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ABSTRACT

Descent Rules and Strategic Transfers. Evidence from Matrilineal Groups in Ghana*

Traditional descent systems can roughly be divided into patrilineal and matrilineal. In the latter, a man's heir is not his own child but rather his sister's son. The paper examines the implications of this social norm for the pattern of inter-vivos transfers using household level data from rural Ghana, where the largest ethnic group is traditionally matrilineal. In particular, it tests the predictions of a model of strategic behaviour according to which children should respond to the threat of disinheritance by increasing transfers to their parents during lifetime to induce a donation of land before the default (matrilineal) inheritance is enforced. I find that the credibility of customary norms enforcement, as proxied by the presence of a nephew in the father's household, significantly increases the probability of receiving transfers from children for Akans but not for other groups. The effect is specific to nephews and not to other co-resident boys. This pattern of behaviour can affect asset accumulation decisions across generations.

JEL Classification: O16 and O17
Keywords: inter-vivos transfers, matrilineal inheritance, social norms and strategic bequests

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1 Introduction

It is now recognized that principles of social organization and membership in social groups shape economic activity in important ways. This is especially true in traditional societies, where the distinction between an individual's role within the ethnic group or the extended family and his or her economic choices is particularly blurred. The empirical analysis of the economic effects of group membership is typically complicated by the endogenous nature of the group participation decision. For this reason, focusing on kin groups or ethnic groups has an advantage: membership in such groups is determined by blood relations and is not the result of an individual's choice.[1] Furthermore, the strong set of social norms that typically regulates membership in such groups makes it particularly interesting to study their economic effects. This paper attempts to study the effects of one specific norm, namely descent rules that govern the way in which kin membership is established and property is inherited, on one specific economic decision, i.e. that of giving inter-vivos transfers to different members of the family. Private transfers constitute a significant fraction of the resources available to poor households in developing countries, and understanding what lies underneath the pattern and flow of these transfers is a crucial task for designing economic policies in the areas of social security, savings promotion, etc.

In traditional societies kinship identity, together with all the duties and rewards it entails, is defined through descent principles that roughly fall into either of two categories: patrilineal or matrilineal.[2] In patrilineal cultures children are members of their father's kin group and inherit the father's property at his death. In matrilineal cultures kin membership is traced through the uterine line, so that children belong to their mother's kinship (*matrikin*) and not to their father's. A man's heirs are thus his sister's children, not his own. Though less common than patrilineal ones, matrilineal rules are embraced by a variety of cultures in the world spanning regions as different as Africa, East Asia, North and South America. As will be argued in the next section, the matrilineal form of social organization has important consequences for the claims that family members can make on each other's time and property, and hence can be expected to affect individual choices on who to send transfers to in an altruistic as well as in a strategic setting.

This paper offers a theoretical framework that is an adaptation of Bernheim, Shleifer and Summer's (1985) model to a setting where the testator (in this case, the father) is not unconstrained in

[1] For a review of some recent attemps to endogenize ethnic identity, see Alesina and La Ferrara (2005).

[2] In practice several cultures employ "mixed" systems of descent, but the purposes of this analysis is to contrast the two main underlying principles.

his choice about inheritance, but rather must obey a customary norm that requires a strictly positive fraction of his land to remain with the matrikin. In particular, the default allocation is for the entire land endowment to be bequeathed to the nephew, unless the father makes a donation to his own children during lifetime. The model shows that there exists a unique subgame perfect equilibrium where children send transfers to their parents to induce the latter to donate the maximum socially acceptable amount of land to them. This prediction of the model is tested using household level data from Ghana for the years 1987-89 and exploiting the variation in descent principles across ethnic groups. In fact the main ethnic group in Ghana, the Akan, is by tradition matrilineal, and although customary rules are eroding in response to modernization, the matrilineal structure persists in a large number of communities, especially in rural areas. After controlling for household composition and resources, I find that Akans are significantly more likely to receive transfers from their children compared to other ethnic groups, and that this effect is reinforced by the extent to which customary matrilineal norms are observed. My main proxy for the credibility of customary norms enforcement is the presence of a nephew in the household of the head. As I will discuss in the next section, Akan traditions encourage young boys to spend some time in their maternal uncles' homes during adolescence to cement their relationship. The basic identification strategy is thus a difference in difference estimation where I compare Akan and non-Akan households with and without coresident nephews. I estimate a probit model for the likelihood of receiving positive net transfers from children and find that both the Akan dummy and the interaction between Akan and coresident nephew have a positive and significant coefficient, consistently with the prediction that children face a more credible threat of being disinherited. The magnitude of the effect suggests that, ceteris paribus, if we took an Akan household without a nephew and introduced a coresident nephew of the head, the latter would be 3.7 percentage point more likely to receive transfers from his own children. On the other hand, for non-Akan households the presence of a coresident nephew would actually decrease the likelihood of receiving transfers by 1.3 percentage points. When instead of a nephew I repeat the same estimation with other coresident boys who are functionally equivalent to nephews but have a different relationship to the head (hence are not entitled to inherit by default), I find no significant effect on the interaction with Akan. This lends some confidence to the interpretation that the estimated effect may actually be related to strategic transfer motives. Further tests presented in the paper to validate this interpretation seem to point in the same direction.

This paper is related to two strands of the literature. On the one hand, there is the literature

on intergenerational transfers and bequest behavior. In a non-strategic setting, Cox (1987) investigates the motives for intergenerational transfers distinguishing between altruistically and exchange-motivated ones. In his model parents send transfers to their children because they care about their children's utility and also they expect to receive some services in exchange. In equilibrium the probability of receiving a transfer is negatively correlated with the recipient's income, but the amount received can be positively correlated with it if the exchange regime is the prevailing one, given that under decreasing marginal utility for the child the parent must give him more to induce him to provide services.[3] Since Becker's (1981) seminal work, it is well recognized that bequests can influence children's behavior. Bernheim et al. (1985) show that the testator can take this into account and strategically design a bequest rule that maximizes the surplus extracted from the prospective heir(s). In particular, in equilibrium the amount of "services" provided by the recipient (child) to the testator (parent) is increasing in parental wealth and in the credibility of the threat of disinheritance, as proxied for example by the existence of other potential heirs. The model in this paper is an extension of Bernheim et al. (1985) that takes into account the constraints on the allocation of bequests generated by matrilineal descent principles.

A second strand of the literature explains the presence of different social norms regarding the transmission of property from parents to children as a rational response to different economic environments. In a recent paper, Botticini and Siow (2003) show how the parents' decision to give dowries to their daughters and bequests to their sons can constitute an optimal incentive scheme when married daughters leave the household and sons have a comparative advantage in working with family assets. As the labor market develops and sons stop working for their family, dowries disappear and children of both genders receive bequests. Platteau and Baland (2000) review inheritance practices in Medieval Europe and in contemporary developing countries, contrasting primogeniture with partible inheritance. They argue that while in Asia matrilineal principles serve the purpose of maintaining the integrity of the family real estate, in Sub-Saharan Africa there is a widespread attachment to the equal division norm. They anticipate that as land scarcity becomes more severe in the face of growing population pressure, traditional land tenure arrangements are likely to give way to market transactions. Bernheim and Severinov (2003) provide a theoretical explanation for the prevalence of equal division of bequests, interpreting it as a signal of parental altruistic preferences.

[3] McGarry (1999) examines the joint determination of inter-vivos transfers and bequests in a multiperiod setting. She focuses on liquidity constraints and uncertainty over the recipient's permanent income in a purely altruistic model, while this paper assumes no uncertainty and strategic behavior.

Finally, two recent empirical studies focus on matrilineal inheritance practices and on their impact on agricultural and schooling investments. Using data from Western Ghana, Quisumbing, Panyongayong, Aidoo and Otsuka (2001) argue that traditional (matrilineal) land tenure institutions are evolving towards individualized rights in circumstances where it is important to provide incentives for cocoa tree planting. In a different matrilineal society, Sumatra, Quisumbing and Otsuka (2001) consider land inheritance and schooling as different forms of intergenerational transfers and study the evolution of gender differential in schooling as land tenure systems become more individualized.

The remainder of the paper is organized as follows. Section 2 briefly reviews some basic notions on matrilineal and patrilineal descent principles taken from the anthropological literature. In section 3 a simple theoretical framework is offered to highlight the relationship between matrilineal descent, family structure, and the pattern of intergenerational transfers. Section 4 describes the empirical methodology and the data, while section 5 contains the econometric evidence. Finally, section 6 concludes.

2 Matrilineal versus patrilineal descent

Kinship is reckoned in many different ways across cultures in the world. In most cases descent is traced through a single line of ancestors, e.g. either through the mother or through the father (unilineal descent). The two basic forms of unilineal descent are *patrilineal* and *matrilineal*, depending on whether descent is traced through a female or through a male ancestor, respectively. In patrilineal societies, children are considered to be part of their father's kin group and not of their mother's. Kin membership is then passed on by male children to their own children, and so on. In matrilineal societies, on the contrary, children are part of their mother's kin group and only female children can pass kin identity on to their offspring. The existence of these two regimes (and often coexistence in the same area between different ethnic groups) has interesting economic implications, in that they involve substantial differences in social organization as well as in the transmission of property.

From the point of view of social organization, matrilineal societies are characterized by the fact that the relationship between father and child is somewhat weaker than in patrilineal ones. Given that the father does not belong to the same matrikin as his child, some of the responsibilities generally assigned to fathers are instead taken on by the mother's brother, who is the closest male kinsmen of the child.[4] In some cultures, among which the Akan of Ghana, this can reach the point that, as

[4] Among the matrilineal Akan of Ghana, the father is responsible for food and clothing expenditures of his wife and

soon as he becomes an adolescent, a male child can be expected to move out of his parents' home and join the maternal uncle's household (something that in anthropology is known as avunculocal residence).[5]

Inheritance patterns are also quite different across matrilineal and patrilineal cultures. Although in Ghana communal ownership is the most common land tenure system for both groups, implying that land is effectively property of the lineage, the intergenerational transmission of control rights varies among the two. In patrilineal systems a man's property is typically transmitted to his children, and only if there are no children to other relatives. This is not the case in matrilineal societies. The kinship diagram in figure 1 illustrates the customary inheritance pattern of the matrilineal Akan of Ghana, which can be considered representative of most matrilineal groups.[6] Following the convention in social anthropology, triangles indicate males, circles females, vertical links indicate a descent bond, horizontal ones a codescent bond, and the sign "=" stands for a marriage relationship. The shaded symbol is the focal point from which every relationship is to be viewed, and I shall refer to it as the household head. The numbers inside the circles or triangles indicate the *order* in which a given relative should inherit the head's property.

[Insert figure 1]

Consistently with the principles of social organization, the male head's heir will be his nephew. However, seniority requires that property be passed first to any living male codescendant of the head (i.e., any living brother) and then to the younger generation. If no brother or nephew exists, the closest male relative to inherit the head's property will be the maternal aunt's son.

For the sake of completeness, note that female property is transmitted, in the order, to the mother of the deceased, to any living sister, and then to the daughters of the deceased. Therefore, in contrast to male property, a woman's property will ultimately be transmitted to her own children both in matrilineal and in patrilineal societies. This fact, coupled with the fact that the incidence of land control rights in rural Ghana is much higher among men than among women, motivates our

children, as well as for school expenditures of the latter. The matrikin, on the other hand, covers all other expenses (e.g., related to weddings and other ceremonies).

[5] For extensive studies on matrilineal traditions in Ghana, see among others Fortes (1950), Rattray (1969) and Okali (1983).

[6] Strictly speaking, the inheritance principle in figure 1 applies only to *inherited* property, which belongs to the matrikin, and not to self-acquired property. In practice, it is often difficult to distinguish between inherited and acquired property given the low incidence of land titling.

choice to focus on inheritance of men's property.[7]

The interpretations of the effect of matrilineal organization on the well being of a man's wife and children are quite contrasting. On the one hand, it is generally believed that the strength of the matrikin gives a woman more bargaining power vis-a-vis her husband, and indeed some features of matrilineal societies seem to point in this direction (e.g., the absence of sanctions against divorced women). On the other hand, according to customary matrilineal norms in Ghana men are expected to maintain their wife and children, who are expected to work for him in return, but such labor input does not give them any rights over the property acquired by the man. Thus, the traditional matrilineal inheritance scheme can lead to the paradoxical situation in which a man's wife and his children work all their life on his land and at his death are left virtually with no property.

To avoid this contingency, it has become more and more common among Akan men to *make donations to their children* earlier in life, or to establish with a *written will* that part of their property should be inherited by their children (customary Akan rules in fact can only apply to *intestate* property). This is subject to approval on behalf of the matrikin, so the practice is that some but not all of a man's property can be donated to his own children, so that a part of the land remains vested with the matrikin.[8] In order for the gift to be officially recognized, the man needs to inform the matrikin that the transfer is intended to be permanent and to perform some rituals, which may include drinks and a token payment by the beneficiaries to family elders (Okali (1993)). Once the land has been acquired from the father, security of property rights may actually be stronger than on land allocated by the lineage (Bruce and Mighot-Adholla (1994)). The division of land among members of the nuclear family and of the matrikin obviously creates a tension between different relations of the household head, and will constitute an important element of the theoretical framework.

[7] Note also that, in addition to the separation of the property, it is customary in Ghana to observe a division of the type of crops cultivated by men and women, and of the income generated by different sources, as documented by Lastarria-Cornhiel (1997) and by Doss (2001). This pattern is widespread in West Africa in general and is documented for Côte d'Ivoire by Duflo and Udry (2001).

[8] The importance of avoiding open conflict within the kin group is such that open refusals rarely occur, also because members "adjust" their requests in advance.

3 A simple theoretical framework

This section offers a simple theoretical framework that highlights the effects of matrilineal inheritance rules on children's incentives to support their parents and on parents' bequest choices, in the spirit of Bernheim et al. (1985).

Consider an economy with three agents: a parent (P), a child (K), and a non-child (from now on: a nephew, N). The parent has an endowment of land $L > 0$ that he cannot sell, but that he can allocate among his child and his nephew according to some rule that we shall specify below. Given that L is assumed to be illiquid (in accordance with the empirical context under study), in order to finance his consumption the parent depends upon the transfers $t_K \geq 0$ and $t_N \geq 0$ that he receives from his child and his nephew, respectively. Indicating with l_K and l_N the amount of land given by the parent to his child and nephew, the preferences of K and N are represented by the following well-behaved utility functions:[9]

$$\begin{aligned} U^K &= U(l_K, t_K) \\ U^N &= U(l_N, t_N) \end{aligned} \tag{1}$$

with $U_l^i \equiv \partial U/\partial l_i > 0$, $U_{ll}^i \leq 0$, $U_t^i \equiv \partial U/\partial t_i < 0$, $U_{tt}^i \geq 0$, $i = K, N$, indicating that utility is increasing in the amount of land received and decreasing in the amount of transfers given. I also assume that $U_{lt}^i \equiv \partial^2 U/\partial l_i \partial t_i \leq 0$, indicating that the marginal disutility of t_i is non-decreasing in l_i.[10]

The parent's utility is a function of the transfers received and of the utility of the child and the nephew:

$$V^P = V\left(t_K, t_N, U(l_K, t_K), U(l_N, t_N)\right) \tag{2}$$

[9] The utility function is assumed to be the same for the child and the nephew in order to highlight the differences in behavior generated by the matrilineal rule alone. The model can obviously be generalized to the case in which K and N had different preferences.

[10] The results are basically unchanged if one follows Bernheim et al. (1985) in assuming that K's and N's utility is initially increasing and then decreasing in t_i, i.e. that $U_t \equiv \partial U/\partial t_i > 0$ for low enough t_i and $U_t < 0$ for high enough t_i,.with $U_{tt} \geq 0$ in the relevant range of high t's. The assumption $U_{lt} \leq 0$ can be justified as in the empirical context under study land has not only a market value as a currently productive asset, but also a value for the "status" it confers and for future production uses. In this sense, it is conceivable that someone with no land to start with may be willing to give up more money (send more transfers) to acquire an incremental unit of land than someone who already has a lot. Note that this assumption is sufficient but not necessary for our results.

where, indicating partial derivatives with subscripts, we assume $V_{t_K} > 0$, $V_{t_N} > 0$, $V_{U^K} > 0$, $V_{U^N} > 0, V_{U^K U^N} = 0$. In order to isolate the role played by the matrilineal constraint, I shall restrict the analysis to the symmetric case in which the parent gives the same weight to the transfers received from K and from N, as well as to their utilities. In this setting the only asymmetry arises from the different land endowments to which K and N are entitled to according to the social norm.

In order to be feasible, an allocation of land must satisfy the following constraints:

$$L = l_K + l_N \tag{3}$$

$$l_K \geq 0; \; l_N \geq \underline{l}_N > 0. \tag{4}$$

Equation (3) is simply a budget constraint on the total land available. Expressions (4) instead are the key assumptions capturing the nature of matrilineal descent principle: the parent is not free to bequeath all his land to his child, but must leave an amount no lower than $\underline{l}_N$ to his nephew.[11] The child, on the other hand, can in principle be disinherited entirely, as the "reservation" amount of land for K is zero. The "strict" anthropological norm described in the previous section corresponds to a default outcome in which $l_K = 0$ and $l_N = L$. However, by making a donation during lifetime the parent can increase the amount of land allocated to his child to the disadvantage of his nephew. Assumption (4), in particular $\underline{l}_N > 0$, says that the parent cannot go all the way to disinheriting N, because this would not be approved by the matrikin. In what follows I shall focus on the case $\frac{L}{2} < \underline{l}_N < L$ to avoid the uninteresting symmetric solution (when the matrilineal constraint is not binding) and the trivial case in which no land can possibly be left to the child ($\underline{l}_N = L$). In a model where everything else is symmetric, the matrilineal constraint will introduce an asymmetry between the child and the nephew.

The sequence of actions is the following. First, the parent chooses an allocation of land (i.e., commits to a bequest rule), and then the child and the nephew simultaneously transfer the amounts t_K and t_N to P.[12] In order to extract positive transfers from K and N, the parent can make his bequest conditional on t_i and specify a bequest rule $\{(l_K, t_K), (l_N, t_N)\}$ that for every transfer level chosen by

[11] To avoid the trivial case in which no land can possibly be left to the child, $\underline{l}_N$ is assumed to be strictly smaller than L.

[12] The assumption that the parent can *commit* to the bequest rule, which follows Bernheim et al. (1985), can be defended on the grounds that the entire matrikin has to approve of the proposed allocation, and this "collective" agreement is more difficult to renegotiate compared to an unrestricted individual decision.

the child and the nephew grants them a given amount of land. In addition to the feasibility constraints (3) and (4), the allocations (l_K, t_K) and (l_N, t_N) must be such that K and N are guaranteed at least their reservation utility:

$$\begin{aligned} U(l_K, t_K) &\geq U(0,0) \\ U(l_N, t_N) &\geq U(\underline{l}_N, 0). \end{aligned} \tag{5}$$

Consider the following maximization problem for the parent:

$$\begin{aligned} &\max V\left(t_K, t_N, U(l_K, t_K), U(l_N, t_N)\right) \\ &\text{s.t.} \quad (3),\ (4) \text{ and } (5). \end{aligned}$$

Denote with $(l_K^*, l_N^*, t_K^*, t_N^*)$ the solution to this problem. Along the lines of Bernheim et al. (1985) one can show that the following bequest rule is such that this allocation emerges as a subgame perfect equilibrium in the game described above.

(a) If $t_K \geq t_K^*$ and $t_N \geq t_N^*$, then $l_K = l_K^*$ and $l_N = l_N^*$.

(b) If $t_K \geq t_K^*$ and $t_N < t_N^*$, then $l_K = L - \underline{l}_N$ and $l_N = \underline{l}_N$.

(c) If $t_K < t_K^*$ and $t_N \geq t_N^*$, then $l_K = 0$ and $l_N = L$.

(d) If $t_K < t_K^*$ and $t_N < t_N^*$, then P leaves everything to the one who is closest to the target transfer. Specifically, if $t_K^* - t_K \leq t_N^* - t_N$, then l_K and l_N are as in (b); otherwise they are as in (c).

In other words, the parent should set a rule that promises land allocations l_K^*, l_N^* to his child and nephew if they both comply with the desired transfer amounts t_K^*, t_N^*; otherwise, the one whose transfer is closest to the desired level gets everything and the other is disinherited (compatibly with the matrilineal constraint). This way the parent attains the highest possible utility by extracting all the surplus from K and N. It is precisely the threat of disinheritance that induces transfers from the (otherwise selfish) nephew and child.

In the present context the above game has a unique equilibrium, that is

$$\begin{aligned} t_K &= t_K^*; \qquad l_K = L - \underline{l} \\ t_N &= t_N^* = 0; \qquad l_N = \underline{l}. \end{aligned}$$

In other words, the matrilineal constraint is binding and according to the bequest rule no transfer is requested from the nephew in equilibrium. The intuition is the following. Since the minimum

amount of land that the nephew may get is already larger than any amount the child may receive ($\underline{l} > \frac{L}{2}$ is equivalent to $\underline{l} > L - \underline{l}$), and because of decreasing marginal utility, every additional unit of land allocated to the child always buys the parent more transfers than an additional unit allocated to the nephew. In other words, when the social norm invests a relatively large fraction of the parent's land in N and only allows for relatively small donations to K, then we expect the parent to receive transfers from his child but not from his nephew, and to give his child the maximum amount of land that is socially acceptable.

The above model is an admittedly rough attempt to capture some implications of the matrilineal norm through a partial equilibrium framework. It could be extended in several directions, which I only mention here because they go beyond the scope of the present analysis. The first would be to include an explicit game between the head and his wife's brother (i.e., his child's maternal uncle) so they could compete for transfers from the child. This would complicate the analysis but not change the conclusions substantially if there are strong enough reasons for children to want to inherit their own father's land. Such reasons may include land-specific investments made by the children while they were working for their father, or security of property rights that may be better enforceable when the land is inherited from the father than when it is allocated by the matrikin.[13] Second, one could think of an explicit bargaining game between the head, his child and his nephew, and model the strength of the norm as affecting not only the minimum amount of land that must stay with the matrikin, but the bargaining strength of the different parties. Third, the model abstract from issues of incomplete information which may play a non-negligible role in certain contexts.

Despite its simplicity, the above theoretical framework has two interesting implications. The first follows directly from Bernheim et al.'s (1985) result: the presence of two or more potential beneficiaries from the inheritance allows the parent to "extract" transfers from them during lifetime. The effectiveness of this mechanism crucially depends on the credibility of the threat that one beneficiary will be disinherited to the advantage of the other.

A second implication, more related to the specificity of the present analysis, derives from the asymmetry in the reservation values of the child and the nephew. Under the sufficient condition that the marginal rate of substitution between l_i and t_i is decreasing, then $t_K^* > t_N^*$. In other words, we can always expect K to transfer more than N in equilibrium. In what follows we shall try and test some of these predictions, compatibly with the information available in the data.[14]

[13] The latter argument about property rights is made, among others, by Bruce and Mighot-Adholla (1994).

[14] In particular, the data used in this paper identifies transfers from one's own children but not from the sons of one's

4 Empirical strategy and data

4.1 Methodology

The goal of the empirical section is to assess the role of matrilineal constraints in shaping children's transfer decisions. In the absence of confounding factors, a simple strategy would be to include among the regressors the ethnic identity of the recipient, and given that only Akans follow matrilineal principles in Ghana, the coefficient on the Akan dummy could be interpreted as the effect of matriliny. However, Akans may differ from other groups in their propensity to transfer for a variety of cultural or economic reasons that could be unrelated to strategic incentives linked to inheritance. For this reason in most of what follows I will try to identify several proxies for the credibility that the matrilineal norm may be enforced, and rely on a difference in difference strategy that compares Akans to other ethnic groups in their response to changes in these proxies.

In particular, the proxy on which I rely the most is the presence of a coresident nephew of the head in the household. Recalling the role of avunculocal residence among Akans, I will interpret this as a signal of a relatively strong tie between the head and his matriclan. I will then test whether children of Akans respond differently to the presence of a nephew compared to children from other ethnic groups. In particular, I will use a probit model to estimate the probability of receiving net transfers from children, and will focus on the coefficient of the Akan dummy and of the interaction term with coresident nephew (or with other proxies for norms enforcement). Specifically, I will estimate the following model:

$$\Pr(T_{ic} = 1) = \Phi(X_i\beta + Z_c\xi + \gamma \cdot Akan_i + \delta \cdot Akan_i * Nephew_i + \lambda \cdot Nephew_i) \tag{6}$$

where Φ is the Normal cdf, T_{ic} is a binary variable taking value one if parent i receives transfers from child c; X_i is a set of parental (recipient's) characteristics, Z_c is a set of child (sender's) characteristics, $Akan_i$ is a dummy equal to one if i belongs to the Akan ethnic group, and $Nephew_i$ is a dummy for the presence of a coresident nephew in i's household. According to the model we should observe $\gamma > 0$ and $\delta > 0$. This prediction will be tested in table 2 below, and subjected to a series of robustness tests.

sister, so a direct comparison of the amounts received from the two will not be possible.

4.2 The data: a descriptive analysis

The data used for the empirical analysis is from the first two rounds of the Ghana Living Standard Surveys: GLSS1 (1987/88) and GLSS2 (1988/89).[15] Because matrilineal norms essentially apply to the allocation of land, in most of the analysis I use the rural subsample of the GLSS. The only exception is the last part of the analysis, where I look at transfers from the point of view of the senders and include senders (children) who live in urban areas. The GLSS contains information on transfers from different relatives of the household head, to a level of detail which distinguishes between spouse, children, grandchildren, siblings, parents, parents in law, nieces or nephews, etc. Unfortunately, though, transfers are recorded only from and to people who are *not* household members, so there is no way to infer anything about monetary transfers within the household or on different types of parental support on behalf of residing children.[16] Our analysis will thus be restricted to monetary transfers received from children who are not household members.

A positive feature of the data is that respondents belong to different ethnic groups, only one of which – the Akan – follows matrilineal descent principles. The rural sample consists of 3,183 households pooled from both years (but with no overlap of the same household in consecutive years). In terms of ethnic composition, the Akan constitute 49.5% of the sample, the Ewe 15.6% of the sample, the Ga and Adangbe 5.1% of the sample, and the remaining are mainly Northern tribes.

The data contains information on transfers sent and received by the respondent to different branches of the family. Intergenerational transfers can thus be examined from two points of view: (i) taking the respondent to be the old generation, we can examine the pattern of transfers *from* the younger generation (e.g., the children); (ii) taking the respondent to be the young generation, we can examine the pattern of transfers *to* older generations (e.g., the parents). Most of my analysis will follow perspective (i) due to the proxy I use for norms enforcement, which requires knowledge about residence of a nephew *in the house of the recipient* – something that is available only when the recipient (not the sender) is the household head. However, the usefulness of a double perspective hinges precisely on the fact that there is fairly accurate information on household members but not so much on relatives who live outside the household. Therefore it is likely that important characteristics

[15] The choice of the earlier rounds of the GLSS is motivated by the fact that in later years the effects of the Intestate Succession Law introduced by the Government of Ghana modified traditional matrilineal inheritance practices (see Awusabo-Asare (1990)).

[16] Among recent studies of parental benefits from children's coresidence see Kochar (2000) and Pezzin and Schone (1999).

regarding the sender (or the receiver) are omitted from the relevant regressions. Considering the household head "from both sides" of the intergenerational transaction should allow, at least to some extent, to gauge the effects of these omitted characteristics.[17]

[Insert table 1]

Table 1 reports summary statistics on household transfer behavior. The top panel reports mean probabilities of receiving *net transfers* (defined as a positive difference between the transfers sent to and the transfers received from a given source) at different levels of disaggregation regarding the donor. Overall, Akans are significantly more likely to be net transfer recipients compared to the remaining groups. This is true especially for transfers from spouses (45% for Akans versus 24% for others) and from children (16% versus 8%), while the difference for other categories of senders (in particular, siblings) is negligible.[18] It is interesting to note that children are precisely the ones who, according to Akan customary rules, are not entitled to inherit the head's property, while siblings and nephews are the "default" heirs. The bottom panel of table 1 contains analogous figures for the average amount of net transfers from each source, conditional on net transfers from that source being positive. However, when broken down by source the difference is never statistically significant.

5 Econometric results

5.1 Transfers from children

We next move to multivariate analysis to examine transfer choices of several actors. The first set of results looks at the household head as a "parent" and examines the probability of receiving a net transfer from one's children, conditional on the household head having at least one child who resides outside the household. In all estimates, standard errors are corrected for clustering of the residuals at the village level. Marginal probit coefficients are reported together with z-statistics. Summary statistics on the variables used in the regressions can be found in Appendix Table A1.

[17] The adoption of a double perspective, i.e., parent's and child's viewpoint, is common to other analyses of intergenerational transfers, such as Lillard and Willis (1997) among others.

[18] The figures for spouses, children and parents are conditional on the existence of such a sender outside the household. In particular, for spouses I require that the couple does not cohabit, for children I require that the head has at least one non-resident child, and for parents I require that either the mother or the father are alive and not living in the household. The unconditional probabilities for Akans and non-Akans are, respectively, .11 and .03 from spouses, .14 and .08 from children, .03 and .02 from parents.

[Insert table 2]

The first column of table 2 represents a baseline specification. Controls include characteristics of the household head, such as age, education and cohabitation with the spouse, and language spoken (which identifies the ethnic group). Household characteristics include labor income, an index of durable goods owned[19], and household size. The explanatory variables also include a set of dummies for the presence of children (differentiated by sex) in the following age brackets: 0-5 years, 6-11, 12-16, and above 17 years old. The reason is that choices on child fostering (in or out) may respond to the demographic composition of the head's own children. The age of the oldest nonresident child, the education of the most educated nonresident child, and a dummy for whether the head has a nonresident child living in a city are included to proxy for the donor's contributing capacity. As proxies for unexpected shocks, we employ a dummy for whether the head was ill in the last year, and a dummy for having lost part of the crop.

According to the estimates of column 1, ceteris paribus Akan heads are 2 percentage points more likely to receive net transfers from their nonresident children than Northern ethnic groups (the omitted category), while other ethnic dummies are not statistically significant. The effect represents about one-fourth of the overall probability. Before exploring the nature of this "Akan effect", we can look at the other explanatory variables. Female headed households are more likely to receive transfers, as are households whose heads are older.[20] Ownership of durables does not seem to affect the likelihood of being a net recipient of transfers from one's children, but household labor income is negatively and significantly related to the probability of receiving transfers. Prima facie, these results are consistent with an explanation in which transfers respond to the recipient's need. A possible caveat on this interpretation comes from the positive coefficient on education (i.e., the highest grade achieved by the household head): households with more educated heads are more likely to receive net transfers. Note that this should not be due to unobserved correlation between the recipient's and the sender's education, as the grade achieved by the most educated of the nonresident children is also included among the regressors. Another counterintuitive result, from the point of view of need-driven transfers, is that available indicators of shocks (i.e., having lost part of the crop in the

[19] The index is constructed by principal factor analysis from information on the ownership of the following assets: radio, sewing machine, refrigerator, air-conditioning, tape-player, TV, bicycle, motorbike, car.

[20] Female headed households represent 14 percent of the observations in table 2. They are included to account for the possibility that children may send transfers home to reach their fathers even when the latter are not recorded as "household heads". None of the results is affected if we only include male-headed households in the sample.

past year, or illness of the head) are either insignificant or significant with the unexpected sign.[21] Turning to the demographic composition of the head's children in the household, only two coefficients are statistically significant: that on boys aged 12 to 16 (positive), and that on girls aged 6 to 11 (negative). While the former can be explained with the choice of sending boys to secondary school, the latter is probably due to the fact that young girls perform a number of household chores and free up household labor. As for the characteristics of the sender, the only variable that significantly (and positively) affects the likelihood of sending money to one's parent is the child's age.

Columns 3 and 4 contain the key result of this empirical section. The idea behind the theory was that children's incentives should respond to the likelihood that the parent obeys the customary rule and leave all property to the matrikin. In columns 3-4, the strength of the parent's link with the matrikin is proxied by the presence in the household of a nephew of the head, and the interaction term between the Akan and the nephew dummy is meant to capture a potential effect specific of the matrilineal ethnic group. While the presence of a nephew in the household per se decreases the likelihood that the head receives a transfer (the coefficient on "Nephew" is negative), for Akan households the opposite is true: the interaction term between "Nephew" and Akan is positive and statistically significant at the 5 percent level. In other words, for Akan heads the presence of a nephew in the household *increases* the likelihood of receiving money from their own children. Interaction terms with other language groups (not included in the table) were not significant. The magnitude of the estimated effect can be gauged by computing the change in predicted probabilities for Akan and non-Akan households when we move from a situation where there is no coresident nephew to one where there is. Ceteris paribus, this experiment increases the probability that Akan households receive net transfers from their children by 3.7 percentage points, while it actually *decreases* by 1.3 percentage points the same probability for non-Akan households. This means that once we control for other variables, the overall effect is 5 percentage points.[22] The effect remains equally significant

[21] This does not seem to be due to correlation with the income variable, as the coefficient on crop lost remains negative when we omit income from the controls in table 2.

[22] The apparent discrepancy between the size of this effect and the marginal coefficient on the interaction term reported in table 2 is due to the fact that the latter is the change in predicted probability that occurs when Akan*Nephew goes from 0 to 1, holding *every other variable* at the sample mean. The estimate of 3.7 percentage points given in the text is obtained holding everything at the mean except for Akan (that is held at 1), Ga-Adangbe and Ewe (that are held at 0), Nephew and Akan*Nephew (that go from 0 to 1). A similar procedure gives -1.3 for non-Akan groups. I also estimated a linear probability model and the coefficients (standard errors) multiplied by 10^2 for the variables of interest were the following. Nephew: -6.79 (2.95); Akan*Nephew: 9.6 (5.95); Akan: 3.48 (2.06).

and the same order of magnitude if we control for the number of non-resident sons and daughters of the head and interact these variables with Akan (columns 5-6 in table 2). Interestingly, the coefficient on the interaction of Akan and number of non-resident sons is negative, possibly due to free riding behavior or to the fact that, as the number of "exceptions" to the matrilineal rule that the father should obtain increases, it becomes less likely that he will be granted enough land for each child to justify a transfer.

The main result in table 2, i.e. the positive coefficient on the Akan-nephew interaction, deserves further discussion. First, it must be noted that it is not possible from the survey to know whether nephew means sister's or brother's son, so the nephew variable is measured with error to the extent that it is only sisters' sons who can inherit according to matrilineal principles. However, this should work against finding an effect due to attenuation bias. Second, the effect I find on the interaction term is consistent with several explanations other than the one suggested by the theory. Ideally, one would want to control for the *existence* of a nephew, and not just for his coresidence with the household head. Unfortunately, the data contain no information on nephews unless they are members of the household. Even information on living sisters of the household head is recorded only if (i) they reside with the head, or (ii) they are not household members but have explicit economic transactions with the head, for example they send transfers. This means that using information on the head's sisters as a proxy for the potential existence of nephews would introduce a selection bias. I therefore rely on a direct measure of existence of a nephew living with the head. While this is trivially correlated with the existence of a nephew in general, it also has the advantage of proxying for the intensity of the head's adherence to traditional matrilineal principles. The main objection to this strategy is that the presence of a nephew in the household may be endogenous to the children's transfer decision. For example, one could argue that Akan households would be more likely to take in nephews as "replacements" for sons who leave the home, although this does not seem to be confirmed in the data.[23] While a full treatment of the endogenous household structure is currently not possible with the data at hand, in what follows I try to rule out some competing explanations and gather a number of pieces of evidence in support of the proposed conjecture.[24]

[Insert table 3]

[23] See Appendix table A3, which reports the number of households with co-resident nephews and with non-resident children by Akan/non-Akan ethnicity.

[24] For an analysis in which economic outcomes and residential choice are jointly determined, see Foster (2005).

First of all, one of the reasons why children are fostered into other households in rural Africa is to finance their education.[25] The higher transfers to households in which there is a nephew of the head may thus be explained by the fact that he is enrolled in school and that his cousins are indirectly helping him. Column 1 of table 3 includes among the regressors, together with all other controls of the previous table (not displayed), the number of children living in the household who are currently enrolled in school. While the coefficient on this variable is positive and significant, as expected, the interaction term between "Nephew" and Akan is not affected, suggesting that there is something more going on than simply financing education. Similarly, when the possibility that the nephew joins the household to get a job as an apprentice is accounted for by controlling for the number of apprentices in the household, the interaction term between Akan and nephew remains positive and significant.[26]

A further check is performed in column 2, where – instead of a nephew – the presence of a niece in the household is considered. In terms of blood relationship nieces and nephews are equivalent, but the former are not entitled to inheriting their uncle's property, while the latter are. It is encouraging to observe that the interaction term between "Niece" and Akan is not statistically significant.

However, the most interesting test for the robustness of our explanation is done in column 3 of table 3, where the nephew dummy is replaced by a dummy for the presence of another fostered boy aged below 17 who is *not* a nephew nor a sibling of the head.[27] By construction such a boy is *functionally equivalent* to a nephew under all respects, but is not entitled to inherit according to matrilineal rules. If the coefficient on the Akan-nephew interaction reflected a spurious reaction to the presence of a male adolescent in the households, then we should find the same pattern of results when we substitute "Fostered boy" for nephew. Column 3 shows that we don't. Also when we use a generic variable that captures the presence in the household of "any boy" aged below 17, we do not get any significant result on the interaction with Akan (see column 4). This suggests that our effect is not due to the presence of a boy per se, but to the different *salience* that the presence of nephews has in Akan households compared to the presence of other relatives and compared to other ethnic groups.

[25] For a recent analysis of child fostering decisions in Burkina Faso, see Akresh (2003). Early work on child fosterage in Ghana using census data was done by Isiugo-Abanihe (1985).

[26] Results are available from the author.

[27] Within the sample of households that have at least one non-resident child, which is the one used in table 3, 103 households have a co-resident nephew of the head (37 are Akan and 66 non-Akan) and 360 have a fostered boy who is not a nephew (196 are Akan and 164 are non-Akan).

[Insert table 4]

The underlying premise of the model was that monetary transfers were part of an intertemporal exchange between children and parents where the latter would donate the land. The GLSS includes one question that allows to verify the plausibility of this equilibrium in the data. The question asks household heads how many acres of land were given away in the past twelve months (the same period for which the monetary transfers are recalled). The question explicitly distinguishes between land gifted and land for which monetary or in kind payments were received. In column 1 of table 4 I include the variable "land gifted in past year", which only refers to the acres of land donated without payments. While this variable per se does not have a significant effect, when interacted with Akan (column 2) it takes a positive and significant coefficient. This means that Akan parents are more likely to receive transfers from their children the greater the amount of land they have donated during that year. On the other hand, if we repeat the same exercise with land sold, leased, rented out or sharecropped out to non-household members in the past year (columns 3-4), the interaction with Akan is actually negative and marginally significant. While it is not possible to interpret these coefficients in a causal way, their sign is consistent with the predictions of the theory. In particular, it is comforting that the positive coefficient on land alienated by Akans is specific to land *gifted* and not land sold or rented out.

[Insert table 5]

Table 5 considers two more proxies for the strength of the matrilineal norm. The first regards the nature of property rights on land and is constructed from a question on whether the respondent can sell his or her land. The possible answers were: never, with permission of the family, with permission of the village head, and yes without permission. In the first two columns of table 5 the sample is split between those who say that they can sell their land without asking for permission (24 percent of the sample) and the rest. Being able to freely sell one's land is interpreted as an indication that the role of the clan in deciding on the allocation of the land is very limited. In this case, the matrilineal norm should not affect transfer behavior. As expected, the Akan dummy is insignificant in the sample of those who can sell their land without asking for permission from the extended family (column 2), while it retains its positive coefficient in the subsample of households "constrained by the social norm" (column 1).[28]

[28] In the regressions of table 5 it is not possible to perform a triple difference estimation by including the interaction with Akan and nephew due to the small number of observations with co-resident nephews that would remain in each

The second proxy for the strength of the matrilineal rule is constructed on the basis of the dominant religion in the village. Anthropologists who study matrilineal systems in Africa discuss the role played by Christian missionaries in the slow erosion of these systems. Missionaries were in fact concerned with the potential threat to the nuclear family that matrilineal rules were imposing, as well as with the unequalizing effects that such rules had on a man's own children as opposed to his nephews. For this reason Christian missionaries constantly fought the strict application of matrilineal rules in the villages where they settled. In columns 3 and 4 the sample is split between villages where Christians are the dominant religious group (hence the strength of matrilineal norms should be lower) and villages where they are not. As expected, the Akan dummy displays a positive and significant coefficient in the latter, but not in the former, set of villages.

5.2 Transfers to parents

We can next consider the household head as a "sender" and estimate the probability that a man sends positive net transfers to his parents, conditional on either parent being alive and not living in the same household. The goal is to better assess the role of sender characteristics –which in the previous estimates were only the age, education, and location of the sending child– and in particular to infer whether the "Akan effect" found before was simply the result of a correlation between ethnic identity and omitted sender characteristics. Because senders (children) may live both in urban and in rural areas, I use the full sample of male household heads for these regressions, though I show that virtually identical results hold in the rural sub-sample.

[Insert table 6]

Table 6 contains the baseline probit estimates. As in previous tables, marginal probit coefficients are reported with z-statisics and standard errors are corrected for clustering of the residuals at the village level. Summary statistics for the variables used are reported in Appendix Table A2. The first notable result is that the Akan dummy remains positive and significant in all specifications, after controlling for a large number of sender's characteristics. Ceteris paribus, Akan household heads are about 16 percentage points more likely to send net transfers to their parents than are individuals from Northern ethnic groups. This represents half the size of the overall sample probability. Among other controls, the donor's contributing capacity as proxied by labor income and by the durable goods index significantly increases the probability of sending money to one's parents. The education of the head is

category.

uncorrelated with the propensity to send transfers to the parents, while cohabitation with the spouse has a negative effect, possibly due to intra-household conflict on resource allocation. The presence of children in the household, on the other hand, has a positive impact, possibly due to a "demonstration" effect as argued for example by Cox and Stark (1994). The educational attainment of the recipient father is insignificant, while that of the mother has a negative and significant coefficient in the full sample, possibly as a proxy of parental income or wealth. Note that the urban residence of the sender does not significantly affect the propensity to transfer. Indeed, when only the rural subsample is considered (column 2) the results are almost unchanged, and the coefficient on Akan is basically the same.

In columns 3 and 4 of the table I exploit one more piece of information available on the head's father to gain some insight on the interpretation of the "Akan effect." The sample is split between men whose father was a farmer and men whose father was not a farmer. The idea is that farmer status may be a proxy (though very imperfect) for the land ownership of the father – a variable which is not in the survey. According to the strategic interpretation of transfers induced by the matrilineal rule, we should expect Akans to display a higher propensity to transfer only if their father had land (as proxied by the fact that he was a farmer). In fact, the results show that the Akan dummy retains a positive and significant coefficient in the subsample of individuals whose father was a farmer (column 3) but not in the rest of the sample (column 4).

Overall, the estimates in table 6 suffer from serious omitted variable problems related to the paucity of information on the recipient's side (the sender's parents). More importantly, in contrast to the availability of nephew coresidence that was used in previous regressions, due to data limitations there is no clear identification strategy when we look at transfers from the point of view of the senders. Nonetheless, the above results can be useful to show that the higher propensity to transfer of Akan children is not a result of omitted sender's characteristics. As such, they should best be viewed as complements to the results in the previous section.

6 Concluding remarks

This paper suggests that a particular set of norms related to membership in ethnic groups, namely matrilineal descent principles, have important implications for the pattern of inter-vivos transfers, hence indirectly for saving decisions of young individuals who are "constrained" by these norms. Although there is a growing interest in research that is at the intersection of economics and anthro-

pology, relatively little attention has been paid to how ethnic identity affects the intergenerational transmission of property. Descent rules are likely to influence not only transfer behavior, but also the types of investment that parents make in their children. In a related project (La Ferrara, 2005) I examine the impact of inheritance rules on parental investment in children's education, exploiting a legal reform that involved the matrilineal system in Ghana from the 1990s onwards. An extension of this type of analysis to other countries and/or other economic decisions may shed light on some effects of ethnic group membership that are mediated by particular social norms to which the groups obey. Furthermore, this research can have important policy implications in contexts where access to land is severely restricted (including potential gender inequalities) and inheritance patterns are a crucial element in this respect.

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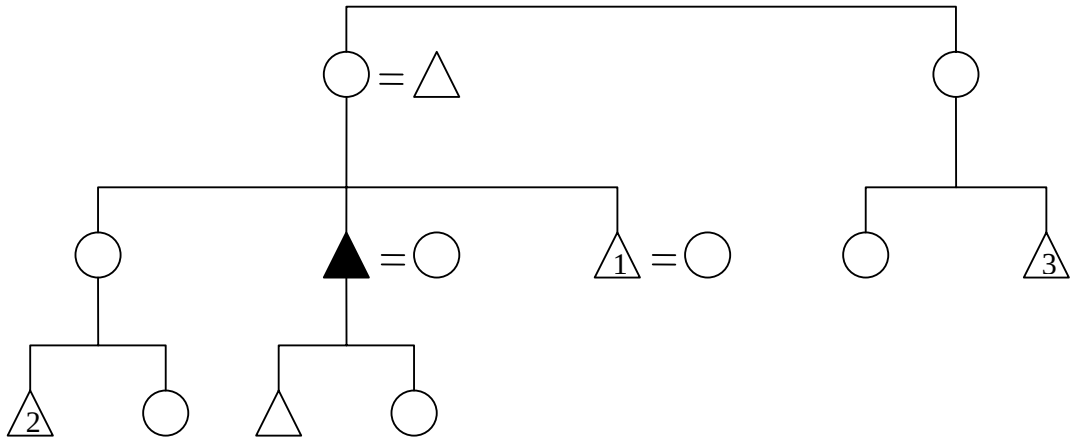

△ Male

○ Female

Dark area refers to household head. Numbers indicate order of inheritance

Figure 1: Matrilineal descent

Tables

Table 1: Net transfers, descriptive statistics

	Akan	*Non-Akan*	*T test*[a] *(p-value)*
PROBABILITY			
From all sources	.34	.19	.00
From spouse	.45	.24	.00
From children	.16	.09	.00
From parents	.06	.03	.03
From siblings	.08	.07	.24
From nephew	.02	.01	.09
AMOUNT[b]			
From all sources	30,993	25,458	.06
From spouse	40,383	48,578	.24
From children	27,224	21,943	.26
From parents	14,124	21,632	.11
From siblings	17,443	14,300	.32
From nephew	19,021	22,934	.77

Source: Author's calculation on GLSS. Sample includes both rounds of the survey.
(a) Two-sided test of equality of means between Akan and Non-Akan.
(b) Amounts calculated conditional on receiving positive net transfers from the relevant source. Unit is Ghanaian cedis, constant prices Sept. 1989.

Table 2: Transfers from children and nephews' presence

Dependent vbl = 1 if received net transfers from non-resident child	*Marg. Coeff.*[(a)] [1]	*z-stat* [2]	*Marg. Coeff.*[(a)] [3]	*z-stat* [4]	*Marg. Coeff.*[(a)] [5]	*z-stat* [6]
Nephew in HH			-1.866	(-2.11)**	-1.645	(-2.17)**
Akan*Nephew			19.8	(2.13)**	16.4	(2.01)**
Akan	1.96	(2.23)**	1.602	(1.95)*	.735	(0.83)
Ga-Adangbe	.667	(0.43)	.560	(0.39)	.81	(0.61)
Ewe	.882	(0.81)	.910	(0.89)	.672	(0.73)
Income (ln)	-.549	(-2.51)**	-.504	(-2.43)**	-.448	(-2.47)**
Durables	.831	(1.5)	.783	(1.5)	.673	(1.44)
Female	7.15	(3.89)***	6.57	(3.82)***	5.64	(3.72)***
Age	.565	(3.04)***	.538	(3.00)***	.516	(3.13)***
Age squared	-.003	(-2.01)**	-.003	(-1.99)**	-.003	(-2.14)**
Education	.130	(2.80)***	.116	(2.63)***	.109	(2.7)***
Cohabitation	-.039	(-0.04)	-.173	(-0.19)	-.198	(-0.25)
HH size	-.096	(-0.63)	-.056	(-0.37)	-.086	(-0.57)
# sons 0-5 yrs	.558	(1.15)	.429	(0.93)	.396	(0.92)
# sons 6-11 yrs	.209	(0.46)	.177	(0.41)	.214	(0.55)
# sons 12-16 yrs	.850	(2.00)**	.741	(1.83)*	.759	(2.04)**
# sons >17 yrs	-.170	(-0.42)	-.219	(-0.57)	-.257	(-0.77)
# daughters 0-5 yrs	.347	(0.63)	.288	(0.56)	.316	(0.67)
# daughters 6-11 yrs	-1.36	(-2.47)**	-1.21	(-2.31)**	-1.02	(-2.18)**
# daughters 12-16 yrs	.23	(0.42)	.229	(0.44)	.268	(0.58)
# daughters >17 yrs	.632	(1.44)	.566	(1.31)	.519	(1.31)
Illness	-.497	(-0.88)	-.488	(-0.9)	-.476	(-0.98)
Lost crop	-1.128	(-1.83)*	-1.08	(-1.85)*	-1.04	(-1.99)**
Non resid. child age	.155	(2.28)**	.149	(2.31)**	.145	(2.33)**
Non resid. child educ	.081	(1.31)	.085	(1.43)	.061	(1.14)
Non resid. child city	.267	(0.43)	.154	(0.26)	.291	(0.54)
# Non res. sons					.367	(1.41)
Akan*# Nonres sons					-.585	(-1.85)*
# Non res. daughters					-.722	(-2.4)**
Akan*# Nonres dau.					.948	(2.78)***
No. obs	1257		1257		1257	
McFadden's R^2	.30		.31		.32	
Count R^2 [(b)]	.91		.92		.92	

Notes: * denotes significance at 10 percent level, ** at 5 percent level, *** at 1 percent level.
Table reports marginal probit coefficients; z-statistics in parenthesis, adjusted for clustering of the residuals at the village level.
(a) All coefficients are multiplied by 10^2.
(b) Count R^2 is the fraction of correct predictions.

Table 3: Household structure, sensitivity

Dependent vbl = 1 if received net transfers from non-resident child	[1]	[2]	[3]	[4]
Nephew in HH	-1.765			
	(-2.73)***			
Akan*Nephew	22.2			
	(2.35)**			
Akan	1.145	1.981	1.666	1.39
	(1.60)	(2.22)**	(1.73)*	(1.06)
# children enrolled in school	.912			
	(3.55)***			
Niece in HH		2.25		
		(1.39)		
Akan*Niece in HH		-.493		
		(-0.21)		
Fostered boy in HH			-.442	
			(-0.49)	
Akan*Fostered boy in HH			1.265	
			(0.79)	
Any boy in HH				-1.02
				(-1.01)
Akan*Any boy in HH				.806
				(0.61)
BASIC CONTROLS[(a)]				
No. obs	1257	1257	1257	1257
McFadden's R^2	.32	.30	.30	.30
Count R^2	.92	.91	.91	.91

Notes: * denotes significance at 10 percent level, ** at 5 percent level, *** at 1 percent level. Table reports marginal probit coefficients; z-statistics in parenthesis, adjusted for clustering of the residuals at the village level. All coefficients are multiplied by 10^2.
(a) Basic controls include those in column 1 of table 2.

Table 4: Transfers from children and land given

Dependent vbl = 1 if received net transfers from non-resident child	[1]	[2]	[3]	[4]
Nephew in HH	-1.838	-1.593	-1.841	-1.803
	(-2.12)**	(-2.18)**	(-2.12)**	(-2.13)**
Akan*Nephew	19.05	17.3	19.5	19.2
	(2.08)**	(2.04)**	(2.13)**	(2.12)**
Akan	1.634	1.302	1.589	1.704
	(1.99)**	(1.83)*	(1.91)*	(2.13)**
Land gifted in past yr[(a)]	.02	-.731		
	(0.45)	(-2.21)**		
Akan*Land gifted in past yr		.779		
		(2.33)**		
Land sold or rented out in past yr[(b)]			.008	.073
			(1.28)	(2.03)**
Akan*Land sold or rented out in past yr				-.068
				(-1.92)*
BASIC CONTROLS[(c)]	Yes	Yes	Yes	Yes
No. obs	1239	1239	1239	1239
McFadden's R^2	.31	.32	.31	.31
Count R^2	.92	.92	.91	.92

Notes: * denotes significance at 10 percent level, ** at 5 percent level, *** at 1 percent level.
Table reports marginal probit coefficients; z-statistics in parenthesis, adjusted for clustering of the residuals at the village level. All coefficients are multiplied by 10^2.
(a) Acres of land given away in past 12 months with no payment in exchange (monetary or in kind).
(b) Acres of land sold, leased, rented out or sharecropped out to non HH members in past 12 months.
(c) Basic controls include those in column 1 of table 2.

Table 5: Strength of matrilineal norms

Dependent vbl = 1 if received net transfers from non-resident child	Cannot sell land [1]	Can sell land [2]	Non-Chrst. village [3]	Christian village [4]
Akan	2.296	-.439	5.765	1.645
	(2.16)**	(-0.96)	(2.62)***	(1.62)
Ga-Adangbe	4.54	-.36	--	2.113
	(1.42)	(-1.62)		(0.83)
Ewe	1.96	-.387	2.305	.056
	(1.54)	(-1.57)	(2.10)**	(0.04)
BASIC CONTROLS[(a)]	Yes	Yes	Yes	Yes
No. obs	771	239	323	778
McFadden's R^2	.34	.39	.35	.30
Count R^2	.91	.91	.95	.90

Notes: * denotes significance at 10 percent level, ** at 5 percent level, *** at 1 percent level. Table reports marginal probit coefficients; z-statistics in parenthesis, adjusted for clustering of the residuals at the village level. All coefficients are multiplied by 10^2.

(a) Basic controls include those in column 1 of table 2.

Table 6: Transfers to parents

Dependent vbl = 1 if sent net transfers to non-resident parent	*Full sample* [1]	*Rural sample* [2]	*Father farmer* [3]	*Father not farmer* [4]
Akan	15.36	15.72	16.94	9.08
	(4.42)***	(3.80)***	(4.38)***	(1.15)
Ga-Adangbe	9.96	8.15	10.71	8.38
	(1.69)*	(1.05)	(1.61)	(0.82)
Ewe	6.47	3.54	7.09	1.89
	(1.52)	(0.72)	(1.44)	(0.24)
Income (ln)	5.1	3.75	4.79	5.2
	(3.78)***	(2.24)**	(3.13)***	(1.75)*
Durables	6.93	13.0	6.64	7.27
	(4.07)***	(3.41)***	(2.73)***	(2.84)***
Age	3.44	-.62	.88	-1.19
	(0.41)	(-0.66)	(0.92)	(-0.63)
Age squared	-.006	.004	0	.02
	(-0.55)	(0.39)	(1.08)	(0.67)
Education	.22	.34	.17	.18
	(0.96)	(1.25)	(0.66)	(0.36)
Cohabitation	-8.54	-8.95	-10.92	-5.0
	(-2.03)**	(-1.59)	(-2.17)**	(-0.61)
HH size	-2.53	-2.79	-2.6	-.83
	(-2.73)***	(-2.73)***	(-2.51)**	(-0.33)
# children 0-5 yrs	2.68	3.49	2.7	1.81
	(1.64)	(1.94)*	(1.52)	(0.41)
# children 6-11 yrs	3.73	5.19	4.86	-1.68
	(2.14)**	(2.62)***	(2.54)**	(-0.39)
# children 12-16 yrs	2.49	.823	2.22	1.77
	(1.15)	(0.32)	(0.92)	(0.35)
# children >17 yrs	1.51	5.19	2.0	-1.77
	(0.64)	(1.65)*	(0.71)	(-0.34)
Mother's education	-1.82	-1.82	-1.17	-1.97
	(-2.92)***	(-1.49)	(-0.75)	(-2.82)***
Father's education	.16	0	.20	.25
	(0.53)	(0)	(0.36)	(0.59)
Urban	3.52		4.48	-2.56
	(1.13)		(1.25)	(-0.43)
No. obs	1703	1072	1265	426
McFadden's R^2	.07	.06	.08	.05
Count R^2	.66	.69	.68	.62

Notes: * denotes significance at 10 percent level, ** at 5 percent level, *** at 1 percent level.
Table reports marginal probit coefficients; z-statistics in parenthesis, adjusted for clustering of the residuals at the village level. All coefficients are multiplied by 10^2.

Appendix Tables

Table A1: Summary statistics (Sample used for "*Transfers from children*")

	Mean	*Std. Dev.*	*Obs.*
Received net transfers from children[(a)]	0.129	0.336	1840
Income (ln)	11.335	1.260	1700
Durables	-0.167	0.454	1840
Female	0.279	0.449	1840
Age	47.96	14.68	1840
Age squared	2515.8	1519.1	1840
Education	4.221	5.555	1840
Cohabitation	0.765	0.424	1406
HH size	5.322	3.453	1840
# sons 0-5 yrs	0.399	0.703	1840
# sons 6-11 yrs	0.386	0.687	1840
# sons 12-16 yrs	0.330	0.637	1840
# sons >17 yrs	0.322	0.701	1840
# daughters 0-5 yrs	0.39	0.673	1840
# daughters 6-11 yrs	0.34	0.629	1840
# daughters 12-16 yrs	0.24	0.52	1840
# daughters >17 yrs	0.216	0.52	1840
# children enrolled in school	0.937	1.443	1840
Illness	0.502	0.5	1839
Lost crop	0.600	0.49	1735
Non resid. child age	19.13	8.35	1840
Non resid. child educ	6.084	5.6	1840
Non resid. child city	0.284	0.451	1840
Ga-Adangbe	0.049	0.217	1839
Ewe	0.159	0.366	1839
Akan	0.513	0.5	1839
Nephew	0.056	0.23	1840
Niece	0.047	0.212	1840
Fostered boy	0.196	0.397	1840
Any boy	0.682	0.466	1840
Land gifted in past yr (acres)	0.354	3.75	1769
Land sold or rented out in past yr (acres)	3.53	22.33	1769
Christian village	0.744	0.437	1618

Note: (a) Conditional on having at least one non-resident child.

Table A2: Summary statistics (Sample used for "*Transfers to parents*")

	Mean	*Std. Dev.*	*Obs.*
Sent net transfers to parents[(a)]	0.348	0.476	2128
Income (ln)	11.66	1.16	2040
Durables	0.126	0.951	2128
Age	35.2	9.8	2128
Age squared	1335.4	795.5	2128
Education	7.683	6.144	2127
Cohabitation	0.882	0.322	1769
HH size	4.486	3.114	2128
# children 0-5 yrs	0.996	1.068	2128
# children 6-11 yrs	0.62	0.942	2128
# children 12-16 yrs	0.333	0.718	2128
# children >17 yrs	0.196	0.63	2128
Mother's education	0.599	2.41	2126
Father's education	2.354	4.988	2127
Urban	0.38	0.485	2128
Ga-Adangbe	0.078	0.268	2128
Ewe	0.173	0.378	2128
Akan	0.461	0.499	2128

Note: (a) Conditional on having at least one non-resident parent alive.

Table A3: Frequency in residence patterns

	No nephew	Nephew	Total
Full sample			
No non-resident child	1,301	42	1,343
Non-resident child	1,737	103	1,840
Total	3,038	145	3,183
Akan sample			
No non-resident child	616	15	631
Non-resident child	907	37	944
Total	1,523	52	1,575
Non-Akan sample			
No non-resident child	685	27	712
Non-resident child	829	66	895
Total	1,514	93	1,607