Health outcomes after the abolition of Cost-sharing in public hospitals in Uganda

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Summary

With a GDP per capita of about US$250 per annum, Uganda is listed among the poorest countries of the world. However, in the last 15 years, the country has recorded some of the highest GDP growth rates in the region. A number of policy measures, including structural adjustment, tight fiscal and monetary policies are responsible for this trend. The economic reforms, first implemented in May 1987, cut across various sectors of the economy, including health, education, public service, industry, agriculture, etc. These reforms have had several positive and negative outcomes on the population of Uganda, depending on the sector.

In this paper, I focus on one aspect of the reforms, cost sharing in public hospitals and the implication of the abolition of the measure in February 2001. Aggregate and household level data from Ugandan from before and after the abolition of user fees for public health services are used to explore the impact of this policy change on the ability to access health services. The paper explores the impact of the measure on outcomes in terms of workdays lost due to sickness by different groups of households, and in particular groups (orphans) who had earlier been excluded from such services. Administrative and household level data point to a significant improvement in access to services, much of which is by the poor. The improved access to services was, however, not associated with improved outcomes, suggesting that better access was not accompanied by improvements in the quality of services, as is indeed supported by qualitative evidence and the fact that wealthy households seem to have opted out of public services. The fact that health outcomes have significantly worsened for orphans suggests that more than just eliminating fees is needed to improve health services for the poor and vulnerable.

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1. Introduction

1.1 Background to the economy of Ugandan

With income per capita of about US$250 per annum, Uganda is ranked among the poorest countries of the world. The many years of turmoil and political instability have led to serious disruptions in almost all forms of economic activity and have left the country at the mercy of the donors. The economy of is largely dominated by the agricultural sector, with agriculture accounting for almost 41% of gross domestic product (GDP), over 90% of total exports and employing about 80% of the population, (Republic of Uganda, 2002). Most of the industries and service sectors in the country are based on the processing and marketing of agricultural products. The industrial/manufacturing sector accounts for about 10%, while the commercial service sector (including supply of electricity and water, trade, hotels and transport) accounts for about 21% of GDP. Community services (including health, education, and general government) account for about 20% of GDP (ref. Table 1).

Table 1: The economy of Uganda at a glance

	1999	2000	2001
Total GDP (billion US$)	5.20	5.46	5.81
Share agriculture (%)	42.1	41.7	41
Share industry (%)	9.6	9.5	9.9
Share community services (%)	19.0	19.7	19.8
Share commercial services (%)	25.2	24.9	25.2
Share others (%)	4.1	4.2	4.1
Total population (million)	21.6	22.2	22.8
Share rural population (%)	84.72	83.78	83.33
GDP per capita (US$)	241.21	245.91	254.82
GDP growth rate (%)	6.2	4.8	6.4
GDP per capita growth rate (%)	3.6	2.2	4.0
External debt (billion US$)	3.5	3.6	3.4

Source: Republic of Uganda, 2002. Background to the Budget, 2002/03.

However, in the last 15 years, the country has recorded some of the highest GDP growth rates (averaging about 5% per annum) in the region. For example, Uganda's GDP growth rate in 2001 was about 6.4%, (ref. Table 1). A number of policy measures, including

structural adjustment, tight fiscal and monetary policies are responsible for this trend. The economic reforms, first implemented in May 1987, cut across various sectors of the economy, including health, education, public service, industry, agriculture, etc. These reforms have had several positive and negative outcomes on the population of Uganda, depending on the sector. In this paper, I focus on one aspect of the reforms, cost sharing in public hospitals and the implication of the abolition of the measure in February 2001.

1.2 Motivation for the study

The debate on user fees for health care services has generated a lot of controversy, with an ideological divide between the proponents of the 'free market', on the one hand, arguing that charging for health care is an important demand-management tool, and the promoters of the 'public good', on the other, arguing that user fees can only lead to equity problems, denying the poor access to health services. Whether or not assessing user fees can improve health outcomes is an issue that has been widely discussed in the literature. Most, if not all of the studies on the subject have, however, explored the impact of increasing user fees rather than the opposite. Data from Uganda provide a unique opportunity to observe the extent to which eliminating of such fees could improve health outcomes.

This paper examines the impact of the abolition of user charges in public hospitals on ability to access health care services. The paper also explores the outcomes of the change in policy in terms of workdays lost due to sickness by different groups of households, and in particular groups (orphans) who had earlier been excluded from such services for Uganda. Two decades into the AIDS epidemic, civil conflict and the high adult mortality rates have resulted in large numbers of orphans in developing countries, (Ainsworth and Filmer, 2002). However, little is known about the health status of orphans and how the abolition of user fees may have affected their access.

The paper is structured as follows. Section two reviews the nature of health care services and user fees in developing countries and the Ugandan health situation. Section three

explores the determinants of service utilization including user fees as one possible factor, examines to what extent there is a ink between increased cost recovery and improved quality of service delivery in a number of dimensions, and describes the data used, in addition to providing a number of descriptive statistics. In section four we present results on demand for health services and incidence of being rationed and health outcomes, in particular workdays lost due to sickness, asking whether, and if yes how these outcomes have been affected by cost recovery policies. Section five concludes with a number of policy recommendations.

2. User fees and health care services in developing countries

2.1 Introduction

This section reviews the empirical literature on the impact of introducing user fees for health, pointing to some of the desirable features that should be included in such analysis. We then describe characteristics, both in terms of changes in health financing, as well as the availability of data, of the Ugandan system. These features are illustrated with descriptive evidence pointing towards a significant increase in households' spending for medical care, as well as changes in the availability of services and medical care at the provider level.

2.2 Implication of user-charges on the use of public health facilities

Whether or not cost recovery in health services helps or prevents poor people from accessing health services has been discussed in a large body of literature (see Akin et al. 1989, Reddy and Vandermoortele 1993, Shaw and Ainsworth 1995, and Gilson et al. 2000 for summaries). The general consensus, as supported by recent empirical evidence, seems to be that even the poor are willing to pay for high quality of health services. This has been interpreted as implying that charging of user fees, if accompanied by improvements in quality, can be justified and will not have a negative impact on equity.

In Bangladesh, even poor patients are reported to have bypassed free or very cheap government institutions and travelled further to more expensive establishments that offered acceptable quality (Akin and Hutchinson, 1999). Similarly, in Egypt, the poor have been shown to avoid public facilities that provide services of low quality in favour of private ones where service provision is better, suggesting that Government should focus on financing rather than direct provision of health services (Nandakumar et al. 2000). Introduction of user fees in Mauritania in 1992 is reported to have not only helped to improve the quality of health care but also improved facilities and ability to invest in upgrading and training (Audibert and Mathonnat 2000). In Niger, no evidence for serious reductions in access or increases in cost could be found when investigating the impact of

implementing direct user charges which were combined with insurance payments and improved service quality. In fact, higher utilization of formal care, which is surmised to be due to improvements in quality, is reported to have outweighed any possible decrease in utilization due to increased costs (Chawla and Ellis 2000). Introduction of user fees is found to receive broad support if such fees eliminate the often significant charges and bribery that are usually levied unofficially, in which case the negative impact on equity is likely to be limited (Killingsworth et al. 1999). In Cameroon, higher quality implied that increases in health fees did in fact constitute a reduction in the effective price of health services and led to increased utilization of such services, with no visible negative impact on the poor (Litvack and Bodart 1993).

While there appears to be ample evidence on a benign or even positive impact of the introduction of user charges for health services, other contributions to the literature paint a less positive picture. In Zaire, for example, charging for health services has been associated with a direct decline in use (Haddad 1995). In Ghana, even though increased cost recovery was perceived to be associated with increased quality of general health delivery, services, and drug supplies, it nonetheless led to higher levels of self-medication and other behaviour aimed at cost saving by the poor (Asenso-Okyere et al. 1998). On equity grounds, user fees on health care can lead to disappointing results because they inhibit the poor from accessing health services much more than they inhibit the non-poor. In Kenya, for example, Collins, et al (1996) find that introduction of use fees led to a reduction in outpatient registration of about 27% in provincial hospitals and higher reductions in district and lower level health centres. Newsbrander, et al, (2000) report that 91% of households in Kenya knew of someone who failed to seek health care because of cost. There were also massive reductions in the percentage of female patients and the unemployed seeking treatment.

Even where user fees have been well designed, enforcement can be problematic (Nyonator and Kutzin 1999) and criteria for exemption which are often used to mollify the impact of such measures on the poor are not always implemented in the way they

were designed. Finally, credit constraints may constrain the ability to access fee-based services even in a situation where there is a clear willingness to pay by a specific group although informal insurance networks (Hausman-Muela et al. 2000). A review of three country cases finds that the goals of cost recovery policies were rarely fully accomplished and that, even where there was a positive change in quality, equity may have suffered (Gilson et al. 2000).

In practice, the ability to respond to these needs is often constrained by data availability. Lack of data on service provision at the facility level makes it difficult to ascertain the extent to which the expected improvement in service quality has indeed materialized. Aggregate data on users that lack information on their socio-economic characteristics makes it difficult to identify the poor and thus assess how they have been affected by reforms of health financing. Inability to control for other factors such as the provision of infrastructure complementary to health services makes it difficult to assess the trade-offs involved and decide whether government should invest in health related services rather than, say, improving water supply. This paper explores the issue at hand with respect to supply of health services, households' demand for such services, and actual outcomes before and after the abolition of cost sharing.

2.3 Public expenditure on health and outcomes

Findings by Ablo and Reinikka (1998), demonstrate that mere budget allocations alone can be misleading in explaining outcomes and making policy decisions, when institutions are weak. How efficiently expenditures are transformed into actual services i.e. distribution of the allocations at the recipient level, and other non-policy factors can have a strong impact on outcomes. This study is also motivated by literature which shows that health outcomes can vary across gender, age, and level of income. For example, Newbrander, et al (2000) show that the poor are more likely to delay or not to seek treatment, and when they seek treatment, they are willing to travel longer distances to looking for cheaper alternatives than the non-poor. Canagajah and Ye (2001) report that health expenditures and health care provision in Ghana tend to favour the more affluent

regions and non-poor at the expense of the poor. They find no link between public health expenditures, particularly the pattern of immunization across the country, and health outcomes. For example, the findings show that despite the much more extensive health facilities in the more affluent areas, the percentage of fully immunized children is only marginally higher. In the health sector, outcomes can be strongly influenced by the bias of the health policy (curative *vis a vis* preventive), other non-policy factors such income per capita, income distribution, level of education and cultural factors rather than the allocations per see. Using the 1992-93 and 1997-98 Vietnam Living Standards Survey data, Glewwe, et al (2002) find that growth in household expenditures account for only a small proportion of improvements in children's nutritional standards.

Like elsewhere in the world, health care provision in developing countries is associated with large inequalities, particularly inequalities based on age, gender and disadvantaged groups. Using the Living Standard Measurement Study for Brazil, Diaz (2001) finds that, based on mortality rates, reported appearance of chronic health problems and self-assessed health for children aged 5 years and below, boys are in worse health condition than the girls. After this age, the differences tend to disappear until adulthood when the women consistently consider themselves to be less healthy. Diaz finds larger differences among the women's groups and inequalities based on economic status, which tend to increase with age. The rich accumulate a greater number of health years, resulting in pro-rich inequalities.

2.4 Description of Uganda's health system

From the time of independence, the Uganda had one of the best health care systems, with the largest and most equipped referral hospital (Mulago Hospital) in the region. Almost each district had a well functioning and equipped hospital, with fairly equipped dispensaries, at the county and sub-county levels. But following the neglect and mismanagement of public affairs that besieged the country in the 1970s and early 1980s, there was massive deterioration in the quality of health care services in the country. Today most of the public health facilities in the country are in a sorry state and there are

acute shortages of trained personnel and medical equipment. The staff are underpaid and highly demoralised. Many highly trained medical personnel have taken economic refugee to other countries, particularly the developed countries, and/or the private sector. Since 1987, a number of private and non-governmental (NGO) operated clinics and hospitals have sprung up (Ablo and Reinikka, 1998) to try and compensate for the rather stagnant supply of health care services by the public sector. However, most of the private-sector clinics and hospitals are located in the major urban areas, particularly, the capital, Kampala and are generally out reach for the poor.

Indicators of the quality of health care such as births attended by qualified health workers, patient to health personnel ratio, contraceptive prevalence, population with access to essential drugs etc. show that the quality of health care provision in the country is very low. The WHO (2001) report indicates that there are only about 19 nurses and 14 mid-wives per 100,000 people in Uganda. Coverage by dentists is much lower at about 1 dentist for every half a million people. Only about 15% of adults have access to contraceptives and only 70% of the population have access to essential drugs. Because of cost and distance, about 58% and 41% of women, respectively, fail to seek antenatal care in hospitals. Equally, health outcome indicators such as immunization coverage, incidence of child stunting, life expectancy and probability of surviving up to age 65 years all paint a gloomy picture. Immunization coverage for children below one year in 2001 was only about 83%, about 38% of children in Uganda are under-height for their age and 26% are under-weight for age. Life expectancy at birth[1] is only about 42 years (and only 36 years for health life expectancy), compared to the over 70 years in the developed countries and the global average of 66 years. Contrary to expectations, the shares of health expenditure to overall gross domestic product (GDP) and public health expenditure to total health expenditure tend be low among the developing countries compared to the developed countries. Total expenditure on health in Uganda is only about 3.5% of GDP while public expenditure on health as a percentage of total health

[1] Life expectancy among most sub-Saharan African countries had declined in the 1990s owing to the AIDS epidemic, which is rampant among the youth. Uganda's life expectancy declined from 47 years in 1990 to 44 years in 1995 and 42 years in 2000. The situation and trend are a lot similar for other countries in the region, (ref. Table 2).

expenditure is only about 38%. Based on 1998 figures, total health expenditure per capita is only about 11 US dollars.

Table 2: Health indicators for Uganda and selected countries

Country	Infant Mortality …/1	Life expectancy	Diarrhoea prevalence		Nutritional status …/3		Antenatal care …/4		Vaccination coverage…/5
	Under 1 year	Total years …/2	Under 6 months	6-12 months	Height for age	Weight for height	Doctor.	Nurse	1 – 2 yrs
Uganda 1988	98.3	47	26	43.3	39.4	1.2	11.5	76.1	49.3
Uganda 1995	81.3	44	17.7	33.3	35.8	5.4	9.6	81.6	60.5
Uganda 2000/01	88.3	42	17.8	38.1	34	5.1	8.5	83.8	47.3
Burkina Faso 1992/93	93.7	45	15.7	28.3	30.6	16.7	2	57.1	72.7
Burkina Faso 1998/99	105.3	44	14.4	28.8	34.9	16.7	1.9	60.7	55.9
Cote d'Ivore 1994	88.5	48	11.6	24.3	24.4	8.3	4.1	79.1	72.3
Cote d'Ivore 1998/99	112.2	46	10.3	30.3	21.3	9.6	5.7	78.5	73.4
Ghana 1988	77.2	57	16.3	38.5	31.1	7.2	27.4	55.7	40.3
Ghana 1993	66.4	59	14.2	24.9	25.9	11.3	26.4	59.2	68.2
Ghana 1998	56.7	57	13.6	25.4	19.2	13	25.8	62.8	76
Kenya 1989	60.7	57	17.1	25.4	-	-	28.5	48.9	61
Kenya 1993	61.7	53	13.5	23.8	29	4.6	23.7	71	69.2
Kenya 1998	73.7	47	11.9	22.4	33	6.1	27.8	64.1	55.4
Nigeria 1990	87.4	49	10.9	26.3	37.9	8.7	35.7	23.5	34.7
Nigeria 1999	75	47	8.2	18.8	45.5	12.4	24.7	38.9	19.5
Zimbabwe 1988	49.1	56	15.1	41.4	27.4	1.6	18.5	72.9	77.6
Zimbabwe 1994	52.8	49	13.8	33.2	21.4	5.5	20.9	72.2	79.1
Zimbabwe 1999	65	40	6.1	27.7	26.4	7.1	12.1	80.5	68.6

Source: i. World Health Organisation: Survey Indicators. www. measuredhs.com/data/indicators.
ii. World Bank, World: DevelopmentIndicators. www.devdata.worldbank.org/hnpstats.

…/1 Number of deaths per 1,000 children born alive.

…/2 For life expectancy, the figures reported refer to 1990, 1995 and 2000, where applicable.

…/3 Medical officer consulted by pregnant woman.

…/4 Indexes are expressed in terms of the number of standard deviation (SD) units from the median of the NCHS/CDC/WHO international. Figures reported indicate percentage of children whose index is below 2 standard deviations.

…/5 Percentage of children one to two years of age, for whom a vaccination card was shown to the interviewer during the first year of life, according to current age of the child.

The indicators for Uganda show that the quality of health care is not only low but also deteriorating, and particularly after the introduction of cost sharing. For example, from Table 2, we note that while infant mortality (under one year) declined from 98 to 81 death per 1,000 children between 1988 and 1995, it increased to 88 in 2000/01. Although there was a slight increase in antenatal care provided by nurses from about 82 to 84, the number of pregnant women consulting a medical doctor declined from 9.6 to 8.5 between 1995 and 2000/01, respectively. The prevalence of diarrhoea among children aged below 6 months remained fairly static at about 18% but it increased among children aged 6

months to 1 year from about 33% to 38%. This is in spite of the improvements earlier registered between 1988 and 1995. The incidence of stunting reduced from about 40% in 1988 to about 36% in 1995, but after which it reduced only slightly to 34% in 2000/01. In 2000/01, vaccination coverage for age 1 to 2 years declined to 47%, well below the level registered in 1988.

Compared with other countries in the sub-Saharan African region, these health indicators show that Uganda is lagging behind. For example, the infant mortality rate of 74 for Kenya (1998) and 65 in Zimbabwe (1999) are much lower in comparison to those for Uganda. The number antenatal care attendances with a doctor are about 28 in Kenya, 25 in Nigeria, and 26 in Ghana. Prevalence of diarrhoea among children below 6 months of age is only about 12% in Kenya, 8% in Nigeria and 6% in Zimbabwe.

In an effort to improve efficiency and to revamp quality in the provision of health care services in the country, government, has since 1989, undertaken a number of policy measures, among which was the policy of cost sharing or cost recovery, by imposing user charges in public hospitals[2]. The second major policy change was a shift to focusing on preventive health care rather than curative health care. In principle, however, there was no national policy on user fees but the Ministry of Health (MOH) issued fee-for-service guidelines to districts and the health providers. According to the guidelines, charges of Ushs500 for adults and Ushs300 for children, were to be imposed. Urban hospitals had the liberty to charge up to Ushs1,000 for adults and Ushs500 for children. The charges were a block fee payable before consultation, irrespective of what services one required or obtained. The revenue generated was to used to pay top-up allowances to staff[3] (50%), purchase of drugs and supplies (30%), maintenance and repairs of facilities (10%), supervision, transport and outreach (10%), (MOH, 1997). The findings show that most of the health clinics did not follow the guidelines set by the MOH, preferring to charge higher fees. However, in the heat of the 2001 presidential election campaigns, and

[2] This measure was also part of the overall economic recovery programme (ERP) and austerity measures undertaken by government to reduce the fiscal deficit, and to bolster control of inflation, by reducing public expenditure and government borrowing from the Central Bank.

following repeated complaints of inability to pay consultation fees and the high cost of drugs, the government, with effect from February 2001, resolved to abolish user charges in all public health centres. This was implemented as measure to promote access to services by all. The measure was immediately implemented, the impact of which has not yet been established.

To-date, health care provision in Uganda is undertaken by both the public and the private sectors. However, due to inadequacies of the public sector, the private is found to be playing a leading role in the provision of health services to the population, (Ablo and Reinikka, 1998). For example, the World Bank (1996) survey of performance and perceptions of health and agricultural service in Uganda shows that only about a quarter of households in Uganda used government health services while about one third used some other health care service provider in the period one month prior to the survey. The population is reported to resent public hospitals because of the frequent lack of drugs, poor facilities and having to wait for longer than eight hours. In addition, health workers tend to devote very little time to the activities of the health units, and rural health units fail to attract qualified health workers.

2.5 Summary of the literature

Whereas it can be argued that even the poor are willing to pay for high quality of health services and therefore user fees are okay as long as they are accompanied by improvements in quality, equity, in terms of access by all can be lost as a consequence of the same policy. From the foregoing, it is noted that user fees on health services can lead to serious negative implications for the society. In particular, the poor are liable to suffer most as they would find no alternative recourse for medical attention. Most of the previous studies have focused on the impact of user fees on health outcomes. The Ugandan data gives the opportunity to consider the other side of the coin, the implication of abolishing user fees. In the next section, we lay out the conceptual framework and

[3] This was meant to complement the meager official salaries paid to health workers as an incentive to promote commitment to work and to improve efficiency.

estimation procedures to estimate this impact on access to health services and health outcomes for Uganda.

3. Conceptual framework, data and estimation strategy

3.1 Introduction

An efficient and equitable health care programme is an essential ingredient in the improvement of welfare of the population for any country. Good health is very important for economic growth and development and enjoyment of life by the population. Good health is necessary for the population to perform efficiently in their day-to-day activities, reduces incidences of wastage and releases resources for development in other sectors. In the World Health Report, 2000 it is noted that,

> "Health systems provide the critical interface between life-saving, life-enhancing interventions and the people who need them. If health systems are weak, the power of these interventions is likewise weakened, or even lost. Health systems thus deserve the highest priority in any efforts to improve health or ensure that resources are wisely used", (WHO, 2000).

It is therefore critical that if the health status of the population is to be enhanced, both public and private health care providers work hand-in-hand to provide quality health care services to all, at the lowest cost possible. For a developing county like Uganda, the development, provision of health care services and overall performance of the country's health system is largely the responsibility of the government. The careful and responsible management of the well-being of the population is the very essence of good government, (WHO, 2000). As indicated earlier, government imposed user charges on public health services, which were later abandoned. This paper explores the impact of the abolition of user charges in public health centres. We the before-and-after scenario to test 3 major propositions.

The first, and the major proposition of this study is that abolition of user charges has resulted in increased preference for, and use of public health care services for the sick, given that they are now free. The flip side of this proportion is that the policy has led to reduced preference for, and use of private health care services, given that the private providers charges fees for the use of their services.

Our second proposition, and as a corollary to the first, is that abolition of user charges in public health care facilities has resulted in reduced incidence of rationing[4] in comparison to the period when user charges were being imposed. Abolition of user charges should therefore be expected to have a negative impact on rationing (i.e. reduced numbers of the rationed), particularly for the poor and other disadvantaged groups such as the orphans.

The third proposition is that the economic impact (using workdays lost as proxy) of the incidence of sickness has reduced following the abolition of user charges. Abolition of user charges was intended to improve access to health care facilities by all and therefore, other things being equal, should be associated with relatively reduced periods of sickness and hence lower workdays lost. In the next section, we discuss the model and estimation procedures used to establish the impact of abolition of user charges on individual behaviour and health outcomes in Uganda.

3.2 Impact of abolition of user fees on access and health outcomes

In this section, we model the probability of choosing a public or private hospital and being rationed when sick as being conditional on a number of household characteristics and distance to hospital and the impact of user charges. The task of the study is to examine and test the impact of the abolition of user fees in public health care centres, which we implement using individual level data from the 1999 and 2002 national household surveys. Since the 1999 data was collected when the policy was in force, and the 2002 data has been collected almost one year after its abolition, we are able to make a 'before and after' analysis of the impact of the policy. Two scenarios are considered; children aged 14 years and below and those aged above 14 years.

Considering the poverty levels in the country, abolition of user fees should, at least in the short run[5], result in increased reporting to public hospitals, particularly by those who

[4] We define the condition of being rationed as the failure to seek treatment when sick because of cost or long distance to the health center. In the data there are those individuals who did not seek treatment because they considered the ailment to be mild. These are not included in the category of the rationed.

[5] In the long run patients may realize that possibly the quality of the health care system has not improved and decide to seek alternative means of treatment. Patients may also realize that they have to wait for too

were previously rationed out of the health care system altogether. To begin with, we develop a model of the likely outcomes of the abolition of user fees on the public health care services. We note that abolition of user fees is likely to increase the probability of seeking treatment from the public hospitals as opposed to the private health care providers. It is also likely to result in reduced incidences of rationing, conditional on being sick. The policy is also likely to in different outcomes for children, particularly the disadvantaged (orphans, etc.) and the adults.

3.3.1 Access to health care services

The choice of hospital (public or private) and the probability of being rationed are then modelled as a function of both personal and household/dwelling characteristics. Among the personal characteristics we include age, education and gender and among the household characteristics we include value of household assets, as proxy for its income, household size and distance to hospital. We also include locational dummies, urban/rural and the regional dummies to capture any locational advantages. This can be presented as a general form equation:

$$H_{it} = f(\mathbf{X}_{it}, \mathbf{R}_{it}, \mathbf{X}_{it}T, \mathbf{R}_{it}T, T) \quad \ldots\ldots\ldots\ldots\ldots\ldots(1)$$

Where;

H_{it} is a categorical indicator that takes a value of 1 if the individual: a, chooses a public health care provider or b, chooses a private health care provider rationed or c, is rationed (depending on the equation) when sick at time t, i.e. either 1999 or 2002 and 0 otherwise.

$\mathbf{X}_{it}$ is a vector of individual and household characteristics including age, sex, education, household size, household assets and distance to hospital. $\mathbf{R}_{it}$ is a vector of locational dummies including urban and the four regions, Central, East, North and West.

$\mathbf{X}_{it}T$ and $\mathbf{R}_{it}T$ are the individual/household variables and the locational dummies interacted with the year dummy. T is the year dummy with a value of 1 if the observation is from 2002 and 0 if it is from 1999. It provides an estimate of the pure time trend of the

long and/or to buy the medicine or to bribe the personnel in order to be attended to. This could result in reduced reporting of sickness to public health care centers.

probability of seeking treatment in public or private hospital or being rationed or over time. We expect a positive coefficient for the choice of public hospital and a negative coefficient for private hospitals and being rationed.

For choice of hospital and rationing, the model estimated is specified thus:

$$C_{it} = \alpha_1 Y_{it} + \alpha_2 H_{it} + \alpha_3 D_{it} + \alpha_4 R_{it} + \beta_1 Y_{it} T + \beta_2 H_{it} T + \beta_3 D_{it} T + \beta_4 R_{it} T + \alpha_5 T + \mu_{it} \quad \ldots (2)$$

Where the dependent variable, C_{it} is the choice of public or private hospital or being rationed, each taking a value of 1 if the individual chooses say the public facility or private facility or is rationed and 0 otherwise. Y_{it} is the log of the value of household assets (as proxy for income), H_{it} is a vector of individual/household characteristics including age, sex, education and D_{it} is a vector of dwelling characteristics, including toilet facilities, type of roofing and floor material. R_{it} is a vector of locational variables, distance to hospital and urban/rural and the different regions. The terms $Y_{it}T$, $H_{it}T$, $D_{it}T$, and $R_{it}T$ are interactive terms between the original variables and the year dummy, T, which itself is used to capture the impact of the pure time trend on being sick. Finally, μ_{it} is the error term, assumed to follow the usual assumptions of normality and constant variance. We expect that the value of household assets a negative impact on the incidence of sickness, dwelling characteristics, as defined (1 if a household meets the minimum standard ad 0 otherwise) are expected to have a negative impact on the probability of being sick. For the incidence of sickness, we cannot state the expected signs for age, sex and locational and the time dummies a priori.

The different elements of the coefficient vectors, $\acute{a}_j$ and $\hat{a}_j$, provide estimates of the impact of individual/household characteristics and location on the probability of being rationed or using public of private health care providers in 1999 and the change in the impact between 1999 and 2002. For example, for the *j-th* element of the vector $\mathbf{H}_{it}$ or $\mathbf{R}_{it}$, the corresponding elements of the coefficient vectors $\acute{a}_j$ and $\acute{a}_j + \hat{a}_j$ denote the impact of particular characteristics on the probability of using public or private health care providers or being rationed, as the case may be, in 1999 and 2002, respectively.

To establish the differential impact of the policy change on specific groups, we estimate separate regression for children aged 14 years and below and for adults. In the regression estimates for children, we include a dummy that takes the value 1 if the child is an orphan and 0 otherwise. The cut-off of 14 years corresponds with the age at which children are expected to complete their primary level of education. At this age, they are not able to make their own decisions about health care, but are depended on their parents. In addition, the programme of Universal Primary Education (UPE) in force since 1997 means that most of the children in this age category are attending school and it would important to find out if health-related problems are disrupting their studies.

3.3.2 Health outcomes

Access to or being rationed from the health facilities when sick falls on the demand side for health care services by individuals. Our interest in this study is to also establish the impact of the abolition of user fees on health outcomes; incidence of sickness and workdays lost due to sickness. We envisage that the policy was associated with a reduction in the incidence of sickness and the workdays lost as patients are expected to seek treatment in time and therefore incidences of re-occurrence of the same ailment and workdays lost would be reduced. In particular, the workdays lost gives us an indication of the economic impact of being sick for the individual and the household as a whole[6]. In this section, we present two models, a probit model of the incidence of being sick, and tobit model for the economic impact of being sick on workdays lost.

For incidence of sickness, we estimate a probit model of the form:

$$S_{it} = \alpha_1 Y_{it} + \alpha_2 H_{it} + \alpha_3 D_{it} + \alpha_4 R_{it} + \beta_1 Y_{it} T + \beta_2 H_{it} T + \beta 3 D_{it} T + \beta_4 R_{it} T + \alpha_5 T + \varepsilon_{it} \ldots\ldots \quad (3)$$

[6] At the individual and household level, the incidence of sickness can lead to substantial loss in terms of production time missed, and can have important social and psychological implications such as loneliness and anxiety. Studies on the economic implications of the incidence of sickness at the level of the firm reveal that the cost of lost work time can be substantially higher than the wage, especially where there is no perfect substitute for the absent worker and there is team production or penalties for not meeting output

Where S_{it} is the incidence of being sick, taking a value of 1 if the individual reports having had some form of sickness in the previous 30 days, and 0 otherwise. Y_{it} is the log of the value of household assets (as proxy for income). H_{it} is a vector of individual/household characteristics including age, sex, education and household size. D_{it} is a vector of dwelling characteristics, including toilet facilities, type of roofing and floor materials. R_{it} is a vector of locational variables, urban/rural and the different regions. The terms $Y_{it}T$, $H_{it}T$, $D_{it}T$, and $R_{it}T$ are interactive terms between the original variables and the year dummy, T, which itself is used to capture the impact of the pure time trend on being sick. Finally, ε_{it} is the error term, assumed to follow the usual assumptions of normality and constant variance. We expect the value of household assets to have a negative impact on the incidence of sickness, dwelling characteristics, as defined (1 if a household meets the minimum standard and 0 otherwise) are expected to have a negative impact on the probability of being sick. Education is expected to lower the incidence of sickness, given that the educated are likely to be in better position to make use of preventive measures such immunisation, use mosquito nets, etc. For the incidence of sickness, we cannot state the expected signs for age, sex, locational, and the time dummies a priori.

To examine the economic impact of being sick, we estimate a tobit model, with workdays lost due to sickness as the dependent variable. The model is stated thus:

$$W_{it} = \alpha_1 Y_{it} + \alpha_2 H_{it} + \alpha_3 D_{it} + \alpha_4 R_{it} + \alpha_5 K_{it} + \beta_1 Y_{it}T + \beta_2 H_{it}T + \beta_3 D_{it}T + \beta_4 R_{it}T + \beta_5 K_{it}T + \alpha_6 T + \eta_{it} \ldots\ldots.(4)$$

Where W_{it} is the number of workdays lost due to sickness. The rest of the variables are defined as before, except that here we add K_{it} and $K_{it}T$ to capture the impact of distance to hospital and the distance interacted with the year dummy, respectively on the workdays lost. η_{it} is an error assumed to be normally distributed with mean zero and constant variance. Other things constant, we expect the value of household assets to have

targets. Wages only represent a lower bound fro losses from a day of missed work that could be much larger than the wage rate. See Pauly, et al (2002).

a negative impact on the workdays lost because of sickness, i.e. the well-off are expected to be in better to seek good quality medical attention when sick and therefore to lose less days. The number of days lost due to sickness is expected to increase with the distance to the nearest health facility. Better dwelling characteristics, associated with higher levels of income are expected to lead to fewer workdays lost when sick. If abolition of user fees is associated with increased access to health care by all and reduced sick days, then the dummy T should have a negative sign. Like before, we cannot state the expected signs for age, sex and locational dummies a priori.

3.4 Data and descriptive evidence

To provide evidence that would allow us to answer these questions, we rely on two national data sets to estimate the impact of abolition of user charges on a number of individual health care seeking behaviour and outcomes. The first data set comes from two rounds of the Uganda national household surveys (UNHS); the 1999/2000 survey (UNHS I), fielded between August 1999 and September 2000 and the preliminary 2002/2003 survey (UNHS II), conducted by the Uganda Bureau of Statistics (UBOS) which was conducted between February and June of 2002. The UNHS I covered a total of 10,696 households, comprising of about 57,385 individuals and the UNHS II includes about 2,400 households, with about 12,641 individual observations. Both surveys provide a rich source of information on individual and household characteristics, health status (incidence of sickness in the previous 30 days), choice of hospital and constraints faced. The survey data allows us to differentiate individuals by wealth class, explore the changes in why services were not utilized, and the impact on outcomes. In addition, the 2002 community survey, conducted together with the social survey, provides excellent information on service provision by the two most commonly used health facilities in each community[7], which allows us to complement household level information on use of health facilities with an independent measure for the supply and cost of such services.

[7] Information for each establishment was collected both from an official representative of the institution as well as from the community in an attempt to be able to cross-check for possible divergent views and perceptions. As there was very little variation between the information provided by the two sources of information we use either an average or what we consider to be the most knowledgeable source.

The data provides qualitative and quantitative information, including availability and prices of malarial drugs and antibiotics, consultation fees, fulltime and part-time health workers, hours open and bed capacity, etc., on the situation before and after the removal of user fees for both **public** and **private health facilities**[8].

This is complemented with administrative data collected by the Health Management Information Services (HMIS) covering about 1,400 public health care institutions countrywide, which provides information, at the institutional level, on reporting of different ailments, medical personnel, facilities, financing and general infrastructure available to public health care institutions before and after the abolition of user charges.

3.5 Estimation strategy

The major focus of the paper is to estimate the impact of the abolition of user fees, on access to health services and incidence of sickness and the implication to the household, in terms of work days lost. We use the administrative data on services rendered to obtain a panorama of the extent to which the policy shift has affected different types of health services across regions. We use an index of districts, denoted by *i* and different treatment services at a health unit, denoted by *j* and a dummy AFT to represent whether the observation is obtained after abolition of user or before. The estimating equation is then stated thus;

$$Treat_j = \alpha_0 + \alpha_1 AFT + \alpha_2 D_i + \grave{\imath} \qquad (5)$$

Where $Treat_j$ is the type of treatment for which the patient is registered in the hospital, AFT is a categorical variable taking the value of 1 if the treatment is recorded after and the abolition and 0 otherwise, and D_i is the district index, ì is the error term assumed to be normally distributed with mean 0 and constant variance.

[8] For purposes of this paper, we define public hospitals as any health centre/facility/hospital financed out of public resources, either at the central or local government level. Private hospitals are defined as those health centres/facilities/hospitals that are financed by non-governmental organisations, private individuals and companies, including traditional health care establishments. In the discussion, we use the words; **hospital** and **health care centres** inter-changeably to mean a health care facility, no matter its size. Our major concern is the type of ownership, which is distinguished as stated above. We also use the terms government and public hospitals or health care centres interchangeably.

However, the administrative data has a number of shortcomings given that it is gathered by administrators of the health unit, (i) there is no indication of whether the demand for services was met by adequate supply; (ii), it is not possible to tell from the data what the impact of the policy on outcome variables was; (iii) the data does not differentiate patients treated by income, age or gender. We therefore cannot make any assessment on the implication of the policy change on different categories of individuals and households. (iv), There could be other noise in the data which can only imperfectly be controlled for by the number of clinics reporting; (v) There could be a possible incentive to mis-report or change standards over time if staff presume that their reward will depend on this after the abolition (self-fulfilling expectation). Given these shortcomings, we use the UNHS data to assess the impact of abolition of user fees on access to and health outcomes.

Given that the UNHS I data were collected when the policy of user charges on public health services was in force while the UNHS II data have been collected after the abolition of the policy, we can make an assessment of the policy. We treat the change in policy as an exogenous factor and pool the two data sets to establish its impact of different groups of households, by estimating separate equations for children and adults, with the cut off age at 14 years. Individuals aged above 14 years, at which age children they are in secondary school or working if they are not school, are considered mature enough to make their own decisions about their health; reporting of sickness and ability to take themselves to hospital. On the other hand, individuals aged 14 years and below are considered too young to make their own decisions, and rather depend on the head of the household. For this category, we use some of the characteristics of the head such as education and sex in the estimations, instead of the individual characteristics. In addition, we consider a specific group of children, the orphans, who may be disadvantaged[9] over

[9] Children living without their parents, particularly the biological mothers can face serious disadvantages with respect to health care and can suffer social and academic problems, including dropping out of school, much more than other children. Using the 1988 US Child Health Supplement to the National Health Interview Survey, Case and Paxson (2001) find that children living with step-mothers are less likely to have routine visits to a doctor or dentist nor do they have a place for usual medical care.

other groups in terms of access to health services. To examine the magnitude of the impact of abolition of user fees on the incidence of rationing, and choice of hospital, we estimate equation 2, and to examine the magnitude of the incidence of sickness, we estimate equation 3 while to establish the impact of abolition of user fees on workdays lost, we estimate equation 4.

4. Empirical evidence

4.1 Introduction

In this section, we discuss the results of the study. In the first section, we report the change in diseases reported to health units before and after the abolition of user charges, based on the administrative data. We also deal with the descriptive statistics of household characteristics, incidence of sickness, workdays lost and reporting of sickness to hospital, public and private and the incidence of rationing. In the second section, we discuss the empirical results of the probit models estimated for choice of hospital, public *vis a vis* private, and rationing, conditional on being sick. In the third section, we discuss the empirical evidence on incidence of being sick and its economic impact the individual/household by considering the workdays lost.

4.2 Descriptive evidence

4.2.1 Reporting of sickness, national data

Using the HMIS data, we regress the different types of reported diseases with a time dummy on the right hand side to capture the impact of the policy change. On the right hand side we also include regional dummies to estimate the change in reporting of the different ailments in the different regions. The coefficient of the time dummy therefore represents a percentage increase in different types of diseases as reported to the health centres. The results show significant increases in the number of new cases first reported, referrals to unit, deliveries, anti-natal and post-natal cases, and vitamin supplementation. New cases reported to a health unit for the first time are found to have increased by about 20% for those under 5 years of age and 31% for age 5 years and above. Referrals to unit increased by about 26%, anti-natal cases increases by about 15% while post-natal cases increased by about 34%. In addition, we do district fixed effects and variation across regions, the results of which show very clearly that there is an expansion in the number of cases reported to hospital. The results remain more less the same across the regions, except for the North, which is found to report decimal and insignificant increases. The greatest increment, of about 60% overall and 74% in the Central, 79% in the East and the

West, and 32% in the North is reported in the case of vitamin A supplementation. As if to confirm the increased number of birth-related cases reported to health units, reporting of cases handled by traditional birth attendants (TBA) is found to have gone down by about 16% countrywide and 20% and 13% in the Central and the Eastern regions, respectively. This seems to indicate that individuals who were previously rationed, possibly because of the cost, are now being reporting hospitals. Details of the results are reported in Table 3.

Table 3: Medical cases reported to hospital

	All Uganda	Region			
Category of cases		**Central**	**East**	**North**	**West**
New cases and referrals to unit					
Under 5 years)	0.185***	0.263***	0.301***	-0.107	0.253***
	(5.83)	(5.49)	(6.36)	(1.29)	(4.11)
5 years and above	0.309***	0.348***	0.429***	-0.031	0.494***
	(9.59)	(7.78)	(7.60)	(0.33)	(10.39)
Referrals	0.259***	0.336***	0.359***	0.029	0.439***
	(5.23)	(3.30)	(4.00)	(0.24)	(5.01)
Antenatal, deliveries and Postnatal cases					
New antenatal cases	0.122***	0.018	0.241***	(0.021	0.270***
	(3.36)	(0.22)	(3.16)	(0.27)	(4.19)
Re-attendances/referrals	0.165***	0.248***	0.520***	0.273**	0.413***
	(5.37)	(3.09)	(6.52)	(2.35)	(3.71)
Deliveries at unit	0.278***	0.261***	0.286***	0.250***	0.459***
	(7.98)	(3.35)	(5.15)	(3.25)	(6.76)
Deliveries handled by TBA's ../1	-0.156***	-0.196*	-0.128*	-0.088	0.027
	(3.66)	(1.97)	(1.67)	(0.88)	(0.31)
Post natal cases	0.341***	0.057	0.304***	0.061	0.252
	(7.13)	(0.89)	(6.05)	(0.89)	(4.28)
Other cases					
Total weighed	0.382***	0.681***	0.352***	0.308**	0.337***
	(7.44)	(5.34)	(4.13)	(2.22)	(4.21)
Vitamin A supplementation	0.613***	0.744***	0.785***	0.320**	0.787***
	(12.28)	(7.45)	(9.10)	(2.51)	(9.15)

* significance at the 10% level; ** significance at the 5% level; *** Significance at the 1% level.
t-statistics in parenthesis.
…/1 TBA stands for traditional birth attendants. These are non-medical personnel individuals but with skills to aid delivery. Government has run programmes to train TBA's in methods of hygiene and safe delivery countrywide.

However, given that the respondents in this survey were the administrators of the health centres, there could be an incentive to over report on key areas so as to win the support of the government. Secondly, the data has no household or individual characteristics of the patients, so that it is not easy to establish the economic implication of the results at the household and individual level. We therefore complement our analysis from the HMIS data with the household data to estimate the impact of the abolition of user fees on a

number of different outcomes for the population. Our interest is to establish the impact of the policy change on use of both public and private health facilities and the incidence of being rationed, for different categories of the population. Using the value of household assets and dummies for various dwelling characteristics, our analysis enables us to make inference on the impact of the policy change on the poor *vis a vis* the non-poor. By including a dummy for children who are orphans, we estimate the impact on this disadvantaged group.

4.2.2 General individual/ household characteristics

Table 4 presents the general descriptive statistics of the survey data. The data shows that compared to 1999, there were improvements in a number of household characteristics in 2002. For example, the value of household assets[10] (at the 2002 Ush:US$ exchange rate) increased from an average of US$786.5to US$ 961.6. There are also impressive improvements in the dwelling conditions as indicated by the proportion of households with an iron-sheet roofed house, cement floor, pit latrine etc.

4.2.3 Incidence of sickness and reporting to hospital

Descriptive statistics on the incidence of sickness, and implications are included in Table 5. We note that between 1999/2000 and 2002/2003 the incidence of sickness slightly increased from about 27.1% to about 31.3% nationwide. At the regional level, the same is true, with the highest increase being reported in the Central region where the incidence of sickness increased from 22.2% to about 28.5%. The lowest increase was reported in the Eastern region (from about 36.2% to about 38.1%). However, the Eastern and Northern regions continue to report the highest incidences of sickness, at 38.1% and 39.1%, respectively compared with 28.5% and 28.9% in the Central and the Western regions, respectively. In the North, the high incidence of sickness could be associated with the insecurity, which has tended to result in a breakdown in social infrastructure and a high influx of refugees in the region. In the Eastern and Western regions, the problem could be attributed to the large expanse of wetlands (in the East) and forests (in the West), which

[10] This includes household items such as house, furnishings, radio, transport equipment, enterprise assets and land. It excludes the value of livestock, covered in the UNHS I socio survey but not in the UNHS II.

provide good breeding grounds for mosquitoes and therefore a high prevalence of malaria. Although the North reports the highest incidence of sickness, a closer look at the types of ailments suffered shows that it has the lowest incidence of malaria in the country, with about 40% of all medical cases being malaria, compared with the national average of about 57%. The highest incidence of malaria is reported in the West (about 66%), followed by the East (60%) and the Central (54%).

With respect to seeking of treatment when sick, the proportion has increased from about 68.3% in 1999 to about 78.9% in 2002. At the regional level, the highest increase was reported in the East where the proportion increased from about 55.8% to about 75.2%, followed by the North, from about 71.1% to 78.0% and the West from 79.3% to 78.5%. The Central region had the lowest increase from 74.4% to 75.1%. There was a big jump in the proportion of those seeking treatment in public hospitals as opposed to the private hospitals. While in 1999 the proportion of those seeking treatment in public hospitals was only about 1% it increased to 21.2% in 2002. In the Central region, the proportion increased from 0.8% to 19.4% and in the East from 1% to 21.2% while in the North and West the proportion increased from 1.4% and 1.1% to about 25% and 22.3%, respectively.

Of those who did not report to hospital in 1999, the major constraint was reported to be cost of consultation, (15.2%), followed by sickness being mild (11.3%) and long distances (5.2%). High costs and long distances were a major problem in the Eastern region where 18.4% and 13.6% of those not seeking treatment reported high costs and distance as the major constraints. In 2002, the major constraint for not seeking treatment was reported as high cost, but by 8.4% of those who did not seek treatment. While the average number of household members reporting some form of sickness increased from about 3.1 to 3.4 members per household, the average number of workdays per person lost due to sickness dropped from around 8.3 in 1999 to about 7.1 in 2002. These descriptive statistics seem to point to the fact that removal of cost sharing in public hospitals has led to some positive outcomes in terms of access to health services by a bigger proportion of the population and a drop in the economic impact of being sick. Those who were

originally rationed because of cost seem to be having access to medical facilities, which results are sustained by the regression results. Detailed descriptive statistics are presented in Tables 4 and 5.

Table 4: Summary of household characteristics in Uganda, 1999 and 2002

	All Uganda	Region			
Variable		**Central**	**East**	**North**	**West**
			1999		
Value of households assets (US $)	786.54	918.43	728.36	345.77	971.56
Roof with iron sheets or better (%)	64.14	85.55	57.58	16.46	77.75
Cement screed floor or better (%)	24.70	39.04	23.77	10.31	20.44
Flush toilet (%)	2.84	2.43	5.54	1.06	1.73
Pit latrine (%)	70.14	78.38	58.40	51.76	83.99
Distance to hospital (km)	5.67	5.53	4.49	5.65	4.81
Female headed households (%)	21.65	25.30	19.05	25.88	18.19
Age of household head (years)	44.36	45.00	43.76	42.81	45.23
Education of household head (years)	5.65	6.08	5.99	5.13	5.23
Household size	7.30	7.43	7.55	6.92	7.16
Maximum education in household (years)	3.41	3.91	3.46	2.70	3.30
Number of households	10,696	3,110	2,865	1,802	2,919
Number of individuals	57,387	15,608	15,535	9,616	16,628
			2002		
Value of households assets (US $)	961.56	900.23	1,002.23	611.58	1,155.23
Roof with iron sheets or better (%)	80.23	87.52	69.10	31.65	90.39
Cement screed floor or better (%)	35.97	40.92	30.36	16.67	37.77
Flushing toilet (%)	2.51	0.81	6.69	0.00	3.00
Pit latrine (%)	78.37	74.97	72.64	67.17	89.69
Distance to hospital (km)	5.87	5.51	4.00	8.36	5.03
Female headed households (%)	24.41	24.56	22.37	31.99	22.96
Age of household head (years)	39.14	38.88	39.63	39.37	39.19
Education of household head (years)	6.37	6.28	7.13	4.90	6.46
Household size	6.97	6.78	7.71	6.46	6.96
Maximum education in household (years)	4.13	4.03	4.51	3.48	4.24
Number of households	2,411	887	578	280	666
Number of observations	12,641	4,424	3,200	1,524	3,493

Source: Own calculation from UNHS 1999 and preliminary data for UNHS 2002

Table 5: Incidence of sickness and use of health care services, 1999 and 2002

Variable	All Uganda	Region			
		Central	East	North	West
			1999		
Proportion of sick (%)	27.14	22.15	36.22	27.05	23.38
Average number of sick days	8.32	8.52	7.11	8.59	9.69
Sick members in household	3.12	2.62	3.67	2.68	3.05
Reporting of sickness to hospital (%)	68.34	74.37	55.81	71.09	79.27
Ow Government hospital (%)	1.03	0.78	0.98	1.42	1.08
Ow Private hospital (%)	67.31	73.59	54.83	69.67	78.19
Did not report to hospital (%)	31.66	25.63	44.19	28.91	20.73
Sickness mild (%)	11.26	10.72	12.26	8.02	7.28
Distance too long (%)	5.18	3.77	13.58	8.89	2.81
Cost too high (%)	15.22	11.14	18.35	12.01	10.64
			2002		
Proportion of sick (%)	31.32	28.54	38.12	39.06	28.87
Average number of sick days	7.11	6.79	5.41	8.46	8.38
Number of sick members in household	3.36	268.21	4.17	3.56	3.57
Reporting of sickness to hospital (%)	78.93	75.12	75.15	78.02	87.48
Ow Government hospital (%)	21.21	19.40	21.15	25.00	22.28
Ow Private hospital (%)	57.73	55.71	54.00	53.02	65.20
Did not report to hospital (%)	21.07	24.88	24.85	21.98	12.52
Sickness mild (%)	7.83	9.39	9.52	6.21	4.97
Distance too long (%)	4.85	4.95	6.04	7.17	2.95
Cost too high (%)	8.39	10.54	9.29	8.60	4.60

Source: Own calculation from UNHS 1999 and preliminary data for UNHS 2002

Using the community level data for 2002, (covering about 200 communities) we are able to make some qualitative assessment of changes in the facilities available in both public and private health care centres. From Table 6, we note that apart from the significant reduction in the proportions of patients paying consultation fees, and for malarial drugs and antibiotics, there was no major change in other facilities available in both the public and private health facilities after March 2002. The availability of malarial drugs and antibiotics declined slightly from about 99% to 94% and from 97% to 93%, respectively. However, a t-test of the difference in means shows no significance in the case of malarial drugs and is only significant at the 10% level in the case of antibiotics. The number of full time doctors and nurses in public hospitals remained rather stable at about 3.5 and 22.6, respectively, while those in the private hospitals remained at about 1 and 6.8, respectively per hospital. The number of hours the facility is open to the public remained

also fairly constant at about 17 and 16 hours per day for the public and private facilities respectively. On the whole, there seems to have been little change in the facilities.

Table 6: User fees, and status of health facilities before and after March 2001

	Government facility				Private facility			
	Before Mar'01		After Mar'01		Before Mar'01		After Mar'01	
Variable	**Obs**	**Mean**	**Obs**	**Mean**	**Obs**	**Mean**	**Obs**	**Mean**
% of patients who paid for:								
Consultation	154	0.77***	154	0.03***	123	0.54	123	054
Antibiotics	154	0.25***	154	0.05***	125	0.97	125	0.98
Malarial drugs	154	0.25***	154	0.04***	130	0.98	130	0.98
Availability of medicine And facilities								
Antibiotics	204	0.97*	211	0.93*	146	0.92	149	0.93
Malarial drugs	203	0.99	211	0.94	146	0.99	149	0.99
Bed capacity	193	73.96	196	73.87	134	28.93	137	26.21
Hours open per day	200	16.95	206	16.87	142	15.98	15.74	2.24

Source: Own calculation from HMIS data.
*Significant at 10%; **Significant at 5%; ***Significant at 1%.

4.3 Choice of hospital and incidence of rationing

In each case, we estimate and report results for 2 separate equations, first for those aged above 14 years and those aged 14 years and below, detailed results are included in Table 7. Considering rationing, our estimations show that for both the adults (aged above 14 years) and the children (age 14 years and below), the 2002 dummy is associated with a decline in the incidence of being rationed. For both the adults and the children, the coefficient is -0.095 and is significant at the 10% level in the case of adults and at the 5% level for the children indicating that there has been a decline the incidence of being rationed following the abolition of user fees. The probability of seeking treatment from a public hospital increased by about 27% for the adults and by over 70% for children, consistent with the descriptive statistics. On the other hand, the probability of seeking treatment in private hospitals is found to have declined by about 40% for the children, but the coefficient is not significant for the adults. This evidence strongly suggests that the removal of cost sharing in public hospitals has been associated with their increased use, at least considering the decrease in the probability of being rationed and the increase in

the probability that an individual would choose the public hospital in comparison to the private hospitals after the policy change.

The log of the value of assets (used as a proxy for household income) indicates that the large the value of household assets (which should be consistent with higher income), the lower the probability of being rationed in terms of seeking medical attention when sick. The results show that the log of a household's asset value reduce the probability of being rationed by about 2% percentage points for both the adults and the children. The log of the value of assets is found to have a positive impact on the choice of government hospitals among the children, where it increases the probability by about 0.6 of 1% but has no impact on the probability of using public hospitals for the adults. With respect to the choice of private hospitals, assets are found to increase the probability of choosing private hospitals by about 3% for the adults and about 1% for the children. This suggests that the higher the household income, the higher the probability that individuals will seek health services from the private providers when sick. The log of the value of assets and year interaction dummy is not significant for the adults but indicates that among the children, there was a decline in the probability of being rationed for the poor by about 1.8%. In the case of being rationed among those aged above 14 years, that $\alpha_1 + \beta_{1,} = 0$ (at the 10% level). For the children, we are able to reject the hypothesis in the choice of government and private hospitals. This suggests that there is a significant year effect on the impact of assets on being rationed (for the adults) and choice of hospital for the children. In particular, the coefficient on the choice of government hospital being negative suggests that the poor are more likely to have access to public health facilities as opposed to the well-off who are inclined to choose the private facilities (positive coefficient).

Distance to hospital is found to have no impact on rationing for the adults but to positively affect the probability of being rationed among the children, increasing the probability by about 0.2%. Distance to hospital is found to positively affect the probability of choosing a public hospital (though with very small coefficients), but to

negatively affect the probability of choosing a private hospital[11]. This seems to suggest that despite the constraints of long distances, people continue to seek treatment from public hospitals, because of lower costs, which calls for increased government spending on public health facilities in order to meet the demands of those who cannot afford the cost in private health centres. The distance/year dummy is only significant (with a negative sign) in the choice of private hospitals for the children, suggesting that after the abolition of user fees, children are less likely to seek treatment from private hospitals.

Age is found to have a positive impact on the probability of being rationed for the adults but to have a negative impact in the case of children. Among the adults, age is not significant in the choice of public hospitals but has a positive and significant impact in the case of private hospitals. Among the children, age has a negative impact in the choice of both public and private hospitals. The impact of age/year interaction is negligible in all cases, except for choice of private hospital among the adults, where it is negative. Gender of the individual is found to have no impact on being rationed, or choice of private hospitals but, in the case of adults. it has positive and significant for choice of public hospitals. This suggests that when women are sick, they are more likely to go to public hospitals in comparison to men possibly because of their lower levels of income.

Education of the individual has important consequences on health outcomes. The findings show that, among adults, the higher the level of education, the lower the probability of being rationed (1.4%), and the higher the probability of choosing a private health provider (1.4%) when sick but has no significant impact on the choice of public health providers. One more year of education reduces the probability of being rationed and increases the probability of choosing a private health care provider by about 1.4 percentage points in each case. Education squared is positive in the case of being rationed but with negligible coefficient and negative in the choice of private health providers. For the children, we used the education level of the household head to capture the impact of education on rationing and choice of hospital and the findings are similar to the results

[11] Newbrander, et al, (2000) find that in Kenya and Tanzania, the poor are willing to travel long distances to get treatment at public hospitals, which confirms that user costs can deny the poor access to health services.

for the adults. An additional year of education of the household head significantly reduces the probability of children being rationed, by about 0.7%, and that of choosing a public health provider, but by a negligible figure, and positively impacts on the probability of choosing a private health provider, by about 0.9%. This seems to suggest that the higher the level of education, the more conscious about their health individuals become, and are therefore more willing to pay to meet the cost of health requirements when sick. It may also suggest that those with higher education have higher income and are therefore in better position to pay for their health requirements.

For the children, being an orphan is found to have no impact on rationing, nor choice of hospital. But for other relatives or 14 years and below are more likely to be rationed by about 4% and less likely to go to private hospitals by about 5%. After the abolition of user fees, other relatives are about 2% more likely to go to the government hospitals when sick.

The size of the household is found to negatively impact on the probability of being rationed and to positively impact on the probability of choosing a private health provider. This seems to be counter intuitive as a large household would imply higher dependence ratios and lower per capita income within the household and therefore more chances of being rationed and a higher possibility of seeking a public health provider rather than the private.

Individuals living in the urban areas are found to be less prone to being rationed when sick and to have better advantage in choice of hospital in comparison to those in the rural areas. Being in the urban areas reduces the probability of being rationed by about 8.1% for the adults and about 8% for the children. It increases the probability of choosing a public health provider by about 1.6% for adults and about 1.4% for the children and that of choosing a private provider by about 5% and 6% for the adults and children, respectively. This is consistent with the generally higher levels of income, education and better infrastructure among households in the urban areas in comparison to those in the rural areas. However, the urban/year dummy interaction shows that there was reduction

in the difference in access between the urban and the rural areas. Among the adults, urban individuals are 2.1% (4.3% for the children) more likely to be rationed and about 1.8% (0.8% for the children) less likely to use public hospitals after the removal of user fees. Put differently, rural adults and children are found to be 2.1% and 4.3%, respectively, to be less rationed and adults are 1.8% and children 0.8% more likely to go to a public hospital in 2002. This is suggestive that the policy had significant equity implications for access to health facilities for the rural and urban population.

Regional dummies show that in the East, both adults and children are more likely to be rationed, by about 11.3% and 14.4%, respectively, in comparison to individuals in the Central region (not included in the regressions). On the other hand, they are less likely to use private health providers by about 16.7% for adults and about 21% for the children. Children in the East are 1.2% more likely to be treated from public hospitals compared to children in the Central. In the Northern region, adults are about 2.4% more likely to seek treatment in public hospitals, and children are about 7% more likely to be rationed while they 4.4% less likely to use private health care centres compared to the Central region. In the West, adults are about 5% less likely to be rationed and about 10% more likely to use private health care services, and the children are about 1.3% more likely to be treated from public hospitals in comparison to individuals in the Central region. The regional/year dummy interactions show that after the removal of user fees, there was a significant decline in rationing in the East (11%) and the West (about 8%). For the adults, there was an increase in the choice of public hospitals in the West (2.2%) and an increase in the choice of the private health care providers in the East (16%) in comparison to the Central region. Among the children, there was a reduction in rationing in all the three regions, by 10% in the East, 7% in the North and the West, and an increase in the choice of the private hospitals in the East, by 17%. This shows that there are regional imbalances in access to health care services in the country, with individuals in the Central region having better access to private service providers and being less prone to rationing. This is not strange because the Central region has, by far, better infrastructure (including health care facilities) and on the average, people in the region have higher levels of income and education than the other regions. The regional/year dummies show a reduction in

rationing, in the East, North and West in comparison to the Central, particularly for the children, which suggests that user fees was a big constraining factor for access to health facilities.

Table 7: Rationing and choice of hospital

	Above 14 years			Up to 14 years		
		Hospital type			Hospital type	
Variable	**Rationed**	**Government**	**Private**	**Rationed**	**Government**	**Private**
Year dummy	-0.070	0.308***	-0.054	-0.084*	0.720***	-0.417***
	(1.38)	(6.60)	(0.80)	(1.77)	(8.72)	(5.44)
Total asset value (log) [α_1]	-0.019***	0.001	0.025***	-0.019***	0.005**	0.013**
	(5.07)	(0.64)	(4.82)	(5.61)	(2.51)	(2.42)
Total asset value*year dummy [β_1]	0.006	-0.002	-0.011	0.019**	-0.008***	0.028**
	(0.58)	(0.86)	(0.97)	(2.13)	(3.62)	(2.45)
Distance to hospital [α_2]	-0.000	0.000***	-0.001**	0.002***	0.000***	-0.005***
	(1.26)	(4.78)	(1.98)	(7.11)	(3.77)	(9.75)
Distance *year dummy [β_2]	0.001	-0.000	-0.001	-0.001	0.000	-0.010***
	(1.35)	(1.13)	(1.57)	(1.59)	(0.53)	(5.18)
Age in years	-0.003***	0.001	0.005***	0.013***	-0.002**	-0.022***
	(3.58)	(1.48)	(3.64)	(4.59)	(2.05)	(5.46)
Age squared	0.006***	-0.000	-0.007***	-0.060***	0.008	0.110***
	(5.40)	(1.03)	(5.05)	(2.91)	(1.28)	(3.75)
Gender, 1 if female	-0.002	0.005	0.004	-0.004	-0.003	0.008
	(0.22)	(1.59)	(0.38)	(0.62)	(1.61)	(0.87)
Education	-0.016***	0.001	0.012***			
	(5.53)	(0.82)	(3.19)			
Education squared	0.502**	-0.059	-0.400			
	(2.35)	(0.80)	(1.52)			
Education of head				-0.005**	0.001	0.007*
				(2.04)	(0.80)	(1.95)
Head's education squared				-0.000	-0.000	-0.000
				(0.45)	(1.63)	(0.30)
Orphan				-0.011	0.008	-0.002
				(0.90)	(1.14)	(0.09)
Orphan*year dummy				0.037	-0.006	0.038
				(1.27)	(1.12)	(1.05)
Other relative				0.037***	-0.005	-0.049***
				(3.54)	(1.08)	(3.31)
Other relative*year dummy				-0.036	0.019**	-0.027
				(1.53)	(2.07)	(0.77)
Household size	-0.006***	-0.000	0.006***	-0.001	0.000	-0.001
	(4.22)	(0.55)	(3.15)	(1.15)	(0.24)	(0.54)
Hh size/year interaction	0.009***	-0.000	-0.010***	0.005	-0.001**	0.008*
	(2.58)	(0.06)	(2.58)	(1.44)	(1.99)	(1.88)
Urban dummy [α_3]	-0.078***	0.016**	0.047***	-0.080***	0.014**	0.063***
	(6.76)	(2.47)	(3.02)	(7.89)	(2.51)	(4.22)
Urban*year dummy [β_3]	0.012	-0.017***	0.049*	0.044*	-0.008*	-0.027
	(0.47)	(3.62)	(1.82)	(1.77)	(1.87)	(0.96)
Eastern region	0.119***	0.005	-0.175***	0.148***	0.010*	-0.219***
	(9.69)	(0.75)	(11.17)	(12.36)	(1.68)	(14.42)
Northern region	-0.026*	0.025***	0.030	0.067***	0.009	-0.033*
	(1.81)	(2.71)	(1.55)	(4.54)	(1.11)	(1.72)
Western region	-0.045***	0.008	0.092***	0.021*	0.011*	0.013
	(3.49)	(1.07)	(5.41)	(1.67)	(1.67)	(0.75)
Eastern region*year dummy	-0.114***	-0.001	0.168***	-0.100***	-0.008*	0.169***
	(5.72)	(0.07)	(5.84)	(6.30)	(1.73)	(6.58)
Nort hern region*year dummy	-0.007	-0.009	-0.022	-0.070***	-0.000	0.053
	(0.20)	(1.13)	(0.54)	(3.07)	(0.05)	(1.41)
Western region*year dummy	-0.074***	0.018*	-0.050	-0.076***	-0.004	0.015
	(2.84)	(1.67)	(1.46)	(3.70)	(0.61)	(0.46)
Observations	9,401	9,401	9,401	10,057	10,057	10,057
Pseudo R^2	0.104	0.268	0.058	0.082	0.320	0.065
Log-likelihood ratio	-4,081.62	-1,517.16	-5,811.49	-3,847.77	-1,374.82	-5,920.99
χ^2 for $\alpha_1 + \beta_1 = 0$	2.81	0.52	2.65	0.00	7.57	15.39
Prob value	0.094	0.472	0.104	0.948	0.006	0.000
χ^2 for $\alpha_2 + \beta_2 = 0$	0.59	7.69	9.60	5.36	7.06	65.43
Prob value	0.442	0.006	0.002	0.021	0.008	0.000
χ^2 for $\alpha_3 + \beta_3 = 0$	9.63	6.90	16.28	7.56	0.31	2.73
Prob value	0.002	0.009	0.000	0.006	0.579	0.099

Absolute value of z statistics in parentheses
significant at 10%; ** significant at 5%; *** significant at 1%

4.4 Incidence of sickness and work days lost

4.4.1 Incidence of sickness

From the descriptive statistics, it was noted that between 1999 and 2002, there was an increase in the incidence, reporting of sickness to hospitals and the average number of sick individuals per household. In this section, we analyse the impact of removal of user charges on public health services on the incidence of sickness and the economic effects of sickness (in terms of work days lost). The data we have permits us to make analysis of the factors that may affect the incidence of sickness, which is measured as 1 if sickness is reported in the previous 30 days and 0 otherwise. We also estimate the economic impact of sickness, in terms of work days lost. Here we discuss the results of the probit model of the factors likely to influence the incidence of sickness and the tobit model for days lost for both the adults and children aged 14 years and below.

4.4.2 Workdays lost due to sickness

The incidence of sickness can have strong consequences not only for the sick person, but also for other members of the household, particularly where the sick is a child. The sick require time off to seek treatment, money to purchase drugs and sometimes to purchase additional nutritional food supplements. Depending on the gravity of the problem (it can be worse where the patient is admitted in hospital), the time lost can be quite substantial. Following is a discussion of the results of our estimations, distinguished into two sections. Section i., deals with outcomes for adults and section ii., deals with outcomes for children. For the children, we include a dummy for orphans that takes the value of 1 if the child is an orphan (with one or both parents not living). The detailed results are presented in Table 8.

Table 8: Incidence of sickness and work days lost (above 14 years)

	Sick	Days lost
Year dummy	0.036	2.040
	(0.96)	(1.19)
Total asset value (log) [α_1]	-0.011***	-0.265**
	(4.04)	(2.22)
Total asset value*year dummy [β_1]	0.007	0.121
	(1.36)	(0.51)
Distance to hospital [α_2]		0.016*
		(1.95)
Distance to hospital*year dummy [β_2]		-0.021
		(1.16)
Flushing toilet	-0.040***	-2.514***
	(2.70)	(3.36)
Pit latrine	-0.017***	-0.635**
	(2.79)	(2.26)
Cement floor or better	-0.019***	-1.408***
	(2.71)	(4.32)
Iron sheet roof or better	0.022***	0.477
	(3.38)	(1.55)
Age in years	0.005***	0.198***
	(7.29)	(6.60)
Age squared	-0.001	0.008
	(1.33)	(0.25)
Gender, 1 if female & 0 if male	0.058***	2.370***
	(11.66)	(10.16)
Education	-0.001	-0.147*
	(0.63)	(1.78)
Education squared	-0.245**	-7.504
	(2.02)	(1.33)
Household size	-0.011***	-0.401***
	(14.68)	(11.90)
Urban dummy [α_3]	-0.008	-0.579
	(1.08)	(1.60)
Urban*year dummy [β_3]	0.006	0.638
	(0.46)	(1.02)
Eastern region	0.133***	3.929***
	(16.69)	(11.11)
Northern region	0.029***	1.002**
	(2.95)	(2.25)
Western region	0.014*	1.111***
	(1.80)	(3.17)
Eastern region*year dummy	-0.034**	-1.637**
	(2.16)	(2.14)
Northern region*year dummy	0.034	2.078**
	(1.61)	(2.17)
Western region*year dummy	0.001	0.703
	(0.05)	(0.94)
Constant		-14.454***
		(14.85)
Observations	34,133	34,133
Pseudo R^2	0.054	0.022
Log-likelihood ratio	-18,987.32	-47,181.41
χ^2 for $\alpha_1 + \beta_1 = 0$	0.53	0.43
Prob value	0.468	0.515
χ^2 for $\alpha_2 + \beta_2 = 0$		0.09
Prob value		0.758
χ^2 for $\alpha_3 + \beta_3 = 0$	0.04	0.01
Prob value	0.850	0.916

Absolute value of z statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

i. Adults

For the adults, we find that the year dummy is not significant, suggesting that the abolition of user charges has not had an in impact on reporting of sickness or the workdays lost due to sickness. The log of the value of household assets is found to reduce the probability of falling sick and the number of workdays lost by about 1% and 0.3 of a day (equivalent to about 7 hours) per person, respectively. Since we use the value of assets as proxy for income, this implies that the richer a household is, the less likely that its members will fall sick, and the higher the chances of seeking early, and possibly better treatment, even at a cost. Richer households are usually associated with better access to education, and general health services and in some cases are able to pay for health insurance. However, the asset/year interaction is not significant implying that there was no appreciable impact on poor households.

Distance to hospital increases the workdays lost due to sickness by about one fifth of a day, implying that individuals living further away from health care centres tend to either take long to report for consultation or fail to return for continuation of treatment and therefore take long to recover. This is consistent with the descriptive statistics, which show that about 16% of those who do not seek medical treatment when sick are constrained by long distances. Dwelling characteristics[12], type of toilet, and floor materials show that individuals living in houses with better facilities are less likely to fall sick and to lose less workdays because of sickness. Individuals in households with a flushing toilet, are about 4% less likely to fall sick while those with a pit latrine and cement screed floor are in each case, 2% less likely to fall sick. Possession of a flushing toilet, pit latrine and cement screed floor reduces the workdays lost due to sickness by about 2.5, 0.6 and 1.4 days, respectively. However, the type of roofing material (iron sheets) has a positive coefficient suggesting that individuals in better households have higher chances of falling sick, and losing more workdays, which is counter-intuitive.

[12] Dummies for dwelling characteristics are constructed based on the household possession of the minimum quality of the facility. For example, roofing material is 1 if the house is roofed using corrugated iron sheets, asbestos sheets, tiles, or concrete. The minimum here is corrugated iron sheets. Flushing toilet includes

Age in years suggests a positive relation, an additional year increases the probability of being sick by about 0.1%, while it increases the number of days lost due to sickness by about 0.2. The age/year interaction and age squared are not significant in both cases. Being female increases the probability of being sick by about 5.8% and the number of days lost by about 2.4. This suggests that females tend to fall sick more often and to lose more workdays than men do. Noting that a big proportion of the agricultural output, on which the backbone of the Ugandan economy lies, is produced mainly by women, health care providers need to develop a gender-sensitive policy in order to reduce the economic loss as a result of sick women.

Education of the individual is found to have no significant impact on the probability of being sick. However, at the 10% level, it found to have a negative impact on days lost due to sickness. An additional year of education reduces days lost due to sickness by about 0.15, implying that those with higher levels of education are more likely to seek quicker and better treatment when sick than the less educated. Education squared is negative in the case of incidence of sickness but not significant in the case of workdays lost.

Household size reduces the probability of being sick by about 1% and the number of days lost due to sickness by about 0.4. This is counter intuitive as it would be expected that larger households tend to have lower incomes and are therefore more prone to sickness and to losing more workdays when sick.

In the case of adults, being in an urban area has no significant impact on the incidence of sickness or the workdays lost due to sickness. However, the regional dummies show that individuals in the East, North and West (though weakly in this case) are more likely to be sick in comparison to the Central region, with probabilities of about 13%, 3% and 1%, respectively. The regional/year dummy interaction shows a slight improvement for the East, where the probability of being sick seems to have gone down by about 3% in 2002.

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inside and outside facility while pit latrine includes shared and non-shared facility. Cement floor includes ceramic and wooden tiles.

However, the regional dummies are not significant in the case of the North and the West. In terms of days lost, again individuals in the East, the North and the West are likely to lose more workdays due to sickness than individuals in the Central region, by about 4 days in the East and 1 day in the North and the West. This shows there exists large discrepancies in access to health care services between the Central and the other regions, which can be explained by the proximity to good health facilities and higher incomes for the people in the Central region in comparison to the others. The regional/year dummy interaction shows a reduction of about 1.6 workdays lost in the East but increased workdays lost due to sickness in the North by about 2 days after the abolition of user fees in public hospitals. This could be attributed to the continued civil strife in the area and the resulting decline in the provision of social services.

ii. Children

For the children, our discussion on the incidence of sickness and days lost centres mainly on one specific category of children, the orphans, who may be highly disadvantaged in terms of access to health services. In the case of children 14 years or below, we find that there is a significantly lower incidence of sickness, by about 9% and workdays lost, by about 2.9 days after the abolition of user fees. This could be attributed to the increased access to health care facilities and reduced rationing as we noted in the last section. The log of the value of household assets is found to have no impact on the probability of a child being sick, or the workdays lost. But the asset/year interaction shows that there was reduced reporting of sickness among the poorer individuals, by about 54% and workdays lost by this group reduced by about 0.5. Households with a cement floor or better are found to lose less days (0.7) due to sickness of children in comparison to those with poorer floor. Details of the results are presented in Table 9.

Table 9: Incidence of sickness and work days lost (age up to 14 years)

Variable	Sick	Days lost
Year dummy	-0.092**	-2.853**
	(2.57)	(2.24)
Total asset value (log) [α_1]	-0.001	0.041
	(0.54)	(0.45)
Total asset value*year dummy [β_1]	0.024***	0.582***
	(4.28)	(3.09)
Distance to hospital [α_2]		-0.072***
		(8.01)
Distance*year interaction [β_2]		0.025
		(1.36)
Flushing toilet	-0.008	-0.678
	(0.42)	(1.12)
Pit latrine	-0.001	-0.098
	(0.18)	(0.49)
Cement floor or better	-0.012*	-0.711***
	(1.78)	(3.00)
Iron sheet roof or better	0.005	-0.114
	(0.73)	(0.52)
Age in years	-0.049***	-1.469***
	(23.60)	(21.42)
Age squared	0.190***	5.651***
	(13.02)	(11.65)
Age*year interaction	0.004**	0.123**
	(2.38)	(2.48)
Gender, 1 if female	0.005	0.071
	(1.02)	(0.44)
Orphan [α_4]	0.013	0.471
	(1.52)	(1.61)
Orphan*year dummy [β_4]	0.049**	1.604**
	(2.51)	(2.52)
Other relative	-0.026***	-0.739***
	(3.66)	(3.09)
Other relative*year dummy	-0.023	-0.789
	(1.34)	(1.35)
Education of head	0.001	0.002
	(0.65)	(0.04)
Head's education squared	-0.000	-0.002
	(0.90)	(0.62)
Household size	-0.007***	-0.205***
	(9.73)	(8.05)
Urban dummy [α_3]	0.005	-0.059
	(0.60)	(0.22)
Urban*year dummy [β_3]	0.004	0.299
	(0.31)	(0.64)
Eastern region	0.150***	3.182***
	(19.01)	(12.67)
Northern region	0.049***	1.406***
	(4.99)	(4.39)
Western region	0.009	0.501**
	(1.20)	(1.98)
Eastern region*year dummy	-0.035**	-0.785
	(2.25)	(1.47)
Northern region*year dummy	0.012	0.758
	(0.60)	(1.12)
Western region*year dummy	-0.023	-0.013
	(1.45)	(0.02)
Constant		-0.439
		(0.74)

Observations	35,500	35,500
Pseudo R2	0.066	0.023
Log-likelihood ratio	-19,766.57	-47,778.01
χ^2 for $\alpha_1 + \beta_1 = 0$	18.99	12.81
Prob value	0.000	0.000
χ^2 for $\alpha_2 + \beta_2 = 0$		8.31
Prob value		0.004
χ^2 for $\alpha_3 + \beta_3 = 0$	0.53	0.33
Prob value	0.468	0.568
χ^2 for $\alpha_4 = \beta_4$	12.68	13.17
Prob value	0.000	0.000

Absolute value of z statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

The age of child is found to be negatively related and age squared to be positively related to the probability of being sick. This suggests that the incidence of sickness among children reduces with age up to a certain level and then begins to increase. Again, the higher the age, the lower the days lost due to sickness. An additional year of age reduces days lost by about 1.5. The gender of the kid has no consequence on the probability of being sick or the days lost due to sickness.

Orphans[13] are found to be about 6% more likely to fall sick and to lose about 1.6 days due to sickness in 2002 compared to children who are not orphans, suggesting that despite the policy change, this category of children has remained disadvantaged. On the other hand, other relatives living in a household are less likely to fall sick by about 2.6% and they are less likely to lose working days when sick by about 0.74. The other relatives/year dummy interaction is not significant in both cases.

Distance to hospital reduces workdays lost due to sickness by about 0.7 suggesting that those near health facilities are likely to seek treatment immediately they fall sick. However, education of the household head has no significant effect on the probability of a child being sick nor the workdays lost due to sickness. Children in houses with a cement screed floor or better are about 1.2% less likely to fall sick and the loss in

[13] In the estimations, we first include three categories of orphans, the double orphans; both parents not living, the paternal orphans; father not living and the maternal orphans; mother not living. Only the double orphan category is significant but using the t-test of the equality of the three categories, we fail to reject the null hypothesis that they are equal. We therefore take one category, children aged 14 years or below with either one or both parents not living.

workdays is reduced by about 0.7. This is consistent with the idea that good dwelling conditions have a positive impact on the health of the individuals. Household size reduces the incidence of sickness among children by about 1% and the number of workdays lost by about 0.2. This could be related to the extended family system where additional members of the household; relatives and non-relatives take care of the sick children by either taking them to hospital or looking for natural herbs used in treatment.

Regional dummies again show a higher incidence of sickness in the East, by about 15%, and the North, by about 5% in comparison to the Central region. The Western regional dummy is not significant. In terms of workdays lost due to sickness, in the East individuals lose about 3.2 days, 1.4 days in the North and about 0.5 days in the West more than in the Centre. Only the East/year dummy interaction is significant, revealing reduced incidence of sickness in the region in 2002. Distance to hospital increases workdays lost by about 0.07 while the distance and year dummy interaction is not significant and the urban dummy is not significant.

4.5 Implications

The results clearly show that the policy of removing user charges on public health services in February 2002 has had a strong positive impact on access to health services by the population. There was increased reporting of cases to hospitals, particularly the public hospitals and there seems to be improved access across the rural/urban households/individuals and across the regions. The findings show reduced rationing and increased use of public health care services in 2002, after the abolition of user fees. This is a move towards the right direction if the government is to achieve good health for all. Our findings show that being sick is associated with large economic losses in terms of workdays lost, particularly when it is the women or the children who are sick. However, the results show that despite the policy change, disadvantage categories of individuals, using the orphans as an example, did not benefit much in terms of increased access.

Administrative data shows significantly large increases basically in all types of diseases reported in health units after the abolition of user fees. Particularly, there was increased reporting of Vitamin A supplementation and birth-related cases. This suggests that a number of individuals who could not afford to meet the medical bills before, now had the opportunity to consult with medical personnel and to seek medical treatment after the change in policy.

Large regional and urban/rural differences in rationing, choice of public and private hospitals and incidence of sickness and workdays lost are found to exist in the health system in Uganda. The biggest incidence and losses due sickness being associated with the East and the North. Distance to hospital is found to increase the probability of using public hospitals, but to reduce the probability of using private hospitals. Education is found to have a positive effect on choice of private hospitals and to reduce the incidence of sickness and workdays lost. All this implies that in order to improve the health conditions of the people of Uganda, it is necessary to address these issues through a proactive set of policies that bring services nearer to the people. Removal of user fees

alone may not be sufficient to bring about significant improvements in the health conditions of the population. In the next section, we make conclusions and make a number of policy recommendations, based on the evidence adduced here.

5.0 Conclusions and the way forward

In this paper, we estimate the impact of the abolition of user fees in public health care institutions on the demand for health care and on the incidence of sickness and economic loss arising from being sick. Using the probit and tobit models on household survey data we find that the abolition of user fees in public hospitals is associated with reduced incidences of rationing, increased use of government health care facilities and reduced use of private health care centres. This is consistent with estimations based the administrative data, which show significantly increased reporting of cases of all kinds of sickness in public hospitals. This suggests that abolition of user fees has, to a large extent, eased the constraint of inability to meet consultation fees and costs of drugs, particularly for the poor and the disadvantaged groups, the orphans. We also find that distance is not necessarily an obstacle to the use of government health facilities, but is a constraint in the case of private hospitals. This implies that government should increase spending on public health facilities in order to meet the demands of those who cannot afford the cost in private health centres. Urban and regional dummies that there are strong regional imbalances in access to health care services in the country, with individuals in the urban areas and Central region having better access to private service providers and being less prone to rationing. The regional/year dummies show major reductions in rationing in the East, North and West in comparison to the Central, which suggest that user fees was a big constraining factor for access to health facilities.

It is noted in the analysis that the value of assets owned by a household (as proxy for its income) is, among both adults and children, a very important factor in reducing the incidence of being rationed when sick. Among the adults, the value of assets has an important impact in mitigating the incidence of sickness and the days lost due to sickness. The educational level of the individual and the household head are important in reducing days lost due to sickness. Locational characteristics offer advantages in terms of health outcomes, particularly urban areas as opposed to the rural areas. Removal of user charges on public health services seems to have had little impact on the incidence of sickness and the days lost due to sickness, but a strong impact on the choice of public hospitals.

Among the disadvantaged groups, the orphans, the incidence of sickness and workdays lost increased despite the abolition of user charges in public hospitals.

From the qualitative information we note that despite the increased demand for health services by the population, there seems to have been little increase in the facilities, and the number of medical personnel. In fact, there has been a deterioration in the quality of the services provided. But in order to improve the well-being of the poor, abolition of user fees without improving the quality of the health services is not sufficient. There is need to improve the quality of the health facilities, in addition to removal of all other barriers that may hinder the access of the poor to the facilities. It is important to establish and stock health units in the rural locations, at the sub-county and county headquarters so as to reduce the distances covered by the sick. Special interest groups, particularly women and the orphans need to be given particular attention in the provision of health services so that is equitable distribution and access by all.

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