

FINANCIAL ASSISTANCE TO BEREAVED HOUSEHOLDS: LESSONS FROM KAGERA, TANZANIA

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Abstract: In view of the severity of the AIDS epidemic in Africa and elsewhere, designing appropriate assistance policies for households experiencing an adult death is a pressing public policy concern. Better policies will strengthen and take into account existing household coping mechanisms, rather than duplicating or undermining them. In this paper, we investigate the nature of coping mechanisms among a sample of households in Kagera, Tanzania in 1991-94, by estimating the magnitude and timing of receipts of private transfers, public assistance and loans by households with different characteristics. We find that less poor households (i.e. those with more physical and human capital) benefit from larger receipts of private assistance, but receive less public assistance initially after a death. On the other hand, poorer households rely more on loans, for up to a year after a death. Though the loans in this sample are largely private, these results suggest that the expansion of micro-credit programmes as well as targeted grant programmes may help the poorest households in areas hard-hit by the AIDS epidemic.

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Foreword

The broad-based economic impact of the AIDS epidemic is first and foremost felt at the household level. Among the effects of illness and death in the family is an increase in health care expenditures and shifting consumption patterns. Wealth and savings can also be dramatically altered, leading to an overall decrease in welfare. A number of surveys have explored these impacts of the epidemic in Africa, yet little has been reported on how households cope to minimize them. To address this gap in knowledge, in the run-up to ADF 2000, UNAIDS supported analysis of household coping strategies in the form of monetary transfers.

The World Bank Household and Demographic Survey, carried out between 1991 and 1994 in Kagera, Tanzania, collected data on some of the ways households use credit, public assistance and private borrowing in an attempt to cope with the shock of an adult death in the family. This paper presents an analysis of these coping mechanisms, using an econometric analysis. The findings reveal that the poorer households undergo a dramatic decrease in consumption as a consequence of an adult death. In contrast, less poor households actually increase their expenditures—a probable result of increased health care and funeral costs. In terms of seeking assistance through monetary transfer, it is the less poor households that benefit most from private assistance. Poorer households are most dependent on loans for up to a year and, in the short run, benefit most from the available public assistance.

What do these findings indicate in terms of improving methods of assistance? Although interest rates were not included in the analysis, the importance of loans was evident. It suggests that microfinance programmes with low-interest credit for the poor could be an important intervention in maintaining consumption patterns. (Microfinance responses to the epidemic have been analysed further in the ADF background paper—*The role of microfinance in the fight against HIV/AIDS*—also contained on this CD Rom.) We must now meet the challenge of further developing these microfinance initiatives and facilitating access to such assistance for the poor.

UNAIDS, December 2000

*The entire village is in mourning,
but every household is mourning in its own way.*

(Kagera villager²)

*All happy families are alike,
but each unhappy family is unhappy in its own way.*

(Tolstoy, *Anna Karenina*)

Introduction

This paper examines some of the ways in which households respond to tragedy. Using a panel dataset from the Kagera region of western Tanzania, we examine household responses to death, with a special focus on the ravages of HIV and AIDS. The ability to cope means ensuring not only the welfare of household members around the time of the death, but also their well-being in the future.

AIDS has been reported in nearly every country in the world, but more than 90% of adult HIV infections are in developing countries, and more than 60%—around 25 million—are in sub-Saharan Africa (UNAIDS 2000). By the end of 1999, more than 50 million people had been infected with HIV, and 19 million had already died from AIDS and AIDS-related illnesses (*ibid.*). More than 12 million children in sub-Saharan Africa have been orphaned by AIDS (*ibid.*). In 1999, roughly 5.4 million more people became infected with HIV worldwide; two-thirds of these new HIV infections were in sub-Saharan Africa (*ibid.*).

AIDS has had a horrifying impact on life and health in central and southern Africa. In Zimbabwe, for example, estimated life expectancy at birth is 22 years shorter than it would have been in the absence of AIDS (US Bureau of the Census 1996, 1997). By the end of 1997, an estimated 1.3 million people were living with HIV in Tanzania, and more than one million had died of AIDS (UNAIDS 2000). HIV prevalence among those attending antenatal clinics in Dar es Salaam rose from 4% in 1986 to 14% in 1995/96 (UNAIDS 1998). More than 10% of children under 15 in Uganda, and more than 3% in Tanzania, have lost their mother or both parents to AIDS (UNICEF 1999). In Tanzania, 20% of under-five mortality is due directly to AIDS (*ibid.*). A study from the Mwanza region of Tanzania (Boerma et al 1997) found that AIDS had increased mortality rates by one-third: an estimated 42% of today's 15-year-olds will die before their sixtieth birthday.

Projections of the consequences for economic growth vary, but it has been estimated that the AIDS epidemic will reduce the growth of GDP per capita in Tanzania by 0.10–0.90% per year (Cuddington 1993; Over 1992; Bloom and Mahal 1997). Most studies from central and southern Africa show that HIV infection rates are higher among the wealthier and more educated segments of the population (Ainsworth and Semali 1998). AIDS is ravaging the ranks of the skilled and educated, with potentially tragic consequences for future growth. The AIDS epidemic is consuming a greater share of government resources that could have been put to other uses. World Bank research indicates that, in poor countries, the annual average cost of treating one AIDS patient was significantly greater than the annual cost of educating ten primary school students (World Bank 1999). Compounding the impact on aggregate growth, the children of HIV-infected parents may be withdrawn from school if the family can no longer pay fees or buy supplies, or if the child's labour is needed at home, on the farm, or in the marketplace³.

² Quoted in Rugalema 1999.

³ See Ainsworth, Beegle and Koda (2000) for an analysis of the impact of adult mortality on school enrolment in this data.

The consequences of HIV and AIDS for the household are not the same as other diseases and other causes of death. Because the virus is mainly sexually transmitted, AIDS usually strikes prime-age adults, at the peak of their productive and income-earning years, who are often heads of families. Other things being equal, fatal illness increases household expenses (for health care and, ultimately, funerals) at the same time as it reduces household income (due to diminished labour time). Yet, according to preliminary work using this dataset, households are at least partly able to compensate for, and in time recover from, the death of a family member (see e.g. Over et al. 1996). We will try to understand one way in which households cope, by looking at the household's receipt of transfers and other unearned income around a death. We will also attempt to shed some light on the following questions:

- How well do informal risk-spreading institutions help households after a death?
- How effectively do formal-sector interventions support household coping efforts?
- What policies might be implemented to increase the effectiveness of local risk-spreading institutions?

Previous research using this dataset has revealed that vulnerability to shocks varies across households, and this may significantly affect the path of development and the distribution of well-being in the long run. This confirms the findings of research in other areas, which show that the risk-mitigating actions of households lead to slower growth as well as lower current income (Rosenzweig and Wolpin 1993, Platteau 1991, Rosenzweig and Binswanger 1989; Banerjee and Newman 1993, 1998).

It has also been suggested that mechanisms for informal insurance are fragile and incomplete—they work best for small idiosyncratic shocks, and do not adequately protect the poorest (Jalan and Ravallion 1997; Alderman and Paxson 1992; Coate and Ravallion 1989). Even when it does work, informal insurance may lead to greater divisions between rich and poor (Fafchamps 1992; Hoff 1998).

Thus there is considerable opportunity for public sector intervention, but it is necessary to locate the gaps in the household's ability to self-insure. What are the characteristics of those households that overcome the tragedy relatively quickly? We identify three sources of financial assistance available to households following a death: private transfers, private borrowing, and assistance from public or other formal organizations. The evidence suggests that, on average, private transfers provide the vast majority of assistance, but not all households rely equally on these sources. Some households benefit more from private assistance networks, while others depend relatively more on credit or formal assistance.

This suggests that households differ systematically in the characteristics and factors that condition the household's response to the crisis. Previous research has established that the epidemic is more likely to affect some segments of the population before others (Ainsworth and Semali 1998), and that the impact of the crisis differs significantly across, for example, wealth class (World Bank 1999). In order to identify the determinants of the household's receipt of financial assistance, we need to control for the household-specific factors that influence both the household's exposure to the epidemic and the nature of its response. The structure of the paper is as follows: we first describe the survey and data; next, we examine the use of finance from the three sources mentioned above and correlate receipts with death and a range of household characteristics. Finally, we present the results of multivariate analysis to find robust and generalizable links between a household's characteristics and its access to and use of various sources of financial assistance.

Survey description

The data come from a four-round panel survey in the Kagera region of northwestern Tanzania, conducted between 1990 and 1994. The region is west of Lake Victoria and borders

the Rakai district of Uganda to the north, and Rwanda and Burundi to the west. More than 80% of the population live in the rural areas—most of them in agriculture. The farming system consists of tree crops (bananas and coffee), annual crops (maize, sorghum and cotton) and livestock.

Adult mortality is relatively high in Kagera, partly due to the early spread of HIV and AIDS. The first recorded case of AIDS in the region was in 1983, but the virus was probably present at least a decade earlier. The region is a crossroads for goods traffic, and was affected by the war between Tanzania and Uganda in the late 1970s. More recently, it has provided a haven for refugees fleeing Rwanda and Burundi.

A population-based seroprevalence survey in Bukoba, the regional capital, in 1987, found that roughly a quarter of the prime-aged (15-50) adults were infected with HIV, as were up to 10% in the surrounding areas.

Although AIDS has severely affected parts of central and southern Africa, and is widely prevalent in the survey region, it is not the largest cause of death in the sample. The survey was conducted over a three-year period from 1990 to 1994, during which some 9.6% of sample individuals died (compared to a crude death rate in Tanzania of 1.4% in 1995 [World Bank 1999]). About 40% of sample deaths can be directly attributed to AIDS. Including deaths in the year prior to the survey period, 44% of household-wave observations have experienced a death at some point in the past.

The region was stratified by cluster and village, and all households within selected villages were given an initial enumeration survey. From that enumeration, 816 households were selected to receive the first round of the complete household survey. Since adult mortality was still a relatively rare event, households that indicated recent experience with severe illness in the initial enumeration were over-sampled. Altogether, 913 households were interviewed at least once⁴.

After each round, some households dropped out and were replaced. Of the original sample drawn from the enumeration, 6% dropped prior to their first interview. Of the remaining sample of households, fewer than 10% dropped out prior to the end of the survey (round 4) (Ainsworth and Semali 1995). The attrition rate in this survey compares favourably to other panel surveys. The surveys of European households in the Luxembourg Income Study, for example, have an average dropout rate of around 22% after three rounds, or about 7% per round (Singh 1995); World Bank Living Standards Measurement Surveys have a per-round dropout rate of about 12% (Glewwe and Jacoby 2000); whereas the Kagera study has a per-round (per-wave) dropout rate of about 2.5%.

It might be expected that households most severely affected by a death would be more likely to drop out. After all, only intact households can remain to be interviewed again, and the disaster can be so severe as to destroy the household. If that is the case, the sample is biased in favour of 'more successful,' or less severely affected, households. This would minimize any measurement of the impact of the disease, and weaken our ability to draw meaningful inferences from the analysis. Examination of the data does not suggest any systematic bias. While households that drop out are smaller, with fewer assets, they have younger household heads with more education. Households that drop out are also less likely to have suffered a

⁴ Although 816 households were selected from the enumeration sample for the first round, a further 24 households were added by the field team from the list of replacement households, so that 840 households were interviewed in Round 1. Two dwellings of a single household were mistakenly identified as two households and interviewed in each round; both sets of observations for that household were dropped, yielding a Round 1 sample of 838 households.

death than households that remain⁵. This suggests that more mobile households (rather than more adversely affected ones) drop out.

The impact of AIDS on households, and household responses to the crisis

Previous analysis of this dataset (see Over et al. 1996 and World Bank 1999) has found that households with a death have higher total expenses as well as higher expenditures on all components of consumption than households in which no death has occurred. This is not because death makes one wealthy, but because, in this sample, wealthier households are more likely to suffer a death.

The impact of a death on well-being depends largely on the resources available to the household. Not all households suffer in the same way, to the same extent, or for the same length of time. For the poorer half of households in the sample, both food expenditure and food consumption fell dramatically in the six months following a death (Figure 1). For the non-poor half, food expenditure and consumption actually rose following a death. This again suggests that households are heterogeneous, both in terms of the impact of the crisis and in the ways they respond to it.

Why does the impact of a death differ so dramatically across households? If the ability to cope differs across wealth class, is it simply that wealth itself constitutes self-insurance? Or do wealthier households have better access to particularly useful community coping resources than do poorer households? To answer these questions, we must first examine how a household's characteristics affect the magnitude and the type of community resources on which it is able to draw.

Kinsey, Burger and Gunning (1998) argue that poor households are relatively constrained in their choice of coping mechanisms: "The relatively poor tend to smooth income more than consumption while the relatively wealthy tend to smooth consumption alone (p.90)." The choice of response may reflect limited opportunities among poor households, rather than differences in preferences.

Table 1 presents bivariate correlations of the dependent variables (transfers, credit and official assistance), as well as a range of characteristics that may determine both the ability of the household to withstand the shock and the household's receipts of outside assistance. The first set of columns compares means across death experience. Households that have experienced a death receive more net private transfers than households that have not suffered a death, but the difference is not statistically significant. They also receive less in credit than those without a death (in fact, those with a death appear to be net lenders), but again the within-variance is sufficiently large to eliminate differences between the groups. Households with a death do receive more assistance from NGOs, government, or other formal institutions.

As noted above, households with a death are larger and wealthier (in terms of physical assets). They are more likely to have older and female household heads. Also, consistent with the earlier discussion of attrition, households with a death are more likely to have arrived in the first wave of the survey and remain for all four waves. Households with a death are less likely to drop out and less likely to be chosen as a replacement.

In our sample, the variables describing household human and physical capital include household assets, household health status (measured as the average body mass index of adults), household size, education and age of the household head. They are highly correlated with each other. In our regressions, we use an index, constructed as the first principal components of these characteristics, as a proxy for household resources (i.e. human and

⁵ T-tests available.

physical capital). The first principal component explains 82% of the variation in all six variables. All variables except the age of the head enter positively in this index.

It is worth taking a step back from the data and asking why there are private transfers. For what reason does one household give something to another? The motivations for these private actions have specific implications for public policy. The choice of intervention depends significantly on the structure of existing 'informal' institutions. Transfers may be made in payment for some previous, unobserved transaction of goods or services. In that case, they serve no insurance function at all. On the other hand, they may be motivated by altruism: 'I care for you, and help you when you need it, and I give no thought to what you might do for me. It is simply your happiness that makes me happy.' In the economics jargon, this would translate as: 'your welfare is an argument in my objective function.' Finally, transfers may be a part of an informal insurance system: 'I will help you today, but with my help I am purchasing your promise to help me in the future.' In other words, under the insurance interpretation, transfers are either the purchase of future obligations, or repayment for past obligations.

Finally, although casual comparisons show limited use of credit, and no difference across experience of death, an empirically sound distinction between credit and transfers may be difficult to make. It is well known that credit can have an insurance function (cf. Evans-Pritchard 1940 and Scott 1976 on reciprocal gift-giving, Platteau and Abraham 1987, Eswaran and Kotwal 1989, and Udry 1990, 1994 on credit). Fafchamps and Lund (1998) argue that local informal assistance can be described as "quasi-credit." That is, when limited enforcement constrains participation in mutual assistance programmes, risk is mitigated by a combination of low- or zero-interest loans, combined with gifts.

However, there may be a significant difference between credit and transfers, in that the former requires a more formal and explicit arrangement (even though that arrangement can be flexible). When the informal exchange contract is unenforceable, the donor will insist on a more formal arrangement that forces the recipient to reciprocate, or protects his donation with some security. To the extent that the loans are given at positive interest rates, or that collateral is pledged with a positive probability of default, that increases the cost of finance relative to a scheme of repeated interest-free mutual assistance.

This raises the question of the distribution of these sources of finance. Do all households have access to these resources? Table 2 describes the incidence of (positive net) receipts by source. We distinguish in this table by (Wave 1) wealth and by death experience. Among the poorer half of households, 60% receive some formal assistance, less than half are net recipients of private transfers, and one-sixth are net borrowers in the private credit market. Among the wealthier half of households, two-thirds receive some formal assistance, more than half are net recipients of private transfers, and the same percentage are net borrowers in the private credit market.

There is a greater distinction between households that have experienced a death in the past and those that have not. The former are more likely to receive private transfers (60% vs. 44%) and public assistance (68% vs. 60%). On the other hand, they are slightly less likely to borrow (17% vs. 18%). The majority (56%) of the 670 poor households that have experienced a death receive formal assistance, as does the majority (62%) of non-poor households with a death.

While Table 2 shows that there is little difference in the incidence of access to sources of financial assistance across wealth class (i.e., the proportion of households using each source is broadly similar), there may be greater differences in the amounts received across classes. Figure 2 describes the cumulative distribution of transfers received⁶. The smooth curve rising

⁶ All curves are in terms of adult-equivalent units.

monotonically from zero to one is a Lorenz curve for total expenditures, in which equality is implied by the diagonal line from zero to one. The other lines are concentration curves—the proportion of assistance from each source that go to each cumulative proportion of the total income (expenditure) distribution. In principle, if the curve depicting the distribution of an item is above the Lorenz curve, it is relatively more equitable than the prevailing income distribution, in the sense that that segment of the population receives a larger share of that item than it receives of aggregate income; if it is below the Lorenz curve, that segment of the population receives proportionally less of it than would be consistent with its share of aggregate income. If the distribution curve is above the diagonal, then that segment of the population also receives more in absolute terms than other parts of the population.

This figure shows that formal assistance is more equitably distributed than private transfers, although both are progressively distributed (since they are both above the Lorenz curve). The more striking feature of this figure is the distribution of private credit (we superimpose a smoothed curve to ease interpretation). These curves are all net, so that private transfers are those received minus those given out, and credit is the difference between borrowing and lending. The credit curve can be interpreted in terms of progressivity, but it also shows that the poorer half of the population are net borrowers, while the wealthier half are net lenders. The poorer half, in this figure, borrow more than they would be expected to if the distribution of credit reflected the prevailing income distribution; they also borrow more than average, and they borrow more than the wealthy. The credit curve is far more variable in the top half of the income distribution, which reflects the fact that a few wealthy households account for the majority of borrowing and lending activity.

Figure 2 shows that private assistance is proportional to total income (expenditure), but the amount of both private transfers and formal assistance received by the poor is significantly less in absolute terms than that received by the wealthy. The wealthy are also more likely to receive private transfers from other regions within Tanzania, or abroad⁷.

Receipt of Transfers in Response to an Adult Death

As mentioned earlier, the bereaved household can cope economically with a death in many ways: by seeking financial assistance either from friends and relatives, or from a formal government or nongovernment assistance agency; by changing the mix of crops grown on family plots; by altering members' time allocation between labour market participation, work at home and school; by selling assets; recruit or shed household members; or by reducing consumption of some or all household members. We focus on the receipt of formal and informal transfers and credit. We want to estimate by how much the net receipt of assistance changes after a death, by both direct and indirect channels.

While Tables 1 and 2 above indicate some differences—primarily in the incidence of receipts across experience of death—these differences may not hold up under more rigorous analysis. There may be other confounding factors that influence, for example, both the probability that a household will suffer a death and its response to the death. In economic terms, the death is endogenous to the response. Assuming that the occurrence of a death is exogenous to the response and independent of any omitted variables or errors, it would, in theory, be possible to estimate the relationship consistently by ordinary least squares. However, there are several reasons to suspect that they are not independent. It is possible that both the probability of death and the response are correlated with the probability that the household will drop out of the sample. This would be the case, for example, if households that suffered a death and received fewer transfers were also more likely to drop out. In addition, there are likely to be unobserved characteristics conditioning both the death and the response.

⁷ This is in line with the work of Reardon, Delgado and Matlon (1992) who found that households invest in migration and remittance channels, and Rosenzweig (1988), who found that households in India arrange marriages for their daughters in areas with low income covariance.

We estimate the household's receipt of transfers using an error-components, two-stage least squares procedure, to control for possible biases arising from endogeneity or unobserved heterogeneity (Baltagi 1995). We also allow the response to vary across households over time, and by differences in household resources⁸. Our regression results (see Lundberg, Over, and Mujinja, 2000a) indicate that the probability of dropping out of the sample does not influence the household's receipt of assistance.

The regressions show that receipts do respond to the death and to the time since the death, and that the response varies according to the resources the household can command. We use the results of the regressions to simulate the evolution of the household's receipts of assistance following a death. Figure 4 presents the simulation of the median household's receipts of total assistance (the sum of private transfers, formal assistance, and private credit) for the 30 months following the death. The solid curve shows the predicted receipts of total financial assistance; the dashed lines show the 90% confidence interval. The vertical (left) axis depicts the rate of receipts in thousand TSh per capita. The horizontal line in each panel, labelled on the right axis, is the counterfactual estimate of receipts for the average household that has not suffered a death. The estimated impact of a death on receipts is computed as the difference between the solid curve and the counterfactual.

The median household receives financial assistance at the rate of about 30,000 TSh per year⁹ immediately after the death, and continues to receive assistance until 18-24 months after the death¹⁰. In total, the median household receives roughly 144 000 TSh in financial assistance during that 18-month period, which is more than this household's estimated per-capita expenditures for the period.

At first glance, this is evidence of a well-functioning informal insurance network. The bereaved household is significantly compensated for the death. However, the question then arises as to whether this insurance system exists for all households. If so, does it function as well for all classes of households? To answer this question, we simulate the evolution of financial assistance following a death for typical poor and wealthy households. In addition, we distinguish financial assistance by source, to see whether the private response to a death differs from the response of public and nongovernmental institutions.

The top three panels of Figure 5 (5a, 5b and 5c) present the estimated response and its 90% confidence interval for households at the tenth percentile of household resources; i.e. very poor households. The bottom three panels (5d, 5e, and 5f) present the same calculations for a household at the ninetieth percentile of household resources. As in Figure 4, the horizontal line labelled at the right border in each panel represents the estimated counterfactual: i.e. what would have happened in the absence of a death.

Figure 5d shows that the less poor receive transfers at the rate of about 40 000 Tsh per household member per year immediately after the death, and continue to receive private

⁸ In this paper, we present only the conclusions supported by the analytical model. The regression results and further discussion of econometric methods may be found in Lundberg, Over, and Mujinja (2000a). As discussed above, we use the first principal components index as a proxy for household resources.

⁹ The surveys were conducted at six-month intervals, and the figures here use the half-year as the time unit. The estimate of 30,000 TSh per year is twice the point estimate (14,600) illustrated in the figure; in other words, the annualized rate at which these households receive transfers immediately following a death.

¹⁰ We compute the assistance received as the area under the curve and above the counterfactual, from the date of the death until the date at which the estimate is not significantly different from zero (that is, when the 90% confidence interval crosses the counterfactual).

transfers until 18-30 months later. On the other hand, the poorest households receive no statistically identifiable private assistance (Figure 5a).

Contrast the picture for private transfers with those of formal assistance and private borrowing. The less poor also receive formal assistance, but not until about nine months after the death. They receive some, but not much, private credit. On the other hand, the lack of significant amounts of private transfers for the poorest households apparently forces them to depend on the latter two forms of receipts. However, the total amount flowing from these is less than ten thousand shillings (per half-year) on the date of the death—half that received by the less poor on that day—and poor households continue to receive transfers for only a year, as opposed to the 18 months that private transfers endure for the less poor (panels 5a and 5d).

Our point estimates indicate that, six months after the death, resource-rich households are receiving transfers at the annual rate of 27 000 TSh. At the same time, the resource-poor households receive no private transfers, but do get assistance from formal institutions at the rate of 4400 TSh per year, and are borrowing an additional 4600 TSh per year. One year after the death, the rich are still receiving private transfers at a rate of 17 000 TSh per year, whereas the poor have stopped receiving any assistance, whether in the form of private transfers, formal assistance, or credit.

Figure 6 presents the household's total receipts of financial assistance, again by the number of months since the death, but now also distinguishing by the index of household resources. In total, the resource-poor household could possibly receive assistance at the rate of 18 800 TSh per adult equivalent member one month after the death, which is a respectable half of the 37 000 TSh received by the resource-abundant household (though the estimate for the poor is not statistically significant). If the distribution of financial assistance were maintained at this rate over time for all households, it would be an impressively progressive allocation. As a percentage of total income, the annual rate of receipts would amount to a quarter of per-capita expenditure for the poor, and 13% of per-capita expenditure for the rich.

Over the course of the first year following a death, poor households receive about 52 400 TSh per capita, while rich households receive about 176 000 TSh per capita¹¹. This is still progressive, as it represents about 70% of total per-capita expenditures of the poor, and 63% of total per-capita expenditures for the rich. However, the receipts of assistance by resource-poor households diminish rapidly with time, and are completely gone within one year after the death, while those of the resource-abundant household persist for almost two years. While the total received by the poor is 52 400 TSh (all in the first year), the rich receive a total of about 280 000 TSh per capita in the 30 months following the death—coincidentally, almost exactly the annual per-capita expenditure among rich households.

Conclusions

This paper has tried to explain one of the mechanisms by which households deal with a death. Clearly, some households fare much worse than others. But that observation itself motivates the key question: why do some households manage better than others? The household's human and physical capital—the ability to self-insure—is part of the answer. Households with sufficient resources may not need formal-sector assistance.

Resource-abundant households rely more on private transfers, whereas resource-poor households rely relatively more on credit. These results seem to support the hypothesis of Fafchamps and Lund that credit acts as insurance in cases where informal contracts are not enforceable. In Kagera, a donor household will make transfers to a rich household, and trust that the recipient will repay in the future. There is an implicit contract for repayment. For

¹¹ This is the integral of the point estimate curve in panels 6a and 6b, from 0 to 12 months after the death, above the counterfactual.

poor households, the contract must be explicit: 'I will help you if you are poor and in crisis, but I want an explicit promise of repayment, not merely an implicit one. I don't trust that you will be able to repay; I need some guarantee.' If this is true, it means that the impact of the death is potentially even worse for poor households; not only are they hit harder, but they must also bear a larger part of the burden alone.

Thus resource-abundant households are wealthy not only in physical and human assets, but also in 'social' assets, or social capital. They have a larger, broader and, presumably, wealthier network of friends and relatives on whom they can depend in times of crisis. They are more likely to receive private assistance, and they receive more assistance, than do poorer households. In an environment of incomplete and unenforceable contracts, a larger social network provides greater resources for common risk-pooling.

These quasi-insurance transactions are personalized functions of the characteristics of donor and recipient, not impersonal market transactions. The expected returns to gifts given depend on information about the ability of the recipient to reciprocate in the future—i.e., future creditworthiness or vulnerability. Thus it may be reasonable even for a poor donor to give more to a wealthy recipient than to another poor recipient, if the expected returns to gifts made to a wealthy household exceed those of gifts to a poor household.

Those outside the network—the resource-poor—can only have access to the risk-pooling resources through formal credit contracts. Even assuming the rate of interest is actuarially fair, the cost of risk aversion is far greater for the poor than for the rich, since the risk of default and loss of collateral is not zero. For the rich, inability to reciprocate the assistance will reduce access to future assistance, but will not imply the loss of currently productive assets.

What are the policy implications of these findings? First, government and nongovernment agencies made a substantial difference to resource poor-households that had suffered an adult death in Kagera, Tanzania in 1990-1994. According to the regression results and the simulations, formal sources accounted for more than a third of all financial assistance received by the poorest households a month after the death. Second, the amount of such formal assistance was substantial in absolute terms. Computing the integral under the estimated profile of formal assistance in panel 5b gives an estimated total of 30 500 Tsh per adult equivalent over the 18 months until receipts cease. At an annual rate of 20 300 Tsh, or about US\$70 in 1991, this amount compares favourably with Tanzania's 1991 per capita GNP of US\$110.

Third, since panel 5e shows that resource-abundant households receive assistance also, though with a lower priority than do the poor households, this suggests that formal assistance programmes could provide more assistance to the poorest households by limiting the amount given to the better-off. This suggestion must not be taken lightly, however, since strict adherence to progressive targeting criteria can undermine the political support for a subsidy programme (Sen, 1995, Gelbach and Pritchett 1997). In addition, it is difficult to design accurate targeting mechanisms (Lundberg and Diskin 1995), and attempts to reduce false positives (capture by non-needy households) often lead to increases in false negatives (omitting truly needy households).

Finally, resource-poor households in Kagera avail themselves even more of loans than they do of formal assistance in response to a death. And they do so even more than do resource-abundant households. Many of the loans taken in this sample may be 'quasi-credit,' that is, flexible arrangements whereby repayment is contingent on changes in the fortunes of borrower and lender. The Kagera survey did not elicit interest rates, so further data are required before we can estimate the actual costs of borrowing; but it is safe to say that the costs of insuring consumption against a death are higher for poor households than non-poor

households. Credit and transfers are structurally different: interest rates on loans are likely to be positive, and loans may require the borrower to forfeit collateral with a positive probability of default. The evidence suggests that the poor are excluded from the relatively more flexible transfer scheme, and that they rely more on private credit. Thus, to the extent that micro-credit programmes improve access and lower the total costs of borrowing, they may be effective not only for their usual purpose of stimulating investment in micro-enterprises, but also in helping the most resource-poor households to cope with the impacts of an adult death in areas hard hit by the AIDS epidemic.

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Table 1. Descriptive Statistics, by Death Experience

Variable name	<i>No death</i>		<i>Any death</i>		<i>t-test</i>
	<i>mean</i>	<i>sd</i>	<i>mean</i>	<i>sd</i>	
<i>Assistance Received</i>					
Net private transfers ^a	1.041	(23.199)	1.931	(16.671)	(1.243)
Formal assistance ^a	0.341	(1.843)	0.520	(1.691)	(2.895) **
Net private credit ^a	0.135	(5.335)	-0.077	(2.810)	(1.383)
Total receipts ^a	1.517	(24.160)	2.374	(17.261)	(1.151)
<i>Sampling Attributes</i>					
Attrition	0.053	(0.225)	0.039	(0.193)	(2.004) *
Survey end	0.067	(0.250)	0.037	(0.190)	(3.892) **
<i>Household Resources</i>					
Log assets	2.491	(0.658)	2.584	(0.611)	(4.244) **
Log BMI	1.313	(0.049)	1.313	(0.048)	(0.138)
Male hh head	0.785	(0.411)	0.658	(0.475)	(8.138) **
HH head age	48.576	(16.207)	50.031	(18.116)	(2.419) *
HH head education	4.158	(3.172)	4.133	(3.205)	(0.223)
Log RAAE	0.472	(0.226)	0.497	(0.222)	(3.208) **
Resources index	0.004	(0.760)	-0.005	(0.777)	(0.334)
<i>Death Variables</i>					
Death	0.000	.. ^c	1.000
Time since death	0.000	..	19.188	(10.740)	..
Time since death squared	0.000	..	483.438	(450.364)	..
Resources X Death	0.000	..	-0.005	(0.777)	..
Resources X Time since death	0.000	..	-0.718	(16.458)	..
Resources X Time since death squared	0.000	..	-26.737	(482.316)	..
N	1896		1462		

^a Thousand TSh per adult equivalent.

^b OLS, intercept = -5.012.

^c Zero variance: variable is a constant.

* significant at 5%, ** significant at 1%, + significant at 10%.

Table 2. Incidence of assistance by source

	Private transfers	Formal assistance	Private credit	Total assistance	Number of households
Poor households	812	1030	293	1092	1686
with death	379	445	105	498	670
without death	433	585	188	594	1016
Non-poor households	895	1119	295	1076	1682
with death	491	560	140	575	800
without death	404	559	155	501	882
All households					
with death	870	1005	245	1073	1470
without death	837	1144	343	1095	1898
Number of households receiving assistance	1707	2149	588	2168	3368

Figure 1. Short-term Impact of Death on Food Expenditure and Food Consumption per Adult Equivalent

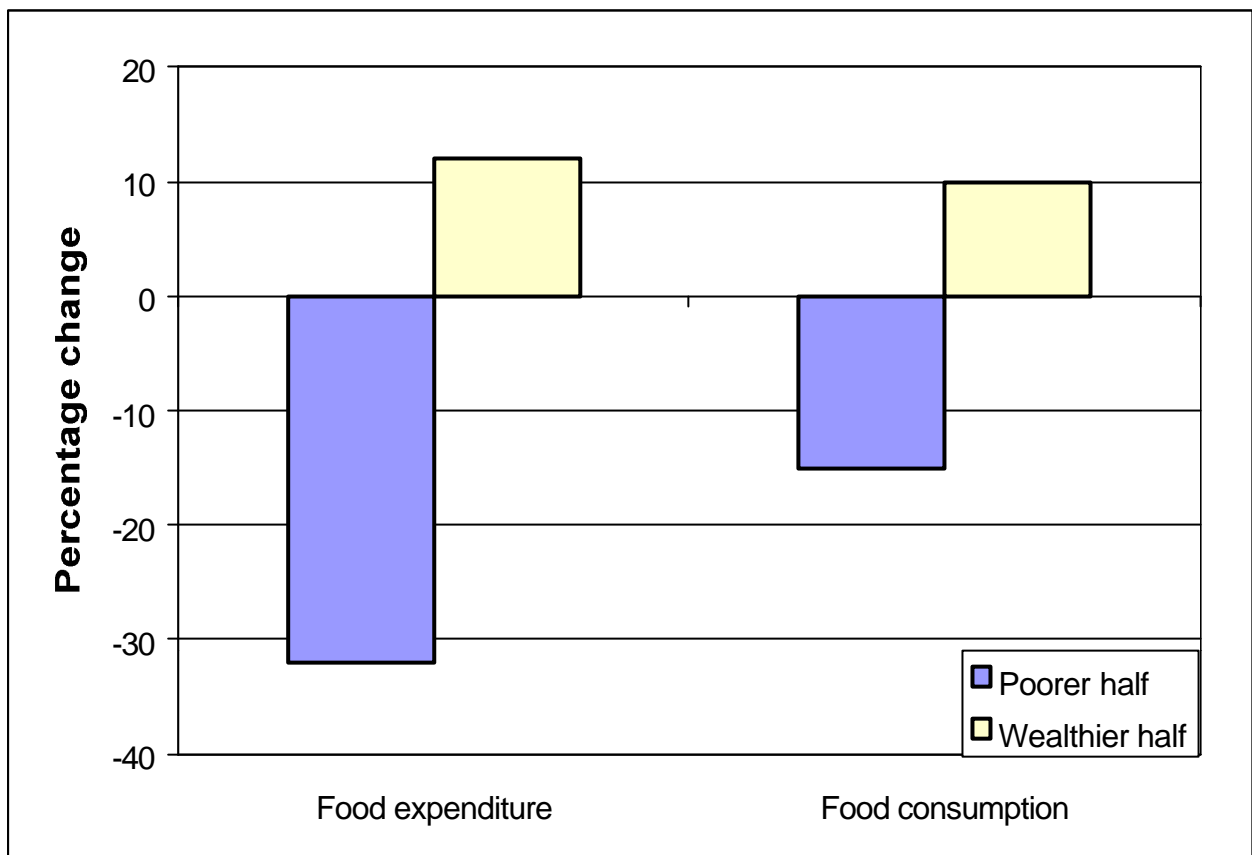
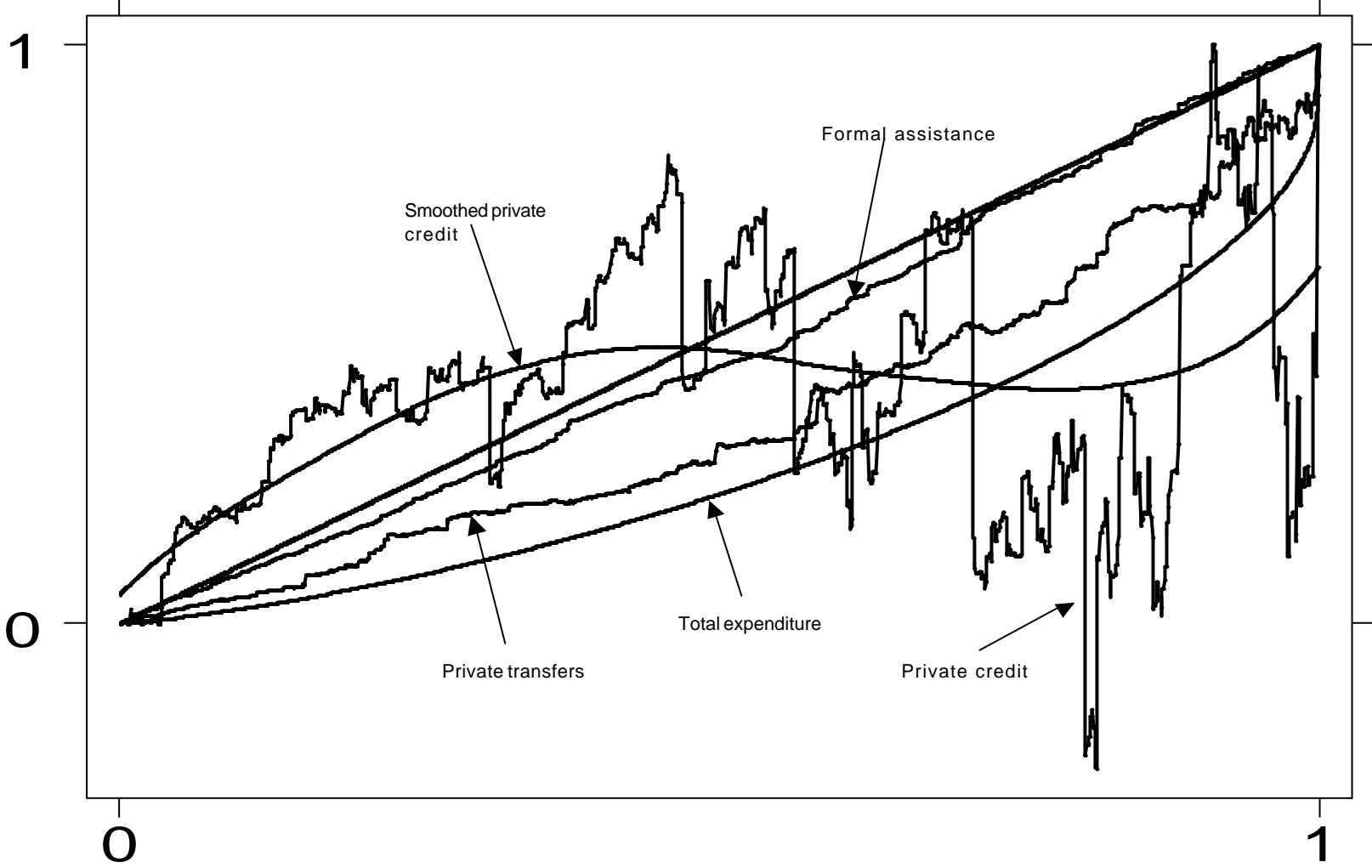
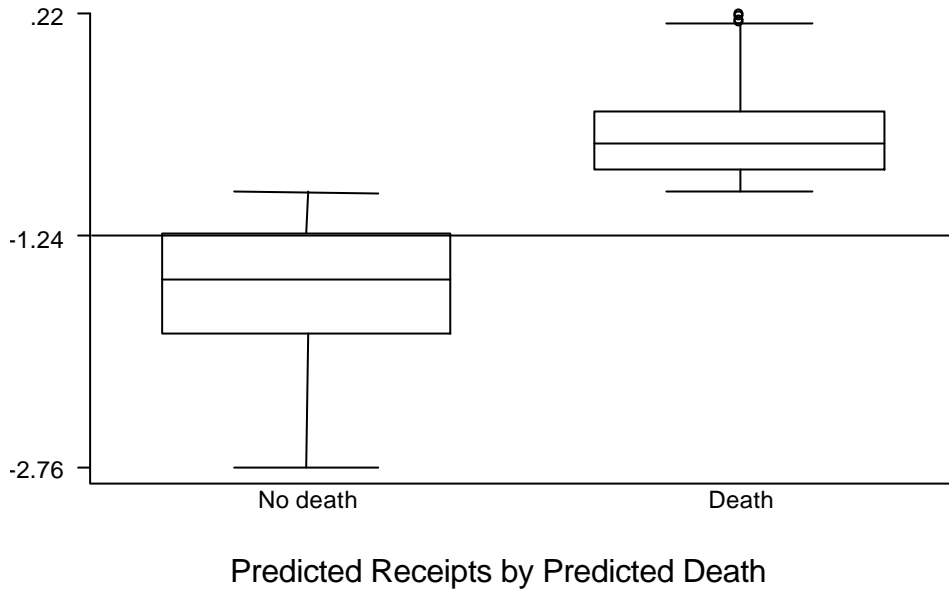


Figure 2. Concentration Curves for Private Transfers, Private Credit, and Formal Assistance¹²



¹² All per adult equivalent.

Figure 3. Predicted Net Private Transfer Receipts by Predicted Death (Thousand TSh)¹³

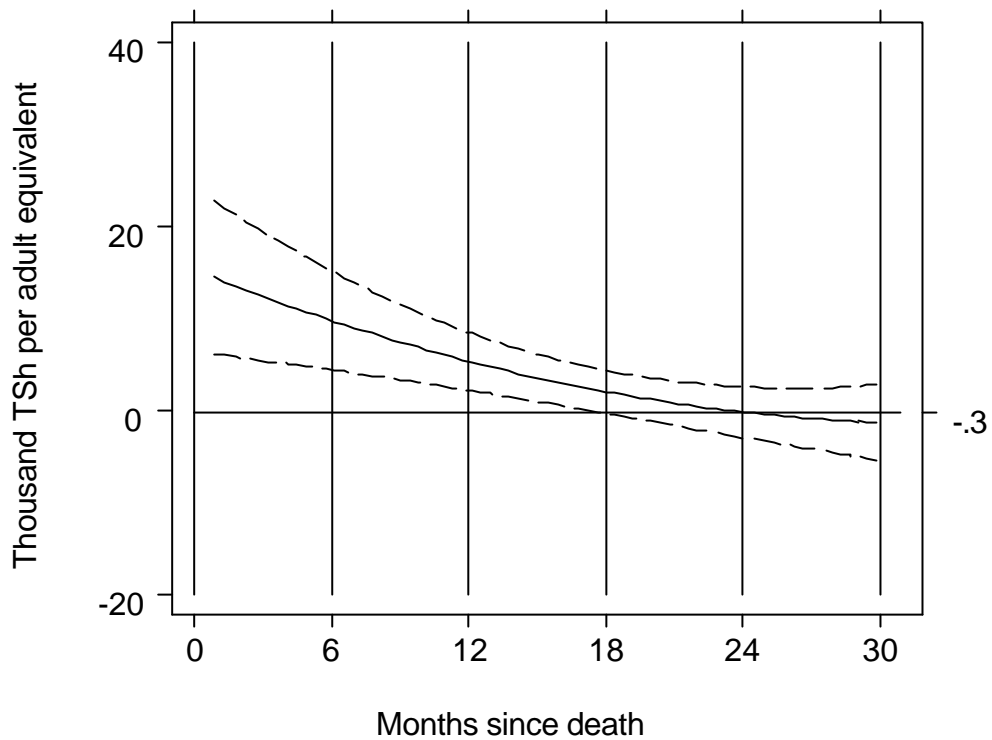


¹³ Predicted deaths come from a linear probability model. Death is predicted for observations with a predicted probability of death greater than or equal to 0.5. The table below describes the prediction, which has a corresponding Pearson χ^2 statistic of 143.55.

Actual deaths	Predicted deaths		
	0	1	Total
0	1392	495	1887
1	784	672	1456
Total	2176	1165	3343

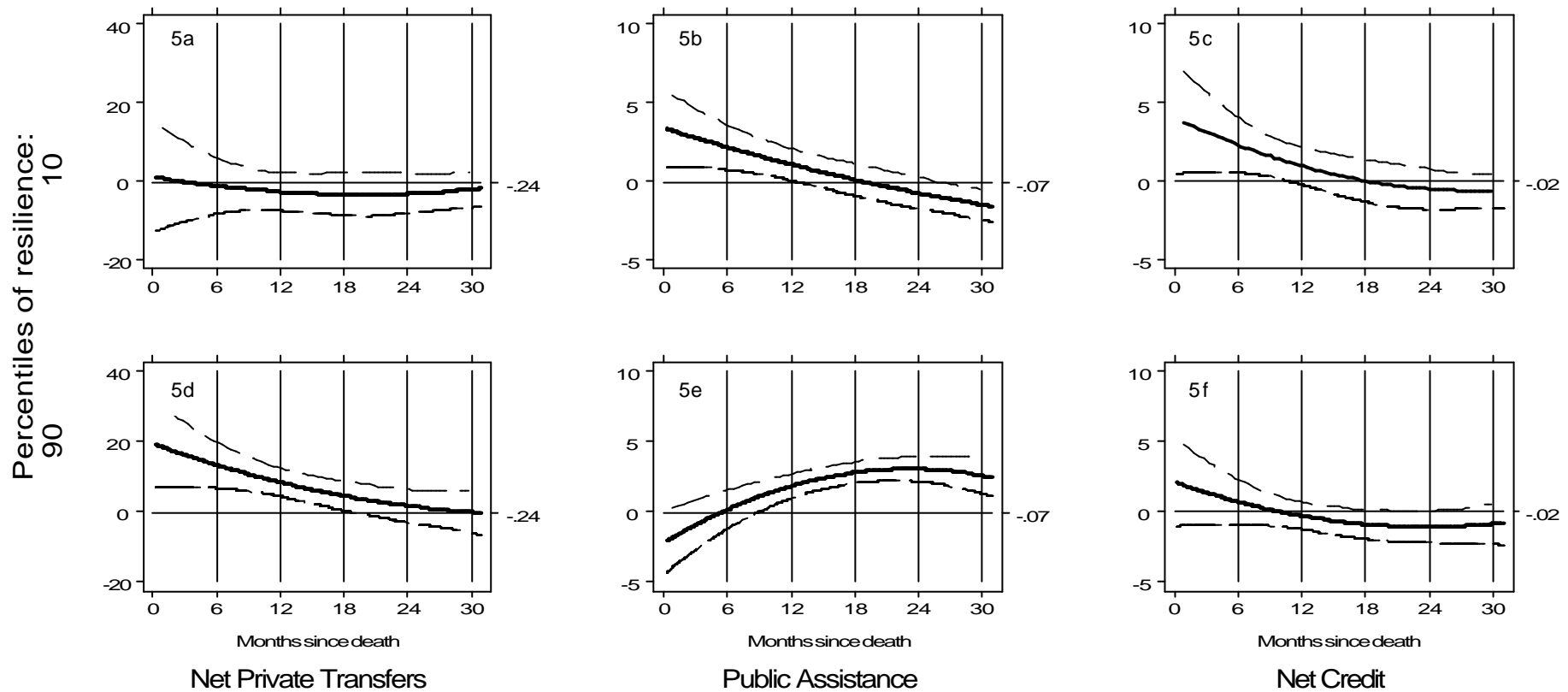
Predicted net transfer receipts are taken from an error-correction 2SLS regression on death, where the first stage is the linear probability model of death, and the second stage prediction uses the fitted values from the first stage regression.

Figure 4. Total Assistance Received by Median Household Following a Death¹⁴



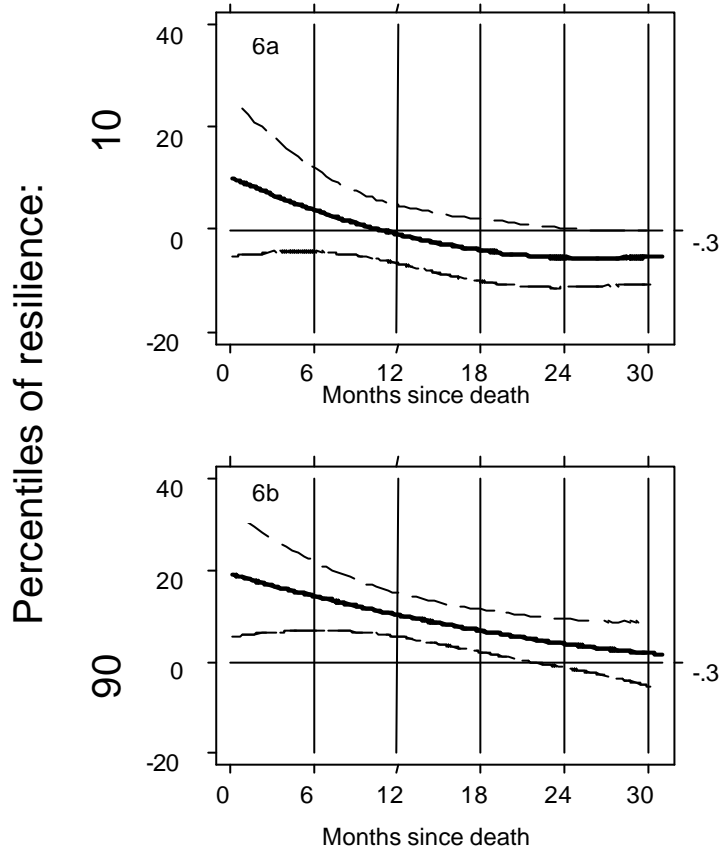
¹⁴ The solid curve is the estimates of the sum of net receipts of private transfers, formal assistance, and private credit following a death. The dashed lines show the 90% confidence interval. The vertical (left) axis depicts the rate of receipts in thousand TSh per capita. The horizontal line, labelled on the right axis, is the counterfactual estimate of receipts for households that have not suffered a death. The impact of a death on receipts is computed as the statistically significant difference between the solid curve and the counterfactual. In this figure, death has a statistically significant positive impact on the amount received, which continues for the 18 months following the death.

Figure 5. The Evolution of Transfers, Credit and Assistance Following a Death¹⁵



¹⁵ See note 12. In this figure, death has no statistically significant impact on the amount of private transfers received by resource-poor households (5a), whereas it increases the private transfers received by resource-rich households for up to 18 months (5d).

Figure 6. The Evolution of Transfers, Credit and Assistance Following a Death¹⁶



Transfers, Assistance, and Credit

¹⁶ See note 12.