Insuring Food Consumption and Property against Funeral Expenses

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Abstract: In response to funeral expenses that drastically affect household consumption, many families in developing countries enter into formal and informal funeral insurance arrangements. We investigate the effectiveness of these arrangements, at a time when people are faced with profound social and economic stress, in insuring food consumption and household property against funeral expenses immediately after a burial and before the next income injection using data collected in urban Zimbabwe in the second quarter of 2014. We find that households who own at least two of the same property use sale of property as a form of insurance, and not necessarily as a distress strategy. We argue that it makes sense for households with excess property to insure their extra property (that is, their illiquid savings) against funeral expenses, and perhaps retain the property as capital for entrepreneurial activities. Households that do not have at least two of the same property would rather hold on to their property and destabilise food consumption, possibly leading to the household being trapped in a malnutrition cycle that may undermine future productivity. We conclude that informal and/or formal insurance plays a preventive role in these households.

1 Introduction

In response to funeral expenses that drastically affect household consumption, many families in developing countries enter into formal and informal funeral insurance arrangements. On the one hand, theoretical work has been devoted towards understanding how informal insurance arrangements are formed (Genicot and Ray 2003; Bold 2009) and how they share risk under conditions where there is imperfect information and enforceability (Kocherlakota 1996; Ligon et al 2002). On the other hand, several studies have provided an empirical assessment of their functions and how they operate, especially at group level. Hall (1987), Roth (2001), Thomson and Posel (2002), Dercon et al (2006), Case et al (2008) and LeMay-Boucher (2009) are examples of such studies. Despite all this work, little is known about the effectiveness of informal funeral insurance arrangements at a time when people are faced with profound urban social and economic stress (Devereux 2006; Fafchamps and Ferrara 2012). This paper seeks to address this imbalance by estimating the effectiveness of informal funeral insurance in protecting poor households in urban Zimbabwe, from reduced food consumption and loss of household property, against funeral expenses.

Earlier empirical work by Cochrane (1991) piloted the analysis of the effectiveness of insuring consumption against idiosyncratic shocks, without a specific shock in particular, under

complete markets. Gertler and Gruber (2002) provide a specific analysis by assessing the extent to which families are able to insure consumption against illness. Bold and Dercon (2014) use funeral insurance data from rural Ethiopia to model the emergency of formal mutual insurance companies under limited contract enforceability. We add to this literature by focusing the study on the extent to which informal insurance mechanisms of households are able to insure consumption against funeral expenses. Furthermore, we assess insuring household property such as cell phones, computers, and television sets among others, against funeral expenses in particular. This is important because some households sell property and/or assets[1] immediately after a funeral and before the next income injection, to finance consumption. None of the identified empirical work addressed insuring property against idiosyncratic shocks in general and funeral expenses in particular. Yet knowing what other variables (such as household property) of the household, besides consumption, are exposed to idiosyncratic shocks is important because it may demonstrate that the effects of shocks go beyond food consumption. For instance, the possibility that shocks could lead to depletion of household property suggests a potentially large loss in household welfare, compared to the loss limited to the disruption of food consumption.

Studying informal funeral arrangements has largely been confined to rural areas in the literature. Fafchamps and Ferrara (2012) were among the first to consider studying informal insurance in an urban milieu in Kenya. The aim of their work was to examine the extent to which risk sharing groups serve to pool income and hence serve as insurance. A study by Berg (2015) adds to the scant literature on informal insurance in urban areas by studying funeral insurance in comparison to life insurance in South Africa. This paper contributes to the literature on informal insurance arrangements in urban areas. This is also important because a growing proportion of people in Africa are living in the urban milieu.

If households are able to completely insure consumption and property against funeral expenses using their informal insurance, there may be relatively larger gains that may be derived from introducing social and development policies that support informal insurance schemes. There may also be theoretical gains that may shed light on the evolving debate on the relevance of informal systems in social protection. This debate has generally raised four arguments: firstly, that informal mechanisms are rapidly disappearing under processes of commercialisation (Sen

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[1] An asset is generally considered as a stock of wealth or may be considered as capital (Sherraden 1991). To avoid confusion, we use the phrase 'household property' to denote household possessions that are not necessarily used as capital.

1980; Moser 1998); secondly, that informal mechanisms are economically damaging and displacing them is likely to be socially and economically preferable (Devereux 2001); thirdly, that informal mechanisms are well-functioning and public transfers will displace them (Cox and Jimenez 1995); and fourthly, that informal mechanisms are part of preventive social protection from non-state actors (Devereux and Sabates-Wheeler 2004).

To address the effectiveness of informal funeral insurance in protecting poor households in urban Zimbabwe, we estimate the ability of families to insure food consumption and household property against funeral expenses after a funeral and before the next income injection into the household using data collected by one of the authors in Bulawayo in the second quarter of 2014. Specifically, we specify a binary response logit model that explains the effect of funeral expenses on change in food consumption and household property that follows a funeral.

2 Institutional setting, death and informal insurance

After 1990, Zimbabwe introduced an Economic Structural Adjustment Program (ESAP) that arguably led to more concerns than solutions relating to the social costs of adjustment for vulnerable households in Zimbabwe (Renfew 1992). Unemployment started to worsen (Minot 1994) and a decade later inflation was over 79,000,000 per cent (Hanke 2008). The profound decline of Zimbabwe was also reflected in social challenges, such as HIV/AIDS and cholera, which heightened vulnerability to sickness and death. In 2008, a large cholera epidemic took hold in Zimbabwe starting in a district called Chitungwiza which is 25 km southeast of the capital Harare and it eventually spread to almost the whole country (WHO 2009).

While economic turmoil in Zimbabwe has stabilised to some extent in recent years, the reality of death is still present. Evidence of this comes from the survey data used in this paper. Of the 298 households enumerated, 120 of these experienced death in the past five years (2009 – 2013). The survey data shows that some households experienced death more than once during this period. The mean age of those dying is 44.3 with a standard deviation of 28.41. The gender ratio of those who have died in the period under study is 1.18 men : 1 woman. Table 1 shows that the higher percentage of those dying would have had a long illness, a scenario commonly associated with HIV/AIDS.

Table 1: Causes of death in Bulawayo, 2009 – 2013

Cause of deaths	Percentage
Long illness (> 3 months)	40
Short illness (< 3 months)	37.5
Accident	7.5
Old age	10.83
Died in child birth	1.67
Other	2.5
Total	100

Source: Own survey data

There are two sizeable economic costs of death: the immediate cost of financing a funeral and the cost of reduced household labour supply. This paper focuses on the costs of the former, and these costs are given in table 2. Given that the study covers funeral costs experienced by households from 2009 to 2013, all costs on or before 2013 are inflated to 2014 prices, which is the chosen base year, using consumer price index. As shown in table 2, the cost of food takes a bigger share of the funeral expenses. This is because when bereavement occurs in Zimbabwe, relatives will come to stay with the deceased family for all the mourning days. Relatives have to be fed by the bereaved family. In addition, community members also visit every night of the mourning days. They are also fed during their visits.

The unpredictability of when death may take place suggests that financing funeral expenses could destabilise household finance leading to loss in welfare immediately after a burial. Funeral insurance is therefore important for households. Past research confirms that households regard funeral insurance as important, although many of the households are covered by informal funeral insurance more than they are covered by formal insurance (see Dafuleya 2013).

The data from the survey shows that families that have experienced death in the past five years rely on several sources of payment shown in figure 1, which all act as a form of funeral insurance. As shown in figure 1, community risk sharing initiatives (CRSI) and burial societies dominate as a source of financing the larger share of funeral costs such as feeding relatives,

transport and purchasing a coffin. In addition to CRSI and burial societies, households also use individual savings as a source of payment to cover the expensive requirements of feeding relatives, transporting mourners to the gravesite and purchasing the coffin (see figure 1). Household saving is also an important source of paying for small expenses such as phoning the relatives, and purchasing flowers and clothes for the deceased. Figure 1 shows that relatives also contribute to almost all expenses. There is interaction between these sources of funeral insurance that makes them hard to disentangle.

Table 2: Descriptive statistics of funeral expenses in Bulawayo, Zimbabwe

| Expense	Mean	Std Dev	Min	Max
Feeding relatives and community members	516.77	541.48	23	1200
Transport	281.63	289.45	10	1810
Coffin	421.15	292.02	41	1602
Funeral parlour	169.37	157.19	43	209
Cemetery	57.77	38.79	5	228
Contacting relatives	21.69	20.48	6	90
Clothes\blankets for the deceased	51.71	34.84	0	189
Flowers	25.00	24.25	0	150
Programme	13.16	10,74	0	53

Source: Own survey data.
Note: The expenses are in US$.

An explanation of the difference between CRSI and burial societies is salient. The group-based insurance (burial societies) is distinct from community-wide insurance (CRSI), yet most households belong to both. A burial society is a group of friends, relatives, work mates and/or church mates who deliberately come together to finance themselves and their extended families against death related expenses. CRSI is a community-wide initiative in which residents that belong within a set community boundary are by default required to contribute food or cash when another household within the same boundary faces bereavement. What these types of schemes have in common is that they are formed to insure funeral expenses. However, burial societies have a small membership, are well organised and are governed by their constitution. They contribute money before death occurs. While community level schemes are also well organised, they are far larger than group-based schemes and are not governed by any rules.

Instead they are based on repeated interaction and fear of social segregation for not participating in the scheme.

Figure 1: Sources of payment for funeral expenses
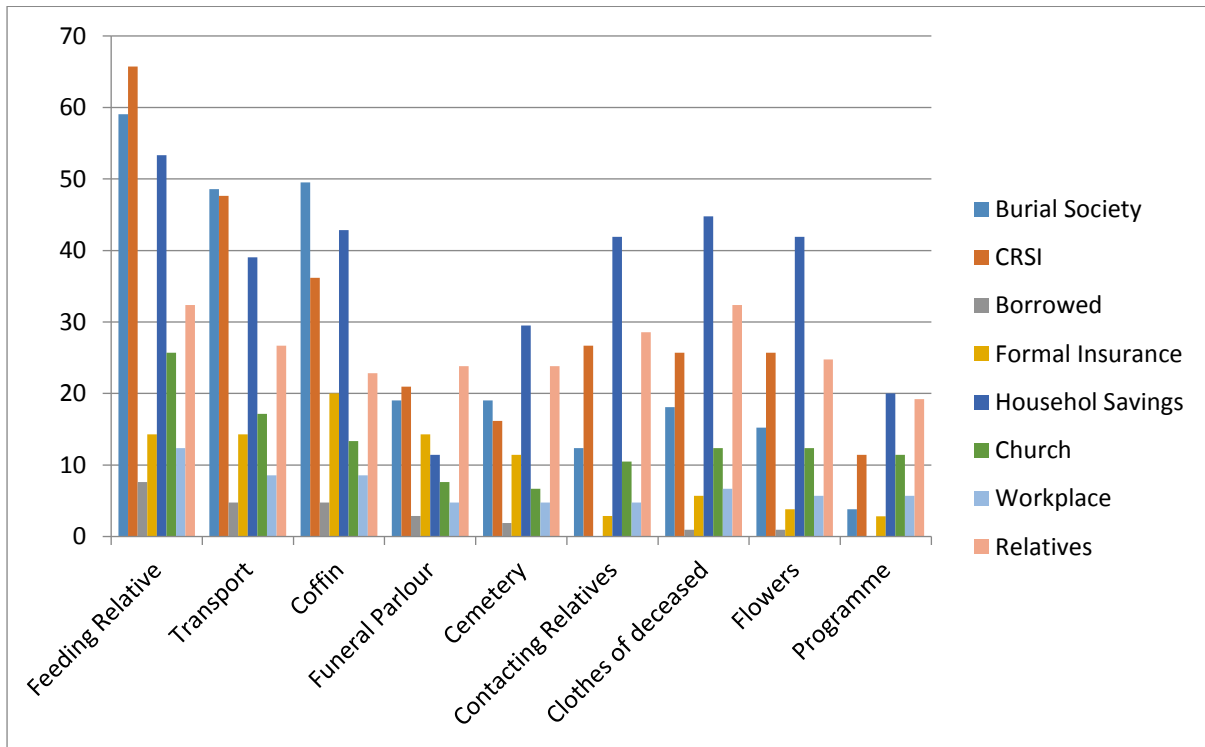
Source: Own survey data.
Note 1: The key to the graph follows the order of the bars, that is, burial society is matched with the first bar and relatives with the last.
Note 2: Numbers on the vertical side represent the frequency of the source of payment in paying for funeral expenses as reported by the households in the survey.

3 Data and Descriptive Statistics

The data for this paper comes from a household survey conducted by one of the authors in Bulawayo, the second largest city in Zimbabwe, between March and July 2014.[2] The surveyed covered 298 households from three poor high-density suburbs – Matshobana, Sizinda and Sokusile. The descriptive statistics of variables used in this paper are provided in table 3. These are categorised into whether the household is uninsured, informally insured, formally insured or both formally and informally insured. As can be seen in table 3, the mean of the variable that captures changes in food consumption immediately after a funeral is 0.21 for the insured households and 0.75 for the uninsured households.

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[2] A thorough description of the survey and the questionnaire used is available in the PhD thesis of the author available online.

Table 3: Descriptive statistics of variables in the regressions

Variables (Yes = 1; No = 0)	Uninsured (61 observations)				Informally Insured (102 observations)				Formally Insured (15 Observations)				Formal and Informally Insured (22 observations)			
	Mean	Standard Deviation	Min	Max	Mean	Standard Deviation	Min	Max	Mean	Standard Deviation	Min	Max	Mean	Standard Deviation	Min	Max
All changes in consumption	0.75	0.46	0	1	0.21	0.41	0	1	0.25	0.46	0	1	0.063	0.25	0	1
Reduce number of meals per day	0.25	0.46	0	1	0.08	0.27	0	1	0.13	0.36	0	1	0	0	0	1
Eat small portions	0.5	0.54	0	1	0.14	0.35	0	1	0.25	0.46	0	1	0.063	0.25	0	1
Change to cheaper diet	0.38	0.52	0	1	0.09	0.29	0	1	0.13	0.36	0	1	0	0	0	1
Funeral Expenses	423.8	264.36	155	900	999.88	610.47	190	3104	1 877.38	528.66	1125	2578	2 420.38	919.97	1 060	4 443
Borrowed immediately after the funeral	0.75	0.55	0	1	0.24	0.43	0	1	0.38	0.52	0	1	0.25	0.45	0	1
Sold property immediately after the funeral	0.5	0.32	0	1	0.09	0.29	0	1	0.13	0.35	0	1	0.19	0.40	0	1
Household drawing down other savings	0	0	0	1	0.08	0.27	0	1	0.13	0.35	0	1	0	0	0	1
Household size	5.75	2.38	3	8	7.76	2.51	2	15	7.75	2.71	4	12	7.81	3.49	3	17
Head age	52.25	17.65	31	80	49.35	15.72	19	85	53.86	13.50	35	75	50.13	11.97	26	65
Household head is able to do full workload	0.75	0.46	0	1	0.82	0.39	0	1	0.75	0.46	0	1	0.94	0.25	0	1
Household total income	202.5	125.78	80	450	391.39	299.72	0	1540	462.5	339.91	150	1000	403.13	471.57	60	2 100
Number of migrants	1.286	1.60	0	4	1.76	1.85	0	7	1.75	2.38	0	7	1.06	1.34	1	0

This implies that on average, uninsured households change food consumption more than insured households following a funeral. This is despite the fact that the average funeral expenses of the uninsured households are lower (at mean of US$423.80) compared to informally insured households (at mean of US$999.88).

It could be that insured households are extravagant on funerals because they have a higher standard of living and are insured (a moral hazard associated with insurance) and that poorer households both do not have insurance and spend less. However, the fact that low funeral expenses on average affect food consumption for uninsured households, and high funeral expenses on average do not seem to affect the food consumption of insured households, demonstrates a marked difference of what formal and informal funeral insurance may do. This becomes more pronounced given that the average monthly total income of households is one-third, or one-half at most, of the average unexpected funeral expenses. These are huge expenses, which if not insured or managed properly, could have devastating effects on household food consumption and property, and I attempt to further explain this evidence in the next two sections.

The change in food consumption in most households mainly originates from eating smaller quantities of food compared to changing to a cheaper diet and reducing the number of meals taken per day. This could indicate two things. First is that eating smaller quantities could be nutritionally better than migrating to a cheaper diet and having less meals. The second is that this could indicate the effect of unobserved variables in the data such as loss of appetite, an issue which we turn to later.

The mean of the variable, 'household drawing down other savings' is zero for uninsured households. This indicates that uninsured households do not use any household savings to finance food after a funeral. It could be that these households do not have savings to draw down from. This is also evidenced by the fact that uninsured households borrow and sell property immediately after the funeral (see table 4). It is unlikely that a household would borrow if it has other savings to draw from, unless it is fixed savings.

While formal and informally insured households also do not use any household savings to finance food after a funeral, the interpretation of this is different to those of uninsured households. For households with both formal and informal funeral insurance, it could be that there is no need to draw down household savings given that the funeral expenses may be covered by insurance. This is likely because these households have two types of funeral

insurance. For the informally insured only or the formally insured only, the households draw down on other savings. This could mean that formal and informal insurance complements each other in insuring funeral expenses.

Table 4: Cross tabulations of type of insurance on borrowing or selling property immediately after the burial

	Borrow immediately after burial			Sell immediately after burial		
Type of Insurance	**No**	**Yes**	**Total**	**No**	**Yes**	**Total**
None	15	46	61	31	31	61
	25	75	100	50	50	100
Informal	80	22	102	94	8	102
	78.79	21.21	100	92.42	7.58	100
Formal	11	4	15	13	2	15
	75	25	100	87.50	12.5	100
Both	18	4	22	19	3	22
	81.25	18.75	100	87.5	12.5	100

Source: Own Survey
Key: Order of appearance is as follows: Frequency is at the top, followed below by row percentage.

The indications from cross-tabulations in table 4 are that most of the uninsured households who faced bereavement in the past five years borrowed immediately after a burial to finance food consumption, compared to insured households. To the extent that this is true, the fact that the uninsured households still had small portions of food immediately after the funeral despite small funeral expenses compared to insured households and despite being more likely to borrow; indicates serious consequences that could result from not being insured for funerals. About half of these households also sold property to finance food consumption, thereby suggesting that the effects of failing to insure funeral expenses extend beyond food consumption. This may not only leave households in debt but having to engage in distress property sales, which could have devastating future effects. In contrast, most insured households do not borrow and neither do they sell assets immediately after a funeral.

In table 5, the descriptive statistics of property ownership in surveyed households is provided. Cell phones and television sets are the only properties with an average ownership that is greater than one. However, other properties such as DVD players, laptops and hand-tools have a mean of less than one but there are indications that at least one household owns more than one of these properties.

Table 5: Property ownership and sales of property after a funeral to finance consumption

Property	Mean number owned	Standard deviation	Min	Max	Percentage of Property sold				
					Uninsured households	Informally insured household	Formally insured household	Informal &formally Insured household	All Households
TV	1.05	0.20	0	3	31	6.3	0	0	13.4
Radio	0.48	0.51	0	1	7.3	0	0	0	2.3
DVD	0.71	0.45	0	2	16.8	6.3	50	0	23
Refrigerator	0.80	0.40	0	1	0	0	0	0	0
Stove	1	0	1	1	0	0	0	0	0
Washing machine	0.02	0.14	0	1	0	0	0	0	0
Microwave	0.11	0.31	0	1	0	0	0	0	0
Heater	0.10	0.30	0	1	0	0	0	0	0
Cell phone	1.51	0.88	0	4	28.9	37.5	50	33.4	34
Bicycle	0.13	0.36	0	2	11	6.2	0	0	4.5
Car	0.09	0.29	0	1	0	0	0	0	0
Pick-up truck	0.02	0.13	0	1	0	0	0	0	0
Laptop	0.22	0.24	0	2	0	6.2	0	33.3	16
Desk computer	0.03	0.16	0	1	0	37.5	0	33.3	4.5
Hand tools	0.24	0.66	0	3	5	0	0	0	2.3

Source: Own survey

Table 5 also shows that the household properties which are mainly sold to finance food consumption after a burial and before the next income, in order of percentages, are cell phones, DVD players, laptops and television sets. Of households that sold property, 34 percent sold a cell phone, 23 per cent sold a DVD player, 16 per cent sold a laptop and 13.4 per cent sold a television set to finance food consumption. None of the households sold property that could be potentially income generating, such as a pick-up truck. As a result the study is not able to focus on insuring assets[3] against funeral expenses, but rather concentrates on insuring household property.

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[3] As already stated in chapter two of the thesis, the term assets is generally used in economic literature as a productive economic resource expected to yield a benefit to the owner in future periods (for example, livestock). In an attempt to be in line with literature, the term asset is not used in this chapter because it is only unproductive

4 Testing the effectiveness of funeral insurance

The effectiveness of funeral insurance is now assessed in this section. First, we present the methods employed and results on the effectiveness of funeral insurance in insuring food consumption against funeral expenses after a burial and before the next income injection into the household. Second, we present the methods employed and the results on the effectiveness of funeral insurance in insuring household property against funeral expenses in the same period.

In each case, we start with an assessment of the effectiveness of funeral insurance for insured households relative to uninsured households. Here, we assess if insured households mitigate a slump in food consumption and depletion of property better than uninsured households after a burial. Thereafter we assess the effectiveness of funeral insurance for insured households only, that is, in non-relative terms. In addition, we assess the ability of uninsured households to mitigate a slump in food consumption and depletion of property. Then we compare the results of the insured and uninsured households to determine the effectiveness of (especially) informal funeral insurance. In each case, we check for robustness of the results and end with a combined interpretation of the results based on the four main arguments relating to informal mechanisms in the social protection landscape.

Insuring Food Consumption Against Funeral Expenses

As already indicated, the assessment in this section is addressed both in relative (that is, assessing the effectiveness of funeral insurance relative to those households who do not have) and nonrelative (that is, limiting the regressions to households with funeral insurance only) terms. The discussion below begins with the former and ends with the latter.

1. *Effectiveness of funeral insurance to smooth food consumption in relative terms*

In the data and descriptive statistics section, the characteristics of the dependent and independent variables showed that, on average, households without insurance fail to smooth food consumption after financing a funeral and before the next income injection. In this section, we further check on this evidence by testing the effectiveness of funeral insurance to insure food consumption against unexpected funeral expenses using equation (1) below.

$$P(\Delta C_i = 1|x) = \beta Ins_i + \gamma(Exp_i) + \delta X_i + \alpha S_i + e_i \qquad (1)$$

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assets (household property or durable goods) that the households seemingly insure in the three surveyed neighbourhoods.

The variable ΔC_i considers changes in food consumption that take place after a funeral and before the next income. These changes include reduction in the number of meals taken per day, eating smaller portions of food, and changing diet to cheaper and/or less preferred food. Any indication of an experience on these changes by households is coded one and zero otherwise. Variable Exp_i represents funeral expenses and Ins_i shows if a household has or does not have funeral insurance.

A series of household demographic controls X_i and suburb-level effects S_i are also included for control purposes. The household demographic variables selected are: the household size, age of head of the household, ability of household head to do full workload, household total income and number of migrants. These variables are considered important given that they may determine if the household may change eating patterns after a burial. We also include variables that capture if a household borrowed, used savings and/or sold property to finance food consumption.

Several issues need explanation concerning running the logit regression equation (1). First, the base of the variable Ins_i is all those households that do not have funeral insurance, whether formal or informal. The coefficients resulting from this variable are therefore assessed in comparison to the base. The estimations of the effectiveness of funeral insurance in this sense are relative to uninsured households. Second, the equation is run without distinguishing between CRIS and burial societies, as both are informal funeral insurance and most households belong to both. If a household has any of these insurance mechanisms, it is taken that they are informally insured. However, in regressing the equation we are able to distinguish between households who have formal versus informal insurance and those with both. But this comparison is not used at this stage in terms of comparing the effectiveness of these types of insurance against one another. This is done later when we consider the assessment in absolute terms.

The estimates of equation (1) are provided in table 6. In column 1, variables that determine whether a household reduces meals after a funeral are presented. There is no significant difference between insured and uninsured households in their ability to mitigate reduction of meals after a burial.

Table 6: Estimating effect of funeral expenses on changes in food consumption for insured households relative to uninsured households

VARIABLES	(1) Reduce number of meals	(2) Eat small quantities	(3) Cheap diet	(4) All change in consumption
Funeral Insurance: Informal	-0.879	-1.319*	-1.764*	-1.337*
	(5.762)	(0.706)	(1.065)	(0.760)
Funeral Insurance: Formal	-1.232	-1.457*	-2.419*	-1.642*
	(5.958)	(0.869)	(1.360)	(0.932)
Funeral Insurance: Formal and Informal	-	-2.344**	-	-3.512***
		(1.030)		(1.092)
Used household saving (=1)	3.121*	-0.257	-	-0.407
	(1.666)	(0.804)		(0.818)
Funeral expenses	0.002	0.0005	0.001**	0.0007**
	(0.001)	(0.0004)	(0.0001)	(0.0003)
Borrowed immediately after the funeral (=1)	-5.740**	0.445	-0.077	0.625
	(2.650)	(0.429)	(0.570)	(0.415)
Sold property immediately after the funeral (=1)	-4.664**	0.435	-0.966*	0.454
	(2.341)	(0.496)	(1.083)	(0.502)
Household size	-0.958	-0.086	-0.061	-0.183*
	(0.735)	(0.098)	(0.118)	(0.100)
Age of household head	0.175*	-0.001	-0.024	0.011
	(0.090)	(0.017)	(0.021)	(0.016)
Household total income	-0.006*	-8.06e-05	0.0003	-0.001
	(0.004)	(0.000656)	(0.001)	(0.001)
Number of migrants	-0.097	-0.100	-0.044	-0.032
	(0.275)	(0.119)	(0.176)	(0.109)
Household head is able to do full workload (=1)	-	0.791	0.486	-1.816**
		(0.746)	(0.887)	(0.806)
Sokusile neighbourhood	-6.321	-0.275	1.797**	-0.037
	(6.945)	(0.595)	(0.895)	(0.588)
Sizinda neighbourhood	0.619	0.069	1.660*	0.565
	(1.694)	(0.581)	(0.876)	(0.552)
Pseudo R^2	0.21	0.26	0.34	0.29
Observations	85	117	95	134

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Note: gaps in the table, shown by a hyphen, result from the fact that the model cannot be fitted because the coefficient for the variables in question would be negative infinitely (that is, predict success perfectly). For example, all households with formal and informal insurance never experienced a reduction in the number of meals, that is, they are all coded zero.

As already shown in table 3, households with insurance are most likely to have higher funeral costs. In spite of this observation, a priori we do not expect these funeral expenses to be significant in determining a slump in food consumption since they are covered by insurance. Table 3 also showed that households without insurance spend little on funerals compared to insured households. Despite this, the funeral expenses of the uninsured households are double the monthly household total income. As such, a priori, funeral expenses of uninsured households are expected to disrupt food consumption after a burial. Regressing equation (1)

indicates that funeral expenses significantly determine a slump in household food consumption patterns immediately after a funeral and before the next income (see columns 3 and 4 of table 6). The higher the cost of the funeral, the higher the chances are that the household will change to a cheaper diet.

If funeral expenses are significant in determining whether food consumption is smoothed or not, then it could be that funeral insurance fails to completely insure funeral expenses. Given that the data used here has both households with and without insurance, it could be that the lack of insurance in uninsured households is the reason why funeral expenses are significant (see columns 3 and 4 of table 6) in determining slumps in food consumption. Analysing this using only insured households, as we do in the next section, could shed more light on the coefficients of funeral expenses in households with funeral insurance.

The variables 'used household savings', 'borrowed immediately after a funeral' and 'sold property immediately after a funeral' in table 6 column 1 are all significant and need careful interpretation. This is because in the data, there is a possibility of confusing the timing of a reduction in the number of meals with drawing down savings, borrowing or selling property, immediately after a funeral and before the next income. For instance, a household may experience a slump in consumption at time D_t after a funeral, and then decide to draw down savings, borrow or sell property at time D_{t+1} to smooth consumption from time D_{t+2} onward until the next income injection into the household. In this case, the analysis would show that the household had a reduction in the number of meals ($\Delta C_i = 1$) and not correct for the fact that the household went on to draw down savings, borrow and/or sell property to alleviate its situation. A positive coefficient on these variables (for example borrowing) will be realised from regressing equation (1) in this instance. Another instance is a household that draws down savings, borrows and/or sells property immediately after a funeral at time D_t before it realises a slump in food consumption; such that from time D_t onwards, consumption is smoothed. Here, the analysis would show that the household did not have a reduction in the number of meals ($\Delta C_i = 0$) because it has drawn down savings, borrowed and/or sold property. Unlike the former instance, a negative coefficient on these variables will be realised from regressing equation (1) in this instance.

This is the case with the use of household savings to finance food consumption in column 1 of table 6. The coefficient is positive, seemingly implying that households that draw down savings reduce the number of meals eaten more than households that did not borrow. Yet this may not

be the case given that it may be indicating that households that reduced meals went on to borrow to mitigate their situation.[4] Yet again, it could be that households that never reduced their number of meals did not need to borrow as they were comfortable in their situation. The results on this are therefore ambiguous. However, what remains clear is that the households also use savings to mitigate funeral expenses and this is significant in this case.

The case is different for borrowing and selling property to finance food consumption. The signs of the coefficients demonstrate that those who used these measures mitigated reduction in number of meals taken by the household more than those who did not. This finding is especially important for the next section where we consider insuring household property. None of these three independent variables (household savings, borrowed and sold property) is significant in columns 2 and 4, where we consider variables that determine whether a household eats small quantities and the overall (any of the three changes in first three columns) slump in food consumption after a burial.

In columns 2 to 4, insured households are able to mitigate a slump in food consumption compared to uninsured households. Households with both formal and informal funeral insurance have an even higher significance (see columns 2 and 4 in table 6) indicating a better effectiveness in smoothing consumption. This seemingly confirms the suggestion made earlier; that formal and informal funeral insurance complements each other.

Most of the control variables in all columns show the expected pattern of effects on the dependent variable and very few are significant. An increase in the household size reduces the possibility of destabilising food consumption after a funeral. This could be an indication that higher numbers bring more opportunities of securing food sources. An increase in the age of the household is associated with a reduction in the number of meals taken. The effect of household income is significant in smoothing consumption for the dependent variable 'reduction in number of meals' but not for all other types of consumption. This makes sense in that households with higher incomes are not expected to cut down on the number of meals taken in a day.

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[4] There is reverse causality in this case. I however do not concentrate on it as the main independent variable of interest is funeral expenses.

2. Effectiveness of funeral insurance to smooth food consumption in non-relative terms

The study now narrows the sample to the analysis of households with insurance to assess if funeral expenses destabilise their food consumption. Thus, we now consider insured households separately from those without funeral insurance. If funeral expenses in insured households can significantly destabilise food consumption, this would be indicative of the fact that funeral insurance is not effective in mitigating slumps in food consumption after a burial and before the next income. We use equation (2) to test this.

$$P(\Delta C_i = 1|\boldsymbol{x}) = \beta(Exp_i) + \delta X_i + \alpha S_i + e_i \qquad (2)$$

In equation (2), if households with funeral insurance are completely insured against death expenses, the variable β should be equal to zero. That is, the funeral expenses will not be a determinant of changes in food consumption immediately after the funeral and before the next income injection into the household.

The results from estimating equation (2) are presented in table 7. Here, only variables of interest are presented and those that are not of interest are only included in the appendix section that is table 7a to 7c). The control variables are also not discussed as they produce similar signs and levels of significance as those presented in table 6.

For households that are formally and/or informally insured, the funeral expenses do not seem to result in any changes in food consumption after conducting a funeral. For informally insured households, which are those belonging to CRSI and/or burial societies, funeral expenses significantly (at 10 percent) determines migration to a cheaper diet after a burial. For instance, an increase in funeral expenses of US$100 increases the rate of migration to a cheaper diet by 40 percentage points. This is indicative of the fact that informal insurance may not be completely effective in protecting poor households against reduced food consumption. Noteworthy is the fact that this may not be the case if informally insured households spent less on funerals, as uninsured households did. Nonetheless, informal insurance completely insures funeral expenses for any other slumps in food consumption. That is, as shown in table 7, funeral expenses are insignificant in determining a reduction in the number of meals and eating small quantities after a burial. This is, however, not the case with uninsured households, where funeral expenses are only insignificant in the assessment of a reduction in the number of meals taken. For all other types of slumps in food consumption, as shown in columns 2 – 4 of table 7, funeral expenses have a significant effect on food consumption for uninsured households.

Table 7: Estimating the effect of funeral expenses on food consumption in non-relative terms

VARIABLES	(1) Reduce number of meals	(2) Eat small quantities	(3) Cheap diet	(4) All slumps in consumption
Formally and/or informally insured household				
Funeral expenses	-0.00007	0.0002	0.0002	0.0002
	(0.0004)	(0.0003)	(0.0004)	(0.0003)
Control variables	Yes	Yes	Yes	Yes
Pseudo R^2	0.19	0.22	0.27	0.25
Observations	92	110	95	110
Informally insured household only				
Funeral expenses	0.00001	0.001	0.004*	0.002
	(0.0005)	(0.001)	(0.002)	(0.001)
Control variables	Yes	Yes	Yes	Yes
Pseudo R^2	0.17	0.22	0.26	0.23
Observations	78	81	74	96
Uninsured households				
Funeral expenses	0.002	0.008***	0.012***	0.010***
	(0.002)	(0.003)	(0.004)	(0.004)
Control variables	Yes	Yes	Yes	Yes
Pseudo R^2	0.17	0.22	0.26	0.27
Observations	59	59	57	59

Robust standard errors in parentheses
*** $p<0.01$, * $p<0.1$
Note: the control variables are provided in the appendix to this section.

These findings suggest two conclusions. First, there is some evidence that insured households smooth consumption better than uninsured households. Second, informal funeral insurance somewhat prevents a reduction in food consumption after a burial, but is insufficient on its own. Households go on to use other forms of insurance such as formal insurance, borrowing and drawing down from other household savings to completely protect food consumption against funeral expenses. There are caveats to this evidence though, which I now turn to.

Are Results Affected by Omitted Variable Bias and Measurement Errors?

One major assumption of the equations (1) and (2) is that none of the independent variables is correlated with the error term. Unfortunately this assumption is too strong. The first problem is the high possibility that the reduction in the number of meals eaten per day or eating less quantities may be due to loss of appetite by family members who are still grieving. The second

problem is that measuring the expenses of conducting a funeral with households that do not keep financial diaries is a difficult exercise. It would not be surprising if there were measurement errors on costs of funerals in the data. This is especially true since we needed respondents to recall most of these costs.

Omitted 'loss of appetite' variable bias: In collecting data, we unfortunately did not capture the possibility that reduction in meals and eating small portions could be due to grief experienced by household members after the burial. Using the descriptive statistics provided in table 3, this scenario can further be observed from the fact that most households eat less portions of food and rarely change to cheap food. Two pieces of evidence, however, suggest that this may not be the case. First, borrowing, selling household property and use of other savings to finance food consumption would not be significant in some of the results shown in table 6. Households would not borrow or sell property to finance food when they are not hungry. So it is highly unlikely that they would borrow money for food or borrow food when in fact the slump in food consumption is due to loss of appetite.

Second, for an omitted variable to confound with one of the independent variables, in this case the funeral expenses, there must be a correlation of the omitted variable 'loss of appetite' with both changes in food consumption and funeral expenses. The funeral expenses are incurred during the funeral proceedings and never after the funeral.[5] The loss of appetite in the period immediately after conducting a funeral is therefore not logically expected to be correlated with funeral expenses. Thus it becomes unlikely that funeral expenses may be confounded with the effect of the omitted 'loss of appetite' variable. Furthermore, the omitted variable is not correlated with whether a household is insured or not.

Measurement errors: To address this problem, we use an alternative variable that is correlated with the funeral expenses but uncorrelated with the error term in equation (1). This variable, here denoted *Z,* will act as an instrument used to invalidate measurement errors associated with costs of funerals and at the same time introduce an exogenous shock to clean out any endogeneity. Thus, following Wooldridge (2010, 2013), at the first stage I have

$$Exp_i = \gamma(Z_i) + \beta Ins_i + \tau X_i + \varphi S_i + \varepsilon_i \tag{3}$$

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[5] The fact that expenses are incurred during a funeral does not preclude the fact that the funeral expenses can still be paid for after a funeral.

At the second stage, the predicted $\widehat{Exp_i}$ from equation (6) is added to the logit regression in (1) and (2) to give

$$P(\Delta C_i = 1|\boldsymbol{x}) = \beta Ins_i + \gamma\left(\widehat{Exp_i}\right) + \delta X_i + \alpha S_i + e_i \tag{4}$$

$$P(\Delta C_i = 1|\boldsymbol{x}) = \beta\left(\widehat{Exp_i}\right) + \delta X_i + \alpha S_i + e_i \tag{5}$$

where $E(Exp_i|Z_i) \neq 0$ and $E(Z_i|e_i) = 0$ and all other terms are as previously defined.

It is difficult to think of an instrument such as Z_i for two reasons. One, to find a variable that is correlated with funeral expenses is not easy. Two, the second condition that requires non-correlation with the error term cannot be empirically tested. Consequently, the selection of an alternative variable is based on intuition and/or economic reason ahead of carrying out econometric tests to check its suitability.

Given the foregoing difficulties, the approach taken was to search for variables in the data that can be correlated with funeral expenses and yet make intuitive and economic sense to act as reasonable alternatives to funeral expenses. Two variables were identified. First, in the survey, we collected information on how the deceased was related to the head of household. The idea behind using this information (variable) is that if the deceased was close to the household head, such as a child or parent, then this could be reflected in high funeral costs. Second, the age of the deceased at the time of death could also be positively correlated with high funeral expenses. Based on norms discovered during fieldwork, we expect attendance at a funeral of an adult person to be high, leading to high funeral costs compared to funerals for children.[6] The age of the deceased at the time of death is therefore identified as a possible instrument as well.

The first-stage regression results (see Table 7d in the appendix) based on equation (3) show that the age at the time of death is a highly significant variable that determines the cost of funeral expenses. A 50 year old dying would increase funeral expenses by at least US$500 more than the death of a one year old. It is therefore possible to use the age of the deceased at the time of their death as a proxy to funeral expenses. An additional reason for using the age of the deceased is that data on the age is more accurate than data on funeral expenses. This, however, cannot be said about the relationship of the deceased with the household head. While

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[6] The expectation that the death of an adult person results in higher funeral costs compared to the death of a child can be challenged. For instance, the death of a child draws a lot of sympathy and consequently a lot of support that may increase funeral expenses. Data from Bulawayo seem not to suggest this alternative reasoning as shown by the discussion based on table 7d in the appendix. However, there is an insignificant indication that as people die at a very old age, the effect of the age of the deceased on funeral expenses is lessened. This is shown by the negative coefficient of the 'age of the deceased squared' variable in table 7d in the appendix.

intuition would suggest that core family members would attract high funeral expenses, this appears not to be so as the extended family members seem to attract more funeral costs instead and this is significant at one per cent. Thus, we drop this alternative variable and retain the former.

Using data with both insured and uninsured households, the second-stage regression results (see Table 7e in the appendix) based on equation (4) are similar to results based on equation (1), which is reassuring. Households with insurance significantly do better than those without.[7] Using data with insured households only, the second-stage regressions results (see Table 7f in the appendix) based on equation (5) show that funeral expenses for the informally insured households are no longer significant in determining migration to a cheaper diet and any of the other slumps in food consumption. However there are still signs that households do borrow and use other savings immediately after the funeral and before the next income injection. This seemingly confirms that insured households complement their funeral insurance cover from other sources to smooth food consumption.

Insuring Household Property Against Funeral Expenses

In table 4, it was noted that some households sold property to finance food consumption immediately after a burial. We now turn to assess this in detail to check if insured households mitigate the sale of property to finance food consumption. To do this, we use equations (6) and (7) below.

$$P(\Delta P_i = 1|\boldsymbol{x}) = \beta Ins_i + \gamma(Exp_i) + \delta X_i + \alpha S_i + e_i \qquad (6)$$

$$P(\Delta P_i = 1|\boldsymbol{x}) = \beta(Exp_i) + \delta X_i + \alpha S_i + e_i \qquad (7)$$

Equations (6) and (7) are similar to equations (1) and (2). The only difference is that now ΔP_i is considered and not the change in ΔPC_i. Here, ΔP_i is the change in household property that directly follows a funeral. It takes the value of one when there is a slump, and zero otherwise.

In equation (6), the effectiveness of funeral insurance to smooth property after a burial is assessed relative to uninsured households. In equation (7), the assessment is limited to households with insurance only. Here, we assess if funeral expenses determine distress sale of

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[7] It is noted though that this informal insurance does not come for free. These households pay for it through monthly subscriptions. It makes sense that these benefits be weighed against subscriptions and other indirect costs. This chapter does not cover this aspect. It is mainly interested in assessing the effectiveness of informal insurance in insuring funeral expenses against food consumption and property.

property in insured households. Evidence of this will also shed light on whether funeral insurance of urban households is effective.

1. Effectiveness of funeral insurance to smooth household property in relative terms

The results of regressing equation (6) are presented in table 8. As with the case on regressing equation (1), the base of the variable of interest Ins_i is all uninsured households. The results of the coefficients of insured households, whether formal, informal, or both, from this logit regression are therefore assessed in comparison to uninsured households.

The results in table 8 indicate that households with funeral insurance, whether formal, informal or both, reduce the odds of selling household property to finance food consumption immediately after a funeral by almost eight times to those households without insurance. While there is no doubt that this is a huge impact due to funeral insurance in preventing distress property sales, there is, however, a possible caveat to this. It could be that some households save and preserve the value of their money in the form of property. This way, when they are faced with a shock leading to financial shortages, they will then liquidate (sell) property to cope. In this instance, the sale of property may not be considered as a distress strategy. This possibility may confound the results.

The foregoing caveat is supported in literature. For example, Beverly et al (2001) hypothesise three stages of savings. In the first stage, households must consume less than the income they receive each month. In the second stage, savings are converted from cash to other forms that are illiquid. Finally, households must resist temptation to convert illiquid assets to liquid. The second stage therefore suggests that there is a possibility that some households would have excess property as a form of savings and/or insurance to an extent that the sale of this property is not as a result of distress, but is pre-planned. We turn to this issue later in this section.

Only three of the control variables are significant. The first of these is also a variable that is of interest; that is, the funeral expenses. The coefficient of funeral expenses is positive, signalling that an increase in these expenses leads to property depletion. For instance, a US$1,500 funeral increases the rate of property sales by a percentage point. While this is a small effect due to funeral expenses, it is highly significant at the one per cent level. We therefore reject the hypothesis that the coefficient of funeral expenses is zero and interpret this to mean that households are not completely insured. However, this is not surprising here given that the analysis includes households with and without funeral insurance. The next section considers insured households only to assess the hypothesis that the coefficient of funeral expenses is zero.

Table 8: Estimating the effect of funeral expenses on property depletion for insured households relative to uninsured households

VARIABLES	(1) Sold property immediately after funeral
Funeral Insurance: Informal	-7.579***
	(0.487)
Funeral Insurance: Formal	-7.856***
	(0.779)
Funeral Insurance: Formal and Informal	-7.724***
	(0.677)
Used household saving (=1)	0.641
	(0.877)
Funeral expenses	0.0007***
	(0.0002)
Borrowed immediately after the funeral (=1)	-0.217
	(0.358)
Household size	-0.102
	(0.092)
Age of household head	0.175
	(0.017)
Household total income	-0.0006
	(0.0006)
Number of migrants	0.222
	(0.101)
Household head is able to do full workload (=1)	-5.557***
	(0.876)
Sokusile neighbourhood	-4.822*
	(0.793)
Sizinda neighbourhood	-0.455
	(0.531)
Pseudo R^2	0.44
Observations	96

Robust standard errors in parentheses
*** p<0.01, * p<0.1

Unlike the funeral expenses variable, which is significant and has a positive sign in table 8, the other two significant variables have negative signs. The first relates to the household head who is able to do an adult workload. These heads have a particularly strong effect in smoothing household property immediately after a funeral and before the next income. They have more than five times the odds of smoothing property than household heads who are not able to do a full workload. The second relates to neighbourhood variables. Households in Sokusile have 4.8 times the odds of mitigating property depletion after a funeral than households in Motshobana, which was used as a base category in this analysis. This significant difference could be explained by the fact that households in Sokusile may be valuing property more than households in Matshobana.

2. Effectiveness of funeral insurance in smoothing household property in non-relative terms

The analysis is now limited to households that are insured. Here, the objective is to assess if insured households are able to insure household property against funeral expenses. We also include results of assessing uninsured households' ability to smooth property to allow for comparison.

Using equation (7), if funeral insurance is effective in insuring household property against funeral expenses after a funeral and before the next income, then the coefficient of funeral expenses should be zero. We use table 9 to show the results of regressing equation (7). As shown, we cannot reject the hypothesis that the coefficient of funeral expenses is zero, regardless of whether the type of insurance is informal or is formal and/or informal. This is interpreted to mean that funeral insurance is effective in smoothing household property.

Table 9: Estimating the effect of funeral expenses on household property in non-relative terms

VARIABLES	Sold property immediately after funeral
Formally and/or informally insured households	
Funeral expenses	0.0003
	(0.0004)
Control variables	Yes
Pseudo R^2	0.18
Observations	95
Informally insured households	
Funeral expenses	0.0002
	(0.535)
Control variables	Yes
Pseudo R^2	0.17
Observations	78
Uninsured households	
Funeral expenses	0.013*
	(0.008)
Control variables	Yes
Pseudo R^2	0.19
Observations	59

Robust standard errors in parentheses
* $p<0.1$

Table 9 also shows the results of regressing equation (7) on uninsured households to also assess the hypothesis that the coefficient of funeral expenses is zero for these households. As shown, we reject this hypothesis. Here, an increase of US$100 on funeral expenses increases the rate of selling household property to finance food consumption after a burial by 1.33 percentage points.

The control variables of each and every category in table 9, that is, for the formally and/or informally insured households, informally insured households, and uninsured households, are presented in table 9a in the appendix. A discussion on them is also not reported as they generate results that are similar to those discussed in table 8, with the exception of household total income. This variable is significant for informally and uninsured households in mitigating sale of property after a burial.

These results suggest that informal (and formal) funeral insurance perfectly mitigates property depletion for households that have gone through bereavement. However, it could be that households that sold property had stored their savings in an illiquid form, given that at some point saving cash in a bank or at home was not viable due to inflation. In such a case, it can hardly be argued that the sale of household property is detrimental to the welfare of the household. Rather, it would just be another form of insurance (where savings are used as idiosyncratic insurance as discussed in section 2). However, for this to hold we must observe in the data what we refer to as 'excess property' and this is discussed in the next section.

Are the results confounded by excess property ownership?

A household is assumed to have excess property ownership if it has at least two of the same properties within a house (see table 5). If households that sold property to finance consumption after a funeral had an excess of the type of property sold, it may be the case that the additional property is used as savings and/or insurance. In the context of this article, a household with excess property ownership does not necessarily mean that that household is wealthy compared to the one without more of the same property. Even so, to the extent that a critical asset threshold is used to differentiate asset rich from asset poor households, we also differentiate households with and without more of the same property. Thus, the critical property threshold for separating the sampled households is having at least two of the same properties. For instance, a household with two laptops may find it easier to sell one to finance food consumption compared to a household with only one.

A household without a minimum of two of the same properties may rather go through disruption in food consumption than destabilise the only property they have. If this is the case, adding the variable 'owns at least two of the same properties' and interacting it with funeral expenses would assist to test the 'excess property ownership' effect in triggering household property sales immediately after a burial. The equation below captures this.

$$Logit(P_i) = \gamma Exp_i + \mu EXCESS_i + \pi(Exp_i * EXCESS_i) + \delta X_i + \alpha S_i + e_i \qquad (8)$$

Where

$EXCESS_i$ takes the value of one when a household has a multiple of the same property and zero otherwise.

$Exp_i * EXCESS_i$ is a term used to interact funeral expenses with the variable 'owns at least two of the same properties'.

In table 10, we present the results of regressing equation (8) to test the confounding effect of excess household property ownership. Because of the 'interact term' introduced in equation (8), the coefficient of funeral expenses in table 10 cannot be interpreted in isolation. For instance, the effect of funeral expenses on household property sales, if the household has at least two of the same properties, is 0.0908841.[8] The effect, if the household does not have at least two of the same properties, is 0.0007019.[9] Thus the effect of funeral expenses on property sales is higher for households with excess property compared to those without.

Notably, a household that has excess property increases the odds of selling property to finance food consumption after a funeral by 1.65 times to households without excess property. These results provide two pieces of evidence. First is that excess ownership of property increases the odds of selling household property to smooth food consumption. Second is that households with excess of the same property prefer smoothing food consumption by selling property more than households without excess of the same property. Consequently, the result seemingly suggests that the sale of property is a form of funeral insurance strategy more than it is a distress strategy. However, the question is: is this a deliberate strategy?

If owning excess property is a deliberate strategy by households to insure food consumption against funeral expenses, then the need to insure this property falls away. However, indications from the field during the survey were that it is rare that households accumulate excess property

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[8] Calculated as follows: $0.0007019 + 0.0901822 * EXCESS$, which gives $0.0007019 + 0.0901822 * 1$.
[9] Calculated as follows: $0.0007019 + 0.0901822 * 0$.

as a form of funeral insurance. Rather, excess property is a savings strategy of households who especially intend to raise capital for entrepreneurial activities. If indeed this is the case, then it becomes crucial that this property be insured against funeral expenses.

Table 10: Estimating the effect of funeral expenses, and presence of excess property, on property depletion for insured households relative to uninsured households

VARIABLES	(1) Sold property immediately after funeral
Funeral Insurance: Informal	-7.292***
	(0.857)
Funeral Insurance: Formal	-7.331***
	(0.947)
Funeral Insurance: Formal and informal	-7.324***
	(0.929)
Used household saving (=1)	0.814
	(0.901)
Funeral expenses	0.0007**
	(0.0003)
Owns at least two of the same property (=1)	1.647**
	(0.925)
Funeral expenses x Owns at least two of the same property (=1)	0.090*
	(0.0004)
Borrowed immediately after the funeral (=1)	0.667
	(0.423)
Control variables	Yes
Pseudo R^2	0.32
Observations	98

Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

If the foregoing suggestion is accurate, then funeral insurance may mitigate the sale of property after a funeral and perhaps retain property as capital for entrepreneurial activities. In this sense, it is therefore salient to separate households with at least two of the same properties from those with only one of each property in order to understand the contribution of funeral insurance in the context of household property ownership.

The results of doing this are presented in table 11. In column (1), the regression is limited to households without excess property ownership. Here, there is no significant difference between insured and uninsured households in mitigating selling of property after a burial to smooth consumption. This indicates that insuring household property does not make economic sense for households without at least two of the same properties.

Table 11: Estimating the effect of funeral expenses on property depletion for insured households relative to uninsured households with and without excess property, separately

VARIABLES	Sold property immediately after funeral		Slump in any food consumption	
	(1) No Excess Property	(2) Excess Property	(3) No Excess Property	(4) Excess Property
Funeral Insurance: Informal	-2.012	-6.218***	-1.071*	-1.001*
	(0.361)	(0.672)	(0.742)	(0.627)
Funeral Insurance: Formal	-2.679	-4.786***	-1.117*	-1.002*
	(0.726)	(0.773)	(0.740)	(0.711)
Funeral Insurance: Formal and Informal	-1.890	-5.628***	-2.102**	-1.617*
	(0.671)	(0.770)	(0.774)	(0.783)
Used household saving (=1)	1.658	0.375	0.510	0.292
	(1.062)	(0.875)	(0.917)	(0.653)
Funeral expenses	0.0003	0.001*	0.0006**	0.0004
	(0.0004)	(0.0002)	(0.0006)	(0.0003)
Borrowed immediately after the funeral (=1)	-0.217	-0.580	-0.489	-0.319
	(0.358)	(0.384)	(0.457)	(0.301)
Controls	Yes	Yes	Yes	Yes
Pseudo R^2	0.11	0.19	0.21	0.17
Observations	96	43	96	43

Robust standard errors in parentheses
*** p<0.01, **p<0.05, * p<0.1

Column 2 presents regression results for households with excess property ownership. Here, insured households mitigate selling of household property far better than uninsured households and this is highly significant. For instance, households with informal funeral insurance reduce the odds of selling property after a burial by 6.22 times to the uninsured households. Unlike for households without excess property ownership, it makes economic sense for households with at least two of the same properties to insure their property against funeral expenses, if they are not using excess property as a funeral insurance strategy.

Furthermore in column 2, funeral expenses lead to property sales for households with a multiple of the same property. An increase of US$1000 in funeral expenses increases the rate of selling household property by 0.6 percentage points. While this effect is small, it is significant at the 10 per cent level. This further justifies the need of households with excess property to insure against funeral expenses if they are to preserve their illiquid savings (in the form of excess property) for perhaps entrepreneurial purposes.

In columns (3) and (4), we assess the effectiveness of funeral insurance in smoothing food consumption for households with and without excess property ownership. We find that

households with funeral insurance mitigate a slump in food consumption after a funeral better than uninsured households for both households with and without excess property. However, the effect is stronger for households without excess property. For example, households with both formal and informal insurance reduce the odds of experiencing a slump in food consumption by more than two times the uninsured households for households without excess property as shown in column 3. In column 4, households with both formal and informal insurance reduce the odds of experiencing a slump in food consumption by less than two times the uninsured households for households with excess property.

Funeral insurance for households without excess property improves the household's ability to smooth consumption. For excess property households, funeral insurance does not only smooth consumption, it also prevents the sale of excess property to finance food consumption.

5 Interpretation of results in the context of social protection
The results generally provide evidence that households with informal (and/or formal) funeral insurance do smooth food consumption after a burial better than uninsured households. In addition, unlike uninsured households, informally insured households basically insure food consumption against funeral expenses, although this insurance is complemented by other sources of finance. The results also show that households with a multiple of the same property benefit from informal (and/or formal) insurance in mitigating property depletion after a funeral more than households without excess property. These results are now interpreted in the context of social protection.

Social protection in the Global South focuses on both state and non-state actors (Dafuleya 2015). Non-state actors include efforts of individuals and the communities to change their own lives (Devereux and McGregor 2014) through informal social protection strategies such as CRSI and burial societies. This is in contrast to social protection in the Global North where emphasis is largely on the role of the state (ILO 2001). Consequently, four distinct arguments concerning the role of informal mechanisms in the social protection landscape have been debated.

First is the view that informal insurance will rapidly disappear under processes of commercialisation (see Moser 1998; Sen 1980). Here, informal risk strategies are understood to be present mostly because of missing formal insurance markets especially in rural areas. Indeed, there is much literature on informal insurance in rural areas (see Fafchamps 2003 and Fafchamps and Lund 2003). As modernisation and commercialisation takes place,

conventional markets become available and hence are postulated to displace informal markets. The proportion of people living in the urban milieu in developing countries is growing and so is commercialisation. These processes, according to Sen (1980) and Moser (1998) are therefore expected to reduce the number of informal risk initiatives. But this seems hardly to be the case. This study, using a cross-sectional data, demonstrates that informal insurance co-exists and complements formal insurance in modernised Bulawayo in Zimbabwe. Other studies conducted in Zimbabwe confirm this as well. Hall (1987) conducted a study on self-reliance in modernised Harare and found many burial societies that have been in existence for years. Some of these were also recorded by Cormack (1983) four years before being reported by Hall.

Second is the view that groups and CRSIs are economically damaging and that displacing them is likely to be socially and economically preferable (Devereux 2001). This view could be supported by the following: that informal insurance exploits women to the benefit of others without necessarily guaranteeing their own insurance cover (Kasente et al 2002); that there is a 'dark side' to the social capital of informal mechanisms (Davies 1996 p37); and that most informal mechanisms have limited financial management as discussed in section 2. However, as shown by Hall (1987), group-based funeral insurance has rules that are provided in their constitutions. These rules have evolved with modernisation so that exploitation of women, or any other members for that matter, is generally not possible (Dafuleya and Zibagwe 2012). There are also measures these groups have put in place to curb embezzlement of funds (see Dafuleya 2013).

The third view suggests that informal mechanisms are well functioning initiatives so that any public transfers will have little net impact because they will simply crowd them out (Cox and Jimenez 1995). There are studies that show that group-based informal insurance schemes are operating well (for example see Dercon et al 2006). Dercon et al argue that these initiatives are also well-positioned to be used by both the state and non-governmental organisations as development vehicles. This argument is logical in that public transfers may subsidise and complement what these risk sharing strategies are already achieving, as will be shown later when I turn to policy implications.

The fourth view is that group and community level informal insurance schemes are part of social protection systems that are outside the scope of state social protection (Devereux and Sabates-Wheeler 2004). PASGR (2012) uses the term non-state social protection to refer to social security systems that do not originate from the state, and actors therein include

individuals, family, community, donor or NGOs. The study indicates that individual insurance, group and community insurance, play a significant part in smoothing consumption in the face of a death shock. As such, this chapter supports the view that informal funeral insurance schemes are part of social protection provided by non-state actors. Furthermore, borrowing and savings used as shock-mitigating strategies arguably constitute non-state social protection given that these, together with insurance, are usually not differentiated by households (Alderman and Paxson 1992).

6   Conclusions

The paper sets out to assess the effectiveness of informal funeral insurance in insuring food consumption and household property against funeral expenses immediately after a burial and before the next income injection in Bulawayo, Zimbabwe. None of the identified empirical work addressed insuring household property against idiosyncratic shocks in general and funeral expenses in particular. Therefore embarking on this scientific study perhaps makes a contribution to existing literature in this sense.

While the main interest of the analysis was on informal funeral insurance, it was found that some households combine both formal and informal insurance to insure funeral costs. As a result, the analysis of formal insurance was included by default. We found evidence that informally (and/or formally) insured households are largely able to absorb funeral expenses and mitigate slumps in food consumption better than uninsured households. However, we also found evidence that both formally and informally insured households draw from other sources of finance to augment their funeral cover against funeral expenses. Most of these results were confirmed by instrument variable method where the age of the deceased was used in place of funeral expenses, which we suspected could suffer from measurement errors and could be correlated with the error term.

The use of a number of insurance mechanisms available to a household, which include formal and informal insurance, with other sources of finance such as borrowing and savings, is interpreted to mean that households treat their finances as a nexus. Moreover, it demonstrates that formal and informal insurance can complement each other in insuring consumption against unexpected expenses. In fact the analysis in table 6 showed that households that complement informal with formal funeral insurance are more effective in smoothing food consumption against funeral expenses.

On insuring household property, we found two pieces of evidence. First is that the results in table 9 suggested that the sale of property is used as a form of funeral insurance, more than a distress strategy, by households who own at least two of the same properties. Using property depletion by excess property households to smooth food consumption after a funeral may, however, be wasteful. The excess property may perhaps be retained and used as capital for entrepreneurial activities. Therefore, it makes sense for households with excess property to insure their extra property (or illiquid savings) against funeral expenses. This evidence was shown in table 11.

Second is that when faced with death shocks, households that do not have at least two of the same properties would rather hold on to their property and destabilise food consumption. As a result, table 11 showed that insuring household property does not make economic sense for these households. Only insuring food consumption makes sense. In other words, for households without excess property, uninsured death shocks have serious consequences because slumps in food consumption may trap them in a malnutrition cycle which may undermine future productivity. Informal (and/or formal) funeral insurance, without a doubt, plays a social protection (preventive) role in these households.

The burial societies and CRSI's finances represent a large share in the household finances that are directed towards paying for funeral expenses. This was shown in figure 1. In this context, the continued existence and popularity of these informal schemes is unsurprising. As such it makes social and economic sense to target informal schemes for social policy and partner with them for social development. It is worth noting that some states now have social policy frameworks that allow for partnering with informal groups to improve social protection available for workers in the informal sector. Tanzania especially, provides a prominent example of this. In 1996, the state introduced a Community Health Fund in which the government tops-up 100 per cent of total contributions from members (Olivier et al 2012).

There are therefore gains that may be realised from state-informal policy frameworks especially with an incentive design for diversified portfolios of insurance. For instance, on each funeral insurance contribution from members, public transfer or donors could pilot a project where top-ups are added to the group funds. These top-ups, however, could be directed towards another form of social insurance such as medical insurance. This is especially necessary in a country like Zimbabwe that does not have a community-based health insurance scheme, yet has a huge number of informal funeral insurers. It is important that the alliance between the

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state or donors with informal schemes overcomes initial hurdles so that there will be clear demonstration effected to other informal initiatives concerning the advantages of having a diversified insurance portfolio.

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Appendix

Table 7a: Estimating the effect of funeral expenses on change in food consumption: formally and informally insured households only

CONTROL VARIABLES	(1) Reduce number of meals	(2) Eat small quantities	(3) Cheap diet	(4) All change in consumption
Borrowed immediately after the funeral (=1)	1.581**	0.206	0.200	0.473
	(0.746)	(0.444)	(0.527)	(0.387)
Sold property immediately after the funeral (=1)	0.354	0.094	-	0.276
	(1.297)	(0.768)		(0.753)
Household drawing down other savings (=1)	1.400*	0.905*	-	0.543
	(0.742)	(0.520)		(0.510)
Household size	-0.091	-0.127	0.183	-0.02
	(0.221)	(0.184)	(0.217)	(0.018)
Age of household head	0.048	-0.005	-0.046	-0.017
	(0.042)	(0.031)	(0.058)	(0.026)
Household total income	-0.001*	-0.0004	-0.003*	-0.005*
	(0.0003)	(0.001)	(0.004)	(0.004)
Number of migrants	-0.062	-0.233	-0.222	-0.115
	(0.333)	(0.224)	(0.242)	(0.230)
Household head is able to do full workload (=1)	-	-1.362*	-1.554*	-1.872**
		(1.424)	(1.300)	(0.963)
Sokusile neighbourhood	-2.938	-0.671	4.615*	-0.255
	(1.589)	(0.824)	(1.893)	(0.493)
Sizinda neighbourhood	0.201	1.072	1.189*	0.845
	(0.592)	(0.581)	(1.667)	(0.969)
Pseudo R^2	0.19	0.22	0.27	0.25
Observations	92	110	95	110

Robust standard errors in parentheses
*** p<0.01, **p<0.05, * p<0.1

Table 7b: Estimating the effect of funeral expenses on change in food consumption: informally insured households only

CONTROL VARIABLES	(1) Reduce number of meals	(2) Eat small quantities	(3) Cheap diet	(4) All change in consumption
Borrowed immediately after the funeral (=1)	0.710	1.169**	0.194	-0.056
	(0.529)	(4.872)	(0.884)	(0.808)
Sold property immediately after the funeral (=1)	0.953	0.125	0.306	-
	(0.747)	(5.984)	(1.276)	
Household size	-1.013*	-0.343*	-0.132	-0.417*
	(0.730)	(0.198)	(0.183	(0.183)
Age of household head	0.150*	0.013	-0.109	-0.021
	(0.042)	(0.029)	(0.049)	(0.028)
Household total income	-0.002*	-0.0002	-0.001*	-0.002*
	(0.001)	(0.001)	(0.003)	(0.001)
Number of migrants	-0.069	-0.115	-0.233	-0.039
	(0.169)	(0.211)	(0.391)	(0.190)
Household head is able to do full workload (=1)	-	-0.818	-1.779**	-1.684**
		(1.140)	(1.035)	(1.638)
Sokusile neighbourhood	-0.002	0.630	2.749*	-0.054
	(0.780)	(1.245)	(1.633)	(0.712)
Sizinda neighbourhood	0.293	1.613	1.058*	1.420
	(0.793)	(1.045)	(1.013)	(0.987)
Pseudo R^2	0.17	0.22	0.26	0.23
Observations	81	68	81	76

Robust standard errors in parentheses
*** p<0.01, **p<0.05, * p<0.1

Table 7c: Estimating the effect of funeral expenses on change in food consumption: uninsured households only

CONTROL VARIABLES	(1) Reduce number of meals	(2) Eat small quantities	(3) Cheap diet	(4) All change in consumption
Borrowed immediately after the funeral (=1)	-0.330	-1.649*	1.120	-0.245
	(0.862)	(1.071)	(1.376)	(1.196)
Sold property immediately after the funeral (=1)	1.047	1.066	-2.252*	-0.163
	(0.695)	(0.783)	(1.296)	(0.818)
Household drawing down other savings (=1)	-0.559	-0.329	-0.731	-1.526
	(0.937)	(1.013)	(1.587)	(1.428)
Household size	-0.053	-0.197	0.183	0.004
	(0.137)	(0.156)	(0.217)	(0.176)
Age of household head	0.016	-0.004	-0.146**	-0.017
	(0.023)	(0.026)	(0.058)	(0.026)
Household total income	-0.005**	-0.0005	0.003	-0.004*
	(0.001)	(0.0009)	(0.004)	(0.004)
Number of migrants	-0.180	-0.831**	0.222	0.115
	(0.190)	(0.198)	(0.242)	(0.229)
Household head is able to do full workload (=1)	0.095	-1.165	-1.554*	-0.872
	(0.734)	(0.829)	(1.300)	(0.963)
Sokusile neighbourhood	0.530*	-0.445	4.616**	2.553*
	(0.893)	(1.041)	(1.893)	(1.493)
Sizinda neighbourhood	0.351**	0.506	1.668	1.845*
	(0.822)	(0.840)	(1.189)	(0.969)
Pseudo R^2	0.17	0.22	0.26	0.27
Observations	37	47	40	59

Robust standard errors in parentheses
*** $p<0.01$, **$p<0.05$, * $p<0.1$

Table 7d: Searching for an alternative variable for funeral expenses

VARIABLES	(1) **Funeral Expenses**	(2) **Funeral Expenses**
Alternate variable 1: Age of the deceased	14.11**	
	(5.502)	
Age of the deceased squared	-0.033	
	(0.076)	
Alternate variable 2: Extended family		428.4***
		(155.8)
Other relatives		163.4
		(221.8)
Total household income	0.308	0.147
	(0.328)	(0.208)
Household size	46.70*	49.23*
	(27.46)	(28.06)
Number of migrants	0.228	-2.891
	(36.66)	(40.07)
Informal funeral Insurance	274.3	247.6
	(250.1)	(266.2)
Formal Funeral Insurance	534.6***	1.178***
	(123.7)	(334.7)
Formal and Informal Funeral Insurance	944.8***	1.641***
	(203.2)	(304.4)
Age of household head	-10.82	3.478
	(27.16)	(4.821)
Constant	-256.2	-113.5
	(574.6)	(372.0)
Observations	167	167
R-squared	0.535	0.536

Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 7e: Estimating the effect of age of the deceased at time of death on changes in food consumption for insured households relative to uninsured households

VARIABLES	(1) Reduce number of meals	(2) Eat small quantities	(3) Cheap diet	(4) All change in consumption
Funeral Insurance: Informal	-727.1	-1.517**	-0.863	-1.971***
	(10.662)	(0.668)	(0.793)	(0.731)
Funeral Insurance: Formal	-654.8	-1.388	-1.636	-2.185**
	(0)	(0.859)	(1.220)	(0.925)
Funeral Insurance: Formal and Informal	-	-2.839***	-	-3.609***
		(1.007)		(1.008)
Used household saving (=1)	-0.656	0.012	0.0208	0.015*
	(359.4)	(0.009)	(0.0128)	(0.009)
Age of the deceased at time of death	620.6	0.444	0.420	0.664
	(11.665)	(0.451)	(0.532)	(0.423)
Borrowed immediately after the funeral (=1)	547.2	-0.379	-	-0.310
	(16.554)	(0.805)		(0.793)
Sold property immediately after the funeral (=1)	404.5	1.111**	-	0.725
	(12.871)	(0.556)		(0.552)
Household size	-5.761	-0.076	-0.0623	-0.159
	(3,150)	(0.103)	(0.119)	(0.098)
Age of household head	16.10	-0.007	-0.024	0.007
	(158.1)	(0.017)	(0.021)	(0.015)
Household total income	-0.427	5.37e-05	0.001	-0.0007
	(11.53)	(0.0006)	(0.001)	(0.0007)
Number of migrants	-20.32	-0.167	-0.043	-0.049
	(2.364)	(0.131)	(0.159)	(0.112)
Household head is able to do full workload (=1)	-	0.666	0.292	1.834**
		(0.783)	(0.863)	(0.862)
Sokusile neighbourhood	-334.3	-0.469	0.878	-0.396
	(0)	(0.548)	(0.658)	(0.525)
Sizinda neighbourhood	66.19	-0.231	0.611	0.199
	(0)	(0.557)	(0.606)	(0.487)
Constant	-375.3	0.222	-0.708	-0.293
	(0)	(1.479)	(1.746)	(1.380)
Pseudo R^2	0.21	0.25	0.29	0.32
Observations	85	117	95	134

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7f: Estimating the effect of age of the deceased at time of death on food consumption in non-relative terms

VARIABLES	(1) Reduce number of meals	(2) Eat small quantities	(3) Cheap diet	(4) All slumps in consumption
Formally and/or informally insured households				
Funeral expenses	-0.004	0.007	0.006	0.005
	(0.018)	(0.008)	(0.010)	(0.007)
Control variables	Yes	Yes	Yes	Yes
Pseudo R^2	0.16	0.18	0.23	0.21
Observations	87	102	92	106
Informally Insured only				
Funeral expenses	-0.153	0.016	0.013	0.015
	(859.6)	(0.015)	(0.018)	(0.012)
Control variables	Yes	Yes	Yes	Yes
Pseudo R^2	0.21	0.20	0.27	0.22
Observations	72	81	69	96
Uninsured Households				
Funeral expenses	0.0009	0.007**	0.021***	0.016***
	(0.004)	(0.004)	(0.008)	(0.005)
Control variables	Yes	Yes	Yes	Yes
Pseudo R^2	0.24	0.19	0.28	0.31
Observations	59	59	57	59

Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 9a: Estimating the effect of funeral expenses on household property in non-relative terms

CONTROL VARIABLES	Formally and/or informally insured households only (1) Sold property immediately after	Informally insured households only (2) Sold property immediately after	Uninsured households only (3) Sold property immediately after
Borrowed immediately after the funeral (=1)	-0.583	-0.042	-0.154
	(0.393)	(0.011)	(0.839)
Household drawing down other savings (=1)	0.341	1.468	-0.626
	(0.844)	(1.209)	(0.998)
Household size	-0.066	-0.018	0.039
	(0.165)	(0.220	(0.133)
Age of household head	0.008	0.010	-0.014
	(0.033)	(0.036)	(0.023)
Household total income	-0.0001	-0.003**	-0.002*
	(0.001)	(0.0003)	(0.002)
Number of migrants	0.437*	0.336*	0.177
	(0.212)	(0.303)	(0.167)
Household head is able to do full workload (=1)	-	-	-1.664***
			(0.747)
Sokusile neighbourhood	-1.441*	0.914	-0.295
	(1.431)	(1.867)	(0.876)
Sizinda neighbourhood	0.315	0.152	-0.242
	(1.319)	(1.458)	(0.816)
Pseudo R^2	0.18	0.17	0.19
Observations	95	78	59

Robust standard errors in parentheses
*** $p<0.01$, **$p<0.05$, * $p<0.1$