

A Dark Side of Social Capital?

Kinship, Consumption, and Savings

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We explore if traditional sharing norms in kinship networks are associated with consumption and accumulation decisions of poor black households in Kwazulu-Natal, South Africa. Our results are consistent with the interpretation that households try to evade their “sharing obligations” by (i) accumulating durables that are non-sharable at the expense of durables that may be shared, (ii) increasing consumption of non-durables, and (iii) reducing savings in liquid assets. By attenuating accumulation incentives, kinship sharing may come at the expense of income growth — if so, a culturally-induced poverty trap can possibly eventuate. We demonstrate tentative evidence that more extensive kinship networks are associated with lower incomes, especially for the subsample of households that is relatively well off.

Keywords: Traditional sharing norms, spending, accumulation of wealth, sub-Saharan Africa.

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1. Introduction

In the absence of “formal” financial markets and insurance opportunities, many people in developing countries depend on informal community structures to provide social security and reduce their exposure to risk (e.g., Kimball 1988, Rosenzweig 1988, Fafchamps 1991, Coate and Ravallion 1993, Townsend 1994, Udry 1994, Fafchamps and Lund 2003). A key role in this respect is played by the extended family (kinship), where membership of a kinship network is acquired by bloodlines, marriage, or adoption. Kinship is a collective institution, and represents a primary principle of social organization in sub-Saharan Africa and countries like the Philippines and Vietnam, governing social relationships and marital customs, and regulating access to resources and services. The formation of strategic alliances between families is one of the essential features of kinship systems (e.g., Bloch 1973). Provision of economic and social security to its members via redistribution—sharing—is another one.

Unlike friendship networks, which are typically voluntary and based on reciprocity (such that incentive constraints imply limited mutual insurance possibilities, as modeled by Coate and Ravallion 1993)¹, kinship relations may define *obligations* for its members. In this respect, Scott (1976) and Platteau (1991) refer to the “moral economy” of societies characterized by kinship relations, and Hoff and Sen (2006) talk about a “social contract” among members of an extended family (see also Fortes 1969, Bloch 1973).² Moral obligations towards sharing and redistribution

¹ Extensions of the seminal paper by Coate and Ravallion include work accommodating altruism among individuals (especially kin members) by Foster and Rosenzweig (2001), non-stationary transfers (Ligon et al. 2002), and group stability in the context of risk-sharing among subgroups (Genicot and Ray 2003).

² Rosenzweig (1988, p.1167) writes that “the ties of common experience, altruism and heritage among family members enable families to transcend some of the information problems barring the development of impersonal markets.” However, the compulsory sharing paradigm goes a step further. Platteau (2000) discusses the evolution of sharing norms, and the role of witchcraft and other social sanctions to support them. Writing about the Merina of Madagascar, Bloch (1973, p.78) is explicit

are supported by custom and norms, enabling kinship members to claim assistance from their relatives in dealing with difficulties. Fortes (1969) refers to this as “sharing” without “reckoning,” and Gulliver (1971) remarks that the statement “you must help a man because he is your kinsman” has the same constraining quality as the statement “you must cultivate because you need food to live.” In light of this it is no surprise that Coate and Ravallion (1993) remark that, among anthropologists, a rather “romanticized view” of kinship-based sharing systems has long been dominant. Kinship is celebrated as a successful indigenous institution—reproduced over time, and affecting the well-being of many people in developing countries. In the African context, kinship is a major component of social capital, providing a safety net for the unlucky.

While sharing norms may provide some protection against risks and adverse shocks, one might wonder whether this risk-pooling service comes at a price. The prospect of forced redistribution may directly impact on spending and savings decisions. Lewis (1955) recognizes the adverse incentive effects of compulsory sharing when writing about successful kinship members who “may be besieged by ... increased demand for support from a large number of distant relatives.” Similarly, Bauer and Yamey (1957) mention sharing obligations may “... obstruct the spreading of the banking habit since people are unwilling to have bank accounts the content of which are likely to be divulged to kinsmen. Generally, it weights the scales against [conspicuous] investment.” Compulsory contributions to the family pool—akin to a ‘family tax’—therefore may discourage individuals to work hard and accumulate assets.³

about this as well: “to fail in kinship obligation is to be a witch..., in other words to be the opposite of a moral being: a murderer, a bestialist, a lover of death, etc”.

³ Other mechanisms may exist. There are the usual moral hazard problems associated with the provision of (mutual) insurance against contingencies. For example, Bauer and Yamey (1957: 66)

What evidence exists for either the perspective that the moral economy implies “sharing without reckoning,” or the alternative conjecture that traditional sharing norms within kinship networks are inimical to economic growth? Ample anecdotal evidence is provided in Kennedy (1988) and Platteau (2000) that kinship obligations do indeed affect behavior,⁴ but we are not aware of any empirical analyses linking kinship membership to consumption and investment. The closest in spirit is work by Anderson and Francois (2006) and Barr *et al.* (2008). Anderson and Francois do not measure kinship membership explicitly, but find a positive correlation between ethnic homogeneity and the degree of formalization in savings, investment and insurance groups in Kibera slum, Kenya. They explain this apparent paradox by noting that credibly committing to enforcement is more difficult in homogenous groups, where kinship obligations presumably play a role. But without punishment in the case of rule transgression, these groups cannot function. In response, such groups prefer rules over discretion, and voluntarily delegate part of their responsibilities to an “outsider.” Barr *et al.* (2008) consider endogenous formation of risk sharing groups in an economic experiment and also conclude “genetically related individuals tend to distrust one another and so do not group when enforcement depends on intrinsic motivations alone” (p.5, see also Barr and Genicot 2008).

write “... the [extended family] system ... minimizes the inducement for people to improve their position because they can count on being provided with the means of subsistence at a level not very different from that of the majority of their kinsmen, including the energetic, thrifty and able.” Another avenue via which sharing norms may have adverse economic consequences is nepotism. If successful kinship members achieve positions of responsibility they may be expected to provide jobs for less fortunate (and possibly less qualified) relatives. But if nepotism is costly for organizations and firms, and can be anticipated, the odds that a kinship member will actually be promoted to positions of authority will decline (or the terms associated with the position will deteriorate). For a theoretical model highlighting entry barriers for kin members in a modernizing society, refer to Hoff and Sen (2006) and for empirical work on nepotism in Ghana, refer to Collier and Garg (1999).

⁴ Others have speculated about this issue as well. For example, Dekker (2008) explores wealth differences among households in rural Ethiopia and finds, to her surprise, that migrants who don’t own land are often-times better off than indigenous land-owning households. She concludes “This discrepancy may (at least partly) be related to social networks in the sense that the obligations and norms related to a strong network support may in fact hamper individual economic development. The analysis required to further explore such a relationship is however beyond the scope of this chapter.”

The main objective of this paper is to explore the empirical relationship between traditional sharing rules in kinship networks and household consumption and savings decisions. We use detailed survey data from KwaZulu-Natal (Republic of South Africa) to link household expenditures to a measure of the size of a household's kinship network. Specifically, we analyze whether savings, but also consumption of sharable and non-sharable durables, are correlated with the number of kinship links. Given limitations set by our data, we aim to address 'endogeneity concerns', through panel estimations and IV models. Our results are consistent with the hypothesis that traditional sharing rules invite evasive behavior. If so, traditional sharing rules could possibly contribute to the existence of poverty traps by discouraging investments and savings.

This paper serves as a reminder of the importance of cultural factors and social norms as potential drivers or impediments to development—an idea that has become rather snowed under in recent decades when attention was focused on the roles of markets and (formal) institutions.⁵ It also contributes to the growing literature relating economic development to social capital, where social capital may be defined as norms that enhance the incentive compatibility of non-contractual or legally enforceable exchange (e.g., Carter and Castillo 2002).⁶

The paper is organized as follows. Section 2 outlines our empirical strategy, based on an analysis of budget shares, and we introduce our data. In section 3 we present our results, and show how household expenditures vary with kinship

⁵ For more recent work emphasizing the importance of various aspects of culture, refer to McCleary and Barro (2006) and Tabellini (2007).

⁶ Kinship ties may help to restrain opportunistic behavior of members for the common good, lower transaction costs, facilitate the exchange of information, and enable communities to overcome social dilemma situations. However, empirical evidence does not reveal a robust correlation between social capital and economic growth (e.g., Narayan and Pritchett (1999) and Carter and Castillo (2002) versus Miguel et al. (2005) and Adato et al. (2006)). Insofar as traditional sharing norms are associated with social capital, we postulate this may be due to distorted incentives induced by the family tax – the “dark side” of social capital.

obligations. We demonstrate that the size of a household's kinship network – proxied by the self-reported number of kinship links – is correlated with spending patterns. Households with many kinsmen spend a smaller share of their income on liquid and sharable assets. Importantly, compulsory sharing is also associated with reduced savings. In section 4 we place our findings in perspective, and draw some conclusions.

2. Empirical Strategy and Data

We have in mind a world in which income depends on labor time and a random shock. Once it realizes its income, the household can take some part of its income outside of the pool of resources on which the extended family can draw. The purpose of the empirical work is to investigate the evidence that households with greater kin obligations make different spending decisions than those with fewer kin obligations, and that the nature of those differences is consistent with the hypothesis of evasion from kin group obligations. Specifically, since kin obligations are similar as a tax (that is: refraining from altruism-based arguments as in Foster and Rosenzweig 2001), we postulate that kin obligations reduce demand for normal goods subject to the family tax.

This was analyzed as follows. We study the relationship between kinship links and households' expenditure by estimating a set of budget share equations. We distinguish between sharable and non-sharable goods, but we also consider the “durability of goods” (as non-durability of certain goods may be an alternative approach to avoid the family tax—goods used up in consumption cannot be shared). Specifically, we distinguish between three different categories of goods (assets) that may be purchased by households: (i) durable, non-sharable goods, (ii) durable,

sharable goods, and (iii) non-durable, consumptive goods. Sharable in this context refers to appropriable by kinship members (i.e. sharable implies potentially “taxable”), at the expense of the household. Moreover, and as a fourth category, we also consider savings (a rather liquid asset according to our definition—see below) as a variable in the analysis.

Our underlying hypothesis is that if households try to evade compulsory sharing norms within their kinship network, we will observe a move towards goods that are directly used up within the household (e.g. consumption of food and drinks) as well as a move towards assets that are non-sharable by nature. As corollaries of this idea, we predict a move from liquid towards illiquid assets, and also that the prospect of future sharing obligations attenuates incentives to allocate funds towards productive investments. After all, savings – especially in the form of money – are perhaps most easily appropriated by kin members.

Let x_h denote a measure of amount of resources in the household (i.e. total consumer expenditure) and let w_{ih} be the corresponding budget share for categories $i = 1, \dots, 4$ and for households $h = 1, \dots, H$. We can write an Engel curve as follows:

$$(1) \quad w_{ih} = \alpha_0 + \alpha_1 \ln x_h + \alpha_3 k_h + \alpha_4 X_h + v_{ih},$$

where k_h is a metric capturing the number of kinship connections (see below) for the h^{th} household, X_h is a vector of controls, and v_{ih} is the error term.⁷ In budget share models, x_h is usually considered potentially endogenous – hence $E(x_h | v_{ih}) \neq 0$. Conventionally, in empirical analyses of Engel curves, the household’s level of income as well as income squared are used as instrumental variables, z_h . This implies assuming $E(z_h | v_{ih}) = 0$ (e.g., Blundell *et al.* 1993, Lewbel 1997). We follow this approach, and also include lagged income (in 1993) as an additional instrument.

⁷ We also explored including a quadratic term for the log of total expenditure, and found this did not affect the main results.

Since the education variable, which is one of our controls, may also be endogenous we include lagged education expenditures (both linear and quadratic terms) as well as expenditures on books as additional instruments.

Data are drawn from the 1993-1998 KwaZulu-Natal Income Dynamics Study. This is a representative sample of the rural and urban black population in KwaZulu Natal. This study was a collaborative project between researchers at the International Food Policy Research Institute (IFPRI), the University of Natal, and the University of Wisconsin. This data collection represented the first attempt to describe living conditions in post-apartheid South Africa. An important outcome of the apartheid era is the paucity of credible and comprehensive data on which poverty reduction strategies and other policies could be based. Ethnically, KwaZulu-Natal is rather homogeneous, with 85% of the population classified as black. The survey only contains information on black households, and the great majority of the respondents can be classified as poor. Among other things, the database includes sections on food and non-food expenditures, occasional expenditure, income, agricultural activities, as well as information on kin networks.

Table 1 presents summary statistics of the variables that will be used in the regression analysis. Our kinship variable captures the number of self-reported non-resident kinship links for the household in question. Respondents (typically household heads) are first asked to identify all their relatives living under the same roof as well as relatives living elsewhere.⁸ Our kinship variable is constructed by summing the various relatives of the household head (grandparents, parents, aunts or uncles, siblings, cousins, nieces, nephews, etc.) that don't live under the same roof as the household head. Non-residence was determined by the following question; "Has

⁸ It is not clear whether respondents also included family members of their spouse. This implies that we measure kinship with noise, which will bias our estimates towards zero.

he or she lived under this roof for more than 15 days of the last 30 days?”. This implies that the size of the resident household is rather fuzzy and possibly may vary with idiosyncratic shocks and economic conditions.

Most of the non-resident relatives represent a household of their own. Since the kinship variable is determined by bloodlines and marriage, one might expect it to be exogenous, and not correlated with the error term.. However, this is not obviously true. Unobservables component of the error term may be correlated with the number of external links of the household. Also, household formation and structure in South Africa responds to economic factors (e.g., Klasen and Woolard 2008), which automatically implies that the size of the non-resident kinship network varies as well. Moreover, to the extent that geographic distance affects requests for support, one would expect that migrants experience a lower family tax. For these reasons we try to explore several dimensions of potential endogeneity bias in the next sections..

Our kinship variable is not a measure of the actual family tax burden, but rather captures *potential* pressure that could be exerted on the household by kin members. The average number of links in our sample is slightly over three. Since this reflects links to other households, and given that the average household size is of about six members, the total kin network may be quite large. Kinship linkages for some households are more extensive than that – up to 16 links are recorded in our sample.

As mentioned above, we distinguish between three different categories of consumption goods to explore the effect of kinship obligations on spending. Each category is represented by a particular variable, which we will vary in robustness analyses below. Overall, our expenditure categories amount to more than 50% of annual household expenditures (taking into account expenses on furniture and

appliances as well, as we do in section 3.3, raises the share to more than 75% of total expenditures).

Our metric for durable and non-sharable assets is expenditures for home improvement. Importantly, this variable does not include payments to increase the size of the house, which could be conflated as an in-kind transfer to kin members if larger houses enable households to accommodate more kin members. Instead, it captures expenditures for upgrading or restoring roofs, floors, doors, etc. On average this category amounts to 3.5% of expenditures of surveyed households. Next, we use one proxy for durable yet sharable assets, namely expenditures on jewelry and watches. These can be stored but individual items can be easily traded or borrowed, making this a good that is less than perfectly safe from kin members' requests for support. In the absence of well-developed savings opportunities, it is perhaps no surprise that 7.5% of expenditures are allocated to jewelry. To capture consumables (non-durable goods) we use food outlays for resident household members as our category. Importantly, this variable only includes food for household members, and outlays for visiting kin members and other guests have been netted out. About 42% of all expenditures fall into this category, reflecting the overall low income level of the respondents.

Finally, we use the sum of savings in current accounts, savings accounts, and stokvel (i.e., contributions to credit cooperative for poor people) as our measure of liquid financial assets. In the basic model specifications we consider the total stock of accumulated financial assets (and not savings divided by income) because assets are accumulated over various years.⁹ However, we have also estimated models based on the “flow” of savings—arguably a more volatile measure, but also “cleaner” as it is

⁹ But, as expected, the results for savings scaled by total expenditures are very similar to the ones based on unscaled savings. Results are available on request.

less affected by the history of investment decisions. The results for both savings variables are qualitatively similar (flow results not reported but available on request).

As controls in our budget share and asset regressions we include (the natural logarithm of) total expenditures as a measure of the resources available to the household. We also include a dummy for rural households (in rural areas most activities are related to agriculture), a measure of proximity to road infrastructure, the number of resident household members, the average education of the household, and the average age of members in the household.

3. Regression results

Tables 2 and 3 report the results for our expenditures and savings analyses. We first present both OLS and IV results (addressing endogeneity of total expenditures and education), respectively, in columns (a) and (b). For now we ignore potential endogeneity of the kinship variable (addressed in the remaining columns, and discussed below). The results in columns (a) and (b) are broadly consistent. The main coefficient of interest in all three panels is the one associated with our kinship variable. This correlation is significant throughout, and the sign is consistent with the hypothesis that compulsory sharing invites distortionary spending.

Test statistics provided at the bottom of the panel reveal that we cannot reject the null hypothesis of endogeneity of expenditures and education for most budget share equations; hence the use of the IV estimator appears appropriate. Both total expenditures and education are endogenous in the budget shares equations for home improvement and jewels, but we find no evidence of endogeneity bias in the food share equation. Regarding the financial asset variable, both expenditures and education are endogenous. Results of the various overidentification tests (Sargan-

Hansen), endogeneity tests (C-tests) and instrument relevance tests (F values first stage) are summarized in Tables 2 and 3. Now let us return to the (second stage) results in more detail.

In panel (a) of Table 2 we report outcomes for the case of durable, non-sharable assets (measured by expenditures on home improvement). If households aim to evade their sharing obligations, they should allocate a greater share of their income to such non-sharable assets. This is consistent with the data, which reveal a positive and significant positive correlation between kinship links and home improvement expenditures – households with larger (non-resident) extended families allocate a greater share of their expenditures towards the consumption of durables that cannot be shared with others. Both the OLS and IV approach suggest increasing the number of kinship is associated with more such expenditures . Increasing the number of links by one standard deviation (2.9 links) is associated with a modest increase in the budget share of durable non-sharables by 3.2 per cent. The share of home improvement expenditures is increasing in total expenditures (suggesting this is a luxury good), and in our education and age variables. The share is greater in rural areas and declining in household size.

The family tax hypothesis predicts that expenditures for durable yet sharable assets will decline in the number of kinship links. This is consistent with evidence in panel (b). A one standard deviation increase in kinship linkages is associated with a 2.5% fall in expenditures on jewels. This may suggest households are unwilling to hold on to durable assets if they feel that such assets may be subject to forced sharing with others.

Further support for the family tax hypothesis is provided in panel (c), dealing with the case of direct consumption of food within the household (a non-durable).

Controlling for the size of the household, a one standard deviation increase in kinship linkages is associated with a modest but significant 1% increase in *per capita* consumption of food and beverages. Increasing the number of kinship links by one standard deviation is associated with an increase of food consumption by 2.3%. This could be evidence of a “use it or lose it” philosophy which again is consistent with evasive behavior. Not surprisingly, the share of food expenditures is declining in total expenditures (reflecting the inelastic nature of its demand), and increasing in household size.

While the potential distortive effect of the family tax on consumption patterns is in itself of interest to economists, its impact on savings, accumulation and investment decisions are perhaps more relevant because of the dynamic implications. If compulsory sharing attenuates accumulation incentives, it could contribute to the reproduction of poverty and the creation of poverty traps (e.g. Carter and Barrett 2006). The regression results in columns (a) and (b) of Table 3 are consistent with such an idea. First stage results of the IV model where we have again instrumented for expenditures and education are provided in column (a) of Table 4 (for test statistics: see bottom of Table 3).

The estimated coefficient for kinship in the second stage results reported in Table 3 is negative and significant. Increasing the number of kinship ties by one standard deviation is associated with a reduction of 12% of savings. Translating such behavioral responses in standard growth-type models (e.g. Ben-David 1998) would suggest that long-term income effects may result. If future research indeed confirms that the behavioral response to “moral economy” obligations is of this order of magnitude, it is easy to see how extended kinship systems can perpetuate poverty. Finally, our IV estimates suggest a positive effect of education on savings (albeit at a

diminishing rate), but fail to uncover a positive relation between savings rates and income (e.g. Kraay and Raddatz 2007 for macro level evidence). Note that OLS estimates for these variables are qualitatively different, highlighting the importance of addressing endogeneity concerns.

As a robustness check we have re-run all regressions using *expenditures per household member* for the various categories, rather than the aggregate household expenditure measure. The qualitative results are identical (not reported, but available on request).

Next, unobserved household heterogeneity can affect our estimations. To address this concern we exploit the availability of two rounds of the survey and implemented both a household fixed effects 2SLS model as well as an error correction 2SLS model. This latter estimator is a matrix weighted average of a fixed effect 2SLS and a regular 2SLS (Baltagi, 2008), and has the advantage of capturing the effects of household specific time-invariant variables while the GLS allows controlling for different error structures across households.

Including the households fixed effects in the IV setting has the advantage of delivering consistency even when the potential correlation between the right hand side variables and the error term is not only due to time invariant household heterogeneity. For instance, the amount of resources available in a household may be correlated to time-invariant unobservables such as location or ability. but also by time-variant phenomena such as weather.

The results of both panel estimators are reported in Table 2 (columns c and d) and Table 4 (columns c and d). The results are fairly consistent with those obtained earlier. We did a Hausman test based on the difference between the fixed and random

effect 2SLS models. This test did not reject the hypothesis that the random effects model yields consistent estimates for all models but the food budget share.¹⁰

Finally, the number of kinship links and household members could be negatively correlated in a mechanical way: for a given total kinship network size (household members plus other kinship members), decreasing the number of household members increases the number of non-household kinship members. To explore this issue of colinearity we also regressed kinship on a number of variables including household size, finding that the latter variable never enters significantly (e.g., in a simple regression of kinship on household income and size, the t-value of the household size variable is only 0.39). This does not come as a surprise: the unconditional correlation between kinship and household size is only 0.006.¹¹

3.1 Endogeneity of the kinship variable?

Several arguments can be developed to advance the case that our kinship variable is an endogenous regressor in our models. In the previous section we provided the results of two panel estimators, showing the estimated coefficients for our kinship variables were consistent. This gives some confidence that our results are not an econometric artifact stemming from failure to control for unobserved heterogeneity or endogeneity.¹² We investigated this further via a 2SLS model where we instrument for the size of the kinship network.

¹⁰ We obtained the following chi statistics: 8.8 (p-value 0.26) for home improvement, 11.56 (p-value 0.12) for jewels, 5.29 (p-value 0.64) for savings and 21.74 (p-value 0.0028) for food share.

¹¹ We also tried a robustness analysis where we first regressed household size on kinship, and then use the residuals from this auxiliary regression to capture the role of household size in a system that explains expenditures. This does not affect the results (results not shown, but available on request).

¹² We also explored the consequences of controlling for spatial effects. The households in the database belong to 63 different neighborhoods. Spatial or neighborhood effects may be relevant because households from a certain area could simultaneously have a large kinship network and, say, low consumption of jewels or low levels of savings. We adopted a random-effects 2SLS model (Baltagi, 2008) to capture the concern of systematic variation in the structure of families across (but not within)

Instrument choice is notoriously complex. We use the lagged (1993) measure of the extended family as an instrument, and assess its validity via testing for overidentification and for instruments relevance. The second stage results are reported in column (e) of Table 3 (and first stage results in Table 4). As before, we find that the kinship variable enters negative and significantly (at the 5% level).¹³ Test statistics are reported at the bottom of Table 3. Both the Sargan-Hansen statistic and the F-test indicate that the instruments are appropriate. This allows us to test whether our kinship metric is exogenous, and we use a C test to assess its orthogonality. The results suggest kinship is an exogenous variable (test statistic 0.7, p-value= 0.4). Of course this approach does not address potential endogeneity induced by unobserved characteristics that are of a *permanent* nature.

Finally, the availability of two survey rounds¹⁴ suggests the adoption of a first difference model. This approach controls for endogeneity if the correlation between the right hand side variables and the error term applies only via the individual effect, so that removing such effects automatically takes care of endogeneity. For completeness we provide the results in column (f) of Table 3, and again we find that the kinship variable enters significantly and with a negative sign. We also implemented this first difference transformation to the budget shares equations. To conserve space we do not report these results. They were consistent but less precise.¹⁵

neighborhoods. The qualitative results are very consistent with the ones presented (available from the authors on request).

¹³ We have also instrumented for kinship in the budget share regressions to control for any omitted variables. The results are qualitatively unaffected.

¹⁴ A third round of the survey (2004) exists. Unfortunately, in this last round data on kinship were not collected. We therefore could not use this extra database for our analysis.

¹⁵ This can be due to the vast reduction of variation in the right hand side variables. To conserve space we do not report these results here. They are available upon request.

3.2 Kinship and income

Next, we explore the correlation between the number of kinship links and household income. Kinship ties may reduce savings or work effort, and in a symmetric Nash equilibrium every household's income must be lower. In reality, of course, kin members are not identical, and the burden of supporting others asymmetrically rests on the shoulders of a subset of the kin network. Income levels probably determine whether households are on the giving or receiving end of the distribution. If so, an ambiguous relation between income and the size of the kinship network eventuates — depending on the balance between transfers received and given, as well as the impact on accumulation and investment decisions.

Specifically, we would expect the richer households to be unambiguously negatively affected by more extensive kinship obligations (these households are net transfer providers and also incur the incentive effect induced by the family tax). In contrast, for poorer households within kinship networks the net effect is ambiguous. Like their more wealthy counterparts they incur adverse incentive effects, but potentially offsetting such effects may be positive net transfers within the network.

To explore this issue we ran a interquintile regression model, regressing our measure of household resources (proxy for income) on the size of the kinship network and a constant. This flexible approach allows us to explore whether the relation between income and kinship varies across quintiles of the income distribution. This approach provides an estimate of the conditional median, and not the mean, of the distribution. However, in our sample median and mean were not very different. The main results are reported in Table 5. Consistent with expectations we find qualitatively different kinship coefficients for the various income groups. Specifically, there is no negative association between income and the kinship variable

for the poorest sub-sample. This is consistent with the interpretation that for these households the transfer and incentive effects offset each other. However, and as conjectured, moving to richer subsets we find that the kinship variable consistently enters significant and negatively. Interestingly, the coefficient increases monotonically as we consider higher income subsamples. Any adverse effects of the extended family on income appear especially large for the top of the distribution – these households are the ones most likely to be approached for support by their kin.

In column (b) we repeat the analysis but now take our income measure as the dependent variable. The main results are unaffected. We have also estimated a switching regression, allowing for two distinct regimes below and above a threshold income level. The results are consistent: the switching model identifies a structural break above which the relation between income and our kinship metric is negative and significant (not shown, but available on request).

As one final remark and caveat, we would like to emphasize that the approach taken in this subsection is rather rough. Whether households are net receivers from (or providers to) the network depends on their income *relative to that of their own kin members* – rather than relative to the sample population. However, in the absence of more detailed information about relative incomes within kin networks, this approach allows us to tentatively analyze whether the impact of the kinship network depends on the economic conditions of the household.

3.3 An alternative explanation?

We have documented significant associations between the size of the kinship networks and spending patterns (and some tentative evidence of a causal relation between these variables), and as one possible explanation we advance evasion of the

family tax. However, alternative explanations are consistent with the evidence presented thus far. Specifically, households with bigger kin networks may feel less need to self-insure (as they can rely on their kinsmen), and as a result spend more on food and home improvements. While our data do not allow an in-depth treatment of this issue, additional evidence is consistent with the family tax hypothesis (and not the alternative “kin insurance” argument).

The survey also contains data on so-called “furniture and appliances” (26% of total expenditures). Because these goods do not fit squarely within the types of spending categories identified above, we have chosen not to include them in the main analysis. Nevertheless, we believe it is a useful category to distinguish between the two alternative explanations because, if anything, we believe “furniture and appliances” are part of the sharable and durable category. Clearly, these items are less liquid and less easily sharable than jewels, but they can be picked up and taken from the household by kinsmen, and they can be traded or pawned. The family tax hypothesis would therefore argue that extending the size of the kinship network would be associated with *reduced* expenditures on furniture and appliances. In crisp contrast, the alternative explanation that mutual insurance frees up resources for consumption unambiguously predicts that consumption of furniture and appliances should *increase* in the size of the kin network. What do the data tell us?

We have regressed the budget share for furniture and appliances on the kinship networks and controls (estimating equation (1) as before).. The same result emerges as for jewels (panel b of Table 2): the estimated coefficient for the variable kinship is significant at the 5% level and of negative sign.¹⁶ This provides tentative support for the family tax hypothesis and against the alternative explanation. Moreover, the

¹⁶ We also find that furniture enters as a luxury good, and that expenditures are declining in household size.

results make intuitive sense. Comparing the elasticities of budget shares with respect to the kinship variable, we find that an increase of one per cent in the latter reduces the budget shares in jewels and furniture by -0.82 per cent and -0.18 per cent, respectively. This is what we would expect: since furniture and appliances are less easily “shared” with kinship members than jewelry (and presumably less easily converted into cash), they invite a smaller evasive response.

4. Discussion and Conclusions

An important source of inspiration for this project was conversations with (African) colleagues, locked up in kinship obligations. One of them drove a car that seemed extravagant in light of his salary. While we initially believed this was due to an unusual preference for expensive vehicles, or perhaps to status seeking, we soon learned that our colleague owned an expensive car to credibly signal to his kinsmen that his residual resources for providing assistance were limited or non-existent. In our jargon, the car was a durable, non-sharable asset. Another colleague explored opportunities to migrate, in spite of significant personal cost associated with such a move. Being in a position to forsake on his kinship obligations was a dominant motivation for this desire to migrate.¹⁷ Anecdotal evidence suggests that the moral “sharing without reckoning” perspective is naïve.

Williamson (2000) identifies “culture” as the most persistent dimension of institutional quality, and in light of the recent emphasis on the relevance of institutions for economic outcomes (e.g. Rodrik *et al.* 2004), a re-appraisal of the role of culture in development appears appropriate. The so-called “modernization

¹⁷ Interestingly, recent work by Munshi and Rosenzweig (2009) suggests migration in India is low because people don’t want to give up the insurance provided by informal networks. Arguably incentives motivation to migrate are to an important extent determined by the simple fact whether respondents are (or: expect to be) consistently on the “giving end” of the distribution, or not.

approach” to development advanced in the 1950s and 1960s argued that traditional societies cannot graduate smoothly into the industrial era unless they abandon traditional patterns of motivations, attitudes and values (e.g. Moore 1963). This approach has been discredited, and gave way to another paradigm arguing that rural people in developing countries make efficient choices from a wide spectrum of contracts, taking into account their resource endowments and the external conditions surrounding them (e.g. Hayami and Otsuka 1993). To what extent is decision-making in developing countries constrained yet efficient and rational, and, conversely, to what extent may certain cultural factors be impediments to development? While addressing this important question in full goes beyond the scope of this paper, we believe the evidence in this paper contributes to a better understanding of the issue.

Many anthropologists hold a “romanticized view” of compulsory sharing systems in the context of extended family (kinship) systems. In the absence of access to formal financial institutions, traditional sharing norms imply an important safety net for the unlucky and less able. However, our results suggest the classical efficiency-equity tradeoff may be relevant in the context of the moral economy as well. Specifically, traditional sharing norms may distort household decision-making with respect to spending and saving. A large kin network is associated with the allocation of a greater share of household income to direct consumption, and with the substitution of non-sharable durables for sharable durables. Moreover, compulsory sharing is correlated with reduced savings, possibly contributing to the perpetuation of poverty. We also present tentative evidence that the impact of sharing norms varies across income groups. While adverse incentive effects and positive transfers may imply a zero net effect for the poorest households, we observe a negative correlation between kinship networks and income for the richer quintiles.

We don't provide evidence of a "poverty trap" in this paper, and certainly don't demonstrate that kinship networks and associated compulsory sharing are necessarily economically inefficient. This would involve a comparison of both benefits and costs of kinship systems, and we only focus on the distorting consequences (costs). The benefits, including efficiency effects, of providing transfers to the poorer members of kinship networks may be large. Of course our results also don't suggest that "social capital" is necessarily impeding economic development. Our results are consistent with the interpretation that one specific form of *bonding* social capital (borrowing terminology of Putnam 2000), with its focus on strong ties between people within a group, invites distortions. Bridging social capital, instead, captures ties connecting different groups of individuals, and opens up possibilities for cooperation and innovation. In the words of Bowles and Gintis (2002: F428): "Communities work because they are good at enforcing norms, and whether this is a good thing depends on what the norms are."

Nevertheless, it is possible that cultural factors result in a social equilibrium that is Pareto dominated. Game theory and social choice theory can explain how societies can be "locked into" dysfunctional institutions – taking collective decisions that are *ex ante* inefficient (e.g. Arnott and Stiglitz 1991, Platteau 2000, Hoff and Sen 2006). In the words of Bauer and Yamey: "The extended family [...] is an example of an institution which has many advantages in one stage of development but which may later become a drag on economic development" (1957: 64). We believe more research on cultural factors and underdevelopment is warranted. Future research on kinship and savings and income growth could usefully accommodate asymmetric information into account (the visibility of income and the signal effects implied by different modes of spending), or focus on the dynamics of capital accumulation.

Moreover, extending the analysis using information on incomes and transfers *within* kin networks would be a logical next step. The material presented in this paper hopefully acts as a first step and impetus to trigger more work in this relevant domain.

References

- Adato, M., M. Carter and J. May (2006). "Exploring poverty traps and social exclusion in South Africa using qualitative and quantitative data." *Journal of Development Studies* 42: 226-247
- Anderson, S. and P. Francois (2008). "Formalizing informal institutions: Theory and evidence from a Kenyan slum." In: *Institutions and Economic Growth*, E. Helpman (ed.), Harvard University Press
- Arnott, R. and J. Stiglitz (1991). "Moral hazard and nonmarket institutions: Dysfunctional crowding out or peer monitoring?" *American Economic Review* 81: 179-190
- Baltagi, B. H. (2008). *Econometric Analysis of Panel Data*. Forth Edition, Wiley Chichester, UK
- Barr, A., M. Dekker and M. Fafchamps (2008). "Risk sharing relations and enforcement mechanisms." Oxford University, mimeo
- Barr, A. and G. Genicot (2008). Risk sharing, commitment and information: An experimental analysis. *Journal of the European Economic Association* 6: 1151-1185
- Bauer, P. and B. Yamey (1957). *The economics of under-developed countries*. Cambridge: Cambridge University Press
- Ben-David, D. (1998). "Convergence clubs and subsistence economies." *Journal of Development Economics* 55: 153-159
- Bloch, M. (1973) "The long term and the short term: The economic and political significance of the morality of kinship." In: *The character of kinship*. J. Goody (ed.), Cambridge: Cambridge University Press
- Bowles, S. and H. Gintis (2002). "Social capital and community governance." *The economic journal* 112: F419-F436.

- Blundell R, P., Pashardes and G. Weber G. (1993). "What do we learn about consumer demand patterns from micro data?" *American Economic Review* 83: 570-597
- Carter, M.R. and M. Castillo (2002). "The economic impacts of altruism, trust and reciprocity: An experimental approach to social capital." University of Wisconsin–Madison, Dept. of Agricultural & Applied Economics, Staff Paper 448.
- Carter, M.R. and C. Barrett (2006). "The economics of poverty traps and persistent poverty: An asset-based approach." *Journal of Development Studies* 42: 178-199
- Coate, S. and M. Ravallion (1993). "Reciprocity without commitment: Characterization of informal insurance arrangements." *Journal of Development Economics* 40: 1-24
- Collier, P. and A. Garg (1999). "On kin-groups and wages in the Ghanaian labor market." *Oxford Bulletin of Economics and Statistics* 61: 133-157
- Dekker, M. (2008). "Intra-household differences in coping with illness in rural Ethiopia." in: M. Rutten, A. Lelieveld en D. Foeken (eds.) *Inside Poverty and Development in Africa. Critical Reflections on Pro-poor Policies*. pp. 201-224. African Dynamics Series. No. 7. Leiden: Brill Publishers.
- Fafchamps, M. (1991). "Solidarity networks in pre-industrial societies: Rational peasants in a moral economy." *Economic Development and Cultural Change* 147-173
- Fafchamps, M. and S. Lund (2003). "Risk sharing networks in rural Philippines." *Journal of Development Studies* 71: 261-287
- Fortes, M. (1969). *Kinship and the social order: The legacy of Lewis Henry Morgan*. Aldine: Chicago
- Foster, A. and M. Rosenzweig (2001). "Imperfect commitment, altruism, and the family: Evidence from transfer behavior in low-income rural areas." *Review of Economics and Statistics* 83: 389-407
- Genicot, G. and D. Ray (2003). "Group Formation in risk-sharing arrangements." *Review of Economic Studies* 70: 87-113
- Gulliver, P.H. (1971). *Neighbours and networks: The idiom of kinship in social action among the Ndendeuli of Tanzania*. Berkeley: University of California Press.

- Hoff, K., and A. Sen (2006). "The kin system as a poverty trap." In: *Poverty Traps*, S. Bowles, S. Durlauf and K. Hoff (eds.), Princeton University Press
- Kennedy, P. (1988). *African capitalism: The struggle for ascendancy*. Cambridge: Cambridge University Press
- Kimball, M. (1988). "Farmers' cooperatives as behavior towards risk." *American Economic Review* 78: 224-232
- Klasen, S. and I. Woolard (2008). "Surviving unemployment without state support: Unemployment and household formation in South Africa." *Journal of African Economies* 18: 1-51
- Kraay, A. and C. Raddatz (2007). "Poverty traps, aid, and growth." *Journal of Development Economics* 82: 315-347
- Lewbel, A. (1996). "Demand estimation with expenditure measurement errors on the left and right hand side." *The Review of Economics and Statistics* 78: 718-725
- Lewis, W. (1955). *The theory of economic growth*. London: George Allen & Unwin
- Ligon, E., J. Thomas and T. Worrall (2002). "Mutual insurance and limited commitment: Theory and evidence in village economies." *Review of Economic Studies* 69: 115-139
- McCleary, R. and R.J. Barro (2006). "Religion and economy." *Journal of Economic Perspectives* 20: 49-72
- Miguel, E., P. Gertler, D. Levine (2005). "Does social capital promote industrialization? Evidence from a rapid industrializer", *Review of Economics and Statistics*: 87: 754-762.
- Moore, W.E. (1963). *Social Change*. New York: Prentice-Hall
- Munshi, K. and M. Rosenzweig (2009). Why is mobility in India so low? Social insurance, inequality and growth. NBER Working papers no. 14850
- Narayan, D. and L. Pritchett (1999). "Cents and sociability: Household income and social capital in rural Tanzania." *Economic Development and Cultural Change* 47: 871-897.
- Platteau, J.P. (2000). *Institutions, social norms and economic development*, Harwood

- Putnam, R.D. (2000). *Bowling alone: The collapse and revival of American community*. New York: Simon & Schuster.
- Rodrik, D., A. Subramanian and F. Trebbi (2004). "Institutions Rule: The Primacy of Institutions over Geography and Integration in Economic Development." *Journal of Economic Growth* 9: 131-165
- Rosenzweig, M.R. (1988). "Risk, implicit contracts and the family in rural areas of low-income countries. *Economic Journal* 98: 1148-1170
- Scott, J. (1976). *The moral economy of the peasant: Rebellion and subsistence in Southeast Asia*. New Haven: Yale University Press
- Tabellini, G. (2007). "Institutions and culture." Presidential Address EEA Meetings, Budapest
- Townsend, R.M. (1994). "Risk and Insurance in Village India." *Econometrica* 62: 539-591
- Udry, C. (1994). "Risk and insurance in a rural credit market: An empirical investigation in Northern Nigeria." *Review of Economic Studies* 61: 495-526
- Williamson, O.E. (2000). "The New Institutional Economics: Taking Stock, Looking Ahead." *Journal of Economic Literature* 38: 595-613

Table 1: Definition and summary of the variables

	Mean	Std Dev	Min	Max
Ln(expenditures): Total expenditure in Rand (1 USD = 6.02 Rand)	7.5	1.12	3.51	11.8
Kin network: Number of links with non resident households	3.12	2.916	0	16
Rural (dummy, 1= yes; 0= urban): If main source of income is from agriculture	0.45	0.497	0	1
Proximity; Proximity to infrastructure	2.60	0.605	1	3
Household size: Number of resident member of the household	6.4	3.81	1	27
Education: Average years of education per household	4.97	2.656	5	18.5
Durable and non-sharable - Home improvements: budget share allocated to home improvement in rand	0.036	0.106	0	0.870
Durable and sharable assets - Jewels: budget share allocated to jewels and watches in rand	0.075	0.148	0	0.899
Durable and sharable assets - Furniture and appliances: budget share allocated to furniture and appliances in rand	0.26	0.29	0	0.9
Non durable and sharable – Food: budget share allocated to food consumption within household	0.419	0.155	0.041	0.893
Assets: Liquid assets, savings, investments in rand	3469	22614	0	549999

Table 2. Budget Shares Regressions: Consumption and Kinship

Categories	Variables	OLS (a)	IV (b)	Household Fixed Effect 2SLS (c)	Household Error Corr. 2SLS (d)
<i>a) Home Improvement</i>	Kin network	0.001*** (0.0004)	0.001** (0.001)	0.005* (0.003)	0.0028* (0.015)
	Ln expenditure	0.023*** (0.0011)	0.010* (0.006)	0.006 (0.015)	0.014** (0.007)
	Education	-0.005*** (0.001)	-0.074*** (0.012)	0.011 (0.44)	-0.004 (0.003)
	Education squared	0.0001*** (0.0001) (0.0004)	0.005*** (0.0008) (0.001)	-0.00035 (0.00023) (0.006)	0.00017 (0.0002) (0.015)
	Age	0.004*** (0.0004)	0.006*** (0.0001)	0.00023 (0.0016)	0.0003 (0.001)
	Age squared	-0.00004*** (0.000005)	-0.0001*** (9.2E-06)	-0.000001 (0.000022)	-0.000004 (0.00001)
	Proximity	0.0004 (0.001)	0.007*** (0.002)		
	Rural	0.019*** (0.002)	0.002 (0.003)		
	Household size	-0.004*** (0.0005)	-0.002 (0.001)	-0.0018 (0.0027)	-0.0008 (0.0008)
	Constant	-0.176***	-0.053	0.067	-0.063

N = 936; Overidentification: Sargan-Hansen: 3.65 (p=0.3), Endogeneity (expenditures or education) C test: 7.34 (p=0.061). Instrument relevance (F-test) Ln(expend.): 122.8 (p=0) Education: 76.7 (p=0) Education²: 68.7 (p=0)

<i>b) Jewels</i>	Kin network	-0.008*** (0.003)	-0.020** (0.01)	-0.0024* (0.0015)	0.052 (0.002)
	Ln expenditure	0.073*** (0.01)	0.200** (0.097)	0.022*** (0.006)	0.04*** (0.009)
	Education	-0.007*** (0.003)	0.140 (0.1)	0.0006 (0.0019)	-0.003 (.18)
	Education squared	4.6E-05 (0.001)	0.008 (0.006)	-0.0003* (0.00015)	0.0001 (0.0003)
	Age	0.001 (0.003)	0.007 (0.006)	0.0006 (0.0007)	0.0004 (0.001)
	Age squared	-9.3E-06 (0.00004)	-0.0001 (0.0001)	-0.00001 (0.00001)	-0.000009 (0.00002)
	Proximity	-0.002 (0.008)	-0.004 (0.015)		
	Rural	-0.01 (0.010)	-0.052* (0.028)		
	Household size	-0.013*** (0.003)	-0.037** (0.016)	-0.0016 (0.0012)	-0.0025** (0.001)
	Constant	-0.430*** (0.075)	-0.972* (0.5)	-0.15 (0.04)	-0.26*** (0.063)

N = 967; Overidentification: Sargan-Hansen: 1.78 (p=0.6) Endogeneity (expenditures or education). C test: 11.8 (p=0.006). Instrument relevance (F-test) Ln(expend.): 108.5 (p=0), Education: 67.6 (p=0) Education²: 64.8 (p=0).

<i>c) Food</i>					
Kin network	0.011***	0.010***	0.007	-0.0008	
	(0.002)	(0.002)	(0.005)	(0.002)	
Ln expenditure	-0.117***	-0.115***	-0.222***	0.13***	
	(0.005)	(0.001)	(0.02)	(0.01)	
Education	-0.013***	-0.015***	-0.024***	-0.0126***	
	(0.003)	(0.005)	(0.006)	(0.0041)	
Education squared	0.001***	0.001***	0.002***	0.001***	
	(0.0002)	(0.0002)	(0.0004)	(0.0003)	
Age	0.003	0.002	0.0017	0.0025*	
	(0.002)	(0.002)	(0.002)	(0.0015)	
Age squared	-0.00005**	-0.00004*	-0.000021	-0.000031*	
	(0.00002)	(0.00002)	(0.00003)	(0.00002)	
Proximity	-0.010*	-0.011***		-	
	(0.005)	(0.006)			
Rural	0.058***	0.059***		-	
	(0.008)	(0.008)			
Household size	0.017***	0.015***	0.0081***	0.007	
	(0.003)	(0.003)	(0.0011)	(0.001)	
Constant	1.230***	1.238***	1.34***	1.3***	
	(0.048)	(0.073)	(0.07)	(0.073)	

N = 1001; Overidentification: Sargan-Hansen: 2.13 (p=0.3) Endogeneity (expenditures or education)

C test: 0.56 (p=0.8) Instrument relevance (F-test) N.A. No evidence endogeneity of Expenditures or education

All panels: Significance levels are denoted by one asterisk (*) at the 10 percent level, two asterisks (**) at the 5 percent level, three asterisks (***) at the 1 percent level.

Table 3. Kinship ties and Savings

Variables	OLS	IV	Household F.E. 2SLS	Household F.E. 2SLS Error. Cor.	IV Kinship	First Difference Estimator
	(a)	(b)	(c)	(d)	(e)	(f)
Kin network	-1400.0*** (413.47)	-4930.9*** (2295)	-1540.2 (1328.8)	-973.58* (542.2)	-2177.9** (1004)	-473.33** (240.88)
Ln expenditure	7356.7*** (1817)	41856** (19854)	13617.4*** (5061.4)	18000*** (2383)	25753** (10999)	564*** (1654.89)
Education	329.9 (718)	6842.7 (16813)	-5067.27*** (1727.3)	-4352*** (1005)	-10796* (6350)	-1967.92 (2592.8)
Education squared	40.4 (79.3)	-1280.1 (1389)	357.58*** (126.8)	261*** (72.65)	431.61 (319.66)	228.53 (260.16)
Rural	-1485.4 (740.2)	-1996 (4312)			-5918 (3569)	
Proximity	146.8 (990.3)	-2525.4 (92346)			-262.73 (3499.96)	
Age	344.6* (202)	539 (697)	-316.189 (618.3)	-654.27* (386)	565.15 (528.99)	-27.95 (262.087)
Age squared	-4.16* (2.29)	-0.9 (8.99)	6.38 (8.25)	10.28*** (5.061)	-3.3 (7.19)	1.77 (2.85)
Household size	-1622.5*** (492)	-7259** (3505)	-934.2797 (968.5318)	-1097.97*** (278.55)	-3635.57** (1694.9)	-353.07 (414.51)
Constant	-50257*** (13253)	-286692** (134675.1)	-79377.91*** (34583.71)	-107829*** (16977)	-146167.2** (61847.4)	

Instruments: Ln total expenditure 1993, shocks in the previous two years, expenditure for education 1993, expenditure for education 1993 squared. Overidentification (Sargan-Hansen test): 0.8 p-value = 0.36. Endogeneity test (C test): 10.3 Relevance tests (F test): Expenditure 45.7 (p-value = 0) Education 46.5 (p-value = 0) Education2 48.2 (p-value = 0). Testing for (d): Overidentification (Sargan-Hansen test of all instruments): 0.259 (p-value = 0.61). Relevance test for Kin network: 186 (p-value = 0). Robust standard errors have been used.

Significance levels are denoted by one asterisk (*) at the 10 percent level, two asterisks (**) at the 5 percent level, three asterisks (***) at the 1 percent level.

Table 4. First Stage Regression IV Results

Variables	(a)	(b)
Dependent: ln Expenditure		
Kin network	0.034*** (-0.014)	-
Rural	-0.248*** (-0.048)	-0.238*** (0.047)
Proximity	0.115*** (-0.037)	0.108*** (0.037)
Age	0.033*** (-0.012)	0.032*** (0.012)
Age squared	-0.001*** (-0.0002)	-0.0005*** (0.0002)
Household size	0.087*** (-0.017)	0.054*** (0.011)
ln tot expenses93	0.31*** (-0.035)	0.308*** (0.035)
Shocks	-0.143*** (-0.047)	-0.154*** (0.048)
Education exp	0.0003*** (-4.9E-05)	0.0003*** (5.0E-05)
Education exp squared	-1.7E-08*** (-4.9E-09)	-1.7E-08*** (4.9E-09)
Kin network 1993		0.014** (0.006)
Constant	4.307*** (-0.314)	4.37*** (0.31)
Dependent: Education		
Kin network	-0.178*** (-0.043)	-
Rural	-1.169*** (0.145)	-1.252*** (0.147)
Proximity	0.255** (-0.113)	0.256** (0.115)

Age	0.174***	0.182***
	(-0.037)	(0.037)
Age squared	-0.002***	-0.002***
	(-0.001)	(0.001)
Household size	-0.237***	-0.078**
	(-0.052)	(0.033)
ln tot expenses93	0.804***	0.828***
	(-0.107)	(0.108)
Shocks	-0.153***	-0.168
	(-0.145)	(0.148)
Education exp	0.001***	0.001***
	(-0.0002)	(0.0002)
Education exp squared	-8.1E-08***	-7.8E-08***
	(-1.5E-08)	(1.5E-08)
Kin network 1993		-0.032
		(0.02)
Constant	-3.745***	-4.4***
	(-0.958)	(0.957)
Dependent: Education squared		
Kin network	-2.819***	-
	(-0.575)	
Rural	-13.259***	-14.1***
	(-1.927)	(1.96)
Proximity	2.499*	2.576*
	(-1.504)	(1.534)
Age	1.962***	2.12***
	(-0.489)	(0.496)
Age squared	-0.023***	-0.024***
	(-0.007)	(0.007)
Household size	-3.332	-0.74*
	(-0.692)	(0.445)
ln tot expenses93	10.203***	10.49***
	(-1.419)	(1.443)
Shocks	-2.996	-3.100
	(-1.92)	(1.96)
Education exp	0.018***	0.018***

	(-0.002)	(0.002)
Education exp squared	-1.0E-06***	-1.0E-06***
	(-2.0E-07)	(2.1E-07)
Kin network 1993		-0.835***
		(0.275)
Constant	-72.784***	-80.86***
	(-12.727)	(12.74)
Dependent: kinship		
Rural	-	0.154**
		(0.063)
Proximity	-	-0.059
		(0.049)
Age	-	-0.051***
		(0.016)
Age squared	-	0.0004*
		(0.0002)
Household size	-	-0.929***
		(0.014)
In tot expenses93	-	-0.082**
		(0.046)
Shocks	-	0.0035
		(0.062)
Education exp	-	-0.0002***
		(6.6E-05)
Education exp squared	-	1.3E-08*
		(6.5E-09)
Kin network 1993	-	0.386***
		(0.009)
Constant	-	2.05***
		(0.41)

Significance levels are denoted by one asterisk (*) at the 10 percent level, two asterisks (**) at the 5 percent level, three asterisks (***) at the 1 percent level. Robust standard errors reported in parenthesis.

Table 5. Income and the Kinship Network

		Total expenditure as dependent variable		Income as dependent variable	
Quintile	Variable	Coefficient	P-value	Coefficient	P-value
10-30%	Kin network	-7.6 (6.01)	0.21	-6.02 (9.79)	0.53
30-50%	Kin network	-25.17* (13.9)	0.07	-61.96*** (13.26)	0
50-70%	Kin network	-29.35* (17.4)	0.09	-103.28*** (18.02)	0
70-90%	Kin network	-165.6*** (46.73)	0	-155.82** (72.42)	0.03
Bootstrapping (1000 replications) has been used for the computation of the standard errors. Constants are not reported					