)	-0.056 (0.059)	-0.003 (0.061)
Other ethnicity	-0.099* (0.053)	-0.071+ (0.047)	-0.062 (0.083)	-0.141* (0.073)	-0.131* (0.071)	-0.011 (0.063)
<i>Household Characteristics</i>						
Father's education	-0.018*** (0.007)	0.012*** (0.004)	-0.017* (0.009)	0.006 (0.006)	-0.022** (0.009)	0.018*** (0.005)
Mother's education	-0.006 (0.010)	0.004 (0.006)	0.005 (0.013)	-0.006 (0.009)	-0.012 (0.014)	0.008 (0.007)
Asset index (z-score)	-0.007 (0.012)	0.029** (0.012)	-0.021 (0.018)	0.033* (0.019)	-0.000 (0.017)	0.022 (0.016)
Older siblings	-0.002 (0.004)	-0.002 (0.004)	-0.009+ (0.006)	-0.006 (0.005)	0.004 (0.006)	-0.000 (0.005)
Younger siblings	0.009** (0.004)	0.000 (0.004)	0.002 (0.005)	0.005 (0.005)	0.013** (0.005)	-0.004 (0.005)
Loss of parent(s)	0.070*** (0.027)	0.035 (0.030)	0.068* (0.042)	0.062 (0.051)	0.077** (0.036)	0.020 (0.038)
<i>Community Characteristics</i>						
Primary school	-0.024 (0.024)	-0.175*** (0.037)	0.027 (0.034)	-0.198*** (0.061)	-0.063* (0.033)	-0.170*** (0.048)
Secondary school	-0.002 (0.026)	0.028 (0.029)	0.034 (0.034)	-0.054 (0.041)	-0.033 (0.037)	0.102** (0.040)
Hospital	-0.074*** (0.020)	0.044 (0.035)	-0.039+ (0.027)	0.080+ (0.055)	-0.097*** (0.028)	0.020 (0.045)
Rural 10 years	0.155*** (0.031)	-0.070** (0.029)	0.168*** (0.043)	-0.130*** (0.043)	0.129*** (0.043)	-0.022 (0.040)

Notes: *** p<0.01, ** p<0.05, * p<0.1, + p<0.15. Standard errors calculated using the delta method. All models include regional dummies for childhood place when 10 years old. Number of observations: ALL: 2,401; Men: 1,035; Women: 1,366.

Table 4: Average Marginal Effects including Siblings' Gender and Age Composition

	Panel A		Panel B		Panel C	
	ALL		MEN		WOMEN	
	Rural	Urban	Rural	Urban	Rural	Urban
Father's education	-0.018*** (0.007)	0.012*** (0.004)	-0.017* (0.009)	0.006 (0.006)	-0.023** (0.009)	0.018*** (0.005)
Mother's education	-0.005 (0.010)	0.004 (0.006)	0.006 (0.013)	-0.006 (0.009)	-0.011 (0.014)	0.008 (0.007)
No. older brothers	0.003 (0.006)	0.006 (0.006)	-0.014 (0.010)	-0.000 (0.008)	0.017* (0.009)	0.013+ (0.008)
No. older sisters	-0.007 (0.007)	-0.013* (0.007)	-0.005 (0.011)	-0.013 (0.010)	-0.010 (0.010)	-0.015+ (0.009)
No. younger brothers	0.005 (0.005)	-0.002 (0.006)	-0.001 (0.007)	0.001 (0.008)	0.010 (0.008)	-0.007 (0.008)
No. younger sisters	0.013** (0.006)	0.002 (0.006)	0.007 (0.008)	0.007 (0.008)	0.016** (0.008)	-0.002 (0.008)
Asset index (z-score)	-0.007 (0.012)	0.029** (0.012)	-0.021 (0.018)	0.033* (0.019)	-0.000 (0.017)	0.022 (0.016)
Loss of parent(s)	0.070*** (0.027)	0.038 (0.030)	0.064+ (0.042)	0.064 (0.051)	0.078** (0.036)	0.021 (0.038)

Notes: *** p<0.01, ** p<0.05, * p<0.1, + p<0.15. Standard errors calculated using the delta method. All models include individual and community variables as well as regional dummies for childhood place when 10 years old. Number of observations: ALL: 2,401; Men: 1,035; Women: 1,366.

ONLINE APPENDIX (NOT FOR PUBLICATION)

Table A.1: Average Marginal Effects—Main Results including Individual’s Education

	Panel A		Panel B		Panel C	
	ALL		MEN		WOMEN	
	Rural	Urban	Rural	Urban	Rural	Urban
<i>Individual Characteristics</i>						
Gender	−0.075*** (0.016)	−0.014 (0.015)				
Age	0.088*** (0.024)	−0.051** (0.024)	0.074** (0.034)	−0.034 (0.037)	0.096*** (0.034)	−0.054* (0.031)
Age-squared	−0.001*** (0.000)	0.001** (0.000)	−0.001* (0.001)	0.001 (0.001)	−0.002*** (0.001)	0.001* (0.001)
Years of education	0.002 (0.002)	0.003+ (0.002)	0.008*** (0.002)	0.005** (0.003)	−0.006* (0.003)	0.001 (0.003)
<i>Household Characteristics</i>						
Father’s education	−0.017** (0.007)	0.010** (0.004)	−0.019** (0.009)	0.003 (0.006)	−0.016* (0.010)	0.017*** (0.005)
Mother’s education	−0.011 (0.011)	0.004 (0.006)	0.004 (0.013)	−0.007 (0.009)	−0.020 (0.016)	0.009 (0.008)
Asset index (z-score)	−0.007 (0.012)	0.026** (0.012)	−0.025 (0.018)	0.029+ (0.019)	0.006 (0.017)	0.019 (0.016)
No. older siblings	−0.001 (0.004)	−0.004 (0.004)	−0.011* (0.006)	−0.008 (0.006)	0.006 (0.006)	−0.001 (0.005)
No. younger siblings	0.008** (0.004)	0.001 (0.004)	0.002 (0.004)	0.005 (0.005)	0.013** (0.005)	−0.003 (0.005)
Loss of parent(s)	0.067** (0.027)	0.044+ (0.031)	0.074* (0.042)	0.075 (0.052)	0.067* (0.036)	0.025 (0.038)
<i>Community Characteristics</i>						
Primary school	−0.027 (0.024)	−0.174*** (0.038)	0.014 (0.033)	−0.192*** (0.062)	−0.058* (0.034)	−0.167*** (0.048)
Secondary school	−0.003 (0.026)	0.025 (0.029)	0.029 (0.033)	−0.049 (0.041)	−0.035 (0.038)	0.098** (0.041)
Hospital	−0.073*** (0.020)	0.044 (0.035)	−0.044+ (0.027)	0.080+ (0.055)	−0.089*** (0.028)	0.017 (0.045)
Rural at 10 years	0.159*** (0.031)	−0.074** (0.030)	0.171*** (0.042)	−0.124*** (0.043)	0.122*** (0.044)	−0.031 (0.040)

Notes: *** p<0.01, ** p<0.05, * p<0.1, + p<0.15. Standard errors calculated using the delta method. All models include regional dummies for childhood place at 10 years old. Number of observations: ALL: 2,401; Men: 1,035; Women: 1,366.

Table A.2: Average Marginal Effects—Main Results excluding the Youngest Migrants

	ALL	
	Rural	Urban
<i>Individual Characteristics</i>		
Gender	−0.071*** (0.015)	−0.012 (0.015)
Age	0.077*** (0.024)	−0.022 (0.024)
Age-squared	−0.001*** (0.000)	0.001 (0.000)
<i>Household Characteristics</i>		
Father's education	−0.014** (0.006)	0.010*** (0.004)
Mother's education	−0.006 (0.010)	0.004 (0.006)
Asset index (z_score)	−0.004 (0.012)	0.028** (0.012)
Older siblings	−0.001 (0.004)	−0.001 (0.004)
Younger siblings	0.008** (0.003)	0.001 (0.003)
Loss of parent(s)	0.063** (0.027)	0.047* (0.029)
<i>Community Characteristics</i>		
Primary school	−0.029 (0.024)	−0.149*** (0.037)
Secondary school	0.006 (0.026)	0.017 (0.028)
Hospital	−0.078*** (0.020)	0.044 (0.034)
Rural at 10 years old	0.156*** (0.031)	−0.065** (0.028)

Notes: *** p<0.01, ** p<0.05, * p<0.1, + p<0.15. Standard errors calculated using the delta method. All models include regional dummies for childhood place when 10 years old. Number of Observations: ALL: 2,274.

Table A.3: Average Marginal Effects—Main Results excluding Temporary Migrants

	ALL	
	Rural	Urban
Gender	−0.026** (0.012)	−0.008 (0.014)
Age	0.048** (0.020)	−0.022 (0.023)
Age-squared	−0.001** (0.000)	0.000 (0.000)
<i>Household Characteristics</i>		
Father's education	−0.007+ (0.004)	0.009** (0.004)
Mother's education	−0.002 (0.006)	0.001 (0.006)
Asset index	−0.006 (0.010)	0.042*** (0.012)
No. older siblings	−0.004 (0.003)	−0.002 (0.003)
No. younger siblings	0.001 (0.003)	−0.005+ (0.004)
Loss of parent(s)	0.037* (0.020)	0.057** (0.027)
<i>Community Characteristics</i>		
Primary school	−0.019 (0.022)	−0.165*** (0.034)
Secondary school	0.012 (0.020)	0.030 (0.027)
Hospital	−0.013 (0.018)	0.027 (0.032)
Rural at 10 years	0.054** (0.024)	−0.001 (0.028)

Notes: *** p<0.01, ** p<0.05, * p<0.1, + p<0.15. Standard errors calculated using the delta method. All models include ethnicity dummies and regional dummies for childhood place when 10 years old. Number of observations 1,897

Table A.4: Main Results including interaction between Asset Index and Rural Origin

	Panel A		Panel B		Panel C	
	All		MEN		Women	
	Rural	Urban	Rural	Urban	Rural	Urban
Father's education	-0.018*** (0.007)	0.012*** (0.004)	-0.016* (0.009)	0.006 (0.006)	-0.022** (0.009)	0.018*** (0.005)
Mother's education	-0.006 (0.010)	0.004 (0.006)	0.006 (0.012)	-0.006 (0.009)	-0.012 (0.014)	0.008 (0.007)
Older siblings	-0.002 (0.004)	-0.002 (0.004)	-0.010* (0.006)	-0.006 (0.005)	0.004 (0.006)	-0.000 (0.005)
Younger siblings	0.009** (0.003)	0.000 (0.004)	0.003 (0.004)	0.005 (0.005)	0.013** (0.005)	-0.004 (0.005)
Asset index	0.029+ (0.020)	0.033** (0.014)	0.032 (0.032)	0.044** (0.021)	0.027 (0.027)	0.020 (0.019)
Rural at 10 years	0.148*** (0.030)	-0.080*** (0.031)	0.165*** (0.047)	-0.164*** (0.049)	0.126*** (0.045)	-0.022 (0.040)
Rural*asset	-0.056** (0.024)	-0.022 (0.024)	-0.079** (0.038)	-0.068* (0.040)	-0.042 (0.033)	0.001 (0.031)
Loss of parent(s)	0.069*** (0.027)	0.034 (0.030)	0.070* (0.041)	0.059 (0.051)	0.075** (0.036)	0.020 (0.038)

Notes: *** p<0.01, ** p<0.05, * p<0.1, + p<0.15. Standard errors calculated using the delta method. All models include individual and community variables as well as regional dummies for childhood place when 10 years old. Number of observations: ALL: 2,401; Men: 1,035; Women: 1,366.