FINANCIAL PROTECTION IN UGANDA'S HEALTH SYSTEM:

catastrophic and impoverishment effects of out-of-pocket health care payments

A mini-dissertation submitted to the University of Cape Town in partial fulfilment of the requirements for the Master of Public Health (Health Economics)

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Part 0: Preamble

Declaration

I, **Kwesiga Brendan**, hereby declare that the work on which this dissertation is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other university.

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Dedication

I dedicate this work to my family for the unwavering support; to my friends for the constant encouragement; and to God for presenting me with this opportunity and always making everything possible.

Thesis abstract

Direct out-of-pocket payments for health care are not only a barrier to accessing health care but they also endanger households' welfare. This study assesses the impact of out-of-pocket payments for health care on the welfare of households in Uganda.

Using data from the nationally representative Uganda National Household Survey 2009/10, the study assesses the extent and intensity of catastrophic out-of-pocket health care payments using a threshold that varies with household's socio-economic status. The study also assesses the impact of out-of-pocket payments on the poverty status of the population. The household characteristics associated with both catastrophic and impoverishment effect of out-of-pocket payments for health care are then identified using a multivariate logistic model.

Results indicate that households generally lack financial protection. The extent and intensity of catastrophic payments and impoverishment due to the out-of-pocket payments is very high. Householdswith a member aged above sixty five years or a member aged below five years were found to have a higher likelihood ofincurring both catastrophic payments and impoverishment. While utilisation of both public and private health facilities were both associated with a high likelihood of financial risk, this risk was higher among households that used private facilities. There is a need for concerted efforts aimed at reducing the level of out-of-pocket payments for health care in Uganda. This is achievable by adopting mandatory prepayment mechanism to finance health care. Initiatives for reducing out-of-pocket payments should target the most vulnerable households as identified in the study.

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[◊]SHIELD is an African research network that is part of the Global Network of Health Equity (GNHE). The GNHE comprises EQUITAP (Equity in Asia-Pacific Health systems, an Asia-Pacific Research Partnership) and LANET (The Latin American and Caribbean Research Network on Financial Protection and Health Observatory).GNHE aims at enabling comparative and collaborative work so as to enhance equitable universal access.

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Part A: Study Protocol

1.0 Introduction

The need to attain universal coverage has become a major policy goal for many countries. The significance given to this call for universal coverage was highlighted by the devotion of World Health Report 2010 to this cause (see WHO 2010). Universal coverage not only emphasises access to health care for all but also protection from financial risk for all who access care (Carrin et al. 2008). Emphasis on the need for financial protection within universal coverage is supported by the argument that a health system need not only aim at improving health outcomes but should also protect those accessing care from any drastic financial consequences (Wagstaff 2008). Financial risk protection within a health system is also referred to as the insurance function of the health system that is meant to protect households from the uncertainties that may arise as a result of accessing health care (Kutzin 2001). It has been argued that the way a health system is financed has a huge role to play in determining the level of financial protection that the health system provides (Kutzin 2001).

A health system can be financed either through direct out-of-pocket payments (such as user fees and co-payments at the point of service) or through prepayment mechanisms. However, there is a call for all health systems to focus on adopting prepayment mechanisms as the means of financing their health systems. The 58th World Health Assembly 2005 through resolution 58.33 called for all countries to adopt prepayment mechanisms as a way of moving towards universal coverage (WHO, 2005). Resolution 64.9 of 64th World Health Assembly also called on health systems to adopt sustainable health financing mechanisms that enable financial protection (WHO 2011). It has been noted that moving away from out-of-pocket payment for health care to prepayment is the key to reducing financial burden of health payments (Xu et al. 2007). Out-of-pocket financing mechanism not only put a heavy burden of paying for health care but also acts as a barrier to accessing health care. Out-of-pocket health financing does not provide room for pooling and hence offers no chance for income and risk cross subsidies within the health systems (Kutzin 2001, McIntyre and Kutzin 2011).

Despite the problems with out-of-pocket payments mechanisms, they are still the dominant form of health care financing mechanism in most developing countries

particularly in sub Saharan Africa (McIntyre et al. 2006). In Uganda, for instance, out-of-pocket payments contribute up to 37.9% of all the health sector expenditure while the rest of health sector expenditure sources are government and external sources contributing 33.6% and 28.5% respectively (Okwero et al. 2010).

1.1 Problem statement

Uganda like most low-income countries was forced to introduce user fees in public health facilities in the early 1990s. This was part of the health sector reforms under the structural adjustment policies (SAPs) recommended by the World Bank as a solution to the high levels of debt and macro-economic stagnation. User fees in the public facilities were aimed at raising revenue, preventing unnecessary use of health care and improving the quality and coverage of health care (Gilson and Mills 1995, Gilson 1997). The introduction of user fees in public facilities was based on a theoretical argument that since demand for health care is price inelastic, the fees would be able to raise revenue that would be used to improve quality and coverage (Akin et al. 1987). The equity concerns arising from the introduction of the fees would be dealt with by exempting the poor. However, evidence against the effectiveness of user fees to achieve the intended objectives and also the burden these fees put on the people lead to policy makers to advocate for their removal (Gilson and McIntyre 2005, Xu et al. 2006)**.**

In 2001, user fees were abolished in all public facilities in Uganda. The removal of user fees increased access to health care especially among the poor and was seen as a great step toward attaining equity in Uganda's health system (Burnham et al. 2004, Deininger and Mpuga, 2004, Xu et al. 2006,Tashobya et al. 2006). Since user fees (paid atpublic facilities) and direct payments to private providers comprise total out-of-pocket payments in Uganda, abolition of such fees in public facilities was expected to lead to a general decrease in direct out-of-pocket payments. However, while user fees were abolished in 2001, there has been an increasing trend in the level of out-of-pocket payments. World Health Organisation's statistics show that out-of-pocket payments as a percentage of total private expenditure increased from 56.7% in 2000 to 65.4% in 2008(WHO 2011). Hence whereas user fee abolition has improved access and use of health services, high out-of-pocket payments have made financial protection elusive (Orem et al. 2011).This continued increase in out-

of-pocket expenditure is likely to result into adverse consequences for households especially the poor (see Van Doorslaer et al. 2006, Van Doorslaer et al. 2007, Xu et al. 2003).

One of the main reasons cited for the increase in the share of out-of-pocket expenditure, even with the abolition of user fees is the increased use of the private health sector that mainly relies on out-of-pocket payments (Xu et al. 2006). The private sector is the preferred provider for both the rich and poor households (Deininger and Mpuga, 2004, Kasirye et al. 2004). This continued use of private sector services is attributed to public sector inefficiencies. These include; frequent drug stock-outs and inequality in the distribution of human resource between the private and public sectors (Orem and Zikusooka 2010, Zikusooka et al. 2009).The problem of out-of-pocket spending has been worsened by the presence of informal fees in the public sector (Xu et al. 2006). Given the very low levels of prepayment (mainly through voluntary health insurance), the problem of increased out-of-pocket health expenditure is likely to lead to increased exposure to financial risk. This thus calls for a need to assess the level of financial protection within Uganda's health system so as to provide evidence to guide policies aimed at addressing the problem of financial risk that results from out-of-pocket payments.

1.2 Study rationale

Ensuring equitable financing and financial protection within the health system has been an important objective extolled in all recent health sector plans in Uganda. This has been highlighted in the Health Sector Strategic Plans I and II (HSSP I and II) and the National Health Plan I (NHPI) which run from 2000-2010. It is also part of the current Health Sector Strategic and Investment Plan (HSSIP) and NHP II which are guiding the health sector activities from 2010/2011 to 2014/2015(MOH 2010a, MOH 2010b, MOH 2010c). On a wider scale, importance of equity and specifically financial protection in a health system has also been emphasized in the health financing strategy for Africa (WHO 2006a, WHO 2006b). However, while countries may aim at upholding the principle of equity in health care financing and attaining universal access, they often lack empirical evidence to guide policy aimed at achieving this. The main motivation of this study is to generate empirical evidence to guide appropriate health policy responses aimed at protecting households from financial

risk. This evidence is timely for Uganda given that the country is planning on implementing a National Health Insurance Scheme.

In providing evidence about financial protection, there is a need to go further than just showing the extent and intensity of the problem to identifying the households which are more vulnerable to the problem of financial risk.

1.3 Aim of the study

The study will assess the financial burden on households due to out-of-pocket payments within Uganda's health system.

1.3.1 Specific objectives

- To quantify the catastrophic impact of direct out-of-pocket healthcare payments on households in Uganda
- To establish the impoverishment effect of direct out-of-pocket health care payments on households in Uganda
- To assess households' vulnerability to financial risk resulting from direct out-of-pocket health care payments

1.4 Literature review

Assessment of financial protection gained prominence with the publication of the World Health Report (WHR) 2000. This report introduced the notion of fair financing as a measure of equity in health care financing (McIntyre 2010). The notion of fair financing emphasised the need to promote fairness through health system financing. However the methodology used in the WHR 2000 in the measurement of fair financing was heavily criticised (Wagstaff 2001, Almeida et al. 2001). According to Almeida et al (2001), the measure of fair financing was not methodologically sound and also lacked a socially responsive view of fairness. Wagstaff(2001) notes that fair system is one that protects households especially the poor from excessive health care payments that may drive households into poverty. This concern is based on the egalitarian theory of justice as fairness[2]. Wagstaff and van Doorslaer (2003) thus

[2]Egalitarianism above refers to a situation where inequality is tolerated only if it does not lead to worsening of the conditions of the worse off or does not improve the conditions of those who are already better off (Rawls, 1999). It thus refers to the prioritisation of the needs of worse off in society.

suggested methodologies to measure fairness in financing based on the argument that households should not face financial risk when they pay for health care.

The methodologies by Wagstaff and van Doorslaer (2003) are based on the conventional (Foster-Greer-Thorbecke) FGT poverty indices[3] and are referred to as the catastrophic and impoverishment methodologies. These methodologies are defined later on. The economic theory on which these methodologies are based is the Grossman-Wagstaff model of demand for health (Grossman 1972, Wagstaff 1986). According to the Grossman-Wagstaff model, the cost of health care is reflected by the amount of household consumption foregone so as to purchase that health care.

The methodologies for measurement of financial protection introduced above all focus on the impact of out-of-pocket payments for health care on household[4]. While the narrow focus on out-of-pocket payments has faced criticism, it is backed by the conceptual frameworks for health care financing such as Hsiao (2003) and Kutzin (2001). According to Hsiao (2003), out-of-pocket payments are a policy instrument that can be influenced by the policy maker so as to achieve financial protection. Out-of-pocket payments thus serve as a focal variable for the policy makers in attaining financial protection in a health system. This is because decreasing the level of out-of-pocket payment is one of the main ways in which financial protection can be attained. Wagstaff (2008) points out that the critics of relying on out-of-pocket payments in measuring financial risk are usually blind to the difference between policy objectives and policy instruments.

Both catastrophic and impoverishment methodologies are based on an assumption that households do not choose to spend excessively on health care (health care expenditure is not discretionary) and household resources are fixed (O'Donnell et al. 2008). Though there is debate on how realistic these assumptions are,

[3]FGT indices as used in conventional poverty measurement show the extent, intensity and the severity of poverty (Foster et al. 1984). The extent of poverty is indicated by the headcount measure while the intensity and severity of poverty are indicated by the gap measures.

[4] A household is the appropriate unit of analysis in understanding the burden of illness on households because it has been shown that when a household member is faced with illness, the impact is spread across the household and health care consumption decisions are made by the household not the individual (O'Donnell et al., 2005).

Wagstaff(2008) again argues that the assumptions particularly that of non-discretion in health spending should hold in developing countries. Wagstaff (2008) presents this argument based on a study by Deaton and Zaidi (2002) which showed that income elasticises of health spending was low. However, on the assumption of fixed household resources, this has been shown not to hold (see Flores et al., 2008) as households borrow and deplete savings when faced with illness. A summary of methodological and empirical review of studies using these methodologies are presented below. A full literature review will be presented in Part B of this study.

1.4.1 Catastrophic out-of-pocket health care payments

A catastrophic health care payment is a health care payment that exceeds a certain predetermined threshold in relation to a household's living standard (Xu et al. 2003, Wagstaff and van Doorslaer 2003).Such expenditures affect the household's ability to spend on other household's basic necessities (Russell 2004). Given the arbitrary nature of the thresholds used in defining catastrophe, various thresholds have been proposed (Xu et al. 2010). This issue of using various thresholds is noteworthy given that use of different thresholds leads to different results and conclusions (Goudge et al. 2009). It has thus been suggested that a wide range of threshold values should be presented in a study so that readers and policy makers may choose which one to use in interpreting results (Su et al. 2006).

The need for fairness in defining the indicesused in measuring catastrophic out-of-pocket health care payments has received attention in recent studies (Ataguba 2011, Onoka et al. 2011). These studies argue that since households of different socio-economic status have different marginal utilities with regards to their post payment income, making them face a similar threshold would be blind to equity considerations (Ataguba 2011, Onoka et al. 2011). These studies thus suggest that households of different socio-economic status should face different thresholds in determining households that have incurred catastrophic health payments. The argument of different households facing different thresholds is based on the principle of vertical equity which implies that people of unequal needs should be treated differently (McIntyre and Mooney, 2007).

Studies carried out in Africa using the catastrophic methodology have shown that there is a very high burden on households due to direct health care expenditure. A multi country study involving 59 countries across the world (including some African countries) found that the catastrophic impact due to out-of-pocket payments among the African countries varied (Xu et al. 2003). Catastrophic out-of-pocket payment[5] was least in countries like Namibia and Djibouti with about 0.5% of the households incurring catastrophic expenditure while in over ten African countries, about 3% of all households incurred catastrophic expenditures (Xu et al. 2003). In Uganda, using a fixed threshold 40% threshold of non-subsistence expenditure, 2.92% of all households were shown to have incurred catastrophic expenditures in 2003 (Xu et al. 2006). The latter estimate indicated a decline in the extent of catastrophic payments from 3.15% in 2000 before the removal of user fees in public facilities (Xu et al. 2007). This indicates that high out-of-pocket payments associated with user fees lead to high levels of catastrophic payments. This positive relationship between incurring catastrophic payments and high out-of-pocket payment has also been observed in other multi-country studies (Mills et al. 2012, van Doorslaer et al. 2007).

Similarly high levels of catastrophic out-of-pocket health care payments have been reported by other studies in Ghana and Nigeria (Ichoku and Fonta 2009, Akazili 2010). In one of Nigeria's states 39% of the population exceeded the 5% threshold of total consumption expenditure (Ichoku and Fonta 2009). In the study carried out in Ghana, the catastrophic impact ranged from 11% to 2.43% for thresholds between 5% and 40% (Akazili, 2010). This study in Ghana also shows the intensity of the catastrophic out-of-pocket payments on the households. The intensity of catastrophic payments was very high especially among the poor with households exceeding the 20% threshold (total consumption expenditure) by 44% representing a 64% budget share which goes up to 75% for non-food expenditure. The intensity of catastrophic payments as shown in the study by Akazili (2010) and the distribution of the catastrophic impact across the socio-economic distribution range are important dimensions of catastrophic payment that have not been computed in most of the previous studies.

[5]Catastrophic payment in that study (Xu et al., 2003) was defined as spending over 40% of household's non-subsistence consumption as out-of-pocket payment.

It is also worth noting that for the studies that used variable thresholds for households of different socio-economic groups, their estimates are for catastrophic payment impact using variable thresholds are higher than the fixed thresholds (Onoka et al. 2011, Ataguba 2011). However the Ataguba (2011) finds that the mean positive gap[6] estimated using the variable thresholds was lower than that estimated using fixed thresholds. Another factor worth noting about the variable thresholds specifically with the Ataguba (2011) methodology is that since they are generated based on where one lies on the income distribution range; one does not need to generate the measures reflecting the distribution of the catastrophic impact of out-of-pocket health care payments.

The catastrophic methodology has been widely used in Asia, South America, Europe and North America. Findings from Africa correspond to those reported in other low and middle income countries in Asia and South America**.** These studies will be reviewed later in Part B of this study. While the methodology of assessing catastrophic payments is useful, it fails to show the absolute impact of out-of-pocket health expenditure on the household. It has been noted that even burdens lower than 1% can have a disastrous impact on households driving them into poverty (Goudge et al. 2009). To show the absolute impact of health care expenditure, the impoverishment methodology can be used. A review of some literature about impoverishment is shown below.

1.4.2 Impoverishment due to out-of-pocket health care payments

The impoverishment methodology is based on the adjustment of the conventional poverty measures (FGT indices) for the impact of out-of-pocket health expenditures (Wagstaff and van Doorslaer 2003). This methodology is based on the argument that spending on health is unpredictable and is likely to have a negative impact on overall household welfare. O'Donnell et al. (2008) and van Doorslaer (2006) further argue that health care expenditure takes place as response to a basic need that is not adequately reflected in the poverty line. The impoverishment methodology is considered a more objective measure than the catastrophic methodology as it is not subject to the use of arbitrary thresholds.

[6]Mean positive gap for catastrophic health payments is the average out-of-pocket health care payments made in excess of a set threshold. This average does not include those who do not exceed this threshold.

Unlike catastrophic out-of-pocket health care payments, the assessment of impoverishment associated with direct out-of-pocket health care payments has been scarcely studied particularly in African countries. Some of the African studies reviewed include Mills et al. (2012) which covers South Africa, Ghana and Tanzania, Akazili (2010) in Ghana and Ichoku and Fonta (2009) in Nigeria. The studies reviewed show a high level of impoverishment due to out-of-pocket payments. Mills et al., (2012) show that the extent and intensity of poverty due to out-of-pocket payments was highest in Ghana which had the highest level of out-of-pocket payment as a share of total health sector financing. The results by Akazili (2010) and Mills et al., (2012) for Ghana are similar. In Ghana using $1.25 ($2.5) poverty line, about 1.6% (1.8%) of the population was further impoverished by paying out-of-pocket for health care. This represents a 9% (3.8%) relative raise in poverty headcount. A similar trend was observed in Nigeria with health expenditure raising poverty levels. Ichoku and Fonta (2009) report a 2.6% increase in poverty headcount using Nigeria's national poverty line. These findings are similar to those reported in many Asian countries where paying out-of-pocket payment for health care lead to an increase in poverty (van Doorslaer et al., 2006). Although the general evidence is that high out-of-pocket payments increase the level of poverty, van Doorslaer et al.,(2006) shows that the differences in poverty increment due to out-of-pocket payments between countries may be more attributed to the other policies in place to protect particularly the poor from incurring these out-of-pocket payments.

Apart from increasing the extent of poverty, out-of-pocket payments could also deepen poverty levels. For example in Ghana, Akazili (2010) reports that the households that fell below the $1.25 poverty line needed to add up 5.36% of household resources to move to the poverty line. In this particular study (Akazili, 2010), the increase in the depth of poverty was mainly among the non-poor as opposed to the poor. However, Mills et al. (2012) shows that in both Tanzania and South Africa, that the depth of poverty was increased mainly among the poor. The latter finding is also observed in the majority of the eleven Asian countries studied by van Doorslaer (2006). The difference in these findings is explained by the difference in policies protecting the poor from incurring high catastrophic out-of-pocket payments as was in some Asian countries as noted earlier (see van Doorslaer et al. 2006). However an alternative explanation as to why large out-of-pocket payments

may be concentrated in the non-poor would be due to the poor being too poor to fall ill (Akazili, 2010). In such situations the poor modify their perception of illness so as to avoid incurring impoverishing out-of-pocket payments.

In using the catastrophic and impoverishment methodologies, there is a need to go further to show people/households that are vulnerable to financial risk (O'Donnell et al. 2005). Since some households are too poor to consume health care, exposure to financial risk rather than incurrence may better guide health policy objectives in ensuring financial risk protection. Vulnerability to financial risk is discussed below.

1.4.3 Household's vulnerability to financial risk

Vulnerability is the likelihood of a household facing risk that may cause its welfare to decline (Dercon 2005). The assessment of vulnerability to financial risk helps to show who financial risk protection initiatives in the health sector should be aimed at. Factors that indicate vulnerability to financial risk in the health sector are multidimensional (Mukherjee et al. 2010).

Review of empirical studies shows that preconditions for financial risk include availability of health care services requiring payment, low capacity to pay and lack of prepayment (Xuet al.2007). Recent evidence from Ghana and Rwanda has also showed that mandatory prepayment increases financial protection with the impact being particularly felt among the poor (Nguyen et al. 2011, Saskena et al. 2011). However a study carried out in Zambia showed that households which used prepayment (private insurance) were more likely to incur financial risk (Ekman et al. 2007). However to explain this counter intuitive evidence, Ekman points to the possibility of supplier induced demand, moral hazard or a combination of both and the possibility of self-selection where voluntary prepayment maybe a rational response to high health care needs.

The type of health provider used, type of care consumed and household characteristics also predict vulnerability to financial risk (Xu et al. 2006, Somkotra and Lagrada 2009, Saskena et al. 2010). These studies show that the use of inpatient care and use of private facilities was a major predictor of financial risk. Xu et al. (2006) found that households which were more likely to incur financial risk in Uganda were those whose household head had a low level of education and had a

member aged above 65 years. This positive association between age and financial risk due to out-of-pocket payments has also been shown by Knaul et al. (2007) and Xu et al. (2007). The effects of both age and education have a theoretical grounding on the theory of demand for health (Grossman 1972). This is because age influences the likelihood falling ill and hence using health care while education makes someone a more efficient user of health care.

A high socio-economic status has been shown to be protective against financial risk (Ekman, 2007). However, O'Donnell et al. (2005) shows that when household consumption expenditure is used as a measure of socio-economic status, financial risk due to out-of-pocket payments is positively associated with high socio-economic status. This result is attributed to reverse causality as a household's health expenditure may be dependent on their total household expenditure.

It is worth noting that in assessing vulnerability to financial risk, most studies shown have mainly used the catastrophic methodology to predict financial risk due to out-of-pocket payments. Noting that all catastrophic costs are not necessarily impoverishing (see Abul Naga and Lamiraud, 2011), there is a need to also use the impoverishment methodology in assessing vulnerability to financial risk such as was done in Knaul et al.(2007) in Mexico.

1.4.4 Summary of literature review

A review of literature shows that out-of-pocket health care payments have adverse effects on households. Health systems that heavily rely on these expenditures are more likely to record higher incurrence of financial risk. The review also shows that some household characteristics indicate vulnerability to incurring financial risk. However, despite the availability of methodological tools that can be used to assess financial protection, they have not been widely applied in most countries. Even with the tools that have been more commonly applied such as the catastrophic health payments methodology, there have had recent methodological improvements meant to give a better reflection of equity in health sector financing (see Ataguba 2011). These methodologies however have also not been adopted in different contexts. It has also been noted that presenting a profile of households that is more likely to incur financial risk would be important in guiding policy aimed at increasing financial protection. This study thus fills the gaps in literature by;

- Applying a varying threshold in the analysis of catastrophic health payments (such as in Ataguba, 2011). This is seen as an improvement in the commonly used methodologies (see Wagstaff and van Doorslaer, 2003 and Xu et al. 2003) so as to show a better reflection of vertical equity in measurement of financial protection.
- The study also corrects poverty indicators for the impact of out-of-pocket payments as a result of assessing health care in Uganda. No published study in Uganda was identified that has done this analysis using a nationally representative survey and the literature on such studies is also scarce particularly in Africa.
- Finally the study assesses vulnerability to financial risk due to out-of-pocket health expenditure. While a similar analysis has been carried out in Uganda using the catastrophic out-of-pocket health payments methodology (Xu et al., 2006), this study assess catastrophic payments using a different approach. This creates a need to re-examine the predictors of catastrophe. Assessment of factors associated with impoverishment will also be done. The assessment of factors associated with impoverishment has been scarcely studied.

1.5 Methods and Analysis

1.5.1 Data sources

The major data sources for this study is the nationally representative Uganda National Household Survey (UNHS) for the year 2009/2010. This survey was conducted by the Uganda Bureau of Statistics (UBOS). Data collection for this survey used a two-stage design. In the first stage, 712 enumeration areas (EA) were drawn by probability proportion to size (PPS). In the second stage, systematic sampling from each enumeration area picked 10 households in the selected enumeration areas. The sampling frame used is based on Uganda's 2002 national population and housing census. Data collection for UNHS 2009/10 was between May 2009 and April 2010.UNHS 2009/10has a sample size of 6800 households. The UNHS collects individual and household level data about socio-economic characteristics, health status, health seeking behaviour, household health expenditure among other things which makes it suitable for this study.

All data analysis is done using both ADePT version 5.2 (World Bank, 2012) and STATA 11 (Statacorp, 2009). All the estimates and the standard errors are adjusted for the sampling design used and weighted at national level using the appropriate survey weights generated by the Uganda Bureau of Statistics so as to obtain results at population level.

1.5.2 Methods

a. Measuring social economic status

In measuring the financial burden of out-of-pocket payments on households, socio-economic status of households will be measured using household consumption expenditure. Household expenditure is the preferred measure for measuring socio-economic status in low income settings on both theoretical and empirical grounds. The theoretical grounds are that consumption is less prone to random shocks while empirical grounds are that consumption has less measurement errors when compared to income (Deaton and Zaidi, 2002). To enable household levels analysis, socio-economic status is adjusted to adult equivalent which is representative of household level welfare. Adult equivalent household size (AE) is estimated as shown below.

$$AE = (A + \gamma C)$$

Where A represents number of adults (18 years and above) in the household while C represents the number of children (under 18), γ is represents the calorie requirements of children relative to adults (Appleton et al. 1999).Both male and female are assumed to have the same calorie requirements. γ varies according to age group from 0.273 for the household members below 1 year to 0.95 for household members between 16 and 18 years (Appleton et al., 1999, Levine 2010).

An index of social economic status composed of household's housing conditions and asset ownership is generated with STATA software using the principal component analysis (PCA) method[7]. This index is used in assessing household factors associated with financial burden of out-of-pocket payments. This has been recommended by O'Donnell et al. (2005) so as to solve the problem of reverse

[7]A brief explanation of the principal component analysis method is attached in the Appendix.

causality that arises if household consumption expenditure is used as a measure of socio-economic status. PCA is a statistical techniques applied to a set of variables so as to form coherent subsets that are relatively independent from each other. The original set of variables is transformed into a substantially smaller set of uncorrelated variables called components. The asset index, *A* for a household i is defined as follows:

$$A_i = \sum_k f_k \frac{(a_{ik} - m_k)}{s_k}$$

Where:

– $a_{ik}$is the value of asset k to household i

– $m_k$is the sample mean

– $s_k$is the sample standard deviation

– $f_k$are the weights associated with the first principal component

b. Estimating household out-of-pocket payments

This variable captures all expenditure on health and medical care that is paid to all health facilities used by individuals in the households as reported in the survey data. These payments are covered under Section 10B (Non-Durable Goods and Frequently Purchased Services code 501-509) of the UNHS. This "Heath and Medical Care" section captures expenditure on consultation fees, medicines, hospital/clinic charges, and other medical expenditure including traditional/alternative medicine and uses a recall period of 30 days. Total out-of-pocket payments is computed for each household and divided by adult equivalent household size (computation of adult equivalent household size is as described above).

c. Catastrophic out-of-pocket healthcare payments analysis

To estimate catastrophic payments, a methodology used in Ataguba (2011) is used. This methodology utilises the inequality aversion parameter to create thresholds that are dependent on households' socio-economic status (rank dependent thresholds). This means that households of different social economic status face a varying threshold in determining whether a health payment is catastrophic. Full derivation of the rank dependent threshold (Z_{cat}^1) which is used in the computation of the

catastrophic indices is shown in Ataguba (2011). The indices computed for catastrophic health payments analysis are shown below;

Rank dependent catastrophic head count (H_{cat}^1)

$$H_{cat}^1 = \frac{1}{N}(\sum_{i=1}^{N} E_i^1) = \mu_{E^1}^1$$

$E_i^1$is a measure indicating whether a household or an individual exceeds the rank dependent threshold. $\mu_{E^1}^1$is the mean of E_i^1 and N is the sample size.

Rank dependent catastrophic gap (G_{cat}^1)

$$G_{cat}^1 = \frac{1}{N}(\sum_{i=1}^{N} O_i^1) = \mu_{O^1}^1$$

This capture the deviations from catastrophic threshold Z_{cat}^1 , we use the rank dependent catastrophic gap. $\mu_{O^1}^1$is the mean of the overshootsO_i^1.

Mean positive gap

Given that the gap G_{cat}^1 above averages across all the observations, we compute the rank dependent overshoots excluding the zero (Those who do not spend above the set threshold). The mean positive rank dependent gap (PG_{cat}^1) can be defined as;

$$PG_{cat}^1 = \frac{\sum_{i=1}^{N} O_i^1}{\sum_{i=1}^{N} E_i^1} = \mu_{O^1}^1 \Big/ \mu_{E^1}^1$$

d. Impoverishment effect of out-of-pocket-payments

This study uses Wagstaff and van Doorslaer (2003) methodology to estimate impoverishment due to out-of-pocket payments. The methodology is described below;

If Z_{pov}^{pre} =pre-payment poverty line and X_i =individual i's prepayment consumption

Then define $P_i^{pre} = 1$ if $X_i < Z_{pov}^{pre}$

Pre-payment poverty headcount

$$H_{pov}^{pre} = \frac{1}{N}\sum_{i=1}^{N} P_i^{pre} = \mu_{p^{pre}}$$

Pre-payment poverty gap

$$G_{pov}^{pre} = \frac{1}{N}\sum_{i=1}^{N} g_i^{pre} = \mu_{g^{pre}}$$

Normalized pre-payment poverty gap

$$NG_{pov}^{pre} = \frac{G_{pov}^{pre}}{Z_{pov}^{pre}}$$

Mean positive pre-payment poverty gap

$$MPG_{pov}^{pre} = \frac{\sum_{i=1}^{N} g_i^{pre}}{\sum_{i=1}^{N} p_i^{pre}} = \frac{\mu_{g^{pre}}}{\mu_{p^{pre}}}$$

Replacing superscripts “pre” with “post” gives the analogous post payment measures. The poverty impact of out-of-pocket payment is the defined as difference between the relevant pre-payment and post payment measures.

Impoverishment Head count

$$PI^{H} = H_{pov}^{post} - H_{pov}^{pre}$$

Impoverishment Gap

$$PI^{G} = G_{pov}^{post} - G_{pov}^{pre}$$

Normalised Impoverishment Gap

$$PI^{NG} = NG_{pov}^{post} - NG_{pov}^{pre}$$

Mean positive gap

$$MPG^{NG} = MPG_{pov}^{post} - MPG_{pov}^{pre}$$

Uganda's poverty line and the international poverty lines ($1.25/ day poverty line) are used in estimating both the poverty head count and the gap measures as a result of out-of-pocket health care payments. Uganda's poverty line is region and location specific. International poverty lines are computed using purchasing power parity (PPP) conversion factor.

e. Factors associated with incurring financial risk due to out-of-pocket payments

To assess the household's vulnerability to financial risk as a result of household's direct out-of-pocket payments, household's characteristics associated with both catastrophe and impoverishment are determined using multivariate logistic regression[8]. Dummy variables are generated indicating whether a household incurred catastrophe or impoverishment due to out-of-pocket payments (such as in O'Donnell et al., 2005, Knaul et al. 2007).

Model Specification

The logistic model used is shown below;

$$In\left[\frac{\pi(x)}{1-\pi(x)}\right] = \alpha + \beta_1\chi_1 + \beta_2\chi_2 + \cdots + \beta_i\chi_i$$

Where $\pi(x)$ is the probability that the response variable $Y_i = 1$

α is the equation constant and β_i is the coefficient of the predictor variable χ_i.

The independent variables that will be used in the regression are shown in Table 1 below. These are drawn from a review of literature. Since the financial risk variables (dependent variables) are based on expenditure, socio-economic status is measured using asset index composed of household's housing conditions and assets owned as noted earlier.

[8]Derivation of the logistic regression model is explained in the Appendix

Table 1: Independent variables used in the model

Household level variables	Variable type
Elder (Having a member above 65 years)	Dummy 1=Yes 0=No
Very young (Member below 5 years)	Dummy 1=Yes 0=No
Household socio-economic status(quintiles)	Categorical with five outcomes 1-Poorest 2-Second poorest 3-Middle 4-Second richest 5-Richest
Household size (Having more than 5 members)*	Dummy 1=Yes 0=No
Location	Dummy Urban=1 Rural=0
Region	Categorical with four outcomes 1-Central 2-East 3-North 4-West
Sex of household head	Dummy 1=Male 0=Female
Private facility (Use of private facility)	Dummy 1=Yes 0=No
Public facility (Use of public facility)	Dummy 1=Yes 0=No
Education of household head	Dummy 1=Yes 0=No

*The estimated average household size in the UNHS 2009/10 is five household members

1.6 Research Ethics

This study uses secondary household survey data and so no ethical issues are expected. However, ethics approval was beenobtained from the Health Research Ethical Committee (HREC) of the University of Cape Town before the start of the study (approval letter has been attached as an appendix).

1.7 Dissemination

A Journal article has been prepared for submission to a peer reviewed journal. As is required of MPH (Health Economics) mini- thesis, a policy brief has also been prepared for publication. The findings of the study are to be presented at appropriate conferences (domestic and international), in-country stakeholder forums and presentation of a cross country comparison through the discussion paper series as part of the Strategies for Health Insurance and Equity in Least Developed countries (SHIELD) project.

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Part B: Literature Review

2.0 Introduction

This section presents a review of the literature about financial protection of households with respect to health care financing. The objectives of this review are; to put the current study into perspective, inform its design and its methodology and also identify the gaps in previous studies. This section thus presents a theoretical review, methodological review and an empirical review.

2.1Financial burden of illness on households due to health care payments

The relationship between poverty and ill health is mutually reinforcing (Wagstaff, 2002). This relationship is exacerbated by the impact of health care payments on the households (Wagstaff 2002, Kawachi et al. 1997, Narayan et al. 2000). McIntyre et al. (2006) note that even though households may be able to adopt coping mechanisms[9] in managing illness costs, illness is likely to drive them into poverty. This is related to the phenomenon of "medical poverty trap" (McIntyre et al. 2006, Whitehead et al. 2001). The medical poverty trap refers to the effect of health care payments on households through increasing untreated morbidity by limiting access to health care which leads to an increase in long term poverty (Whitehead et al. 2001).

Poverty is not the only concern with regards to health care financing. It has been noted that large health care payments compromise a sizeable share of the household's disposable income leading to adverse effects on the consumption patterns of other necessities such as food and housing (Russell 2004, Culyer and Wagstaff 1993). The theoretical basis for the linkage between health care payments and financial burden due to health payments as discussed above is grounded in theory of demand for health. This is based on the Wagstaff-Grossman model of demand for health (Grossman 1972, Wagstaff 1986). According to the Wagstaff-Grossman model, the cost of health care to a household is reflected by basic consumption that is fore gone so as to purchase health care.

[9]Coping mechanisms are means adopted by households such as labour substitution, asset sales/depletion, borrowing and dissaving so as to manage the costs of illness (McIntyre, 2006).

2.2Vulnerability of households to financial risk due to health care payments

The concept of vulnerability to risk is defined as the likelihood of a household's welfare facing adverse effects that may cause its living standard to decline (Dercon 2005, Baeza et al. 2006, Chambers 1989). Moser (1998) defines vulnerability not only in reference to the threat of incurring the risk but also the ability to recover from such risk. Moser suggests that household's ownership of assets increases their resilience to risk.

Focussing on the health care payments related risks, Mukherjee et al.(2010) defines vulnerability to shocks due to health care payments as a multi-dimensional concept consisting of root causes, intervening causes and intermediate causes. A similar definition has also been suggested by Kanjilal et al. (2007). Root causes of vulnerability are the socio-economic characteristics of a household. These influence the likelihood of incurring illness and consequently the costs associated with illness. Intervening causes on the other hand are the underlying factors such as demographic characteristics, place of residence, social characteristics and the supply side factors within a health system that affect access[10] to health care. The intermediate causes according to Mukherjee et al., (2010) are concerned with how households handle the financial costs of illness and how they cope especially in the absence of financial protection. The underlying and intervening causes are mainly the factors which influence the cost of health care when one is ill.

The theoretical basis for vulnerability of households to financial risk due to health care payments is also grounded in the theory of demand for health (Grossman 1972, Wagstaff, 1986). Grossman (1972) states that the demand for health care which is derived demand for a commodity good health is influenced by many factors including health status. It is these factors that influence the likelihood of incurring financial risk due to health care payments. Wagstaff (1986) also argues that an individual's health status (dependent on his health production function), depreciation rate of health (dependent on age) and their wage rate determine the "shadow price" or household consumption foregone because of health care payments.

[10]Access to health care is also a multidimensional concept that refers to not only the use of health care but also includes the acceptability, affordability and suitability of health care services (McIntyre et al. 2009).

2.3 Health system financing and the role of out-of-pocket health care payments

To understand the role of a health financing mechanism on financial risk in a health system, one needs to demystify what is meant by a health system. Earlier studies conceptualised health systems by focussing mainly on the end products of the health system which are the outcomes or goals of the health system (Roemer 1993, Raffel 1997, Murray and Frenk, 2000).Others have focussed on functions or actors that produce the outcomes or achieve the health system goals (Londoño and Frenk 1997, Mills and Ranson 2001). The World Health Organisation creates a linkage between the functions and the goals by defining a health system as an interaction of actors and actions whose aim is to restore good health (WHO, 2007).Similar approaches have been used in conceptualising health system financing (Kutzin 2001,Hsiao 2003).

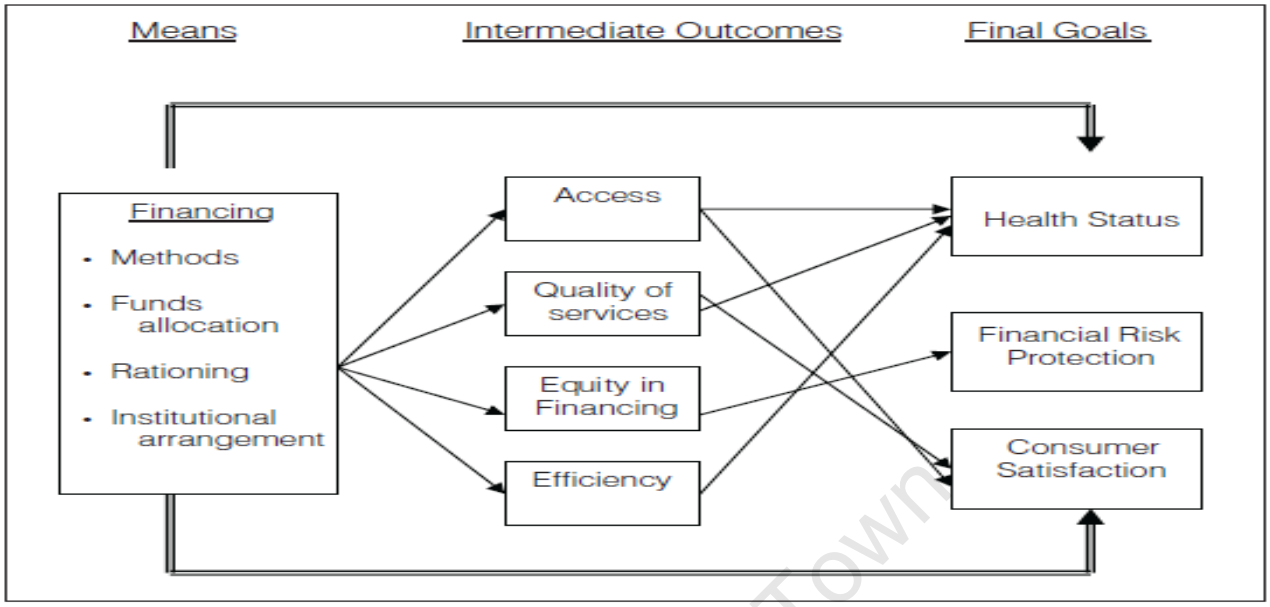
Kutzin (2001) provides a descriptive framework of functions in a health system and their linkage in attaining financial protection. Kutzin (2001) categorises the functions as collection, pooling and purchasing[11]. For a health system to attain financial protection which implies reduced financial risk, health care financing should be mainly prepaid (Kutzin 2001). This enables resource pooling, and income and risk cross subsidies[12].However, this is not possible with out-of-pocket payment.

Hsiao (2003) provides an analytical framework creating a linkage between the functions which he refers to as the means or explanatory variables and the goals or the explained variables. Hsiao (2003) framework is illustrated Figure1.

[11]Collection refers to the mechanisms used to raise health sector revenue, pooling refers to the creating of resource pools and risk pools so as to generate income and risk cross subsidies while purchasing refers to the methods used to purchase health care services within the health system.

[12]The importance of resource pooling arises from the unpredictability of illness and the inability of households to raise resources when faced by illness. It is this inability of households to raise resources when faced with an illness episode that necessitates cross subsidies. Cross subsidies can be through the healthy paying for the ill and the rich paying for the poor.

Figure 1: Relationship between health care financing instruments and health systemgoals



Source: Hsiao (2003)

From the framework in Figure 1, for a health system to obtain the goal of financial protection, the policy instruments defined as the means in the Figure1 above available to the policy maker are the health care financing mechanism. In the context of health financing, out-of-pocket payments is one of the major policy instruments available to the policy maker in controlling financial protection. However, as discussed earlier (see discussion from Kutzin framework above), payment for health care using out-of-pocket payment is likely to increase the financial burden of illness. Health systems should thus aim at reducing out-of-pocket payments. For this reason methodologies aimed at measuring financial burden of illness have relied on the policy instrument of out-of-pocket payments (Wagstaff, 2008).

2.4Measurement of the financial burden out-of-pocket of health care payments

The World Health Report (WHR) 2000 put unto the agenda the need to assess equity and fairness in health care financing (see McIntyre 2010). The WHR index for fairness in health financing known as, the fair financing index (FFC) incorporated a concern for households incurring financial risk. It defined a fair system as one wherein the burden of health payments is equalised across all households. However this definition was criticised particularly for its lack of a socially responsive view of equity (Almeida et al. 2001, Pedersen 2002, Wagstaff 2001).

The concept of equity introduced above is based on fairness and justice both normative concepts based on the fact that health is a human right (Braveman and Gruskin 2003, Whitehead and Dahlgren 2007). While there are varying perceptions of fairness (see Cuyler 2001), vertical equity[13] has been emphasized in the context of health financing (Wagstaff and van Doorslaer 2000). The method in the WHR 2000 however advocated for horizontal equity.

Based on Rawl's egalitarian view of justice as fairness it has been argued that society should be concerned about its members that incur financial risk due to health care payments [14](Wagstaff and van Doorslaer 2003). This argument forms a basis for the catastrophic and impoverishment methodologies (these will be defined later on under their sub sections) which are threshold based approaches used to represent the financial burden incurred by household due to out-of-pocket payments.

These approaches are based on the conventional approaches in poverty analysis[15] of which Foster-Greer-Thorbecke (FGT) indices (Foster, Greer & Thorbecke 1984) have been the most used. This is because the FGT indices not only fulfil Sen's(Sen 1976)desirable properties of a poverty index[16] but also satisfies the important axioms that make it more suitable for the measurement of poverty[17].

[13]Vertical equity is an equity concept that advocates for treatment of unequal groups unequally while horizontal equity advocates for equal treatment for all groups even those that are unequal (Olsen 1997, McIntyre and Mooney, 2007). In health care financing, the morally relevant characteristic that can be used for determining inequality is usually the socio-economic status.

[14]Egalitarianism as suggested by Rawls implies prioritisation of the worse off in the society as inequality is allowed only if it does not improve the better off (Rawls, 1999). Egalitarianism thus has aspects of being envious of the non-poor. This approach to fairness differs from that of Varian (1975) who defines fairness as non-envy where for there to be an equitable distribution, no individual should wish to hold any other individuals consumption bundle.

[15]While there are currently many theoretical approaches guiding poverty analysis such as the monetary, capability, social exclusion and participatory approaches to poverty measurement, the monetary approach has been most used in measurement of financial protection in the health system.

[16]While other poverty indices such as the Sen-Shorrocks-Thon (SST) index have been shown to satisfy the elements originally proposed by Sen (1976) and has also been used in poverty analysis, it has not been widely adopted in the measurement of financial protection in the health system.

[17]The axioms are monotonicity, transfer/distributional sensitivity and sub-grouped decomposability. Monotonicity implies that all things constant, a reducing household income must increase the poverty measure while the transfer axiom states that all things constant, transfer of income from a poor to a

The catastrophic and impoverishment methodologies are based on the assumptions that household health expenditure[18] is non-discretionary and household resources are fixed (O'Donnell et al. 2008).The assumption of non-discretion is justified by empirical evidence by whose findings show that the income elasticity of demand for health care is low especially in low income countries (Wagstaff 2008). However the assumption of fixed household resources has been shown not to always hold as some households borrow or deplete savings to cover the costs of illness (Flores et al. 2008, Leive and Xu, 2008).

2.4.1 The catastrophic impact out-of-pocket health care payments

Berki (1986) defines a health care payment as catastrophic if that payment is likely to endanger a family's ability to maintain its customary living standard. Catastrophic health payments have generally been defined as health care expenditure that exceeds a certain predetermined threshold in relation to a household's living standard which has implications on the household's consumption of other basic commodities (Wagstaff, Doorslaer 2003, Xu et al. 2003, Russell, 2004). Gertler and van der Gaag (1990)note that if a household spends more than 5% of its total consumption on health care, the household's effective demand for other commodities is affected. Such thresholds have formed the basis for the catastrophic health care payments methodology. The thresholds used also usually depend on the measure of living standard adopted. Measures of living standard used in the catastrophic health payments methodology are discussed below.

Consumption is the preferred measure for living standard as it is less prone to fluctuations and is more likely to be accurately reported than income (Deaton and Zaidi 2002, Filmer and Pritchett 2001). However some studies argue for the use of income. Sulku and Bernard (2012) argue that relying on expenditure other than income is likely to underestimate the catastrophic impact of health payments and also underestimate the burden on those who manage the illness costs through

rich household should also increase poverty measure (Foster et al. 1984). Sub group decomposability implies that the indices can be presented for different sub groups of a population (ibid.).

[18]O'Donnell et al. (2005) state that health expenditure is defined with reference to households other than individuals because empirical evidence has shown that households bear the costs of illness collectively (see Sauerborn et al. (1996). This has been noted as a major difference between standard economic analysis of the theory of consumer demand and demand for health care as there is interdependence in people's utility functions (Mooney 2009, Rice and Unruh 1998).

borrowing or even asset depletion. However the use of income as a measure of welfare is limited in low income settings where the majority of the population is unemployed or is mainly in the informal sector. In such cases the standard of living is better represented by consumption.

Some living standard measures used to measure catastrophic health care payments adjust household consumption to reflect a household's ability to pay for health care. Adjustment is done using food expenditures and is based on Engel's law of demand which states that one's income increases, their proportion of food consumption relative to other household consumption decreases (Xu et al. 2006). However, given that some households may be consuming what are considered luxurious food commodities, there is a need to use household's subsistence expenditure other than household's actual food consumption in determining the household's ability to pay (Xu et al. 2006). However, Wagstaff (2008) notes that such an adjustment (using subsistence consumption) makes it hard to differentiate the burden between those below subsistence and those just at subsistence before incurring health care payments.

The catastrophic health payments methodology is able to estimate both the extent and intensity of health care payments. However given society's concerns for equity, distribution of both the extent and the intensity of the catastrophic payments is a policy concern (Wagstaff and van Doorslaer, 2003). To address this concern, distributional sensitive measures representing which socio-economic group is most affected by the payments are also generated. Catastrophic health payment indices weighted by the concentration index[19] are generated to show whether it is the rich or poor who incur the catastrophic payments[20] (Wagstaff and van Doorslaer, 2003).

There is an argument that a fair index of catastrophic health payments should reflect vertical equity and diminishing marginal utility of income (Ataguba 2011). At the core

[19]A concentration index is a measure of inequality that depends on the relationship between the variable of interest and the rank of the household/individual based on their socio-economic status (O'Donnell et al, 2008).

[20] Another equity weighted measure for catastrophic payments has been suggested by Ichoku and Fonta (2006). This measure considers policy maker's aversion to catastrophic spending among the poor using an aversion parameter that ranges between 2 and 5.

of this argument is the idea that households of different socio-economic status should not be made to face similar thresholds. Onoka et al.,(2011) apply a threshold which varies with the ratio of household's expenditure on food and the food expenditure index in the quintile in which the household belongs. They use a different threshold for each quintile. Ataguba (2011) uses a threshold that not only varies according to each percentile but also has properties that allow it to be adjusted so as to produce similar estimates such as in Wagstaff and van Doorslaer (2003) where a fixed threshold is used. Ataguba (2011) uses inequality aversion parameter (Donaldson and Weymark, 1983) so as to embrace the ethical concern for the poor. Ataguba (2011)'s methodology does not require use of distributional sensitive measures since the threshold used is already based on where one lies in the income distribution range.

However, catastrophic health payments methodology is blind to the hardships faced by households as even small budget shares spent as out-of-pocket payment may greatly endanger household welfare (Goudge et al. 2009). This measure discussed above is thus relative. The impoverishment methodology which is a more absolute measure is discussed below.

2.4.2The impoverishment effect of out-of-pocket health care payments

It has been argued that healthcare payment result from unforeseen shocks and is likely to have a negative impact on household welfare (O'Donnell et al., 2008).This is the basis of the impoverishment methodology (Van Doorslaer et al. 2006). The method is thus based on the adjustment of the prepayment out-of-pocket payment poverty estimate (obtained using FGT poverty indices) for the impact of out-of-pocket health payments (Wagstaff and van Doorslaer 2003).

Poverty lines are used in the assessment of the impoverishing effect of health payments. Country specific poverty lines and international poverty lines have often been used in the measurement of impoverishment. Proposed in the World bank's World Development Report 1990, international poverty lines were initially set at $1/a day and $2/a day at the purchasing power parity(PPP) values of 1985 but have lately been revised to $1.25/a day and $2.5/ a day at PPP dollar values of 2005 (Ravallion et al. 2009). The justification for the use of these poverty lines is that the national poverty lines have a positive economic gradient above some critical level

and their elasticity rises with average consumption approaching unity in rich countries (Ravallion et al. 1991). International poverty lines on the other hand rise with mean consumption but with low elasticity at low consumption (Ravallion, 2009). International poverty lines also allow comparability between countries (Levine, 2010).

The impoverishment methodology measures the extent and intensity of poverty due to health care payments. These are represented by the impoverishment headcount and the impoverishment gap respectively. It has been noted that measurement of financial burden of households should go beyond indicating incurrence of financial risk and show factors associated with vulnerability to incurring financial risk as a result of out-of-pocket payments (Knaul et al. 2007, O'Donnell et al. 2005).

2.4.3 Measurement of vulnerability to financial risk that results from out-of-pocket health payments

As has been discussed in section 2.3, some households may be more likely to incur financial risk than others. In assessing factors associated with household's likelihood of incurring catastrophic out-of-pocket payment or impoverishment, a variety of methods have been used. Studies have relied on sub group comparisons to determine which households are more likely to incur financial risk. Most studies use discrete choice models to identify households that are most likely to face financial risk due to out-of-pocket payments. The discrete choice models often used are the logit and probit models. The latter applies when the error term in the model is assumed to have a logistic distribution while the former applies when the error term is assumed to have a standard normal distribution (see Jones, 2007). However, the results produced by both models are similar in sign and significance (Joglekar, 2008).

2.5 Empirical Review

This section presents a review of empirical studies on catastrophic and impoverishing out-of-pocket payments and factors associated with incurring both catastrophic payments and impoverishment due to out-of-pocket payments for health care.

Literature search strategy

The search for review articles was limited to studies published in English and used a combination of the following key words; “financial protection in the health sector, catastrophic health payments, impoverishment due to health expenditure , out of pocket health payments”. These key words were used to search the following data bases;

- Google scholar
- PubMed
- EconLit
- CINAHL
- Medline

In addition to the above, a manual search for the references of the studies obtained in the search above was conducted. The following key institutional websites were also used in the literature search process.

http://www.who.int

http://www.worldbank.org

http://www.equitablehealthfinancing.org/

http://www.equitap.org/

http://www.equinetafrica.org/

http://heu-uct.org.za/research/projects/shield-project/

http://www.funsalud.org.mx/GNHE/index.html/

Inclusion and exclusion criteria

The criterion for eligibility of inclusion was relevance to the objectives of the current study. Studies included had to have either quantified catastrophic and/or impoverishment or assessed vulnerability to incurring catastrophic payment and/or impoverishment using a nationally representative survey. For vulnerability, the main interest was household level factors associated with catastrophic payments and impoverishment.

In the inclusion of studies, priority was given to studies from Africa, Asia and Latin American especially those from countries classified as low income and middle income countries as per the World Bank Atlas method. These were considered more relevant to the current study. Other than the multi-country studies that include countries across all continents, no studies from Europe or North America were included in the empirical review.

Very few studies in Africa have used nationally representative surveys. As a result, some African studies were included irrespective of the coverage of the surveys. The quality of the evidence presented was assessed by critically reviewing the methods used in the study.

A total of forty-eight studies were reviewed. Of these studies, thirty six used the catastrophic health payments methodology; seventeen used the impoverishment methodology while twenty one studied the factors associated with both catastrophe and impoverishment. It is important to note that some of these studies used both methodologies and go ahead to identify factors associated with financial risk. The specific characteristics of the studies will be provided in the summaries under each of the sub sections below.

2.5.1 Studies about the catastrophic impact of health care payments

Out of thirty-six studies reviewed, twelve were from Africa, sixteen were from Asia and four were from Latin America. Four studies were multi-country including countries from various continents. Saksena et al.(2010) covers fifty one countries while Xu et al. (2003) and Xu et al. (2007) cover fifty nine and eighty nine countries respectively. Elgazzar et al. (2010) covers six countries from North Africa and Asia

(Middle East). Only seven of these studies included did not use national representative surveys.

While different methods were used to define catastrophic payments, the method by Wagstaff and van Doorslaer (2003) and the one by Xu et al.,(2003) were the most common. Where a study is said to have used the Wagstaff and van Doorslaer(2003) methodology, it means the measures of socio-economic status (SES) used are total household consumption expenditure and total consumption minus household's actual food consumption (non-food consumption expenditure). The Wagstaff and van Doorslaer methodology also involves computation of catastrophic health payment headcount, gaps, concentration indices and weighted headcount and gap[21]. Various thresholds are used in defining catastrophic payments. On the other hand, the Xu et al.,(2003) method used in a multi-country study of fifty one countries measures living standard by subtracting household's subsistence food consumption from total household consumption and uses a 40% threshold in defining catastrophic payments. A summary of the studies reviewed with their findings is presented in Table 2.

[21]The catastrophic headcount is the extent of catastrophe represented by total number of households that exceed a threshold. The catastrophic gap on the other hand is the intensity of catastrophe representing by how much households exceed a given threshold. Concentration indices and the weighted versions of the headcount and gap as described in the methodological review are inequality measures showing who bears the burden of catastrophic payment.

Table 2: Studiesassessing the catastrophic impact of out-of-pocket health care payments

Study	Country	Data source	Method/Living standard measure (SES)	Summary of results
(Akazili2010)	Ghana	National survey	Used the Wagstaff and van Doorslaer(2003) methodology	The headcount ranges from11.0% at the 5% threshold to 2.56% at the 20% threshold of total consumption. Using non-food consumption as SES, headcount varies from the 10.7% at 10% threshold to 2.43% at the 40% threshold. Apart fromthe10% threshold of total consumption, headcount is concentrated among the poor. The gap is mostly concentrated in the poor apart from the 15% and the 20 %(total consumption) and 20 %(Non-food consumption) thresholds.
(Ataguba 2011)	Nigeria	National survey	Adjust the Wagstaff and van Doorslaer (2003) method to create both variable and fixed thresholds. Vary thresholds according to household SES.	With total consumption as the SES measure, headcount increases as more emphasis is placed on the poor and the all estimates are higher than at a fixed threshold. For the gap measures, the rank-dependent catastrophic gap decrease as the initial thresholds increase, while the positive gaps increase with increasing initial threshold levels. The same pattern occurs with non-food consumption as SES measure.

Study	Country	Data source	Method/Living standard measure (SES)	Summary of results
(Mills et al. 2012)	South Africa Tanzania Ghana	National surveys	Define catastrophe using the 40% threshold of non-food consumption	Ghana had the highest catastrophic headcount(2.43%) while South Africa (0.09%) had the least head count and gap at all thresholds. Apart from South Africa, payments were mainly concentrated among the poor.
(Beaulière et al. 2010)	Ivory Coast	Patient survey	Used non-food consumption as measure of SES with 10% and 40% thresholds.	At 40% threshold, 12% of households incur catastrophic payments while at 10% threshold, over 50% of the households incur the payments.
(Bonu et al. 2009)	India	National survey	SES measure is consumption expenditure. Maternal expenditure which is the variable of interest is excluded from the total expenditure component. They construct capacity to pay by subtracting subsistence expenditure from total consumption. For the two different measures of SES, the thresholds used are 10% for total consumption and 40% for capacity to pay.	About 16% of the households exceed the 10% threshold of total consumption while 51% exceeded the 40% of their capacity to pay. At the 10% of total consumption threshold catastrophic payments increases with the deciles while at 40% of capacity to pay threshold, it increases up to the third decile and then declines with increase in the decile.
(Elgazzar et al., 2010)	Yemen Lebanon West Bank and Gaza Iran Egypt Tunisia	National surveys	SES is total consumption and 10% threshold is used.	Catastrophic head count was least in West Bank-Gaza and Iran and are was highest in Lebanon and Tunisia.

Study	Country	Data source	Method/Living standard measure (SES)	Summary of results
(Castillo-Riquelme et al.,2008)	South Africa Mozambique	Regional surveys	Use 10 % threshold and 40% for total monthly income and non-food expenditure respectively.	At the 10% threshold of monthly income 42.4% households in Mozambique incurred catastrophic expenditures while for South Africa, it was 7.9% and 7.5% in the provinces of Kwazulu-Natal and Mpumalanga respectively. Using the 40% threshold headcount in Mozambique, Kwazulu-Natal and Mpumalanga was 39.1%, 7.1% and 9.4% respectively.
(Flores et al., 2008)	India	National survey	Adjust Wagstaff and van Doorslaer (2003) method for the impact of coping. Used income and total consumption as measures of SES. Compute three catastrophic payments headcounts indicators. • Proportion of health payments, irrespective of the source of funds, over total consumption. • Proportion of health payments financed from income over total income. • Difference between the above estimates (indicates those who survived making catastrophic payments through coping).	There was a substantial difference between the headcount which considers coping and the one which does not consider coping. For example at the 5% threshold, the coping unadjusted measure was 3.54% while the coping adjusted measure was 0.52%.

Study	Country	Data source	Method/Living standard measure (SES)	Summary of results
(Ghosh 2011)	India	National surveys	Used the Wagstaff and van Doorslaer (2003) method	Catastrophic headcount increased between 1993/94 and 2004/05. At the 10% threshold there was an increase from 13.1% to 15.4%.
(Ichoku and Fonta, 2006)	Nigeria	Regional survey	Use thresholds of 5% and 10% of gross household expenditure. Weight the catastrophic headcount and catastrophic gap to show policy makers' aversion (v) to catastrophic spending among the poor.	Weighted measures for both headcount and gap provide higher estimates but there was variation depending on the weight given to the aversion parameter. Highest estimates are at v=5 where v, the aversion parameter ranges between 2 and 5.
(Ichoku and Fonta, 2009)	Nigeria	National survey	Used the Wagstaff and van Doorslaer (2003) method	At the lower thresholds the catastrophic payments are concentrated among the rich while at the higher thresholds, the reverse is true. The overshoots are concentrated among the rich at the lower thresholds but at higher thresholds they are concentrated among the poor.
(Ico 2007)	Philippines	National surveys	SES measure used was household consumption and household capacity to pay which was defined as non-food consumption. Thresholds are from 1% to 10%.	Both head count and gap increased between 2000 and 2003. At the 10% threshold for example headcount (gap) increased from 3.2 %(0.33%) to 3.5 %(0.33%). However the mean positive gap at that same threshold decreased.

Study	Country	Data source	Method/Living standard measure (SES)	Summary of results
(Kavosi et al. 2012)	Iran	National surveys	Used Xu et al. 2003 methodology	Headcount decreased from 12.6% in 2003to 11.8% in 2008.
(Knaul et al. 2007)	Mexico	Natural surveys	Catastrophic payments defined as 30% of non-food consumption	Catastrophic payments increased between 1992 to 1998 and then gradually decreased
(Knaul et al. 2006)	Mexico	Natural surveys	Catastrophic payments defined at 20% and 30% of non-food consumption	Catastrophic payments increased between 1992 and 1998 and then gradually decreased
(Knaul et al. 2011)	Argentina Bolivia Brazil Chile Colombia Costa Rica Dominican Rep. Ecuador Guatemala Mexico Nicaragua Peru	National surveys	Used both non-food spending and non-subsistence household expenditure as SES. Threshold of 30% is used. Any expenditure for those living below subsistence using the non-subsistence measure is considered catastrophic.	Estimates obtained using the non-subsistence based measure of SES is higher than those obtained using non-food spending measure of SES. Catastrophic head count at all thresholds and measures of SES was least in Costa Rica and highest in Nicaragua.
(O'Donnell et al. 2005)	Bangladesh Hong Kong India Sri Lanka Thailand Vietnam	National surveys	Catastrophic payment was defined as 10% of total household consumption.	Sri Lanka and Thailand had the least estimates of headcount at 2.98% and 3.52% respectively and at the Vietnam and India had the highest estimates at 15.11% and 15.57% respectively.

Study	Country	Data source	Method/Living standard measure (SES)	Summary of results
(Limwattanononet al. 2008)	Thailand	National surveys	Catastrophic expenditure is defined using 10% of total consumption	Regardless of the type of health care used, catastrophic payments were higher in 2000 and lower in 2004.
(Mataria et al. 2010)	Palestine	National surveys	Used Wagstaff and van Doorslaer (2003) method	At the 40% threshold the catastrophic headcount is shown to have doubled between 1998(1%) and 2007(2%).
(Nguyenet al. 2011)	Ghana	District survey	Defined catastrophe as using 5% of quintile specific income 10% of total income and 10% 20% of non-food consumption	At t 5% threshold, 2.8%households incurred. Using 10% threshold, head count was 2.1% (total income) and 2.0 %(non-food consumption). 20% threshold gave a head count of 2.6%.
(Onwujekwe et al. 2010)	Nigeria	Regional survey	Use the 5% threshold for average monthly malaria treatment as a proportion of average monthly non-food expenditure and also monthly malaria expenditure as a proportion of annual health expenditure.	Using monthly non-food expenditure as measure of SES, the catastrophic head count was 3.2% while using annual health expenditure, the head count was 20.7%. Payments are mainly in the urban areas and in the lowest quintile.
Onoka et al. (2011)	Nigeria	Regional survey	Used fixedand variable thresholds (Vary thresholds using the ratio of food expenditure and a food expenditure index in that quintile). Non-food expenditure used as a measure SES.	Using variable thresholds there was variation depending on the scenario considered but the estimates are higher than those obtained using fixed thresholds.

Study	Country	Data source	Method/Living standard measure (SES)	Summary of results
(Okwero et al. 2010)	Uganda	National survey	Total consumption expenditure as measure of SES and a the 10% threshold	28% incurred catastrophic spending during the study period with catastrophic payments mainly in the lower quintiles of SES and more concentrated in the western region.
(Salti et al. 2010)	Lebanon	National surveys	Wagstaff and van Doorslaer (2003) method.	There were variation in head count and gap across thresholds and across the measures of living standard. While the catastrophic payments head counts were concentrated among the poor, the overshoots are concentrated in the non-poor.
(Saksena et al. 2010)	51 countries	National surveys	Xu et al. (2003) methodology	Average headcount was 13.1% across all countries. Headcounts ranged from 1.92% to 56.8% with an average incidence of 26.2%. Headcounts also vary depending on care (inpatient and outpatient) used.
(Saksena et al. 2011)	Rwanda	National survey	Xu et al. (2003) methodology	2.9% of households incurred catastrophic costs with the payments mainly concentrated among the poor and the uninsured.
(Shahrawat and Rao2011)	India	National survey	Used 40% threshold of the household's non-food expenditure	5.76 % of rural households and 3.21% of urban households which make up 5.06% households incurred catastrophic payments

Study	Country	Data source	Method/Living standard measure (SES)	Summary of results
(Somkotra andLagrada, 2008)	Thailand	National surveys	Used Wagstaff and van Doorslaer, (2003) method.	Variation across thresholds and measures of living standard. Catastrophic headcount is concentrated among the non-poor except in 2000 with non-food expenditure as SES. Using total consumption as SES, overshoots were concentrated among the non-poor except in 2004. For non-food consumption, all catastrophic payments were concentrated among the poor.
(Somkotra andLagrada, 2009)	Thailand	National surveys	Catastrophe defined in terms of 10% of total consumption and 40% of non-food consumption	Headcount was 6.44% and 1.23% at the 10% and 40% thresholds respectively. Payments mostly concentrated among the non-poor.
(Su et al. 2006)	Burkina Faso	District survey	Household non-food expenditure as SES measure. Used thresholds between 20% and 60%.	Headcount generally decreased with the threshold. Head count was 18.9% using the 20% threshold and 8.1% at 60% threshold.
(Sulku and Bernard, 2012)	Turkey	National survey	Used thresholds of 10% and 20% of family income in defining catastrophic payments.	Catastrophic head count was 18.9% at the 10% threshold and 14.4% at the 20% threshold.
(Skordis-Worrall et al. 2011)	India	National and City(Mumbai) survey	Used Flores et al., 2008 methodology in obtaining coping adjusted measure of catastrophe. Define catastrophic payments using 40% of total income	At the 40% threshold, 41% incurred catastrophic expenditures. After adjustment using the Flores et al. methodology 15% of the sample faced catastrophic spending on maternal and neonatal health services.

Study	Country	Data source	Method/Living standard measure (SES)	Summary of results
(Van Doorslaer et al. 2007)	China Hong Kong India Indonesia Korea Rep Kyrgyz Rep Malaysia Philippines Sri Lanka Taiwan Thailand Vietnam	National surveys	Wagstaff and van Doorslaer(2003) method methodology	Bangladesh, China, India, Nepal and Vietnam, which are most reliant on out-of-pocket payment, have the highest incidence of catastrophic payments while the least were observed in Sri Lanka, Thailand and Malaysia.
(Wagstaff and van Doorslaer, 2003)	Vietnam	National survey	Used consumption and capacity to pay (defined as total consumption less actual food consumption). In addition to the head count, they measure the gap, mean positive gap and provide weighted headcount and gap weighted by the concentration indices.	Catastrophic impact (both the head count and gap) reduced from 1993 to 1998 across all thresholds independent of the measure of SES. For total consumption the concentration of payments (in poor or non-poor) varies across thresholds while all the gaps are mainly concentrated among the non-poor independent of the threshold or measure of SES. Using non-food measure, both the index and gaps are all concentrated among the non-poor apart from at the 30% and 40% threshold in 1998.

Study	Country	Data source	Method/Living standard measure (SES)	Summary of results
(Wagstaff, Lindelow 2008)	China	National surveys	Catastrophe was defined as health care payments exceeding a given per centage of the household's per capita income. Five thresholds (5% to 25%) were considered.	The results vary across the surveys used and the year in which the survey was carried out. Considering the 5% threshold for the most current survey year presented, the headcounts were 65.4 %(GSCF for 2003), 63.3%(H8BS for 2003) and 3.4% (CHNS for 2000)[22].
(Xu et al. 2003)	59 countries including countries such as Uganda, Namibia, Djibouti , Ghana, Egypt, South Africa, Zambia among others	National surveys	Catastrophic payment was defined as health payments above 40% of household non-subsistence expenditure (obtained by subtracting average food expenditure)	Variation across countries. Positive relation between the proportion of households with catastrophic health expenditures and the share of out-of pocket payments in total health expenditure. African countries had a high average headcount when compared with other continents.
(Xu et al. 2007)	89 countries although the specific countries used are not shown in the article	National surveys	Used Xu et al. (2003) method	Variation in the incidence of catastrophic health care payments across countries, ranging from virtually 0% in the Czech Republic and the United Kingdom to more than 10% in Brazil and Vietnam. Average was 2.3 % while the median was only 1.47 %.

[22]GSCF is Ganzu Survey of Children and Families, H8BS is the World Bank Health VIII project while the CHNS is the China Health and Nutrition Survey

(Xu et al. 2006)	Uganda	National survey	Used Xu et al. (2003) method	Catastrophic payment decreased from 4.82% in 1997 to 3.15% in 2000 and to 2.92% in 2003.. Apart from 2000, payments are concentrated among the poor.

2.5.2 Studies about the impoverishment impact of health payments

Seventeen studies were reviewed of which four are from Africa, nine are from Asia and three are from Latin America. Elgazzar et al.,(2010) study countries in both Africa and Asia. Apart from Ichoku and Fonta (2006), all studies use national representative household surveys. For the studies that used international poverty lines, the $1.08 a day and $2.15 a day poverty lines were used with purchasing power parity (PPP) values of 1993 while the $1.25 a day and $ 2.5 a day poverty lines were used with PPP values of 2005. A summary of the studies reviewed and their findings are presented in Table 3.

Table 3:Studies assessing the impoverishment effect of out-of-pocket health care payments

Study	Country	Data source	Methodology	Summary of results
(Akazili, 2010)	Ghana	National survey	Used expenditures[23] a measure of SES. Use the $1.25 and $2.5 international poverty line.	Impoverishment head count at the $1.25 poverty line was 1.59% and 1.83% at $2.5 poverty line. The normalised gap was 2.29% at the lower and 2.01% at the higher poverty lines.
(Baeza et al. 2006)	Argentina Chile Ecuador Honduras	National surveys	Used expenditure as a measure of SES and used country specific national poverty lines.	The head count was 5% (Argentina), 1% (Chile), 11% (Ecuador) and 4 %(Honduras).
(Mills et al.,2012)	Ghana South Africa Tanzania	National surveys	Used expenditure as a measure of SES. Use the $1.25 and $2.5 international poverty line.	In South Africa headcount was 0.45% ($1.25) and 0.77% ($2.5) while in Tanzania it was 0.55% ($1.25) and 0.34% ($2.5). The normalised gap was 0.15% in South Africa and 0.34% in Tanzania. Both South Africa and Tanzania have a similar normalised gap at $2.5.Ghanaian results are similar to those inAkazili (2010) above.
(Elgazzar et al., 2010)	Yemen Lebanon West Bank and Gaza Iran Egypt Tunisia	National surveys	Impoverishment was measured using the national poverty lines in Egypt and Lebanon while for the other countries, the $1.08 and $2.15 international poverty lines. SES measure is expenditure.	Head count difference is higher in West Bank and Gaza (11.35%), Egypt (4.29%, Lebanon (4.1%), Iran (1.8%), Yemen (1.6%) and least in Tunisia at 0.66%. Normalised gap measure shows a similar pattern with the highest in West Bank and Gaza at 8.5% and least in Tunisia at 0.14%.

[23]Expenditure is used in this table to imply household consumption expenditure.

Study	Country	Data source	Method/Living standard measure (SES)	Summary of results
(Flores et al., 2008)	India	National survey	Used expenditure as a measure of SES. Used national poverty line. Adjust for the effect of coping with health care payments. In addition to the impoverishment head count, they also measured transient and hidden poverty effects[24].	The adjusted measures for coping produced a lower impact on household poverty. Unadjusted measure however showed impoverishment of up to 0.51%, transient poverty was 0.06% while hidden poverty was 0.45%.
(Garg and Karan 2009)	India	National survey	Used expenditure as a measure of SES. Poverty line used was not stated.	Impoverishment head count was 3.24%. This was greater in the rural (3.51%) than in the urban area (2.51%). However, the impoverishment gap is greater in the urban than in the rural area.
(Ghosh, 2011)	India	National surveys	SES measure is total consumption. Used the national poverty line.	All estimates were higher in 2004/05 than in 1993/94. Headcount was higher by 0.4%, gap the gap by 4.1% while the mean positive gap was higher by 0.4%.
(Ichoku and Fonta ,2006)	Nigeria	Regional survey	Used expenditure as a measure of SES. Results were presented for different economies of scale measures (0.7 and 0.3) used in constructing an adult equivalent household size. National poverty line was used.	Using per capita expenditure, impoverishment head count was 4.1%. The higher economies of scale (0.7) impoverishment head count was 4.6% while at the lower economies of scale (0.3) it was 3.6%. Gap measures also follow a similar pattern.

[24]Transient poverty is increase in poverty computed using unadjusted measures of impoverishment while hidden poverty is the difference between adjusted and unadjusted poverty due to out-of-pocket payment.

Study	Country	Data source	Methodology	Summary of results
(Ichoku and Fonta, 2009)	Nigeria	National survey	Used expenditure as the measure of SES. Used national poverty line.	Impoverishment headcount was estimated at 2.6, impoverishment gap was 2.2% and the normalised mean positive gap is 1.8%.
(Knaul et al.,2007)	Mexico	National surveys	Used expenditure as a measure of SES. Poverty line used was not explicitly stated	Headcount increased from 5.17% in 1992 to 7.4% in 1998 and then decreased to 1.79% in 2004.
(Knaul et al.,2006)	Mexico	National surveys	Used three poverty lines. The $1.08 and $2.15 international poverty lines and the food poverty line.	The impoverishment increasedfrom1992 to 2000 and then decreased after introduction of social insurance between 2002 and 2004.
(Mataria et al.,2010)	Palestine	National survey	Used expenditure as a measure of SES. Poverty line used was not explicitly stated.	Head count was 11.8% in 1998 and 12.5% in 2006
(Salti et al.,2010)	Lebanon	National survey	The study used six poverty lines. Lebanese national poverty line $4.4, the international poverty lines at $1.08 and $2.15 and $2.2, $3.3 and $2.9 poverty lines. SES is consumption expenditure.	Head count is greatest (4.1%) at highest poverty line and is least at $1.08 %(approximately0%). At the $2.2 poverty line it was 1.1% and at the $2.15 it was 1%. Head count measures were also given at the $3.3 and $2.9 poverty lines.
(Shahrawat and Rao, 2011)	India	National survey	SES measure is total consumption. Used the national poverty line.	Poverty headcount increased by 3.5%. This was higher in the rural (3.8%) than the urban (2.7%) area. The gap increases by Rs.4. There were variations in impoverishment across quintiles. The lowest quintile was the most impoverished using both the gap and headcount.

Study	Country	Data source	Method/Living standard measure (SES)	Summary of results
(Somokotra and Lagrada2008)	Thailand	National survey	Use the national poverty line. SES is measured using household consumption expenditure.	Headcount decreased from 1.23% in 2000 to 0.7% in2002 to 0.58% in2004. Gap measures also follow a declining pattern.
(Van Doorslaer et al. 2006)	China India Indonesia Thailand Kyrgyz Rep Malaysia Philippines Sri Lanka Taiwan Nepal Bangladesh	National survey	Used expenditure as a measure of SES. Used the $1.08 and $2.15 international poverty lines	At the $1.08 poverty line, the total head count across all the countries was 2.7% with the highest head count difference observed in Bangladesh (3.8%) and the least in Malaysia and Kyrgyz (0.1%). The total gap at $1.08 poverty line was 0.8%.with the maximum gap in India (1.0%) and the least in Thailand (approximately 0%).
(Wagstaff and van Doorslaer2003)	Vietnam	National surveys	Used both the food and overall (including both food and other requirements) poverty line for 1993 and 1998. SES measure used was consumption.	Food poverty line impoverishment headcount was 4.4 %(1993) and 3.4% in 1998. Normalised gap measures for those years were 1.4% and 0.8% respectively. At the overall poverty line, impoverishment was much lower at 0.5% in 1998 compared to 0.4% in1993. Normalised gap was still lower in 1998 (0.2%) compared to 1993 (0.4%).

2.5.3Studies about household vulnerability to financial risk

In all twenty-one studies covered in this section. In these studies, only Knaul et al.,(2007)assess factors associated with both catastrophe and impoverishment due to out-of-pocket health care payments. Most studies defined incurrence of catastrophic expenditure as a binary variable and use either logistic or probit models. However some studies use different methods. For example Barros et al.,(2011) use Poisson regression, Saskena et al. (2011) model catastrophic expenditure into four ordered categories and use ordered probit model for analysis while Sulku and Benard (2012) and Knaul et al.,(2011) do bivariate analysis for each of their predictor variables in determining factors associated with catastrophic payments. The summary of studies is shown in Table 3.

Table 4: Studies assessing household vulnerability to financial risk

Study	Country	Data set	Method	Variables	Summary of results
(Barros et al., 2011)	Brazil	National survey	Generate crude and adjusted associations between vulnerability indicators. Use Poisson regression.	Outcome variable is incurrence of catastrophic health payments. Independent variables are SES, Sex of household head, race, elder in household, having more than 2 children in household and health insurance	For unadjusted associations; SES, female household head, race, elder and more than 2 children in household predicted vulnerability while insurance offered a protective effect. For adjusted associations, the interaction between SES and health insurance suggesting no protective effect for insurance.
(Bonu et al. , 2009)	India	National survey	Bivariate analysis and. Multivariate logistic regression	Outcome variable was incurrence of catastrophic maternal expenditure. Independent variables classified as individual community, household and maternal health care service variables.	Educational status, religion, state, location (urban) and SES were significant predictors of vulnerability.

Study	Country	Data set	Method	Variables	Summary of results
(Ekman 2007)	Zambia	National survey	Logit model	The dependent variable is catastrophic payments. Independent variables were employment based insurance, voluntary insurance, exemption from paying out-of-pocket ,household head characteristics, household characteristics, and the community characteristics	Employment based insurance and exemption reduce vulnerability to catastrophe while there is no evidence for reduced vulnerability for being a member of a prepayment scheme. Health risk related variables increase vulnerability to catastrophe. Higher socioeconomic status variables are associated with reduced risk.
(Galárraga et al. 2008)	Mexico	National surveys	Estimate naive probit models, and bivariate probit models that use instrumental variables	Independent variable is catastrophic payments. Dependent variables included enrolment into insurance, SES, age, chronic illness, household and demographic characteristic	Effect of insurance depended on survey instrument used. In two out of the three surveys, insurance was shown to have a protective effect. Predictors of vulnerability to risk were age, rural location and no formal education.
(Joglekar 2008)	India	National surveys	Use a two part model.	Independent variables are grouped into economic variables health/environmental risk factors, demographic and	Variables which increase vulnerability are poverty, large household size and

				regional/location variables.	presence of children in household while education and insurance reduce vulnerability.
(Kavosi et al. 2012)	Iran	National survey	Logistic regression.	Dependent variable is catastrophic payments. The independent variables are; Household insurance status, sex of head, household size, member over 65 years, member below 5 years, disabled member, SES, dentistry service usage, inpatient service usage and outpatient service usage	Determinants of vulnerability were having a member above 65, being in lower SES, no insurance and being disabled.
(Knaul et al. 2007)	Mexico	National surveys	Logit models used for both catastrophic payments and impoverishment	Presence of elders and children(less than 65 and greater than 5 years) in a household, gender and education of household head, household size, social security, private insurance, location and poverty.	Household size predicts impoverishment but not catastrophic payments. The presenceofelders and children in a householdis positively associated with both catastrophe and impoverishment. Education, social security and urban are negatively associated with risk due to out-of-pocket payments.

Study	Country	Data set	Method	Variables	Summary of results
(Knual et al. 2011)	Argentina Bolivia Brazil Chile Colombia Costa Rica Dominican Rep. Ecuador Guatemala Mexico Nicaragua Peru	National surveys	Compared sub-groups within each country for the variables associated with catastrophic payments.	Location, income, household composition, household size and health insurance are Used as the independent variables.	Factors that predicted vulnerability were households with children, elderly, large households, households without insurance, rural location and poor households.
(Amaya Lara and Ruiz Gómez 2011)	Colombia	National survey	Probit model	Independent variables are; Type of service used and paid for, size of household, dependence index, presence of permanently disabled persons, events of childbirth, percentage of taxpayers out of the total number of members, characteristics of household head, such as age, gender, work situation, and insurance situation. The dependent is catastrophic payments.	Factors which indicate vulnerability are having more than two children, having elder members of a household, disabled member, paying out-of-pocket, using an unsubsidized policy while factors which indicate a protective effect are household socio-economic status.

Study	Country	Data set	Method	Variables	Summary of results
(Nguyen et al. 2011)	Ghana	District and national surveys	Probit model.	Health insurance, chronic illness, bad health, individual/household characteristics were independent variables. Dependent variable is the incurrence of catastrophic health expenditure.	Only health insurance is shown to have a protective effect
(Rashad et al. 2012)	Egypt	National survey	Logistic regression	The dependent variable is the incurrence of catastrophic payments. Independent variables were sex, location, employment, education, insurance, age dependence ratio, chronic illness and having a child	Risk factors were aged member(above 65), chronic illness, rural location while protective factors included insurance, education and large household size
(O'Donnell et al. 2005)	Bangladesh Hong Kong India Veitnam Sri Lanka Thailand India	National surveys	Probit model	The dependent variable is catastrophic payments. Independent variables include age-sex household composition and size, location, SES, education and living conditions	Large proportion of children (not infants) and non-adults, education, health living conditions were negatively associated with risk of incurring catastrophic payments. SES and urban location is positively associated with catastrophic payments while the effect of insurance and large household size is

					mixed across countries.
Study	**Country**	**Data set**	**Method**	**Variables**	**Summary of results**
(Saksena et al. 2010)	Multi-country (51 countries)	National surveys	Probit model	The incurrence of catastrophic payments was the dependent variable while inpatient expenditure, outpatient expenditure and medicine were included as are independent variables.	Inpatient care, outpatient and purchase of medicines are all associated with incurrence of catastrophic payments.
(Saksena et al. 2011)	Rwanda	National survey	Out-of-pocket payment as a share of ability to pay was grouped into 4 ordered categories and analysed using ordered logit model	Independent variables were sex of household head, SES, location and insurance.	Lower SES, male headed household, household with an under 5 year old and being from the southern province predicted risk. Insurance, education and having an elder (above 65) did not predict risk.
(Somokotra and lagrada2009)	Thailand	National surveys	Logistic regression	The dependent variable is the incurrence of catastrophic payments. Health care utilisation and household characteristics were included as independent variables.	Hospitalisation, having high SES and elderly person and chronic illness predict vulnerability.
(Su et al. 2006)	Burkina Faso	District survey	Logit model	The dependent variable was catastrophic payment while the independent variables included illness episode, utilisation, literacy levels, gender, household size, SES	Utilisation and high episodes predict vulnerability while high economic status is negatively associated with risk.

Study	Country	Data set	Method	Variables	Summary of results
(Sulku and Bernard 2012)	Turkey	National survey	Bivariate analysis	The dependent variable was catastrophic payment while independent variables were demographic characteristics, poverty status, health service type, access to health care and self-reported health status	The poor and those living in economically less developed regions had the greatest risk. However the protective effect of insurance varied across schemes.
(Wagstaff and Lindelow2008)	China	National surveys	Probit model and correct for endogeneity of insurance by use of instrumental variables.	Catastrophic payments was the dependent and while insurance status and other variables were included as the independent variables.	No protective effect from insurance
(Xu et al. 2007)	Multi-country	National surveys		The dependent variable is catastrophic payment while independent variables are age (more than 60 years and less than 5 years), financing mechanism used andtheGDP share of health financing.	Prepayment, GDP per capita, GDP allocation to health and being above 60 years are all negatively associated with catastrophic payments. Social health insurance scheme are more protective in middle income countries

Study	Country	Data set	Method	Variables	Summary of results
(Xu et al.2006)	Uganda	National surveys	Logistic regression	Dependent variable was the incurrence of catastrophic payments. Independent variables are year of the survey, age, facility used, sex, education and location	Public and private use(although private had a higher odds ratio), Age(less than 5 years and more than 65 years) and living in a female headed household all predicted vulnerability to risk
(Yardim et al. 2010)	Turkey	National survey	Logistic regression	The dependent variables used included SES(per capita expenditure), education, employment, insurance status, disability, pre-school children and location (urban)	All variables were positively associated with increased catastrophic payments apart from having pre-school children and urban location.

2. 6 Discussion

All the studies reviewed showed that financial protection is lacking in the health systems. However the extent and intensity of financial risk varies across countries. The studies show that households spend a substantial amount of their income as out-of-pocket health care payments and these payments also drive households into poverty. The studies also showed that some households were more vulnerable to incurring financial risk as a result of out-of-pocket payments. The findings from the review are discussed further below.

The general evidence was that countries with high out-of-pocket payments had higher levels of catastrophic payments both in terms of extent and the intensity. Mills et al.,(2012) who assessed catastrophic payment in South Africa, Ghana and Tanzania find that Ghana which had higher out-of-pocket payment had higher levels of catastrophe. Such findings are also confirmed by studies which show that introduction of measures to reduce out-of-pocket payment lead to reduction in catastrophic payments while the reverse was true for policies that increased out-of-pocket payment (Knaul et al. 2006, Knaul et al.2007, Limwattananon et al. 2007, Somokotra and Lagrada2008, Nguyen et al. 2011, Ghosh 2011, Ico 2007, Mataria et al.2010). While van Doorslaer et al. (2007) finds that low income countries in Asia had higher levels of catastrophic payment due to higher reliance on out-of-pocket payment, the extent of these catastrophic health payments varies across these countries. Among those poor countries, the difference in levels of catastrophic payments due to out-of-pocket payments depended on the absence of charges in the public sector and presence of efficient exemption schemes for the poor (van Doorslaer et al. 2007).

African health systems have been particularly affected by the problem of catastrophic payment. In the multi-country study by Xu et al., (2003), it was shown that the extent of catastrophic payment in African countries is much higher than the OECD[25] average of 0.5%. A review of the country specific studies indeed confirms this finding. The country specific studies in Africa can be grouped into two

[25] OECD refers to the Organisation for Economic Co-operation and Development which is an international economic organisation composed of mainly high income/developed countries.

categories. Category one consists of studies such as Akazili (2010), Mills et al.,(2012), Ataguba (2011), Ichoku and Fonta(2006), Elgazzar et al.(2010), Nguyen et al.,(2011), Onoka et al.(2010), Okwero et al.(2010), and Saksena et al.(2011) which focussed on the catastrophic burden of all illness. The second category includes studies such as Castillo-Requilme et al.,(2008), Onwujekwe et al.,(2010), Su et al.,(2006) and Beauliere et al.,(2010) that focussed on the catastrophic burden of specific diseases especially malaria. Both categories of studies showed that catastrophic payments are high. However, the disease specific studies(category two) which were usually not based on national representative surveys showed higher estimates than those in category one.

Many of the studies on catastrophic health care payment only showed the extent (headcount) but not the intensity (gap) of such payments on the households that incur them. For example while one can point to three studies that have studied catastrophic payments in Uganda (Xu et al. 2003, Xu et al. 2006,Okwero et al. 2010), none of these studies estimates the catastrophic gap of the payments.

The distribution of the catastrophic health payments (headcount and gap) is also not presented by many studies. The results of the studies that present how such payments are distributed show that the pattern of distribution of the headcount and the gap measures may be different within a country or between countries (Salti et al. 2010, Mills et al., 2012). Ichoku and Fonta (2009) and Akazili (2010) show that the pattern may even differ across thresholds. They found that at the lower thresholds, the gap was usually concentrated among the poor while at higher thresholds the gap is concentrated among the rich. These variations between countries as discussed by van Doorslaer et al.,(2006) depend on the health system context. In a health system which is private sector dominated and where there are exemptions for the poor in public facilities, the distribution is most likely to be among the rich (see also Somokotra et al.,2009). The distribution of the gap may depend on the size of the out-of-pocket payments made within the health system.

A recent research direction has been the use of variable thresholds as a reflection of equity in measuring catastrophic payments (Onoka et al. 2011, Nguyen et al. 2011, Ataguba 2011). It is worth noting that all these studies find that using variable thresholds produces higher estimates than the fixed thresholds. The method used

by Ataguba (2011) has an additional advantage. Since it relies on a threshold that depends on where one lies on the income distribution range, then one does not have to generate the distributional sensitive measures discussed above which are also based on where a household lies on income distribution range.

The impoverishment impact of health payments which is shown by the increase in the extent and intensity of poverty due to health payments was also shown to be very prevalent in countries in this review. An important dimension from the impoverishment methodology is the relative rise in poverty[26]. Studies reviewed show that even for small increases in the poverty due to out-of-pocket payment, the relative raise in poverty was high (van Doorslaer et al., 2006). Like with catastrophic health payment, the impoverishment effect was most felt where out-of-pocket is high as a proportion of total health financing (Mills et al. 2012, Elgazzar et al. 2010, van Doorslaer et al. 2006, Beaza and Packard 2006). It was also shown that introduction of mandatory prepayment financing is a counter measure to out-of-pocket payments and leads to a reduction in the level of impoverishment (Knaul et al., 2006, Knaul et al. 2007, Somokotra and Lagrada2008).

Studies of impoverishment effect mainly used either national poverty lines or the international poverty lines. Although the motivation for the use of the different lines is different as discussed under the methodological review, only Salti et al.,(2010) and Knaul et al.,(2006) used both national and international poverty lines for a country specific study.

A review of the African studies that studied the of impoverishment effect of out-of-pocket payments shows that the studies used different approaches. Akazili (2010) and Mills et al.,(2012) for instance use international poverty lines while Ichoku and Fonta, (2006, 2009) use national poverty lines. Elgazzar et al.(2010) on the other hand uses both international poverty lines and country specific national poverty lines for the countries covered. It is worth noting that all the studies find an increase in poverty as a result of out-of-pocket payments. Among the countries studied by Mills et al. (2012) Ghana had a highest level of impoverishment both in terms of headcount and gap when compared to South Africa and Tanzania. In Tanzania and

[26]This measure indicates the increase in poverty as a proportion of the pre out-of-pocket payment level of poverty.

South Africa impoverishment was more through increased extent rather than the worsening of poverty or increasing intensity of poverty. However the reverse was true in Ghana (Akazili, 2010). The finding in Ghana is similar to what was found in most of the eleven Asian countries studied by van Doorslaer et al.(2006) where impoverishment was shown to be mainly through increased poverty among those who are already poor. The latter finding may be explained by the inability of the poor households to access health care. These household are too poor to pay for health care so they have to modify their perception of illness as noted by Akazili (2010).

The studies by Flores et al., (2008) and Skoradis-Worral et al.,(2011) innovatively correct the standard Wagstaff and van Doorslaer (2003) measures for the impact of coping such as household borrowing to pay for health care. While driven by a genuine concern of household consumption being variable and not fixed as assumed in the standard methodologies, their approach is also not likely to fully capture the inter temporal household consumption. While their adjustments show that coping reduces the household financial burden, a consideration of household's consumption in the long term may indeed show a bigger burden. This issue is also raised by Wagstaff (2008). The impact of financing mechanism used by household in the long term may be observed using panel data and using methods as used in studying chronic poverty (O'Donnell et al., 2008).

The factors which were found to be positively associated with both catastrophic payment and impoverishment were having an aged (above 65 years or above) household member or a child below 5 years with in the household. However, as noted earlier, among the studies reviewed, only Knaul et al.(2007) assesses factors associated with impoverishment using a national representative survey. That study found that having a large household size, though associated with impoverishment was not associated with incurring catastrophic payments.

The factors which were found to be significantly associated with catastrophic payments include, low SES, rural location, low educational status of the household head, hospitalisation/utilisation of health care especially private facilities, a large household size and lack of prepayment/insurance. However on the last two issues not all studies were in agreement. The factors identified above associated with financial risk are related to factors that are likely to push up the costs of illness.

However the relationship between SES and catastrophic payments may be to the relationship between SES and the likelihood of falling ill. Sulku and Benard (2012) also find that households from economically less developed regions were more exposed to financial risk.

Joglekar (2008) found that a large household size as a predictor of catastrophic payments. However, Rashad et al.,(2012) and Hajizadeh and Ngheim (2011) find that a large household size has a negative association with incurring catastrophic payments. Knaul et al.(2007) on the other hand showed that while a large household size predicts impoverishment, it did not predict catastrophic payments. The impact of household size can be understood through the role a large household plays in coping with illness such as cutting costs through use of an informal care giver. However a household size may negative association with catastrophic payments because as argued by O'Donnell et al. (2005) the economies of scale of medical consumption is limited relative to other items. Also, in case of contagious diseases, large households face a bigger risk to their welfare.

On insurance, the studies using the catastrophic health payments and impoverishment showed that generally, increased mandatory prepayment through national health insurance schemes such as in Mexico, Ghana and Thailand reduced financial risk. In studies about vulnerability to financial risk, similar observations were made in these countries and in other countries such as Rwanda (Saksena et al. 2011), Iran (Kavos et al. 2012) and in India (Joglekar 2008). However, in Zambia (Ekman, 2007), Brazil (Barros et al. 2011) and China (Wagstaff and Lindelow 2008), prepayment particularly voluntary prepayment was shown not to be protective against financial risk. This is because the protective effect of insurance may be negatively influenced by either adverse selection or moral hazard or both. Adverse selection is a situation where individuals with more risk have higher propensity to demand for insurance (Wagstaff and Lindelow 2008).Moral hazard on the other hand arises when insured individuals expose themselves to more risk (ibid.). Moral hazard and adverse selection arise from the problem of information asymmetry in the market for voluntary insurance and both result into an increase in the average health expenditure of those with insurance. Another explanation for the no protective effect

of insurance as shown in the Brazilian study by Barros et al.,(2011) is the interaction effect between socio-economic status and insurance.

2.7 Conclusion

This review shows that paying for health care through out-of-pocket payments is a major cause of financial risk to households. The financial risk is through increased household poverty and also through compromising of the consumption of other household necessities. It has also been shown that household characteristics are associated with the likelihood of incurring financial risk as a result of out-of-pocket payments. Decreasing the levels of out-of-pocket payment is likely to reduce the burden on households due to illness. Noting that empirical studies are needed to understand the state of financial protection within the specific countries, there is need for the measurement of financial protection to be based on sound methodologies with a responsive view of equity and fairness.

This review informs the design of the current study on the methods to be used to measure the financial burden of paying for illness. It also guides on the choice of the variables to include in such analysis to understanding household vulnerability to the financial burden of paying for illness. This study will aim to fill the dearth of evidence on financial protection particularly in African countries where nationally representative surveys have not often been used to examine this phenomenon.

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Part C: Journal Manuscript*

*The Journal manuscript is prepared as per the requirements set in the instructions for authors for the Journal of Health Economics, Policy and Law. However there are some variations in the manuscript presentation to improve the readability. The tables, figures and footnotes are presented within the text.

Financial protection in Uganda's health system: catastrophic and impoverishment effects of out-of-pocket health care expenditure

Abstract

Direct out-of-pocket payments for health care are noted to limit access to health care and also endanger households' welfare. This study assesses the impact of out-of-pocket payments for health care on the welfare of households in Uganda.

Using data from the Uganda National Household Surveys 2009/10, the study assesses catastrophic impact of out-of-pocket health care payments defined using a threshold that varies with household's socio-economic status. The study also assesses the impoverishment effect of out-of-pocket health care payments. Using a multivariate logistic model, factors associated with incurring both catastrophic health care payments and impoverishment are identified.

Results indicate a high extent and intensity of both catastrophic payments and impoverishment due to out-of-pocket payments. A household with a member aged over sixty-five years or below five years were factors found to be significantly associated with higher likelihood of incurring both catastrophic payments and impoverishment. While utilisation of both public and private health facilities also increased the likelihood of financial risk, this risk was higher for those using private facilities. There is a need for concerted efforts towards reducing the financial risk associated with out-of-pocket payments. Such efforts should be focussed on the most vulnerable households that have been identified in this study.

1. 0 Introduction

Internationally, health systems are called upon to ensure universal access to health care for their populations (WHO, 2005; WHO, 2010; WHO, 2011). This implies ensuring the availability of health care for everyone that needs it while consequently protecting them from the associated financial burden (Carrin et al., 2008). The reliance on out-of-pocket payments for health care is a major cause of financial burden among households. The World Health Report 2010 notes that over 100 million people are pushed into poverty while over 150 million people incur excessive out-of-pocket health payments that place a heavy burden on their living standards (WHO, 2010). Despite the call for health systems to adopt sustainable health financing mechanisms as a path to universal access, most health systems in low income countries, particularly in sub-Saharan Africa, are still heavily dependent on out-of-pocket payments (WHO, 2006; McIntyre et al., 2008).

In Uganda, user fees in public facilities were introduced in1993 as part of a package of economic reforms recommended by the World Bank to reduce the level of debt and macroeconomic stagnation in the country (Akin et al., 1987). The introduction of user fees in the health sector was based on a theoretical argument that since the demand for health care is price inelastic, the health sector would be able to raise its own revenue so as to improve the quality of its services (Akin et al., 1987; Gilson and Mills, 1995). However, the implementation of the user fee policy did not only fail to achieve the stated objectives, it also led to decreased health care utilisation. This consequently increased morbidity and mortality (McIntyre, 2007; Yates, 2009). In response to these, user fees were abolished in 2001. The abolition of user fees was expected not only to increase access to health care but would also reduce the financial burden on households due to out-of-pocket payments.

Indeed, public health care utilisation increased particularly among the poor when user fees were removed (Nabyonga et al., 2005; Xu et al., 2006; Tashobya et al., 2006; Burnham et al., 2004). However, among the rich, the rate of increase in utilisation of public facilities decreased to a rate even lower that before the removal of user fees (Xu et al., 2006). This is attributed to perceived differences in quality between the public and private sectors. Studies have shown that the private health sector is the preferred provider for both the rich and the poor in Uganda (Kasirye et

al., 2004; Rutebemberwa et al., 2009; Orem and Zikusooka, 2010; Pariyo et al., 2009). The preference for private facilities which mainly rely on out-of-pocket payments has kept those payments high in Uganda (Orem et al., 2011). The other factor attributed to the high out-of-pocket payments in Uganda is the presence of informal payments in the public facilities (Xu et al., 2006). It has been shown that out-of-pocket payments as a percentage of private health expenditure in Uganda increased from 56.7 per cent in 2000 to 65.4 per cent in 2009 (WHO, 2011). These out-of-pocket payments constitute about 37.9 per cent of total health expenditure, with donors and government contributing the remaining 28.5 per cent and 33.6 per cent respectively (Okwero et al., 2010).

Since illness is unpredictable, the consequent out-of-pocket payments incurred due to illness are likely to impose a financial burden on households. This is through their effect on allocation of the household's disposable income. For instance they compromise the consumption of other household necessities such as food, clothing education and housing (Russell, 2004). These payments may also lead to a decrease in welfare leading to an increase in the level of poverty (Whitehead et al., 2001; Wagstaff, 2002; McIntyre et al., 2006). It has been argued, therefore, that in a fair and equitable health system, households should not pay more than a certain proportion of their total income for healthout-of-pocket (Wagstaff and Doorslaer, 2003; Xu et al. 2003). Exceeding such a threshold would make such payments catastrophic (Berki, 1986). These out-of-pocket payments should also not push households into poverty or worsen their state of poverty (Wagstaff and Doorslaer, 2003). These arguments form the basis for the methodologies used in measuring financial protection in a health system.

For a country like Uganda to move towards universal access, there is a need for empirical evidence to guide the development of necessary policies. This is the main motivation of this study. This study analyses the level of financial protection in the Ugandan health system by quantifying the extent and intensity of both financial catastrophe and impoverishment associated with out-of-pocket payments for health care. It also assesses the factors that are associated with both catastrophic out-of-pocket payments and impoverishment. It is important to note that some earlier studies have investigated aspects of the financial burden of illness in Uganda (see Xu et al. 2003; Xu et al., 2006; Orem et al. 2011; Okwero et al., 2010; Niëns et al.,

2010; Ruhweza et al., 2009). However, based on the review of the literature, none of these published studies quantified the overall impoverishing impact of out-of-pocket health care payments on households. This study also uses a more recent and generalized methodology developed in Ataguba (2011) to quantify the catastrophic impact of such payments on households. Furthermore, the assessment of factors associated with household vulnerability to financial risk is scarce in most of the previous studies, particularly in studies that assess impoverishment.

2 Methods

2.1 Data source

The 2009/10 Uganda National Household Survey (UNHS) data were used for this study. This is a national representative survey conducted by the Uganda Bureau of Statistic (UBOS). The UNHS 2009/10 used the 2002 Uganda population and housing census sampling frame and used a two stage stratified sampling design. In the first stage, 712 enumeration areas were selected. The enumeration areas were allocated to ten sub-regions representing both urban and rural areas. In the second stage, ten households were systematically drawn from each of the selected enumeration areas. The total sample size was 6800 households.

Data analysis was done using both ADePT version 5.2 (Word Bank, 2012) and STATA version 11 (Statacorp, 2009). All the estimates and the standard errors are adjusted for the sampling design using the appropriate sampling weights.

2.2 Living standards measurement

The study uses total household consumption expenditure as the measure of living standards. Household consumption is a preferred measure of living standards because it is less prone to fluctuation and is easier to collect in household surveys with less likelihood of being underreported when compared to income (Filmer and Pritchett, 2001;Deaton and Zaidi, 2002). The components of household consumption expenditure used are; food, beverages and tobacco, durable and non-durable household goods and frequently purchased services and the semi-durable goods and durable goods and services. Total consumption expenditure is converted into an adult equivalent household consumption so as to account for household composition. The adult equivalent scale used in this study has been discussed

elsewhere (see Appleton et al., 1999; Levine, 2010). The equivalence scale weights household members based on the difference in calorie requirements [1]based on their age. The equivalence scale (AE) is estimated as:

$$AE = (A + \gamma C) \quad (1)$$

Where*A* represents the number of household members aged 18 years and above while *C* represents those below 18, γ varies from 0.273 for the household 18 years members below 1 year to 0.95 for household members between 16 and 18 years

Another living standards measure used was an index of socio-economic status composed of household's housing conditions and asset ownership. This index was generated in STATA using the principal component analysis (PCA)[2]. PCA is a statistical technique applied to a set of variables so as to form smaller coherent subsets that are relatively independent from each other (Vyas and Kumaranayake, 2006). These subsets are what are referred to as components. This index was used to generate quintiles of socio-economic status used as a measure of living standard for the analysis to assess household factors associated with financial risk. This index was used rather than household consumption expenditure so as to address the problems of reverse causality[3]. This has been recommended by O'Donnell et al.,(2005). Moreover, the theory around vulnerability to financial risk emphasizes the importance of assets in resilience to risk (Moser 1998).

[1]This equivalence scale is obtained by dividing male calorie requirements in each age group by 3000 which represents the calorie requirements for an adult male (Appleton et al., 1999). Both male and female are assumed to have the same calorie requirements.

[2] The household condition variables used are; type of dwelling, construction material of the house, source of drinking water, type of toilet and type of lighting. The asset ownership variables used are; houses, land, furniture, household appliances, transport equipment and electronic equipment, jewellery and any other household assets not classified in the categories above.

[3]Reverse causality refers to a situation when there is correlation between the independent variable and the dependent variable. Consumption expenditure would lead to reverse causality when assessing factors associated with financial risk since households that generally have high consumption expenditures would be expected to also have high out-of-pocket expenditures.

2.4 Measurement of household out-of-pocket payments

The components of out-of-pocket payments include consultation fees, medicines, facility charges and all the other health and medical costs not classified in the components above. These include expenditures on alternative/traditional medicines and fees. In assessing impoverishment, each household's total out-of-pocket payments were also converted to adult equivalent household out-of-pocket payments.

2.5 Measurement of financial protection in a health system

In order to assess financial protection using out-of-pocket payments, an important assumption is that such payments are non-discretionary. This means that households do not necessarily choose to spend excessively on health care. This assumption has been shown to hold particularity in low income countries where the income elasticity of demand for health care is low (Deaton and Zaidi, 2002).

The analytical framework used in the measurement of financial protection in this study is illustrated in Figure 2. The financial burden faced by households is assessed using both the catastrophic health payments and impoverishment methodologies[4]. The study also assesses factors associated with both catastrophic health payments and impoverishment due to out-of-pocket payments. There are root causes and underlying causes that make households vulnerable to financial risks (Mukherjee et al., 2010). Underlying causes include the demand side factors that increase the likelihood of households spending more on health while root causes are factors which increase the likelihood of a household facing illness and hence incurring illness costs.

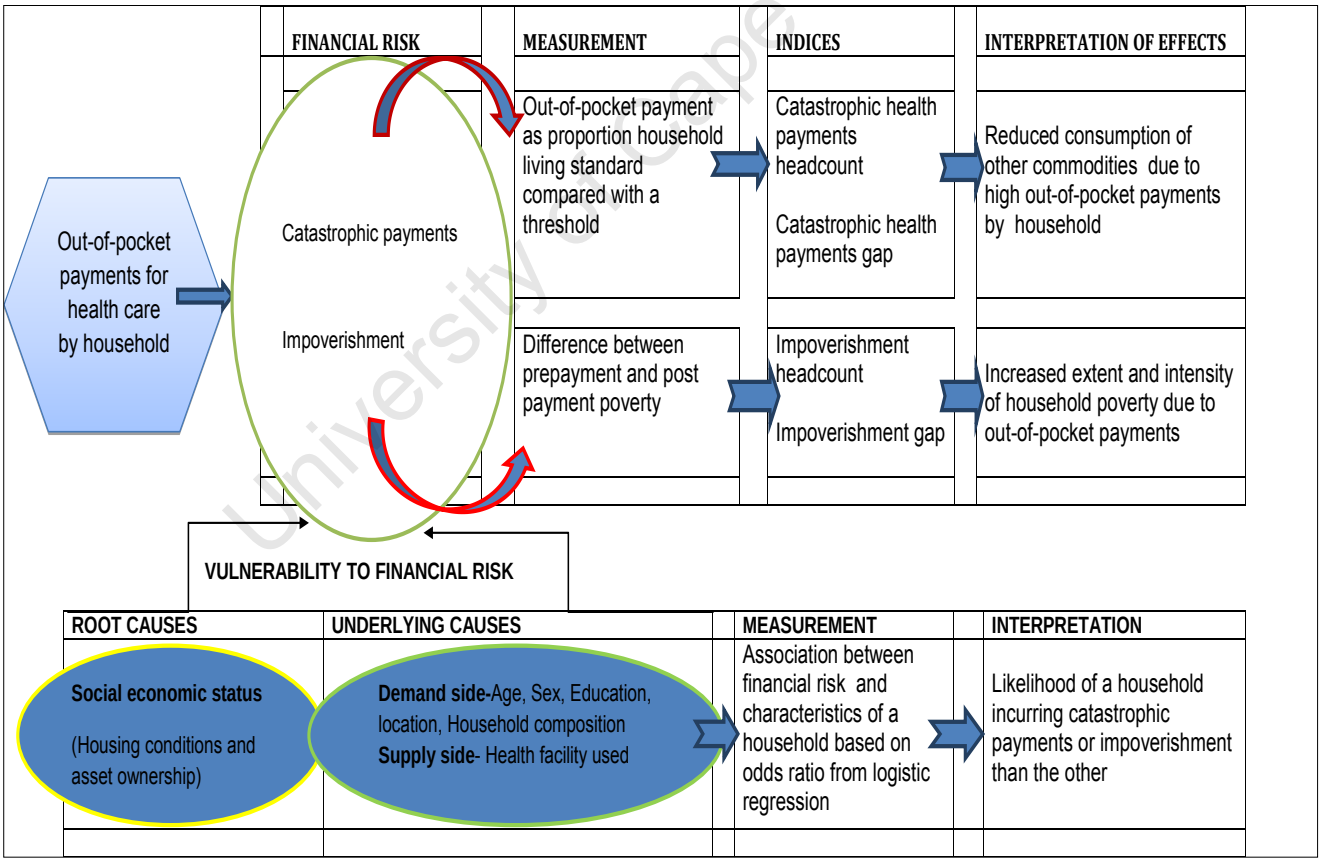
2.6 Catastrophic out-of-pocket health care payments

Out-of-pocket health care payments are defined as catastrophic if they exceed a certain proportion/threshold (z) of the household's consumption expenditure/income (Wagstaff and Doorslaer, 2003, Xu et al., 2003). Ataguba (2011) argues that such a threshold should increase with a household's income. The basic idea behind this reasoning is that such a threshold needs not be the same for households of different

[4]These are further discussed in sections 2.6 and 2.7.

socio-economic status as small out-of-pocket payments could be detrimental to those who are already poor. This implies that household catastrophe should be dependent on where the household lies on the income distribution range. While related methodologies have been suggested (see Onoka et al. 2011; Nguyen et al. 2011), the method by Ataguba (2011) has some desirable properties. Unlike the other variable threshold methods, the method by Ataguba (2011) generates a threshold which varies across each per centile. With this threshold, the measurement of the catastrophic impact is not only adjusted for vertical equity but is also able to fully adjust for the diminishing marginal utility of income. The Ataguba (2011) methodology can also be adjusted so as to obtain results for a fixed threshold as in Wagstaff and van Doorslaer (2003). This paper therefore presents results based on the Ataguba (2011) generalized methodology.

Figure 2: Analytical framework of the study



Source: Adapted from (Mukherjee et al., 2010; Adhikari et al., 2009)

If y_i is defined as total household consumption,T_i as the household's total out-of-pocket payments and Z_{cat} as the initial threshold, then Ataguba (2011) defines the rank dependent threshold Z'_{cat}as:

$$Z'_{cat} = w(p{:}\gamma) * Z_{cat} \quad (2)$$

where γ is a parameter of aversion to inequality, p is the household's per centile and

$$w(p{:}\gamma) = \gamma(1-p)^{(\gamma-1)} \text{for} \gamma \in (0,1] \quad (3)$$

In this study, following Ataguba (2011), $\gamma = 0.8$ while the initial thresholds are $(Z_{cat}) = 0.05, 0.1, 0.15, 0.25$ as has been recommended in previous studies (Wagstaff and Doorslaer, 2003)

Let O'_i represent the per centile dependent catastrophic overshoot (excess payment above a threshold) such that:

$$O'_i = \max(0, (T_i/y_i) - Z'_{cat}) \quad (4)$$

If $E'_i$is a measure indicating whether a household exceeds the rank dependent threshold, then $E'_i = 1$ when $O'_i > 0$ and 0 otherwise. The rank dependent headcount (H'_{cat}) is defined as:

$$H'_{cat} = \frac{1}{N}(\sum_{i=1}^{N} E'_i) = \mu'_{E'} (5)$$

Where$\mu'_{E'}$is the mean of E'_i and *N*is the sample size. The headcount measures the proportion of households that incur catastrophic payments.

The rank dependent catastrophic gap (G'_{cat}) which captures the deviations from the catastrophic threshold Z'_{cat} , is computed as:

$$G'_{cat} = \frac{1}{N}(\sum_{i=1}^{N} O'_i) = \mu'_{O'} (6)$$

where $\mu'_{O'}$is the mean of the overshoots (O'_i). The rank dependent catastrophic gap (G'_{cat}) is the mean of the overshoots across all the households.

The rank dependent mean positive catastrophic gap (PG'_{cat}) captures the average deviations for households above the threshold (only those who incur catastrophic payments). It is computed as:

$$PG'_{cat} = \frac{\sum_{i=1}^{N} O'_i}{\sum_{i=1}^{N} E'_i} = {\mu'_{O'}}\Big/{\mu'_{E'}} \quad (7)$$

2.7 The impoverishment impact due to out-of-pocket payments

The impoverishment effect of out-of-pocket payments is defined as the increase in poverty that results from household's incurring out-of-pocket costs for health care (Wagstaff and van Doorslaer, 2003; van Doorslaer et al. 2006). This study uses the method proposed in Wagstaff and van Doorslaer (2003) to estimate the impoverishment effect of out-of-pocket payments.

If $Z_{pov}^{pre}$is the poverty line and $Y_i$is individual i's prepayment adult equivalent household expenditure, an individual is poor (i.e. before making health care payments) if$Y_i < Z_{pov}^{pre}$. This is referred to as prepayment poverty. The associated poverty head count is computed as:

$$H_{pov}^{pre} = \frac{1}{N}\sum_{i=1}^{N} P_i^{pre} = \mu_{p^{pre}} \quad (8)$$

The short-fall from the poverty line (g_i^{pre}) is defined as $(Y_i - Z_{pov}^{pre})$ if $Y_i < Z_{pov}^{pre}$, and zero otherwise. The associated average prepayment poverty gap is defined as:

$$G_{pov}^{pre} = \frac{1}{N}\sum_{i=1}^{N} g_i^{pre} = \mu_{g^{pre}} \quad (9)$$

The normalised poverty gap is computed as:

$$NG_{pov}^{pre} = \frac{G_{pov}^{pre}}{Z_{pov}^{pre}} \quad (10)$$

The mean positive prepayment gap which is the shortfall for only those who were below the poverty line before incurring out-of-pocket payment is computed as:

$$MPG_{pov}^{pre} = \frac{\sum_{i=1}^{N} g_i^{pre}}{\sum_{i=1}^{N} p_i^{pre}} = \frac{\mu_{g^{pre}}}{\mu_{p^{pre}}} \quad (11)$$

The normalised mean positive prepayment gap is defined as:

$$NMPG_{pov}^{pre} = \frac{MPG_{pov}^{pre}}{Z_{pov}^{pre}} \quad (12)$$

When the superscripts "pre" are replaced with "post" in equations 9 to 12 the analogous post-payment poverty measures are obtained. The poverty impact of out-of-pocket payment is then defined as the difference between the relevant pre-payment and post-payment measures.

Impoverishment headcount is computed as: $PI^H = H_{pov}^{post} - H_{pov}^{pre}$; the impoverishment gap is computed as: $PI^G = NG_{pov}^{post} - NG_{pov}^{pre}$ while the mean positive impoverishment gap is computed as: $PI^{NMPG} = NMPG_{pov}^{post} - NMPG_{pov}^{pre}$

Uganda's poverty line (PL1) which is region and location specific and the $1.25 per day international poverty line (PL2) were used in this study. The maximum value of PL1 is in urban central (Shs. 32106.24 per month) while the least is for western rural (Shs. 28165.4 per month). The average value is Shs. 29,306.32 per month. The international poverty line is computed for Uganda using the PPP conversion factor of 2009($1=750.45).The $1.25/day poverty line is equal to Shs. 27,923.18 per month.

Pen's Parade of pre and post health payment household consumption

Pen's parade is a plot of two expenditure parades (i.e. gross and net of out-of-pocket payments) using a cumulative proportion of individuals ranked according to their gross household consumption expenditure (O'Donnell et al., 2008). This plot is able to illustrate the welfare decreasing effect of the out-of-pocket payment by showing the increase in the extent and depth of poverty.

2.8 Factors associated with incurring financial risk due to out-of-pocket payments

Model specification

Vulnerability to financial risk was assessed using a multivariate logistic model[5]. The dependent variables used are incurring catastrophic out-of-pocket payments and being impoverished by out-of-pocket payments. Incurring catastrophic out-of-pocket payments is defined at the 10 per cent initial threshold and impoverishment is defined at Uganda's poverty line (PL1). A household is impoverished if it is pushed

[5]Logistic regression is preferred to other binary response models such as the probit models because of its simplicity and ease of interpretation. However, results produced by both probit and logit models are similar both in sign and significance.

below the poverty line or if its depth below the poverty line is increased as a result of out-of-pocket health care payments. The logistic model is specified as:

$$In\left[\frac{\pi(x)}{1-\pi(x)}\right] = \alpha + \beta_1\chi_1 + \beta_2\chi_2 + \cdots + \beta_i\chi_i \quad (13)$$

Where $\pi(x)$ is the probability that the response variable $Y_i = 1$. The coefficient α is the constant and β_i is the coefficient of the predictor variablesχ_i. All independent variables used in the analysis are described in the Table 5.

Age and education predict one's vulnerability to financial risk through their effect on the demand for health (Grossman 1972; Wagstaff 1986). The very old and the very young are more likely to need more health care and spend more on health care. Education on the other hand is more likely to make an individual more efficient in the utilisation of health care. This would decrease the household out-of-pocket payments on health care. Low socio-economic status increases the risk of out-of-pocket payments on households (Mukherjee et al., 2010). Using Moser (1998)'s framework, households that own assets are more resilient to the threat posed by financial risks of out-of-pocket payments. They are thus more able to cope with such payments than those without such assets. Another variable of interest is household size. A large household is likely to increase financial risk (O'Donnell et al., 2005). However, a large household may also increase the availability of informal care givers which may result in lower out-of-pocket costs. Other variables considered include the location of the household and the type of facility utilised.

Table 5: Independent variables used in logistic regression model

Household level variables	Variable type
Elder (Having a member above 65 years)	Dummy; 1=Yes 0=No
Infant (Member below 5 years)	Dummy; 1=Yes 0=No
Household index of socio-economic status(quintiles)*	Ordered categorical variable with five outcomes 1-Poorest 2-Second poorest 3-Middle 4-Second richest 5-Richest
Household size less than 5 members[1]	Dummy; 1=Yes 0=No
Location	Dummy; Urban=1 Rural=0
Region*(Region of country where household is located)	Categorical variable with four outcomes 1-Central 2-East 3-North 4-West
Sex of household head	Dummy; 1=Male 0=Female
Private facility (Use of private facility)	Dummy; 1=Yes 0=No
Public facility (Use of public facility)	Dummy; 1=Yes 0=No
Has the household head ever attended any formal school?	Dummy; 1=Yes 0=No

***Quintile 1 and central region were used as reference for the socio-economic and region variables respectively.

[1]Five members is the average household size in Uganda as per UNHS 2009/10

3 Results

3.1 Household catastrophic out-of-pocket health payments

The results for catastrophic out-of-pocket health are presented in Table 6. This table shows the catastrophic headcount and catastrophic gap indices.

Table 6: Household catastrophic out-of-pocket health payments results for variable thresholds ($\gamma = 0.8$)

	Initial thresholds			
	5%	10%	15%	25%
Headcount	38.0%	22.8%	15.3%	6.7%
Gap	3.8%	2.5%	1.7%	0.8%
Mean positive gap	9.96%	11.0%	11.00%	11.81%

Source: Authors' computations based on UNHS 2009/2010

As shown in Table 6, a large number of households spend a substantial share of their total consumption expenditure as out-of-pocket payment for health care. The number of households that spent above the thresholds varies depending on the initial threshold. With a 5 per cent initial threshold for example, the catastrophic headcount was 38 per cent. This means that on average, 38 per cent of the households in Uganda spend above 5 per cent of their total household consumption expenditure as out-of-pocket health care payments. This represents over two million households based on the population estimate of about six million households in the UNHS 2009/10. The catastrophic headcount decreases to 22.8 per cent at the 10 per cent initial threshold of total consumption expenditure and was 6.7 per cent at the 25 per cent initial threshold.

The catastrophic health payments gap varies from 3.8 per cent (at the 5 per cent initial threshold) to 0.8 per cent at an initial threshold of 25 per cent. Using the 5 per cent initial threshold as an example, the average catastrophic gap of 3.8 per cent means that on average households pay out-of-pocket for health care in excess of the variable threshold by 3.8 per cent. The mean positive gap which refers to the mean excess payment among only those who exceed the set threshold varies from 9.96

per cent at the 5 per cent initial threshold to 11.81 per cent at the 25 per cent initial threshold.

3.2 Impoverishment effect of out-of-pocket payments

The results for impoverishment analysis are presented in Table7. The results are presented for the poverty headcount and the normalised gap measures.

Table 7: Impoverishment analysis results UNHS 2009/2010

	PL 1(Uganda)				PL 2($1.25)			
	Gross	Net	Absolute	Relative	Gross	Net	Absolute	Relative
Headcount	24.5%	28.7%	4.3%	17.6%	22.7%	26.8%	4.1%	18.1%
Normalised gap	6.7%	8.1%	1.4%	20.9%	6.3%	7.6%	1.3%	20.6%
Normalised MPG	27.6%	28.3%	0.8%	2.9%	27.7%	28.4%	0.8%	2.9%

Source: Authors' computations based on UNHS 2009/2010

Note: MPG=Mean positive gap

Absolute=Gross-Net

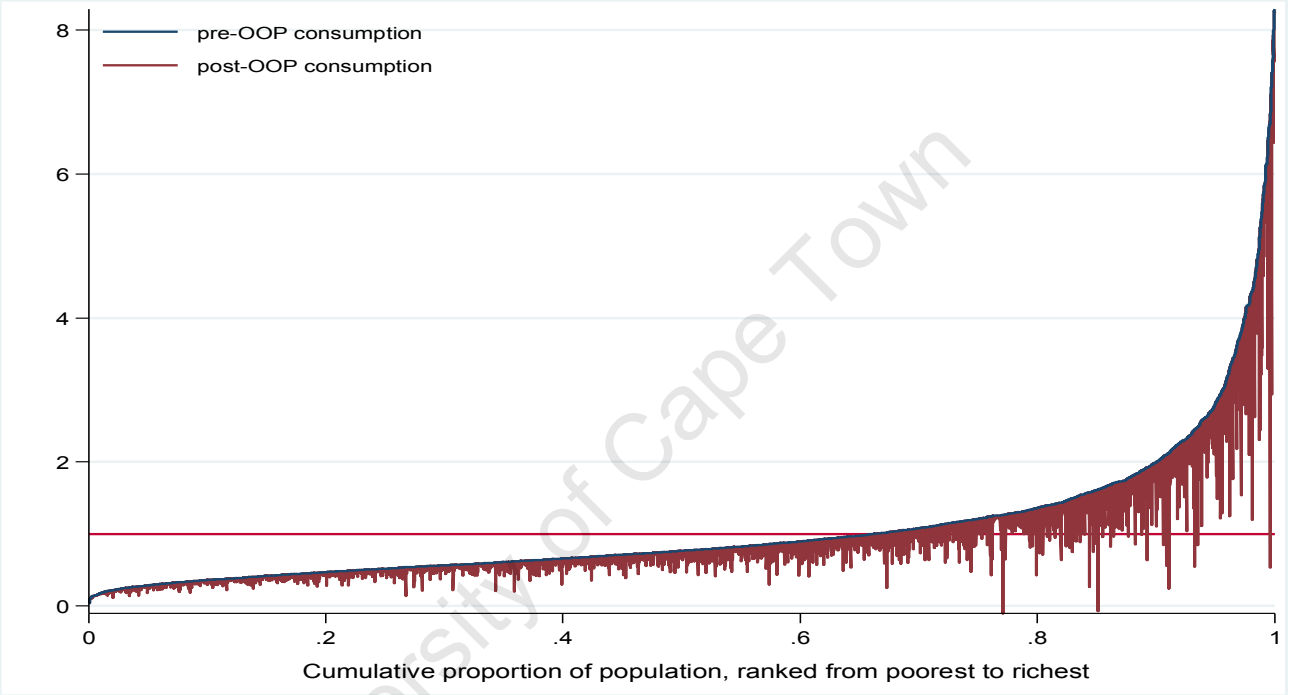
Relative=Absolute/Gross

At the Ugandan poverty line, out-of-pocket payments impoverished 4.3 per cent of all Ugandans. This represents over one million and three hundred thousand more Ugandans being pushed below the poverty line due to out-of-pocket payments. When compared with the prepayment poverty level, this represents a 17.6 per cent relative rise in the poverty headcount. The normalised poverty gap increased by 1.4 per cent and this represents a 20.9 per cent relative increment. The normalised mean positive gap also increased although at a much lower percentage point (0.8per cent). The relative increment in the mean positive gap was 2.9 per cent. This indicates that the increase in poverty due to out-of-pocket payments was mainly among the non-poor. Out-of-pocket payments thus mainly increased the extent rather than the intensity of poverty. As also shown in Table 7, a similar pattern was observed using the $1.25 a day poverty line for all the poverty indices measured.

Pen's parade of household consumption pre and post out-of-pocket health care payment

The Pen's chart in Figure 3 shows that out-of-pocket payments for health care lead to a significant decrease in household welfare. This was indicated by the decrease in household consumption expenditure shown by the "paint drips".

Figure 3: Pen's parade of household consumption expenditure gross and net of out-of-pocket payments



Source: Authors computations based on UNHS 2009/10

3.3 Factors associated with financial risk as a result of out-of-pocket payment

Tables 8 and 9 show the factors that are associated with the likelihood of incurring catastrophic payment and impoverishment from out-of-pocket payments respectively. These include having a household member aged above sixty five years or a household member below five years, and the utilisation of both public and private facilities. All these factors are significant at the 5 per cent level. For both models, compared to utilising public facilities, the utilisation of private facilities had much higher odds ratio. This indicates increased likelihood of incurring financial risk when a household member utilises a private facility. The odds ratio associated with the likelihood of incurring catastrophic payments through private facility use was OR=4.65(P=0.000) while for impoverishment it was OR=2.29(P=0.000). The only

factor that was significantly associated with decreased likelihood of incurring financial risk was belonging to at least the middle/third quintile of socio-economic status as compared to belonging to the lowest/first quintile.

Households located in the eastern and northern regions of the country were less likely to incur catastrophic health payments as compared to households in the central region. While households located in the western region were found to be associated with a higher likelihood of incurring catastrophic payments than those in the central region, this association was not statistically significant at the 5 per cent level. The association of sex of the household head, education of the household head , whether a household is located in an urban or rural area and size of the household with incurring catastrophic payment were all not statistically significant.

Another significant factor associated with impoverishment and the increased likelihood of impoverishment was belonging to a household located in either northern or eastern Uganda as compared to a member of a household in central Uganda. However the odds ratio for eastern Uganda is only significant at the 10 per cent level. The other factors associated with less likelihood of impoverishment due to out-of-pocket payments were having a household size of less than five members and being a member of a household whose head is educated.

Table 8: Logistic regression of factors associated with household catastrophic out-of-pocket payments-UNHS 2009/10

Catastrophic	Odds Ratio	Linearized Std. Err.	t	P>|t|	[95%Conf.	Interval]
Eastern	0.673	0.066	-4.04	0.000	0.556	0.816
Northern	0.653	0.078	-3.55	0.000	0.516	0.826
Western	1.008	0.109	0.08	0.935	0.816	1.250
Urban	0.965	0.125	-0.28	0.781	0.745	1.244
Quintile 2	0.858	0.088	-1.5	0.135	0.701	1.049
Quintile 3	0.721	0.079	-2.99	0.003	0.581	0.894
Quintile 4	0.614	0.076	-3.96	0.000	0.482	0.782
Quintile 5	0.557	0.081	-4.03	0.000	0.420	0.741
Public facility	2.198	0.170	10.2	0.000	1.889	2.557
Private facility	4.65	0.433	16.5	0.000	3.874	5.585
Elder in household	1.247	0.128	2.16	0.031	1.020	1.525
Infant in household	1.303	0.113	3.06	0.002	1.099	1.545
Household size	1.050	0.081	0.64	0.525	0.903	1.222
Sex of head	1.013	0.090	0.16	0.873	0.857	1.199
Education of head	1.062	0.100	0.66	0.512	0.887	1.272

Number of strata	= 10	Number of obs	= 6774
Number of PSUs	= 711	Population size	= 6216351
		Design df	= 701
		F(15, 687)	= 26.58
		Prob> F	= 0.000

Table 9: Logistic regression of factors associated with impoverishment due to out-of-pocket payments-UNHS 2009/10

Impoverishment	Odds Ratio	Linearized Std. Err.	t	P>|t|	[95%Conf.	Interval]
Eastern	1.326	0.211	1.77	0.077	0.970	1.812
Northern	1.858	0.314	3.67	0.000	1.333	2.588
Western	.9317	0.152	-0.43	0.664	0.677	1.282
Urban	1.069	0.230	0.31	0.757	0.700	1.631
Quintile 2	0.757	0.088	-2.4	0.017	0.603	0.950
Quintile 3	0.478	0.059	-6.02	0.000	0.375	0.608
Quintile 4	0.438	0.065	-5.53	0.000	0.327	0.587
Quintile 5	0.085	0.026	-8.16	0.000	0.047	0.153
Public facility	1.260	0.121	2.41	0.016	1.044	1.521
Private facility	2.298	0.215	8.9	0.000	1.912	2.760
Elder in household	1.339	0.197	1.99	0.047	1.003	1.786
Infant in household	1.377	0.153	2.88	0.004	1.108	1.712
Size of household	0.488	0.048	-7.28	0.000	0.402	0.592
Sex of head	0.948	0.103	-0.5	0.621	0.765	1.173
Education of head	0.736	0.079	-2.85	0.004	0.596	0.909

Number of strata	= 10	Number of obs	= 6774
Number of PSUs	= 711	Population size	= 30661931
		Design df	= 701
		F(15, 687)	= 23.32
		Prob> F	= 0.000

4 Discussion

The results indicate a lack of financial protection within Uganda's health system. Since out-of-pocket health care payments account for a substantial share of household budget, they are likely to compromise the consumption of other basic necessities. Paying for health care on an out-of-pocket basis was also shown to lead to an increase in poverty. Some household characteristics were shown to be associated with increased likelihood of incurring financial risk due to out-of-pocket payments.

The results in this study follow similar patterns as those of previous studies about the financial burden of out-of-pocket payments in Uganda (Xu et al. 2003; Xu et al. 2006; Okwero et al., 2010). Although no previous studies in Uganda have analysed the impoverishment effect of direct out-of-pocket payments for households due to having accessed health care, the findings in this study are similar to those reported in related studies such as Ssewanyana and Okidi (2007) and Neins et al., (2011). In a multi-country study that included Uganda, Neins et al.,(2011) assessed the likely impoverishment impact if households purchased medication for chronic illness. Ssewanyana and Okidi (2007) adjusted the UNHS 2005/06 poverty estimates for the impact of social expenditure. Social expenditure variable was composed of combined expenditure on education and health. Both of the studies above indicate a high impoverishing effect of out-of-pocket payments.

The findings of this study are also in accord with those from other low and middle income countries in Africa, Latin America and Asia(Mills et al., 2012; Knaul et al. 2011; Van Doorslaer et al. 2006; Van Doorslaer et al. 2007, Knaul et al.,2007). When compared with the African countries studied in Mills et al. (2012) which are South Africa, Tanzania and Ghana, the results in this study indicate a much higher burden on households in Uganda. This may be related to the high out-of-pocket payments as a proportion of total health sector financing. Countries like Nigeria (see Ichoku and Fonta, 2009) which also has out-of-pocket payment as the most dominant form of health financing also have similarly very high levels of catastrophe and impoverishment.

It is important to note that the impoverishing impact of out-of-pocket payment was mainly through an increase in poverty among the non-poor rather than the deepening of poverty among the poor. This finding should not be confused with the existence of more financial protection among the poor than the rich. In fact, it points to a situation where the poor may be too poor to even afford falling ill (Akazili, 2010). The poor thus have to modify their perception of illness so as to avoid incurring out-of-pocket payments (McIntyre et al., 2006). An alternative explanation for this finding is that since the poor utilise more of free public facilities than the rich (see Xu et al., 2006), their exposure to out-of-pocket payments is decreased. However, since the demand for public sector facilities is lower than that for private sector facilities as indicated by preference for the latter (see Kasirye et al., 2004; Rutebemberwa et al., 2009;Pariyo et al., 2009), it is only those who can afford to pay for the private sector service that utilise them.

The utilisation of both public and private facilities was associated with increased financial risk to households although the risk was higher with the use of private facilities. It is worth noting that the use of private facility was the greatest factor associated with increased risk of incurring both catastrophic payments and impoverishment. This has also been shown by Xu et al., (2006). While this is expected, given that the private sector mainly relies on out-of-pocket payments which are a major driver of financial risk, there could be other explanations. The increased risk associated with the use of private sector services may be due to the 'unnecessary' or excessive health care provided by private health providers to boost their revenues leading to high out-of-pocket payments (Basu et al., 2012).

The regional variation in financial risk associated with out-of-pocket payments needs to be interpreted in the context of the poverty situation in the country. The Northern and Eastern Uganda have been shown to contribute more to the poverty estimates than the other regions (UBOS, 2010). This means that for the poor in these regions, any small out-of-pocket payments will increase the intensity of poverty. However, the low budget shares incurred as out-of-pocket payments may also indicate low utilisation in those regions due to difficulties in accessing health care (see Orem and Zikusooka, 2010).

A household's socio-economic status indicated by the housing conditions and the ownership of assets was found to be protective from the financial risk associated with illness. This is due to the influence of the housing conditions on a household's likelihood of becoming ill (Mukherjee et al., 2010). Ownership of assets also indicates a household's ability to self-insure and hence protecting themselves from impoverishing out-of-pocket health payments (O'Donnell et al., 2005). The effect of age and education are also as predicted by economic theory of the demand for health (Wagstaff 1986; Grossman 1972). A household composed of very young or very old members is more exposed to the risks that result from out-of-pocket health care expenditure. On the other hand, education is more likely to make someone a more efficient user of health care and hence decreasing the exposure to financial risk. Another household characteristic that was found to be protective was belonging to a household with a small size (less than five members). This is because the economies of scale of consumption of health care are limited when compared to other household consumption (O'Donnell et al., 2005).

The lack of financial protection as indicated above has important implications for the population of the country and is an issue that needs attention. Based on the findings above, there is need for the country to move towards prepayment (particularly mandatory) for health care as a means of attaining universal access. This recommendation is based on evidence from low and middle income countries where mandatory prepayment has been shown to increase the level of financial protection (Nguyen et al., 2011; Saksena et al., 2011; Somkotra and Lagrada, 2008; Limwattanonon et al., 2008; Knaul et al., 2006, Knaul et al., 2005). Prepayment based health systems have also been recommended by the World Health Organisation as the path to universal coverage (WHO, 2011). For the private facilities where fee for service is the dominant provider payment mechanism, high out-of-pocket payments can be reduced by adopting a provider payment mechanism that does not increase household out-of-pocket expenditures.

The main strength of this study is its ability to not only quantify the financial burden of out-of-pocket payment for health care in both relative and absolute terms but also to show which households are most vulnerable to the financial risk in Uganda's health system. The relevance and significance of this study and its findings in guiding Uganda's attempts at attaining universal access to health care cannot be

downplayed. These findings can be used both as a tool for advocacy and as a guide in designing effective financial protection strategy. Further, in comparison to other studies, this study uses a variable threshold in the measurement of the catastrophic impact of out-of-pocket payments. The variable threshold enables one not only to obtain a more socially responsive measure of catastrophe in line with society's consideration of equity and fairness but also produces a measures that are adjusted for the marginal utility of income (Ataguba et al.,2011). As has been shown by Ataguba (2011), such adjustments lead to estimates higher than those produced using fixed thresholds. Also, unlike most of the previous studies in low and middle income countries, this study assesses household characteristics that are associated with impoverishment using a nationally representative household survey.

The limitations of this study are mainly related to the survey tools and the inherent weaknesses in the catastrophic and impoverishment methodologies. As noted by other studies that have used the UNHS (see for example Orem et al., 2011) the nomenclature used for health facilities is different from that in the Ugandan health system. This is likely to affect the results of the study. For example, despite the significant role played by the private not for profit (PNFP) subsector in Uganda's health system, it is difficult to identify such facilities in the UNHS survey. Lumping facilities together depending on facility ownership as has been done in this study (that is public and private ownership) is likely to lead to loss of some information. However as shown by the results, the use of any health facility was associated with financial risk. Different nomenclature would have only varied the size but not the sign of the association between financial risk and the health facility used. Also while it would have been important to show whether it was inpatient or outpatient care that was more impoverishing, the survey does not have explicit questions necessary to distinguish between the two. Furthermore, the variable threshold used in assessing catastrophic payment was based on an inequality aversion parameter. The choice of the value to attach to this parameter is subjective. Ataguba (2011) recommends that such a value should ideally be derived from community weighted preferences representing how compassionate a society is to the poor.

Further research is needed on how much it would require the government to implement mandatory prepayment and how to design a progressive scheme. Panel data analysis for financial protection is also needed so as to observe inter temporal

impact of out-of-pocket payment for health care on households in the long term. Multidimensional measures of poverty should also be utilised so as to capture the full scope of the impact of ill health on households.

5 Conclusion

The absence of financial protection in Uganda's health system especially in relation to the impact of out-of-pocket payments calls for a concerted action. This should be guided by evidence and "best practice" in ensuring that out-of-pocket payments do not continue to lead to financial catastrophe and/or impoverish households. In going about this, there is a need to focus mainly on the most vulnerable households that have been identified in this study. If the problems of the financial burden of health care payments on households are not addressed, they may lead to dire consequences for the growth and development of the country.

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This policy brief is based on an MPH (Health Economics) mini-dissertation by Brendan Kwesiga submitted to University of Cape Town (UCT) at the Health Economics Unit, Faculty of Health Sciences. The dissertation was supervised by John E Ataguba (Health Economics Unit, UCT).

This work was made possible by the support from Strategies for Health Insurance and Equity in Less Developed Countries (SHIELD) project. This project aims at generating evidence to enhance equitable universal access. It is funded by the International Development Research Council (IDRC)

Part D: Policy Brief

FINANCIAL PROTECTION IN UGANDA'S HEALTH SYSTEM:

Catastrophic and impoverishment effects of out-of-pocket health care expenditure

KEY POINTS

- *1.4 million households in Ugandan spend over 10% of their total consumption as out-of-pockets payments for health care*
- *1.32 million more Ugandans are pushed below the poverty line due to out-of-pocket health care payments*
- *Direct out-of-pocket payments for health care compromise households' consumption of other basic necessities and increase the levels of poverty.*
- *Adopting prepayment health care financing mechanisms will reduce the burden of direct out-of-pocket health care payments on households.*
- *Measures to ensure financial protection should be targeted at the households that are most vulnerable to financial risks associated with out-of-pocket payments.*

Introduction

Universal access to health care is one of the major issues on top of the international health policy agenda. The core of this issue is the need to ensure access to necessary health services for all while concurrently limiting exposure to financial risk. This is a result of the realisation that health systems need to go beyond just treating illnesses but should also ensure that those who access health care do not face financial risks due to health care payments (Wagstaff 2008).

As a means to achieve universal coverage, health systems have been called upon to adopt sustainable health financing mechanisms based on prepayment (WHO 2011). This is because prepayment mechanisms enable the pooling of resources and risks. This pooling enables the subsidisation of the poor by the non-poor and the ill by those who are not ill (Mills et al. 2012). However, many countries including Uganda are still mainly reliant on direct out-of-pocket payments at the point of service.

In Uganda, out-of-pocket payments constitute over a third of all health care expenditure (Okwero et al. 2010). This is still the case despite user fees having been abolished at all public facilities since 2001. The perceived difference in quality of services between the public and the private health sector has made the private sector a preferred provider for both rich and poor households (Pariyo et al. 2009, Rutebemberwa et al. 2009). Given that the private sector relies mainly on out-of-pocket payments paid on a fee for service basis, this has led to increased out-of-pocket payments. Reliance on out-of-pocket payments exposes the households to the risks associated with health care payments and this has implications on household welfare especially on the consumption of other basic necessities.

The motivation of this study is to generate empirical evidence to guide appropriate policy responses aimed at protecting households from the financial risks that result from out-of-pocket payments for health care in Uganda.

Using data from the Uganda National Household Survey (UNHS) 2009/10, this study assessed the effects of out-of-pocket health care payments on household welfare. This was to understand how such payments impoverish households and the impact of such payments on the consumption of other household necessities. The study further explored the factors that are associated with increased likelihood of incurring financial risk due to out-of-pocket payments.

Findings

1.4 million households in Ugandan spend over 10% of their total consumption as out-of-pockets payments for health care

- **Households in Uganda spend a large proportion of their total consumption as out-of-pocket health care payments**

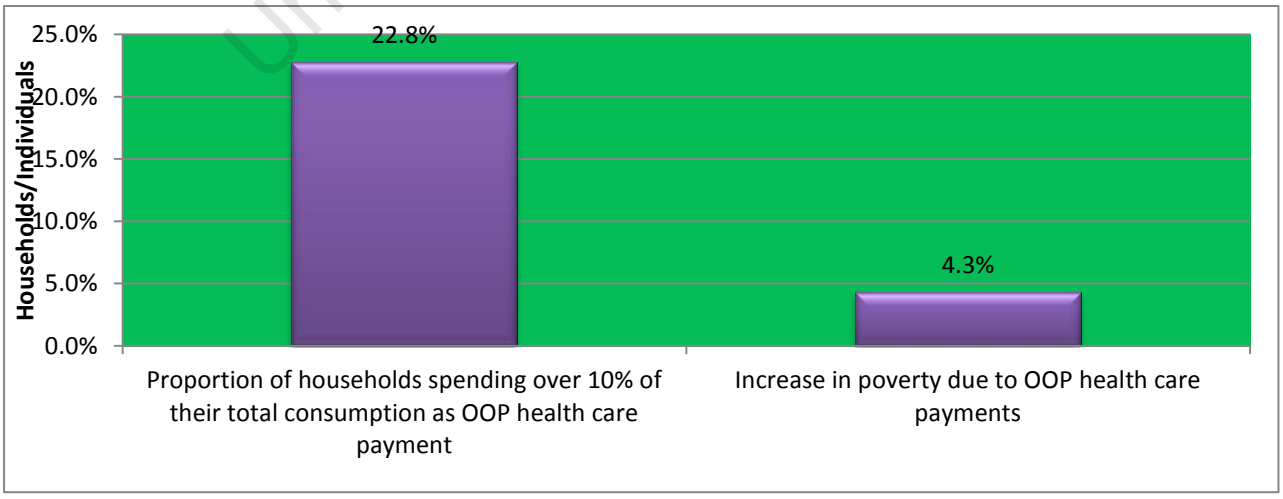
Many households in Uganda spend a substantial proportion of their total consumption as out-of-pocket health payment. For example, in 2010 over 20% of all households in Uganda which represents about one million and four hundred thousand households spend over 10% of their total consumption as out-of-pocket payments. Such out-of-pocket payments compromise household's consumption of other basic necessities such as food, education and housing.

- **Out-of-pocket health care payments impoverish several Ugandans**

In 2010, paying out-of-pocket for health care in Uganda is responsible for impoverishing about 4.3% of Ugandans. This means that a total of one million, three hundred and twenty thousand more Ugandans are pushed into poverty because of out-of-pocket health care payments. This increase in poverty is mainly among the non-poor households.

1.32 million more Ugandans are pushed into poverty due to out-of-pockets payments for health care

Impact of out-of-pocket payments(OOP) on the welfare of households in Uganda



Source: Authors computations based on UNHS 2009/10

- **Who is more likely to incur financial risk due to out-of-pocket payments?**

Households that use private health facilities are more exposed to the risks that are associated with direct out-of-pocket payments. Many of these households become impoverished and have to reduce the consumption of other basic necessities. Households that use public facilities face similar risks but this is not as much as those that use private facilities. These findings when related to the findings above indicate that the poor might not be consuming all the required health care. The poor thus have to modify their perception of illness so as to avoid incurring health care payments. This has grave implications on the general health status in the country and consequently the productivity of the economy.

The household where there is an adult aged above 65 years or a child below five years need more protection from the financial risk that results out-of-pocket payments as these are more prone to such risk. On the other hand, households of a high socio-economic status and other associated characteristics such as having an educated household head and a small household size were associated with less financial risk. This finding relates to the ability of such households to prevent illness, effectively use medical care when ill and also to self-insure for example through the sale of assets.

Households in Northern and Eastern Uganda are more driven into poverty due to out-of-pocket payments when compared with the households in central Uganda. This is so even though theyspend a smaller proportion of their total consumption expenditure as out-of-pocket expenditure than those in the central region. Noting that these regions are most affected by poverty in the country, it confirms that, even very small out-of-pocket health care payments can lead to drastic consequences for the households that are already poor.

Policy recommendations

Appropriate policy interventions are needed to ensure adequate protection of households from the risks associated with health care payments and also allow resource pooling so as to enable the subsidisation of the poor by the non-poor and the ill by those who are not ill. The policy recommendations are outlined below;

- Adopting prepayment health care financing mechanisms which will shield households from the risks associated with out-of-pocket payments. This could be through a national health insurance scheme that substantially limits fees paid at any of the health facilities for the essential health care packages consumed by the poor.
- Efforts aimed at protecting households from incurring risks associated with out-of-pocket payments need to be targeted at households that are most vulnerable to such risk as identified above.

In conclusion, enabling financial protection of households from the risks associated with health care payments is a crucial intervention if Uganda is to move its population out of poverty and guarantee sustainable livelihood.

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Disclaimer: ***The photographs used in this policy brief are for illustrative purposes only. They do not imply a particular health status, attitude, behaviour or action on the people who appear in the photographs.***

Part E: Appendices

Appendix 1: Plagiarism Declaration

Name: KWESIGA BRENDAN

Student Number: KWSBRE001

Course: MPH (Health Economics)

Declaration

1. I know that plagiarism is wrong. Plagiarism is to use another's work and pretend that it is one's own.

2. I have used the **Harvard** referencing convention for citation and referencing for the protocol, literature review and policy brief and **The Chicago Manual of Style, 15th Edition, (The University of Chicago Press, 2003)**for the journal manuscript. Each contribution to, and quotation in, this thesis from the work(s) of other people has been attributed, and has been cited and referenced.

3. This **thesis** is my own work.

4. I have not allowed, and will not allow, anyone to copy my work with the intention of passing it off as his or her own work.

Signature Signed by candidate

Date: 25th October 2012

Appendix 2: Principal component analysis (PCA) method

This appendix offers a brief explanation of the PCA method. Readers with more interest about this method, its use and computation techniques particularly in constructing a socio-economic status index may further consult Vyas and Kumaranayake (2006) and O'Donnell et al. (2008).

PCA is a multivariate statistical technique that is used to obtain a linear combination of original variables that explains the variability of the original variables. Thus one is able to obtain a coherent subset of original variables and these are referred to as principal components. The coefficients of the linear combinations indicate the relative importance of each variable on the new principal component. These components formed reflect the underlying process that created the correlation and this underlying process may not be directly measureable. PCA has thus become a very important method in understanding socio-economic differences across populations.

PCA method relies on the variance maximisation principle. The first PC has the largest variance or explains the largest variability within the data. The higher the correlation between the original variables, the less the number of PCs formed.

The PCs depend on the covariance or correlation matrix of random variables. Given a set of variables

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is the weight of the m^{th}principal component and n^{th} variable. The first Principal component (PC_1) explains the largest variation in the original data with the second (PC_2), which is uncorrelated to the first one, explaining a decreasing proportion of the total variation. To generate an asset index for measuring socio-economic status using PCA, the asset index, *A* for a household$i$ is defined as follows:

$$\sum \quad \text{———}$$

Where:

– is the value of asset k of household i

– is the sample mean of the asset k

– is the sample standard deviation

– are the weights associated with the first principal component (PC_1).

References

O'Donnell, O., Van Doorslaer, E., Wagstaff, A. &Lindelöw, M. 2008, *Analysing health equity using household survey data: a guide to techniques and their implementation*, *World Bank Publications*.

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Appendix 3: Logistic regression model

If $\pi(x)$is probability of an event occurring at household i with characteristic j (household characteristic and other relevant covariates).The odds ratio (OR) which indicates how often the event is likely to occur is given as;

$$OR = \frac{\pi(x)}{(1-\pi(x))}$$

$OR = 0$ If$\pi(x) = 0$ and $OR = \infty$ if $\pi(x) = 1$

In this study, if $OR > 1$ then the factor under consideration indicates vulnerability to financial risk while $OR < 1$ indicates otherwise.

IfX_i represents the factors used in the model and β is a vector of parameters, by applying a logit transformation to the linear probability model (LPM)[34], the model below is obtained as

$$In\left[\frac{\pi(x)}{1-\pi(x)}\right] = \alpha + \beta_1\chi_1 + \beta_2\chi_2 + \cdots + \beta_i\chi_i$$

$\beta_i$arecoefficient of variables X_i used in the regression.

[34]LPM model is a typical linear regression model but with a binary dependent variable.

Appendix 4: UCT Human Research Ethics Approval Letter

UNIVERSITY OF CAPE TOWN

Health Sciences Faculty
Human Research Ethics Committee
Room E52-24 Groote Schuur Hospital Old Main Building
Observatory 7925
Telephone [021] 406 6338 • **Facsimile** [021] 406 6411
e-mail: shuretta.thomas@uct.ac.za

25 May 2012

HREC REF: 248/2012

Mr B Kwesiga
c/o Mr J Ataguba
Public Health & Family Medicine

Dear Mr Kwesiga

PROJECT TITLE: FINANCIAL PROTECTION IN UGANDA'S HEALTH SYSTEM: CATASTROPHIC AND IMPOVERISHMENT EFFECTS OF OUT OF POCKET HEALTH CARE EXPENDITURE.

Thank you for submitting your study to the Faculty of Health Sciences Human Research Ethics Committee for review.

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

Approval is granted for one year till the 30th May 2013.

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.
(Forms can be found on our website: www.health.uct.ac.za/research/humanethics/forms)

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please quote the HREC. REF in all your correspondence.

Yours sincerely

PROFESSOR M BLOCKMAN
CHAIRPERSON, HSF HUMAN ETHICS
Federal Wide Assurance Number: FWA00001637.
Institutional Review Board (IRB) number: IRB00001938

This serves to confirm that the University of Cape Town Human Research Ethics Committee complies to the Ethics Standards for Clinical Research with a new drug in patients, based on the Medical Research Council (MRC-SA), Food and Drug Administration (FDA-USA), International Convention on Harmonisation Good Clinical Practice (ICH GCP) and Declaration of Helsinki guidelines.
The Human Research Ethics Committee granting this approval is in compliance with the ICH Harmonised Tripartite Guidelines E6: Note for Guidance on Good Clinical Practice (CPMP/ICH/135/95) and FDA Code Federal Regulation Part 50, 56 and 312.

Appendix 5: Journal Instructions for Authors

CAMBRIDGE | Instructions for Contributors

Health Economics, Policy and Law

General correspondence should be sent to:

Ms Azusa Sato
Editorial Assistant
Health Economics, Policy and Law,
LSE Health and Social Care
London School of Economics and Political Science,
Houghton Street,
London WC2A 2AE
United Kingdom
Email: hepl@lse.ac.uk

Submission

All manuscripts must be submitted online via the website:

http://mc.manuscriptcentral.com/hepl

Detailed instructions for submitting your manuscript online can be found at the submission website by clicking on the 'Instructions and Forms' link in the top right of the screen; and then clicking on the 'Author Submission Instructions' icon on the following page.

The Editor will acknowledge receipt of the manuscript, provide it with a manuscript reference number and assign it to reviewers. The reference number of the manuscript should be quoted in all correspondence with HEPL Office and Publisher.

Health Economics, Policy and Law endorses the International Committee of Medical Journal Editors' Uniform Requirements for Manuscripts Submitted to Biomedical Journals. Authors should familiarise themselves with the Uniform Requirements at www.ICMJE.org before submitting their manuscripts.

Articles

Original research articles should be between 6,000 and 8,000 words, including tables and figures, with an accompanying abstract not exceeding 200 words. Guest editorials, review articles and debate essays may also be considered. Authors should note the journal's editorial policy when making submissions.

Guest editorials will be invited pieces in which authors will provide a short, analytical commentary on a topical issue. The recommended length for guest editorials is 2,000 words. Some issues of the journal may also contain review articles (5,000 words) and debate essays (3,000 words). Review articles will feature a discussion of two or three books on a related theme while debate articles will assess an area within the scholarly disciplines or policies pertinent to health. For specific comments on the appropriateness of an idea for a review article, debate essay or a research article generally, please contact Adam Oliver at a.j.oliver@lse.ac.uk or Elias Mossialos at e.a.mossialos@lse.ac.uk

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In published articles where statistical analysis of original data has been conducted, contributors are expected to provide a replication data set that can be accessed via the electronic version of *Health Economics, Policy and Law*. Mathematical appendices may also be deposited with the *HEPL* website.

Style Sheet

1. Manuscripts should be clearly typed in double spacing and should have a left-hand margin of at least 25 mm/1 inch and a right-hand margin of at least 40mm/1.5 inches. Type size should be no smaller than 12 points. Contributors are asked to retain an exact replica themselves for use in answering copy-editor's enquiries and correcting proofs.

2. Footnotes should be numbered consecutively (in superscript) within the text and listed in a separate section at the end of the article before the References.

3. *Referencing*. Authors must use the author-date system of referencing as described in The Chicago Manual of Style, 15th Edition, (The University of Chicago Press, 2003). In this system citations in the text and footnotes list the author's surname and the year of publication of the work in parentheses. Eg. (Sen and Williams, 1963). Where there are three or more authors, list the first author's surname, followed by et al. and the year of publication. The full list of cited references is then provided alphabetically at the end of the article. References should contain, in the case of books, the names of authors as they appear on the title page, the year of publication, the full title including any subtitle, the place of publication and the name of the publisher, and in the case of articles, the name(s) of the author(s), the year of

publication, the full title of the article, the name of the journal, the volume and issue numbers, and the page reference (number of first and last page).

Le Grand, J. (2003), *Motivation, agency and public policy: of knights & knaves, pawns & queens*. Oxford: Oxford University Press.

Harsanyi, J.C. (1982), 'Morality and the theory of rational behaviour', in A. Sen and B. Williams (Eds), *Utilitarianism and beyond*. Cambridge: Cambridge University Press.

Arrow, K.J. (1963), 'Uncertainty and the welfare economics of medical care', *American Economic Review*, 53(5): 941-73.

4. Tables and Figures. Each table and figure should be on a separate sheet, numbered and collected together at the end of the article, after the References. Their place in the text should be indicated by a space and the words 'Table X (Figure X) about here'. Tables should be clearly laid out and designed to fit into a space 190 x 120mm. Vertical lines between columns should be omitted, and horizontal lines limited to the top and bottom of the table, with an additional line below the column headings. Totals and percentages should be labeled, and units identified. Figures should not contain more detail than can be clearly shown in a space 190 x 120mm.

5. Authors should submit one copy of their articles and an accompanying cover letter electronically via email to: HEPL@lse.ac.uk Please note that hardcopies sent by post will not be accepted. The submitted manuscript file should be in Microsoft Word (not PDF) to allow relevant information to be extracted before peer review. All submissions should include a page with the names and current affiliations of all authors and full contact details for the corresponding author (email address, phone and fax numbers, and mailing address). The entire manuscript should be double-spaced, with a left-hand margin of at least 25 mm/1 inch.

6. *Spelling*: Please use English rather than American spelling. In general use the spelling –ise/isation rather than –ize/ization (eg. organise/organisation). *Capitals*: Please keep these to a minimum and be consistent throughout the manuscript. *Italics* should be used for foreign words except proper names and words (such as role, elite) that have entered common English usage. The use of italics for emphasis is discouraged. *Abbreviations*: Omit full stops in abbreviations consisting of capital letters (USA) and use capitals for acronyms (WHO). Use eg. instead of 'for example' and ie. instead of 'that is'. *Dates* should be in the form 1 May 1968; 1990s (no apostrophe); the twentieth century. *Numbers* up to ten should normally be spelt out, except for percentages, exact quantities or a series of numbers. Use 'per cent' (not %) except in tables. Include a comma in numbers over 999.

7. To ensure a fair and anonymous peer review process, authors should not allude to themselves as the authors of their article in any part of the text. This includes citing their own previous work in the references section in such a way that identifies them as the authors of the current work.

8. Proofs are supplied to ensure that the printed version coincides with the manuscript accepted. Rewriting sections of an article in proof is not possible. Please make sure that your accepted manuscript is in its final form before it is sent to the printer.

Proofs

First proofs may be read and corrected by contributors provided they can return the corrected proofs within five days of receiving them. The master proof will always be sent directly to the Editors by the printer; contributors will receive duplicates.

Offprints

Authors of accepted articles will be supplied with two complimentary copies of the printed issue in which their contribution is published. Each contributor shall on request also be provided with a copy of the PDF version of their article to create printed offprints.

Last updated August 2009

Appendix 6: Uganda National Household Survey Questionnaire

Batch Sequence No

UGANDA BUREAU OF STATISTICS

THE REPUBLIC OF UGANDA

THE UGANDA NATIONAL HOUSEHOLD SURVEY 2009/10

SOCIO-ECONOMIC SURVEY QUESTIONNAIRE

SECTION 1A: IDENTIFICATION PARTICULARS										
1. STRATUM:										
2. DISTRICT:										
3. SUB-STRATUM: (Urban = 1, Other Urban= 2, Rural = 3)										
4. COUNTY:										
5. SUB-COUNTY:										
6. PARISH:										
7. EA:										
8. HOUSEHOLD SER. NO.:										
9: SAMPLE NO.:										
10. HOUSEHOLD CODE:										
11. NAME OF HOUSEHOLD HEAD:										
12. LOCATION ADDRESS OF HOUSEHOLD:										

THIS SURVEY IS BEING CONDUCTED BY THE UGANDA BUREAU OF STATISTICS UNDER THE AUTHORITY OF THE UGANDA BUREAU OF STATISTICS ACT, 1998.

THE UGANDA BUREAU OF STATISTICS
P.O. BOX 7186
KAMPALA,
TEL: +256-414-706000, 230370
Fax: 0414-230370
E-mail:ubos@ubos.org
Website: www.ubos.org

SECTION 1B: STAFF DETAILS AND SURVEY TIME

1. NAME OF INTERVIEWER								
	DD		MM		YYYY			
2. DATE OF INTERVIEW								
3. NAME OF SUPERVISOR								
	DD		MM		YYYY			
4. DATE OF CHECKING								
5. NAME OF FIELD EDITOR								
	DD		MM		YYYY			
6. DATE OF INSPECTION								
	HRS							
7. STARTING TIME								

8. RESPONSE CODE:

Codes for Item 8:

Completed..... 1

Partially done..... 2 *(Reasons for partial response should be explained in the remarks)*

9. REMARKS BY INTERVIEWER:

10. REMARKS BY SUPERVISOR:

Section 2: Household Roster

We would like to make a complete list of household members.

PERSON ID	Name	Sex 1= M 2= F	What is the relationship of [NAME] to the head of the household? 1= Head 2= Spouse 3= Son/daughter 4= Grand child 5= Step child 6= Parent of head or spouse 7= Sister/Brother of head or spouse 8= Nephew/Niece 9= Other relatives 10= Servant 11= Non-relative 96= Other (specify)	What is the residential status of [NAME]? 1=Usual member present 2= Usual member absent 3=Regular member present 4=Regular member absent 5=Guest 6=Usual member who left hh more than 6 months ago 7=Left permanently/died **(for codes 5 – 7 end interview at column 7**	During the past 12 months, how many months did [NAME] live here? **WRITE 12 IF ALWAYS PRESENT OR IF AWAY LESS THAN A MONTH**	If [NAME] has not stayed for 12 months, what is the main reason for absence? See code book	**For codes 1 – 4 in column 5**		**For all household members aged 10 years and above**	
							How old is [NAME] in completed years? **IF LESS THAN ONE WRITE 0**	What is the present marital status of [NAME]? 1= Married monogamously 2= Married polygamously 3= Divorced/ Separated **(>> NEXT PERSON)** 4= Widow/ Widower **(>> NEXT PERSON)** 5= Never married**(>> NEXT PERSON)**	Does (NAME) currently use or has he/she in the past used any tobacco products such as cigarettes, cigars, pipes or chewable tobacco? 1= Yes 2= No **(>>NEXT PERSON)**	For how long (in years) has (NAME) been using them or did he/she use them? **Completed Years**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**

Section 3: Survival status of Parents and Migration of Household Members

Ask only household members **(usual and regular members)**.

PERSON ID	For all household members below 18 years		For all household members aged 10 years and above					
	Is the natural father of [NAME] living in this household? 1= Yes 2= No but alive 3= No but Dead 4= No don't know	Is the natural mother of [NAME] living in this household? 1= Yes 2= No but alive 3= No but Dead 4= No don't know	Since 2004, has [NAME] lived in another place, such as another village, another town or country, for 6 or more months at one time? 1= Yes 2= No **(>> 15)**	When did [NAME] move here [CURRENT PLACE OF RESIDENCE] the most recent time? Year	In what district or country did [NAME] live before coming to [CURRENT PLACE OF RESIDENCE] the most recent time? DISTRICT CODE	Was the place where [NAME] lived before coming here a rural or urban area? 1= Rural 2= Urban	What was the main reason you came to [CURRENT PLACE OF RESIDENCE] the most recent time?	In how many other places (such as another village, town or abroad) did [NAME] live for 6 or more months at one time since 2004?
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

Code for 13
1= To look for work
2= Other income reasons
3= Drought
4= Eviction
5= Other land related problems
6= Illness, injury
7= Disability
8=Education
9= Marriage
10= Divorce
11= To escape insecurity
12= To return home from displacement
13= Abduction
14= Follow/join family
96= Other (specify)

Section 4: Education: All Persons 5 Years and above

Ask the following questions about all members of the household (usual and regular) who are 5 years and above.

PERSON ID	**For all household members aged 10 years and above** Can you read and write with understanding in any language? See codes below	Have you ever attended any formal school? 1= Never attended 2= Attended school in the past **(>> 4)** 3= Currently attending school **(>> 6)**	Why have you not attended school? See code below **[>> NEXT PERSON]**	What was the highest grade that you completed? See code sheet-Annex 3	Why did you leave school? See code below **[>> NEXT PERSON]**	What grade were you attending in 2008/09? See code sheet-Annex 4 **If attended earlier than last year record 98**	What grade are you currently attending? See code sheet-Annex 4 **If not currently attending go to next person**	Who manages the school? 1= Government 2= Private 3= NGO/ religious organization 4= Other (specify)	What type of school are you currently attending? 1= Day 2= Boarding **(>> 10)** 3= Day and Boarding	Distance to the school in km? **ONLY FOR DAY SCHOLARS**	How much has your household spent during the past 12 months on your schooling? **IF NOTHING WAS SPENT, WRITE 0.** **IF THE RESPONDENT CAN ONLY GIVE A TOTAL AMOUNT, WRITE (DK) IN THE RELEVANT COLUMNS AND THE TOTAL NUMBER IN COLUMN 12f**.						Are you currently receiving a scholarship or subsidy given by the government or school to support your education? 1= Yes 2= No
											School and registration fees (contribution to school development fund)	Uniforms and sport clothes	Books and school supplies	Boarding fees	Other expenses	Total expenses	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12a**	**12b**	**12c**	**12d**	**12e**	**12f**	**13**

Code for column 2
1= Unable to read and write
2= Able to read only
3= Able to read and write
4= Uses Braille

Code for Column 4
1= Too expensive
2= Too far away
3= Poor school quality
4= Had to help at home
5= Had to help with farm work
6= Had to help with family business
7= Education not useful

8= Parents did not want
9= Not willing to attend
10= Too young
11= Orphaned
12= Displaced
13= Disabled
14= Insecurity
96= Other (specify)

Code for Column 6

1= Completed desired schooling
2= Further schooling not available
3= Too expensive
4= Too far away
5= Had to help at home
6= Had to help with farm work
7= Had to help with family business
8= Poor school quality
9= Parents did not want
10= Not willing to attend further
11= Poor academic progress
12= Sickness or calamity in family
13= Pregnancy
96= Other (specify)

Section 5: Health: All Household Members

Ask the following questions about all members of the household **(usual and regular)**.

PERSON ID	During the past 30 days, did you suffer from any illness or injury? 1= Yes 2= No **(>> 12)**	For how many days did you suffer due to illness or injury during the past 30 days? Days	For how many days did you have to stop doing your usual activities due to illness or injury during the past 30 days? Days	Can you describe the **major** symptoms of the illness or injury that you **primarily** suffered fromduring the past 30 days? **Record up to 2 symptom codes** See code below		Was anyone consulted (e.g. a doctor, nurse, pharmacist or traditional healer) for the major illness or injury during the past 30 days? 1= Yes **(>> 8)** 2= No	Why was no one consulted for the major illness? See code below **[>> 12]**	Where did you go for the first consultation during the past 30 days? 1= Drugs at Home **(>> 12)** 2= Neighbor/Friend 3= Community health worker 4= HOMAPAK drug distributor 5= Ordinary shop 6= Drug shop/Pharmacy 7= Private clinic 8= Health unit government 9= Health unit NGO 10= Hospital government 11= Hospital NGO 12= Traditional healer 96= Other (specify)	Distance to the place where this treatment was sought for in km?	What was the cost of this consultation, including any medicine prescribed even if purchased elsewhere?	What was the cost of transportation to the place where this treatment was sought including hotel expenses?	During the past 6 months (including the past 30 days), did you suffer from any illness or injury? 1= Yes 2= No	Is (NAME) currently suffering from diabetes, high blood pressure or heart disease? 1= Yes 2= No	Record Person ID. No. of the person reporting.
1	**2**	**3**	**4**	**5a**	**5b**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**

Codes for Column 5

1= Diarrhoea (acute)

2= Diarrhoea (chronic, 1 month or more)
3= Weight loss (major)
4= Fever (acute)
5= Fever (recurring)
6= Malaria
7= Skin rash
8= Weakness
9= Severe headache
10= Fainting
11= Chills (feeling hot and cold)
12= Vomiting
13= Cough
14= Coughing blood
15= Pain on passing urine
16= Genital sores
17= Mental disorder
20= Abdominal pain
21= Sore throat
22= Difficulty breathing
23= Burn
24= Fracture
25= Wound
26= Child birth related
96= Other (specify)

Code for Column 7
1= Illness mild
2= Facility too far
3= Hard to get to facility
4= Too dangerous to go
5= Available facilities are costly
6= No qualified staff present
7= Staff attitude not good
8= Too busy / long waiting time
9= Facility is inaccessible
10= Facility is closed
11= Facility is destroyed
12= Drugs not available
96= Other (specify)

Section 6: Disability, Malaria and Fever Module

Ask the following questions about all members of the household (usual and regular) unless specified.

PERSON ID	Does (NAME) have difficulty seeing, even if he/she is wearing glasses? 1= No - no difficulty 2= Yes - some difficulty 3= Yes – a lot of difficulty 4= Cannot see at all 8= Don't Know	Does (NAME) have difficulty hearing, even if he/she is wearing a hearing aid? 1= No - no difficulty 2= Yes - some difficulty 3= Yes – a lot of difficulty 4= Cannot hear at all 8= Don't Know	Does (NAME) have difficulty walking or climbing steps? 1= No - no difficulty 2= Yes - some difficulty 3= Yes – a lot of difficulty 4= Cannot walk at all 8= Don't Know	Does (NAME) have difficulty remembering or concentrating? 1= No - no difficulty 2= Yes - some difficulty 3= Yes – a lot of difficulty 4= Cannot remember/concentrate at all 8= Don't Know	Does (NAME) have difficulty (with self care such as) washing all over or dressing, feeding, toileting etc? 1= No - no difficulty 2= Yes - some difficulty 3= Yes – a lot of difficulty 4= Cannot care for self at all 8= Don't Know	Does (NAME) have difficulty communicating, (for example understanding others or others understanding him/her) because of a physical, mental or emotional health condition? 1= No - no difficulty 2= Yes - some difficulty 3= Yes – a lot of difficulty 4= Cannot communicate/understand at all 8= Don't Know	Is (NAME) able to work or to attend school? 1= Yes, all the time 2= Yes, sometimes 3= No 4= NA		Did [NAME] sleep under a mosquito net last night? 1= Yes 2= No **(>> 12)**	**If Yes**, under which of the following brand of nets did (NAME) sleep? 1= Olyset 2= Permanet 3= Duranet 4= Net protect 5= Interceptor 6= Other	Was this net ever soaked or dipped in a liquid to repel mosquitoes or bugs during the past 12 months? 1= Yes 2= No 3= Not sure
							Working	Schooling			
1	**2**	**3**	**4**	**5**	**6**	**7**	**8a**	**8b**	**9**	**10**	**11**

Section 7: Housing Conditions

Now we would like to ask you about your housing conditions: all the rooms and all separate building used by your household members.

1. What type of dwelling is it?

   1= Independent house
   2= Tenement (Muzigo)
   3= Independent flat/apartment
   4= Sharing house/flat/apartment
   5= Boys quarters
   6= Garage
   7= Hut
   8= Uniport
   96= Other (specify)

2. What is its tenure status?

   1= Owned
   2= Rented (Normal)
   3= Rented (subsidized)
   4= Supplied free by employer
   5= Supplied free or rent paid by relative or other person
   6= Other (specify)

3. How many rooms does your household use for sleeping?

4. What is the major construction material of the roof?

   1= Thatch, Straw
   2= Iron sheets
   3= Tiles
   6= Other (specify)

5. What is the **major** construction material of the external wall?

   1= Thatch, Straw
   2= Mud and poles
   3= Timber
   4= Un-burnt bricks
   5= Burnt bricks with mud
   6= Burnt bricks with cement
   7= Cement blocks
   8= Stone
   96= Other (specify)

6. What is the **major** material of the floor?

   1= Earth
   2= Earth and cow dung
   3= Cement
   4= Mosaic or tiles
   6= Other (specify)

7. What is the **main** source of water for drinking for your household?

   1= Private connection to pipeline
   2= Public taps
   3= Bore-hole
   4= Protected well/spring
   5= River, stream, lake, pond
   6= Vendor/Tanker truck
   7= Gravity flow scheme

8= Rain water
96= Other (specify)

8. How long does it take to collect the drinking water from the main source? (**Time in minutes** if the answer in question 7 is different from 1, 7, 8, and 9 in the relevant box)

To and from [ ][ ][ ] Waiting time [ ][ ][ ]

9. How far is the main source from your dwelling? **(Distance in kilo meters)**

[ ][ ]

10. How much water does the household use (for all purposes) per day?

(Record in litres) [ ][ ][ ]

11. What is the type of toilet that is mainly **used** in your household?

1= Covered pit latrine private
2= Covered pit latrine shared
3= VIP latrine private
4= VIP latrine shared
5= Uncovered pit latrine
6= Flush toilet private
7= Flush toilet shared
8= Bush
96= Other (specify)

[ ]

12. **If Code 2, 6 or 7,** with how many other households do you share this toilet?

[ ]

13. What is the main source of lighting in your dwelling?

1= Electricity
2= Paraffin lantern
3= Tadooba
4= Firewood
5= Solar
6= Other (specify)

[ ]

14. What type of fuel do you use most often for cooking?

1= Firewood
2= Charcoal
3= Paraffin/kerosene
4= Electricity
5= Gas
6= Other (specify)

[ ]

15. What type of cooking technology do you use in your household?

1= Traditional stove (Sigiri)
2= Traditional 3-stone open fire
3= Improved charcoal stove
4= Improved firewood stove
5= Gas stove/cooker
6= Paraffin stove
7= Electric plate/cooker
96= Other (specify)

[ ]

Section 8: Household Assets

Type of assets	Asset code	Does any member of your household own [ASSET] at present? 1=Yes 2=No **(>> 6)**	How many […] do your household own at present?		Did any member of your household own [ASSET] 12 months ago? 1=Yes 2=No **(>> Next Asset)**	How many […] did your household own 12 months ago?	
			Number	Total estimated value (in Shs)		Number	Total estimated value (inShs.)
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Household Assets							
House	001						
Other Buildings	002						
Land	003						
Furniture/Furnishings	004						
Household Appliances e.g. Kettle, Flat iron, etc.	005						
Electronic Equipment e.g. TV., Radio, Cassette, etc.	006						
Generators	007						
Solar panel/electric inverters	008						
Bicycle	009						
Motor cycle	010						
Other Transport equipment	011						
Jewelry and Watches	012						
Mobile phone	013						
Other household assets e.g. lawn mowers, etc.	014						

Section 9: Outstanding Loans in the Last 12 Months

Qn.No		Head	Spouse
(1)	**(2)**	**(3)**	(4)
1	Which of the following sources can (NAME) borrow money from now? **(Circle all that apply)** Friends/ relatives = A Private money lender = B Landlord = C Employer = D Bank = E Microfinance institutions = F Input trader/shop keeper = G Others (specify) = X None = Z	A B C D E F G X Z	**A B C** **D E F** **G X Z**
2	What is the maximum amount (NAME) can borrow now? (U. Shs)	☐☐☐☐☐☐☐	☐☐☐☐☐☐☐
3	Has (NAME) ever applied for a loan?	Yes No	**Yes No**
	a) Formal financial institution	1 2	**1 2**
	b) Semi-formal institutions	1 2	**1 2**
	c) Informal sources **If no code 1 circled, skip to next person/next section**	1 2	**1 2**
4	When did (NAME) apply?	☐☐☐☐ ☐☐ Year Month	☐☐☐☐ ☐☐ **Year Month**
5	What was the **main** reason for applying? 1= Buy land 2= Buy livestock 3= Buy farm tools and implements 4= Buy farm inputs such as seeds, fertilizer, pesticides 5= Purchase inputs/working capital for non-farm enterprises 6= Pay for building materials (To buy house)	☐	☐

	7= Buy consumption goods and services 8= Pay for education expenses 9= Pay for health expenses 10= Pay for ceremonial expenses 96= Other (specify)		
6	How much did [NAME] ask for?		
7	What is the status of the loan application? 1= Fully or partly approved 2= Rejected **(>> NEXT PERSON)** 3= Still pending **(>> NEXT PERSON)**	☐	☐
8	How much did [NAME] receive?		
9	How much was paid back to lender (principal plus interest)? **If none, write '0'**		
10	How much is still outstanding – has to be paid back to lender – (principal plus interest)? **If none, write '0'**		
11	Repayment period **If no fixed term, write '99'**	Months ☐☐	**Months** ☐☐
12	**What was required as security?** **1 = None** **2 = Land** **3 = Livestock** **4 = House** **5 = Future harvests** **6 = Vehicle** **7 = Group (peer monitoring)** **8 = Character** **96 = Other (specify)**	☐	☐

Section 10A: Household Consumption Expenditure

On average, how many people were present in the last 7 days? In this section children are defined as less than 18 years.

Household Members				Visitors			
Male adults	Female adults	Male children	Female children	Male adults	Female adults	Male children	Female children

(Part A) Food, Beverage, and Tobacco (During the Last 7 Days)

Item Description	Code	Unit of Quantity	Consumption out of Purchases				Consumption out of home produce		Received in-kind/Free		Market Price	Farm gate price
			Household		Away from home							
			Qty	Value	Qty	Value	Qty	Value	Qty	Value		
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
Matooke	101											
Matooke	102											
Matooke	103											
Matooke	104											
Sweet Potatoes (Fresh)	105											
Sweet Potatoes (Dry)	106											
Cassava (Fresh)	107											
Cassava (Dry/ Flour)	108											
Irish Potatoes	109											
Rice	110											
Maize (grains)	111											
Maize (cobs)	112											
Maize (flour)	113											
Bread	114											
Millet	115											
Sorghum	116											
Beef	117											
Pork	118											
Goat Meat	119											
Other Meat	120											
Chicken	121											
Fresh Fish	122											
Dry/ Smoked fish	123											

Eggs	124											
Fresh Milk	125											
Infant Formula Foods	126											
Cooking oil	127											
Ghee	128											
Margarine, Butter, etc	129											

Section 10A: … Continued (Part A) Food, Beverage, and Tobacco (During the Last 7 Days)

Item Description	Code	Unit of Quantity	Consumption out of Purchases				Consumption out of home produce		Received in-kind/Free		Market Price	Farm gate price
			Household		Away from home							
			Qty	Value	Qty	Value	Qty	Value	Qty	Value		
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
Passion Fruits	130											
Sweet Bananas	131											
Mangos	132											
Oranges	133											
Other Fruits	134											
Onions	135											
Tomatoes	136											
Cabbages	137											
Dodo	138											
Other vegetables	139											
Beans fresh)	140											
Beans (dry)	141											
Ground nuts (in shell)	142											
Ground nuts (shelled)	143											
Ground nuts (pounded)	144											
Peas	145											
Simsim	146											
Sugar	147											
Coffee	148											
Tea	149											
Salt	150											
Soda*	151											
Beer*	152											
Other Alcoholic drinks	153											
Other drinks	154											
Cigarettes	155											
Other Tobacco	156											
Expenditure in												

Restaurants on: 1. Food	157											
2. Soda	158											
3. Beer	159											
Other juice	160											
Other foods	161											

*** Sodas and Beers to be recorded here are those that are not taken with food in restaurants.**

Section 10B: Household Consumption Expenditure

(Part B) Non-Durable Goods and Frequently Purchased Services (During the last 30 days)

Item Description	Code	Unit of Quantity	Purchases		Home produced		Received in-kind/Free		Unit Price
			Qty	Value	Qty	Value	Qty	Value	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Rent of rented house/Fuel/power									
Rent of rented house	301								
Imputed rent of owned house	302								
Imputed rent of free house	303								
Maintenance and repair expenses	304								
Water	305								
Electricity	306								
Generators/lawn mower fuels	307								
Paraffin (Kerosene)	308								
Charcoal	309								
Firewood	310								
Others	311								
Non-durable and Personal Goods									
Matches	451								
Washing soap	452								
Bathing soap	453								
Tooth paste	454								
Cosmetics	455								
Handbags, travel bags etc	456								
Batteries (Dry cells)	457								
Newspapers and Magazines	458								

Others	459								
Transport and communication									
Tires, tubes, spares, etc	461								
Petrol, diesel etc	462								
Taxi fares	463								
Bus fares	464								
Bodaboda fares	465								
Stamps, envelops, etc.	466								
Air time & services fee for owned fixed/ mobile phones	467								
Expenditure on phones not owned	468								
Others	469								

Section 10B: … Continued

(Part B) Non-Durable Goods and Frequently Purchased Services (During the last 30 days)

Item Description	Code	Unit of Quantity	Purchases		Home produced		Received in-kind/Free		Unit Price
			Qty	Value	Qty	Value	Qty	Value	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Health and Medical Care									
Consultation Fees	501								
Medicines etc	502								
Hospital/ clinic charges	503								
Traditional Doctors fees/ medicines	504								
Others	509								
Other services									
Sports, theaters, etc	701								
Dry Cleaning and Laundry	702								
Houseboys/ girls, Shamba boys etc	703								
Barber and Beauty Shops	704								
Expenses in hotels, lodging, etc	705								

Section 10C: Household Consumption Expenditure

(Part C) Semi-Durable Goods and Durable Goods and Service (During the last 365 days)

Item Description	Code	Purchases	Consumption out of household /enterprise stock	Received in-kind/Free
		Value	Value	Value
1	**2**	**3**	**4**	**5**
Clothing and Footwear				
Men's clothing	201			
Women's clothing	202			
Children's clothing (excluding school uniforms)	203			
Other clothing and clothing materials	209			
Tailoring and Materials	210			
Men's Footwear	221			
Women's Footwear	222			
Children's Footwear	223			
Other Footwear and repairs	229			
Furniture, Carpet, Furnishing etc				
Furniture Items	401			
Carpets, mats, etc	402			
Curtains, Bed sheets, etc	403			
Bedding Mattresses	404			
Blankets	405			
Others and Repairs	409			
Household Appliances and Equipment				
Electric iron/ Kettles etc	421			
Charcoal and Kerosene Stoves	422			
Electronic Equipment (TV, radio cassette etc)	423			
Bicycles	424			
Radio	425			
Motors, Pick-ups, etc	426			
Motor cycles	427			
Computers for household use	428			
Phone Handsets (both fixed and mobile)	429			
Other equipment and repairs	430			
Jewelry, Watches, etc	431			

Section 10C: … Continued

(Part C) Semi-Durable Goods and Durable Goods and Service (During the last 365 days)

Item Description	Code	Purchases	Consumption out of household enterprise stock	Received in-kind/Free
		Value	Value	Value
1	**2**	**3**	**4**	**5**
Glass/ Table ware, Utensils, etc				
Plastic basins	441			
Plastic plates/ tumblers	442			
Jerry-cans and plastic buckets	443			
Enamel and metallic utensils	444			
Switches, plugs, cables, etc	445			
Others and repairs	449			
Education				
School fees including PTA	601			
Boarding and Lodging	602			
School uniform	603			
Books and supplies	604			
Other educational expenses	609			
Services Not elsewhere Specified				
Expenditure on household functions	801			
Insurance Premiums	802			
Other services N.E.S.	809			

Section 10D: Non-consumption Expenditure

Item description	Code	Value during the last 12 months
1	**2**	**3**
Income tax	901	
Property rates (taxes)	902	
User fees and charges	903	
Graduated tax	904	
Pension and social security payments	905	
Remittances, gifts, and other transfers	906	
Funerals and other social functions	907	
Others (like subscriptions, interest to consumer debts, etc.)	909	

Section 11: Incomes from Enterprise, Employment and Other Activities during the last 12 Months
Section 11A: Enterprise and Other Incomes

Sr. No	Item Description	Cash	Kind (Value)
(1)	(2)	(3)	**(4)**
1	**Income from household enterprises**		
11	Crop Farming Enterprises		
12	Other Agricultural Enterprises (e.g. Livestock, Poultry, etc.)		
13	Non-Agricultural Enterprises – Household/Cottage		
14	Non-Agricultural Enterprises - Others		
2	**Property Income**		
21	Imputed rents of owner – occupied housing (net)		
22	Net actual rents received from building/household property		
23	Net rent received from land		
24	Royalties		
25	Interest received		
26	Dividends		
3	**Current transfers and other benefits**		
31	Pension and life insurance annuity benefits		
32	Family allowances and other social security benefits		
33	Remittances and assistance received from others		
34	**Other income {inheritance, alimony, scholarships and other unspecified income etc.}**		

Section 11B: Employment Income

Id No.	Main Activity		Secondary Activity		Other Activities	Grand Total
	Cash	Kind (Value)	Cash	Kind (Value)	Total	
(1)	(2)	(3)	(4)	(5)	(6)	**(7)**

Section 12: Welfare Indicators

	What is the household's most important source of earnings during last 12 months? **1= Subsistence farming** **2= Commercial farming** **3= Wage employment** **4= Non-agricultural enterprises** **5= Property income** **6= Transfers (pension, allowances, social security benefits, remittances)** **7= Organizational support (e.g. food aid, WFP, NGOs etc)** **8= Other (specify)**	
1202	**Does every member of the household have at least two sets of clothes?** **1= Yes** **2= No**	
1203	**Does every child in this household (all those under 18 years old) have a blanket?** **1= Yes** **2= No**	
1204	**Does every member of the household have at least one pair of shoes?** **1= Yes** **2= No**	
1205	**What is the average number of meals taken by household members per day in the last 7 day**	
1206	**What did you do when you last ran out of salt?** **1= Borrowed from neighbors** **2= Bought** **3= Did without** **4= Does not cook at all** **5= Not applicable**	
1207	**What did your children below 5 years old (0-4 years) have for breakfast yesterday?** **1= Tea/drink with sugar only**	

	2= Milk/milk tea with sugar **3= Solid food only** **4= Tea/drink with solid food** **5= Tea/drink without sugar with solid food** **6= Porridge with solid food** **7= Porridge with sugar only** **8= Porridge with milk** **9= Porridge without sugar only** **10= Nothing** **11= Other (Specify)**
1208	**What did your children between 5 to 13 years old have for breakfast yesterday?** USE CODE FROM Q. 1207 ABOVE
1209	**Was your household's economic activity affected by civil strife during last 12 months?** **1= Yes** **2= No**
1210	**Was your household's economic activity affected by theft/violence or other similar attacks in the last 12 months?** **1= Yes** **2= No**
1211	**Is any member of this household an LC1, LC2 or LC3 committee member?** **1= Yes** **2= No**
1212	**Can other people in the village from your ethnic group be trusted?** **1= Very great extent** **2= Great extent** **3= Neither great nor small extent** **4= Small extent** **5= Very small extent**
1213	**What about people from a different ethnic group?** **1= Very great extent** **2= Great extent** **3= Neither great nor small extent** **4= Small extent** **5= Very small extent**

SECTION 13: CULTURAL PARTICIPATION (For all members 18 years and above during the last 12 months)

ID No.	What is (NAME'S) religion? 1=Catholic 2=Protestant 3=Muslim 4=Pentecostal 5=SDA 6=Traditionalist 96=Other (Specify)	Does (NAME) listen to/watch any music videos 1=Yes 2=No	Does (NAME) do any kind of reading? 1=Yes 2=No [>> 7]	What kind of materials does (NAME) read? Circle all that apply Books =A Newspapers =B Magazines =C Journals =D Other (Specify) =X	Which newspaper(s) does (NAME) usually read? Circle all mentioned New Vision = A Monitor = B Orumuri = C Etop = D Bukedde = E Red Pepper = F Other (Specify) = X	Do you have a cultural institution in your Sub-county? 1= Yes 2= No 3= Don't Know	How does the cultural institution support your community? Circle all mentioned Conflict resolution = A Community mobilization = B Sponsorship for children/youth = C Provision of cultural Services = D Other (Specify) = X Does not support our Community = Z	Did (NAME) participate in any cultural activity in the last 12 months? Circle all mentioned Visit to cultural sites = A Visit to theatre for shows = B Participation in music galas = C Attended introduction, funeral rite, marriage ceremony = D Social events such as birth, giving of names, initiation into adulthood etc = E Participated in any traditional game = F Library = G Other (Specify) = X Did not participate in any cultural activity = Z	Did (NAME) get income from any cultural activities in the last 12 months? Circle all that apply Herbal medicine practice = A Mat/basket making = B Music = C Drama = D Bark cloth making = E Interpreters = F Other (Specify) = X Did not get income from any cultural activity = Z
1	2	3	4	5	6		10		11
				A B C D X	A B C D E X		A B C D X	A B C D E F G X Z	A B C D E X Z
				A B C D X	A B C D E X		A B C D X	A B C D E F G X Z	A B C D E X Z
				A B C D X	A B C D E X		A B C D X	A B C D E F G X Z	A B C D E X Z
				A B C D X	A B C D E X		A B C D X	A B C D E F G X Z	A B C D E X Z
				A B C D X	A B C D E X		A B C D X	A B C D E F G X Z	A B C D E X Z
				A B C D X	A B C D E X		A B C D X	A B C D E F G X Z	A B C D E X Z
				A B C D X	A B C D E X		A B C D X	A B C D E F G X Z	A B C D E X Z
				A B C D X	A B C D E X		A B C D X	A B C D E F G X Z	A B C D E X Z
				A B C D X	A B C D E X		A B C D X	A B C D E F G X Z	A B C D E X Z
				A B C D X	A B C D E X		A B C D X	A B C D E F G X Z	A B C D E X Z
				A B C D X	A B C D E X		A B C D X	A B C D E F G X Z	A B C D E X Z
				A B C D X	**A B C D E X**		**A B C D X**	**A B C D E F G X Z**	A B C D E X Z

Section 14: Link with the Household Enterprises/Activities Questionnaire

1 Over the past 12 months, has anyone in your household operated any household enterprise which produces goods or services (for example, artisan, metalworking, tailoring, repair work; also include processing and selling your outputs from your own crops if done regularly) or has anyone in your household owned a shop or operated a trading business or profession?

1= Yes
2= No **(>> NEXT SECTION)**

2. If Yes list all the household enterprises/activities that the household is/has been engaged in the past 12 months.

1) ……
2)……
3)……
4) ……
5)……
6). ……

INTERVIEWER:

(1) FOR EACH HOUSEHOLD ENTERPRISE/ACTIVITY LISTED, ADMINISTER THE RELEVANT QUESTIONNAIRE

	HRS
END TIME	