THE DETERMINANTS OF PUBLIC HEALTH CARE

EXPENDITURE IN KENYA

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DECLARATION

This research project is my original work and has not been presented to any other institution or university.

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DEDICATION

This research project is dedicated to my beloved family, my dear husband Michael, children Sean, Marisa and Nickson.

ABSTRACT

There is extensive literature on the determinants of health expenditure in OECD countries, but the same is not true for developing countries. Kenya being a developing country experiences the same. The main purpose of this study is to investigate determinants of health care expenditure in Kenya. This study discusses the theoretical literature related to public expenditure theory, a dynamic theory of public spending and the Baumol model. The study reviews empirical literature and local research on health care expenditure.

The study used descriptive study where the researcher gathered data from the published statistics and accounts from economic surveys and strategic plan from the Ministry of Finance and the Ministry of Health. This study also used secondary data which was obtained from economic surveys of Kenyan health care expenditure. Ratio analysis and various models were used to analyze the secondary data collected from 1983 to 2012.

The study found that GDP and external funding have a significant influence on the Public health expenditure in Kenya. It found that; a unit change in GDP results in 0.011 units increase in Public health expenditure while a unit changes in external funding results in -0.304 units decrease in Public health expenditure. Population age structure and technological progress are also significant when t - statistics is used. One unit change in population age structure results in 0.0000007 increases in Public health expenditure in Kenya while a unit change in technological progress results in 1.747 unit increase in Public health expenditure in Kenya.

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ABBREVIATIONS

AIC	Akaike Information Criterion
ANOVA	Analysis of Variance
ARDL	Autoregressive Distributed Lag
CBS	Central Bureau of Statistics
ECA	European and central A s i a n
EOQ	Economic Order Quality
FP	Family Planning
GDP	Gross domestic product
GOK	Government of Kenya
HCE	Health Care Expenditure
KDHS	Kenya Demographic Health Survey
MDGs	Millennium Development Goals
MOH	Ministry of Health
MOPHS	Ministry of Public Health and Sanitation
NGO	Non Governmental Organizations
NHA	National Health Accounts
ODA	Official development aid
OECD	Organization for Economic Co-operation and Development
OOP	Out of pocket
R&D	Research and Development
RH	Reproductive health
SBC	Schwarz Bayesian Information Criterion

SSA   Sub-Saharan Africa

USD   United States dollar

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Health as one of the basic values is the foundation for the quality of human life, the well being of one's family, and also of society as a whole. A healthy society is the foundation for a productive and efficient economy and the development of a country. The rapid growth of health expenditure has become a great concern for both household and governments. There is extensive literature on the determinants of health expenditure in OECD countries, but the same is not true for developing countries. Across the globe there are great variations on the amount countries spend on health. In high income countries per capita health expenditure is over USD 3000 on average, while in resource poor countries it is only USD 30 per capita. In 2008, there were 64 countries whose per capita health expenditure was less than USD 100. There is also wide variation in health expenditure with respect to economic development. Some countries spend more than 12% of GDP on health, while others spend less than 3%, on health. (Kea, Saksenaa, & Hollyb, 2011)

The relationship between health status and economic growth has received generous enquiries in the literature. Outcomes from several studies seem to suggest that there is a positive association between health status and economic development. The wide acceptance of this nexus prompted the prominence of health outcome in the Millennium Development Goals (MDGs). In fact three of the goals are health specific while the others can also be regarded as health enhancing. However, the channels that drive this

relationship are fraught with disagreements. While high health expenditure is viewed as a channel of developing the health status of a nation, the results differ across countries and region. Thus, the financing of health care expenditure (HCE) becomes more important in many resource constraint countries. (Olaniyan, Onisanwa & Oyinlola, 2013)

The opportunity costs of spending on health is very high and thus the need for a justification on the increase or otherwise of health spending in such countries. Incidentally, Sub-Saharan Africa (SSA) is arguably the most underdeveloped region in the world with its attendant problems. Therefore, provision of adequate funding for health care either by the household or the government remains difficult. Some authors have argued that this might be the reasons for the bad health outcomes in the region. (Bichaka and Gutema, 2008; Kaseje, 2006)

1.1.1 Determinants of Health Care Expenditure

The direct effect of GDP on health care expenditure is a reverse causation as explained in, Erdil & Yetkiner (2009), where GDP is a function of health care expenditure. One way of considering this reverse causation effect is to treat health as another component of human capital together with education. There are at least two mechanisms through which GDP is a function of health care expenditures. Firstly, if health expenditure can be regarded as an investment in human capital, and given that human capital accumulation is an essential s o u r c e of economic growth, an increase in health care expenditure must ultimately lead to a higher GDP. Secondly, increase in health care expenditures associated with effective health intervention increases

labor supply and productivity, which ultimately increase GDP.

Population age structure is often included as a covariate in health expenditure regressions. Commonly used indicators are the share of young (under 15 years) and old people (e.g., above 65 or 75 years) over the active or total population. These variables are generally insignificant when included in regression models explaining per-capita health spending (Leu 1986). Epidemiological need is sometimes also incorporated as a covariate through various proxies. Lu et al used HIV zero prevalence as a proxy and found that it had no significant relationship with general government health expenditure as a share of GDP. Murthy and Okunade found that maternal mortality rate had no relationship with health expenditure in African countries (Murthy & Okunade 2009).

Newhouse (2002), technological progress has been seen as an important driver of health care expenditure. Several proxies for changes in medical care technology have been used according to the type of models under consideration. Examples of such proxies in cross-section studies are the surgical procedures and the number of specific medical equipment (Baker & Wheeler 1998), and life expectancy and infant mortality (Dreger & Reimers, 2005). On the other hand, a time index or time-specific intercepts have been used in time-series models. One should expect a combination of these proxies have been used in panel data models (Dormont, Grignon & Huber 2006). All these studies concluded that technological progress and variation in medical practice were major determinants in the level and growth

of health expenditure. Literature from non-OECD countries has not considered technological progress as a covariate, mostly because of a lack of reliable data on technological advances.

The use of primary care gatekeepers seemed to result in lower health expenditure. Public sector provision of health services was associated with lower health expenditure (Gerdtham, Jönsson, MacFarlan & Oxley, 1998). In terms of financing structure very few empirical studies found that the extent to which health care expenditure was financed by the government has a relationship with levels of health expenditure (Leu 1986). Differences in health expenditure between tax-based vs. social-insurance based systems were examined in OECD countries and eastern European and central Asian (ECA) countries (Wagstaff & Moreno-Serra, 2009). The OECD study found that health expenditure per capita was higher in countries where a social health insurance mechanism exists.

Recently, there has been much interest in relationship between external funds and national health expenditure in developing countries. Gaag and Stimac found that whereas there was no significant impact of health-specific official development aid (ODA) on total health expenditure, health- specific ODA has an elasticity of 0.138 against public spending on health (van der Gaag & Stimac 2008). Fee-for-service systems tended to lead to higher expenditure on average than capitation systems (Gerdtham & Lothgren 2000). Therefore from the information above this study suggests that health expenditure is determined by other factors other than GDP.

1.1.2 Health Care Sector in Kenya

According to World Health Organization, the total health expenses are the sum devoted to the public and private health sectors. It covers the provision of health services (preventive and curative), the family planning activities, the nutrition activities, and the emergency aid designated for health but does not include provision of water and sanitation.

Health Financing in Kenya: The Case of RH/FP in Kenya found that the estimates of Ministry of Health expenditures between 2005/06 and 2009/10 grew from Ksh 30 billion to Ksh 47 billion, as shown in Table 1 below. This represents an overall growth of 56%. As a percentage of the Government of Kenya's (GOK) total budgets, the expenditures remain low at 5.3% in 2009/10—almost eight years after the government committed itself to increasing this ratio to 15% by signing the Abuja Declaration. Yet, there are signs of improvement, as the Mid-term Expenditure framework for 2009-2010 indicate that the government intends to increase allocation to the health sector consistently in the two upcoming financial years.

Table 1: Government Health Budget 2005/06 to 2009/10

(Gross estimates in million Kshs)

Description	2005/06	2006/07	2007/08	2008/09	2009/10
Recurrent gross	20,210	21,611	22,745	25,552	28,184
Development gross	9,943	11,716	11,609	9,293	18,827
Total	30,153	33,327	34,354	34,845	47,011
Annual growth of MOH expenditures		10.5%	3.1%	1.4%	34.9%
Total health expenditures (net) as a percent of GOK expenditures (net)	6.0%	6.0%	5.3%	4.9%	5.3%
Total health ministry's expenditures as a percent of GDP	2%	2%	2%	1%	n/a

Source: Data are extracted from Estimates of recurrent expenditure and estimates of development expenditure for the fiscal years 2005/06 to 2009/10.

The health sector in Kenya relies on several sources of funding: public (government), private firms, households and donors (including faith based organizations and NGOs) as well as health insurance schemes (Ministry of Health Kenya, 2011). The GOK funds the health sector through budgetary allocations to the MOH and the MOPHS and related government departments. As far as government spending is concerned, the Ministry of Finance sets three year budget ceilings for each sector in Kenya. In practical terms this means that the Ministry of Health creates a budget based on what the Ministry of Finance has said it will allocate for health expenditures rather than submitting a budget request based on actual needs. The Ministry of Health then disburses the funds it receives through its District Health Management Boards. The health budget shortfalls are manifest

in the widespread lack of adequate drugs and pharmaceuticals, staff shortages and poor maintenance of equipment, transport, and facilities (Ministry of Health Kenya, 2011).

Kenya depends significantly on donor funds, many of which supplement the development component of the national health budget. In 2009/10, on-budget external resources accounted for 15.1% of all health spending in Kenya, or Kshs 7.1 million. In 2005/06, Kenya's health budget was made up to 11.3% by donor contributions. Over the years, Kenya's health sector has increased its dependency on external sources.

Kenya's health care system is structured in a step-wise manner so that complicated cases are referred to a higher level. Gaps in the system are filled by private and church run units. The structure thus consists: Dispensaries and private clinics, Health Centres, Sub-district hospitals and nursing homes, District hospital and private hospitals, Provincial hospitals and National hospitals. Health care expenditure in the SSA varies substantially over time and across countries. Health financing is important for the improvement of health status in any economy. At the macroeconomic level, the level and growth of health care expenditure has been attributed to the income level of such country (Ministry of Health Kenya, 2011). The performance of the health sector is therefore assumed to reflect the size of the income elasticity of health care.

1.2   Research Problem

The rapid growth of health expenditure has become a great concern for both households and governments. There is extensive literature on the determinants of health expenditure

in OECD countries, but the same is not true for developing countries. Kenya being a developing country experiences the same. In Kenya, there is high expenditure in health yet not everyone is covered. There is need for a Wide Sector Approach, to deal with these problems. For this to be effective one needs to understand the determinants of health care expenditure in Kenya. This study uses the local context to illuminate this. Therefore the aim of this study is to answer the question what are the determinants of Public health care expenditure in Kenya?

Newhouse (1977) argues that the health care expenditures results from changes in income alone and concluded that simply examining this variable is sufficient to explain variation in health care expenditures. Hitiris and Posnett (2002) re-examined the relationship between health care and income explored by Newhouse adding non income variables such as the proportion of the population above 65 years of age, mortality rate, and public finance share of health care spending. Although the effect of these additional variables appears to be relatively small, the model suggests that non income variables have significant influence on health care expenditures. However, the health sector must be considered in conjunction with social, economic, and demographic characteristics of the economy. Hence, not only biological and environmental, but also economic, social, and demographic changes affect health and health care expenditure decisions at the national level.

Kiplagat, (2011) in his study on determinants of health insurance choice in Kenya concluded that wealth index, employment status, education level and household size are

important determinants of health insurance ownership and choice. Njenga (2011) in his study on an impact of health aid expenditure on child mortality in Kenya found that health care financing is a key determinant of health system performance since it is expected to provide the resources and economic incentives for operating health systems.

To summarize, except for income which has been recognized as an important determinant of health care spending, there are no studies that have examined other factors which explain the variation in per-capita health expenditure. Wilson's study (as cited by Chaabouni & Abednnadher), noted that this failure can be explained by the limited availability of health care data at the macro level, others studies even blame the weakness of the econometric methods already used.

1.3 Research Objectives

To investigate the determinants of Public health care expenditure in Kenya

1.4 Value of the Study

The Government as a major stakeholder in the healthcare industry in any economy can use the findings from this study in policy formulation in the health sector. The study helps the stakeholder understand the major and minor determinants of health care in Kenya. The study will in addition to the above, be useful to stakeholders, financiers, and investors in formulating and planning areas of intervention and support.

The findings of this research will also help in enlightening the key decision makers in public and private hospitals in Nairobi County and any other county, in policy formulation and on how to determine health care expenditure in the county.

Academicians want to contribute to the body of knowledge; the same body of knowledge has been known to change and research is always the only way to study the same phenomenon over time. This research would therefore helps in opening up opportunities for doing further research on health care expenditure. The study will be a source of reference material for future researchers on other related topics.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the following: Section 2.2 discusses the theoretical literature related to the research topic i.e. Public expenditure theory, a dynamic theory of public spending and the Baumol model. Section 2.3 reviews the empirical literature on health care financing expenditure and Section 2.4 presents review of local research on the research topic and Section 2.5 is the chapter summary.

2.2 Theoretical Literature

2.2.1 Public Expenditure Theory

Public expenditure is spending made by the government of a country on collective needs and wants such as pension, provision, infrastructure, etc. Until the 19th century, public expenditure was limited as laissez faire philosophies believed that money left in private hands could bring better returns. In the 20th century, John Maynard Keynes argued the role of public expenditure in determining levels of income and distribution in the economy. Since then government expenditures has shown an increasing trend.

Brennan (2008) summarizes Buchanan's central themes in this way, "There are two messages that emerge from this work: one is that a proper sense of the extent of market failure, rather than its mere presence, is relevant in all cases; the other is that 'correcting' for such market failure is often a complex multidimensional business not captured by

direct public provision at zero price and not necessarily involving expansion of market output."

As a public expenditure theory of economic policy, this formulation leaves much to be desired, however. First, as Graaff (as cited by Brennan, 2008) has argued persuasively, the prevalence of external effects in consumption contradicts a necessary assumption of the theory. Second, analysis of real-world situations is usually ill-suited to be couched in terms of choices among two alternatives. Third, since most policies involve a loss of welfare to someone, a formal basis for interpersonal comparisons is needed, and since the economist has no particular right to attach social weights to individual welfare in the social welfare function, this is sufficient ground to rule out rigid prescriptions (Brennan, 2008).

2.2.2 A Dynamic Theory of Public Spending

Policy choices are made by a legislature consisting of representatives elected by geographically-defined constituencies. The legislature can raise revenues via a distortionary income tax and by borrowing. These revenues can be used to finance a national public good and district-specific transfer (interpreted as pork-barrel spending). The value of the public good is stochastic, reflecting shocks such as wars or natural disasters. In equilibrium, policy-making cycles between two distinct regimes: "business-as-usual" in which legislators bargain over the allocation of pork, and "responsible-policy-making" in which policies maximize the collective good. Transitions between the two regimes are brought about by shocks in the value of the public good. In the long run,

equilibrium tax rates are too high and too volatile, public good provision is too low and debt levels are too high. In some environments, a balanced budget requirement can improve citizen welfare (Battaglini & Coate, 2006).

Barro's study (as cited by Battaglini & Coate 2006) provided that the theory builds on the well-known tax smoothing approach to fiscal policy pioneered. This approach predicts that governments will use budget surpluses and deficits as a buffer to prevent tax rates from changing too sharply. Thus, governments will run deficits in times of high government spending needs and surpluses when needs are low. Underlying the approach are the assumptions that governments are benevolent, spending needs fluctuate over time, and that the deadweight costs of income taxes are a convex function of the tax rate.

The economic environment underlying this theory is similar to that in the tax smoothing literature. The key departure is that policy decisions are made by a legislature rather than a benevolent planner. The study introduces the friction that legislators can distribute revenues back to their districts via pork-barrel spending. The theory also has implications for the desirability of balanced budget requirements. It studies a fiscal restraint that requires the legislature to ensure that tax revenues equal public spending in every period. Suppose the government initially has no debt, so that under the restraint spending is just on public goods and transfers.

The key determinant of the desirability of a balanced budget requirement is again the size of the tax base relative to the economy's desired public good spending. When the tax

base is relatively large, a balanced budget requirement will enhance citizen welfare, but when it is relatively small, the opposite conclusion applies (Barro, as cited by Battaglini & Coate 2006).

2.2.3 Baumol effect

Baumol's study (as cited by Kea, Saksenaa, & Hollyb 2011) on the Baumol effect or cost disease noted that the so-called Baumol effect is the tendency for relative prices of some services to increase vis-à-vis other goods and services in the economy, reflecting a negative productivity differential and the equalization of wages across sectors. In particular, prices for health services will rise relative to other prices because wages in low productivity sectors must keep up with wages in high productivity sectors. With a price-inelastic demand, the share health care expenditure in GDP would tend to increase over time (Hartwig, 2008).

Pomp & Vujic (2008) in their study on the rising health spending, new medical technology and the Baumol effect noted that the rise in health expenditure as a share of GDP in most OECD countries is possibly caused by so-called Baumol effect, which may arise if labour productivity in health care grows more slowly than in the overall economy. If in addition demand for health care is inelastic, then the share of health spending in GDP will rise over time. Their study estimated the Baumol effect in health spending, using a panel data set of OECD countries.

The Baumol effect may also be an important factor for the growth of health care expenditures, but not necessarily for their levels, although it seems natural to assume that the costs of health care, which is a labor intensive good, will be higher in high wage economies. However, the Baumol effect is a phenomenon that affects mainly developed economies and it seems to be logical not to include it in studies on developing countries.

2.3 Empirical Literature on Determinants of Health Expenditure

Since the 1960s, the increase of health expenditure has caused much concern all over the world. A number of studies have attempted to explain the rise in health expenditures and suggested what variables can be influenced to reduce the costs. All of these studies have considered the approach of the demand function to specify their models. Specifically, health care expenditures are hypothesized to be a function of real per capita income and other non income variables. The non income factors have been identified in literature.

Newhouse (1977), the examination of the determinants of health care expenditure has been a matter of extensive debate over the last two decades. The progressively large availability of international data on health care has led to the development of a vast array of studies disentangling the underlying factors that determine health care expenditure, such as income, aging, time effects and availability of factors. Another factor examined is that of technology progress. However, most studies are based on cross-country data to disentangle the extent to which income – measured by gross domestic product (GDP) – and other determinants, such as demographics and heterogeneity of health care inputs,

explain differences in health expenditure.

Income per capita (GDP) has been identified as a very important factor for explaining differences across countries in the level and growth of total health care expenditures. In literature from OECD countries, cross-section regressions of aggregate health expenditure per capita on GDP per capita consistently showed income elasticity significantly above one, from about 1.20 to 1.50 (Kleiman 1974; Newhouse 1977; Leu, 1986). Aggregate time-series regressions for individual countries most often showed similar results although with considerable variation between countries.

The demographic growth: care consumption and age are clearly linked. Therefore, indicators such as the proportion of the young (e.g., under 15 years old) and old people (e.g., above 65 or 75 years old) over the active or total population have been traditionally flagged as important factors in explaining variations of health care expenditure. However, little evidence exists about the significant effect of these variables (Grossman, 1972; Leu, 1986; Hitiris and Posnett, 1992; Di Matteo, 1998).

Gbesemete and Gerdtham (1992) estimate the impact of per capita income on per capita health expenditure with 1984 data from 30 African countries and conclude that income elasticity of health expenditure is very close to unity while Vasudeva & Ukpolo (1994) reports that health care income elasticity is greater than unit. Also Okunade (2005) reports large variances in both per-capita GDP and per capita health expenditure shares of

national incomes among countries and within regions in Africa. The disparities, along with systematic differences in demographic and socio-political structures have also generated large variances in health status or outcomes among countries.

The technological progress: since the works of Manning et al. (1987) and Newhouse (1992), the rapid technological progress has been seen as a factor of supply and demand who explains the growth of health care expenditure. However, due to the difficulty of finding an appropriate proxy for the changes in medical care technology, very few studies have attempted to study the relationship between the technological progress and health care expenditure. A number of proxies have been considered in literature, such as the surgical procedures and the number of specific medical equipment (Baker and Wheeler, 2000; Weil, 1995), the R&D spending specific to health care (Okunade and Murthy, 2002), life expectancy and infant mortality (Dreger and Reimers, 2005). Some other papers have investigated the effect of the technical changes by adding a time index or time-specific intercepts in the regression specification (Gerdtham and Lothgren, 2000; Di Matteo, 2004).

The role of the real prices in determining the demand for health care is essential (Grossman, 1972). The various studies on the determinants of health care service noted that "a change in the volume of health expenditure is not sufficient to explain the evolution of the share of expenditure in the GDP". The increase in this price of heath expenditures may result in raising either the quantities of the consumed medical care or the prices of the health sector. The importance of any factor differs from one country to

another. However, there is a little empirical consensus on the effect of the real prices on the health care expenditure. This consensus may be explained by the increasing prices of health services compared to other prices since wages in low productivity sectors must keep up with those in high productivity ones (Hartwig, 2008; Okunade et al., 2004), report a positive and statistically significant effect, while (Baumol,1967,Gerdtham et al., 1992; Murthy and Ukpolo, 1994) report an insignificant effect. Hartwig (2008, p.6) asserts that "…we have to recognize that medical care price indices cannot probably be relied on as deflators or explanatory variables." In fact, since the studies argue that given the paucity of data on price, the diverse national schemes of price regulation and the problems in measuring the quality of health care in obtaining this medical price index, we decided not to use this variable in our empirical analysis.

Di Matteo and Di Matteo (1998), restricting the analysis to single countries with multiple jurisdictions providing health care might, to an extent, reduce part of the existing heterogeneity on health care expenditure across countries attributable to differences in the extent of health converge and internal design. Similarly, attempt to examine the determinants of regional health expenditures in Italy and find significant regional specific effects. Both studies use jurisdiction-level data and account for demographic and health care system determinants of public health expenditure. However, they do not examine the extent to which public expenditure in one jurisdiction is affected by the expenditure spillovers from neighbouring jurisdictions; although both theoretical and empirical studies suggest that the hypothesis of spatial interactions may not be ruled out (Revelli, 2002, 2001).

The medical density, which is defined by physicians as per thousand population and used to account for the supply of healthcare, can be considered a cause of the increase in the health expenditures (Delattre and Dormont, 2005; Murthy and Okunade, 2009). This led to the hypothesis of the induced demand which reflects the excess supply of services due to an increase in demand initiated by patients. Theoretically, induced demand is generated by the monopoly of the medical knowledge of doctors associated with the low sensitivity of patients to prices. The excess supply of care can then contribute 3 to higher health costs depending on different modes of organization of health care systems.

Schieber and Maeda used cross section data in 1994 estimated global income elasticity at 1.13 and found higher income elasticity for public spending than for private spending (Schieber & Maeda, 1999). In global literature, Musgrove, Zeramdini and Carrin used cross section data from 191 countries in 1997 and found that income elasticity of health expenditure was between 1.133 and 1.275 depending on the data included. Income elasticity for OOP ranged from 0.884 to 1.033 while it was from 1.069 to 1.194 for government health expenditure. (Musgrove et al 2002).

Education has been found to have a large and considerable impact on health and consumption of health care at the individual and national level (Grossman, 2000) and is expected to affect and change health expenditure via the relationship between health status and health care consumed. It has been argued that after the 1990s, the main driver of health spending is not price but volume of health care (Lopez-Casasnovas et al., 2005).

More recently, Baltagi and Moscone (2010) studied the long-run economic relationship between health expenditure and income in 20 OECD countries over the period 1971–2004. The analysis indicated that health care expenditure and most of its determinants were non-stationary, and that they were linked in the long-run. Their results showed that health care elasticity with respect to income was about 0.87 which was much smaller than that estimated in other OECD studies. Therefore, a simultaneous causality in both directions may exist and needs to be checked. If GDP and health care expenditure determine each other simultaneously, then there is an endogeneity problem in their relationship. If this is the case, then standard estimation procedures which assume that GDP is exogenous will produce inconsistent estimates of the parameters. It seems logical, however, to expect that even if causality exists in both directions, it does not occur instantaneously but with a time lag. For this reason the best way to determine the potential direction of causality relationship between health care expenditure and GDP seems to apply the Granger-causality test (Granger 1969).

2.4 Review of Local Research

Dahlgren and Whitehead (1991) studied the determinants of health status framework presented in discussing Kenyan health inequalities. The determinants explored in this study included elements of household welfare and health care financing and delivery. Among the health status indicators, the studies examined trends in child health status, longevity, morbidity and related factors. It also examines personal characteristics such as gender, age and domicile. Going beyond specific indicators to proximate factors, means

that trend data would be more important than cross-sectional data, yet trend data is often unavailable. These concerns in turn led to varied measures to more effectively monitor the impact of the SAPs reforms. For Kenya, this translated into a series of nationwide welfare monitoring surveys starting from 1992, which have highlighted the growing share of the country's population living below a nationally-defined poverty line amidst growing vertical and horizontal welfare disparities.

McKee and Healy (2002) surveyed on hospitals that were open systems strongly influenced by the environment in which they operate. They interact with the surrounding environment to secure the resources needed for survival, adaptation and growth. Their policies and activities are constantly influenced by external factors related to the population they serve, patterns of prevailing diseases, public expectations, changes in the hospital system and healthcare system, and the broader socio-economic and political environment. Growth in the hospital industry in Kenya will be supported by increasing expenditure on healthcare, within both public and private sectors. This expanded outlay within the public sector, coupled with rising private expenditure and greater levels of insurance coverage will drive the further growth of the medical devices and pharmaceutical industries. Kenya has an extensive network of private healthcare facilities, from small local clinics, to large, high-class hospitals. Private healthcare can be quite good, with small but modern health facilities and well-trained medical staffs that meet international standards.

Okungu (2005) studied Equity in health care financing and expenditure in Kenya and noted that few studies have been conducted to analyze total national health financing or expenditures from all sources and to relate them to their various uses. The study further noted that not only has less attention been paid to the equity in health care financing and expenditure in Kenya, but also very little research has been done to establish the extent to which public health care financing allocation is equitable. Yet the extent to, and the speed with which the public health sector can redress inequities in health care financing and expenditure can significantly reverse the declining health indicators. This study used the broader framework of National Health Accounts (NHA) to analyze national health expenditures in Kenya and attempted to examine whether the health care resources were equitably allocated to different regions. The study used data on health status and other socio-economic characteristics to develop distributional estimates of who makes the payment under each financing mechanism, and who receives the benefits of government health subsidies. The results showed that there are considerable inequities in the distribution of health care resources in Kenya. It was noted that actual expenditures fall below budgetary allocations. The current resource allocation formula is not in favour of poorer provinces. The study noted that a key factor that has contributed to the slow progress towards equity has been the decline in annual real per capita government budget to the health sector.

Musau (2009) in his study on the determinants of childrens health status in Kenya used the Kenya Integrated Household Budget Survey of 2005/2006 to analyze the determinants of children health status. The children that were considered for analysis in

the sample were between the ages of 0 to 60 months. Nutritional measures of height for age, weight for age, and the weight for height scores were used as measures of children nutritional status. Descriptive statistics showed that of the total number of children considered for analysis 40.31 %, 17.89%, and 7.76 % were chronically malnourished, acutely malnourished, and wasted respectively. The OLS regression indicated that, child characteristics are important factors for the health and nutritional status of a child. Household characteristics such as household expenditure, maternal years of education, household size, household residence, absolute poverty level and region were found to have significant impact on child nutritional status. Community variables found to significantly improve children nutritional status are tap and protected water sources and availability of a sanitary facility.

Kiplagat (2011) did a study on determinants of health insurance choice in Kenya. His study noted that in Kenya, the out-of-pocket health expenditure by households' accounts for around 36 percent of the total expenditure on health. Large out-of-pocket payments may reduce consumption expenditure on other goods and services and push households into poverty. Recently, health insurance has been considered as one of the possible instruments in reducing impoverishing effects of large out-of-pocket health expenditure. In Kenya, health insurance has limited coverage, yet there are various types of health prepayment schemes. The study was based on utility maximization theory which postulates that individuals choose among alternatives depending upon which offers the highest total expected utility. Utilizing the 2008-2009 Kenya Demographic Health Survey (KDHS), he estimated a multinomial logit model and conclude that wealth index,

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employment status, education level and household size are important determinants of health insurance ownership and choice. Also, lack of awareness prevents many from enrolling in any form of health insurance scheme.

Njenga (2011) did a study on the impact of health aid expenditure on child mortality in Kenya, 1980-2010. Health care financing is a key determinant of health system performance since it is expected to provide the resources and economic incentives for operating health systems. It is argued that knowledge about health care financing helps to inform government policy by providing an assessment of the effects of their policies on healthcare delivery systems and overall health standards of a country. The study examined the impact of health aid expenditure on child mortality in Kenya between 1980 and 2010, and identified other factors that influence child mortality in Kenya. The study used time series data for a period of thirty years and employs semi log regression analysis on the model and later an Error- Correction methodology on the model to prevent for spurious regression results. The study reveals that the total health aid expenditure influences the under five mortality in Kenya. Other factors were also found to influence under-five mortality in Kenya include density and immunization coverage. In conclusion the above studies found out that: Poor health and inequalities in health status were especially significant because of the potential synergies between poor health and poor capacities to counter poverty. Wealth index, employment status, education level and household size are important determinants of health insurance ownership and choice. The total health aid expenditure influences the under five mortality in Kenya. Other factors

found to influence under-five mortality in Kenya include density and immunization coverage.

2.5 Summary

The literature review allows us to draw the following conclusions. Important factors for explaining the level and growth of total health care expenditures are: income (per capita GDP), technological progress and variation in medical practice, and health systems characteristics. The more recent studies recognize the importance of health system characteristics such as health financing parameters, provider payment mechanisms and service provision. However, the ability to test these variables is limited because of data availability. This implies that some important variables may be missing in the analysis and therefore care should be exercised in the interpretation of the econometric results. It is also worth noting that although income is positively related to health care expenditure, the conclusion regarding income elasticity is not clear. Although most of the studies tend to show that income elasticity is greater than one, some studies conclude that it is less than one. In fact the result for income elasticity is sensitive to the choice of underlying assumptions of the model and on the data used for its estimation. It is therefore an empirical issue.

In contrast, population age structure - expressed by the share of young (under 15 years) and old people (e.g., above 65 or 75 years) over the active or total population – or epidemiological need do not seem to be significant. Although they are unlikely to be important, one should not necessarily exclude them if data are available. As far as

econometric models are concerned, the most interesting conclusions are from panel data models, static as well as dynamic, as opposed to cross-section models, even repeated cross-sections. One of the possible advantages of dynamic panel data is to allow for the possibility of testing for exogeneity of GDP in the health care expenditure regressions and examining the Granger-causality issue. However, for the latter, there are serious limitations when only a short time-series is available.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter highlights the methods and procedures used in carrying out the study. It includes the following; section 3.2 presents survey research design; section 3.3 presents the population and sampling; section 3.4 presents data collection methods instruments used; section 3.5 presents data analysis, Conceptual and analytical model as well as data presentation methods

3.2 Research Design

This was a descriptive study where the researcher gathered data from government publications in the Ministry of Finance and Planning, Central Bureau of Statistics (CBS) and the Ministry of Health. Other sources were information from the Population Census Centre, Economic surveys and strategic plan from the Ministry of Health.

The study employed quantitative method through analysis of the financial statements using various models and ratios to provide predominantly quantitative data to the study. Quantitative data enabled for a more in-depth analysis of the research problem.

3.3 Study Population

Population is defined as all the members of a real or hypothetical set of people, events or objects to which a researcher wishes to generalize the results of the research study (Borg and Gall, 1989). According to Cooper and Schindler, (2000), population refers to the

entire group of individuals or objects to which researchers are interested in generalizing the conclusions.

This study used secondary data which was obtained from different sources as described above for 30 years from 1983 to 2012 from the country's economic survey. This is because the data is analyzed annually. The study utilized time series data collected from government publications in the Ministry of Finance and Planning, Central Bureau of Statistics (CBS) and the Ministry of Health and the economic surveys.

3.4 Data Entry and Data Collection Instruments

This section firstly presents the data was used in this study and then goes on to present the methodology used.

Dahlgren and Whitehead (1991) in his study found that the trend data would be more important than cross-sectional data, yet trend data is often unavailable. In his study, these concerns in turn led to varied measures to more effectively monitor the impact of the SAPs reforms. Lu, H. et al., (2010) looked at the effects of official development aid (ODA) on health spending using data from 1995 to 2006 in low and low middle income countries. Njenga (2011) used time series data for a period of thirty years and employed semi log regression analysis on the model and later an Error-Correction methodology on the model to prevent spurious regression results.

Ratio analysis and various models were used to analyze the secondary data collected from 1983 to 2012 from government publications in the Ministry of Finance and Planning, Central Bureau of Statistics (CBS) and the Ministry of Health. This was complemented with data from the National Health Accounts (NHA) database of the World Health Organization. All expenditure variables were adjusted for purchasing power parity and expressed as per capita USD. All expenditure variables were log-transformed.

3.5 Data Analysis

Data analysis involves organizing, accounting for and explaining the data; that is, making sense of the data in terms of respondents' definition of the situation noting patterns, themes, categories and regularities. After the data was analyzed, a cross examination was done to ensure the trend and patterns of the various ratios and models used to enable for an accurate and complete interpretation (Mugenda and Mugenda, 2003).

The data was thereafter analyzed using a statistical computer package, the SPSS. A qualitative statistical technique was also used during the analysis. This study used non-parametric tests in the computation on correlation, frequencies, percentages, standard deviations, graphs and charts.

3.5.1 Conceptual Model

Based on previous studies (i.e. Hitiris and Posnet, 1992; Hansen and King, 1996; Okunade and Karakus, 2001), a stochastic model was used in this study, based on the

hypothesis that annual health spending per capita is determined by a host of macroeconomic, social and demographic factors. The functional form of the model is given as follows:

PHE = f (GDP, TECHNP, EXTFUND and POPSTR)... (1)

PHE is the Public Health Care expenditure. This is the dependent variable of the model. This study has modelled per capita Public health expenditure as the dependent variable.

Income per capita (GDP) has been identified as a very important factor for explaining differences across countries in the level and growth of total health care expenditures. In literature from OECD countries, cross-section regressions of aggregate health expenditure per capita on GDP per capita consistently showed income elasticity significantly above one, from about 1.20 to 1.50 (Kleiman 1974; Newhouse 1977; Leu, 1986). Aggregate time-series regressions for individual countries most often showed similar results although with considerable variation between countries.

The rapid technological progress (TECHNP) has been seen as a factor of supply and demand which explains the growth of health care expenditure by the works of Manning et al. (1987) and Newhouse (1992). However, due to the difficulty of finding an appropriate proxy for the changes in medical care technology, very few studies have attempted to study the relationship between the technological progress and health care expenditure. A

number of proxies have been considered in literature, such as the surgical procedures and the number of specific medical equipment (Baker and Wheeler, 2000; Weil, 1995), the R&D spending specific to health care (Okunade and Murthy, 2002), life expectancy and infant mortality (Dreger and Reimers, 2005). Some other papers have investigated the effect of the technical changes by adding a time index or time-specific intercepts in the regression specification (Gerdtham and Lothgren, 2000; Di Matteo, 2004).

There has been much interest in relationship between external funds (EXTFUND) and national health expenditure in developing countries. Gaag and Stimac (2008) found that whereas there was no significant impact of health-specific official development aid (ODA) on total health expenditure, health- specific ODA has an elasticity of 0.138 against public spending on health.

Population age structure (POPSTR) is often included as a covariate in health expenditure regressions. Commonly used indicators are the share of young (under 15 years) and old people (for instance above 65 or 75 years) over the active or total population. These variables are generally insignificant when included in regression models explaining per-capita health spending (Leu 1986).

3.5.2 Analytical Model

The data was analysed by use of descriptive statistics (e.g. mean score and standard deviation) and inferential statistics; Correlation and multiple regression.

The model specification is as follows;

$$PHE = \alpha + \beta_1 GDP_t + \beta_2 TECHNP_t + \beta_3 EXTFUND_t + \beta_4 POPSTR_t + \varepsilon \dots\dots\dots\dots\dots\dots (2)$$

Where;

ε = error term

β_i = coefficient : i = 1...4

α = constant

Where subscript t is the time period from 1983, 1984… 2012, and ε is a white noise error term.

This study used the Autoregressive Distributed Lag (ARDL) approach by Pesaran et al. (2001). ARDL bounds testing procedure is based on the joint F-statistics (or Wald statistics) of cointegration analysis. (Chaabouni & Abednnadher) The asymptotic distribution of the F-statistics is non-standard under the null hypothesis of no cointegration between the examined variables. The null hypothesis of no cointegration among the variables in equation (2) against the alternative hypothesis is tested. Pesaran et al. (2001) report two sets of critical values for a given significance level. The computed test statistic exceeds the upper critical bounds value, and then the H_o hypothesis is rejected. If the F-statistic falls into the bounds, then the cointegration test becomes inconclusive. If the F-statistic is lower than the lower bounds value, the null hypothesis of no cointegration cannot be rejected.

In the second step, once cointegration is established the conditional *ARDL* long-run model can be estimated where all the variables are as previously defined. This involves selecting the orders of the *ARDL* model in five variables using Akaike Information Criterion (AIC) and Schwarz Bayesian Information Criterion (SBC). In the third and final step, we obtain the short-run dynamic parameters by estimating an error correction model associated with the long-run estimates.

CHAPTER FOUR

# DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the data analysis and interpretation of the results. It provides various sections. Section 4.2 provides the Summary Statistics, Section 4.3 provides the Empirical Model of the study, Section 4.4 presents Discussion, and finally Section 4.5 provides Summary of the chapter.

4.2 Summary Statistics

Health expenditure can be categorized as out-of-pocket payments and prepayments. Out-of-pocket payments refer to the payments made by the patients at the point of receiving services.
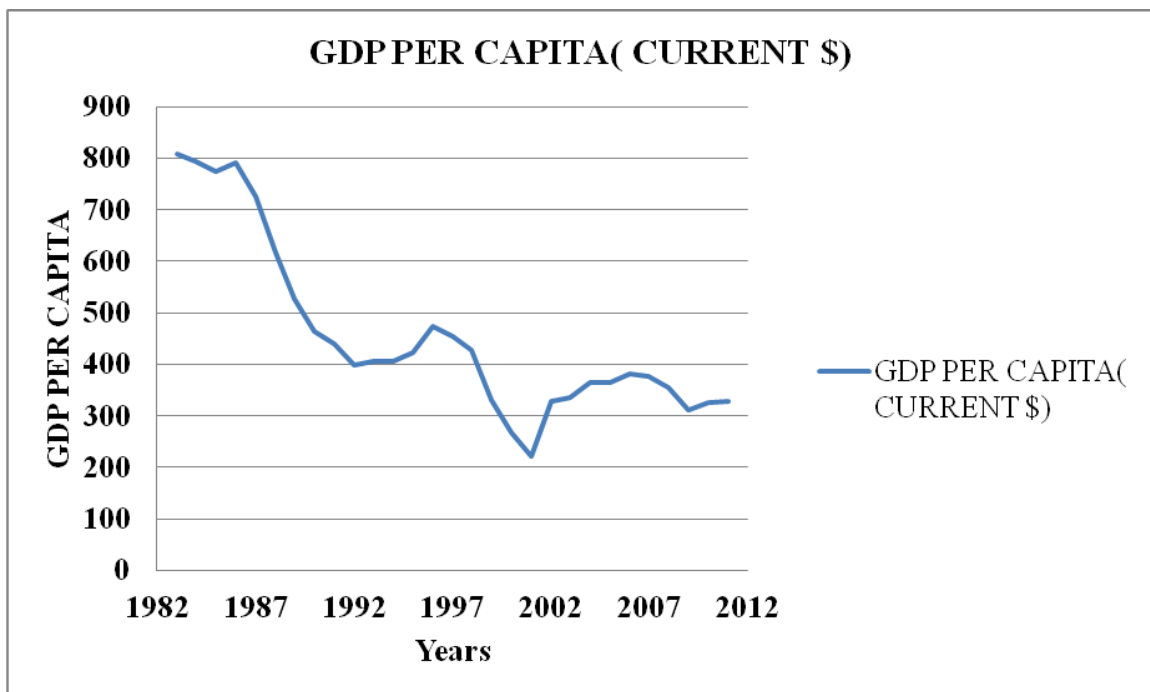
Figure 4.1: Health expenditure in Kenya
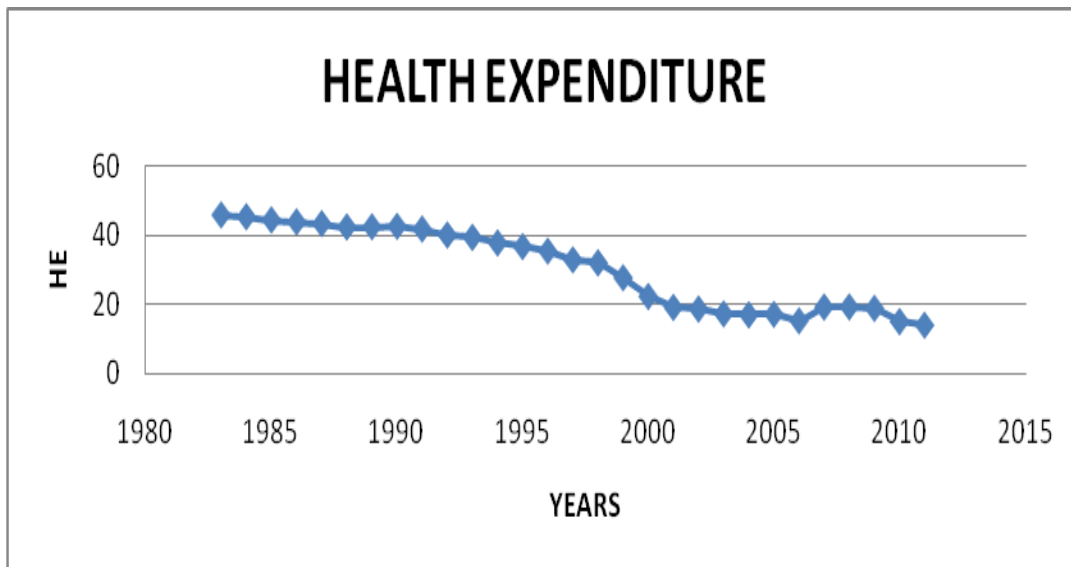
Source: Researcher (2013)

Prepayments are contributions made through general taxation, payroll tax, compulsory insurance and voluntary insurance. The fundamental distinctions between out-of-pocket payments and prepayments are that prepayments are pooled across the population. This study focuses on public health care expenditure in Kenya and out-of-pocket payments which are two major components of national health spending. Private prepayments into private risk-pooling funds, NGO and enterprise spending on health, which was trivial in most countries, were not analyzed as a separate category. The Figure 4.1 above shows the declining trend of health care expenditure in Kenya as the government set fewer budgets to health sector since the year 1983 to the year 2012.

Figure 4.2: GDP per capita trends in Kenya

Source: Researcher (2013)

Kenya's income, often simply measured as GDP per capita has been intensively studied by many people. However, whether health expenditure grows faster than income is not conclusive. In Kenya total health expenditure is lower than the minimum amount necessary for providing a basic package of services to reach health-related MDG goals. The expenditure on health equipment's is less than 50% of total health expenditure. As such we would expect both governments and households in Kenya to allocate a bigger share of their budget on health as income increases but as shown in figure 4.2 above the opposite is happening.

Figure 4.3: Population age structure trends in Kenya on accessibility to health care
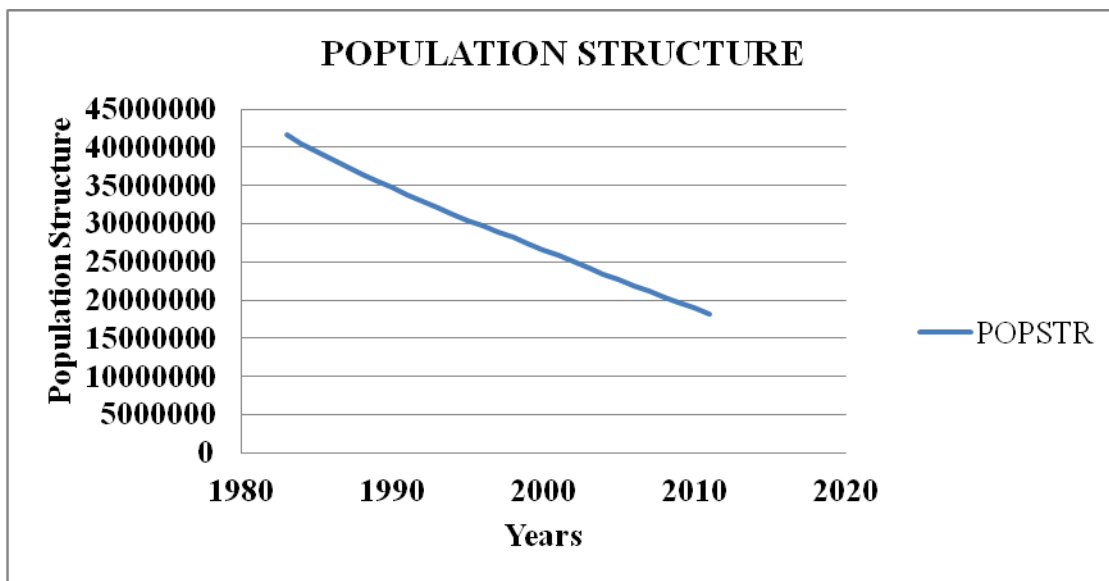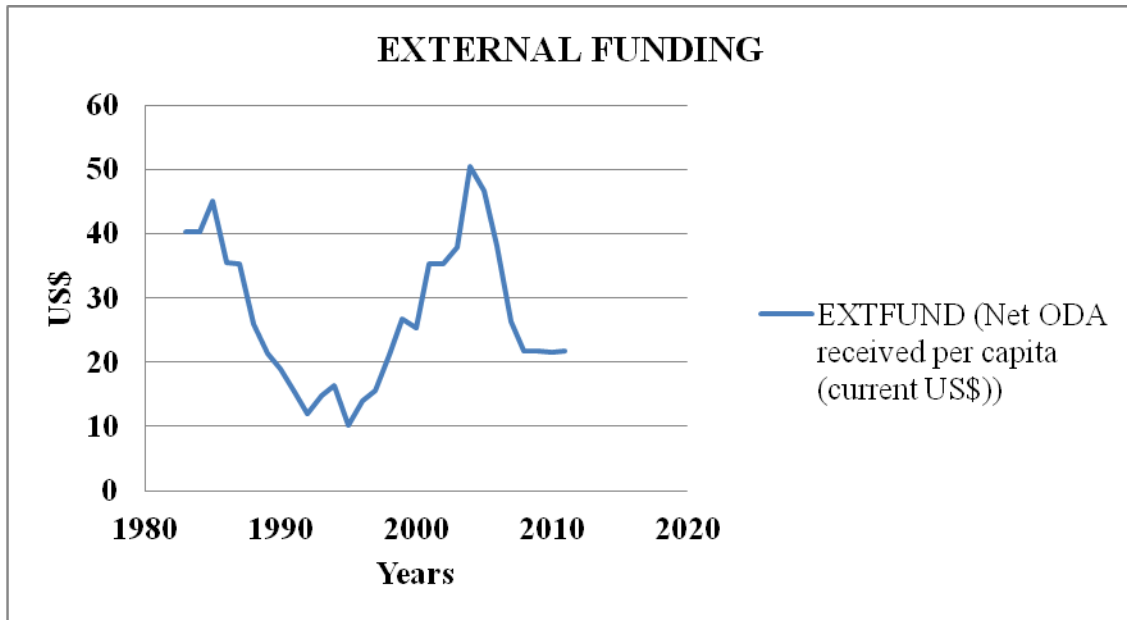

Source: Researcher (2013)

Population structure would have an impact on health expenditure. Commonly used indicators in many studies include the percentage of the population above 60 years old and the population of under 5 or 15 years old. It is well understood that

elderly populations require more health services which could result in higher health expenditure. The population age structure in Kenya has been declining over the years as shown in figure 4.3 above.

Figure 4.4: External funding trends in Kenya

Source: Researcher (2013)

Financing is one of the most important elements of a health system. Knowledge of factors associated to health expenditure would help policy makers to better plan for the future. The current economic crises will not only have impact on health systems in Kenya but also in other developing countries where external funding is essential. Innovative financing methods as well as improving efficiency will be important for increasing resources for low income countries to provide basic services and for high income countries to retain the progress that has made

on universal coverage. In Kenya external funding has been up and down though it has been in inform of aid. The year 2005 Kenya received the highest external funding in health care expenditure as shown in figure 4.4 above.

Figure 4.5: Technological progress trends in Kenya
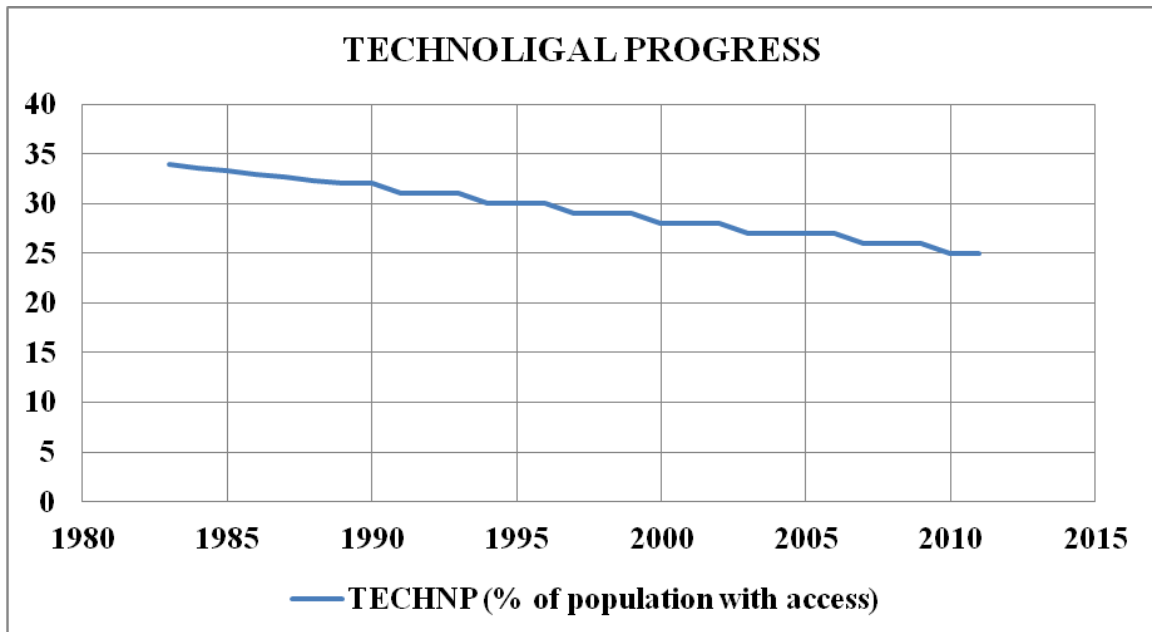
Source: Researcher (2013)

Technology assessment for health policy instrument and planning per capita has significantly decline for a period of time as shown in figure 4.5 above. The acquisition of health care equipment is not done on the basis of evidence from relative advantage outcome, cost of ownership or returns on investment.

4.3 Empirical Model

This section presents the empirical model analyzed and results arranged comparatively for basic descriptive statistics. They are also presented sequentially according to the

research analytical model. The raw data was coded, evaluated and tabulated to depict clearly the results of the study on the determinant of health financing expenditure in Kenya that is; GDP, Technological progress, Population age structure and External funds

4.3.1 Reliability and Validity of data

Table 4.1: Reliability Statistics

Measurement Scale	Cronbach's Alpha (α)
Health expenditure	0.731
GDP	0.757
Technological progress	0.751
Population age structure	0.730
External funds	0.737

Source: Researcher (2013)

Reliability is a fundamental issue in any measurement scale. Scale reliability is considered as the proportion of variance attributed to the true score of the latent construct. Considering the small number of items used to measure each of the 5 values and their necessary heterogeneity, even reliabilities of 0.5 are reasonable. It is usually measured by internal consistency reliability that indicates the homogeneity of items comprising a measurement scale. Internal consistency gives the extent at which items in a model are inter-correlated. Thus, high inter-item correlations explain that the items of a scale have a strong relationship to the latent construct and are possibly measuring the same thing. Usually, the internal consistency of a measurement scale is assessed by using

Cronbach's coefficient alpha. It is generally recommended that a measurement scale having a Cronabach's coefficient above 0.70 is acceptable as an internally consistent scale so that further analysis can be possible. Thus measuring of health expenditure, GDP, technological progress, population age structure and external funding was reliable and valid since alpha value is above 0.731, the study instruments yielded fairly reliable data for this research.

4.3.2 Correlation analysis

Table 4.2: Pearson Correlation coefficients Matrix

		HEALTH EXP.	GDP	POPSTR	EXTFUND	TECHNP
Pearson Correlation	HEALTH EXP.	1.000	.776	.955	-.200	.958
	GDP	.776	1.000	.844	.301	.834
	POPSTR	.955	.844	1.000	.060	.994
	EXTFUND	-.200	.301	.060	1.000	.043
	TECHNP	.958	.834	.994	.043	1.000

Note: *Correlation significant at the level 0.01 (two-tailed)

Source: Researcher (2013)

The Pearson correlation coefficient is a measure of the strength of a linear association between two or more variables and is denoted by *r*. A Pearson correlation coefficient basically, attempts to draw a line of best fit through the data of two variables. The

Pearson correlation coefficient, *r*, can take a range of values from +1 to -1. A value of 0 indicates that there is no association between the two variables. As cited in Wong and Hiew (2005) the correlation coefficient value (r) range from 0.10 to 0.29 is considered weak, from 0.30 to 0.49 is considered medium and from 0.50 to 1.0 is considered strong. However, according to Field (2005), correlation coefficient should not go beyond 0.8 to avoid multi-collinearity. Since the highest correlation coefficient is (.958) from the above table, there is no multi-collinearity problem in this research. From the table above all the predictor variables were shown to have a positive association between them other than External funds and Health expenditure with a weak inversely correlated; with the strongest (.958) being indicated while the weakest (.043).

4.3.3 Regression Analysis

The regression analysis is concerned with the distribution of the average value of one random variable as the other variables which need not be random are allowed to take different values. A multivariate regression model was applied. The regression model specifically connects the average values of y for various values of the x-variables. A regression equation is in no way a mathematical linking two variables but serves as a pointer to questions to be answered. The regression model was as follows:

$$HE = \alpha + \beta_1\,GDP_t + \beta_2 TECHN_t + \beta_3 EXTFUND_t + \beta_4 POPSTR + \varepsilon \ldots\ldots\ldots\ldots (2)\ .$$

Where;

ε = error term

β_i = coefficient : i = 1...4

α = constant

Table 4.3: Strength of the Regression model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.993	.985	.983	1.55342

Source: Researcher (2013)

Analysis in table 4.3 above shows that the coefficient of determination (the percentage variation in the dependent variable being explained by the changes in the independent variables) R2 equals 0.993, that is, public health expenditure, GDP, technological progress, population age structure and external funding leaving only 15.7 percent unexplained.

Table 4.4: Analysis of Variance

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	3839.805	4	959.951	397.808	.000
Residual	57.914	24	2.413		
Total	**3897.719**	**28**			

Source: Researcher (2013)

ANOVA findings in table 4.4 below, shows that there is correlation between the predictor's variables (public health expenditure, GDP, technological progress, population age structure and external funding) and an F ratio is calculated which represents the variance between the groups, divided by the variance within the groups. A large F ratio indicates that there is more variability between the groups (caused by the independent variable) than there is within each group, referred to as the error term (Pallat, 2005). A

significant F test indicates that we can reject the null hypothesis which states that the population means are equal.

Table 4.5: Coefficients of regression equation

Model	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	Beta	Std. Error	Beta	t	Sig.	Tolerance	VIF
Constant	-38.808	18.478		-2.100	.046		
GDP	.011	.004	.158	3.005	.006	.225	4.445
POPSTR	.000	.000	.433	1.776	.088	.010	96.047
EXTFUND	-.304	.030	-.291	-10.235	.000	.766	1.306
TECHNP	1.747	1.021	.408	1.711	.100	.011	91.984

* Significant value when Sig Value is less than 0.05

Source: Researcher (2013)

The established multiple linear regression equation from table 4.5 above becomes:

$Y = -38.81 + 0.011GDP_1 + 0.0000007POPSTR_2 - 0.304EXTFUND_3 + 1.747TECHNP_4$

Where;

Constant = -38.81, shows that if independent variables, GDP, POPSTR, EXTFUND and TECHNP all rated as zero, public health expenditure would be -38.81.

GDP= 0.011, shows that one unit change in GDP results in 0.011units increase in public health expenditure.

POPSTR= 0.0000007, shows that one unit change in population age structure results in 0.0000007units increase in public health expenditure.

EXTFUND= -0.304, shows that one unit change in external funding results in -0.304 units decrease in public health expenditure.

TECHNP= 1.747, shows that one unit change in technology progress results in 1.747 units increase in public health expenditure.

The study found that GDP and external funding has a significant influence on Public health expenditure in Kenya since GDP status has β= 0.011, t= 3.005, p=<0.05, and EXTFUND β=-0.304, t=-10.235, p=<0.05. The study also found that Population age structure and technological progress status have an influence on Public health expenditure in Kenya with the use of t statistics; where POPSTR's β=.00000007, t=1.776, p=>0.05 and TECHNP's β=1.747, t=1.711, p=>0.05.

4.4 Discussion

Several approaches for modeling health care expenditures are presented in the literature review. A first distinction concerns the type of data used. Some studies used household data while others used aggregated macroeconomic data. Given the scope of this study the review is limited to the latter studies. Some previous literature has relied on cross-sectional techniques, while others have used panel techniques. In the latter, static and dynamic models have been used and the results obtained are often different. The analysis indicated that health care expenditure and most of its determinants were non-stationary, and that they were linked in the long-run.

The results showed that GDP increase seems to lead to increases in public health care expenditure. GDP increase led to increases in total health expenditure in all income groups in both the static and dynamic model. There are at least two mechanisms through which GDP is a function of health care expenditures. Firstly, if health expenditure can be regarded as an investment in human capital, and given that human capital accumulation is an essential source of economic growth, an increase in health care expenditure must ultimately lead to a higher GDP. Secondly, increase in health care expenditures associated with effective health intervention increases labor supply and productivity, which ultimately increase GDP.

The effect of health care services is positive as hypothesized and its elasticity appeared to be greater than unity, indicating that government has to invest more on developing infrastructure to better equip the health sector with facilities, especially basic health care services like basic health and primary health care centers

It is also important to note that if health care is a necessity as in the case of Kenya, it is then imperative that governments have a larger role in allocating and directing public resources to health care. This not only prevents costs associated with better human capital formation but also helps in contributing positively to economy as productivity is linked to public health. Government should prioritize establishing a task force to evaluate health care expenditures spent on developmental and non-developmental work and to determine the impact of scarce resources that can otherwise be utilized in a more effective and efficient way.

4.5 Summary

The study identified four factors that are significant in determination of public health care expenditure in Kenya. These include GDP, Technological progress, Population age structure and External funds.

The effect of public health care spending as a percentage of GDP is positive and a priori. If the population is increasing at a slower rate than increases in GDP and health spending as percentage of GDP, it implies that the country has more resources available per person.

Population age structure is often included as a covariate in public health care expenditure regressions. The variables are generally insignificant when included in regression models explaining per-capita health spending.

Technological progress has been seen as an important driver of public health care expenditure even in Kenya. Several proxies for changes in medical care technology have been used according to the type of models under consideration in this study.

External funds, recently, there has been much interest in relationship between external funds and national health expenditure in Kenya. Whereas there was no significant impact of health-specific official development aid on public health care expenditure, health specific official development aid has an elasticity of more against public spending on health.

CHAPTER FIVE

SUMMARY AND CONCLUSIONS

5.1 Introduction

This chapter presents summary and conclusion. This chapter provides various sections which include Section 5.2 include summary of the study, section 5.3 includes conclusion, section 5.4 presents limitations of the study and finally section 5.5 is on recommendations for further research.

5.2 Summary of the Study

What determines public health care expenditures is an important policy question. This study sought to answer this question by investigating the major factors affecting public health expenditures in Kenya based on annual data from 1983 to 2012. This study discussed the theoretical literature related to public expenditure theory, a dynamic theory of public spending and the Baumol model. The study reviewed empirical literature and local research on health care expenditure.

The study used descriptive study where the researcher gathered data from the published statistics and accounts from economic surveys and strategic plan from the Ministry of Finance and the Ministry of Health. This study also used secondary data which was obtained from economic surveys of Kenyan health care expenditure. Ratio analysis and various models were used to analyze the secondary data collected from 1983 to 2012.

The study found that GDP, Population age structure, external funding, technology progress status have significant influence on health expenditure. The results suggest that health expenditure in general does not grow faster than GDP after taking other factors into consideration.

Population age structure is often included as a covariate in health expenditure regressions. Commonly used indicators are the share of young (e.g., under 15 years) and old people (e.g., above 65 or 75 years) over the active or total population. These variables are generally insignificant when included in regression models explaining per-capita health spending. Epidemiological need is sometimes also incorporated as a covariate through various proxies.

Technological progress has been seen as an important driver of health care expenditure even in Kenya. Several proxies for changes in medical care technology have been used according to the type of models under consideration in this study. Examples of such proxies in time-series studies are the surgical procedures and the number of specific medical equipment and life expectancy and infant mortality. This study concluded that technological progress and variation in medical practice were major determinants in the level and growth of health expenditure.

External funds, recently, there has been much interest in relationship between external funds and national health expenditure in Kenya. Whereas there was no significant impact of health-specific official development aid on total health expenditure,

health specific ODA has an elasticity of more against public spending on health.

5.3 Conclusions

It is important to note that if health care is a necessity (Font et al., 2009) as in the case of Kenya, then it is imperative that governments have a larger role in allocating and directing public resources to health care. This not only prevents costs associated with better human capital formation but also helps in contributing positively to economy as productivity is linked to public health. Government should prioritize establishing a task force to evaluate health care expenditures spent on developmental and non-developmental work and to determine the impact of scarce resources that can otherwise be utilized in a more effective and efficient way. Focus should be given to policies that promote greater access to health care facilities, especially for mothers and children. It is valid to establish more health facilities to improve access to the general population.

Our results suggest that health expenditure in general does not grow faster than GDP after taking other factors into consideration. These factors range from demographic factors to health system characteristics like external funding and technological progress.

5.4 Limitations of the Study

One limitation of the above studies is that it has ignored the possibility of non-stationarity in health data and income. Note however that the available time series for some of these studies are rather short.

A potential limitation of this study lies in the fact that no evidence of private health expenditure is available at the regional level. Some studies indicate that the role of private health insurance does play a role in supplementing public coverage, and it is found to be heterogeneously distributed across Kenyan regions.

The study utilized only the public health expenditures to explain health status of the population. In reality there are other health related expenditures especially by the private and religious organisations that were not taken into consideration. Furthermore, at the aggregate level, private health expenditure has not significantly changed in the period examined and remains at 2.1% of GDP. Health system characteristics, such as the provider payment mechanisms and the degree of private provision of the services, were not included in the study due to lack of time series data.

There was a possibility of measurement errors in the variables. For instance, the population structure is considered as one of the best measure of health status; however it has its own logistical problems in measurement. Some methodological issues remained problematic, among which the endogeneity problem was the most challenging.

5.5 Recommendations for Further Research

Future researches on the topic could consider other determinants of healthcare expenditures such as the relative price, or the measure of morbidity and inference about the trends in the mixed health sector in Kenya. The structure of this mixture has been the

centre of the debate of whether increasing centralization or privatization would yield more efficient outcomes.

The study recommends on the use of private health expenditure data at the regional level. Which in private health does play a role in supplementing public coverage, and it is found to be heterogeneously distributed across Kenyan regions.

The government policy framework should be geared towards improving the income per capita of the economy. The study recommends that the government should not only utilize the public health expenditures to explain health status of the population but also use other health related expenditures especially by the private and religious organisations.

The study recommends that other researchers should consider the use of non-stationarity in health data.

The study recommends more accurate data to minimise errors in the variables. A larger data set may also be beneficial in future researches.

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APPENDIX I: HEALTH CARE EXPENDITURE DATA

Years	HE PER CAPITA (CURRENT $)	GDP PER CAPITA (CURRENT $)	POPSTR	EXTFUND (Net ODA received per capita (current US$))	TECHNP (% of population with access)
2012	-	862.23	-	21.93313	25
2011	14.000001	327.8459	18237830	21.71859	25
2010	15.05844045	326.9325	18937969	21.56673	25
2009	18.88836367	312.133	19655192	21.70724	26
2008	19.30851722	355.0732	20387701	21.72682	26
2007	19.28318713	377.1491	21134404	26.36554	26
2006	15.26946534	381.6283	21894026	38.0026	27
2005	17.15225456	365.4512	22665447	46.75399	27
2004	17.00899857	365.603	23447177	50.38091	27
2003	17.2863175	336.281	24240108	37.80759	27
2002	18.68719095	327.8098	25042330	35.26589	28
2001	19.17041599	222.5369	25846436	35.3778	28
2000	22.33198995	268.2948	26642887	25.39627	28
1999	27.79488621	329.848	27425720	26.68481	29
1998	32.12121197	427.2857	28191597	21.10629	29
1997	32.99259206	453.1306	28944780	15.49917	29
1996	35.53647406	474.6028	29696410	13.98182	30
1995	36.84523849	423.3453	30462154	10.19199	30
1994	37.89757598	406.5231	31253701	16.4051	30
1993	39.53048398	404.8484	32076186	14.69096	31
1992	40.2034406	399.2891	32927864	11.92941	31
1991	41.93527752	440.8925	33805301	15.47095	31
1990	42.73555861	463.813	34702176	19.0259	32
1989	42.60350374	526.13	35614576	21.31711	32
1988	42.52713074	615.8608	36540948	25.90792	32
1987	43.51619356	726.5989	37485246	35.39473	33
1986	44.0290654	792.2288	38455418	35.52061	33
1985	44.56472547	774.9283	39462188	45.01018	33
1984	45.51619356	794.7672	40512682	40.19902	34
1983	46.0290654	808.0006	41609728	40.19902	34