

# **WORKING PAPERS**

## **USER CHARGES AND UTILISATION OF HEALTH SERVICES IN KENYA**

Arjun S. Bedi  
Paul Kimalu  
Mwangi S. Kimenyi  
Damiano K. Manda  
Germano Mwabu  
Nancy Nafula

August 2003

Working Paper Series No. 381

**USER CHARGES AND UTILISATION  
OF HEALTH SERVICES  
IN KENYA**

Arjun S. Bedi  
Paul Kimalu  
Mwangi S. Kimenyi  
Damiano K. Manda  
Germano Mwabu  
Nancy Nafula

August 2003

Working Paper Series No. 381

**Comments are welcome and should be addressed to the author:**

c/o ORPAS - Institute of Social Studies - P.O. Box 29776  
2502LT The Hague - The Netherlands

[workingpapers@iss.nl](mailto:workingpapers@iss.nl)

The Institute of Social Studies is Europe's longest-established centre of higher education and research in development studies. Post-graduate teaching programmes range from six-week diploma courses to the PhD programme. Research at ISS is fundamental in the sense of laying a scientific basis for the formulation of appropriate development policies. The academic work of ISS is disseminated in the form of books, journal articles, teaching texts, monographs and working papers. The Working Paper series provides a forum for work in progress which seeks to elicit comments and generate discussion. The series includes the research of staff, PhD participants and visiting fellows, and outstanding research papers by graduate students.

For a list of available Working Papers and how to order them see the last page of this Working Paper.

Some of the latest Working Papers are published full text (or abstract and content page) on the website: [www.iss.nl](http://www.iss.nl) (Research / Working Papers)

For further information contact:

ORPAS - **Institute of Social Studies** - P.O. Box 29776  
2502LT The Hague - The Netherlands - FAX: +31 70 4260799

E-mail: **[workingpapers@iss.nl](mailto:workingpapers@iss.nl)**

ISSN 0921-0210

## **ABSTRACT<sup>a</sup>**

This paper uses data from Kenya to examine the role played by user charges and the quality of health services in determining the choice of health care providers. We find that an increase in the price of using public facilities diverts demand from public to private facilities. The reduction in demand for modern healthcare, captured by an increase in the use of self-treatment, is minimal. In contrast, a decline in the quality of services may be expected to lead to a sharp reduction in the use of public facilities and additional reliance on the self-care alternative. These patterns suggest that a programme of increasing the quality of services and enhancing drug availability through cost-sharing may be more effective at meeting the healthcare needs of the population than a programme of fully subsidising health services at low standards of care. However, since improved health services entail higher costs of provision and use, targeted subsidies are required to ensure that the poor are not denied access to basic care. Difficulties in enforcing statutory fee exemptions at public health facilities have created interest among Kenyan policy makers in social health insurance as a dominant mechanism for financing health care. Demand effects of this potential shift in policy are briefly discussed.

**Key Words:** User fees, healthcare utilisation, insurance, Kenya.

---

<sup>a</sup> This paper has been written under the auspices of a EU funded project (7 ACP KE080) titled, 'Institutional Support to the Kenya Institute for Public Policy Research and Analysis.' The KIPPRA-ISS team working on this paper share equally in its authorship and are listed in alphabetical order: Arjun Bedi—Institute of Social Studies (ISS), Paul Kimalu, Mwangi S. Kimenyi, Damiano K. Manda, Germano Mwabu, Nancy Nafula—Kenya Institute for Public Policy Research and Analysis. We are grateful to the Central Bureau of Statistics, Kenyan Ministry of Planning and National Development for valuable assistance in the course of this study and to Rob Vos for helpful comments.

## CONTENTS

ABSTRACT

CONTENTS

1	INTRODUCTION .....	1
2	COST RECOVERY: ANALYTICAL AND POLICY ISSUES .....	3
	2.1 Analytical Perspectives .....	3
	2.2 Country Experiences in Africa .....	4
3	CONCEPTUAL FRAMEWORK .....	6
4	DATA AND UTILISATION PATTERNS .....	10
5	REGRESSION RESULTS .....	14
6	DISCUSSION .....	17
	6.1 Main Findings and Policy Implications.....	17
	6.2 Present Work in Relation to Previous Studies.....	20
	REFERENCES .....	22
	APPENDICES	

## **1 INTRODUCTION**

In 1987, the World Bank recommended that the principle of cost recovery be incorporated into an agenda for financing publicly provided health services in developing countries. As a result, the number of African countries implementing some form of user fee system has grown considerably. Governments have come to see user fees as an important alternative to tax-based financing for government health services in Africa. Russell and Gilson (1995) find that 14 out of the 15 African countries in their study have some form of user-fees. In a broader study, Nolan and Turbat (1995) point out that 28 out of 37 African countries studied have a fee system in public health facilities.

Despite widespread implementation, the imposition of charges at the point of delivery as a means of financing government health services in developing countries remains a controversial issue. Concern remains widespread that the introduction of user fees in government operated facilities or costly membership in insurance plans could deny the poorest people access to modern health services. While detailed arguments on the pros and cons associated with charging user-fees are provided in Jimenez (1986), the basic argument in favour of user fees rests on the idea that fees facilitate cost-recovery and reduce the financing burden faced by a government. Furthermore, by reducing potentially unnecessary utilisation of free services, user fees promote allocative efficiency. The strongest argument against user fees is based on the equity effects associated with the imposition of such fees. It is argued that the elasticity of demand for health care is higher for the poor as compared to the rich and the imposition of user charges will reduce access to medical care for low-income groups in the population.

Kenya introduced a policy of user charges for the first time, during the post-independence era, in December 1989. Less than a year later, in August 1990, the system of cost-sharing was suspended on grounds that it was denying the poor access to basic care. Following public discussions on the merits and demerits of user charges, a new system of cost-sharing was introduced in April 1992. While the new system was similar to the old system in terms of differentiated user fees by facility, there were some important differences. The user charges were introduced in a phased manner and required payment after treatment had been received (see Mwabu 1995 for more

details). Furthermore, the new reform decentralised management of 75 percent of the fee revenue retained in facilities by District Health Management Boards with representation of the community. Groups of population exempt from the fees were expanded to include civil servants, the military and the unemployed (see Gesami 2000 for more details).

Several studies provided *ex ante* guidance on the effects of user fees in Kenya and in other developing countries. Ellis (1987) studied the effects of user fees in Kenyan health-care facilities and concluded that user fees had the potential to generate revenues but argued that a substantial fraction of the population would no longer be able to afford health care. However, other studies did not yield such clear-cut conclusions. Some authors (see e.g. Akin et al. 1984) argued that demand for health care was price inelastic and utilisation rates would not be affected by any changes in user-fees.

Subsequent to the imposition of user fees a large number of studies examined price effects on utilisation rates and revenue. As in the first generation studies, there was no unanimity among researchers on effects of fees. Some studies indicated that while demand for health care was price elastic (Kanji 1989; Yoder 1989; Waddington and Enyimayew 1990; Lavy and Quigley 1993; Booth et al. 1995; Haddad and Fournier 1995) elasticities were higher for low-income groups (Gertler and van der Gaag 1990 and Sauerborn et al. 1994). Hence, user charges affected these groups adversely.

Other studies (see e.g. Reddy and Vandemoortele 1996; Mwabu and Wang'ombe 1997) revealed that despite the low price elasticity of demand the system of cost sharing led to a substantial reduction in the demand for healthcare because fees were being raised from very low levels. Moses et al. (1992) report that there was a large fall in demand for STD treatment in Nairobi. Owino and Were (1997) show that the existing cost-sharing mechanism has caused both hardship and inaccessibility to modern health care by the vulnerable groups, hence primary and preventive health care activities are endangered.

The studies mentioned above and others (see e.g. Mwabu et al. 1995 and Ngugi 1999) pertain to an analysis of the effects of user fees after the imposition of the first round of fees. Assessments of the effects of the new system of user fees imposed in 1992 have just begun. Nganda (2002) has recently examined changes in user charges at government health facilities since 1992 and the associated changes in service utilisation. His preliminary findings show that despite large upward adjustments

in user fees in all government facilities, overall service utilisation in public health facilities declined very little. Moreover, both curative and preventive services are subject to fees. Despite the fees, there has been an increase in utilisation of some categories of preventive care, notably antenatal and child health services. Fees are also being charged in government dispensaries, contrary to government guidelines on service pricing. Another noteworthy finding of his study is that the Ministry of Health is not able to enforce its guidelines on fee waivers and exemptions. A new facility-based exemption scheme has evolved which benefits only a limited category of patients. There has been an involuntary decentralisation of service pricing and fee exemptions, which has not been ratified by the government. Nganda's work is based on a limited survey of health facilities, which cannot be used to analyse treatment choices of households—the main focus of this study. In particular, the present piece of work is concerned with examining the role of user fees and the quality of health care services in determining household choice of health care providers. We use data from household surveys that were conducted during the period that the second round of fees were in effect. Specifically, we use household data from the welfare monitoring surveys undertaken in 1992, 1994 and 1997 by Kenya's Central Bureau of Statistics, Ministry of Finance and Planning. The main results of the paper are based on the 1994 data set because of its better quality.

The rest of the paper is organised as follows: Section 2 gives a review of analytical and policy issues, with a focus on country experiences with respect to effects of fees on revenue, service access, quality and utilisation patterns. Section 3 presents the conceptual framework. The data used and sample statistics are discussed in section 4. Section 5 reports regression results and section 6 concludes.

## **2 COST RECOVERY: ANALYTICAL AND POLICY ISSUES**

### **2.1 Analytical Perspectives**

The principle that public authorities should assume responsibility for providing social services has gradually been abandoned in the face of economic pressures. Confronted with slow economic growth, external debt, and rapid population growth, governments in many of the world's poorest countries have been faced with a widen-



ing gap between public demand for services and the resources available for public provision.

Moreover, as in some industrialised countries, state provision of health services has come to be seen as inefficient, or as prohibitively expensive or both. The approach of treating health care as a citizen's right, and the attendant attempts to provide free services to everyone have not worked (World Bank 1987). Cost recovery was initially promoted by the World Bank as a mechanism for achieving the twin goals of generating financial resources for the health sector and introducing efficiency enhancing principles in the provision of health care.

Moreover, it was argued that by increasing the resources available to health facilities, cost recovery would improve the quality and the range of services provided, with beneficial outcomes for public health. Thus, new or increased user fees in public health facilities, when accompanied by an improvement in services, would increase use. This increase was expected to be positive for both the poor and the non-poor. Furthermore, a system of user fees would promote allocative efficiency by discouraging frivolous use of scarce healthcare services. In short, cost-recovery in the health sector was presented in the early literature as a win-win solution for acute health care budgetary problems in low-income countries.

Today over 30 governments in Africa have some form of cost recovery program in place. However, serious problems have emerged in the implementation of user charges for health care. Vulnerable social groups have been excluded from vital services, and exemption systems have typically proved ineffective. Revenue collection has fallen far short of target levels in many countries. Meanwhile many of the efficiency and equity gains predicted by earlier research have failed to materialise. Amidst failures of research predictions, the World Bank has distanced itself from the promotion of user fees. In a policy statement at the end of 2000, the Bank declared that it supports the provision of free basic health care. However, it added that well designed and implemented fees could be useful in mobilising additional resources for the health sector (Colgan 2002).

## **2.2 Country Experiences in Africa**

Experience indicates that national systems of user charges for health care have generated an average of about 5 percent of total recurrent health system expenditures,

gross of administrative costs (Gilson, Russell and Buse 1995; Kutzin 1995; Nolan and Turbat 1995). The literature also shows that revenue levels vary over time, sometimes increasing because of improved implementation practices, and falling at other times due to diverse phenomena such as inflation, war or economic recession. While some countries have achieved higher levels of cost recovery than others, their sustainability is unclear. Ghana, for example, initially managed to recover more than 10% of total recurrent government expenditure, but this fell to around 5% after a few years.

Considerable proportions of the total non-salary recurrent expenditure, if generated, may enable significant quality improvements at the facility level. This has been shown to lead to an improvement in perceived quality in some community financing schemes of the Bamako Initiative type (Kutzin 1995). Nonetheless, the available information suggests that revenue generation from user fees in public facilities is inadequate to address the large and growing resource gap that exists in public health facilities in many African countries. Revenue generation is constrained by the need to keep fees low, because household incomes are low. In addition, the administrative costs of implementing a fee system, including the costs of the exemptions necessary to safeguard equity and public health objectives, further reduce cost recovery benefits.

In Niger, Diop, Yazbeck and Bitran (1995) conclude that, for service access in rural areas to be achieved and sustained, cost recovery should not only be accompanied by quality improvements, but also by cost containment measures. Such measures include drug policies which promote the acquisition of essential generic drugs in competitive markets, and human resource programs which strengthen management capabilities and control drug consumption costs at health facility and district levels.

In Zambia, patients lacking cash-income were required to make payments in kind in the form of cereals or livestock donations. Further, the government made minimal exemptions. However, despite these flexible payment mechanisms, Booth et al. (1995) report that the utilisation rates of both hospitals and clinics declined precipitously in Zambia. The number of outpatients dropped in all types of health facilities, especially outpatient consultations for six major diseases. Limited evidence suggests that in Zambia a sizeable number of people who require medical attention and have previously obtained it are staying at home, and in some cases, dying, because they cannot afford to pay user charges (Booth et al. 1995). In one of the children's hospitals in Zambia, the monthly average number of outpatients declined by more than 50 percent over the period 1989-1994. In another hospital, deliveries of babies fell by

nearly half between 1991 and 1994, with a reported increase in maternal deaths in home deliveries.

Evidence of diversion of health care demand from government health facilities to other clinics following imposition of user fees in public clinics is found only in a few countries (Mwabu et al. 1993; Sahn et al. 2002). In Swaziland, 30-40% of patients who had used public hospitals and clinics switched to private providers after introduction of fees in public clinics. Mwabu et al. (1995) report a 52% decrease in outpatient visits at the government health centres after introduction of fees in Kenya in 1989 but do show that a proportion of these visits was diverted to non-government facilities. Similarly, Mbugua et al. (1995) show that attendance at dispensaries in a poor area in Kenya, which continued to provide free services, rose while it fell sharply in all other facilities after introduction of user fees.

A longitudinal survey of Kenya's experience with user fees and reimbursements from the National Hospital Insurance Fund (NHIF) indicates that between 1991 and 1992, the level of fee revenue generated by provincial hospitals tripled and that generated by district and sub-district hospitals doubled. This was as a result of increased prices and strengthened billing systems that, in particular, tapped resources from those covered by health insurance. In the first six months of 1993, 62% of the total revenue generated at provincial hospitals and 48% of that generated at district hospitals came from NHIF claims and cash fees. As a result of such experiences, various analysts suggest that fee implementation should be restricted to hospitals and exemption mechanisms should be improved (Adams and Harnett 1995; Barnum and Kutzin 1993). In another proposal, the government recently announced an intention of transforming the NHIF into a national social insurance scheme that would replace the current system of cost-sharing (Ministry of Health 2002).

### **3 CONCEPTUAL FRAMEWORK**

In an analysis of healthcare demand, concern is typically with price responsiveness of the probability of seeking treatment from a given provider and/or with price elasticities of treatment intensity, as proxied by the number of visits. Due to data limitations, the focus in this paper is on probability of a patient choosing a particular health care provider, conditional on illness. We use a standard framework that has

been employed in several papers that have estimated the use of health care (see Gertler, Locay and Sanderson 1987; Mwabu, Ainsworth and Nyamete 1993). The framework is a short-run static model with a utility function defined over health status and the consumption of all other goods.

Consider an individual confronted with an illness. This individual has to choose among alternative health care providers (including self-care). Health care providers offer different levels of service at varying costs. An individual has to make a discrete choice amongst these providers. Conditional on an individual's health status, the type of illness, availability of information, and income an individual chooses the alternative that yields the highest net utility.

This description of the manner in which an individual may make a choice concerning health care provision may be formalised by considering utility conditional on receiving care from health care provider (HCP)  $j$ . Utility conditional on choosing provider  $j$  is given by,

$$U_{ij} = U(H_{ij}, C_{ij}, T_{ij}) \quad (1)$$

Where  $H_{ij}$  is the expected health status of the individual conditional on receiving treatment from provider  $j$ ,  $C_{ij}$  is the consumption of all other goods except those associated with health care,  $T_{ij}$  represents the non-monetary costs of access to provider  $j$ . The expected improvement in health care status is unobservable but is assumed to depend on the characteristics of an individual (health status, habits, etc.) and the quality of health care received by the individual. This allows us to write a health production function defined over  $X_i$ , the attributes of an individual and  $Z_j$ , the attributes of the provider  $j$ . Hence,

$$H_{ij} = H(X_i, Z_j) \quad (2)$$

Turning to the second argument in the utility function, the level of consumption that is possible depends on the income of the individual and the costs associated with buying health care. If the user fee associated with a visit to provider  $j$  is  $P_j$  and  $Y$  is an individual's income then,

$$C_{ij} = Y_i - P_j \quad (3)$$

Substituting 3 into 1 yields,

$$U_{ij} = U(H_{ij}, Y_i - P_j, T_{ij}) \quad (4)$$

i.e., utility is a function of the expected health status of an individual, the level of non-health consumption, expressed in monetary terms, and the non-monetary costs associated with using provider  $j$ . To guide empirical work it is suitable to substitute (3) and (2) into (1). This yields a general indirect utility function of the form,

$$U_{ij} = U(X_i, Z_j, Y_i, P_j, T_{ij}) \quad (5)$$

Thus, the benefits from visiting a particular health care provider depend on an individual's personal characteristics,  $X$ ; the attributes of the provider,  $Z$ ; the individual's income,  $Y$ ; user fees,  $P$ , faced at provider  $j$ ; and non-monetary costs,  $T$ , associated with visiting provider  $j$ .

In order to empirically determine the probability of choosing a provider we need to choose a particular form for the conditional utility function and to introduce a stochastic disturbance. There are several possible choices for the form of the utility function. What is required is a form for the utility function which is consistent with well-ordered preferences. As shown in Gertler, Locay and Sanderson (1987) a suitable form for the utility function is the semi-translog where health and non-price access costs enter in log form and consumption enters in both log and log-squared forms. Other suitable forms for the utility function include parameterisations that are log-linear in health status and consumption or a utility function that is linear in health status but log-linear in consumption (see Mwabu et al. 1993 for a discussion).

Consider an indirect utility function, which may be written as follows:

$$U_{ij} = V_{ij} + \varepsilon_{ij} \quad (6)$$

Where,  $V_{ij}$  is the systematic part of the utility function and depends on individual characteristics and provider attributes as in equation (5). The idiosyncratic part is represented by  $\varepsilon_{ij}$ . In terms of the functional form of the utility function, keeping in mind the data that we have to carry out our empirical investigation we adopt a linear utility specification. The empirical utility function may be written as,

$$U_{ij} = \alpha' W_i + \beta' K_{ij} + \varepsilon_{ij} \quad (7)$$

where,  $W_i = [X_i, Y_i]$  and  $K_{ij} = [Z_{ij}, P_{ij}, T_{ij}]$ .

Similar to the specification used by Gertler et al. (1987) and Mwabu (1993) variables that enter as inputs in the health production function (2) enter the utility function (7) in a linear fashion. Unlike, in Gertler et al. (1987) and Mwabu et al. (1993), where consumption/income enters the utility function as a quadratic or in log form, we do not directly control for consumption. While we do have information on per capita household consumption, we chose not to include it in our specification as it is potentially endogenous. Instead, we use variables such as education, house quality and access to piped water to capture income and wealth effects (represented by  $Y_i$ ). Finally, our information on the price and quality of health care across different providers does not come directly from the facilities. Rather, these data are obtained from individuals who visited these facilities. Based on this individual information we create variables that capture district level price, quality and availability of different types of facilities. Thus, variation in these data stem from differences in attributes of the same type of health facility across districts as well as differences in attributes of different types of health facilities within a district.<sup>1</sup>

An individual's health care provider choice may now be expressed as

$$HCP_i = j \text{ iff } U_{ij} > \max\{U_{ik}\}, \quad j = 1 \dots J, k \neq j \quad (8)$$

Where  $HCP_i$  is a health care provider indicator. The parameters of (7) and the probability that individual  $i$  chooses health care provider  $j$  may be obtained by estimating a multinomial discrete choice model. The selection rule (8), combined with the assumption that the stochastic error term follows a Weibull distribution, defines a multinomial logit model where

---

<sup>1</sup> Since  $W_i$  consists of variables that vary across individuals, estimates of  $\alpha$  differ across alternatives. As mentioned in the text, variables comprising  $K_{ij}$  vary across districts and across alternatives. This translates into substantial cross-individual variation and allows estimates of  $\beta$  to differ across alternatives. This unrestricted model is similar to the specification used by Dow (1996) and may be contrasted with the restricted specification used by Gertler et al. (1987) and Mwabu et al. (1993). See Dow (1996) for arguments that support the use of an unrestricted model.

$$P_{ij} = \Pr(HCP_i = j) = \exp(\alpha'_j W_i + \beta'_j K_{ij}) / \sum_{k=1}^J \exp(\alpha'_k W_i + \beta'_k K_{ij}) \quad (9)$$

Estimates of the required parameters may be obtained by maximum-likelihood estimation of (9). For a nested multinomial logit specification of (9), see Sahn et al. (2002). The results of the multinomial logit model may be used to compute elasticity of health care utilisation with respect to policy relevant variables. Two additional points need to be made here. First, as discussed above, choosing a particular health care provider depends on individual characteristics as well as the attributes of the choice and, accordingly, it is better to view (9) as a reduced form relationship rather than as a structural form demand function. Second, equation (9) represents a conditional relationship and will be estimated over individuals who report that they are sick or were sick in the two weeks preceding the survey.<sup>2</sup>

#### 4 DATA AND UTILISATION PATTERNS

Three Welfare Monitoring Surveys (WMS) have been conducted in Kenya. These were carried out in 1992, 1994 and 1997. This paper uses information from all three data sets, although due to extremely limited information on health care utilisation patterns in the 1992 and 1997 data sets, the majority of the empirical work in this paper is based on data drawn from the 1994 Welfare Monitoring Survey. The 1994 WMS contains information on about 10,000 households and over 50,000 individuals from almost all districts in Kenya. The 1997 survey contains a similar sized data set, but the data set for 1992 is smaller. These multi-purpose surveys contain information on a variety of dimensions including consumption, child health, fertility, and other individual and family characteristics. In addition, the 1994 survey contains information on the incidence and the type of illness experienced by individuals in the two weeks preceding the survey. The survey also elicits information on the type of health

---

<sup>2</sup> As shown by Dow (1996) unconditional or population (price) elasticities may be obtained by augmenting the conditional elasticities with elasticities obtained from a probit estimate of the probability of falling sick. The unconditional price elasticity is the sum of the conditional price elasticity and the price elasticity of falling sick. To get an idea of the population elasticities we estimated probit models of the probability of falling sick (see table A2) and estimated price and quality elasticities; see also Appleton, 1998). The elasticity of falling sick with respect to user fees in government facilities was about 0.009 and with respect to the non-availability of drugs was 0.037. These are quite small and suggest that, at least in the current context, conditional and unconditional elasticities are not substantially different.

care sought conditional on being ill, the costs incurred, and the reasons for choosing/not choosing a particular type of health care provider. These individual and household data were merged with district level information on the availability of health-care facilities. This merged data set containing information on costs of health care and some elements of the quality of health care and availability (indirect costs) is used to explore the role of price and quality variables in influencing the choice of health care provider. In terms of sample composition, our work concentrates on adults and excludes all those below the age of 15.<sup>3</sup>

TABLE 1  
Incidence of illness and choice of health care provider  
(Std. Error)

<i>Sickness and provider chosen</i>	1992	1994	1997
Sick in the past two weeks (%)	16.56	22.23	15.2
<i>N</i>	24,960	29,323	30,347
Type of illness conditional on being sick:			
malaria/fever (%)	44.9	53.77	53.57
vomit/diarrhea (%)	7.06	8.33	7.06
cough/cold (%)	16.76	16.44	n.a.
Choice of provider conditional on being sick:			
self-care (%)	48.5	80.85	32.4
private	–	6.55	27.1
government	–	10.8	34.9
mission	–	1.78	5.72
to a health facility (%)	47.36	–	–
<i>N</i>	4,134	6,519	4,616

Notes: The 1997 data set does not contain a category defined as cough/cold. Self-care includes visits to traditional and faith healers as well as selfprescribed/pharmacist-prescribed purchase of drugs. The 1992 data set does not provide information on the type of provider.

Table 1 presents some statistics on the incidence and type of sickness. These are presented for all the years that we have data. According to WMS 1992 and 1997, the incidence of illness in the two weeks preceding the survey was about 15-17 percent. In 1994 the incidence was considerably higher at about 22 percent. Malaria/fever is the predominant cause of illness and increases between 1992 and 1994/1997. In terms of choice of health care provider there are sharp differences between the 1994

<sup>3</sup> We restricted ourselves to adults in order to facilitate comparison with the existing literature. For the most part papers that have investigated the impact of user fees on utilisation have concentrated on adults. For example see Mwabu et al. (1993) and Gertler et al. (1987).



and 1997 surveys. According to WMS 1994, 81 percent of those who are ill choose to treat themselves, while about 6.6 percent seek private care, 11 percent go to government clinics/hospitals while the remaining seek help from a mission facility.<sup>4</sup> The numbers for 1997 show that, conditional on being ill, 32 percent of the respondents treat themselves, 27 percent attend private facilities and 35 percent seek help from public facilities. The sharp difference in the utilisation of health care between the 1994 and 1997 surveys is an issue of concern. Although there is a higher incidence of illness in 1994 it is difficult to imagine that this could be the sole cause for the differences. Another possible reason for the differences could lie in the geographically more complete coverage of the 1994 survey. The 1994 survey covers the entire country while the 1992 and 1997 surveys exclude the North Eastern Province and Turkana, Marsabit and Samburu districts. While these districts are thinly populated, they are amongst the poorest areas in Kenya. To establish the effect of this incomplete coverage we excluded these districts and re-estimated the pattern of health care utilisation based on WMS 1994. The differences were minor.<sup>5</sup>

Since the 1994 survey is nationally representative and geographically complete, the remainder of the paper is based on data drawn from the 1994 survey. Table 2 presents mean characteristics for the different health facilities. These means are district level averages and are based on the information provided by individuals in the sample who have visited a particular health facility. These statistics are presented by type of provider. There are sharp differences in user fees across providers. The average price of an outpatient visit to a private health facility is about four times the price of using a public health facility. As a proxy for the non-monetary cost of accessing different types of health facilities we compute a concentration ratio defined as the number of health care facilities in a district per 10,000 population. This indicator takes on a value 0.37 for private facilities and 0.92 for public facilities. While, public

---

<sup>4</sup> WMS 1994 estimates based on the use of health facilities in the last three (3) months shows that 34.97 percent of those who are ill go to private health facilities, 42.83 percent go to government clinics/hospitals and 17.97 percent use mission facilities.

<sup>5</sup> It is possible that the questions that solicit information on health care utilisation in the 1994 and 1997 surveys were understood and answered differently by respondents. In 1994, conditional on being sick, respondents were asked, "What is the most recent action taken?". In 1997, conditional on being sick, respondents were asked, "What kind of health provider did you seek treatment from?". While the question in 1994 is clear and deals with the most immediate action taken to treat an illness, the response to the 1997 question may not deal with the most immediate action taken. Attempts at gathering information from the Central Bureau of Statistics on the instructions provided to the personnel conducting the survey and to the respondents have not been successful.

health facilities are cheaper they are also perceived to be of much lower quality. We have created two variables to capture quality differences across facilities. The first of these captures the unavailability of drugs while the second is a measure of the overall quality of services from the viewpoint of users. The WMS 1994 survey asked respondents to list their reasons for not visiting a particular type of facility. Fifty one percent of those who did not visit a public health facility mentioned lack of drugs as the reason for not seeking care from a public health facility. The corresponding number for those not seeking care from a private facility was 0.64 percent. In terms of the second measure of quality, 7.6 percent of those who did not visit a public health facility mentioned poor services as their reason while for private facilities the number was 0.5 percent. These numbers highlight the stark differences in the quality of care across facilities. While private facilities are four times as costly as public facilities it appears that this is probably more than compensated for by the quality of services that they offer.

TABLE 2  
Health care providers, costs and service, 1994  
(Std. Dev.)

<i>Provider choice and characteristics</i>	Private	Government	Mission
Choice of provider conditional on being sick (%)	8.2	10.9	1.9
User fee - per outpatient visit (shillings)	213 (110)	52 (55)	161 (128)
Drug unavailability (%)	0.64	51.2	2.3
Poor service (%)	0.5	7.6	1.1
Concentration of health facilities (number of health facilities per 10000)	0.37	0.92	0.15
<i>N</i>	419	689	114

Notes: The user fee is calculated as expenditure at a particular health facility divided by the number of visits made to that facility in the last three months. Drug unavailability and the quality of service are based on respondents replies to the reasons for not visiting a particular type of health facility. For example, the number corresponding to drug unavailability in government clinics indicates that 51.2 percent of those who did not visit a government health facility cited lack of drugs as the reason while the corresponding number for private clinics was 0.64 percent.

In terms of individual characteristics the average age of those reporting illnesses is 36.5 years, while average educational attainment is almost 5 years. Other descriptive statistics are presented in table A1. To provide an idea of the characteris-

tics associated with being sick, table A2 presents probit estimates of the probability of being ill (reporting sickness). Estimates based on the 1994 data show that older individuals and females are more likely to report sickness. In terms of wealth and income related characteristics, being ill is not systematically related to the education level of an individual but is linked to housing characteristics and household amenities. Individuals living in houses with weaker construction material and poorer waste disposal facilities are more likely to fall sick.

Before turning to the regression results a few remarks on the data are required. As already discussed above comparability across the three data sets is hampered by differences in geographical coverage and changes in the questionnaire. Moreover, despite being the most complete of the three Welfare Monitoring Surveys, even the 1994 survey has extremely limited information on the quality (inputs) of health care facilities. This limited information does not allow us to assess the effects of different input measures in influencing utilisation. While it is essential to obtain more complete data and to collect data in a manner that allows temporal comparisons, rather than rue the quality of the data our approach has been one of recognising the shortcomings and trying to use the existing data in the best possible manner.<sup>6</sup>

## 5 REGRESSION RESULTS

Table 3 presents maximum likelihood estimates of equation (9).<sup>7</sup> The independent variables include individual and household characteristics and two variables that are of particular interest to us. These two variables are the user charges and our measure of drug unavailability in public health facilities. While we have cost and quality measures for the other types of facilities, the small number of individuals who choose mission or private facilities and the limited variation across districts makes it difficult to use all these variables. Also, the main aim of our work is to examine the effect of price, quality and availability of public facilities in influencing individual

---

<sup>6</sup> Feedback on data issues is being provided to the Central Bureau of Statistics and staff members of KIPPRA are engaged with the CBS in designing questionnaires and contributing to future data collection exercises.

<sup>7</sup> We used Hausman's specification test to examine the validity of entertaining the independence of irrelevant alternatives assumption. On the basis of the test statistics we were unable to reject the null hypothesis that the differences in coefficients are not systematically different.

choices. Thus, we specified equation (9) using measures that pertain only to public facilities.<sup>8</sup>

TABLE 3  
Multinomial Logit Estimates – Choice of health care provider, 1994  
(Std. Error)

Variable	Private	Government	Mission	Self-care
Constant	-2.78 (0.372)	-1.88 (0.406)	-0.712 (1.11)	
Age	0.013 (0.003) <b>.0007</b>	0.003 (0.003) <b>0.00016</b>	0.002 (0.006) <b>0.000017</b>	<b>-0.0009</b>
Male	-0.011 (0.107) <b>.00007</b>	-0.117 (0.086) <b>-0.0106</b>	0.041 (0.199) <b>0.00066</b>	<b>0.0098</b>
Years of schooling	0.047 (0.014) <b>0.002</b>	0.017 (0.012) <b>0.0012</b>	0.013 (0.028) <b>0.00009</b>	<b>-0.0038</b>
Roof of house-grass	-0.324 (0.132) <b>-0.018</b>	0.085 (0.096) <b>0.0104</b>	-0.489 (0.217) <b>-0.0058</b>	<b>0.0136</b>
Piped water	0.354 (0.138) <b>0.0196</b>	0.016 (0.115) <b>-0.0006</b>	-0.029 (0.286) <b>-0.0006</b>	<b>-0.0183</b>
Toilet-pit latrine	-0.216 (0.122) <b>-0.0125</b>	0.175 (0.100) <b>0.0183</b>	-0.752 (0.225) <b>-0.0093</b>	<b>0.0035</b>
User fee in government health facilities	0.002 (0.0013) <b>0.00012</b>	-0.0015 (0.0010) <b>-0.00015</b>	0.0007 (0.003) <b>0.000</b>	<b>0.000</b>
Unavailability of drugs in government health facilities	0.151 (0.351) <b>0.0175</b>	-1.24 (0.254) <b>-0.111</b>	-2.31 (0.625) <b>-0.0269</b>	<b>0.121</b>
N	419	689	114	5164

Notes: Other regressors include province dummies and an indicator for living in an urban area. Log likelihood - 4065.82. The numbers in bold are the marginal effects of the independent variables on choice of health care provider.

By and large the estimates presented in table 3 are not surprising. In terms of the individual characteristics, older respondents are less likely to rely on selftreatment and are more inclined to use private clinics. Given that lack of drugs and poor quality of services in public hospitals may have relatively serious consequences for older individuals their desire to select private hospitals is not unexpected. There does not appear to be any strong link between gender and the type of care that individuals avail. More educated individuals are more likely to seek some form of modern medical care

<sup>8</sup> We estimated specifications of the multinomial logit that included variables indicating the type of illness afflicting an individual. These specifications yielded results similar to those reported in the paper.

than to treat themselves. In terms of the particular health facility chosen, as individuals acquire more education they reduce self-care and turn predominantly to private facilities. Household construction material (roof of house made of grass), the availability of piped water and the method of sewage disposal may be considered as proxies for wealth. These three variables consistently show that poorer individuals are more likely to treat themselves or seek medical care from government facilities.

The last two variables in the model are user fees and our measure of drug unavailability in public health facilities. As may be expected, an increase in user fees reduces the use of public facilities. However, rather than leading to a reduction in the overall use of health facilities, this change leads to demand diversion from public to private facilities and mission facilities, a finding consistent with that reported in Mwabu et al. (1993) for rural Kenya and by Sahn et al. (2002) for rural Tanzania. The increase in self-treatment that may be attributed to an increase in user fees in public health facilities appears to be negligible. The effect of drug unavailability on use of health facilities is very clear. An increase in the unavailability of drugs sharply reduces the use of public facilities, and leads to an increase in self-treatment. To obtain a better idea of the magnitudes of these effects, table 4 presents elasticity estimates.<sup>9</sup>

TABLE 4  
Elasticity of Health Care Utilisation, 1994  
(Standard Errors)

With respect to	Private	Government	Mission	Self-care
Years of schooling	0.206 (0.066)	0.059 (0.053)	0.038 (0.138)	-0.023 (0.008)
User fee in government facilities	0.109 (0.063)	-0.076 (0.046)	0.039 (0.147)	0.0009 (0.007)
Unavailability of drugs in govt. facilities	0.152 (0.168)	-0.559 (0.117)	-1.107 (0.317)	0.075 (0.018)
Concentration of govt. facilities <sup>a</sup>	-0.655	0.439	-0.216	-0.006

Notes: The elasticity estimates have been calculated at the means of the variables. <sup>a</sup> Except for the concentration variable, the elasticity estimates are based on the results reported in table 3. The concentration variable is a proxy for the non-monetary costs of utilising health-care facilities. These elasticity estimates were obtained from a specification that did not include user fees. Given the limited variation in the data it was not possible to estimate a specification that included the concentration ratio and the user fees variable.

<sup>9</sup> We would have liked to present elasticity estimates for different income or consumption quintiles. However, given the overwhelming use of the self-treatment alternative, splitting the sample size and estimating quintile-specific models does not yield stable results.

Table 4 contains own and cross price elasticities with respect to changes in user fees and drug unavailability in public facilities. The own-price elasticity estimates imply that a 10 percent increase in user-fees in government facilities will lead to a reduction in use of these facilities by about 0.8 percent (p-value 0.10). The cross-price elasticities show that the increase in user-fees in public health facilities may be matched by an increase in the use of private and mission facilities. For instance, a 10 percent increase in user-fees in government facilities is associated with a 1 percent increase in the use of private facilities (p-value 0.08). The pattern of results suggests that an increase in user fees in public clinics leads to a diversion of demand from government to other facilities and does not result in a significant reduction in the use of modern health care facilities. The unavailability of drugs has a more pronounced effect as compared to price changes. The effects are larger and statistically significant at conventional levels for the government and self-care alternatives. The estimates suggest that a 10 percent increase in our measure of the availability of drugs in public facilities would increase the use of such facilities by about 5.6 percent. On the other-hand additional drug shortages in public facilities will lead to reduction in the use of government health facilities that will be matched by an increase in the use of the self-care alternative.

## **6 DISCUSSION**

### **6.1 Main Findings and Policy Implications**

This paper has examined the effects of user charges and quality of medical treatment on health service utilisation patterns in Kenya controlling for other covariates of interest, such as education, gender and the environment in which households live. There are five main findings from the analysis undertaken in the paper. The first finding is that most people in Kenya rely on non-government sources of care in the event of illness. For instance, in 1994 and 1997 the majority of people seeking outpatient care relied on non-government health facilities. In 1994, only 11% of patients sought treatment from public health facilities. In 1997, 35% of all outpatients in the country were seen at public health facilities. The remainder of patients relied on non-government health facilities, including self-treatment alternatives. Self-care here comprises home remedies, traditional treatment and drugs purchased from pharmacies

and shops. These forms of treatment need to be understood better so that policy can be designed to improve them, or if desired, to divert demand to other providers. There is also a need to investigate further the reasons for the uneven health-care utilisation patterns.

The second finding is that malaria and fevers are the most common causes of outpatient morbidity in Kenya. Since the majority of outpatients seek self-care, the bulk of malaria patients fall under this treatment option. In view of drug resistant malaria strains, there is a risk of self-treatments contributing to a malaria epidemic in the country. Thus, there is need to train people who sell drugs at small retail outlets on appropriate ways of dispensing them, especially the antimalarial drugs. Moreover, to the extent possible, communities should be educated on the use of antimalarials and other drugs.

The third finding shows that more educated patients are less likely to resort to self-care in the event of illness. Since illiteracy and low levels of schooling are associated with a higher incidence of poverty, we may conclude that the self-treatment alternative is patronised by the poor. Moreover, in the event of sickness the poor are more likely to receive ineffective treatment because the self-care alternative ranks lowest in terms of service quality.

The fourth finding is that government health facilities are of lower quality relative to private and missionary clinics, but they are also much cheaper and more readily available. However, the proportion of patients using government and non-government health facilities is about the same. Thus, even though private health facilities are nearly four times as expensive as government facilities, a relatively large number of people use them because treatment in these facilities is perceived to be of superior quality. The magnitudes and signs of the price and quality elasticities of demand computed in the paper suggest that the negative demand effect of user charges is offset by the positive effect of improvement in service quality. Thus, a policy that subsidises user fees holding quality constant is less likely to succeed in increasing demand compared with a policy that offers improved medical care at a higher fee. However, the fee could deny the poor access to basic care unless a workable exemption scheme exists.

The fifth finding of the paper is that a price increase in government health facilities has the effect of diverting demand to non-government clinics while increasing demand for self-care by a negligible amount. See Sahn et al. (2002) for a similar re-

sult from Tanzania. This finding is consistent with recent evidence that despite large price increases in public health facilities in Kenya since 1992, overall service utilisation has decreased marginally (Nganda 2002).

User charges in Kenya remain a valued source of revenue for public health facilities, even though the proportion of the overall health budget they fund is modest. Furthermore, the findings of this study show that fees in public clinics tend to divert demand to other facilities while reducing overall service utilisation marginally. However, there is evidence that the poor are over-represented in the usage of low quality services. The extent to which fees are responsible for this situation has not been fully considered. However, the general impression is that the fees may be hurting the poor and there is need therefore to establish a compulsory social health insurance scheme to ensure that basic health care is equally available to all (Ministry of Health 2002).

Although health care demand models (Gertler and van der Gaag 1990) predict that the establishment of the social insurance scheme of the type envisaged by the Kenyan policy-makers would increase health service utilisation, there are institutional rigidities inherent in the scheme that can thwart its expected effects on demand (Mwabu et al. 2001). First, health facilities may choose not to use health insurance to pay for medical care because of inability to comply with the formal requirements for using insurance funds, e.g., the paper work that must be completed for the reimbursement to be made. Such facilities would deny patients an opportunity to benefit from a social insurance fund because they would not accept payment for service via insurance. Thus, social insurance schemes should be as convenient as possible to use, but care should be taken not to expose them to moral hazard problems (Grossman, 1972). Second, health facilities that are within reach of beneficiaries of an insurance fund, e.g., health centres and sub-district hospitals might not be eligible for reimbursement from an insurance scheme, such as the Kenyan National Hospital Insurance Fund. In this case, households cannot access services from such facilities despite being covered by insurance. Third, the user fees charged for health services might be too low to motivate insurance holders to incur non-monetary costs of reimbursement, such as the time for paper work or to search for eligibility cards. In such cases, households might choose to pay for medical care in cash, despite being covered by insurance. Although non-monetary costs in this instance do not deter utilisation, they render social insurance an inefficient investment. Instead of reducing welfare by curtailing health service utilisation, the non-monetary costs here reduce potential welfare by



removing an incentive to use a resource already committed for medical care. Finally, although insurance reduces the monetary costs of using health services, it is often not recognised that it normally increases the time cost of using the services. Since under insurance, health care is free of charge at the time of use, waiting lists and queues become dominant mechanisms for rationing health care. Thus, there exists a possibility that the increase in health service utilisation associated with insurance would be offset by a reduction in demand due to insurance-induced increase in the time cost of care. Moreover, even if insurance were to leave the time cost of medical care unaffected, this cost can be sufficiently large to deter usage. This is particularly the case in rural areas where populations tend to be located at considerable distances from health facilities that provide insurance-funded services. A social health insurance scheme should be implemented with caution if it is to offer a Pareto improvement over a system of user fees under which basic care is targeted to the poor through statutory exemptions.

## **6.2 Present Work in Relation to Previous Studies**

We start by clarifying further, the linkage between user fees, service quality and access to basic care by the poor. The findings of this study suggest that income from user fees should be used to improve service quality at government health facilities because such an investment would increase demand for modern health care and reduce reliance on self-treatments. Indeed, the original motivation for the introduction of fees in government health facilities in the 1980s was to use the resultant fee income to improve the quality of the services they offered. As argued in section 6.1, the underlying assumption was that any adverse demand effects of fees would be offset by statutory fee exemptions. The strongest rationale for user fees is that free public health facilities are likely to be indistinguishable from self-treatment alternatives, in terms of the quality of care offered. In situations of severe budgetary constraints, such as have persisted in African countries for decades, fees provide public clinics with an opportunity to improve service quality using the revenue collected from patients. However, user fees have the disadvantage that they have historically relegated the poor to low quality sources of care. Pro-poor fee exemption schemes in public clinics have in the past proved very difficult to implement (Huber 1993).

User fees for health care in government health facilities were initially supported by the first generation health care demand studies in the mid 1980s (see e.g., Akin et al. 1985; World Bank 1987). These studies *predicted* large efficiency and equity gains from a market-based provision of medical care, in contrast to the state-dominated provision of the era. The enthusiasm for fees waned in Africa when evidence from second generation demand studies in the 1990s showed that the fees adversely affected health service utilisation by the poor without raising sufficient revenue for the health sector (see e.g., Waddington and Enyimayew 1990; Mwabu et al. 1995). This evidence was particularly troubling to policy-makers in view of worsening poverty in many African countries in the 1990s. However, it may be that the second generation studies assessed effects of fees too soon after they had been introduced.

Recent demand studies (Nganda 2002; Sahn et al. 2002) examined effects of fees after facilities and communities had had some experience with fees. These studies, like the present one, were undertaken when facilities had (through the process of learning-by-doing) mastered *some* ways of using revenue from fees to improve quality of care. Thus, even as fees reduced overall demand via substitution effects, the income-like demand effects of better quality simultaneously increased service utilisation. Furthermore, better demand specifications in the newer studies capture demand diversion effects of user fees that had been neglected by earlier studies. As a consequence of incomplete specification of demand equations, earlier studies tended to overstate the negative effect of fees. The Kenyan example reported here shows that when quality and demand diversions associated with fees are taken into account, cost-sharing in public health facilities has a minimal reduction in the overall service utilisation. However, the problem of the poor patronising facilities of questionable quality because of their inability to afford fees remains. Widespread poverty in many African countries, Kenya included, continues to be a major barrier to implementation of an equitable system of fees at public health facilities. Using fee exemptions to target basic health services to large numbers of the poor is extremely difficult. This equity issue remains the single most important barrier to widespread acceptance and enforcement of fees in public health sectors in Sub-Saharan Africa, and has created a keen interest in social health insurance schemes in Kenya. The paper has highlighted the potential difficulties associated with such schemes.

## REFERENCES

- Adams, A. and T. Harnett (1995) 'The Poor and Cost Sharing in the Social Sectors of sub-Saharan Africa', Human Resources and Poverty Division, Africa Technical Department, World Bank, Washington, D.C.
- Akin, J.S., C.C. Griffin, D.K. Guilkey and B.M. Popkin (1984) *The Demand for Primary Health Care in the Third World*, Totowa, N.J.: Littlefield Adams.
- Appleton, Simon (1998), 'Demand for Health Services in Kenya' in: *Journal of African Economies*.
- Barnum, H. and J. Kutzin (1993) *Public Hospitals in Developing Countries: Resource Use, Cost, Financing*, Baltimore: The John Hopkins University Press.
- Booth, D., J. Milimo, G. Bond and S. Chimuka (1995) 'Coping with Cost Recovery', Report to the Swedish International Development Authority. Development Studies Unit, Department of Social Anthropology, Stockholm University, Stockholm, Mimeo.
- Colgan, A. (2002) 'Hazards to Health: The World Bank and IMF in Africa', Africa Action Position Paper, Mimeo.
- Diop, F., A. Yazbeck and R. Bitran (1995) 'The Impact of Alternative Cost Recovery Schemes on Access and Equity in Niger' in: *Health Policy and Planning*: 10(3): 223-40.
- Dor, A., P. Gertler and J. van der Gaag (1987) 'Non-Price Rationing and the Choice of Medical Provider in Rural Cote d'Ivoire' in: *Journal of Health Economics* 6 (4): 291-304.
- Ellis, R.P. (1987) 'The Revenue Generating Potential of User Fees in Kenyan Government Health Facilities' in: *Social Science and Medicine* 25: 995-1002.
- Gertler, P. and J. van der Gaag (1990) *The Willingness to Pay for Medical Care: Evidence from two Developing Countries*, Baltimore: Johns Hopkins University Press.
- Gertler, P., L. Locay and W. Sanderson (1987) 'Are User Fees Regressive? The Welfare Implications of Health Care Financing Proposals in Peru' in: *Journal of Econometrics* 36 (1/2): 67-80.
- Gesami, R. (2000) 'Health Care Financing in Kenya: An Empirical Analysis', unpublished Ph.D dissertation, University of Nairobi, Kenya.

- Gilson, L., S. Rusell and K. Buse (1995) 'The Political Economy of User Fees with Targeting: Developing Equitable Health Financing Policy' in: *Journal of International Development* 7 (3): 369-402.
- Grossman, Michael (1972) *The Demand for Health: A Theoretical and Empirical Investigation*, NBER Occasional Paper 119, New York: Distributed by Columbia University Press.
- Haddad, S. and P. Fournier (1995) 'Quality Cost and Utilization of Health Services in Developing Countries. A longitudinal Study in Zaire' in: *Social Science and Medicine* 40 (6): 743-753.
- Heller, P.S. (1982) 'A Model of the Demand for Medical Health Services in Peninsular Malaysia' in: *Social Science and Medicine* 16: 267-289.
- Huber, Joyce H. (1993) 'Ensuring Access to Health Care with the Introduction of User Fees: A Kenyan Example' in: *Social Science and Medicine* 36 (4): 485-494.
- Jimenez, E. (1986) 'The Public Subsidisation of Education and Health in Developing Countries: A Review of Equity and Efficiency' in: *The World Bank Research Observer* 1(1): 111-129.
- Kanji, N. (1989) 'Charging for Drugs in Africa: UNICEF's Bamako Initiative' in: *Health Policy and Planning* 4 (2): 110-120.
- Kutzin, J. (1995) 'Experience with Organisational and Financing Reform of the Health Sector', Strengthening Health Services Paper No. 8, WHO/SHS/CC 94.3. Geneva: World Health Organisation.
- Lavy, V and J.M. Quigley (1993) 'Willingness to Pay for the Quality and Intensity of Medical Care: Low-Income Households in Ghana', LSMS. Working Paper no. 94. Washington D.C. The World Bank.
- Ministry of Health (2002) *National Social Insurance Scheme*, Nairobi, Kenya, Mimeo.
- Moses, S., F. Manji, J. Bradley, N. Nagelkerke, M.Malisa and F. Plummer (1992), 'Impact of User Fees on Attendance at a Referral Centre for Sexually Transmitted Diseases in Kenya' in: *Lancet* 340: 463-66.
- Mwabu, G. and Wang'ombe, J. (1997) 'Health Service Pricing Reforms in Kenya' in: *International Journal of Social Economics* 24 (1-3): 282-293.
- Mwabu, G. (1995) 'Health Care Reform in Kenya: A Review of the Process' in: *Health Policy* 32: 245-255.

- Mwabu, G., James Mwanzia and Wilson Liambila (1995) 'User Charges in Government Health Facilities in Kenya: Effects on Attendance and Revenue' in: *Health Policy and Planning*, 10 (2): 64-70.
- Mwabu, G., M. Ainsworth and A. Nyamete. (1993) 'Quality of Medical Care and Choice of Medical Treatment in Kenya: An Empirical Analysis' in: *Journal of Human Resources* 28 (4): 838-862.
- Nganda, B.M. (2002) 'Service Pricing Practices in Public Health Facilities', Ministry of Health, Nairobi. Mimeo.
- Ngugi, R. (1999) 'Health Seeking Behaviour in the Reform Process for Rural Households: The Case of Mwea Division, Kirinyaga District, Kenya', AERC Research Paper no. 95.
- Nolan, B. and V. Turbat (1995) 'Cost Recovery in Public Health Services in sub-Saharan Africa', Washington, D.C.: World Bank.
- Owino, W. and M. Were, (1997) 'Enhancing Health Care Among the Vulnerable Groups: The Question of Waivers and Exemptions', IPAR DP no. 014/98.
- Owino, W. (1997b) 'Delivery and Financing of Health Care Services in Kenya: Critical Issues and Research Gaps', IPAR DP no. 002/1997.
- Reddy, S. and J. Vandemoortele (1996) 'User Financing of Basic Social Services. A Review of Theoretical Arguments and Empirical Evidence', UNICEF Staff Working Papers, New York.
- Rusell, S. and L. Gilson (1995) 'User Fees in Government Health Services: Is Equity Being Considered? An International Survey', PHP Publication no.15, London: London School of Hygiene and Tropical Medicine.
- Sahn, David E., Stephen D. Younger and Garance Genicot (2002) 'The Demand for Health Care Services in Rural Tanzania', Cornell University, Cornell Food and Nutrition Policy Program, Ithaca, NY., Mimeo.
- Sauerborn, R., A. Nougara and E. Latimer (1994) 'The Elasticity of Demand for Health Care in Burkina Faso: Differences Across Age and Income Groups' in: *Health Policy and Planning* 9 (2): 85-192.
- Waddington, C. and K.A. Enyimayew (1990) 'A Price to Pay, Part 2: The Impact of User Charges in the Volta Region of Ghana' in: *International Journal of Health Planning and Management* 5 (4): 287-312.
- World Bank (1987) *Financing Health Services in Developing Countries: A policy Agenda*, World Bank, Washington, D.C.

- Woodward, D. (1997) 'User Charges for Health Services in Developing Countries: An Approach to Analysing the Effects on Utilisation and Health Outcomes', Discussion Paper Prepared for the ODA Research Work Programme, Mimeo.
- Yoder, R. (1989) 'Are People Willing and Able to Pay for Health Services?' in: *Social Science and Medicine*: 29 (1): 35-42.



## APPENDICES

TABLE A1  
Descriptive Statistics of Selected Variables  
(Std. Dev.)

Variable	1994	1997
Age	36.5 (16.7)	38.1 (17.8)
Male	0.41 (0.49)	0.38 (0.48)
Urban	0.14 (0.34)	0.17 (0.37)
Years of Schooling	4.87 (4.26)	5.35 (4.29)
Roof of house made of grass	0.41 (0.49)	0.32 (0.46)
Availability of piped water	0.24 (0.43)	0.13 (0.34)
Toilet - pit latrine	0.69 (0.46)	0.54 (0.49)
<i>N</i>	6386	4536

TABLE A2  
Probit Marginal Effects - Probability of Reporting Sick  
(Std. Error)

Variable	1994a	1994b	1997
Age	0.003 (0.0002)	0.003 (0.0002)	0.002 (0.0003)
Male	-0.062 (0.006)	-0.062 (0.005)	-0.055 (0.006)
Years of schooling	-0.0014 (0.001)	-0.001 (0.0007)	0.0002 (0.001)
Roof of house-grass	0.022 (0.010)	0.024 (0.006)	-0.005 (0.007)
Piped water	0.001 (0.012)	-0.002 (0.007)	-0.031 (0.018)
Toilet-pit latrine	0.021 (0.010)	0.023 (0.006)	-0.007 (0.009)
User fee in government health facilities*10		0.0003 (0.0004)	
Unavailability of drugs in government health facilities		0.016 (0.014)	
<i>N</i>	28688	28688	29799
<i>Log likelihood</i>	-14539	-14537	-12296

Notes: Other regressors include province dummies and an indicator for living in an urban area.



TABLE A3  
Multinomial Logit Estimates - Choice of health care provider, 1997  
(Std. Error)

Variable	Private	Government	Mission	Self-care
Constant	-0.497 (0.300)	-0.515 (0.329)	-1.95 (0.713)	
Age	-0.0009 (0.003)	-0.006 (0.003)	-0.0006 (0.005)	
Male	0.0004 -0.190 (0.084)	-0.0013 -0.174 (0.078)	0.00007 -0.430 (0.149)	0.0008
Years of schooling	-0.0162 0.0577 (0.012)	-0.0153 0.0227 (0.011)	-0.0113 0.039 (0.021)	0.0429
Roof of house-grass	0.009 -0.264 (0.097)	-0.001 -0.113 (0.088)	0.0005 0.008 (0.160)	-0.008
Piped water	-0.042 0.306 (0.130)	0.0003 0.237 (0.129)	0.0048 -0.023 (0.254)	0.0367
Toilet-pit latrine	0.038 0.221 (0.085)	0.024 0.375 (0.079)	-0.0076 0.154 (0.147)	-0.054
	0.005	0.062	-0.0019	-0.065
<i>N</i>	1235	1570	259	1472

Notes: Other regressors include province dummies and an indicator for living in an urban area. Log likelihood -5448.73. The numbers in bold are the marginal effects of the independent variables on choice of health care provider.