ECONSTOR

WWW.ECONSTOR.EU

Der Open-Access-Publikationsserver der ZBW – Leibniz-Informationszentrum Wirtschaft
The Open Access Publication Server of the ZBW – Leibniz Information Centre for Economics

de Laiglesia, Juan R.; Morrisson, Christian

Conference Paper

Household Structures and Savings: Evidence from Household Surveys

ZBW Leibniz-Informationszentrum Wirtschaft
Leibniz Information Centre for Economics

Mitglied der
Leibniz-Gemeinschaft

HOUSEHOLD STRUCTURES AND SAVINGS:
EVIDENCE FROM HOUSEHOLD SURVEYS

Juan R. de Laiglesia

Christian Morrisson

OECD Development Centre

January 2008

ACKNOWLEDGMENTS

ABSTRACT

This paper examines the relationship between household structures, the institutions that shape them and physical and human capital accumulation using household and individual data from China, Indonesia, Côte d'Ivoire and Ghana.

Household structures differ greatly across countries and are very diverse within countries. In the two African countries studied a large share of the population live in extended households and/or polygamous ones. Such household structures are the exception or even absent in the Asian cases, where nuclear monogamous households prevail.

This paper finds that polygamy is negatively related to capital accumulation. Wealth per capita is significantly lower in polygamous households even after controlling for income, age and literacy of the household head. A first analysis of the possible channels suggests that the larger size of polygamous households plays an important role. A similar result is found for education: enrolment rates are never higher but frequently lower in these households. The diversity across countries demonstrates that polygamy has very different meanings across societies.

Extended households are also examined. The analysis shows that those households that accommodate inactive members of the extended kin group are wealthier than other, comparable households. This result is consistent with accommodation of kin group members acting as a vehicle for solidarity that could also be regarded as a private "tax on success". The implicit transfers embedded in such mechanisms, including fostering, are very high compared to monetary and in-kind transfers and have often been overlooked in the analysis of social relations.

RÉSUMÉ

Ce document examine les relations entre les structures des ménages, les institutions qui les façonnent et l'accumulation de capital physique et humain, en utilisant des données par ménage et par individu en provenance de Chine, d'Indonésie, de Côte-d'Ivoire et du Ghana.

Les structures des ménages varient beaucoup d'un pays à l'autre et sont très diverses à l'intérieur même des pays. Dans les deux pays africains étudiés une partie importante de la population vit dans des ménages étendus et/ou polygames. De telles structures des ménages sont l'exception ou même absentes dans les pays d'Asie où le ménage nucléaire et monogame prédomine.

Ce document constate que la polygamie a une relation négative avec le processus d'accumulation de capital. La richesse par tête est significativement inférieure dans les ménages polygames même après avoir contrôlé par le revenu, l'âge et l'éducation du chef de ménage. Une première analyse des mécanismes possibles qui pourraient expliquer ces résultats suggère que la taille plus grande des ménages polygames joue un rôle important. On trouve un résultat semblable pour l'éducation : les taux de scolarisation ne sont jamais supérieurs mais souvent moins élevés dans ces ménages. La diversité selon les pays prouve que la polygamie a des significations très différentes selon les sociétés.

Les ménages étendus sont aussi étudiés dans ce document. L'analyse montre que les ménages qui accueillent des membres inactifs de leur groupe de parenté étendu sont plus riches que les autres ménages comparables. Ce résultat est cohérent avec l'idée que l'accueil de membres du groupe de parenté est un instrument de solidarité que l'on peut aussi considérer comme un « impôt privé » sur ceux qui ont réussi. Les transferts implicites liés à de tels mécanismes, y compris l'accueil d'enfants, sont très importants par rapport aux transferts monétaires ou en nature et ont été souvent négligés dans l'analyse des relations sociales.

Codes JEL : D12, J12, O12, O16, Z10.

Mots clés : structure des ménages, épargne, polygamie, accueil des enfants, famille d'accueil, Afrique, accumulation de capital.

I. INTRODUCTION

Much of the recent development literature has attributed the relatively slow growth performance of Sub-Saharan Africa, compared to the performance of — among others — Southeast Asia to the apparently low saving rates in the region. While there is a positive association of national savings and output growth at the macroeconomic level, the causality issue is far for settled (see Gutiérrez and Solimano, 2007). Moreover national savings data based on national accounts exhibit important shortcomings, as discussed in detail by Deaton (1990).

Household saving is an important topic in less developed countries because a large majority of population work in agriculture or in the urban informal sector and do not derive the full benefit of the investments financed by modern enterprises or the state. Moreover, relatively underdeveloped financial systems mean that accumulation is often the only way to acquire productive capital or wealth that can be passed on to future generations. Capital per active person and thereby productivity and wellbeing depend principally in this case on household savings.

There is furthermore indicative evidence of the relationship between household savings and household structures, understood to be the composition of the household and the relationships that link its members e.g. the type of marital union and the presence of extended family members. Until the post-war period, births out of wedlock and divorce in Western Europe were quite rare and as a consequence the percentage of single parent households (excluding widows) was also very low. Today these percentages are much higher and often a large majority of these households receive specific public assistance whereas individuals with similar characteristics could finance their consumption and even save when they were married or in a stable union.

Despite such examples, economists have not systematically undertaken an analysis of the relations between savings rates and household structures. It is easy to understand such oversight. Economists, like policy makers and the public generally, consider family life a private domain that commands respect.

Family and household structures are often considered to be of the realm of the private and are the result of the interaction of culture and changing social habits. Interventions in family life such as the one-child policy in China are often considered to be the purview of authoritarian regimes. But several governments have and do apply incentives in order to encourage couples and especially men to avoid conception if they are not determined to get married or take in charge their children. In these countries (Finland, Netherlands, Sweden, United-Kingdom) fathers are forced to pay pensions or to reimburse subsidies paid to mothers.

This example shows that, on the one hand, household structures can have an important impact on household savings and on the economic and social equilibrium, including public finance. On the other hand, while family and household life is often considered private, there is substantial intervention from the state, sometimes in the form of direct regulation (bans on polygamy for example), but most often in the form of fiscal or monetary incentives to influence the behaviour of men, women or both.

These considerations have led us to employ an institutional approach when studying the relationships between household structures and savings and to present some hypotheses concerning the impact of household structures and of kinship relations on savings.

Usually in the literature on household savings (Besley, 1995; Gersovitz, 1998) the authors refer in modelling household behaviour to the case of a nuclear household with two parents and their children. More precisely the traditional literature (Laitner, 1997) refers to archetypical household structures (two parents and their minor children) in Western Europe or North America. But over the last 40 years these structures have rapidly changed: for example the number of single parent households has increased tremendously. The traditional literature implies that we assume that households are always monogamous and rarely include persons who are not members of the nuclear family. Parents with their children constitute this sort of household. Exceptionally a grand-parent or another lineal dependent can live in such a household. On the other hand we assume that each person has very limited obligations and rights with respect to the family, especially outside the household. For example the parents have only some obligations towards their children before legal majority, and they have no obligation all toward other persons who belong to their kinship group.

Such an institutional framework is not pertinent in many developing countries because there are often other types of households, like extended or polygamous ones. On the other hand in some societies (for example as in Sub-Saharan Africa) each person belongs to a kinship group defined by filiation links. All members of the same group have some obligations and rights between themselves which are defined precisely according to the filiation link. For example an uncle has definite obligations and rights toward his nephew and the latter toward his uncle. Consequently, everyone must respect obligations to more than 50 or 100 members (Mahieu, 1990). Extended households result from such obligations to accommodate members of the kinship group.

A survey of the literature on household structures, transfers and savings in developing countries (Morrisson, 2006) allowed us to propose hypotheses on the impact of such institutions on household savings. The aim of this paper is to provide empirical support to some hypotheses. Three hypotheses are put forward with respect to household structures and saving behaviour.

Hypothesis 1: Extended households save less, on average, than nuclear households. Extended households often result from accommodating members of the kin group, including children of school age whose father or mother belongs to the kin group. It is hypothesised that savings per capita decrease as the ratio of inactive persons to the number of members of the household increases. Therefore, if extended households have indeed a greater share of inactive persons, average savings will be lower in extended households than in nuclear households because the average dependency ratio is higher in extended than in nuclear households.

Hypothesis 2: Polygamous households save less than monogamous households. Two reasons can explain lower average savings in polygamous households compared to monogamous households. The first is that savings in polygamous households are directed to less productive uses, therefore not contributing to increase future income and hence, future savings. As Tertilt (2005) explains, polygamy leads to rationing women by high bride-prices. As a consequence "buying" wives and "selling" daughters are good investments which crowd out investment in physical assets. At any given point of time, men have large stocks of liquid savings, which will be never invested but consumed by the wife's father. By a comparison between countries with high rates of polygamy and monogamous countries located in the same zone (close to the Equator) Tertilt (2005) shows that polygamy entails a large increase of fertility and an even larger decrease of savings and output per capita. Much of this behaviour therefore corresponds to unproductive saving, in the sense that it contributes less to future income growth than schooling or acquiring durable or capital goods. While liquid savings are accounted for in the remainder of the paper when the data is available, the imputed value of offspring or wives is not.

The second reason is that polygamous households have a higher ratio of inactive members to workers. This higher dependency ratio leads to lower disposable income, and in turn, lower savings. This second factor is linked to the scarcity of job opportunities in urban areas. In principle a supplementary working person would increase household income more than its size. But when self-employment or employment within the household is more difficult, it is impossible to augment household earnings in the same proportion as its size. On the contrary, in rural zones if there is a large supply of land, the farmer can increase his production in the same proportion as labour supply and can even benefit from scale economies. In towns the man who has several wives, because he was wealthy, must take in charge more than 15 or 20 persons if his wives do not work. As a consequence the income per capita is 3 to 4 times lower than the average income of a nuclear household with two children and the same husband's income. Polygamy is often justified in such cases as an efficient practice which redistributes income and avoids income and wealth inequalities, according to public opinion in Sub-Saharan Africa (Platteau, 2000, Morrisson, 2006).

Hypothesis 3: Single parent households save less than nuclear households with two parents. The majority of single parent households are mothers who live alone with their children. These households have a higher dependency ratio and therefore, less ability to save. Of course we exclude from this group the single parent households where the husband is away or abroad and sends remittances or where the divorced woman receives child support or maintenance allowances from the father of the children.

Transfers within the kinship group play a key role in the mechanisms presented above. We can present two opposite hypotheses: one channel through which transfers favour savings, another one which has a negative impact on them. The first —positive— channel considers that altruistic transfers inside households to the benefit of children promote the accumulation of human capital and the access to financial or physical capital because often young members of the household would not have been able to borrow. Other transfers between households of the same kinship group can also have a positive impact if each right entails an obligation. If a farmer must accommodate a nephew who is an orphan and if this transfer is linked to the obligation that this

young man must work in the farm, there is no negative incidence on savings. Moreover this aid avoids the extreme poverty of orphans in countries where no public assistance exists.

On the contrary in our second hypothesis, transfers that are dictated by custom have a negative impact on capital accumulation when rights to transfers within a kinship group are not linked to obligations. Often heads of household in Sub-Saharan Africa who are civil servants or successful in business must accommodate members of their kinship group who lived before in the village of origin. These persons have been documented to refuse jobs and have opportunist behaviour: they are supported to do nothing. Such forced transfers discourage dynamic people to work more, to save and invest.

This paper has two goals: presenting an in-depth description of household structures in selected countries and analyzing the links between household structures and physical and human capital accumulation at the household level. For that purpose, it uses household level data from four different countries, two from West Africa and two from East Asia. Therefore, it relies on three different sources of variation: *i)* comparisons between polygamous and monogamous households; *ii)* comparisons between extended and nuclear households and *iii)* cross-country variation and especially the comparison of West African and East Asian societies. In what follows, *i)* and *ii)* — that is comparisons between households with different structures within the same country — provide the variation that is used for statistical inference. Cross-country comparisons, on the other hand, help underline how similar structures can result from very different family institutions in different societies and how these have varying implications for saving behaviour.

The paper proceeds as follows: Section II describes the data used, the measurement and categorisation of household structures and the issues that are raised by the methodology used. Section III analyses, household structures in four countries: China, Indonesia, Côte d'Ivoire and Ghana. These structures are as different from one country to the other as from those in Europe or North America. Section IV analyses the links between these structures and capital accumulation. More precisely it examines empirically some hypotheses presented above. The results of this research will allow presenting recommendations in section V to improve development policies by taking into account the specificities of household institutions.

II. DATA SOURCES AND MEASUREMENT ISSUES

We use microeconomic data in order to identify household structures. The multi-purpose survey data we use have the advantage of allowing comparisons between households exhibiting different structures within the same economic environment. We use household survey data from two West African countries (Ghana and Cote d'Ivoire) and two East Asian countries (China and Indonesia). Both West Africa and East Asia exhibit family institutions that are markedly different from each other and from the nuclear family that is assumed by standard economic theory. Within each region, the countries were chosen on the basis of the availability of comparable survey instruments that include data on household composition, inter-household transfers and asset holdings.

Datasets

The Ghanaian dataset is the fourth round Ghana Living Standards Survey (hereafter GLSS-4) carried out in 1998/1999. The Ivorian dataset is the 1987 cross-section of the Côte d'Ivoire Living Standards Survey — also known by its French acronym EPAM (*Enquête Permanente auprès des Ménages* — (hereafter CILSS-3). For China, we use the China Living Standards Survey (1995-1997), which covers the provinces of Heibei and Liaoning in North-eastern China (hereafter CLSS). Finally, for Indonesia, we use the first round of the Indonesian Family Life Survey (1993), hereafter referred to as IFLS-1)

The first three are World Bank Livings Standards Measurement Survey (LSMS) datasets, which guarantees a certain degree of comparability in questionnaire design. The IFLS-1 dataset is the first wave of a multi-purpose panel dataset managed by the Rand Corporation (see Frankenberg and Karoly [1993] for details). The household questionnaire therein, complemented by the individual questionnaire completed by the head of household, provides the necessary data in most cases.

All surveys are multi-stage stratified sample surveys. Both GLSS-4 and CILSS-3 are representative at the country level and IFLS-1 is representative of 13 of Indonesia's 27 provinces, covering 83 per cent of the population. The CLSS is not based on a random sample of the concerned provinces but is built to represent variation within six selected rural counties (three in each of the two selected provinces).

Definitions and measurement

Households are classified as per their structure as a function of the information gathered about members of the household. The classification is done on two dimensions: the presence in the household of collateral kin of the household head and the presence of polygamous families. The remainder of this section discusses how classifications used for families (nuclear and

polygamous) are adapted to households. It also highlights ways in which the classification used in this paper may differ from other interpretations of the demographic literature.

Figure 1 presents canonical structures of household types based on average characteristics observed in the data for each family type and highlighting possible problem cases. Triangles represent males and circles females. While the definitions are gender neutral, actual family structures are not. In particular, the household head (represented as a filled triangle) is usually the oldest adult male. Dotted triangles and circles represent individuals whose belonging to the household would not change the typology, while grey symbols represent family members who are not members of the household. Finally, dotted lines are family ties that will usually not be observable in the data. For example, a second-degree nephew of the household head such as the one in Panel C will usually be classified as "other relative" in survey data.

Figure 1: **Canonical cases of household types**

Panel A
Nuclear monogamous household

Panel B
Nuclear polygamous household

Panel C
Extended monogamous household

Panel D
Extended polygamous household
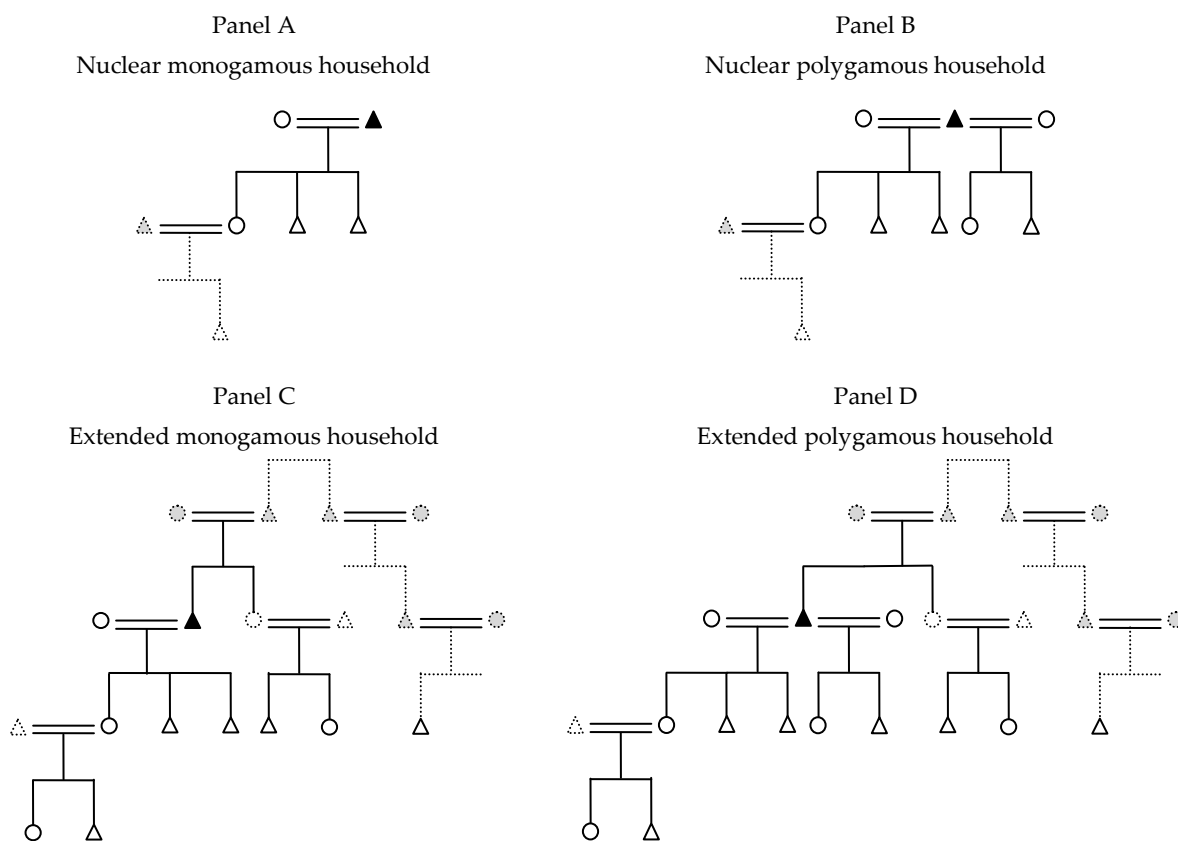
For the purpose of this paper, extended households are those that include collateral kin of the household head. A family is typically deemed nuclear if it only contains individuals linked by direct filiation or marital relationships. A nuclear household, in the strict sense, would therefore be one that comprises exclusively two or more adults in a monogamous or polygamous union and their children. We choose to classify as nuclear those households that comprise only one couple or polygamous union but that also include other linear dependants (typically grand-parents or grand-children). Therefore, the household in Panel A is still considered to be nuclear if

the grandson (the bottom individual) is in the household. A family is deemed extended, as opposed to nuclear, if it includes two or more unions of adults (monogamous or polygamous), it can therefore be seen as a union of nuclear families (Murdock, 1949). With the same example (Panel A), the household would be considered extended if the greyed out male on the far left lived in the household.

The nuclear family of the household head is: his/her partner(s) and children or, if there are no partners or children, the nuclear family of his/her parents. We refer to individuals who are not members of this nuclear family as "collateral kin"[1]. When they are also dependants, in the sense that they have no employment within or outside the household, they are labelled additional dependants (implying additional to members of the household).

Within extended families, two further family structures are worth noting. A stem family is one comprised of two nuclear families with a direct filiation link (that is a union and the parents of one of the spouses). Given the focus of this paper on the obligations with respect to the wider kin network, we choose to classify these as nuclear families whenever there is no collateral kin of the household head[2]. On the other hand, households comprising a nuclear family and collinear dependants, which could be classified as nuclear according to Murdock's (1949) definition, are classified as extended. Many of the collinear dependants are nephews of the household head as presented in Panels C and D, often without their parents living in the same household. This particular structure results from child fostering practices.

This definition leaves some ambiguity about the treatment of mono-parental households or indeed those households headed by an adult who is not in a union. We choose to classify them separately and label them "single adult" households[3] for the purposes of this paper. Preliminary evidence shows that there is a wide variety of family structures that correspond to household structures headed by a single adult. These include widowhood but also polygamous or monogamous families with separate residence. The data available do not consistently allow discrimination across categories. An attempt to analyse the differences in behaviour between these households is nevertheless made in the paper.

In all cases, the classification of families into one of the two structures ignores individuals who are not members of the household (usually defined by the survey as not having lived in the household dwelling in more than nine of the past twelve months) or who are not related to the household by family ties (this excludes a very small amount of observations).

Our main interest is on the social obligation of households to house members of the kin group. For this reason we concentrate on individuals who are not members of the nuclear family of the household head.

---

1. This is a slight abuse of language: siblings of the household head are not considered "collateral kin" in our sense if the household head's nuclear family is his family of orientation. They are if it is the household head's family of procreation.

2. This leads to changing the classification of only a handful of households in the two African countries (adding up to less than 0.5% of households in each), 2% of households in the Indonesian sample and 9% in the Chinese sample.

3. This does not assume that the household head is single, but reflects the fact that there is only one adult in his or her nuclear household as defined above.

Households are also classified into three categories according to whether they comprise monogamous or polygamous unions. A household is classified as polygamous if it comprises at least one co-resident polygamous union (in the great majority of cases (95%) the man in that union is the household head). It is monogamous if the household head is in a monogamous union and a single adult household if the household head's spouse or partner is not a member of the household, is permanently absent[4] or if the household head has no partner.

This classification raises two measurement issues. The first is that marital status information is typically absent for absent spouses. This has two consequences: households where the man in a nuclear family has other non co-resident wives will be classified as monogamous[5] and households where the head's spouse is missing will be classified as mono-parental regardless of whether the spouse has left, is a migrant or lives in another family (be it his own or his parents'). The second issue is that the designation of the household head used in the data collection process can be somewhat arbitrary and is in any case influenced by cultural practices. While in the case of polygamous families, there is seldom much ambiguity, this means that a household comprised of a couple and one parent of one of the spouses could potentially be classified as mono-parental (if the parent is the head) or not (if the spouse in the union is the head). For this reason, households where the head's spouse is absent but that contain one couple with a direct filiation link to the head are not deemed single adult, but rather classified as monogamous or polygamous and nuclear or extended as if the household head were in the family containing the couple in the household.

To summarise, we classify households in two dimensions:

– The first is based on the number of adults linked by conjugal relationship to the head of household (none, one or more), which implies three types of households: single adult, monogamous and polygamous

– The second is linked to the distinction between nuclear households and extended households, which include persons who are not members of the nuclear family of the household head. We apply this distinction only to monogamous and polygamous households, and we obtain these three categories: nuclear, extended and single adult households.

.

---

4. It is common practice in household surveys to automatically assign "member" status to the putative household head or the head's spouse even when they are away, hence the distinction.

5. IFLS-1 does ask of each selected adult (including all heads of household and their spouses) whether they are polygamous. We therefore include a non co-resident polygamous category in this case.

III. THE DEMOGRAPHIC AND ECONOMIC FEATURES OF HOUSEHOLDS

Demographic aspects

Distribution of household types and prevalence

Table A1 (in the appendix) shows the distribution of households according to household category. There are always three items amounting to 100 per cent for all households, the sum of the shares of extended, nuclear and single adult households or that of monogamous, polygamous and single adult households add up to 100 per cent. As in Indonesia in the majority of polygamous households the husband and his wives do not live together and since the survey provide data on polygamy even when co-wives do not live in the same dwelling, we distinguish between two types of polygamous households in this country. Even only with four countries we observe a large diversity of household structures.

Even Côte d'Ivoire and Ghana, which are neighbouring countries, and display many common cultural features, are not at all similar. We find in Côte d'Ivoire the highest percentage of extended households versus nuclear ones, of polygamous versus monogamous ones. If we consider only monogamous and polygamous households, the percentage of polygamous ones reaches nearly 30 per cent. In Ghana the share of extended households and that of polygamous households are much lower than in Côte d'Ivoire. But the percentage of single adult households is around the double of the Ivorian figure. This importance of single adult households results from specific traditions: often the wives of polygamous men live alone with their children. So these wives fall into the single adult category. But other women with children have been left by their husband (or partner) and they live actually alone. As no statistics on polygamy without common residence are available, we can only say that the percentage of polygamous households (including without co-residence) is surely higher and the percentage of single adult households (excluding polygamy) lower[6].

In Indonesia the weight of polygamy is very low, only 2 per cent, and many polygamous households are not co-resident. The percentage of extended households in rural regions is similar to that in Ghana, but half that in Côte d'Ivoire. Finally we observe in China the dominance of

---

6. This assumption is based on Cogneau *et al.*'s (2006) analysis of polygamy in the zone near the border between Côte d'Ivoire and Ghana. They use the Demographic and Health Surveys which measured polygamy at the beginning of the 1990s. The share of women in this zone who are married (with or without co-residence) to a polygamous man, was around 30% in rural Ghana against 40% in Côte d'Ivoire, a difference much less important that the gap suggested by our data on monoparental households.

nuclear household. Polygamy does not exist and there are very few extended or single adult households. China is thus the opposite case of Côte d'Ivoire.

If we compare the four countries, it is clear that the importance of extended households and of polygamous ones decreases steadily from Côte d'Ivoire to Ghana, then to Indonesia and finally to China, where polygamy does not exist and where the nuclear model largely prevails. This sample of four countries provides a large variety of household structures.

The relation between the distribution of households (Table A1) and that of population (Table 1) is explained by the average household size given in Table A1. The same gap, 1 to 1.7, between polygamous and monogamous is observed in Côte d'Ivoire and Ghana. This gap cannot be compared with the gap in Indonesia where nearly all polygamous households are not co-resident and where polygamy was tolerated but at the same time discouraged by the state until recently.

The gap between extended and nuclear households' size is the same in Côte d'Ivoire as that between monogamous and polygamous households. It is lower, 1 to 1.5, in Ghana as well as in Indonesia. The average size of extended households is also lower (7 instead of 9.6 in Côte d'Ivoire).

Finally, Table A1 shows that the size of single adult households is nearly constant across countries, around 3 to 3.3. This figure means that the percentage of adults who live alone as widows or widowers, is relatively low. Most often the household includes children and/or collateral kin.

<center>Table 1: Distribution of the population according to household type</center>

		Extended	Nuclear	Monogamous	Polygamous		Single adult
Cote d'Ivoire							
	Urban	53%	31%	62%	21%		16%
	Rural	43%	50%	48%	44%		8%
	All	47%	42%	54%	35%		11%
Ghana							
	Urban	18%	45%	60%	3.0%		37%
	Rural	17%	54%	63%	7.9%		29%
	All	17%	51%	62%	6.3%		31%
Indonesia					-- co-resident	-- not co-resident	
	Urban	28%	60%	86%	0.1%	2.2%	12%
	Rural	21%	68%	87%	0.1%	2.2%	11%
	Total	23%	65%	86%	0.1%	2.2%	11%
China							
	Rural	8%	89%	96%	0.0%		4%

Notes: (1) Data on non-coresident spouses of polygamous men is only available for IFLS data

       (2) Household members who are family members only.

Table 1, which gives the percentages of individuals by household type, results from these differences in size. These percentages are the most interesting figures because they reveal the distribution of total population across categories of households.

In Côte d'Ivoire the percentage of population living in extended households exceeds that in nuclear households and in rural zones, the percentage of population in polygamous households is nearly as high as the percentage in monogamous households. In Ghana and Indonesia the nuclear household (or the monogamous household) remains the dominant type, but there is a large difference between the two countries. With 51 per cent in nuclear households (instead of 65 per cent in Indonesia), and 62 per cent in monogamous ones (instead of 86 per cent), Ghana appears nearer to Côte d'Ivoire than to Indonesia. Finally in China, an increase of the share of extended household does not change our conclusion on the dominance of nuclear households.

Though polygamy exists in Indonesia, the situation is completely different from that of African countries. Polygamy is marginal in Indonesia (2 per cent of the population) and inexistent in China, whereas more than 1/3 of Ivorians live in a polygamous household. In Ghana it appears less important, around 6 per cent. But this figure underestimates the importance of polygamy because several single adult households are in fact polygamous ones without co-residence as in Indonesia.

If we consider extended, nuclear and single adult households, the share of population in extended households is very high in Côte d'Ivoire where it amounts to nearly 50 per cent. This percentage is around 20 per cent in Ghana and Indonesia, and limited to less than 8 per cent in China. So it is clear that because a large part of households among extended ones must support family members (*i.e.* persons of the same kinship who are not members of the nuclear household and who are not working), this tradition represents a significant burden in Côte d'Ivoire, whereas it is a limited or marginal one in the other countries.

Similarly polygamy is important only in Côte d'Ivoire. In this respect this country and China represent two opposite archetypes of household structures.

Extended households and collateral kin

Table A2 provides a detailed picture of collateral kin ("non-members" of the nuclear household) in extended households. Such information allows us to estimate the dependency ratios which represent the share of inactive persons in population. We have chosen two dependency ratios. The first concerns all members of the households: inactive persons/total number of persons. The second considers only collateral kin in the households; it is defined as inactive collateral kin/total number of collateral kin.

As the percentages of inactive and active persons are very different in rural and urban regions, we must consider the regional data. In Côte d'Ivoire (Table 2), the percentage of inactive persons among collateral kin is very high in urban zones, whereas it is not the case in rural zones. The consequences are completely different. In rural zones, as the percentages of working persons are the same among members and non-members of the nuclear household, we can think that the tradition of supporting non-members has no incidence on average income or savings per capita. On the contrary, in towns, non-members for the most part represent a burden. If we exclude all young children (less than 12 years old), more than 50 per cent of members work in

urban areas, compared to 20 per cent among non-members (see Table A2 for details). The comparison between the two specific groups of non-members: those working and those neither working nor schooled, is very significant: in rural zones, there is one inactive for every four working persons, in towns one inactive for 0.4 working persons. The persons of this last urban group are supported by the head of household and often exhibit opportunist behaviour (cf. supra). We observe the same behaviour in single adult households. Excluding young children, 64 per cent of members work instead of 37 per cent of non-members.

Table 2: **Proportion of inactive members of the household in extended households**

		Among members	Among non-members (collateral kin)
Côte d'Ivoire	Rural	57%	57%
	Urban	71%	86%
Ghana	Rural	57%	72%
	Urban	63%	84%

We find the same contrast between rural and urban zones in Ghana (Table 2): the percentage of inactive persons among non-members is much higher in towns. As in Côte d'Ivoire an idle group of non-members constitutes in urban zones a burden for the extended households.

In Indonesia, a contrast with African countries appears. There is not a large group of non-members in towns supported to remain inactive. Among non-members, the percentage of people neither working nor schooled is the same in towns and in rural zones. The percentages of persons working among non-members are also similar. On the other hand the percentage of working persons (excluding young children and working and schooled persons) among members or non-members is in rural zones as in towns higher among non-members. We can conclude that on the whole the behaviour of non-members is the same in rural and urban zones and that it is not significantly different from members' behaviour. Consequently the presence of non-members in extended households does not entail any burden relatively to nuclear households. Two reasons could explain such results: firstly, there are much more job opportunities in Indonesian towns than in Ivorian and Ghanaian towns; and/or secondly in Indonesia rights to aid within a kinship group are strictly linked to obligations, which is not the case in the two African countries.

In rural China, there are nearly no children among non-members (1 per cent of extended households' population). A majority of adult collateral kin are working (60 per cent instead of 40 per cent neither working nor schooled). This percentage is nearly the same in rural Indonesia: 50 per cent. So we have the same neutral impact of non-members on extended households' income per capita.

The tradition of child fostering is frequent in Côte d'Ivoire: 27 per cent of all children in extended households are non-members. Among single adult households it is even more: 31 per cent of all children. The importance of fostering in Côte d'Ivoire is confirmed by these figures: nearly 60 per cent of the Ivorian population live in extended or single adult households, where

children of other parents stand for a quarter to a third of all children taken in charge by these households.

Fostering is less developed in Ghana (19 per cent of children in extended households are non-members) and in Indonesia (12 per cent) where there are far fewer extended households than in African countries. Finally in China, fostering is an exception: 4 per cent of all children in extended households are not the head of household's children and of course none are found in the nuclear households, which are the large majority.

The analysis of collateral kin in extended households and the assessment of the importance of inactive adults among non-members and that of fostering shows that children fostering and opportunist behaviour are important only in Côte d'Ivoire. We can ignore these phenomena in China. They exist in Ghana, but they are less important and in Indonesia they are unimportant.

Single adult households

The last demographic aspect concerns single adult households. This category of households raises complex problems because it is a very heterogeneous one: data limitations lead to classifying in the same group several sub-groups of households which are in effect completely different. Usually, but not always, the head of household is a woman who lives either alone, with her children and/or with collateral kin (not members of the nuclear household).

The most favourable situation is the case of absent partner because often this partner makes transfers (he has left the household in order to earn more as in the case of the peasant who migrates into a town). Yet we cannot assume that all spouses who went away are migrants and that all migrants send remittances. Without data on remittances we cannot conclude about the incidence of a spouse's being away. With these remittances, the head of household can have the same income per capita, or more, than a monogamous household, in particular if women manage the household's budget better than men would have.

The case of divorced or separated women (we can join the two items, especially considering the large gray area joining informal unions and marriage in West Africa) is ambiguous. Often these women must take in charge their children completely and divorce entails impoverishment. But the father of the children can — willingly or by law — provide some assistance. On the other hand such assistance is very frequent if the single adult household belongs in fact to a polygamous household without co-residence. In this case the resources are the same as if the husband lived in the same house. In Indonesia this case is classified with polygamous households, but in Ghana these households are considered single adult due to data limitations. So we can make the hypothesis that in Ghana some lone women are actually part of a family and receive aid.

The situation of widows is not ambiguous. As these women are much older and more often illiterate than other women, they earn less. Moreover in these countries the wage or income gap between men and women is much more important than in developed countries. As a consequence of these two effects, we can make the hypothesis that these single adult households are poorer than other household headed by a single adult.

This comparison between single adult households leads to the conclusion that data by sub-category are necessary in order to analyse the relations between household structures and expenditures or savings per capita.

Table A3 provides the percentages of single adult households among all households and the distribution of single adult households by sub-category. Ghana appears as an exception with percentages reaching 40 to 50 per cent. In other countries, these percentages are much lower, around 20-30 per cent. China is the opposite example to Ghana with only 3.2 per cent of single adult households in rural zones. On average in other countries, the percentages are higher in towns: the main factor which explains this difference is a higher percentage of never married women in towns (compared to rural zones). Such a difference is not surprising: in rural zones there is a very strong pressure in favour of marriage from parents, girls are married very early (often before they are 20 years old), and young women have few opportunities to find a job providing an independent income (moreover the enrolment rates in school are much lower than in towns and in some regions the majority is illiterate).

In all countries considered, the percentages of widows are high, particularly in rural zones: 34 per cent to 60 per cent of single adult households, except in Ghana, but in this country the bias discussed above is likely to lead to overestimating the total number of single adult households.

The percentages of single adult households where the spouse of the head of household is away are also important: between 20 per cent and 30 per cent in rural as in urban regions. Finally the percentages of divorced or separated women vary from zero in China to the maximum, around 30 per cent in Ghana.

Excluding the Ghanaian exception, we can summarise the situation of single adult households in the other countries. The case of China is simple: there are very few single adult households and these households are distributed rather evenly between three sub-groups: widows, the most frequent, spouse away and never married. In Côte d'Ivoire and Indonesia the percentages of single adult households are much higher, around 20 to 25 per cent, with more widows in Indonesia, more women never married and more with a spouse who is away in Côte d'Ivoire. A priori the situation of single adult households is less favourable in Indonesia because the majority are widows. But we must take into account the burden of non working non-members. The proportion of single adult households which support such non-members is very low in China as in Indonesia. It is similar in rural Côte d'Ivoire, but not in towns where it reaches 36 per cent. Such a percentage means a less favourable situation for many urban single adult households in Côte d'Ivoire than in Indonesia.

The situation of single adult households in Ghana appears as an exception for several reasons. The first is the weight of these households, around 50 per cent of all households. The second is the importance of two sub-groups: divorced/separated and spouse away; indeed the sum reaches 60 per cent of all single adult households instead of a third in other countries. There is a further specificity: the high percentage of male headed households which reaches a third of single adult households in rural zones. We can imagine that those households suffer fewer disadvantages since men have frequently much higher income than women. On the other hand, the situation of one's spouse being away entails also, if the women receive remittances, less

disadvantages. Among all single adult households in Ghana, the sum of these two groups (male headed, spouse away) reaches about 50 per cent. So at the same time the number of single adult households is much higher and the situation of a large part of this population seems more favourable than in other countries

Household structures and living standards

Table 3 presents data on expenditure per capita across household types. In order to take into account economies of scale while applying the same methodology for all countries, we use the Oxford adult equivalence scale[7]. The comparison between expenditure per capita in nuclear and extended households does not lead to simple conclusions. In Indonesian towns the percentage of working persons among non-members is the same that among members. This situation explains nearly identical expenditures per capita in extended and nuclear households. In rural Indonesia as in rural China, the dependency ratio is the same in these two categories of households, but the land/labour ratio is higher in households who must receive non-members because they cannot increase the size of the farm in proportion with the household size (around 60 per cent higher). The consequence is a significant gap in expenditure per capita (it is 19 per cent lower in Indonesia, 10 per cent lower in China) in extended households.

The situation is the opposite in Côte d'Ivoire and Ghana: in rural zones, expenditure per capita is similar. In these countries, the percentage of working persons is the same among non-members and members and often, though not always, the head of household can increase the cultivated area which avoids a large decrease of the land to labour ratio.

In urban areas also we find estimates of expenditure per capita which are nearly similar (9 per cent higher in Côte d'Ivoire and 8 per cent lower in Ghana with two statistically non significant gaps). As in these countries the dependency ratio in towns is much higher in extended households than in nuclear households, we might expect a large gap rather than these figures. Table 3 gives data on expenditure per capita in urban extended households who accommodate persons who do not work and in households who take in working persons. In the latter case, the households do not support any charge because the non-members are working. Expenditure per capita in households who receive dependent persons is much higher than expenditure per capita in households who receive working persons: 49 per cent higher in Côte d'Ivoire and 26 per cent higher in Ghana. These results mean that those households, which support the double burden of children fostering and idle adults, have on average much higher living standards than other extended or nuclear households. It is because of their higher income levels that they are called upon to take in kin**.** In some respects, this double burden represents a private tax levied on richer households by members of their kinship group.

---

7. The first adult carries a weight of 1, subsequent adults have a weight of 0.7 and members of the household under 16, have a weight of 0.5

Table 3: **Expenditure per capita, by household structure**

Expenditure per capita, Oxford adult equivalence scale
(in thousand local currency units for Cote d'Ivoire, Ghana and Indonesia, in yuan for China)

| | Panel A | | | | | |
| | | | | Extended | | Difference |
	Nuclear	Extended		-- without extra dependants	-- with extra dependants	between extended	vs nuclear
Côte d'Ivoire							
Rural	217	223	(0.50)	195	238	(3.00)	(1.24)
Urban	489	534	(1.12)	376	559	(2.86)	(1.50)
All	303	379	(3.21)	245	422	(4.81)	(4.00)
Ghana							
Rural	1 334	1 336	(0.02)	1 238	1 411	(1.87)	(0.60)
Urban	2 270	2 101	(1.37)	1 791	2 254	(1.75)	(0.12)
All	1 622	1 608	(0.18)	1 403	1 742	(2.75)	(1.14)
China							
All (rural)	3 312	3 002	(1.28)	2 826	3 273	(0.91)	(0.18)
Indonesia							
Rural	979	794	(4.41)	772	833	(1.09)	(2.79)
Urban	1 656	1 621	(0.34)	1 468	1 828	(2.11)	(1.32)
All	1 193	1 145	(0.88)	1 048	1 299	(2.97)	(1.43)

| | Panel B | | | | | Panel C | |
	Monogamous	Polygamous				Single adult	Average
Côte d'Ivoire							
Rural	226	205	(2.25)			247	224
Urban	553	319	(4.61)			545	522
All	373	233	(5.01)			405	351
Ghana							
Rural	1 353	1 085	(2.83)			1 683	1 479
Urban	2 257	1 377	(4.72)			2 742	2 503
All	1 649	1 130	(5.78)			2 134	1 855
China							
All (rural)	n/a	n/a				2 661	3 276
Indonesia		co-resident		--not co-resident			
Rural	949	917	(0.19)	928	(0.23)	891	938
Urban	1 657	854	(4.10)	1 307	(2.50)	1 966	1 709
All	1 187	903	(2.04)	1 051	(1.69)	1 283	1 202

Note: Absolute value of t-statistic of test of difference equal zero in parentheses

The comparison between monogamous and polygamous households gives clear results: the average expenditure per capita in polygamous households is significantly lower in rural and urban Côte d'Ivoire and Ghana, as in urban Indonesia (in towns of Côte d'Ivoire and Ghana the

average expenditure per capita is cut by 40 per cent). In rural Indonesia the two categories of households have the same average expenditure per capita.

In African countries these results can be explained by several factors. In towns, because job opportunities are scarce, the percentage of adults working in the household can decrease if the husband has many wives. In order to "buy" a second (or third) wife, he must accumulate money instead of investing in a business or buying a house. Such form of saving leads to the accumulation of present liquid resources at the expense of lower future income growth, and hence, on average, lower future capital accumulation. After the second marriage, the size of the household can double in a few years while the husband's (and household) income remains constant. As a consequence, expenditure per capita expenditure per capita in towns is much higher in monogamous households. The gap is much smaller in rural zones (around 10 to 20 per cent) because the second (or third) wife can work if land is available. But such extension is not possible in some cases, and moreover the productivity of additional household members may not be as high.

In Indonesia, polygamy with co-residence is very scarce (0.1 per cent of all households). In rural zone expenditure per capita expenditure per capita is the same in polygamous households (with or without co-residence) and in monogamous ones. In towns expenditure per capita expenditure per capita of polygamous households (not co-resident) is inferior (-21 per cent) to expenditure per capita in monogamous ones. The situation of non co-resident households in Indonesia is thus rather favourable since there is no gap or a moderate one with monogamous households. In the absence of co-residence, the second wife lives like the head of a single adult household and receives aid from her husband. On the other hand, there are perhaps more job opportunities in towns than in African countries and the birth rates are much lower (the total fertility rate is less than 50 per cent of the rates in African countries; [UNDP, 2005]). The differences between these women-headed households and polygamous ones in Africa, can explain such results.

The data for single adult households (Table A4) must be analysed cautiously because this group includes very different situations.

First, in all countries expenditure per capita in households without non-members (i.e. in nuclear single adult households) exceeds expenditure per capita in households with non-members. The difference is very important in Côte d'Ivoire and in Ghana. Such results are the opposite in urban zone, of results concerning extended households (monogamous or polygamous). The burden of fostering or idle non-members happens by accident in single adult households (a poor woman must take in charge nephews who have lost their parents), but it is not at all related to a redistribution process as it is for extended households which are monogamous or polygamous.

Secondly, in all countries, expenditure per capita of widows is below the average and very often is the lowest. These women are older than other women, they have lost their husband, and in some cases the sons inherited landed property, as in Kenya (Morrisson, 2004). They suffer discrimination in labour markets and nearly all are illiterate because the enrolment rates of girls 40 or 50 years ago were very low.

At the opposite end, we find households where the head's spouse or partner is away, which are nearly always above the average expenditure per capita. This result confirms the conclusion reached by Appleton (1996): female-headed households in Uganda whose spouse is away have the same or higher living standards than monogamous households. In some respect, we could consider from an analytical standpoint these households as monogamous without co-residence, because often the husband has left the household in order to earn more. If at the same time, his wife manages the budget well, she combines higher total income with this advantage. Of course these remarks remain valid only if the husband sends remittances, which these data cannot confirm.

The costs of divorce (or separation) are made clear by the comparison between households with spouse away and the divorced ones. In Côte d'Ivoire, Ghana and Indonesia, expenditure per capita of these households is much lower (with an exception in rural zone of Côte d'Ivoire). This is not at all surprising, since these women receive neither remittances nor child support allowances. Cases where civil courts impose such allowances to the father and where he complies with this decision are exceptional.

Household transfers

Households transfers are important given that they are estimated to amount to between 5 and 10 per cent of total income in the African countries studied (Morrisson 2006). Table A5 gives the percentage of households who make transfers. The figures in Côte d'Ivoire, 53 per cent in rural, 62 per cent in urban regions confirm those of Mahieu (1990): 50 per cent for all households and 55 per cent in towns. The percentages are nearly the same in Ghana, if we exclude gifts, but much higher if, as in Côte d'Ivoire, we include these items (77 per cent and 79 per cent, respectively).

These transfers are not limited to African countries since the percentage of households giving transfers is much higher in Indonesia (around 80 per cent). But in China, it is the opposite: one third instead of more than one half in the two African countries. The data permit an analysis of household transfers among the five quintiles (distribution of households according to expenditure per capita). On average, the percentage of households giving transfers increases from 25-30 per cent (1st or poorer quintile) to 50-75 per cent (top or wealthier quintile) in Côte d'Ivoire and Ghana. The variations are even more pronounced in China. But in Indonesia there is nearly no variation: even among the poor households of the 1st quintile, 70 per cent give transfers.

The most surprising result is the absence of variation among households receiving transfers. In the four countries, in rural as in urban regions, the percentages of households receiving transfers are nearly the same in any quintile (there is even a net increase correlated with income in towns of Côte d'Ivoire). Such a paradox proves that transfers must be analysed with caution. It is not, in the first instance, a means of redistribution from rich to poor households who need aid. Transfers are firstly an important element in social relations and institutions, a symbol of exchange between persons and households linked by filiation or family links and redistribution is only an aspect among others.

The importance of transfers (Tables A5 and A6) explains the situation of single adult households. We can compare the weight of transfers between nuclear and single adult

households with an indicator. The most simple is transfers per capita (excluding zero transfers) received as a percentage of average expenditure per capita. This percentage is much higher for single adult households. In rural and urban Côte d'Ivoire, it reaches 20 per cent instead of 5 to 11 per cent for nuclear households. In rural Ghana this percentage reaches 16 per cent versus 7 per cent. It is in urban regions that the gap is highest: 30 per cent for single adult households instead of 12 per cent. In rural Indonesia, the transfers received by single adult households amount to 31 per cent of their expenditures per capita instead of 14 per cent for nuclear households. Finally in China it is nearly double (11 per cent instead of 6 per cent). Such incoming transfers reaching between 20 per cent and 30 per cent have an important impact on the living standards of single adult households, whereas other transfers have a much less significant impact because they are frequently below 10 per cent.

If we take into account such transfers, the single adult household, except in China, can in some cases reach a higher consumption level than the nuclear or monogamous household in spite of lower incomes.

IV. HOUSEHOLD STRUCTURES, SAVINGS AND INVESTMENT

Household structures and physical capital accumulation

In countries where the majority of population is rural, where a large part of agricultural production is meant for own consumption, where the informal sector and the proportion of self employed are large, household survey income data is typically not very accurate whereas the quality of expenditure data is more satisfactory. Estimating current saving rates from cross-sectional data on income and expenditure leads to very noisy measures. It is therefore more reasonable to rely on data on asset ownership[8].

The use of asset ownership represents accumulated savings and has the added advantage of being less sensitive to transient shocks to income or expenditure than instantaneous measures of savings. Because the main relationships examined in this paper are between relatively stable family institutions and structures and savings, cancelling out short term shocks reduces the noise in the relationship of interest. In the countries considered, holdings of financial assets or formal savings are very low and only concern a minority of households, we therefore utilise the range of assets for which valuations are provided in the data. The surveys provide data on agricultural capital, land, livestock, non-agricultural capital, financial assets, housing and durable goods. All data used are self reported values of assets. For this reason, we exclude land for rural China, as the question was not asked in the survey. Table 4 reports total assets per capita for each category of household as described. Table A7 reports the composition of assets across asset types for each category of household.

Rural and urban households are separated throughout because the forms of investment and possibly economic activity are very different in the two contexts. Whenever data is available, the value of housing represents the largest lion's share of household wealth. In rural areas, it is followed by farmland and then by livestock. In urban Côte d'Ivoire and Indonesia, the dominant asset is housing, which alone amounts to 75 to 90 per cent of total wealth. The decomposition of wealth per item is different in urban Ghana: housing remains the main asset but represents only between 30 per cent and 50 per cent of total wealth. This difference with other countries is balanced by higher percentages for durables and non-agricultural capital.

Only in China does the value of financial assets constitute a large share of the asset portfolio. This is due in part to the absence of data on farmland, but it is remarkable nevertheless that financial assets held are worth, on average, about half as much as housing, while in the other samples examined, their net worth is over ten times smaller. As a consequence, the differences of

---

8.   See among others Aryeetey and Udry (2000) for similar approaches.

wealth per capita between households are determined by the variations in land and housing values in the three other countries.

Average expenditure per capita in single adult households is higher than for other types of households in almost all the samples. This is also true for per capita wealth, although differences are not always statistically significant at conventional levels. However, a finer classification of these households shows that they constitute a very heterogeneous group.

In most cases, divorced and separated heads of household have lower wealth per capita than nuclear or monogamous households. This is especially pronounced in rural areas. The difference can be sizeable: in the most striking case, in urban Côte d'Ivoire, per capita wealth for households whose head is separated only reaches half of that of nuclear households. It appears that divorce or separation have an important negative effect on savings and asset accumulation for the households concerned.

On the contrary, wealth per capita of households headed by widows largely exceeds the averages for other categories of households, with the only exception of rural China. Their expenditure per capita, on the other hand, is lower than for other single adult households. This paradox can be explained by a life cycle effect. Widows, despite low income, tend to be older than the average head of household. They have therefore accumulated assets beforehand.

Finally, in the case of household heads who are married and whose spouse is away — the data seldom allow identification of the spouse's reason not to live in the family home — wealth per capita is nearly always lower than the average while expenditure per capita is higher. Most of these households fall in one or two categories: migrant spouses and households who live separately. The latter is the case for a number of polygamous households in Ghana, where co-residence is not the norm. In both cases, the living arrangements entail substantial transfers. It is possible to explain the observed pattern by a life cycle effect of capital accumulation if the migrant or non co-resident spouse is relatively young. It is however remarkable that remittances or transfers seem to finance consumption rather than savings or asset accumulation, since expenditures per capita are higher than average.

In both Ghana and Indonesia total wealth per capita is the same among extended and nuclear households. In Côte d'Ivoire extended households in urban areas are substantially wealthier: they hold assets worth 82 per cent more per capita. In rural areas, the corresponding figure is 22 per cent but the difference is not statistically significant. In the Chinese sample, we encounter the opposite situation: extended households are poorer by 24 per cent.

The results for the Ivorian sample follow from large differences for housing in both rural and urban areas. The value of farm capital, non-agricultural capital, durables and financial assets are also higher for extended households. The nuclear household comes foremost only for land value per capita. The value of housing per capita is also substantially higher for extended households in urban Ghana and Indonesia. This is however compensated by higher non-agricultural capital in the Ghanaian case. With the exception of urban Cote d'Ivoire, we cannot conclude that the distinction between extended and nuclear households has in general an impact on the amount of wealth owned, nor on the share of land in total wealth.

Table 4: **Assets per capita and household structures**

Total assets per capita
(in thousand local currency units for Côte d'Ivoire, Ghana and Indonesia, in yuan for China)

	Panel A					
	Nuclear	Extended		Extended		
				-- without extra dependants	-- with extra dependants	
Côte d'Ivoire						
Rural	1 572	1 911	(0.26)	1 550	2 104	(0.26)
Urban	1 695	3 095	(0.06)	1 212	3 382	(0.01)
Ghana						
Rural	1 268	1 229	(0.91)	1 045	1 369	(0.33)
Urban	1 982	1 822	(0.77)	1 024	2 216	(0.11)
Indonesia						
Rural	1 846	1 718	(0.53)	1 678	1 791	(0.72)
Urban	3 758	3 660	(0.83)	2 823	4 748	(0.02)
China						
Rural	10 960	8 302	(0.09)	7 461	9 591	(0.51)

	Panel B			Panel C	
	Monogamous	Polygamous		Single adult	Average
Côte d'Ivoire					
Rural	1 656	1 744	(0.75)	2 402	1 821
Urban	2 526	1 948	(0.30)	2 715	2 509
Ghana					
Rural	1 302	711	(0.04)	1 372	1 307
Urban	1 968	1 217	(0.12)	2 338	2 155
China					
Rural	10 827	n/a		7 709	10 729
Indonesia		-- coresident			
Rural	1 792	2 087	(0.56)	2 474	1 930
Urban	3 750	5 581	(0.22)	6 143	4 166
		-- not coresident			
		3 050	(0.18)		
		3 084	(0.53)		

Notes: Sources as in text

P-value of Wald tests of pairwise difference across categories equal zero in parentheses.

The absence of significant differences in total assets per capita in Ghana and Indonesia could be explained by the supplementary earnings of adults who are lodged by a household belonging to their kinship. In Indonesia, the percentages of working persons among individuals who are not members of the nuclear household of the household head (43 per cent in urban Indonesia) exceed largely the low percentage observed in urban Côte d'Ivoire (15 per cent). In Côte d'Ivoire, most collateral kin who live in the household are small children or are enrolled in school. Adding these to collateral kin who are inactive, the majority of non-members (84 per cent, excluding grandsons of the household head) are dependants. This is largely an urban phenomenon. It could be somewhat surprising that households have higher wealth per capita despite this burden.

To further analyse this mechanism, extended households are separated depending on whether they accommodate any dependant (that is to say, inactive) collateral kin. The results, reported in Table 4, are striking. In all cases in urban areas, such households are substantially wealthier in per capita terms. In the case of Côte d'Ivoire, their assets per capita double those of nuclear households. In all cases where there is data for urban areas (that is, all but China) extended households that house dependants are richer than those extended households who do not.

Therefore, despite the substantial burden that accommodating kin members constitutes, these urban extended households are much richer in per capita terms than nuclear households and also richer than those extended households who comprise working members of the kin group. These households also have higher living standards (as measured by expenditure per capita) but the differences in expenditure are much smaller than the differences in wealth.

This is consistent with the burden being set on wealthier households. Wealthier households are compelled to help members of the kin group by providing accommodation to inactive members and taking their children in so they can attend school.

In order to further substantiate the link between accommodating collateral kin and asset holdings, it is necessary to include other covariates into the picture. The analysis so far has relied exclusively on comparison of means across the various categories of households. While a useful first approach, this needs to be complemented by including other important determinants of capital accumulation. In what follows, several determinants of capital accumulation at the household level are included in a regression framework to examine the robustness of the results and to examine the mechanisms through which household structures and family institutions influence capital accumulation decisions.

Two major concerns point to the further covariates to be examined: earnings and life cycle effects. The link between earnings and wealth per capita is obvious, we therefore control for household income and for the household head's education. The latter is not only a determinant of earnings, but is also related to household structure[9]. Education therefore promotes capital

---

9. Pearson's chi-squared tests strongly (at better than 0.01%) reject independence for all countries between both extended status and education variables (literacy and years of schooling) as well as between polygamy and the same education variables. Typically more education is related to lower polygamy prevalence and in the case of the two African countries considered, higher prevalence of extended households (results not reported).

accumulation directly by providing higher income and indirectly by changing behaviour (as smaller households change the arbitrage between present and future consumption). We use the head of household's literacy status as a proxy for education. While this may not be the best variable in the case of urban households, it provides a higher degree of comparability than educational attainment.

Household structures will typically depend also on which point of the life cycle a household is in. In societies where extended households are the norm, households tend to be formed later, by older heads. Polygamy also intervenes relatively late in the life of a household, with men taking a second, younger wife a number of years after their first marriage. It is indeed common for junior wives to have about the same age as the older children of the senior wife. At the same time, household assets result from a process of accumulation over time, hence the need for controlling for the age of the household head as a proxy of household age.

The above discussion on life cycle effects points to the wider issue of the dynamics of household structures, which is not directly addressed in this paper. Household structures are dynamic in two different ways. They evolve with the life cycle of the household, as discussed above. They can also potentially evolve with specific conditions of the household, including income. For example, a large increase in public transfers to the poor in South Africa after 1995 has allowed household size to drop radically, from 4.7 to 3.7 on average between 1995 and 2005.

In turn, the fact that household structures respond to life cycle and economic circumstances means that such structures could potentially be endogenous to capital accumulation processes. In the two dimensions highlighted above, the endogeneity manifests itself in different forms: to some degree extended families are the result of fostering, putting children in fosterage can be a relatively short term phenomenon that responds to income shocks as documented by Akresh (2005) and Duflo and Udry (2004). However, the acceptance of foster children is also grounded on social constraints. On the other hand, while also dependent on social norms, polygamy results from an economic choice, often of the head of household. Indeed, taking a second wife requires the accumulation of substantial liquid assets.

In both cases, the question arises of the possible endogeneity of the household structure variables with respect to asset accumulation behaviour. Because of this potential concern, regression analysis of the differences in asset holdings across household types must be interpreted with caution and as correlation rather than causality, taking into account the possible bias that could arise from the joint determination of household structures and the household asset base.

In order to refine the analysis of extended households, we focus on extended households who receive inactive collateral kin (whom we label additional dependants). Table 5 presents results from regressions of total assets per capita on a number of control variables and an indicator variable which takes value 1 when the household comprises additional dependants, that is dependants who are not part of the nuclear family of the household head. Without controlling for household size, it is remarkable that these households do not seem to be at a disadvantage in terms of asset accumulation at comparable stages of the life cycle and once geographical area and literacy are controlled for.

Table 5: **Total assets per capita and dependants**

OLS regression.
Dependant variable: Total assets per capita

	Cote d'Ivoire		Ghana		Indonesia	
	(1)	(2)	(3)	(4)	(5)	(6)
Additional dependants (dummy)	639	1226	-119	521	274	923
	(1.57)	(2.76)**	(0.39)	(1.95)+	(0.82)	(2.75)**
Household income	0.328	0.505	0.412	0.475	0.005	0.006
	(2.05)*	(3.22)**	(2.32)*	(2.55)*	(1.43)	(1.48)
Age of head of household	79	86	33	41	83	82
	(5.34)**	(5.59)**	(2.86)**	(3.71)**	(6.64)**	(6.53)**
Head of household literacy	1 059	993	782	798	1 484	1 666
	(2.57)*	(2.42)*	(4.38)**	(4.49)**	(6.66)**	(7.19)**
Rural (dummy)	-590	-371	-457	-178	-1 928	-1 942
	(1.59)	(1.02)	(1.09)	(0.42)	(5.79)**	(5.84)**
Household size		-185		-358		-377
		(5.39)**		(4.87)**		(6.58)**
Constant	-2 116	-1 769	-914	-138	-951	618
	(3.02)**	(2.53)*	(1.21)	(0.17)	(1.61)	(1.18)
Observations	1 578	1 578	5 996	5 996	5 442	5 442
R-squared	0.04	0.06	0.02	0.03	0.05	0.06
Country mean (thousands)	2 114		1 617		2 652	

All coefficients in thousands except for income
t statistics in parentheses
Huber-White robust standard errors
+ significant at 10%; * significant at 5%; ** significant at 1%

Households which accommodate collateral kin tend to be larger because of it. Controlling for household size leads to large significant coefficients of the dependants dummy. These households are therefore wealthier than comparable households with other structures, including nuclear households and those that accommodate active members.

Other coefficients behave as expected: the age of the head of household, household income and head's literacy have positive and significant coefficients[10]. Finally the coefficient of household size is nearly always negative and significant.

---

10. The age of the household head was included in quadratic form but did not enter the relationship significantly and is therefore excluded from the results presented.

The results are consistent with the hypothesis of a "tax on success": liable to pressure from the kinship group, these households must support persons who are schooled or inactive. Such behaviour has been documented by ethnologists who give individual examples. But for the first time, evidence consistent with this effect is shown for large and representative samples of households. In spite of this burden these households have higher wealth and expenditure per capita than other households.

The key caveat to these results is related to the response of household structures to income and asset accumulation. It is the possibility of reverse causation. Households can receive foster children or additional dependants because their income is higher than that of other households of the kin group. This can cause them to become extended households. To the extent that it is through this mechanism that they become extended households and given that income and asset holdings are positively correlated, estimates of the effect of additional dependants on asset holdings per capita will be biased upwards. It is difficult empirically to distinguish households that have become extended because of fostering from households which are extended for other reasons. In both cases, incentives to work might differ between collateral kin and members of the nuclear family of the household head.

We now turn our attention to the dichotomy between polygamous and monogamous households. We differentiate between co-resident and non-co-resident polygamous households only in the case of Indonesia for which the data is available, in all other cases, households are considered polygamous when there is co-residence. Polygamous households have fewer assets per capita across regions in Ghana and in urban Cote d'Ivoire while the reverse is true for Indonesia.

In urban Ghana, monogamous households own more capital than polygamous households: the gap reaches 62 percent and is marginally significant (see Table 4). Housing capital per capita across categories is nearly the same whereas the values of net financial assets, non-agricultural capital and durable goods are 20 per cent lower than the values observed for monogamous households. Urban polygamous households in Ghana tend to have a much larger share of their wealth in cattle, which points to households with closer links to agriculture and rural areas. Comparing polygamous to monogamous households in urban Cote d'Ivoire in terms of asset portfolio throws similar qualitative results. However, differences are smaller and not statistically significant for total assets per capita.

In rural Ghana, the comparison yields even clearer results. There is a large and significant gap: polygamous household capital is 46 per cent lower per capita. In the previous comparison between extended and nuclear households, housing was the main difference between categories, indicating that household size was driving the link. Conversely, in rural Ghana, the difference in asset holdings between monogamous and polygamous households comes from large differences in per capita holdings of both productive assets (land, livestock and non-agricultural capital) and durable goods. In rural Côte d'Ivoire, however, differences are minor and not statistically significant.

In Indonesia, differences between polygamous households (whether co-resident or not) and monogamous ones tend to favour polygamous households and are never statistically significant at conventional confidence levels. As pointed out earlier, polygamy represents

different realities in the two West African countries and in Indonesia. Moreover, because it is less seldom observed in the latter country, heterogeneity among households leads to large standard errors in the estimated average asset holdings.

Overall, the conclusions of a comparison between monogamous and polygamous households are clear. The latter status is never an advantage and often a handicap. One would expect the mechanisms through which differences occur to differ between rural and urban areas, especially considering that polygamous households tend to be substantially larger than monogamous ones.

If land were available in rural areas, the head of household could increase the size of his farm to match the increase of household labour force while such scaling up may be harder to achieve in urban areas. In fact land values per capita are much lower for polygamous households than for monogamous ones in Côte d'Ivoire and Ghana. The land to labour ratio is always significantly superior in monogamous households. Although other factors, such as more agricultural capital, have an impact on labour productivity in agriculture, a higher land/labour ratio entails higher labour productivity. Indeed, holdings of farm capital are higher for polygamous households, but they are orders of magnitude smaller than the value of land operated. Despite lower land values per capita, polygamous households in Côte d'Ivoire own financial assets which are nearly three times larger and housing values per capita are also significantly higher in spite of much larger households.

Finally, there are several sources of the difference in households' asset holdings between polygamous and monogamous households. The first relates to the size of the household and the dependency ratio in the household, both of which are likely to be higher for polygamous households due to higher fertility. The second channel works through the composition of asset accumulation and is the basis of Tertilt's (2005) argument. Polygamy can be thought of as an investment in the form of a monetary payment (the bride price) and foregone capital accumulation. Returns take the form of direct payments (again, bride price payments for marrying off daughters) as well as old age assistance. The main effect is therefore diverting savings away from productive uses. This effect can explain the very low level of financial assets owned by polygamous households in urban areas of Côte d'Ivoire and Ghana compared to monogamous households.

In order to gain further insights on the possible channel through which polygamous households could have lower asset holdings, we turn to regression analysis. As pointed out earlier, both earnings potential as captured by educational levels and life cycle effects need to be considered. In the case of polygamy, it is also necessary to pay special attention to the impact of household size. Polygamous households in the two studied West African countries are much larger than monogamous ones (by 75 per cent), which is obviously not accounted for by the simple inclusion of one extra member at the time of marriage. Controlling for household size is important because it can account for economies of scale in capital utilisation. However, household size is clearly driven by polygamy and the two are highly correlated, which is likely to obscure the relationship in a univariate analysis. The coefficient of correlation between polygamy and household size reaches 0.50 in Côte d'Ivoire, 0.31 in Ghana and the value of this coefficient of correlation between monogamy and household size is around -0.40 in these countries as in Indonesia.

OLS regression.
Dependant variable: Total assets per capita

	Cote d'Ivoire		Ghana		Indonesia	
	(1)	(2)	(3)	(4)	(5)	(6)
Polygamous	-502	-52	-899	231	-204	118
	(2.02)*	(0.21)	(2.33)*	(0.62)	(0.18)	(0.09)
-- non co-resident					262	142
					(0.34)	(0.19)
Single adult	968	691	856	143	1 391	764
	(2.38)*	(1.60)	(2.80)**	(0.56)	(3.30)**	(1.77)+
Household income	0.458	0.544	0.438	0.476	0.006	0.006
	(3.13)**	(3.60)**	(2.43)*	(2.55)*	(1.54)	(1.51)
Age of head of household	83	86	34	40	81	81
	(5.47)**	(5.57)**	(3.00)**	(3.65)**	(6.62)**	(6.57)**
Head of household literacy	1 166	1 209	912	845	1 674	1 740
	(2.53)*	(2.61)*	(4.50)**	(4.24)**	(7.28)**	(7.42)**
Rural (dummy)	-448	-458	-285	-187	-1 860	-1 925
	(1.17)	(1.20)	(0.67)	(0.44)	(5.65)**	(5.84)**
Household size		-111		-332		-294
		(3.26)**		(4.63)**		(5.37)**
Constant	-2 493	-2 084	-1 588	-248	-1 234	171
	(3.77)**	(3.10)**	(2.29)*	(0.33)	(1.90)+	(0.28)
Observations	1 578	1 578	5 996	5 996	5 442	5 442
R-squared	0.05	0.05	0.02	0.03	0.05	0.06
Country mean (thousands)	2 114		1 617		2 652	

All coefficients in thousands except for income
t statistics in parentheses
Huber-White robust standard errors
+ significant at 10%; * significant at 5%; ** significant at 1%

Given prior considerations, we choose not to present results separately for urban and rural areas. Table 6 provides results of regressions of total assets per capita on controls and variables indicating whether the household is polygamous (and in the Indonesian case, whether it is co-resident or not). This constitutes the first test of the effects of polygamy on asset accumulation using household-level data that we are aware of.

When household size is not controlled for, polygamy has a negative coefficient which is always significant at the 5 per cent level or better, except in Indonesia where the coefficient is not significant. The size of the coefficient is also quantitatively important, as it is between half (for Ghana) and a quarter (for Cote d'Ivoire) of average total assets per capita. Separate regressions (not reported) for the rural and urban subsamples of the two West African countries considered

lead to similar results, with negative and significant coefficients for polygamy throughout. Results for Indonesia are not surprising. As we have seen, polygamy in this country is very uncommon and characterised by specific features.

Controls have the expected signs. The age of the head of household, household income and household head literacy all enter with significant coefficients (with p less than 0.01) which are positive. Finally, indicators for single adult households are positive or not significant. Such results are related to the heterogeneity of this group with low wealth per capita in some cases (divorce or separation) but higher than in monogamous in other (as widows).

The inclusion of household size, in columns (2) and (4), substantially lowers the estimated coefficients for the polygamy indicator and they are no longer significant. Other coefficients are not altered, indicating that the effect of household size and that of polygamy act through common channels. We derive from this result that the main channel through which polygamy reduces asset ownership is by facilitating the creation of large households, thereby diluting capital.

Like in the case of extended households, the fact that polygamy is the result of a decision of the household can possibly bias the results if that decision depends on variables omitted in the above regressions or simultaneous with capital accumulation decisions. A consideration of the likely direction and magnitudes of possible bias nevertheless lends support to the estimated parameters reported here. Simultaneity bias is the greatest concern, as polygamy is often perceived as a public display of wealth. Therefore, the decision to marry a second wife would be positively determined by asset holdings at the time of the decision. Since these are obviously positively correlated to current asset holdings, this would bias the results upwards. This mechanism is therefore unlikely to be the cause of the large, negative and significant coefficients on polygamy in regressions (1) and (3) in Table 6. It might however, have an incidence on the insignificant coefficients when household size is controlled for. The second key omitted variable is the relative price of polygamy and capital goods or other assets. Higher bride prices, relative to asset and consumption prices could discourage polygamy. This would have an indirect effect on capital accumulation through polygamy status, which is accounted for in the regression, but also a direct effect through faster accumulation of assets, which is not. The omission of bride price in the regression is likely to bias the coefficient on the polygamy dummy downwards as higher relative bride prices are negatively correlated to the probability of being polygamous and positively correlated to asset accumulation. Bride price is unlikely to be the main determinant of polygamy, which is dictated by social status and norms. Low price elasticity of polygamy and the presence of other socially determined elements contributing to polygamy as well as the time lag between the effect of relative prices at the time of the decision to marry again and the price of assets throughout the accumulation process suggest that this effect is likely not to be very large. It should be noted that since it is the *relative* price that matters, including a measure of the price of assets or capital in the regression would not solve this potential problem.

The results so far have therefore shown the importance of household structures for capital accumulation. Beyond those variables whose effect on asset holdings would be expected, such as household age, income and educational achievement, household structures matter for how and how much wealth is accumulated. As it has been shown, extended households tend to be wealthier, in line with a solidarity mechanism that acts like a private "tax on success". Polygamy

is associated with lower asset holdings, an effect that appears to work through the impact of that family institution on the size of households.

Household structures and human capital

This section looks more closely at the differences in human capital accumulation across households with different structures. The results on asset accumulation show that one of the main mechanisms through which household structure has an impact on capital accumulation is through the size of households. The focus is therefore now on whether in those larger households there is also an arbitrage between quality and quantity of children that leads to slower human capital accumulation.

Tables 7 and 8 provide information on education inputs across categories of households. These include the percentage of schooled children aged 6 to 18 and expenditures in education paid by parents per schooled child, as well as the share of expenditure in education for the household as a whole. Although there is variation across countries, a large share of education expenditures is borne by the state, and schooling is therefore the most important of these variables. Following the pattern of the previous section, this section compares nuclear and extended households first and then examines the relationship between education and polygamy.

No clear pattern emerges across countries. In both (rural) China and Indonesia, children are less likely to be enrolled in school when they are in extended households; however the differences are large only in rural Indonesia, where children in nuclear households are 11 percentage points more likely to attend school. Differences in expenditure are small and insignificant in Indonesia while in rural China, extended household spend significantly less on education than nuclear ones; indeed, average expenditure on education per child in extended households is 60 per cent lower than in nuclear households.

Table 7: **Enrolment rate for children 6 to 16 years old, by household structure**

				Panel A			
	Nuclear	Extended		Extended		Difference	extended with extra dependants vs. nuclear
				-- without extra dependants	-- with extra dependants	among extended	
Côte d'Ivoire							
Rural	0.44	0.52	*	0.43	0.57	ns	**
Urban	0.71	0.77	ns	0.74	0.78	ns	ns
Ghana							
Rural	0.79	0.82	ns	0.80	0.85	*	*
Urban	0.93	0.90	ns	0.90	0.89	ns	ns
China							
Rural	0.90	0.85	ns	0.71	0.92	n/a	ns
Indonesia							
Rural	0.80	0.69	***	0.69	0.69	ns	***
Urban	0.90	0.88	ns	0.85	0.91	**	ns

		Panel B				Panel C	
	Monogamous	Polygamous				Single adult	Average
Côte d'Ivoire							
Rural	0.48	0.48	ns			0.52	0.46
Urban	0.78	0.65	***			0.78	0.70
Ghana							
Rural	0.81	0.69	***			0.81	0.80
Urban	0.91	0.81	ns			0.87	0.89
China							
Rural	n/a					0.56	0.89
Indonesia		-- co-resident					
Rural	0.77	0.80	ns			0.74	0.77
Urban	0.88	1.00	n/a			0.83	0.88
		-- not co-resident					
		0.75	ns				
		0.84	ns				

Note: t-test of the no difference across categories significant at the 10% (*), 5% (**) and 1% (***) level respectively

ns: not significant; n/a: not applicable

Table 8: **Expenditure in schooling per enrolled child**

	Panel A						
	Nuclear	Extended		Extended		Difference	
				-- without extra dependants	-- with extra dependants	among extended	vs. nuclear
Côte d'Ivoire							
Rural	20 584	20 485	ns	19 451	20 903	ns	ns
Urban	38 759	45 709	ns	35 293	47 150	ns	ns
Ghana							
Rural	69 301	84 167	ns	76 927	89 845	ns	ns
Urban	220 194	241 442		189 699	268 655	*	**
China							
Rural	358	224	***	260	209	ns	***
Indonesia							
Rural	68 962	66 050	ns	65 072	68 300	ns	ns
Urban	162 295	182 688	ns	186 926	177 401	ns	ns

	Panel B				Panel C	
	Monogamous	Polygamous			Single adult	Average
Côte d'Ivoire						
Rural	17 903	22 946	***		24 489	20 745
Urban	46 474	32 673	**		45 463	43 791
Ghana						
Rural	75 921	47 353	***		81 772	75 753
Urban	229 075	171 732	ns		222 897	224 201
China						
Rural	n/a				260	352
Indonesia		-- co-resident				
Rural	68 980	68 000	n/a		50 034	66 332
Urban	167 244	395 000	ns		209 702	171 138
		-- not co-resident				
		43 068	***			
		147 654	ns			

Note: t-test of no pair wise difference significant at the 10% (*), 5% (**) and 1% (***) level respectively,
ns: not significant;
n/a: not applicable
Data on expenditures for Indonesia concern 6 to 14 year olds only, others are 6 to 17

In the two West African countries considered, the differences go the other way: in urban areas the differences in schooling rates are neither very large nor statistically significant, while in rural areas, children in extended households are more likely to be enrolled in school. The

differences in rural areas are only large and statistically significant for households accommodating additional dependants. Children in these households are significantly more likely to be enrolled in school, by 5 percentage points in Ghana and 13 in Côte d'Ivoire[11].

Average expenditure in education per schooled child is slightly higher in extended households. However, with the exception of urban Ghana, differences in expenditure per child between extended and nuclear households are not statistically significant. Taken together, the two effects lead to household expenditures in education which, as a share of total household expenditures, are substantially higher in extended households, especially those that house additional dependants, than in nuclear ones. These are particularly remarkable in Côte d'Ivoire, where the differences reach 2 per cent and 3.3 per cent of total household expenditure in rural and urban areas respectively. In urban Côte d'Ivoire, for example, nuclear households spend about 2 per cent of their total outlay in education, while the figure for extended households with additional dependants is as high as 6 per cent. Given the higher income and wealth of households accommodating collateral kin, these results show that fostering is an important and widespread solidarity mechanism that works in a fashion consistent with that of a "tax on success".

In the two West African countries, therefore, the combination of fostering, higher incomes and higher share of expenditure in extended households lend to these a clear advantage in terms of human capital accumulation, albeit at significant cost. In both China and Indonesia, meanwhile, extended households are less likely to send their children to school and with the exception of urban Indonesia, do not seem to compensate by spending more on those who do attend school.

Turning now to the relationship between inputs to education and polygamy, a clearer pattern emerges. Enrolment rates are never higher for polygamous households and sometimes significantly lower, by 12 and 10 percentage points in rural and urban Ghana respectively (although the latter is not statistically significant at conventional significance levels) and by 13 percentage points in urban Côte d'Ivoire. The differences have the same sign but are much smaller in Indonesia where we focus on non-co-resident polygamous households only, since there are very few co-resident polygamous households that report child data.

Data on expenditure in education broadly follow the same pattern, with the exception of rural Côte d'Ivoire. Indeed in all other cases, expenditure per schooled child is significantly lower in polygamous households and in some cases much lower, like in rural Ghana, where it is only 60 per cent of the average value for nuclear households. Given higher fertility rates in polygamous households, these results seem to concord with a quantity versus quality arbitrage. This renders the case of rural Côte d'Ivoire all the more puzzling: enrolment rates are not different between monogamous and polygamous households while expenditure per schooled child is higher in polygamous households (despite these households having lower total expenditure per capita). One possible explanation is that it might be easier in rural areas to combine labour or housework with school attendance because of the variation of intensity and

---

11 Since about half of the dependants in these households are children, it appears that children are more likely to go to school when they are fostered. Differential treatment of foster and biological children, which has been documented by Ainsworth (1992), could however undermine this result.

the daily schedules of agricultural labour. In any case, the difference in educational investment by polygamous households in rural and urban areas confirms the handicap of the latter with respect to human capital accumulation.

Like in the case of household assets, the analysis is now extended to include a number of covariates that can shed light on the strength of the relationships when controlling for other demographic characteristics as well as the channels through which polygamy and investment in education interact.

We use a similar set of covariates as that used for the analysis of per capita wealth, which include household income, the age of the head of household and the head's literacy status. In all cases, polygamy is indicated by a set of dummy variables that discriminate between polygamous households, non-co-resident polygamous households (only for Indonesia) and single adult households, the reference category being always monogamous households.

Two sets of regression results are reported below. Table 9 presents results related to enrolment while Table 10 presents results regarding expenditure. In both cases, the unit of observation is the child. In the latter table, Indonesia is omitted due to difficulties with comparability[12].

The first set of results (Table 9) presents logit estimates of school enrolment. Not surprisingly, being in a rural area and being a girl are both associated with significantly lower probabilities of school enrolment. The link between polygamy and enrolment for the two West African samples is clear in columns (1) and (3): the coefficients are negative and significant for Côte d'Ivoire and Ghana. Moreover they are quantitatively important: the probability of a child being enrolled decreases by 10 per cent for polygamous households.

Including a dummy variable for the head of household's literacy alters the results. Household head age and literacy are correlated because literacy has steadily improved over time; hence older heads of household are less likely to be literate. Including literacy changes the sign of the age variable, which also becomes insignificant, indicating that life cycle effects, if present, are not very strong. For older household heads, being richer, an income effect may encourage school enrolment. This appears to be overpowered by the effect of parental education. Overall, older heads of household are less likely to enrol their children (as shown by columns (1), (3) and (5) in Table 9) because they are less educated themselves.

Controlling for literacy of the head of household also weakens the results with regards to polygamy as heads of polygamous households are much less likely to be literate. The coefficients remain however significant at the 10 per cent level for both Ghana and Côte d'Ivoire. The size of the coefficient is attenuated, but polygamy is nonetheless associated with a probability of schooling 5 percentage points lower than the reference category (monogamous households).

---

12. The Indonesia Life Family Survey gathers extensive data on a subset of children, expenditure for each child is therefore not available for all children.

<h3 style="text-align:center; color:#1F6FC0;">Table 9: School enrolment and polygamy</h3>

<p style="text-align:center;">Logit estimation
Dependent variable: child's school enrolment (7 to 15 years old)</p>

	Cote d'Ivoire		Ghana		Indonesia	
	(1)	(2)	(3)	(4)	(5)	(6)
Polygamous	-0.407	-0.223	-0.711	-0.423	0.221	0.544
	(3.16)**	(1.70)+	(3.43)**	(2.05)*	(0.20)	(0.45)
	{-0.095}	{-0.051}	{-0.108}	{-0.053}	{0.027}	{0.057}
--not co-resident					-0.025	-0.114
					(0.11)	(0.50)
					{-0.003}	{-0.015}
Single adult	0.338	0.597	0.007	0.369	-0.243	-0.085
	(1.56)	(2.79)**	(0.06)	(3.21)**	(1.93)+	(0.66)
	{0.075}	{0.125}	{0.001}	{0.039}	{-0.034}	{-0.011}
Female (dummy)	-0.810	-0.863	-0.361	-0.380	-0.123	-0.114
	(8.48)**	(8.87)**	(4.29)**	(4.37)**	(1.49)	(1.37)
	{-0.186}	{-0.196}	{-0.045}	{-0.042}	{-0.016}	{-0.015}
Household income (income in millions)	0.322	0.238	0.028	0.003	-0.002	-0.002
	(6.51)**	(4.50)**	(0.97)	(0.15)	(1.65)+	(1.81)+
	{0.075}	{0.054}	{0.004}	{0.000}	{-0.000}	{-0.000}
Age of head	-0.011	0.005	-0.007	0.005	-0.011	-0.005
	(1.94)+	(0.88)	(1.79)+	(1.32)	(2.51)*	(1.11)
	{-0.003}	{0.001}	{-0.001}	{0.001}	{-0.001}	{-0.001}
Head literate (dummy)		1.254		1.473		0.688
		(7.94)**		(11.83)**		(7.27)**
		{0.265}		{0.171}		{0.096}
Rural dummy	-0.987	-0.689	-0.848	-0.605	-0.985	-0.837
	(7.61)**	(5.13)**	(7.16)**	(5.24)**	(9.84)**	(8.24)**
	{-0.219}	{-0.154}	{-0.095}	{-0.062}	{-0.114}	{-0.096}
Observations	3 024	3 024	6 862	6 862	6 201	6 201

z statistics in parentheses; marginal effects at the mean in round brackets {}

Huber-White robust standard errors, corrected for clustering at the household level

+ significant at 10%; * significant at 5%; ** significant at 1%

As indicated by the analysis above, expenditures may be expected in some cases (especially rural Côte d'Ivoire) to compensate or even go against the findings for schooling in terms of overall investment in education. Table 10 examines the relationship between

expenditures per schooled child and the same demographic and economic variables used before in a linear regression framework.

Table 10: **Education expenditure and polygamy**

OLS regression results
Dependent variable: Education expenditure for each schooled child

	Cote d'Ivoire		Ghana	
	(1)	(2)	(1)	(2)
	Urban	Rural	Urban	Rural
Polygamous	-10 475	4 284	-6 136	-25 794
	(2.72)**	(2.44)*	(0.10)	(3.51)**
Single adult	5 332	5 817	39 567	24 501
	(0.71)	(1.11)	(2.31)*	(4.03)**
Female (dummy)	-3 615	-2 517	6 571	-4 380
	(1.10)	(1.44)	(0.59)	(0.99)
Household income	0.008	0.003	0.015	0.005
	(5.18)**	(2.66)**	(3.72)**	(3.40)**
Age of household head	- 74.6	0.3	-1 706.6	- 36.8
	(0.43)	(0.00)	(2.72)**	(0.19)
Head of household literate (dummy)	8 677	482	78 511	38 472
	(2.02)*	(0.19)	(4.43)**	(7.55)**
Constant	24 220	14 764	181 698	40 935
	(2.49)*	(3.36)**	(4.74)**	(3.52)**
Observations	1 384	891	2 495	4 639
R-squared	0.11	0.06	0.07	0.07

t statistics in parentheses
Huber-White robust standard errors, clustered at the household level
+ significant at 10%; * significant at 5%; ** significant at 1%
The excluded category is monogamous households

Polygamy enters the equation with a negative and significant coefficient both in rural Ghana and in urban Côte d'Ivoire. In both cases, this matches the analysis of descriptive statistics. Household income, not surprisingly is an important predictor of education expenditures, but the regression results show that it is not solely responsible for the lower expenditures observed in polygamous households. Household head's literacy enters the relationship with a strong positive coefficient, as expected.

The pattern observed above for rural Côte d'Ivoire remains, namely a substantially higher expenditure per schooled child and similarly low enrolment rates.

These tests on the relationships between household structures and education, as well as those concerning wealth per capita, confirm the main points of our descriptive analyses on the impact of polygamy on material and human capital accumulation. Polygamy is associated with lower enrolment rates and lower expenditures on education, with the exception of rural Côte d'Ivoire. The combination of these results suggests that an arbitrage between quality and quantity of offspring may be at play.

On the other hand, polygamy is also associated with lower assets per capita, a relationship that seems to be driven by the larger size of polygamous households. This is also consistent with an arbitrage in favour of quantity, with each child being potentially endowed with a lower physical capital base.

Regarding extended households and especially the practice of accommodating collateral kin as a form of solidarity, the patterns that emerge from the analysis of average enrolment and expenditure in Tables 7 and 8 are consistent with fostering being conducive to school enrolment. Considering the substantial costs that such solidarity mechanisms entail and the differences in asset holdings between nuclear and extended households, it is apparent that the pattern of asset ownership is also consistent with solidarity in this form acting as a tax on the wealthier or most successful members of the kin group.

While this paper is concerned with how such a tax-like mechanism can limit the accumulation of assets through the changes it implies in household structures, the presence of this "tax on success" would also limit incentives to work hard to accumulate assets or even to work hard to avoid hardship if people can rely on wealthier members of the kin group. While anecdotal evidence exists, such as cases of skilled workers in the modern sector in West Africa refusing promotions for fear of heavier family burdens, empirical inference of these incentive mechanisms is not attempted in this paper. The existence of this "tax" could partially explain the dearth of very small enterprises in West Africa compared to East Asia.

Family structures are deeply connected on the one hand to household sizes, and on the other hand to household composition, including the dependency ratio. The mechanics presented in this paper call therefore for an analysis that accounts for the dynamics of family structures, both at the level of the individual households and at the level of a society as a whole. Such analyses are beyond the scope of this paper, but the relationships shown between structures and both physical and human capital accumulation are useful building blocks for a general understanding of the evolution of family institutions.

V. CONCLUSION

Before proposing incentives which could stimulate capital accumulation, we will summarise briefly the results of our analysis.

Summary of findings and outlook

In the introduction, we proposed three hypotheses concerning respectively extended (versus nuclear), polygamous (versus monogamous) and single headed households. The first postulates that extended households save less than nuclear ones when the ratio of inactive persons to total number of persons is higher.

In fact, the composition of households in rural zones shows that this dependency ratio is roughly the same in nuclear and extended households. So the fact that wealth per capita is the same in the two categories in Ghana, Indonesia and Côte d'Ivoire (if housing is excluded) is not surprising.

In urban zones of Ghana and Indonesia, wealth per capita in extended households exceeds that of nuclear ones, an advantage which results from a lower ratio of inactive to active members. In Côte d'Ivoire, however, this ratio is much higher in extended households than in nuclear households whereas the wealth per capita is also higher. This paradox which apparently counters our hypothesis can be explained by the living standard of extended households who accommodate inactive persons. Expenditure per capita in these households is around 50 per cent higher than in households who receive active individuals. The former, who support the burden of child fostering and accommodating inactive adults, have, on average, a much higher income than other households. The burden imposed can therefore be thought of as a private tax.

The second hypothesis concerns polygamy. We postulate lower income per capita in polygamous households (Morrisson, 2006) because the head of household cannot increase resources in proportion with household consumption when household size is increased dramatically. Polygamy increases fertility and, by leading to larger households, leads to lower incomes per capita. Moreover, as first put forward by Tertilt (2005), the costs incurred in successive marriages explain a lower propensity to save and invest because dowries crowd out investment in physical assets.

With the exception of rural regions in Côte d'Ivoire (where there is no difference in per capita assets between monogamous and polygamous households), in all other relevant cases, the net value of assets per capita is lower for polygamous households than for monogamous households. These findings are the first exploration of this hypothesis using household level data, following Tertilt's (2005) theoretical and cross country analysis. The results from the two approaches are broadly consistent.

The advantage of monogamous households in capital accumulation is more important in towns than in rural areas. In urban Ghana wealth per capita is 60 per cent higher in these households than in polygamous households. The difference is usually less important in magnitude in rural regions. On the other hand the Ivorian exception (equality in rural zones) raises questions: the share of housing in households' net wealth in this country is very high (83 per cent). If we exclude housing, wealth per capita is significantly larger in monogamous households than in polygamous ones as in other cases.

For single-headed households, we find that divorced or separated heads of household have substantially fewer assets. In the other households headed by single adults, such as widows or widowers, wealth per capita is higher than in monogamous households. Such a result, while showing the limitations of examining asset stocks, does not contradict the hypothesis since the process of capital accumulation has probably taken place before the death of the spouse.

The data on education allows us to add results in line with our conclusions on wealth per capita. In both Côte d'Ivoire and Ghana, there exists a handicap in terms of school enrolment for polygamous households when compared to monogamous ones. There is also such a handicap for extended households versus nuclear ones in China and Indonesia.

Our inspection of inter-household transfers shows that monetary transfers between households represent a low percentage of their income. The exception is single headed households: single adult households receive important transfers exceeding 20 to 30 per cent of their expenditures. Frequently these transfers are remittances sent by the absent spouse.

On the other hand, the study of information about fostering and the accommodation of inactive adults reveal that these constitute in-kind transfers that are much more important than monetary transfers. As such, those practices are akin to a tax. However, their incidence is more complex. When a richer household receives a child whom as a result can attend school, fostering increases human capital accumulation. But fostering also has an impact on the fertility rate because by lowering the private cost of raising a child, it encourages higher fertility. The case of accommodating inactive adults is different. Indeed, such practices can be compared to redistributive mechanisms like tax and benefits systems that guarantee a minimum income to adults. Just as in the case of social protection systems in industrialised countries, the question arises of what the obligations of the recipients of such transfers are. While collateral kin are compelled to work in East Asian societies, many inactive adults are housed in two West African countries that we examine. Such obligations or lack thereof have direct implications both for the ability of jobless individuals to find employment and for aggregate human capital accumulation.

Incentives to stimulate capital accumulation

This analysis of family institutions has provided evidence on the impact that household structures have on physical and human capital accumulation. Family institutions, such as polygamy or fostering are seldom criticised or forbidden by authorities when they are perceived as part of the cultural heritage. However, family structures respond to the incentives generated not only by family policy, but also by tax and benefit systems. Behaviour towards physical and human capital accumulation will respond to cultural pressures and incentives. It will also respond to opportunities and instruments that are sensitive and adapted to these cultural

pressures and incentives. The remainder of this section discusses examples of policies that can be adapted or improved in order to dampen the negative impact of some institutions on savings.

The first example concerns family allowances. Often in emerging economies, governments establish such allowances in order to assist households. In societies where polygamy is relatively important, it can be encouraged by such benefits. Polygamy will be encouraged because the fall in income per capita entailed by more children will be compensated by more important child benefit. In principle governments provide such allowances in order to help large poor households. In fact, due to the mode of disbursement, such allowances are often accessible mostly to civil servants and those with formal employment. From a static perspective, such allowances can alleviate poverty. However, if they lack limits on the size of the transfer with respect to the number of dependents, they discourage family planning and encourage higher fertility and polygamy.

Such benefits exist even in countries with fertility rates above 5 births per woman. Mali, Senegal and Cameroon, provide examples of legislation that promotes high fertility rates and polygamy. Senegalese civil servants, for example, have long been eligible for four different such allowances (a child benefit, a supplement to salary, an additional benefit for older children and premiums for younger children)

In several West African countries, a second instrument of family policy is the income tax system of "quotient familial" by which taxable income is divided by the number of dependants in the household (often weighted by age). Until recently, for example, legislation in Mali favoured large households: each child being equal to a quarter of a share, up to three shares. Up to four foster children can be included. Cameroon's personal income tax used a similar system, with each child being counted as half a share, until its reform in 2004.

These examples show that in countries where fertility is high (above 5 children per woman) and polygamy legal and frequent, family allowances and tax schedules are often favourable to polygamous and large households. Limiting these advantages to a number of children would discourage polygamy and large households and increase the costs of fostering. While in the short run, such a reform may lower the net wealth per capita of larger households, in the long run, it would encourage families to adopt structures more conducive to saving and investment. A government can therefore respect private life and civil rights, but significantly alter incentives in order to stimulate savings.

Present privileges and benefits in many West African countries are partly a legacy of the demographic situation in France over 70 years ago. The benefits available there were transplanted by the colonial power and maintained after independence. This process provides a prime example of the perils of disregarding cultural incentives and adopting cookie-cutter institutions.

The last 20 years have seen the build up of a consensus on the need to reduce illiteracy. In several countries (Mexico, Bangladesh and others) conditional cash or food transfers are used to provide incentives for poor households to keep their children in school. These policies, broadly seen as successful, could encourage or discourage fostering in Africa depending on whether they are granted to all parents or only biological parents. Fostering implies the effective mutualisation of a fraction of the cost of raising a child and thereby favours higher fertility rates. The effects of

conditional transfers on fostering are therefore very important due to their knock-on effect on fertility.

The final implication refers to policies to directly encourage saving. In several countries public loans with concessional interest rates are granted to households who buy housing or set up a microenterprise. The pressure exerted by members of the kin group on its most successful members and anecdotal evidence of practices undertaken to hide returns from investment suggest that there may be a preference for illiquid saving mechanisms (see Fafchamps [1992] for a theoretical exposition of these incentive mechanisms, and de Laiglesia [2006] for further references). Such is the case of mandatory pension contributions: wage-earners must put money into an account to which members of the kinship group have no claim because the contribution is deducted from pay by the firm or the government. One can imagine a similar contribution to finance housing. After some years a wage-earner could use this savings account and borrow in order to purchase a dwelling, the reimbursement being deducted from his or her wage. Such a scheme would allow the constitution of reasonably sized asset base for at least part of the population.

This analysis does not intend to criticise common development policies, but rather to point out that taking specific family institutions into account can help adapt policies to the cultural and social context. As a first step, it is necessary to gain a better understanding of the cultural features of societies, so as to adapt policies to the prevailing family institutions.

The role of development aid

Aid donors clearly cannot address issues related to family institutions, structures and composition directly. These are part of societies' cultures and, with the exception of instances where they entail human rights violations, foreign intervention is unlikely to have the necessary legitimacy.

Nevertheless, to the extent that family institutions have links to capital accumulation and livelihood opportunities and choices, the issues analysed in this paper are of concern to donors because of their development and poverty reduction goals. And there is much that donors can do.

First, they must encourage and facilitate data collection concerning household structures, kinship relations and family traditions. Analyses of living standards based purely on households as units of analysis obscure important social relations, mutual help networks and sometimes heavy social obligations that have a bearing on savings and capital accumulation.

Secondly, the donors can support those governments which undertake reforms of family laws and institutions. As presented earlier, reforms of provisions such as family benefits can give rise to short-term drops in living standards for some groups and provoke strong reactions and resistance. Moreover, the political economy of such reforms may require that those families whose benefits are reduced be compensated, leading to substantial costs. At a time where official development aid is expected to increase and donors are adamant to state their expectation that recipients' own fiscal resources be correspondingly increased, it is of utmost importance to recognise that some reforms would lower available resources in the short run due to the need for

compensation but increase aggregate capital accumulation and therefore fiscal resources themselves in the long run..

Finally, donors have an undeniable impact on the shape of those policies that affect their objectives and supported sectors, be they education, financial sector reform or capacity and institutional strengthening. The analysis above has highlighted the importance of adapting policy to the cultural context. Not only policies that have a bearing on incentives to accumulate capital, but also those that impact on human capital investments and on decisions regarding household structure, composition and size.

The analysis above points to the pitfalls that await if the incentives generated by cultural and especially family institutions are not taken into account and a one-size-fits-all approach to institution building is used.

APPENDIX - TABLES

Table A1: **Distribution of households (in %) and household size according to household structure**

	(1) Extended	(2) Nuclear	(3) Monogamous	(4) Polygamous		(5) Single adult
Cote d'Ivoire						
Urban	37.2%	34.1%	58.9%	12.4%		28.8%
	8.9	5.5	6.6	10.6		3.6
Rural	27.2%	53.9%	53.5%	27.6%		18.9%
	10.3	6.0	5.9	10.5		2.7
All	31.5%	45.5%	55.8%	21.1%		23.1%
	9.6	5.8	6.2	10.5		3.2
Ghana						
Urban	10.2%	36.8%	45.7%	1.3%		53.1%
	6.9	4.8	5.1	9.1		2.7
Rural	10.7%	47.9%	54.5%	4.1%		41.4%
	7.3	5.1	5.3	8.9		3.1
All	10.5%	43.8%	51.3%	3.0%		45.7%
	7.1	5.0	5.2	8.9		3.0
				-- co-resident	-- not co-resident	
Indonesia						
Urban	19.3%	61.1%	78.3%	0.1%	2.1%	19.6%
	6.9	4.6	5.2	6.5	4.8	2.8
Rural	13.6%	68.8%	80.1%	0.1%	2.3%	17.6%
	6.7	4.3	4.7	5.7	4.3	2.7
Total	15.6%	66.2%	79.5%	0.1%	2.2%	18.3%
	6.8	4.4	4.9	5.9	4.5	2.7
China						
Rural	4.8%	92.0%	96.8%	0.0%		3.2%
	5.8	3.6	3.7	n/a		3.2

Notes: (1) sources as in text. Columns (1), (2) and (5) (resp. (3), (4) and (5)) add up to 100%

(2) Data on non-co-resident spouses of polygamous men is only available for IFLS data

Table A2: **Proportion of household members who are not members of the head of household's nuclear family**

(all as proportion of individuals amongst extended families)

	Rural			Urban		
	Members	Non-members (excluding grandsons)	Total	Members	Non-members (excluding grandsons)	Total
Cote d'Ivoire						
12 and under	0.33	0.11	0.44	0.32	0.09	0.41
Worked and Schooled	0.01	0.00	0.01	0.01	0.00	0.01
Schooled	0.04	0.02	0.05	0.08	0.06	0.14
Working	0.31	0.12	0.43	0.20	0.04	0.24
Neither Working nor Schooled	0.03	0.03	0.06	0.11	0.09	0.20
Total	0.72	0.28	1.00	0.71	0.29	1.00
Ghana						
12 and under	0.35	0.07	0.42	0.28	0.05	0.32
Worked and Schooled	0.03	0.01	0.05	0.02	0.01	0.04
Schooled	0.05	0.03	0.07	0.12	0.04	0.16
Working	0.35	0.05	0.41	0.30	0.03	0.34
Neither Working nor Schooled	0.03	0.03	0.06	0.09	0.06	0.15
Total	0.82	0.18	1.00	0.81	0.19	1.00
Indonesia						
Under 10	0.41	0.04	0.45	0.40	0.03	0.43
Worked and Schooled	0.00	0.00	0.00	0.00	0.00	0.01
Schooled	0.07	0.01	0.08	0.12	0.04	0.16
Working	0.14	0.12	0.26	0.11	0.12	0.23
Neither Working nor Schooled	0.15	0.06	0.21	0.10	0.08	0.18
Total	0.77	0.23	1.00	0.73	0.27	1.00
China						
Under 12	0.20	0.00	0.21			
Worked and Studied	0.01	0.00	0.01			
Schooled	0.01	0.00	0.01			
Working	0.54	0.12	0.67			
Neither Working nor Schooled	0.02	0.08	0.10			
Total	0.79	0.21	1.00			

Table A3: **Single adult households: frequency by type (%)**

	Proportion of rural households	with non-members (collateral kin)	with inactive non-members (collateral kin)	With literate head, by gender of head		Proportion of urban households	with non-members (collateral kin)	with inactive non-members (collateral kin)	With literate head, by gender of head	
				Female	Male				Female	Male
Cote d'Ivoire										
Single adult	18.9%	3.3%	2.1%	2%	16%	28.8%	12.7%	10.4%	34%	58%
Head married, spouse away	4.2%	0.5%	0.3%	0%	12%	7.5%	3.0%	2.2%	41%	34%
Divorced	3.5%	0.3%	0.1%	0%	26%	4.7%	2.2%	2.1%	44%	92%
Separated	0.9%	0.1%	0.1%	n/a	0%	2.2%	1.3%	1.1%	71%	47%
Widow(er)	6.5%	2.2%	1.5%	0%	0%	5.2%	3.5%	2.7%	5%	31%
Never married	3.8%	0.4%	0.1%	33%	29%	9.2%	2.8%	2.3%	45%	71%
Ghana										
Single adult	41.5%	6.9%	4.6%	22.4%	53.8%	53.1%	8.9%	6.7%	48.5%	76.3%
Head's spouse away	11.9%	2.6%	1.8%	30.3%	58.8%	16.2%	2.8%	2.1%	52.0%	83.9%
Divorced/Separated	13.2%	2.5%	13.2%	28.0%	48.0%	14.8%	2.8%	14.8%	51.9%	71.0%
Widow	10.7%	1.4%	10.7%	6.0%	24.2%	9.7%	1.7%	9.7%	28.2%	42.7%
Never married	5.6%	0.4%	5.6%	50.1%	64.9%	12.3%	1.5%	12.3%	71.1%	82.6%
Indonesia										
Single adult	17.6%	2.5%	2.0%	26.7%	64.1%	19.6%	4.3%	1.7%	58.5%	83.5%
Head married, spouse away	3.5%	0.9%	0.3%	47.8%	79.1%	3.6%	1.0%	0.5%	75.4%	89.1%
Divorced	2.2%	0.4%	0.2%	27.7%	55.2%	1.6%	0.4%	0.2%	60.7%	67.2%
Separated	0.7%	0.0%	0.0%	34.3%	28.1%	0.5%	0.1%	0.0%	53.5%	48.7%
Widow	10.3%	0.9%	0.4%	18.3%	54.3%	9.6%	1.9%	0.6%	45.7%	59.7%
Never married	0.9%	0.3%	0.2%	49.9%	92.8%	4.2%	1.0%	0.4%	92.4%	95.5%
China										
Single adult	3.2%	0.9%	0.4%	71.4%	77.8%					
Head married, spouse away	1.0%	0.4%	0.3%	100%[a]	66.7%					
Divorced	0.0%	0.0%	0.0%	n/a	n/a					
Widow	1.3%	0.5%	0.1%	60.0%	80.0%					
Never married	0.9%	0.0%	0.0%	n/a	85.7%					

Notes: non-members (collateral kin) refers to individuals who are not members of the nuclear household of the household head and always excludes grandsons/granddaughters; (a) Over only two observations; n/a: not applicable

Table A4: **Single adult households: expenditure per capita**
(in thousand local currency units for Cote d'Ivoire, Ghana and Indonesia, in Yuan for China)

	Rural						Urban					
	All single adult households	Without non-members	With non-members		With inactive non-members		All single adult households	Without non-members	With non-members		With inactive non-members	
Côte d'Ivoire												
Single adult, all	215	232	136	***	121	***	441	543	312	***	326	***
Head's spouse away	228	229	219	ns	187	*	470	554	342	*	382	ns
Divorced	249	261	98	***	115	***	440	508	362	ns	372	ns
Separated	239	254	152	***	152	***	374	456	316	ns	313	ns
Widow	171	189	135	ns	113	**	285	381	236	ns	243	ns
Never married	240	256	88	***	100	***	523	606	332	***	335	***
Ghana												
Single adult, all	1 390	1 487	903	***	956	***	2 340	2 473	1 677	***	1 727	***
Head's spouse away	1 402	1 520	953	***	988	***	2 290	2 427	1 643	***	1 651	***
Divorced/Separated	1 271	1 365	877	***	894	***	2 016	2 153	1 438	***	1 480	***
Widow	1 126	1 169	847	**	1 040	ns	1 743	1 778	1 577	ns	1 717	ns
Never married	2 161	2 267	950	***	872	***	3 263	3 403	2 284	***	2 379	***
Indonesia												
Single adult, all	724	737	647	ns	638	ns	1 674	1 695	1 601	ns	1 458	ns
Head's spouse away	855	912	701	ns	618	**	2 200	2 498	1 403	ns	1 496	ns
Divorced	602	602	602	ns	653	ns	1 251	1 243	1 276	ns	1 611	ns
Separated	763	769	672	ns	.		894	769	1 719	ns	4 039	***
Widow	676	687	559	*	622	ns	1 112	1 094	1 186	ns	1 100	ns
Never married	1 041	1 189	775	**	680	***	2 763	2 799	2 651	ns	1 696	**
China												
Single adult, all	2 165	2 343	1 708	*	2 005	ns						
Head's spouse away	1 915	1 868	1 993	ns	2 216	ns						
Divorced	n/a	n/a	n/a		n/a							
Widow	2 091	2 490	1 493	ns	1 585	ns						
Never married	2 558	2 558	n/a		n/a							

Notes: (1) monetary values adjusted for regional price differentials for Ghana and Indonesia, nominal values for Cote d'Ivoire and China, (2) Non-members of the nuclear household always exclude grandchildren, (3) Significance of test of H0: No difference between households with and without non-members and with and without dependant non-members reported: 1% (***), 5% (**) and 10% (*) or not significant (ns)

Table A5: **Frequency and size of transfers relative to expenditure (%), by household structure**

	Rural				Urban			
	Proportion receiving transfers	Transfers / Household expenditure	Proportion sending transfers	Transfers / Household expenditure	Proportion receiving transfers	Transfers / Household expenditure	Proportion sending transfers	Transfers / Household expenditure
Cote d'Ivoire								
Extended	0.40	0.06	0.61	0.04	0.28	0.02	0.74	0.04
-- without extra dependants	0.37	0.02	0.62	0.03	0.35	0.02	0.72	0.03
-- with extra dependants	0.42	0.08	0.60	0.04	0.27	0.02	0.74	0.05
Nuclear	0.31	0.11	0.55	0.03	0.34	0.05	0.60	0.03
Monogamous	0.35	0.10	0.57	0.03	0.32	0.04	0.69	0.04
Polygamous	0.31	0.07	0.58	0.03	0.28	0.03	0.59	0.03
Single adult	0.55	0.21	0.35	0.06	0.52	0.19	0.49	0.08
All	0.38	0.12	0.53	0.04	0.37	0.10	0.62	0.05
Ghana								
Extended	0.36	0.06	0.81	0.06	0.32	0.10	0.85	0.05
-- without extra dependants	0.38	0.06	0.80	0.05	0.40	0.08	0.83	0.05
-- with extra dependants	0.35	0.07	0.81	0.06	0.27	0.11	0.86	0.04
Nuclear	0.33	0.07	0.78	0.06	0.29	0.12	0.84	0.05
Monogamous	0.34	0.07	0.79	0.06	0.29	0.11	0.84	0.05
Polygamous	0.26	0.05	0.73	0.04	0.35	0.07	0.71	0.02
Single adult	0.51	0.16	0.74	0.05	0.52	0.30	0.75	0.05
All	0.41	0.11	0.77	0.06	0.41	0.24	0.79	0.05

Table A5 (ctd): **Frequency and size of transfers relative to expenditure (%), by household structure**

	Rural				Urban			
	Proportion receiving transfers	Transfers / Household expenditure	Proportion sending transfers	Transfers / Household expenditure	Proportion receiving transfers	Transfers / Household expenditure	Proportion sending transfers	Transfers / Household expenditure
Indonesia								
Extended	0.72	0.08	0.82	0.11	0.64	0.40	0.86	0.32
-- without extra dependants	0.72	0.10	0.83	0.12	0.66	0.37	0.83	0.29
-- with extra dependants	0.73	0.06	0.82	0.07	0.62	0.45	0.91	0.34
Nuclear	0.71	0.14	0.84	0.28	0.65	0.34	0.83	0.41
Monogamous	0.71	0.12	0.84	0.26	0.65	0.35	0.84	0.39
Polygamous								
-- co-resident	0.90	0.02	0.56	0.01	0.50	0.01	0.50	1.33
-- non-co-resident	0.68	0.37	0.80	0.14	0.65	0.61	0.82	0.41
Single adult	0.74	0.31	0.70	0.16	0.68	0.43	0.71	0.37
All	0.71	0.16	0.81	0.24	0.65	0.37	0.81	0.38
China								
Extended	0.29	0.03	0.24	0.01				
-- without extra dependants	0.39	0.05	0.13	0.01				
-- with extra dependants	0.13	0.01	0.40	0.00				
Nuclear	0.29	0.06	0.35	0.04				
Single adult	0.32	0.11	0.04	0.00				
All	0.29	0.06	0.33	0.03				

Notes: All transfers include gifts when available.

Table A6: Average size of transfers per capita by household structure (among non-zero transfers)

	Rural received per capita		sent per capita		Urban received per capita		sent per capita	
Cote d'Ivoire								
Extended	6 927	ns	7 665	ns	6 901	ns	22 263	ns
-- without extra dependants	2 346		4 451		4 757		9 230	
-- with extra dependants	9 111	**	9 428	ns	7 324	ns	24 204	***
Nuclear	12 989		5 539		14 419		18 402	
Monogamous	12 104	ns	6 522	ns	12 121	**	22 626	
Polygamous	7 304		5 869		3 836		9 467	***
Single adult	33 029	***	22 000	**	79 102	***	55 567	**
All	16 753		8 278		38 472		28 592	
Ghana								
Extended	45 201	ns	49 585	ns	172 711	ns	64 906	ns
-- without extra dependants	37 260	ns	48 727		118 430	ns	85 713	ns
-- with extra dependants	51 861		50 233	ns	212 293		54 940	
Nuclear	49 721		66 087		170 629		75 298	
Monogamous	50 585		65 322		175 423		74 282	
Polygamous	17 869	***	29 369	*	42 615	***	19 839	***
Single adult	163 563	***	89 725	ns	576 812	***	143 974	***
All	108 478				440 528			
Indonesia								
Extended	49 832	ns	43 303	**	212 269	ns	243 838	ns
-- without extra dependants	65 132	ns	48 298	ns	183 059	ns	262 717	ns
-- with extra dependants	22 807		34 235		253 020		221 206	
Nuclear	54 148		107 638		199 362		280 866	
Monogamous	50 875		97 867		198 445		273 944	
Polygamous								
-- co-resident	10 418	***	3563	***	2 000	***	316 500	ns
-- non-co-resident	148 926		7 7696	ns	351 729	ns	192 880	ns
Single adult	109 507	***	5 3685	**	393 645	**	296 631	ns
All	63 302		9 0927		240 372		275 986	
China								
Extended	300.9	ns	49.1					
-- without extra dependants	340.7	ns	90.0	***				
-- with extra dependants	121.7		28.7					
Nuclear	384.2		261.9	***				
Single adult	617.5	ns	100.0	n/a				
All								

Notes: Tests of Extended vs. Nuclear, Extended with vs. without extra dependants and Nuclear with vs. without extra dependants and between monogamous and polygamous.

Tests significant at 1% (***), 5% (**) and 10% (*) levels or insignificant (ns). All tests are Wald tests of the difference being equal to zero

For Côte d'Ivoire all transfers include gifts. For Ghana, transfers out of the household include gifts, transfers in does not include them explicitly.

Table A7: Asset ownership (proportions in %), by family structure and area

	Farm capital	Farmland	Livestock	Non-agricultural capital	Non-farm business land	Durables	Net financial capital	Housing
Côte d'Ivoire								
Rural								
Extended	0.2%	13.1%	0.4%	0.5%		0.8%	2.0%	83%
Nuclear	0.1%	26.9%	0.8%	0.2%		0.6%	0.9%	71%
Monogamous	0.1%	24.8%	0.6%	0.2%		0.7%	0.9%	73%
Polygamous	0.2%	15.8%	0.6%	0.5%		0.7%	2.2%	80%
Single adult	0.2%	19.9%	0.6%	0.6%		0.9%	1.0%	77%
Rural	0.1%	21.2%	0.6%	0.4%		0.7%	1.2%	76%
Ghana								
Rural								
Extended	3.1%	36.7%	11.1%	7.3%		8.7%	2.1%	31%
Nuclear	1.2%	29.6%	31.0%	7.3%		7.9%	2.2%	21%
Monogamous	1.4%	31.2%	27.7%	7.4%		8.1%	2.2%	22%
Polygamous	4.6%	25.9%	17.0%	4.9%		7.5%	1.8%	38%
Single adult	0.4%	53.7%	2.9%	4.0%		9.3%	2.3%	28%
Rural	1.0%	41.3%	15.7%	5.8%		8.9%	2.3%	25%
Indonesia								
Rural								
Extended	1.0%	39.6%	1.9%	1.9%	1.0%	3.9%	0.7%	50%
Nuclear	1.2%	40.0%	3.2%	2.3%	1.6%	2.9%	0.2%	49%
Monogamous	1.0%	39.0%	3.1%	2.3%	1.0%	3.1%	0.3%	50%
Polygamous co-resident	0.4%	24.1%	0.0%	3.5%	12.5%	1.2%	-0.1%	58%
Polygamous non-co-resident	4.0%	55.8%	1.0%	2.0%	10.1%	2.6%	-1.0%	25%
Single adult	0.5%	22.4%	1.0%	0.5%	3.0%	2.3%	0.3%	70%
Rural	1.0%	36.2%	2.5%	1.9%	1.9%	2.9%	0.3%	53%
China								
Rural								
Extended	6.4%		6.4%	14.3%		7.8%	20.0%	45%
Nuclear	4.7%		4.2%	16.7%		6.0%	28.4%	40%
Single adult	6.4%		6.0%	6.7%		6.6%	21.0%	53%
Total	4.8%		4.3%	16.3%		6.1%	27.8%	41%

Table A7 (ctd.): **Asset ownership (proportions in %), by family structure and area**

	Farm capital	Farmland	Livestock	Non-agricultural capital	Non-farm business land	Durables	Net financial capital	Housing
Côte d'Ivoire								
Urban								
Extended	0.02%	0.68%	0.06%	2.85%		3.19%	3.22%	90%
Nuclear	0.46%	11.53%	0.03%	1.43%		5.16%	2.70%	79%
Monogamous	0.19%	4.51%	0.04%	2.41%		4.12%	3.19%	86%
Polygamous	0.05%	3.00%	0.09%	2.21%		2.16%	2.13%	90%
Single adult	0.00%	0.33%	0.00%	2.05%		5.39%	4.02%	88%
Urban	0.12%	3.22%	0.04%	2.29%		4.27%	3.31%	87%
Ghana								
Urban								
Extended	0.05%	6.63%	4.74%	8.80%		15.56%	2.14%	62%
Nuclear	2.02%	15.00%	3.85%	22.51%		22.52%	4.35%	30%
Monogamous	1.42%	12.42%	3.75%	18.31%		20.48%	3.69%	40%
Polygamous	0.13%	5.60%	25.29%	5.85%		10.00%	1.25%	52%
Single adult	0.13%	10.51%	5.41%	29.55%		12.99%	2.72%	39%
Urban	0.64%	11.21%	4.89%	25.20%		15.95%	3.09%	39%
Indonesia								
Urban								
Extended	0.08%	2.43%	0.11%	5.13%	3.01%	14.19%	0.50%	75%
Nuclear	0.65%	6.26%	0.24%	3.93%	4.15%	10.45%	0.26%	74%
Monogamous	0.38%	4.74%	0.19%	4.47%	3.73%	12.13%	0.33%	74%
Polygamous co-resident	0.03%	1.68%	1.15%	1.50%	25.38%	6.38%	-2.78%	67%
Polygamous non-co-resident	1.63%	1.98%	0.08%	1.70%	0.71%	7.03%	1.37%	85%
Single adult	0.13%	2.53%	0.11%	1.80%	4.13%	5.25%	0.90%	85%
Urban	0.33%	4.04%	0.17%	3.62%	3.85%	9.99%	0.53%	77%

Table A8: **Expenditures in Education**
Size relative to total and per capita expenditure

	Rural				Urban			
	Expenditure in schooling / Total expenditure		Expenditure in schooling / per capita expenditure		Expenditure in schooling / Total expenditure		Expenditure in schooling / per capita expenditure	
Côte d'Ivoire								
Extended	0.033	**	0.17		0.056	***	0.16	
-- without extra dependants	0.021	ns	0.17	ns	0.045	**	0.19	ns
-- with extra dependants	0.041	**	0.18	ns	0.057	***	0.16	ns
Nuclear	0.021		0.17		0.024		0.15	
Monogamous	0.021		0.16		0.040		0.15	
Polygamous	0.032	***	0.19		0.042	ns	0.18	**
Single adult	0.018		0.19	ns	0.025		0.13	
All	0.024		0.17		0.036		0.15	
Ghana								
Extended	0.114	ns	0.022	ns	0.160	ns	0.044	***
-- without extra dependants	0.104	ns	0.019	ns	0.148	ns	0.039	ns
-- with extra dependants	0.122	ns	0.026	**	0.169	ns	0.047	**
Nuclear	0.101		0.018		0.164		0.031	
Monogamous	0.106		0.019		0.161		0.034	
Polygamous	0.085	**	0.017	ns	0.183	ns	0.025	ns
Single adult	0.119		0.018		0.164		0.029	
All	0.109		0.018		0.163		0.031	
Indonesia								
Extended	0.196	ns	0.045	ns	0.254	*	0.070	ns
-- without extra dependants	0.203	ns	0.045	ns	0.262	ns	0.068	ns
-- with extra dependants	0.179	ns	0.044	ns	0.244	ns	0.074	ns
Nuclear	0.163		0.043		0.220		0.066	
Monogamous	0.170		0.044		0.221		0.067	
Polygamous								
-- co-resident	0.072	n/a	0.014	**	0.964	ns	0.005	***
-- non-co-resident	0.094	***	0.029	***	0.474	ns	0.078	ns
Single adult	0.167		0.034		0.255		0.057	
All	0.168		0.042		0.230		0.065	
China								
Extended	0.131	***	0.018	**				
-- without extra dependants	0.170	ns	0.021	ns				
-- with extra dependants	0.114	***	0.015	***				
Nuclear	0.174		0.036					
Single adult	0.118		0.008					
All	0.172		0.034					

Notes: (1) Extra dependants are non-working individuals who are not members of the nuclear household of the head

(2) tests of differences between extended and nuclear, each type of extended and nuclear, and between polygamous and monogamous, significant at 10% (*) 5% (**) and 1% (***) level

(3) Last column is total expenditure in education, including adults

REFERENCES

AINSWORTH, M. (1992), "Economic aspects of child fostering in Côte d'Ivoire", World Bank, Washington.

AKRESH, R. (2005), "Risk, Network Quality, and Family Structure: Chile Fostering Decisions in Burkina Faso", Discussion Paper No. 902, Economic Growth Center, Yale University.

ARYEETEY, E. and C. UDRY (2000), "Saving in Sub-Saharan Africa", Centre for International Development Working Paper No. 38, Harvard University.\

BECKER, G. (1991), *A treatise on the family*, Harvard University Press.

BESLEY, T. (1995), "Saving, credit and insurance", in Handbook of Development Economics, Vol. IIIA, North Holland, Amsterdam.

COGNEAU, D., C. GUENARD, S. MESPLE-SOMPS, G. SPIELVOGEL and C. TORELLI (2006), "Development at the border", DIAL, Paris.

DEATON, A. (1990), "Saving in Developing Countries: Theory and Review", Proceedings of the world Bank Annual Conference on Development Economics, Washington D.C.

DUFLO, E. and C. UDRY (2004), "Intrahousehold Resource Allocation in Côte d'Ivoire: Social Norms, Separate Accounts and Consumption Choices", NBER Working Paper No. 10498.

EDLUND, L. and N.-P. LAGERLOF (2004), "Implications of marriage institutions for redistribution and growth", mimeo, Columbia University.

FAFCHAMPS, M. (1992), "Solidarity Networks in Pre-Industrial Societies: Rational Peasants with a Moral Economy," Economic Development and Cultural Change, Vol. 41 n. 1.

FRAKENBERG, E. and L. KAROLY (1993), "The Indonesia Family Life Survey (IFLS): Overview and Field Report", November 1995, RAND, Santa Monica, CA.

GERSOVITZ, M. (1988), "Saving and development" in Handbook of Development Economics, Vol. I, North Holland, Amsterdam.

GUTIÉRREZ, M. and A. SOLIMANO (2007), "Savings, Investment and Growth in the Global Age: Analytical and Policy Issues", American University of Paris, Working Paper no. 43

LAITNER, J. (1997), "Intergenerational and interhousehold economic links" in Handbook of Population and Family Economics, Vol. IA, North Holland, Amsterdam.

DE LAIGLESIA, J. R. (2006), "Institutional Bottlenecks for Agricultural Development: A Stock-Taking Exercise Based on Evidence from Sub-Saharan Africa", *Working Paper* No. 248, OECD Development Centre, Paris.

MAHIEU F.-R. (1990), *Les fondements de la crise économique en Afrique: entre la pression communautaire et le marché international*, L'Harmattan, Paris.

MORRISSON, C. avec la collaboration de S. FRIEDRICH (2004), "La condition des femmes en Inde, Kenya, Soudan et Tunisie" *Document de travail* No. 235, Centre de développement de l'OCDE, Paris.

MORRISSON, C. (2006), "Structures familiales, transferts et épargne : un examen", *Document de travail* No. 255, Centre de développement de l'OCDE, Paris

MURDOCK, G. P. (1949), *Social structure*, MacMillan.

PLATTEAU, J.-P. (2000), *Institutions, social norms and economic development,* Harwood Academic Publishers, Amsterdam.

TERTILT, M. (2005), "Polygyny, fertility and savings", Journal of Political Economy, pp. 1341-1371.

UNDP (2005), Human Development Report 2005.