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The savings behaviour of informal settlement households with social grant recipients

A case study of Freedom Park, Soweto

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Southern Africa - Towards Inclusive Economic Development

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ABSTRACT

The majority of South African social grant recipients reside in rural areas, townships and informal settlements. The aim of this study is to investigate whether households in an informal settlement, who receive one or more social grants, save a portion of their income, and what their savings behaviour is. Out of the 215, 150 households save some of their income but mostly in burial societies and stokvels. Households that engaged in other economic activities saved more than households that rely solely on social grants. Therefore, households should also be advised to engage in other economic activities.

Keywords: Social grants, poor households, income, remittances, expenditure, savings

1   INTRODUCTION

The South African poverty rate is one of the highest in the world, even amongst developing countries (Leibbrandt et al., 2010). In 1994, the government introduced socio-economic policies aiming to eradicate poverty, including social grants for the poor (ODI, 2006). Initially, the newly democratic country offered social grants to pensioners, people with disabilities, war veterans and foster children (Patel et al., 2012). But because of the intractable high level of poverty, especially among the black population, a child support grant was introduced in 1998 (Lund, 2011; Williams, 2007). It seems that the expansion of social grants to include the child support grant has hardly had any effect on reducing poverty, however, since the country still has one of the highest poverty rates globally (Leibbrandt et al., 2010). Armstrong et al. (2008), Devereux (2002) and the South African Minister of Finance, Mr Pravin Gordon, have argued that household savings will mitigate household poverty (MoneyWeb, 2013). In essence, their position is that there is merit in household savings as a means of eradicating poverty. But critics of this approach, such as Dupas and Robinsona (2013), emphasise that poor households, including those that receive social grants, are simply too poor to save, as they tend to consume their entire income to meet basic needs. Clearly, there are two opposing positions: one that argues that the poor can save, and the other that maintains that they cannot.

Prina (2015) and Karlan et al. (2014) argue that poor households can and do save, using several informal saving instruments (Prina, 2015), and, like rich households, also use formal saving instruments found within financial institutions (Bachas et al., 2016). Bachas et al. (2016) and Campbell et al. (2012) observe that formal financial institutions have regulations, terms and conditions that hinder the poor from using these saving instruments. Given these opposing views on the saving instruments used by poor households, the question needs to be resolved.

To answer it, this paper identifies poor households as those that are recipients of social grants. In South Africa, poor households are mostly found in rural areas (Shapurjee and Charlton, 2013). The urban poor often reside in townships and informal settlements.[1] According to Basardien et al. (2014), informal settlement households are severely poor compared to formal township households. This paper focuses on Freedom Park, an area in Soweto that has informal settlements.

The remainder of the paper is structured as follows: Section 2 discusses the literature on saving instruments, emphasising its availability and accessibility to poor households; Section 3 explains the methodological approach adopted to answer the research question; Section 4 presents and discusses the findings; and, lastly, Section 5 draws the conclusion.

2   SAVINGS INSTRUMENTS AVAILABILITY AND ACCESSIBILITY

Alongside the divergent argument on whether poor households save or not, is the argument on the savings instruments used by poor households (Bachas et al., 2016; Ellis et al.,2010; Prina, 2015). Bachas et al. mention that poor households could save in formal saving instruments that are offered by formal financial institutions, such as commercial or retail banks. Jain (2015) points out that there are banks that have poor households as their niche market, providing saving instruments for them. Makhaya and Nhundu (2015) point out that Capitec is one such bank that caters for the poor, but do not take into account that, like other formal financial institutions, the niche market banks have

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[1]   The apartheid regime manufactured racial fragmentation that brutally segregated the black population socio-economically into townships. The townships received the least, if any, sufficient local economic development projects (Bonner & Nieftogodien, 2012). Out of the townships, often areas with severe squalid standards of living, overcrowded and dilapidated shacks, emerged informal settlements (Rogerson & Mthombeni, 2015).

regulations, terms and conditions that often restrict the poor from saving in banking institutions (Kishor, 2013). For instance, formal financial regulations, terms and conditions require a potential bank account owner to deposit a minimum fee, provide proof of employment and proof of residence (Allen et al., 2016). Typically, the poor reside in areas that cannot necessarily meet the required proof of residence (Demirgüç-Kunt and Klapper, 2013). Furthermore, dwellers in informal settlement do not receive water and electricity bills that could be used as proof of residence. Also, the poor are often not employed in the formal sector where they are provided with letters of employment and income statements (Demirgüç-Kunt and Klapper, 2013). It seems, then, that the availability of formal financial institutions and their formal saving instruments do not necessary imply that the poor have easy access to such instruments. Access by poor households to saving instruments is often linked to their residence status and form of employment.

In 2012, 54.04% of South Africans were unbanked; that is, the unbanked population did not have a formal financial institution instrument (FinMark, 2013). In 2012, the Department of Social Development and the South African Social Security Agency introduced a SASSA master card disbursement system, allowing beneficiaries to withdraw their monthly social grants from the ATMs of commercial banks. This system decreased the unbanked population percentage to 13% in 2015 (FinMark, 2015). However, it cannot be said that the introduction of the master card disbursement system has significantly increased the use of formal saving institutions by poor households.

According to Ellis et al. (2010), empirical evidence indicates that poor households who are unable to save in the formal financial institutions have alternative semi-formal and informal saving instruments. They describe semi-formal saving instruments as those offered by organisations that are not banks, insurance companies, government, or employers. In South Africa, other African countries and developing countries such as Brazil, semi-formal saving instruments include burial societies and rotating savings and credit associations – the latter referred to as stokvels in South Africa (Matuku & Kaseke, 2014). Unlike formal financial instruments that have regulations, terms and conditions that do not take into account whether a potential saver is poor or rich, the semi-formal saving instruments enable members of burial societies and stokvels to set regulations, terms and conditions that suit the members and their socio-economic characteristics (Mashigo, 2007; Mutesasira et al., 1998). The customised regulations, terms and conditions create accessibility to the burial societies and stokvels. In terms of availability, burial societies and stokvel members ordinarily have a common bond that enables the semi-formal instrument to be easily available to poor households. Semi-formal saving instruments' members have at least one common bond, whether of geographical location, ethnicity, work place fraternity, family, or friendship.

Besides burial societies and stokvels, poor households tend to save in informal saving instruments (Karlan & Morduch, 2010). Ellis et al. (2010) categorise in-kind savings and saving in the house as informal saving instruments. Saving in the house is also referred to as hoarding cash. If a household has excess income, the income could be hoarded at home (Ellis et al., 2010; Paxton and Young, 2009). A household could decide to consider its animals, jewellery, food, etc., as savings; these in-kind savings are classified as informal (Aportela, 1999; Musona & Coetzee, 2001; Wright & Mutesasira, 2001). It seems, then, that the availability and accessibility of an informal saving instrument relies on the household possessing and owning the product it intends to save.

3   METHODOLOGY AND APPROACH

This section introduces the methodology framework for the savings behaviour of informal settlement households who are social grant recipients. The research acknowledges the common savings function developed by Keynes (1936), which is based on individuals or households that save

because they have excess income after consumption. Keynes stipulated that savings have a positive relationship with income and an inverse relationship with consumption. The savings function can be expressed as Equation 1:

$$s = y - c \tag{1}$$

where s is savings, y is income and c is consumption.

This saving function does not acknowledge that there are other variables besides income and consumption that influence an individual or household to save. Chakrabarty and Hildenbrand (2009), Esson (2003), Neves et al. (2009), Osondu, Obike, and Ogbonna (2015), Paxton (2009), Skidmore (2001), and Ting and Kollamparambil (2015) reveal other saving independent variables of poor households. Ting and Kollamparambil use the function shown in Equation 2 to determine household savings:

$$\ln C/Y = \alpha + \beta LCH + \gamma Demographics + \delta Cohorts + \theta Macro + \text{€} \tag{2}$$

where ln C/Y is 'the log of household consumption to income ratio, LCH is a vector of age, age squared, income, wealth and grants, Demographics includes the household size, education, gender, marital status, location and ethnicity control, Cohorts are the dummies for the cohorts and Macro includes the interest rate and global financial crisis dummy' (Ting and Kollamparambil, 2015). Similar to the households' savings function of Ting and Kollamparambil (2015), Osondu et al. (2015) present the savings function of poor households shown in Equation 3.

$$Y = b0 + b1x1 + b2x2 + b3x3 + b4x4 + b5x5 + b6x6 + b7x7 + b8x8 + b9x9 + b10x10 + e \tag{3}$$

where Y is amount saved, x1 is age of the respondents, x2 is household size, x3 is education level, x4 is primary Occupation (Farming=1, otherwise=2), x5 is farm size, x6 is farming experience (years), x7 is membership of farmers association (Yes=1, No=0), x8 is access to credit, x9 is disposable income/expenditure patterns and e is error term.

It is vital to mention that Ting and Kollamparambil (2015) focus on the retirement savings of South African households. The study of Osondu et al. (2015) is based on the savings of small holder arable crop farmers in Umuahia, Nigeria. Both studies have common empirical findings that indicate that consumption, income, age, household size and education are some of the independent variables of household savings. However, these studies do not have some of the saving determinant variables mentioned by Chakrabarty and Hildenbrand (2009), Esson (2003), Neves et al. (2009), Paxton (2009) and Skidmore (2001) – variables such as social grant income and income-pooling. Although Ting and Kollamparambil acknowledge that social grants are often the main income of poor households, they do not distinguish social grant income from other forms of income. Moreover, Osondu et al. and Ting and Kollamparambil do not mention and measure the effect of income-pooling on household savings.

The savings function of this research takes into account the savings determinants of poor households within developing countries as argued and empirically tested by Chakrabarty and Hildenbrand (2009), Esson (2003), Neves et al. (2009), Osondu et al. (2015), Paxton (2009), Skidmore (2001), and Ting and Kollamparambil (2015). A drawn savings function is presented in Equation 4.

$$s = \alpha + \beta_1 sy_i + \beta_2 y_i + \beta_3 Pool_i - \beta_4 c_i + \beta_5 G_i - \beta_6 HHs_i + B_7 Age + \beta_8 Age_i^2 + e \tag{4}$$

where α is the intercept, i indexes households, s is aggregate household savings, sy is social grant income, y is income (including remittances and excluding social grant income), Pool is the pooling of aggregate income or not, c is household consumption, G is the gender of household financial

handler, HHs is household size, Age is the age of household financial handlers, Age^2 is the squared age of household financial handlers, and e is a random error term. The error term represents unobserved random errors or disturbances. Age is squared to measure the nonlinearity of age on household savings.

Equation 4 is a linear regression, whereby s is a dependent variable. The variation of s is expected to be influenced by the variation of social grant income (sy), income (y), income pooling ($Pool$), consumption (c), gender (G) and age of household financial handler, and household size (HHs). Hence, the influential variables are termed independent variables.

Although Equation 4 is similar to the household saving function utilised by Chakrabarty and Hildenbrand (2009), Esson (2003), Neves et al. (2009), Paxton (2009), Skidmore (2001), and Ting and Kollamparambil (2015), the function does not explicitly mention that household consumption has three categories, namely necessity, normal and luxury consumption. All three categories have different elasticity levels whereby households show different price sensitivity across the three consumption categories. Necessity goods are perfectly inelastic, normal goods are elastic, and luxury goods are perfectly elastic (Parpiev & Yusupov, 2011). In the household saving function, presented as Equation 4, household consumption does not take the elasticity of consumption into consideration. As such, in addition to the usual household saving function used by researchers, this study has three different consumption variables. Equation 4 has been expanded to include the various consumption categories. Therefore, the saving function of poor households in this study is as per Equation 5

$$s = \alpha + \beta_1 sy_i + \beta_2 y_i + \beta_3 Dpool_i - \beta_4 cN_i - \beta_5 cNr_i - \beta_6 cL_i + \beta_7 Dgender_i - \beta_8 hhs_i +$$
$$B_9 Age_i + \beta_{10} Age_i^2 + e \qquad\qquad (5)$$

where cN is the consumption of necessity goods, cNr is the consumption of normal goods and cL is the consumption of luxury goods. Despite the elasticity and inelasticity of the consumption categories, this study assumes that all the consumption categories will have an inverse relationship with household savings. The assumption of this study is based on the argument by Keynes (1936) that consumption has an inverse relationship with savings. Hence, Equation 5 assumes negative coefficients for all consumption categories. It also acknowledges that gender and income-pooling are dummies. That is, a household financial handler is either male or female and a household either pools income or does not pool income.

With the exception of household consumption categories, the household saving function of this study is similar to that of Esson (2003), Nwibo and Mbam (2013), Neves et al. (2009), Osondu et al., (2015), Paxton (2009), Shitu (2012), Skidmore (2001) and Ting and Kollamparambil (2015). Having a household saving function that is similar to other studies allows the results of this study to be compared to them.

4   RESEARCH FINDINGS

This section analyses the results on the data collected from households with social grant recipients in Freedom Park, Soweto. Kochhar and Cohn (2011) argue that the demographic characteristics of a research population can provide better understanding of the socio-economic circumstances of particular groups within a study.

4.1   Descriptive statistics

The descriptive statistics of the surveyed households are presented in Table 1. These descriptive statistics comprise a socio-economic structure analysis of the surveyed households, divided into two

groups: those that save and those that do not save. In this study the demographic characteristics of the respondents, who are the households' financial handlers, are analysed, as they have a direct influence on the households' income, consumption and savings behaviour. The demographic characteristics consist of the age, gender and ethnicity of household financial handlers, and the household size. Literature on the life-cycle hypothesis indicates that age is one of the main factors that influence expenditure and saving patterns (Beckmann, 2013; Modigliani, 1966; Sarantis & Stewart, 2001). The age of the household financial handlers is presented in four categories, namely, youth, young adults, adults and grandparents. Youth are between the age of 16 and 24 years, young adults are between 25 and 34 years, adults are between 35 and 59 years, and grandparents are 60 years and older. These categories take into account the life-cycle hypothesis of savings by household financial handlers of which argues that individuals within the working age of 16 to 59 years save, while those outside the working age do not save (Modigliani, 1966).

The age of the surveyed household financial handlers ranges between 16 and 89. The majority of the respondents are adults between the ages 36 and 59 years at 66 (30.70%). Similar findings were reported by DeNavas-Walt and Proctor (2014) in their study of income and poverty in the United States where 62% of the household financial handlers were between the age of 36 and 59 years, thus adults. In this study, the average age of adult financial handlers that save is 44.6 years with a standard deviation of 6.33. The statistics are similar to those of the adult financial handlers who do not save, the non-savers have an average age of 44.8 years with a standard deviation of 6.56.

In terms of gender, the findings indicate that 19 (8.8%) of the respondents are males and 196 (91.2%) are females as indicated in Table 1. Of the 19 male financial handlers, 14 (6.5%) are financial handlers of households who save, and five (2.33%) financial handlers of non-saving households. Saving households that have female financial handlers are 136 (63.26%) and 60 (27.91%) non-saving households have female financial handlers.

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Table 1: Socio-economic structure analysis

Variable	Savers					Non-savers				
	Observations (% households)	Mean	Maximum	Minimum	Standard Deviation	Households f (% households)	Mean	Maximum	Minimum	Standard Deviation
Youth household financial handlers (16 to 24 years)	10 (4.65)	23.2	24 years old	19 years old	1.55	13 (6.05)	20.9	23 years old	16 years old	2.26
Young adults household financial handlers (25 to 35 years)	47 (21.86)	30.5	35 years old	25 years old	2.93	18 (8.37)	29.6	35 years old	25 years old	3.52
Adults household financial handlers (36 to 59 years)	66 (30.70)	44.6	59 years old	36 years old	6.33	22 (10.23)	44.8	58 years old	36 years old	6.56
Grandparents household financial handlers (60 years and above)	27 (12.56)	68.2	89 years old	60 years old	8.77	12 (5.58)	69	83 years old	61 years old	6.86
Male	14 (6.51)	-		-	-	5 (2.33)	-	2.33%	-	-
Female	136 (63.26)	-		-	-	60 (27.91)	-	27.91%	-	-
African	149 (69.30)	-	69.3%	-	-	61 (28.37)	-	28.37%	-	-
Coloured	1 (0.47)	-	0.47%	-	-	4 (1.86)	-	1.86%	-	-
Household size (no. household members)	150 (69.77)	4.8	14	1	2.20	65 (30.23)	4	12	1	2.31
No. of child support grants received in a household	138 (64.19)	2.3	8	1	1.24	56 (26.05)	1.9	5	1	1.15
No of old age grants received in a household	51 (23.72)	1.6	5	1	0.97	23 (10.70)	1.7	5	1	1.1
No. of disability grants received in a household	9 (4.19)	1.4	3	1	0.83	1 (0.47)	0	3	-	-
No. of foster child grants received in a household	1 (0.47)	-	2	-	-	1 (0.47)	-	1	-	-
Receive remittances (ZAR)	34 (15.81)	547.9	2500	150	488.23	8 (3.72)	761.1	1 950	100	488.23

Other income (ZAR)	88 (40.93)	2335.3	8200	100	1707.04	22 (10.23)	1927.3	13 000	260	2 578.33
Pooled income (ZAR)	138 (63.26)	3267.1	12450	320	2139.29	77 (35.81)	2628.2	13 320	320	2 508.26
Piece (ad-hoc) jobs	19 (8.84)	-	-	-	-	3 (1.40)	-	-	-	-
Landlord/lady	20 (9.30)	-	-	-	-	4 (1.86)	-	-	-	-
Traders	16 (7.44)	-	-	-	-	5 (2.33)	-	-	-	-
Blue collar worker	18 (8.37)	-	-	-	-	5 (2.33)	-	-	-	-
Domestic worker	14 (6.51)	-	-	-	-	8 (3.72)	-	-	-	-
Other labour market activities	36 (16.74)	-	-	-	-	16 (7.44)	-	-	-	-
Necessity goods (ZAR)	132 (61.40)	772.1	3200	100	474.98	55 (25.58)	100	3 000	760.80	484.16
Normal goods (ZAR)	71 (33.02)	949.0	5270	20	847.82	63 (29.30)	80	6 733	1201.20	1208.41
Luxury goods (ZAR)	24 (11.16)	153	650	5	154.69	13 (6.05)	24(11.16)	600	186	194.91

Note: Sample size for this research was 215 households out of an area with 1 164 households, the number of households that have social grant recipients is unknown. ZAR = South African currency (rand).

Of the sample of 215 households with social grant recipients, 97.7% (210) respondents classify themselves as Africans and 2.30% (five) respondents classify themselves as Coloureds.[2] The sample area is predominantly populated by Africans, so it is unsurprising that the majority of respondents classified themselves as such. Out of the 210 African households, 149 (69.3%) were financial handlers of households that save, and 61 (28.37%) were financial handlers of households that do not save. Out of the five household financial handlers that classify themselves as Coloureds, only one (0.47%) household financial handler saves and four (1.86%) do not save. Therefore, the majority of the surveyed poor households do save.

Another factor identified in the theoretical and empirical literature that influence spending and saving patterns is household size (measured by the number of individuals in it) and composition. Case and Deaton (1996) and Duflo (2003) report that South African households of social grant recipients have a larger number of household members compared to those without social grant recipients. Studies by Paxton (2009), and Gutiérrez, Juárez and Rubli (2005) found a similar pattern in Mexico. In the South African context, a large household is one that has more than two members (StatsSA, 2011). Generally, in South Africa the size of wealthier households is two, while that of poor households is three and above, with the average household size 3.4 (StatsSA, 2011). In this study, households that save have a minimum of one member, maximum of 14 members and an average of 4.8 members. Households that do not save have a minimum of one, a maximum of 12 and an average of four. Therefore, on average the majority of the saving and non-saving households are large.

Besides the household composition and demographic characteristics of the financial handlers, other economic variables might also influence the savings behaviour of households with social grant recipients (Case and Deaton, 1996; Krige, 2011; Neves et al., 2009). In Table 1, the economic characteristics consist of the type of social grants received, remittances, income sources, income pooling and consumable goods purchased by the surveyed households.

Poor households have different sources of income, and social grants are only one of them. The data indicate that from the seven common social grants, only four were received by the household sample in Freedom Park: child support, old age, disability, and foster child grants. Table 1 shows households receiving more child support grants than the other types. As argued by Williams (2007), poor households tend to receive more child support grants than any other type of social grant.

Besides social grants, poor households typically receive additional income from various labour market-related activities, whether in the formal, semi-formal or informal economy, as well as remittances from family and friends (Erfe, 2007; Krige, 2011; Leibbrandt et al., 2011). Of the 214 responding households, 75 (34.88%) claim that their entire livelihoods are financed by the social grant income. One household did not answer the question on whether the household earns income in addition to the social grant. The remaining 65% (139) of households receive other income in addition. These findings are similar to those of Meyer, Mok & Sullivan (2009), who found that the majority of social grant recipients earn additional income. In this study, other labour market activities in the semi-formal and informal economy are dominant. Of the 139 households, 36 (16.74%) of saving households and 16 (7.44%) non-saving households participate in other labour market activities. The second major income source for households that save is renting, followed by piece (ad hoc) jobs. The second dominating income source for households that do not save is domestic work, also referred to as housekeeping.

Although 139 households reported receiving other income on top of social grants and remittances, only 110 gave these monthly incomes. For saving households, the minimum income value is R100, maximum is R8 200, and average is R2 335.50. Non-saving households have a minimum of R260, maximum of R13 000 and an average of R1 927.30. Of the 110 that stated their income, 36 claimed that monthly income is often

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2   In South Africa, people of mixed race are officially classified as Coloured.

uncertain and unpredictable. Bhat and Nengroo (2013) mention that informal sector activities often provide unpredictable remuneration and profits.

Only 20% (42) of households indicated that they receive remittances. The majority of the households, 80% (173) do not receive any remittances. This suggests that social grants crowd out remittances once households include social grant beneficiaries (Ezemenari, 1997).

According to Case & Deaton (1998) and Neves et al. (2009), extended households often pool resources, especially income, to improve the welfare of the entire household. Table 1 indicates that households that save pool a minimum of R320, a maximum of R12 450, and an average of R3 267.10; they have a standard deviation of 2 139.294. On the other hand, households that do not save pool a minimum of R320, a maximum of R13 320, and an average of R2 628.20; they have a standard deviation of 2 508.264.

Given the relatively low income of the surveyed households, it was necessary to establish what they spent their aggregate income on. Case and Deaton (1998), Neves et al. (2009) and Paxton (2009) claim that poor households spend their aggregate income on consumable items: necessities, normal goods and services such as food, clothing, transport, energy and shelter. Households that save spent a minimum of R100, a maximum of R3 200 and an average of R772.10 per month on necessary goods and services. The non-savers spent a minimum of R100, a maximum of R3 000 and an average of R760.80 per month. In terms of normal goods and services, savers spent a minimum of R20, a maximum of R5 270 and an average of R949 per month. Households that do not save spent a minimum of R80, a maximum of R6 733 and an average of R1 201.20 per month on normal goods and services. Thus both the saving and non-saving households tend to purchase necessity goods more than normal goods. Although the surveyed households are poor, 24 saving and non-saving households spent some of their income on luxury goods and services. Households that save spent a minimum of R5, maximum of R650 and average of R153 per month on luxury goods and services. The households that do not save spent a minimum of R24, maximum of R600 and average of R186 per month on luxury goods and services. It seems, then, that non-saving households spent more than saving households on luxury goods. Table 2 presents a summary of the savings instruments and saving motives used by households.

Table 2: Saving instruments and motives of households that save

Variable	Observations	Mean	Maximum	Minimum	Standard deviation
Burial society	129	163.6	846	25	108.93
Stokvel	72	366.6	1 500	80	261.77
Bank account	56	298.7	1 340	50	256.27
Post office bank account	1	–	500	–	–
Investment account	1	–	30	–	–
Save at home (hoard)	7	381.4	800	100	264.17
Precautionary	119	–	–	–	–
Transactional	61	–	–	–	–
Liquidity	10	–	–	–	–
Housing	15	–	–	–	–
Education	13	–	–	–	–
Bequest	1	–	–	–	–

Table 2 presents the saving motives of the 150 households with social grant recipients that save a portion of their household income. These motives are precautionary, transactional, liquidity, housing, education, and

bequest. One household saves for bequest, 13 households save for education, 15 save for housing, ten save for liquidity, 61 save for transactional and 119 save for precautionary. Saving with a burial society indicates that a household has a precautionary saving motive to cover funeral expenses (Chrétien, 1986). As such, it is not surprising that the large number of households have precautionary saving as a motive to save. Moreover, literature indicates that poor households in informal settlements, such as Freedom Park, tend to save with burial societies and stokvels (Armstrong et al., 2008; Djebbari & Mayrand, 2011; Leibbrandt et al., 2010). Unsurprisingly, then, the second-largest saving instrument in this study is the stokvels. According to Collins (2005) and Neves et al. (2009), stokvel savings are for transactional purposes during holidays, especially Easter and Christmas. As such, the second-largest saving motive among the 150 households is the transactional saving motive.

Tables 1 and 2 focused on presenting and discussing the descriptive statistics of the surveyed households of social grant recipients. The econometric model employed in this study to study the savings behaviour of the households, as well as the analysis of the model specification, is discussed in the next section, and empirical results are presented.

4.2   Econometric model

As discussed above, the literature revealed variables that might influence the savings behaviour of poor households. The variables are regressed for the savings of households that receive social grant to assess the variables that influence such households.

4.2.1 Model specification

Nine independent variables were identified in the literature that might influence the saving culture of poor households:

- Social grant income
- Other income (profit or earned income including remittances)
- Normal goods expenditure
- Income pooling
- Necessity goods expenditure
- Luxury goods expenditure
- Household size
- Gender of respondents
- Age of respondents

Chakrabarty and Hildenbrand (2009), Esson (2003), Neves et al. (2009), Paxton (2009), Skidmore (2001) and Ting and Kollamparambil (2015) state that all income acquired from labour market activities, remittances, social grants and borrowed income have a positive impact on households savings. Therefore, the social grant income and other income used in the model are expected to have a positive sign, while consumption of necessity, normal and luxury goods have a negative sign as argued by Keynes (1936). According to literature, households that pool income are presumed to have the ability to save (Burger et al., 2010; Case & Deaton, 1998; Esson, 2003; Maltsoglou & Taniguchi, 2004; Meyer et al., 2009; Woolard, 2002; Van der Merwe, 2000). Therefore, the expected sign of income pooling as a dummy variable in this study is positive. The literature emphasises that expenditure has an inverse relationship with saving (Neves et al., 2009; Nwibo and Mbam, 2013; Osondu et al., 2015; Paxton, 2009; Shitu, 2012; Walden, 2012). As a result, necessity, normal and luxury goods expenditure as independent variables in this study are expected to have a negative sign.

Gender of respondents is one of the independent variables used in this study, since the studies of Neves et al. (2009) and Paxton (2009) indicate that the gender of a household financial handler has an influence on household savings. In this study, gender would be regressed as a dummy variable. From the literature it is expected that the coefficient sign of female will be positive. The expected sign has been drawn from the

findings of Mexican poor rural household savings studied by Paxton (2009), where females had a positive influence on savings.

According to the literature, the age of the household financial handler has a positive correlation with household savings (Beckmann, 2013; Modigliani, 1966; Sarantis & Stewart, 2001). As such, this study uses age as one of the independent variables. Since Beckmann (2013) and Modigliani (1966) argues that the age of a household financial handler influences household savings positively, the expected sign of age squared in this study is positive. The age variable is squared to account for possible non-linearity in the age of the surveyed households' financial handlers.

The descriptive analyses indicate that the majority of the household financial handlers were between the age of 28 and 50, with an average age of 43. According to the life-cycle hypothesis, household financial handlers have positive savings during their working age – that is, between 16 and 59 (Modigliani, 1966; Ting & Kollamparambil, 2015). Since the majority of the household financial handlers are within the working age, the expected sign is positive.

The empirical studies of Chakrabarty and Hildenbrand (2009), Keynes (1936) and Skidmore (2001) indicate that household size has an inverse relationship with household savings. However, van der Merwe (2000) argues that household size, particularly large household size, has a positive relationship with household savings, although he offers no empirical support for his position. This study, on the other hand, shows that the expected sign of household size towards household savings is negative. It is expected that large households, with more than two members, save less compared to small households with one or two members. The descriptive analyses of the data suggest that the majority of the surveyed households are large. Table 3 summarizes the expected signs.

Table 3: Expected coefficient signs of the variables used in this study

Variable	Dummy	Continues variable	Expected sign
Social grant		Social grant	+
Other income, including remittances		Other income	+
Pool income	Pool income		+
Necessity		Necessity	-
Normal		Normal	-
Luxury goods expenditure		Luxury	-
Gender	Female		+
Age		Age	+
Age^2		Age^2	+
Household size		Household size	-

Based on the expected coefficient signs of the independent variables, the linear saving function is as outlined in Equation 5:

$$s = \alpha + \beta_1 sy_i + \beta_2 y_i + \beta_3 Dpool_i - \beta_4 cN_i - \beta_5 cNr_i - \beta_6 cL_i + \beta_7 Dgender_i + B_8 Age_i + \beta_9 Age_i^2 - \beta_{10} hhs_i + e$$

$$(5)$$

Empirical results are generally used to determine whether the expected signs were met, whether the independent variables influence the savings behaviour of households with social grant recipients and whether their influence is statistically significant after running a regression model. A series of regression models were applied using Stata software package.

4.2.2. Empirical results

The independent variables, along with household savings as dependent variable are regressed, and their results are presented in Table 4. Having various regression models and presenting the results in a table is an analysis reporting method used by various researchers such as Esson (2003), Neves et al. (2009), Paxton (2009) and Seguino and Floro (2003). The regression models ran are tobit, normal Ordinary Least Square (OLS), robust OLS and probit regressions. Three of the four models – normal OLS, Robust OLS, and probit – are statistically significant at 5% significance level, with probability values (p-values) of 0.03, 0.02 and 0.02, respectively. The tobit model is statistically significant at 1% significance level with the probability value of 0.01. Having models that are statistically significant implies that a combination of all the independent variables used in the respective regression models does have an impact on household savings. The results of this study imply that, indeed, social grant income, other income, income pooling, expenditure, gender of a household financial handler, age of a household financial handler, household size collectively have an influence on household savings, as argued by Chakrabarty and Hildenbrand (2009), Erfe (2007), Gough (2011), Keynes (1936), Paxton (2009) and Sarantis and Stewart (2001). However, on an individual basis, some of the independent variables within the models are statistically insignificant.

Table 4: Tobit, normal OLS, robust OLS (model 2) and probit regression models

	Tobit	Normal OLS	Robust OLS	Probit
Constant	-222.8847 (-0.74)	-172.1237 (-0.55)	-311.6355 (-1.28)	-2.0531** (-1.98)
Social grants	0.0496** (2.11)	0.0494** (2.01)	0.0501*** (2.61)	0.007 (0.52)
Other income	0.0635*** (3.91)	0.0616*** (3.65)	0.0339*** (2.57)	0.0001* (1.85)
Pool income (pool)	-8.3829 (-0.10)	-3.7182 (-0.04)	-76.8002 (-1.17)	0.6068** (2.05)
Necessity	-0.0519 (-0.83)	-0.0508 (-0.78)	-0.0351 (-0.69)	0.0004 (1.14)
Normal	0.0775* (1.82)	0.0710 (1.61)	-0.0052 (-0.15)	-0.0001 (-0.51)
Luxury	-0.2047 (-0.68)	-0.1628 (-0.52)	0.1212 (0.49)	-0.0023** (-2.17)
Female	114.7469 (0.94)	112.8899 (0.89)	148.8301 (1.50)	-
Age	4.1744 (0.37)	2.6716 (0.23)	16.4591* (1.80)	0.0712 (1.59)
Age^2	-0.0132 (-0.12)	-0.0020 (-0.00)	0.7246 (-1.62)	-0.0005 (-1.10)
Household size	18.3549 (1.31)	17.0642 (0.17)	0.95 (0.06)	0.0246 (0.34)

Summary of models	Tobit	Normal OLS	Robust OLS	Probit
R^2/Pseudo R^2	0.02	0.21	-	0.15
Adj R^2/ Chi^2	23.97	0.12	-	20.50
Observations	102	102	102	131
Df	-	91	91	-
Probability	0.0077***	0.0159**	0.0230**	0.0151**
VIF	1.02	1.26	-	1.18

Note: The dependent variable (constant) is savings. The t-statistics and z-statistics are in parentheses. All the regression models include gender, household size and pool income as dummies. *, **, *** denote significance at 10%, 5% and 1% levels, respectively. The null hypothesis (H_0) for all models is that an independent variable has a significant impact on household savings. The alternative hypothesis (H_1) is that an independent variable does not significantly impact household savings.

In the tobit regression model, statistically insignificant independent variables are pool income, necessity expenditure, normal expenditure, luxury expenditure, gender of household financial handlers, age of household financial handlers and household size. The implication of the statistically insignificant variables is that the variables do not have an influence on the savings of the surveyed households. That is, in this study, we reject the null hypothesis at 1%, 5% and 10% significance level that the independent variables individually have an impact on household savings of the truncated sample. Statistically significant independent variables are social grants and other income.

The implication of the statistically significant variables is that social grants and other income do indeed have a positive impact on the truncated households' savings. That is, the null hypothesis (at 5% significance level) that social grants have an influence on household savings is accepted. Additionally, the null hypothesis (at 1% significance level) that other income has an influence on household savings is accepted.

Similarly, the statistically insignificant variables in the normal OLS regression are pooled income, necessity expenditure, normal expenditure, luxury expenditure, gender of household financial handlers, age of household financial handlers and household size. The significant variables are social grants and other income at 5% and 1% significance levels, respectively. Independent variables within the robust OLS regression are also statistically insignificant except for age, social grants and other income. The social grants and other income are both statistically significant at 1% significance level and age is statistically significant at 10% significance level.

Of all four regressions, the constant variable, household savings is statistically significant at 5% significance level in the probit regression model. The result implies that households that save do indeed have more savings than households that do not save; therefore we accept the null hypothesis that saving households have more savings than households that do not save. Significant independent variables in the probit model are other income, pool income and luxury expenditure. Other income is statistically significant at 10% significance level, pool income and luxury expenditure are both statistically significant at 5% significance level.

Similar to the above mentioned significant and insignificant independent variables, the empirical evidence of Esson (2003) also showed that some of the independent variables of savings were statistically insignificant. The empirical results of a Mexican study on the savings behaviour of poor households by Paxton (2009), revealed that, in the study's model, some of the independent variables were statistically insignificant, although the overall model was significant. It is, therefore, common for models to be statistically significant, with a few of the independent variables being statistically significant. As such, an outcome of insignificant variables does not suggest that the models of this study are statistically significant.

The R-squared or chi-squared presented in Table 4 are used to indicate how much the normal OLS, probit and tobit models explain the variation in household savings. The tobit model has the highest chi-squared of 23.97, thus interpreted as 23.67% of the variation in household savings of the truncated sample is explained by the tobit regression model. The normal OLS model shows that 12% of the variation in household savings is explained by the model. The probit regression model explains 20.50% of the variation in household savings. The results accord with the argument of Kochhar and Cohn (2011), Mok and Sullivan (2009) and Sharma (2010) that the independent variables influence household savings, although some of the independent variables were statistically insignificant. This study argues that the best regression model, despite having several statistically insignificant variables, is the tobit regression model, followed by the probit regression model and, lastly, the normal OLS regression model. An explanation of the tobit regression model offering the best results is that as the dependent variable is censored. The tobit regression provides consistent estimates that approach the 'true' population parameters of the surveyed households (sample size). After all, the other regression models do not take into account that the sample in this study is truncated.

All the signs of the significant variables (social grants, other income and luxury expenditure) match the expected signs, except for pool income, as presented in Table 3. Variable signs are seen in the sign of the t-statistics and z-statistics. The positive signs imply that an independent variable has a positive effect on savings, in this study. Similarly, a negative sign of an independent variable's t-statistic or z-statistic imply that the variable has a negative effect on household savings.

Sarantis and Stewart (2001) claim that, usually, the age of a household financial handler, as an independent variable, influences household savings positively. According to the t-statistic and z-statistic of this study, indeed the age of the respondents has a positive sign. The study of Paxton (2009) showed that poor households with female financial handlers have positive savings. Analogous to Paxton (2009), all four models investigated indicate that female household financial handlers contribute positively to household savings.

The expected sign of the household size, as presented in Table 3 is negative, but the econometric models' results show otherwise. The sign of household size in all four models is positive. This implies that household size has a positive relationship with household savings. Similarly, t-statistics and z-statistics of pool income, necessity expenditure, normal expenditure and luxury expenditure contradict the expected signs. Having contradictory signs of independent variables of household savings is often experienced. For instance, the household savings studies of poor households in the Eastern Cape by Neves et al. (2009), Western Cape by Esson (2003) and rural Mexico by Paxton (2209) had several independent variables with unexpected coefficient signs.

Despite the contradictory signs of some of the independent variables' t-statistics and z-statistics, it is important to emphasise that all signs of the statistically significant independent variables, that is, social grants, other income, pool income and luxury expenditure, matched the expected signs. Such an outcome enables the researcher to find the utilised models and significant independent variables reliable.

5 CONCLUSION

This paper analysed the savings behaviour of poor households to determine whether poor households save or not. The sample used was 215 households of recipients of social grants located in the informal settlement of Freedom Park in Soweto.

The study discussed saving instruments availability and accessibility for poor households. Although formal saving instruments could be available in some poor regions, poor households might not have sufficient access to utilize services and products offered by institutions like commercial banks. Due to the inaccessibility of formal saving instruments, the poor tend to resort to alternative saving instruments, such as stokvels.

Data analyses reveal that the surveyed households that receive social grant in Freedom Park save. However, out of the 215 households, 150 save and 65 do not save. The analysis is supported by evidence from the literature that indicate that the poor tend to use semi-formal and informal saving instruments rather than formal saving instruments. Accordingly, policy recommendations impacting semi-formal and informal saving instruments are as follows:

- The saving instruments could be regulated to reduce loss of savings and ensure protection of savers.
- Competitive interest rates could be introduced to ensure that savers earn rates that take into account inflation rate.

These recommendations assume that poor household savers will increase their wealth in the long term. On the one hand, researchers could investigate what methods are available for the poor to increase their wealth. On the other, there is room to research on the saving behaviour of poor households that receive social grants in other informal settlements, townships and rural areas. Further in-depth qualitative research on households that are social grant recipients in informal settlements of Freedom Park could increase knowledge and understanding of the households' saving behaviour.

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