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**The Growth of Health Expenditure in Lesotho**  
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**Abstract**

The study analyses the factors behind the growth of health expenditure in Lesotho over the period 1980 to 2011. The cointegration test results reveal that income is one of the important factors explaining the growth of health spending in Lesotho, with public health expenditure being more responsive to changes in income than private health spending. Although the government's role in disease patterns may be overshadowed by increased external funding, the findings highlight that Lesotho is still committed to improving the overall healthiness of its people. On the other hand, public and private health expenditure are found to follow different paths, with the ability of the citizens to finance their healthcare needs reducing the government's pressure to offer more health services. External aid programmes also seem to have impacted positively on Lesotho's public health spending while reducing a burden for privately-financed health services.

**Keywords:** Public Health Expenditure, Private Health Expenditure, Cointegration, Lesotho.

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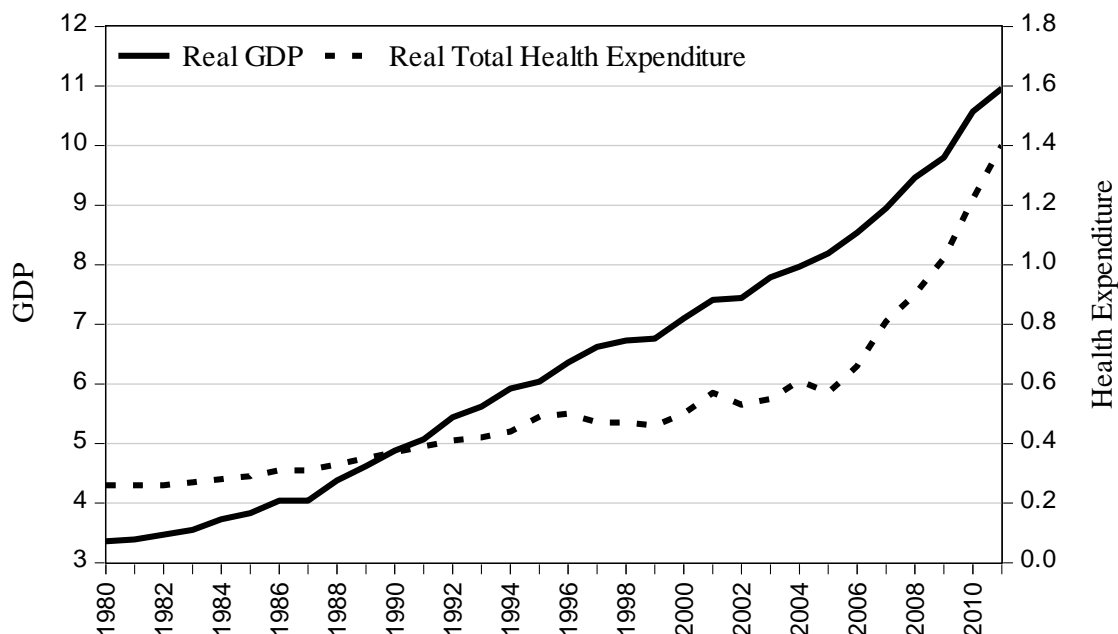
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## **1.0 Introduction**

Healthcare is an important commodity in human life due to its contribution to the wellbeing of individuals and to the productivity capacity of labour force among firms and industries. According to WHO (2014), the world's human degree of healthiness as measured by life expectancy seems to have been improving over time. For example, the life expectancies of both male and female at global level and across all country-income groups have increased by 6 years since 1990. In recent times, the low-income countries have even exhibited largest increases of around 9 years in life expectancies of both male and female – from 51 to 60 years for men and from 54 to 63 for women. This health transition could be attributed to improvements in healthcare as a result of advancement in medical technology and development, which lead to progressive living standards. On the other hand, population increase coupled with medical progression has raised human expectations on healthcare. Intuitively, such increases in human healthcare needs are also expected to increase healthcare expenditures in different economies.

Nevertheless, unlike in developed countries, the level of health spending in developing economies is generally low, resulting also in low health outcomes (Boachie et al., 2014). For instance, Bokhari et al. (2007) indicated that health spending in sub-Saharan Africa is inadequate to meet the increasing health needs brought about by communicable and non-communicable diseases. This makes it difficult for these countries to even achieve the minimum required healthcare needs of their own people, especially the vulnerable groups as they are the ones that are most affected. This issue has led to some policy analysts inclusive of development partners advocating for extensive increase in health expenditure in order to invest in health and reduce disease burden. In response, most developing economies are increasing their healthcare expenditures and Lesotho is not an exception. However, some countries have begun to control health costs as an attempt to keep government spending within sustainable fiscal limits and that called for understanding factors behind the growth of healthcare spending in those economies.

In Lesotho, the level of healthcare expenditure averaged M0.5 billion over the period 1980 to 2011 and this spending has been increasing over time (see figure 1). In 2011, health expenditure reached a maximum of M1.4 billion, which is more than 5 times as much as the 1980 figure of M0.26 billion (at 2004 constant prices). On the other hand, the level of real GDP over the same period has approximately tripled from M3.4 billion in 1980 to M11 billion in 2011, with an average of M6.3 billion (also at 2004 constant prices). All these show a more than proportionate increase in health spending relative to that of real GDP for the country. Thus, the following research questions are posed: what are the factors behind the growth of health expenditure in Lesotho? Does public and private healthcare spending follow the same path? Therefore, the main objective of this study is to analyse the factors associated with the growth of total, public and private health expenditure in Lesotho using the dataset covering the period 1980 to 2011.



**Figure 1:** Trends in real GDP and real total health expenditure in Lesotho (Billion Maloti).

Given that other studies on Lesotho like that of Thamae (2013) and Masenyetse and Motelle (2012) only focused on the relationship between total government spending and other economic factors, this paper takes into account even the role of social and health-related factors in influencing the growth of health spending as one of the main components of total public spending in Lesotho. The paper also contributes to the empirical literature of the determinants of healthcare expenditure in developing countries and its findings may help policy-makers in Lesotho to better understand some of the intricate challenges confronting the country’s health sector.

The rest of the study is then structured as follows. Section 2 gives an overview of Lesotho’s health sector. Section 3 briefly reviews the empirical literature on health spending in developing economies while section 4 describes the methodological framework. The results and analyses are presented in section 5 and section 6 provides concluding remarks and policy implications.

## **2.0 Lesotho’s Health Sector**

Lesotho is constitutionally required to ensure improved public health and create accommodating environment in situations of illness by providing medical services and medical attention to all. Specifically, the country is mandated to reduce infant mortality, stillbirths and generally ensure healthy child development (GoL, 2013). Arranged to fulfill this constitutional mandate, Lesotho’s health sector community is comprised of Government ministries, donors and development partners, and the private sector. The latter comprises of individual private practitioners and non-governmental organizations (NGOs), which include faith-based organizations such as the Christian Health Association of Lesotho (CHAL). Even though the community is very large and diverse, those that provide health services are small in number. For example, the NGOs include Lesotho Planned Parenthood Association (LPPA) with 9 clinics located in the urban areas, Lesotho Red Cross Society operating 4 health

centres, and Population Services International (PSI), which runs 5 voluntary testing and counselling centres in the country.

As a principal stakeholder in healthcare provision, the Lesotho government is obliged to develop health services guidelines and standards, mobilize resources, monitor and evaluate health sector interventions, and develop policies and strategies aimed at improving the lives of Basotho (GoL, 2013). The Government strives to achieve these obligations through its line ministries, with the Ministry of Health and the Ministry of Social Welfare on the forth front, and in collaboration with relevant partners. In line with the 2001 Abuja declaration on health by the African Union countries, Lesotho has also committed itself to allocating at least 15% of its annual government budget towards health public spending. Despite the fact that health expenditure has been increasing over time, Lesotho has not been able to meet this obligation unlike other countries within the region such as Botswana (18%), Malawi (17%) and South Africa (15%) (WHO, 2011). Furthermore, both internal and external stakeholders have been concerned about Lesotho's under expenditure of the very limited allocated health budget especially on capital investment projects.

On the other hand, in an effort to increase equitable access to healthcare services and meet health-related millennium development goals, Lesotho adopted a policy of no fee for healthcare services. The free healthcare services policy was introduced at primary level while minimum fees were set at other higher levels. This setting up of prices by government rather than through the supply and demand forces can promote increase in the use of services but it also depresses the production of those services. This could also be accompanied by a moral hazard problem with apparent quality deterioration, resulting in increased costs of healthcare provision. As another part of the reform, the Government engaged in different Public-Private Partnerships (PPPs) with significant stakeholders. The major partnership is with CHAL, which was signed in 2006. CHAL serves at least 30% of the population of Lesotho through its 8 hospitals and 71 health centres scattered all over the 10 districts (GoL, 2013).

Another important PPP, which was the first of its kind in Africa, was the engagement of Tsepong – a consortium of Netcare (South African private healthcare provider) and a few Basotho private owned businesses, in 2009. The group was engaged to provide services of constructing a 425 bed capacity national referral hospital called Queen Mamohato Memorial Hospital (QMMH), a gateway clinic adjoining the hospital and renovation of 3 Maseru urban filter clinics, namely Qoaling, Mabote and Likotsi filter clinics. The QMMH was established to replace the old depilated national referral hospital, Queen II (QII), and it was intended to work in an integrated network as QMMH, the adjacent gateway clinic and the filter clinics. The consortium was also contracted to manage and deliver clinical and non-clinical services throughout the 18-year period of the PPP agreement. Although the human resource for health remains a major challenge for this PPP initiative, its success proved the capability of low-income countries in undertaking ambitious PPP projects in order to provide good quality health services for their citizens (see Vian, 2013; CIRC, 2013).

As one of the Least Developing Countries (LDCs), Lesotho also qualified for support under the Millennium Challenge Account (MCA) compact of the United States in 2007, where USD362.6 million was received to finance three major projects – the health sector project, the water sector project, and the private sector development project (MCA Lesotho, 2013). The

health sector project was intended to alleviate negative economic impacts of poor maternal health, high HIV and AIDS prevalence and tuberculosis, and other diseases through reinforcement of Lesotho healthcare system. The project involved refurbishment of existing health centre structures and construction of new health centres and anti-retroviral therapy clinics for both government and CHAL. The complimentary inputs such as training, medical waste management, health management information system and decentralization of management were also incorporated under the health sector project. This infrastructure development is viewed as an important pillar in accelerating the country's economic growth. However, for sustainability of the expected outcomes, the government has to increase its health spending over time to ensure fully staffed facilities and renovation of the newly developed infrastructure and continue rehabilitation in future years to come.

### **Health Expenditure in Developing Countries**

The growth of healthcare spending in developing countries is mostly attributable to socio-economic factors and health system characteristics rather than environmental conditions. For example, Angko (2013) analysed the demand-side macroeconomic determinants of public health expenditure in Ghana and the study found that per capita income and population health status and age structure are the major factors influencing the country's choice to invest in healthcare. Similarly, Boachie et al. (2014) discovered that public health spending in Ghana is positively related to the level of economic growth and policies aiming at improving the healthiness of the population such as life expectancy and crude birth rates. However, the study found that other factors including pollution, inflation and percentage of rural population play a less important role in determining the growth of public health expenditure.

Furthermore, Chaabouni and Abednnadher (2014) revealed that, aside from economic growth and the population age structure, the supply of healthcare as measured by medical density (a physician per 1,000 population) also matters in driving the healthcare expenditure in Tunisia. Nonetheless, the study found the measure of environmental quality to be insignificant in explaining the Tunisian health spending. Apart from the above mentioned factors, studies like that of Rono (2013) on Kenya, Imoughelle and Ismaila (2013) on Nigeria and Dhorro et al. (2011) on Zimbabwe, highlighted that factors such as external funding on health, government developmental health policies, literacy rate and technological progress do affect the growth of health expenditure. Schieber and Maeda (1999) also found that public health spending in most economies is more responsive to changes in income than private health spending. On the other hand, Ke et al. (2011) discovered that healthcare still remained a necessity in most developing countries and as a result, the importance of value for money in health spending is emphasized given the scarcity of resources in such economies.

### 3.0 Data and Methodology

The paper employs annual time-series data for the period 1980-2011. The dataset is obtained from the World Bank Development Indicators and all real variables are expressed in 2004 constant prices. However, the interpolation technique was employed to fill the gaps where data was missing. The basic model for the growth of health expenditure in Lesotho, modified from Ke et al. (2011) and Boachie et al. (2014), is then specified as follows:

$$HEX_t = \alpha_0 + \alpha_1 GDP_t + \alpha_2 LXP_t + \alpha_3 HIV_t + \alpha_4 MMR_t + \alpha_5 RUP_t + \alpha_6 URP_t + \alpha_7 Z + \mu_t \quad (1)$$

Where  $HEX_t$  is the natural logarithm of per capita real health expenditure and it can be expressed in a form of total health expenditure ( $TOH_t$ ), public health expenditure ( $PUH_t$ ) or private health expenditure ( $PRH_t$ ). Other variables such as  $GDP_t$ ,  $LXP_t$ ,  $HIV_t$ ,  $MMR_t$ ,  $RUP_t$  and  $URP_t$  denote the natural logarithm of real per capita GDP, life expectancy, HIV and AIDS rate, maternal mortality rate, rural population and urban population, respectively. On the other hand,  $t$  is the time period,  $\alpha$ 's are long-run parameters to be estimated,  $\mu$  is the white noise disturbance term and  $Z$  is any exogenous variable affecting the spending on healthcare services in Lesotho.

In equation 1, the sign of  $\alpha_1$  is expected to be positive since as income increases, the country (or its population) is able to spend more on healthcare services. On the other hand,  $\alpha_2$ ,  $\alpha_3$  and  $\alpha_4$  are expected to have ambiguous signs. This is because a rise (fall) in the degree of healthiness of the population could imply a reduction (increase) in healthcare consumption, and hence expenditure, but for the country to improve the healthiness of its population, it also has to increase the expenditure on healthcare services (and this applies to individuals as well). Furthermore,  $\alpha_5$  and  $\alpha_6$  are expected to be positive since both rural and urban population needs adequate health infrastructure and related services. Moreover, urbanisation comes with pollution and many other social problems, which in turn increases the demand for healthcare services. Lastly, the sign  $\alpha_7$  is expected to be ambiguous.

The study uses the augmented Dickey-Fuller (ADF) unit root test to determine the order of integration of the variables in equation 1 (see Dickey and Fuller, 1979, 1981). It then employs the two-step Engle and Granger (EG) (1987) cointegration analysis to examine the existence of a stable and long-term relationship among the series in the model. The EG test is preferred over the Johansen (1988, 1995) multivariate cointegration technique since it imposes only one cointegrating equation and this fulfills the aim of this study, which is not to analyse all possible long-run relationships between variables. The two-step EG approach involves estimating the cointegration regression through the method of ordinary least squares (OLS) and running the stationarity test on the obtained residuals. However, the standard errors from the OLS estimation are less reliable due to potential correlations between the series over time. In order to correct for serial correlation and potential endogeneity among regressors, the method of fully modified OLS (FMOLS) is therefore used in this study. This method will also generate consistent estimates of the parameters (see Facchini and Melki, 2013).

## **4.0 Results**

### **4.1 Unit Root Test**

The study first examines the time-series properties of data variables using the ADF unit root test. The null hypothesis indicates that there is a unit root and failure to reject the null shows that the series is non-stationary. The Schwarz-Bayesian information criterion (SBIC) is used to select the lag length and the test statistics for each series are presented in table 1. The results show that the null of non-stationarity in levels for all the series cannot be rejected even at the 10% significance level. At first differencing, total, public and private health expenditure, real per capita GDP, HIV and AIDS rate, maternal mortality rate and rural population are found to be stationary at the 1% significance level, while life expectancy and urban population are stationary at the 5% and 10% level, respectively. Therefore, all variables are considered to be integrated of order one and this implies that there might exist a long-run relationship among the series.



**Table 1:** ADF unit root tests

Variable	$H_0$ : non-stationary in levels		$H_0$ : non-stationary in first differences	
	Test statistic	p-value	Test statistic	p-value
<i>TOH</i>	0.709	0.999	-4.873	0.003
<i>PUH</i>	2.394	0.999	-4.276	0.002
<i>PRH</i>	-0.419	0.894	-5.848	0.000
<i>GDP</i>	-2.665	0.257	-6.711	0.000
<i>LXP</i>	-0.850	0.339	-2.121	0.035
<i>HIV</i>	-0.880	0.781	-5.344	0.000
<i>MMR</i>	-0.128	0.938	-5.089	0.000
<i>RUP</i>	6.010	0.999	-7.457	0.000
<i>URP</i>	-0.749	0.818	-2.874	0.062

**Source:** Own computations.

**Note:** All variables are in logarithmic form.

#### 4.2 Cointegration Test

Given that all variables are integrated of the same order, the FMOLS procedure is then used to estimate the cointegration model with the variables in level form. The results for total, public and private health expenditure models are shown in table 2. The ADF test statistics on residuals produced for each model are all found to be significant at the 1% level and thus, the null of no cointegration is rejected. This provides evidence of stable and long-term relationships between different forms of health expenditure and their determinants. For example, there is a positive and significant long-run relationship between all types of healthcare spending and income. The results further show that public health expenditure has higher income elasticity (of 1.286) than private health spending (with the income elasticity of 0.709). This finding is in line with the work of Schieber and Maeda (1999), who found that as income increases in most countries, total and public health expenditure also increase but with public health spending being more responsive to changes in income than private health spending. Therefore, this could be a reflection of a relatively greater revenue-raising capacity of the government as income rises, which enables it to spend more on healthcare services.

**Table 2:** FMOLS Cointegration Test Results

Variable	Model		
	Total Health Expenditure ( $TOH_t$ )	Public Health Expenditure ( $PUH_t$ )	Private Health Expenditure ( $PRH_t$ )
$GDP_t$	1.075*** [4.085]	1.286*** [3.039]	0.709* [1.838]
$LXP_t$	0.445*** [7.718]	0.422*** [4.552]	0.283*** [3.356]
$HIV_t$	0.013* [1.858]	-0.008 [-0.705]	0.025** [2.375]
$MMR_t$	-0.228*** [-7.548]	-0.583*** [-12.02]	0.283*** [6.422]
$RPOP_t$	-6.506*** [-15.10]	-10.67*** [-15.40]	1.209* [1.916]
$UPOP_t$	-1.143*** [-12.15]	-1.849*** [-12.23]	0.226 [1.640]
<i>MCA Dummy</i>	0.043*** [5.132]	0.112*** [8.241]	-0.025*** [-2.017]
<i>1998 Dummy</i>	-0.016** [-2.208]	-0.029** [-2.532]	-0.003 [-0.277]
<i>Constant</i>	29.37*** [12.28]	49.87*** [12.97]	-8.401** [-2.399]
Adj. R <sup>2</sup>	0.991	0.988	0.943
ADF test on residuals	-6.250***	-6.194***	-5.895***

**Source:** Own computations.

**Notes:** t-statistics in square brackets; \*\*\* significance at 1%; \*\* significance at 5%; \* significance at 10%.

Furthermore, life expectancy is found to be positively associated with all forms of health expenditure and its coefficient is significant at the 1% level. This finding corresponds to that of Boachie et al. (2014) and it implies the government (as well as its citizens) had to spend more on healthcare services in order to improve the overall healthiness of the nation. A similar (positive and significant) relationship is found between HIV and AIDS rate and total and private health expenditure, while there is no long-run association between HIV and AIDS rate and public health spending. In addition, maternal mortality rate is found to impact positively on private health expenditure but negatively on total and public health spending (with all coefficients being significant at the 1% level). This could imply that citizens devote more of their resources to health in response to HIV and AIDS and maternal mortality than the government does. However, the role played by the government with regard to disease patterns may not be observed due to increased funding on disease programs from the international sources (see Ke et al., 2011).

On the other hand, rural and urban population are found to be negatively related to total and public health expenditure, while positively associated with private health spending (but a positive coefficient of urban population is found to be marginally significant). Although the former result was unexpected, it seems that the ability of the citizens to finance their healthcare needs did reduce government spending on health services in both rural and urban areas. In the case of the latter area, it could be that adequate health infrastructure already exists and people have improved incomes, hence reducing the pressure of the government to

offer more health services (also see Boachie et al., 2014). The role of exogenous conditions such as the introduction of the MCA compact in 2007 and the political instability of 1998 are examined along with other long-run determinants of health expenditure in Lesotho. It is evident from the results in table 2 that even though the MCA compact had a positive and significant effect on total and public health spending, it reduced the burden for privately-financed health services. Moreover, the 1998 political instability impacted negatively on total and public health spending, but seems to have had no effect on private health expenditure.

## **5 Conclusion and Policy Implications**

Although Lesotho generally increases spending on healthcare services as it gets richer, it is important for policymakers to focus on whether the increased health expenditure really improves or maintains the healthiness of the nation. In that way, the country will be able to strive for value for money outcomes given its scarce resources. On the hand, the ability of Basotho citizens to finance their healthcare needs seems to have reduced the government's pressure to offer more health services. However, this private health financing system could create a barrier to the poor in having access to necessary healthcare. As a result, the country should seek efficient ways of increasing its spending on health in line with the 2001 Abuja declaration to reduce the reliance on private financing of healthcare. This objective could also be achieved through external assistance, which impacted positively on Lesotho's public health spending while reducing the burden for privately-financed health services. Therefore, it is important for the government to continue taking appropriate measures to avoid fungibility of external funds for health. Nevertheless, it is noteworthy to mention that the findings of this study should be interpreted with caution given that other key variables including health system characteristics, official development aid for health and environmental conditions are missing due to unavailability of data.

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