MODELING HEALTH CARE IN ZAMBIA WITHIN THE OVERALL SOCIAL AND FISCAL ENVELOP

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ABSTRACT

The government of Zambia has initiated a process of restructuring the health sector and aiming at ensuring effectiveness of resource allocations while achieving the greatest impact on health status. Although some improvements have been made, particularly in removing financial barriers to seeking health care, the study finds that Zambia's health system does not ensure a sufficient provision of services to effectively support significant disease reductions or to curb the deteriorating overall health conditions. The medical staff available is estimated at less than 50 percent of the recommended establishment. Health care facilities are not able to dispense drugs they describe. The resource allocation to interventions and first level health care is found to be less than the recommended establishment. Nevertheless, the significant increase in donor participation in financing health care and also in the delivery of health care has ranked Zambia favorably in terms of per capita spending on health care compared with low-income African countries and against local and international recommendations. However, the government's share of total health expenditure is far lower than its commitment according to the Abuja and Maputo declarations.

The projection exercise conducted in the study reveals that the overall expenditure on health will increase at a rate that is less than the growth in the national economy under the status quo scenario and even if the cap on wage growth is no longer exist. For addressing the most critical supply side crisis, the study examines the impact of a gradual improvement in the HR situation to meet recommended establishment by 2025, under this scenario the government will eventually meet the Abuja and Maputo declarations.

The study also provides answer to the government sought objective of introducing a national health care insurance, the proposed health insurance would be based on the projection of health care that assumes improvement in population/medical staff ratio and enhanced availability of prescribed drugs. The study calculates the contribution rate at 5.82 percent of the employee's salary, shared equally between employers and employees.

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ABBREVIATIONS AND ACRONYMS

ADM	Admission
BHCP	Basic Health Care Package
CCR	Constant Contribution Rate
CH	Central Hospital
CPI	Consumer Price Index
CSO	Centeral Statistical Office
DH	District Hospital
FA	Funding Agent
FS	Funding Source
GDP	Gross Domestic Product
GH	General Hospital
GHE	Government Health Expenditure
HC	Health Center
HIPC	Highly Indebted Poor Countries
ILO	Ilnternational Labour Office
MDRI	Multilateral Debt Relief Initiative
MOFNP	Ministry of Finance and National Planning
MOH	Ministry of Health
MOLSS	Ministry of Labor and Social Security
NAPSA	National Pension Scheme Authority
NHA	National Health Account
OPD	Oupatient
PAYG	Pay-As-You-GO
TDR	Total Dependency Ratio
TFR	Total Fertility Rate
TGE	Total Government Expenditure
THE	Total Health Expenditure
VAT	Value-Added Tax
WHO	World Health Organization
WHS	World Health Survey
YDR	Youth Dependency Ratio
ZDHS	Zambia Demographic Health Survey

1. INTRODUCTION

1.1. Research Justification and Statement of the Problem

The health policy in Zambia is anchored on the rights based approach that treats health care as a basic human right guaranteed and accessible to every citizen. However, the health care system in Zambia has remained at a level that does not ensure a sufficient provision of services to effectively support significant disease reductions or to curb the deteriorating overall health conditions. The government of Zambia has encountered difficulties in financing health care out of its government budget. Efforts have been initiated to find a stable and efficient health care financing system that will improve access for all population sectors, reduce poverty due to high health care expenses, remove financial barriers to seeking health care and promote improvement in the quality of the delivery of an appropriate volume and mix of public, donor, and private health providers.

The main objective of this study is to answer the specific question of how much the Zambian health care system costs, how it performs now and what are the expected trends in the future? The study is organized in five chapters; a study introduction is presented in the first chapter. The second chapter conducts a thorough situation analysis and evaluation of the current health system within its determinants: demography, health status, labor market, macroeconomic environment, public finance and the existing social security system. In the third chapter, the study develops a quantitative model that permits to conduct comprehensive projections of the overall health system and its determinants. The fourth chapter addresses the feasibility of introducing a Health Insurance in line with the sought objective of the government to integrate a national health insurance into its social security strategy as a major health care financing method. Lastly, conclusions are discussed in chapter five.

1.2. Review of Literature

Decisions made in health care planning require an in-depth understanding of relationships between complex issues and not necessarily from the health field, but rather related to the broader economic and demographic context of the country. Standard modeling techniques such as economic modeling, actuarial modeling, and financial modeling are often used to translate the complexity of the health care system into concrete model that allows for sound decision making. Other more demanding simulation models, such as stochastic modeling i.e. Markov modeling, have been increasingly used in an attempt to capture the components interactions within the health care at a micro-level (i.e. modeling the referral system of the health care). In this section, we briefly review these models to demonstrate their usefulness in understanding real problem in the health care. At the end, a brief description of some models that are used by national and consulting agencies is presented.

A model in general is an attempt to translate complex observation into simpler image to better understand reality. Economic model is a simplified image of real economic process. An actuarial model is a combination of simplified images of natural process. It also includes images of human behavior. Financial model, particularly in health modeling, combines elements of economic and actuarial models to describe the expenditure and financing of the overall, or a subgroup, health system (Cichon, 1999). In stochastic simulation such as in Markov modeling, all relevant

conditions of the question investigated are presented as a series of states, which are mutually exclusive (Sonnenberg, 1999). For example, a patient in a health center can be described as an outpatient or admission in the perspective level of health care. Patients move from one level of health care to another according to specific probabilities governing the transition from one state to another.

Models used by health care systems vary from one country to another, reflecting the specific need and the level of complexity of different health care systems. Nevertheless, commonality of needs allowed the development of unified modeling tool to address specific needs for different countries. The WHO and GTZ developed a simulation tool, SimIns, that illustrates the implications of initial policies with respect to key health insurance variables. It also investigates the required contributions to ensure financial equilibrium within the prevailing or improved utilization patterns and health care costs. It also assesses the impact of health insurance on the overall structure of health financing (WHO).

The ILO model addresses the health care need within the overall Social Budget Model. The health sub model is an aggregated model. It looks at the entire health model as a component of the larger social sector and maps its relationship to the macro economic and demographic environment of the country.

The ILO also organized a stand-alone model that allows the simulation of a wide variety of policy options for the financial consolidation of a social health insurance scheme. The model requires the availability of demographic projection, or could be projected under a separate module. The demographic projection then provides the basis for calculating both the expenditure and income sides of the investigated health insurance (Cichon, 1999).

1.3. Methodological Approach

The nature of questions raised by the research problem statement requires the use of techniques from several disciplines to effectively tackle these issues.

For the evaluation of the current health care system, the study employs health economics principles to assess the functionality and the efficiency of the health market in Zambia. The demand and supply conditions are thoroughly reviewed. Some of the indicators used to evaluate the current health system include:

- Bed occupancy rate: assesses the availability of hospital beds against the actual needs. In general, a rate less than 80 percent implies a surplus in hospital beds and a rate above 80 percent implies a shortage in hospital beds.
- Population/medical staff ratio: assesses the availability of medical staff in different categories. Usually, it is used against local recommended establishment and/or international benchmark.
- Health care utilization: it gives the number of per capita consultation over illness in a given year. Usually, it is compared between different age groups, female-male, urban-rural, and with international experiences. It allows addressing impediments to access to health care facilities and equity issues.
- Impediments to health care access: including proximity to health facility, cost of health care, and poor quality of health care.

- Per Capita Expenditure on Health Care: constitutes a major indicator on the level of health care, used to make comparison with other countries and also with recommended spending by local or international criteria.
- Government health expenditure as a percentage of total government expenditure: African countries committed themselves in the Abuja and Maputo Declarations to allocate a minimum of 15 percent of national budget to the health sector. This indicator evaluates whether government of Zambia has delivered on its commitment.
- Expenditure on health by level of care: Aims at ensuring effectiveness of resource allocation while achieving the greatest impact on the health status for the population.

As for the future trends and projections, the study uses the ILO's Social Budget approach. The selection of this method is particularly relevant in the case of Zambia where the government is still the overwhelming provider of health care. It also reflects level of aggregation and the linkage of health care system to the overall economy and social space as demonstrated by the research problem statement. The health care module of the ILO Social Budget Model is one component of the overall social budget model. Therefore, some modifications have been made to derive the demand and supply sides of the health market through the interaction between the demographic structure, the economy and the health care, without having to map out all other social protection mechanisms. The following diagram illustrates the modified model components and its dependency structure. All model variables are calculated by deterministic equations only.

Figure 1.3.1. Structure of the Projection Model
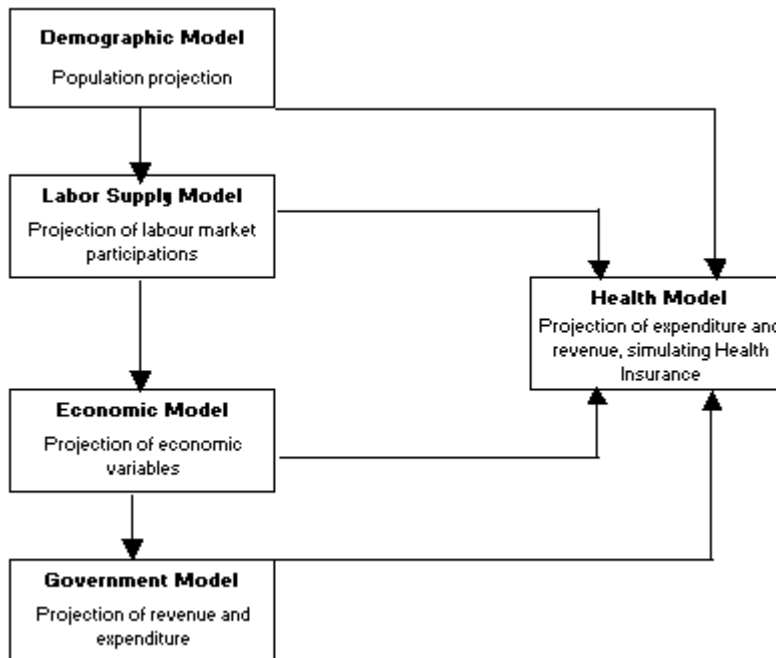
The model then is specifically further developed to integrate national objectives and to reflect the specifity of Zambia's health system. Section 3.3.1. provides further details on the model used.

Currently, there is no National Health Insurance in Zambia. Nevertheless, the Ministry of Health has recognized the potential of social health insurance as a major health care financing method

and it has requested the assistance of international agencies in developing the related studies and other logistics. It is therefore inevitable to investigate the appropriate system of national health insurance in the health care projections. Standard interest theory calculations are used in chapter five to develop the quantitative analysis of the proposed system.

1.4. Data Used

The study finds major differences between data collected from local resources and those of international organizations. For consistency, the study uses local data throughout the study. However, international figures are some times used in case of lack of local estimates, or if issues are found in local data that indicate poor quality.

While new estimates continue to be released by data sources, the study has a cutoff date of July 31, 2007 by which no updates of the quantitative model were conducted.

The author would like to make it clear that the study presents an investigation of a methodological framework that could be used to address the study questions. Therefore, the results presented in this study are in no way a representation of reality, they might not be used in the form of inputs to policy options.

SITUATION ANALYSIS

2.1. Determinants of Health Care

2.1.1. Demographic Environment

The most recent national census of year 2000 reported an overall population of 9.886 million and was subsequently projected at 12.120 million for 2007. The census report indicated that 35 percents of Zambians live in urban areas. It also reported that the male population in 2000 slightly outnumbered the female population for the first time in Zambia.

The growth rate of the population was declining but remained high ranging from 3.1 in the 1970s to 2.4 percent in the 1990s. This was mainly due to a sharp decline in the growth rate of the urban population that offset the modest increase in the population growth rate for the rural areas.

Table 2.1.1.1. Population growth Rate, 1970 – 2000

Population Growth	1970-1980	1980-1990	1990-2000
Total	3.1	2.7	2.4
Urban	6.0	2.6	1.5
Rural	1.6	2.8	3.0

Source: CSO census report, 2000, and UN population estimates.

The pattern of population growth in Zambia has followed those of fertility rates. Like many developing countries, Zambia has a high but declining Total Fertility Rate (TFR) from 7.2 in 1980 to 5.7 in 2005.

Figure 2.1.1.1. Total Fertility Rates, 1980 - 2005
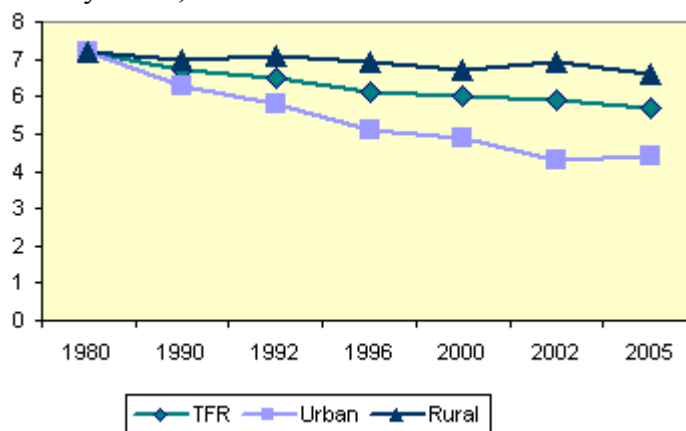
Source: based on CSO census report 2000 and ZDHS 2002.

While much of the decline in TFR between 1980 and 2000 was largely in urban areas, TFR in rural areas remained almost constant over the same period and consequently moderating the rate of decline of the overall TFR. Nevertheless, improved economic conditions in late 1990s and

early 2000s and the resulted increase in rural-urban migration are believed to have curbed the decline in TFR, as most migrants tend to be in the prime of their productive and reproductive years. Other developments included positive trends of decreasing mortality and increased life expectancy observed in the 2000s.

Table 2.1.1.2. Life Expectancy at Birth, 1980 – 2005

Life expectancy	1980	1990	2000	2003	2004	2005
Zambia	51.5	46.9	50.0	52.4	52.4	52.5
Male	50.4	46.1	48.0	51.5	52.3	52.8
Female	52.5	47.6	52.0	53.2	52.6	52.3

Source: CSO census report of 2000, ZDHS 2002 CSO social economic indicator 2004-2005.
Note: life expectancies in the above table differ significantly from those estimated by the WHO.

The demographic feature that most characterizes Zambia's population is that it is a young population. The median age is currently estimated in the neighborhood of 17. The following illustrates the age- group decomposition of the population in 2007.

Figure 2.1.1.2. Population Pyramide, 2007
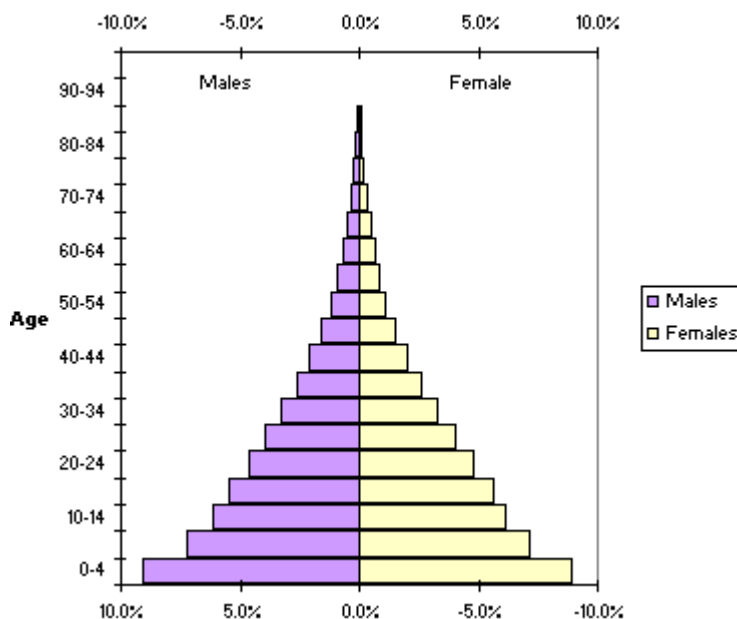
Source: own calculation based on the CSO census report of 2000 and its projections CSO

The population pyramid reveals that female of reproductive age 15-49 constitutes nearly half of the total female population. The broad based young Zambian population has been unchanged over the past couple of decades. The historical record shows that the proportion of population group aged 0-14 ranged between 45 and 48 percent over the past few decades.

A major implication of the young Zambian population is the excessive Youth Dependency Ratio (YDR) and consequently high Total Dependency Ratio (TDR) above 90 percent in 2005.

2.1.2. Health Status

The low life expectancy expressed in table 2.1.1.2. is attributed to the disease burden for Zambia. HIV/AIDS prevalence rate was last estimated in 2002 at 15.6 percent of the population in the age group 15-49 (ZDHS 2002). Despite of the slight decline in the Malaria incidence rate from 383 per 1000 in 2004 to 373 per 1000 in 2005, Malaria accounted for most of the deaths estimated at 22.2 percent of total death.

Figure 2.1.2.1. Percentage Distribution of Deaths by Age Group, 2004
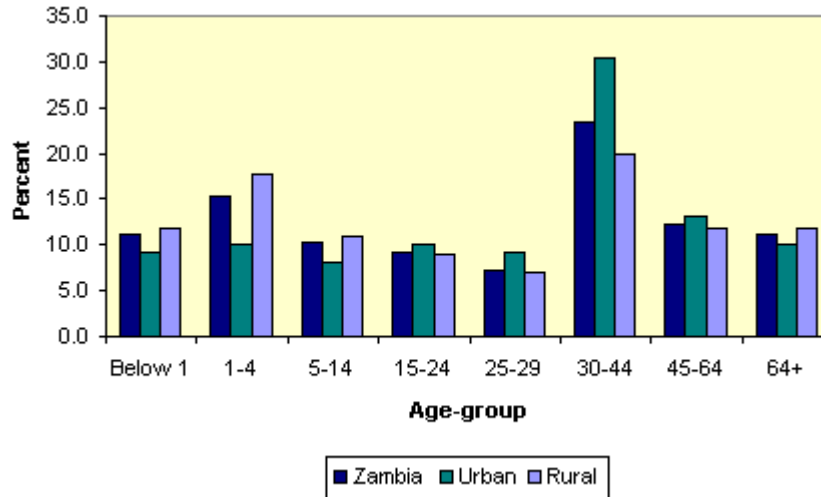
Source: based on LCMS 2004

The concentration of death cases among the age group 30-34 is particularly due to the high HIV/AIDS prevalence rate among this age group and therefore significantly changed the population profile and increased morbidity and mortality rates.

Figure 2.1.2.2. HIV/AIDS Prevalence Rates By Sex and Age Group, 2002
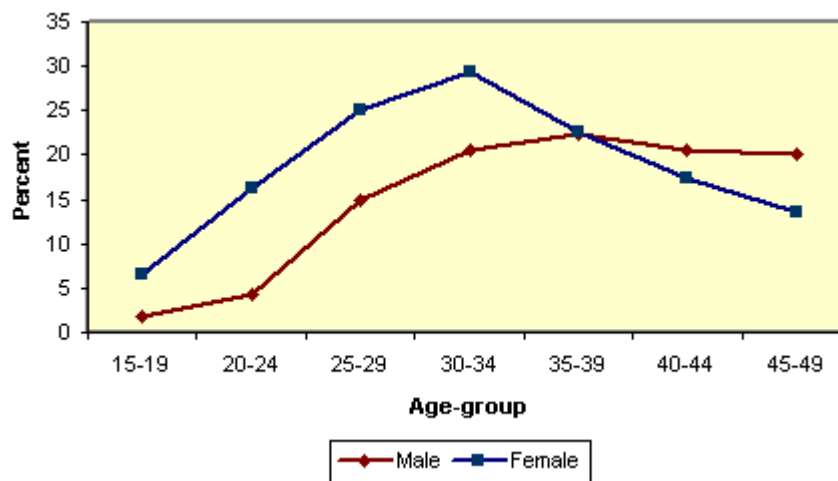
Source: based on ZDHS 2002

Figure 2.1.2.2. sheds lights on the disproportional impact of HIV/AIDS on female population. The female prevalence rate was estimated at 17.8, compared with 12.9 among male population. Urban population was found to be at higher risk with prevalence rate of 23 percent, compared with about 11 percent in rural areas.

Positive trends include declining, but remained high, under-five mortality and infant mortality rates estimated in 2002 at 168 per 1000 live births and 95 per 1000 live births, respectively. That is a decline by 15 and 13 percent, respectively, compared with the 1996 levels. The high rates are mainly caused by the high HIV/AIDS prevalence rates among women in their productive years and the consequent impact on high rates of HIV/AIDS mother to child transmission. In the other hand, national immunization coverage rebounded back in 2004 and was estimated at 80 % of children under one year old, a slight improvement from the year 2003 rate of 73.5 percent. However, coverage is still considerably lower than a peak record of 86 percent achieved in 2001.

2.1.3. Labor Market Trends

The favorable performance of the Zambian economy during the past few years allowed the local economy to absorb the rabidly expanding labor force and also led to moderately reduce unemployment rates. However, the slight economic slowdown in the year 2005 and the resulted sharp rise in unemployment rates estimated at 16 percent in 2005, compared with only 10.3 percent in 2004, reveals the high sensitivity of the labor market to external shocks.

Table 2.1.3.1. Participation, Employment and Unemployment Rates (%)

	Total					
	1996	1998	2000	2002	2004	2005
Participation Rate	79.2	73.9	80.0	86.1	79.9	80.3
Employment Rate	85.2	87.7	87.7	87.9	89.7	84.6
Unemployment Rate	14.8	12.3	12.3	12.1	10.3	15.4
	Male					
Participation Rate	87.1	82.3	83.2	84.0	87.1	86.7
Employment Rate	85.0	86.6	86.5	86.4	90.0	86.2
Unemployment Rate	15.0	13.4	13.5	13.6	10.0	13.8
	Female					
Participation Rate	71.4	65.7	76.7	88.1	72.7	73.9
Employment Rate	85.5	88.9	89.0	89.3	89.4	82.7
Unemployment Rate	14.5	11.1	11.0	10.7	10.6	17.3

Source: Based on LCMS 1996, 1998, 2002/3, 2004, and LFS 2005. LCMS's data were adjusted to eliminate child labour.

Major differences in employment patterns are also found between rural and urban areas. Self-employed and unpaid family members predominantly shape the employment status in rural areas and they constitute 43 and 38 percent of overall employments, respectively.

Figure 2.1.3.1. Employed Persons by Employment Status and Urban/Rural in thousands, 2005
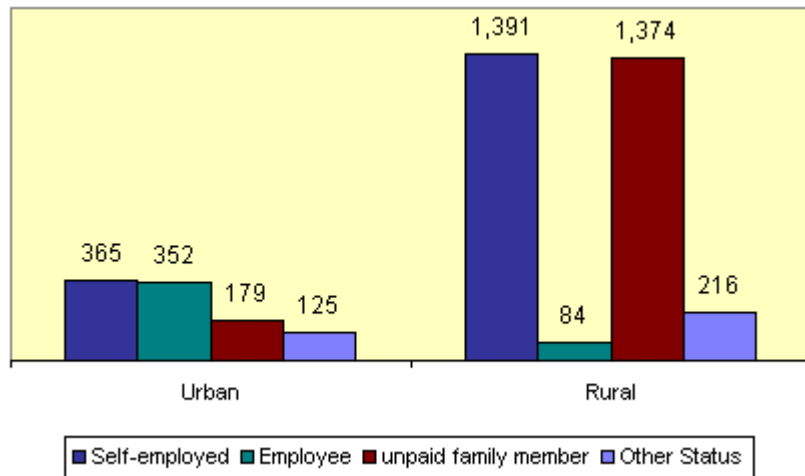
Source: based LFS 2005, and Formal Sector Employment and Earnings Inquiry Report, 2006

Increased employment between late 1990s and early 2000s was experienced in the informal[*]
sector. Moreover, employment in the formal sector decreased over the same period from 479,400
in 1996 to 416,228 in 2004 and before it increased again in 2005 to reach 436,066, or 10.44
percent of total employment. Several reasons might have contributed to this, most importantly,
the restructuring of privatized firms along with declining employment in state-owned enterprises.
The privatization program and the structural adjustment program by the government have also
changed the sector classification of the formal sector. The proportion of the private sector relative
to that of the government has expanded steadily and stood at 65.1 percent of total employment in
the formal sector.

Figure 2.1.3.2. Formal Sector by Employer, January 2006
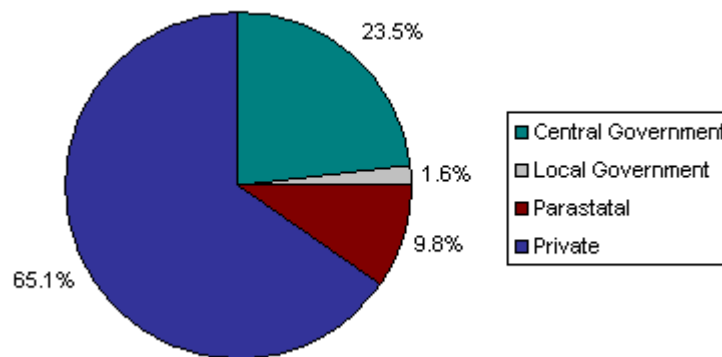
Source: Formal Sector Employment and Earnings Inquiry Report, 2006

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[*] The study uses the definition used by the CSO for the informal sector, which is defined as employment where not
entitled to paid leave, pension, gratuity and social security and worked in an establishment employing less than five
persons.

2.1.4. Macroeconomic Environment

Over the past few years, Zambia's economy has achieved a marked performance in respect to the major macroeconomic indicators. GDP growth was sustained at an average of 4.5 percent in real term between 2000 and 2005, and estimated at 5.76 percent for 2006. This increase is attributed mainly to a double-digit annual growth in construction and mining sectors, averaged at 18.4 and 11.1 percent, respectively. Agricultural sector, however, fluctuated during this period reflecting climate conditions with positive growth in years 2000, 2003 and 2004 and a decline in output levels in years 2001, 2002 and 2005.

This robust growth followed decades of deteriorating economic conditions with falling per capita income by an average of more than 2 percent annually between 1970 and 2000. Inflation was also in the hyperinflation zone for many years. Nevertheless, beginning of late 1990s, the economy witnessed a significant downward trend in inflation rates though remained high at 15 percent in 2006.

Table 2.1.4.1. Main Economic Indicator, 2000-2006

Economic Indicators	2000	2001	2002	2003	2004	2005	2006
GDP, current prices, bln K	10,072	13,133	16,260	20,479	25,997	32,456	38,586
Inflation (CPI)	26.03	21.39	22.23	21.40	17.97	18.32	15.00
GDP growth, real	3.58	4.89	3.30	5.12	5.36	5.22	5.76
Labour productivity growth, real	-1.52	-2.28	-3.66	1.64	7.81	7.49	0.76
Average nominal wage (monthly)	345,514	390,690	441,773	518,451	809,375	1,034,214	1,472,191
Wage growth, real	5.36	-6.85	-7.49	-3.33	32.34	7.99	23.78
Wage/GDP ratio	19.61	16.97	14.00	12.66	15.55	16.67	22.84
Interest rate, nominal	44.28	50.40	38.65	33.92	13.05	17.19	11.50
Exchange rate, Average annual, K	3,711.43	3,573.32	4,310.49	4,366.17	4,760.73	4,434.07	3,577.74

Source: Own calculation based on CSO publications

2.1.5. Public Finances

The government overall revenue performed relatively well between 2002-2006 with an annual increase of 28.5 percent on average, slightly above that of total expenditure. However, the share of tax revenue to total revenue decreased in 2002 and 2003 before it slightly went up between 2004 and 2006 and stood at 75 percent in 2006. This is mainly due to the significant increase of total expenditure in absolute terms as well as a percentage to GDP during the 2000-2003 that prompted an extensive demotic borrowing before expenditure was brought under control following a strict discipline on spending implemented in 2004 and included a cap on the wage bill, a measure that resulted in reduction of domestic borrowing as well.

Table 2.1.5.1. National Budget, 2002-2006

	Actual				Est.	Budget
	2002*	2003	2004	2005	2006	2007
Revenues						
Total	**2,810.1**	**4,810.9**	**6,203.8**	**7,306.4**	**8,184.7**	**9,844.9**
Recurrent Revenue	2,810.1	3,554.7	4,535.7	5,426.0	6,320.6	7,786.9
Tax revenue	2,755.5	3,447.6	4,427.0	5,342.4	6,141.6	7,586.5
Customs and Excise duties	695.4	806.2	1,033.7	1,253.7	1,389.9	1,715.3
Income taxes	1,240.9	1,606.4	2,027.4	2,416.7	2,901.4	3,362.7
V AT	816.6	1,026.9	1,361.4	1,633.1	1,791.5	2,431.2
Minral revenue	2.6	8.1	4.5	38.9	58.7	77.3
Non - tax revenue	54.6	107.1	108.7	83.6	179.0	200.4
Grants	0.0	1,256.1	1,668.1	1,880.4	1,864.0	2,058.0
Expenditure						
Total	**3,269.3**	**4,755.1**	**5,988.1**	**7,266.9**	**8,320.0**	**9,194.3**
Recurrent expenditure	2,657.7	3,826.9	5,285.3	6,444.4	5,470.1	6,150.1
Capital expenditure	611.5	928.1	702.8	822.5	2,849.9	3,044.2
Gross Surplus (Deficit)	**-459.2**	**55.8**	**215.7**	**39.5**	**-135.3**	**650.6**
Financing						
Total	**483.2**	**442.5**	**1,320.4**	**1,643.5**	**1,231.5**	**1,859.4**
Internal Borrowing	483.2	5.5	0.0	0.0	706.0	543.4
HIPC/MDRI Resources	0.0	0.0	0.0	0.0	27.3	199.1
External Borrowing	0.0	437.0	1,320.4	1,643.5	498.2	1,116.8
Surplus (Deficit)	**24.0**	**498.3**	**1,536.1**	**1,683.0**	**1,096.2**	**2,509.9**
Exceptional Revenue						
Total	**337.8**	**101.7**	**149.9**	**218.3**	**397.8**	**433.5**
Net Surplus (Deficit)	**361.9**	**600.0**	**1,686.0**	**1,901.3**	**1,493.9**	**2,943.4**

Source: Financial Reports for the years of 2002 – 2006, and the budget for the year of 2007, MOFNP.
* The MOFNP financial report of the year 2002 did not report Grants.

Figure 2.1.5.1. Revenue and Expenditure as a Percentage of GDP
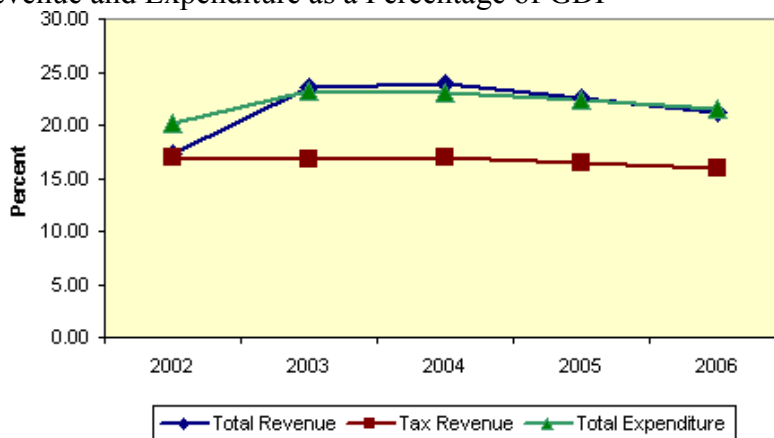
Source: Own calculation based on the annual financial reports and national budget, MOFNP.

2.1.6. Social Security Situation and Social Budget

Combining changes in the labor market with those of the demographic environment during the 1996 and 2005 would showcase the magnitude of the overall demand for transfers (both within households and from outside, public or private). Figure 2.1.7.1 illustrates the development of the transfer dependency ratio measured as a proportion of non-employed population to the employed.

Figure 2.1.6.1. Transfer Dependency Ratio 1996-2005
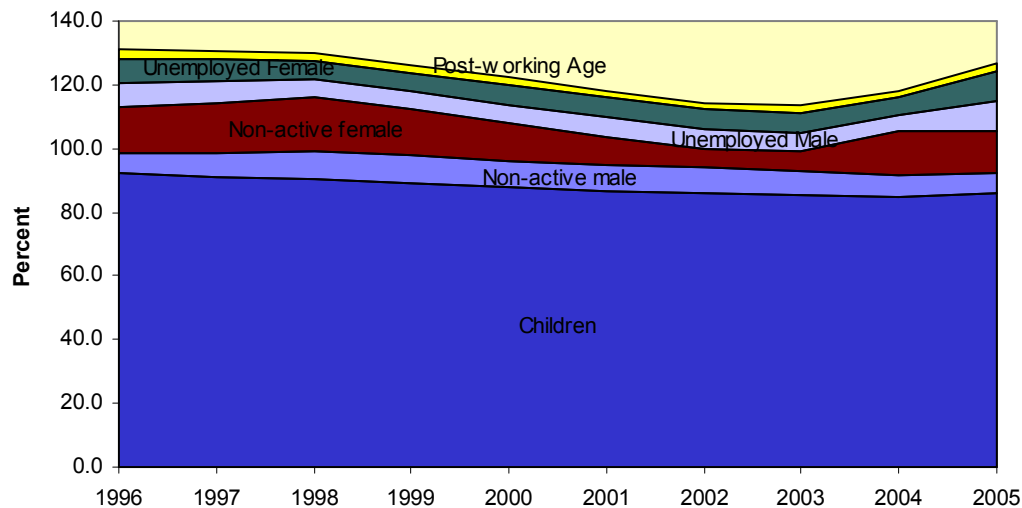
Source: Own calculation based on demographic and labor market data.

The current statutory social security arrangements in Zambia are designed for employees in the formal sector on a compulsory basis. They provide benefits on three contingencies: Old Age, invalidity and survivorship. In 2005, the aggregate number of contributors stood at 498,486 compared with 436,066 employees in the formal sector. While the compulsivity of the law ensured high coverage rate for the formal sector employment, it is expected that the definition of formal sector by the CSO excluded employers who have complied with the prevailing regulations concerning social security. There are also a few cases were employers are operating without social security provisions to their employees due to the lack of proper definition of which employees fall in the informal and formal sectors. It is worth mentioning that there is a provision in the law for coverage of the informal sector. Nevertheless, there have been no serious efforts exerted to capture employment in the informal sector. This is largely due to administrative and logistical challenges. In proportion to total employment, coverage is found at low rate around 12.2 percent of those who are employed against the estimated need for transfer expressed in figure 2.1.6.1.

In addition to the Public schemes, Private employers are free to establish occupational pension schemes for their employees. The government policy has been to bring all public schemes into one national pension scheme, while allowing occupational schemes to act as supplementary schemes. In 2005, private occupational schemes cover 43,514 employees.

Table 2.1.6.1. Zambia's Social Budget-2004

	MK	Percent of GDP
EXPENDITURE		
1. Pensions	**354,080.6**	**1.36%**
1.1. Benefits	256,881.2	0.99%
1.1.1. Statutory Schemes	192,129.6	0.74%
1.1.2. Occupational Schemes	64,751.6	0.25%
1.2. Administrative and Other Expenses	97,199.4	0.37%
2. Short-term	**131.0**	**0.001%**
1.1. Work-accident compensations	107.8	0.00%
1.2. Administrative Expenses	23.3	0.00%
3. Health	**1,122,823.5**	**4.32%**
3.1 government	332,756.0	1.28%
3.2. Donor	790,067.5	3.04%
4. None-contributory social assistance	**51,653.8**	**0.20%**
4.1. Government	49,292.5	0.19%
4.2. Donor	2,361.3	0.01%
5. Others	0.0	0.00%
Total current social expenditure	**1,528,688.9**	**5.88%**
6. Change of reserves	491,455.5	1.89%
6.1. Statutory Schemes	354,590.5	1.36%
6.2. Occupational Schemes	136,864.9	0.53%
Total social expenditure	**2,020,144.3**	**7.77%**
INCOME		
1. Social security contributions	**497,510.9**	**1.91%**
1.1. Statutory Schemes	372,267.0	1.43%
1.2. Occupational Schemes	125,243.9	0.48%
2. Investment income	**201,311.5**	**0.77%**
2.1. Statutory Schemes	112,574.0	0.43%
2.2. Occupational Schemes	88,737.5	0.34%
3. Funds' other income	62,691.9	0.24%
4. Income from donors	792,428.7	3.05%
5. Income from general revenues	466,201.3	1.79%
Total Income	**2,020,144.3**	**7.77%**

Source: Own compilation of data from different sources.

2.2. Health Care System

The health policy in Zambia is anchored on the rights based approach that treats health care as a basic human right guaranteed and accessible to every citizen. To meet this ultimate goal, the government of Zambia initiated a process of restructuring the health sector started in the early 1990s and led to the adoption of a Basic Health Care Package (BHCP) as the framework under which public health care should be delivered. The BHCP defines the health care services that should be delivered at all levels of health care and aims at ensuring effectiveness of resource allocation while achieving the greatest impact on the health status for the population. However, the health care system in Zambia has remained at a level that does not ensure a sufficient provision of services to effectively support significant disease reductions or to curb the deteriorating overall health conditions as explained in section 2.1.2.. While the health sector is faced with many challenges, the high prevalence of HIV/AIDS has in particular constituted an over whelming demand on the already limited resources and contributed to a major imbalance between the market forces for the healthcare.

2.2.1. Trends in the Health Care – Supply Side

The health care delivery system in Zambia is still dominated by a strong role of the government. The latest LCMS 2004 showed that health care facilities run by the government were found to offer most of the health care services in Zambia. 82 percent of those who consulted over their illness reported that they visited one of the government health facilities. Other players in providing health care are mostly missions' institution and private-for-profit health care providers.

Figure 2.2.1.1. Medical Institution Visited by Ownership, 2004
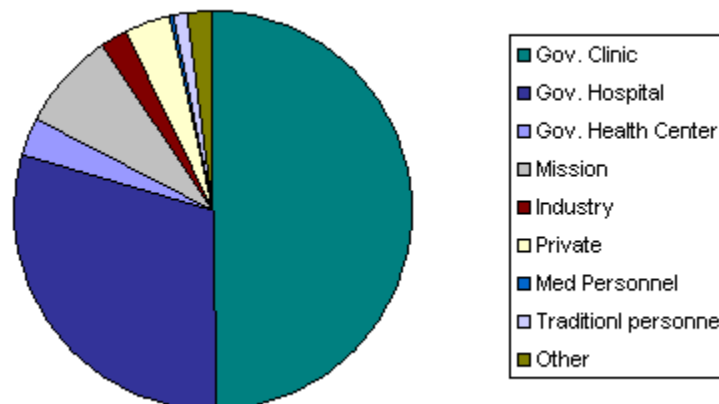
Source: LCMS 2004

The organization of the health care system follows a pyramidal structure complemented with a referral system between all levels of health care. At the bottom is the district level including health centers and district hospitals that provide first level care. The second step is the provincial level providing secondary level care. A third level is tertiary level of care.

Table 2.2.1.1. Distribution of Health Institution by ownership, 2002

	Level 1		Level 2	Level 3
Ownership	Health centre	Hospitals	Hospitals	Hospitals
Government	1'071	36	12	5
Private	98	17	0	0
Missions	61	21	6	0
Total	1'230	74	18	5

Source: Health Institutions in Zambia, Central board of Health 2002.

Prior to the restructuring of the public health system, MOF allocated resources to all levels of care without considerations of efficiency and equity. However, efforts have been exerted to introduce other criteria. The district basked approach, introduced and in 1994, has made it possible for an allocation to districts proportional to its population size. Other criteria aimed at relating resources to the level of health care have been less clear. In any case, current resource allocation does not recognize issues related to vulnerability and special needs of certain population groups.

The government commitment to evidence-based and cost effective interventions through the introduction of the BHCP has led to devoting more resources to prevention programs and services provided in the first level. Nevertheless, a close examination of the functionality of the current referral system would suggest that the referral hospitals in the second and third levels have an excess capacity, measured by bed occupancy rates, relative to that of the district hospitals in the first level and also against a bench mark of an occupancy rate equal to 80 percent.

Table 2.2.1.2. Governmental Hospitals and Bed Distributions, 2002.

Care Level	Beds	Occupancy rate	Actual need for bed	Access (shortage)
First Level	7'100	0.82	7'235	-135
Second Level	5'133	0.43	2'740	2'393
Third Level	4'254	0.29	1'529	2'725
Total	16'487	0.56	11'504	4'983

Source: own calculation based on Health Institutions in Zambia, Central board of Health 2002, LCMS 2004.

The public health care system has been constantly faced with a sever shortage of health staff, which undermines its capacity to cope with the worsening disease burden in Zambia. The Health Sector Joint Annual Review Report of 2005 indicated that the HR situation in the health sector is getting close to becoming a disaster. It further estimated the number of available staff in 2005 at less than 50 percent of the recommended establishment.

Table 2.2.1.3. Population/Medical Staff Ratios, 2005

Staff Category	Population / Staff Ratio	
	Existing ratio	Recommended ratio
Doctors	17'767	4'940
Nurses	1'883	679
Mid Wives	5'050	2'029
Clinical Officers	9'886	2'841
Pharmacists	478'234	270'543
Pharmacy Tech	136'638	94'690
Lab scientists	459'104	227'256
Lab. Technologists	114'776	54'109
Lab Technician	39'307	8'741
Dental Surgeon	819'829	344'327
Dental Technologist	286'940	37'876
Dental Therapist	5'738'806	37'876
Physiotherapist (degree)	0	227'256
Physiotherapist (diploma)	133'461	45'451
Radiologist	3'825'870	344'327
Radiographers	82'573	56'814
Paramedics	35'868	1'894
Nutritionist	176'579	56'814
Support Staff	1'043	1'136
Total	495	230

Source: Health Sector Joint Annual Review Report 2005

The labor-intensive nature of the health service highlights this issue even further and makes it the most critical supply side constraint limiting the effectiveness of the overall health system in Zambia. Current interventions to address the staff shortage have been often in the nature of non-wage incentives to retain staff, which does not seem to have a significant impact. The MOFNP's strict discipline on spending, which has been implemented since 2004 and included a cap on the wage bill have been exacerbating the HR crisis and will not allow for improvements in the above ratios throw wage incentive to attract new staff and/or retaining the existing ones.

The quality of health services provided by the government facilities has been even further compromised with shortage of essential drugs and the inability to dispense drugs they prescribe. The drug availability for health centers and hospitals were estimated at 74 and 82 percent, respectively.

The liberalization process has increased, though still modest, the role played by the private sector in the delivery of health care. Other developments that have given space for the private sector includes the public-private sector partnership in the health sector, which allows for sharing technologies, staff and facilities between the two sectors. In another initiative, the government, private sector, and NGOs jointed resources to deliver basic health care, especially to under coverage rural areas.

2.2.2. Trends in the Health Care – Demand Side

The LCMS 2004 indicated that only 56 percent of those who reported illness consulted over their illness during the two-week study period. 26 percents of persons reported illness used self-administered medicine and 18 percent did nothing about it. This comes in contrast to the government policy of accessible health care services to those they need it.

Figure 2.2.2.1. Health Care Consultation by Age Group in Percent of Reported Illness, 2004
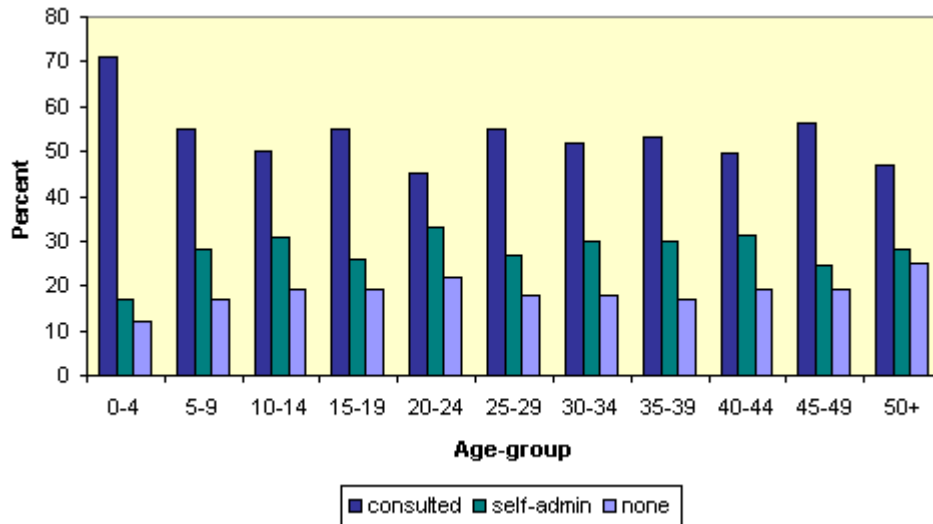
Source: based on LCMS 2004

Differences were found between rural and urban populations in terms of consulting over illness. The LCMS 2004 indicated that 61 percent of urban residents consulted over their illness compared with 54 percents of residents in rural areas. Furthermore, the percentage of those who did nothing about their illness in rural area was almost double that in urban area.

Figure 2.2.2.2. Health Care Consultation by Urban/Rural in Percent to Reported Illness, 2004
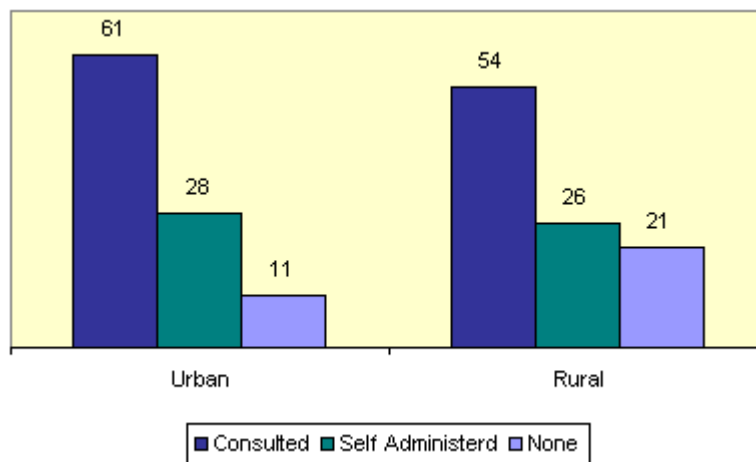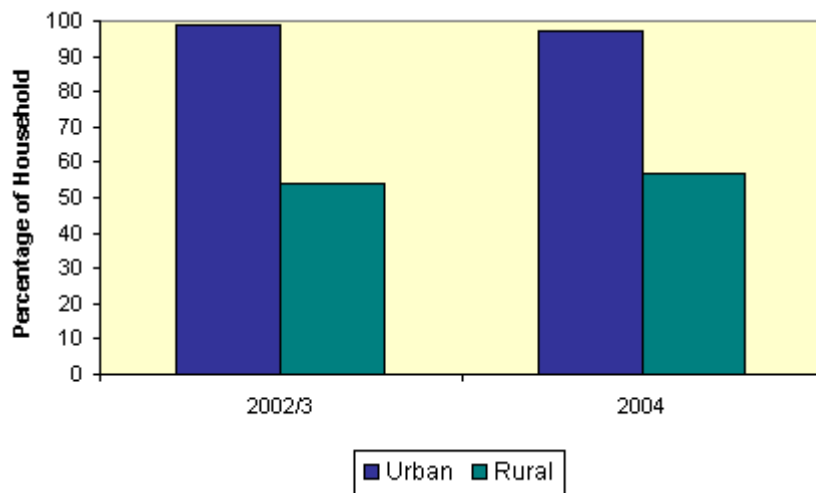

Source: based on LCMS 2004

While the LCMS of 2004 did not follow up with surveyed persons on reasons for not consulting health facilities when needed, the LCMS of 2002/2003 reported that 18 percent of households that did not use a health facility stated that the reason for not doing so was that the health facilities were too far, 15 percent stated that they were too expensive and 10 percent indicated that they were of poor quality.

Proximity to health care is in particular more significant impediment to health care access in rural communities. Despite of the increase in the proportion of households that live within 5 km from health centers from 69 percent in 2002/3LCMS to 75.5 percent in 2004, the gap between rural and urban populations is still significant and therefore contributed to the low access rate to health facilities in rural communities.

Figure 2.2.2.3. Percentage Distribution of Households live within 5 Km to Health Facility, 2002-2004

Source: based on LCMS 2002/3 and LCMS 2004.

Improvements have also been made since the LCMS 2002/3 in respect to the financial cost of access. In line with the government commitment to accessible health care to all citizens, the government abolished user fees in all public health facilities in _____ districts on April 1st, 2006, and is expected to completely abolish it in all districts by 2009/10. However, unavailability of essential drugs prescribed at health facilities continued to impose a disincentive for health care utilization.

In terms of equity, self-reported utilization of health services seems not to change systematically with income as shown in figure 2.2.2.7. However, a study by Caesar Cheelo, Manenga Ndulo and Knut Ödegaard found that the burden of the households' expenditure on health care tend to change with level of income. Although the average cost of a visit for households in upper income quintile is 2.6 times more than the average cost of a visit for households in lowest income quintile, the proportion of visits cost to the household overall expenditure is higher for households in lowest expenditure quintile compared with those in the upper quintile and estimated at 2.3 and 0.4 percent, respectively. It is important to note that this study was conducted prior to the full abolishment of the health facility user fee.

Figure 2.2.2.4. Percentage of People Reported Utilization of Health Services When They Needed, 2003
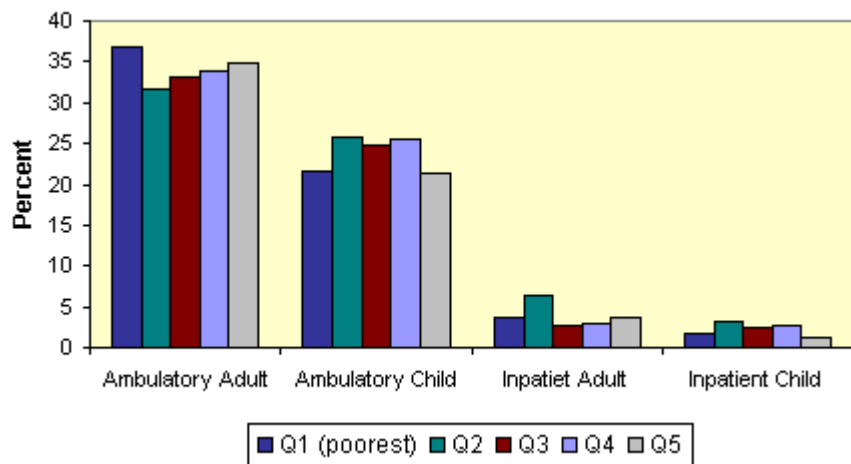
Source: based on the World Health Survey.

As shown earlier, most of those consulted over their illness visited a government-owned institution. The Ministry of Health statistics reported a total 10.5 million outpatient cases in 2003, which is an outpatient utilization rate of 0.98 per capita for government health facilities. While there is no explicit data on the age structure of the attendees, we used the LCMS 2004 to construct the outpatient J-curve. The approach used is to derive the outpatient utilization rate for each age group from the overall utilization rate of 0.98 by employing the slope of the curve of the proportion of those who reported illness and consulted a government health facility to the overall population by age group.

Figure 2.2.2.5. Government Health Facility Outpatient Utilization Rate by Age Group, 2003-4.
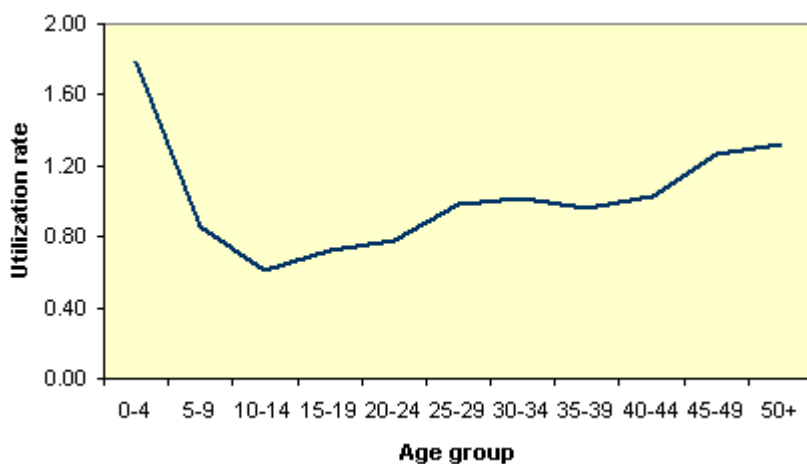
Source: Own calculation based on the LCMS 2004 and MOH data.

The Ministry of Health statistics also reported 724 000 cases admitted to the first level health care before being transferred for upper level health care. It is estimated that there would be acute cases admitted directly into the second referral and third referral hospitals at a rate of one for every 10 000 for each level. On average, the length of stay at each level is estimated as follows:

Table 2.2.2.1. Hospital Length of Stay by level of Care

Level of Care	Length of stay
District Hospital-First level	3
General hospital-Second Level	8
Central Hospital-Third Level	14

Source: Cost of a Basic Health Care package, 2004

2.2.3. Trends in Expenditure on Health Care

The main financing sources for the health care in Zambia are Government, households, and donor. Private Health insurance, employers and other sources remain insignificant sources for financing health care. The NHA for the year 2004 estimated the overall expenditure on health at 7.2 percent of GDP. The increase was remarkable since 2001 and largely attributed to a sharp increase in external donor participation in the health sector.

Figure 2.2.3.1. Health Care Expenditure by Financing Sources as Percentage to GDP, 1996-2004
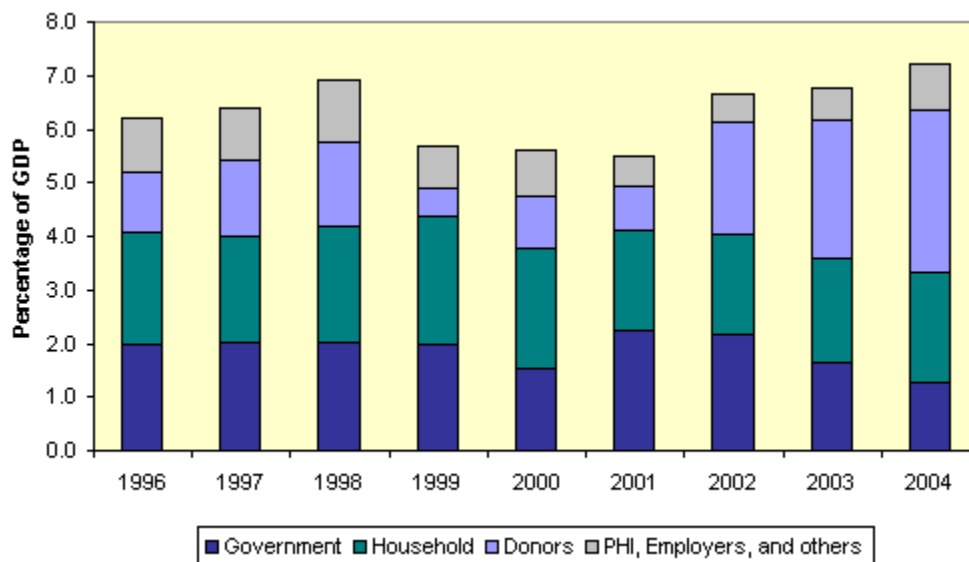
Source: based on NHA2002-2004, MOH

In the 2000s, the health sector observed a major change in positions of financing sources. While historically the household constituted the major financing source, the government overtook the lead over the period of 2001 and 2002. Most importantly, the double-digit growth in donor resources in the year 2002 and the remind high rate of growth in real terms moved donors from the third place prior to 2001 into slightly less than the government proportion in 2002 to the first position in 2003 and onward.

Figure 2.2.3.2. Health Care Expenditure by Financing Sources as Percentage of Total Health Expenditure, 2000-2004
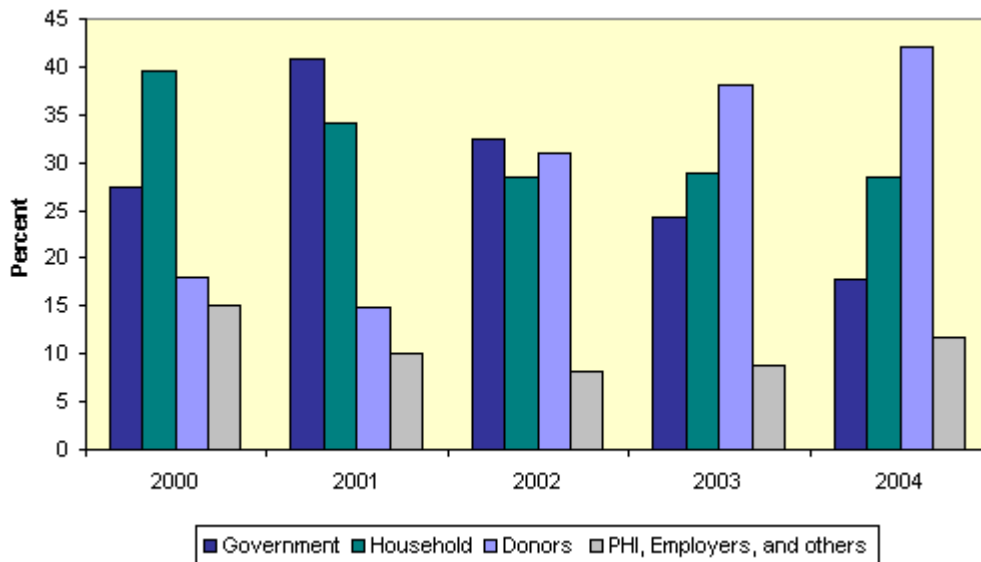
Source: based on NHA2002-2004, MOH

The constant decline in the government proportion of the overall health expenditure was partially explained by the significant increase in donors' contribution. However, the real growth of government expenditure on health started slowing down in 2001 and became even negative in 2002-2004, indicating that the increase of government allocation of funds to the health care was not even sufficient to offset the inflation pressure.

Figure 2.2.3.3. Real Growth in Health Expenditure by Source of Financing, 2000-2004
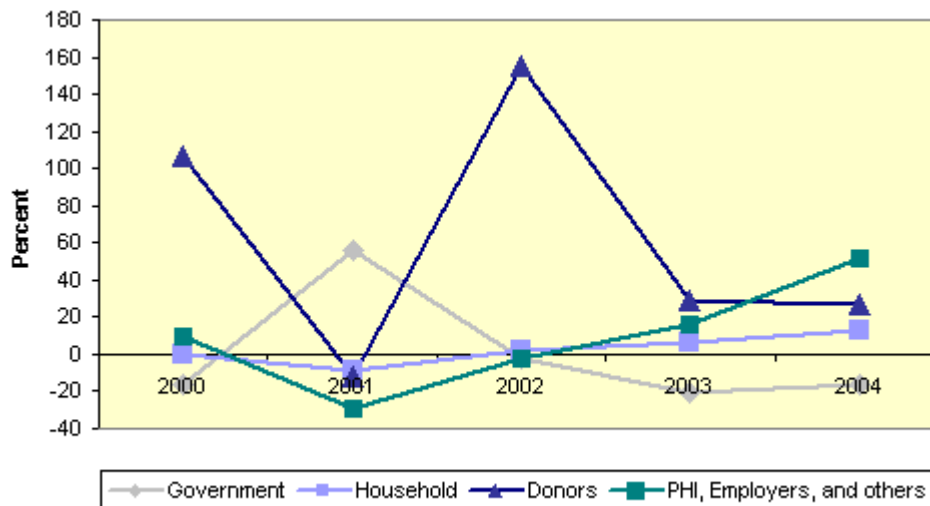
Source: Own calculation based on NHA2002-2004, MOH

The cut in real term spending on health care by the government made it unlikely to meet its commitment to allocate a minimum of 15 percent of national budget to the health sector in line

with the Abuja and Maputo Declarations. The 2004 allocation was estimated at 4.7 percent only and is not expected to have changed significantly since then due to the strict discipline on public expenditure.

The Government spending from its sources in per capita was also very low at 30 thousand K ($6.3 at average exchange rate). This constitutes only 16.7 percent of the estimated cost of the BHCP of $37.70 in per capita basis (including costs associated with fighting HIV/AIDS). In the positive side, however, the overall per capita expenditure on health increased drastically by 78 percent between 2002 and 2004, from a low level of 71.24 thousand K in 2002 ($19.94 at average exchange rate) to a record high level of 169.5 thousand K ($35.6 at average exchange rate, the WHO estimated it for the same year at $30). This is slightly higher than the WHO estimate for the per capita cost of essential intervention package for health for a low-income country like Zambia estimated at $34. Zambia is also ranked favorably compared with other African countries.

Table 2.2.3.1. Per Capita Expenditure on Health Care, US $ Average Exchange Rate, 2004

Country	Overall Per Capita	Government Per Capita (FA)
Zambia	30 (WHO)	16 (Gov as FA)
	35.6 (NHA)	6.3 (Gov as FS)
Kenya	20	9
Malawi	19	14
Mozambique	12	8
Namibia	190	131
Uganda	19	6
United Republic of Tanzania	12	5
Zimbabwe	27	13

Source: WHO and NHA 2004.

In the above table, the WHO estimate for the per capita expenditure on health by government includes all funds distributed through the government. We included another estimate that defines the government as the source of funds only and based on the previous analysis. The significant difference is mainly due to the external donors' funds channeled through the government, which amounted to 55.6 percent of all disbursements from the government.

In addition to financing its own health facilities, the government provides mission health facilities a minimum of 75 percent of the funding provided to an equivalent own facility. Out of the total cost, only 40 percent is allocated to the first level health care, which fell short of the recommended spending level of 77.5 percent estimated by the BHCP.

Figure 2.2.3.4. Government Health Expenditure by Level of Care, 2004

Legend:
- Tertiary
- Secondery Care
- Primary Health Care
- Mission
- Statutory Boards
- Central Admin
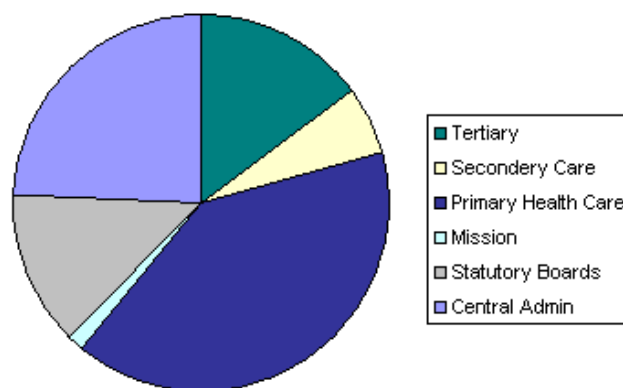
In terms of expenditure by line items, personnel emoluments accounted for most of the government spending in health care. In 2004, personnel emoluments' share of the overall government own funds allocated to the health care stood at 67 percent. It is worth mentioning that the cap on the wage bill implemented by the MOFNP in 2004 has resulted in a constant decline in this ratio from 67 percent in 2004 to a low level projected at less than 50 percent in 2009. This ratio is lower than those of developing countries and essentially constitutes an impediment to reach acceptable levels of population/staff ratios to effectively tackle the deteriorating health conditions in Zambia.

Household spending in health care accounted for 28.4 percent of total health expenditure in 2004. Households spending are mostly out-of-pocket in the form of use fee to consult at health facilities (private or public) and also to procure drug from drug stores.

Figure 2.2.3.5. Households Expenditure by Provider, 2004

Legend:
- Private for Profit
- Pharmacies/drugs
- Traditional Healer
- MOH facility: use fee
- Others
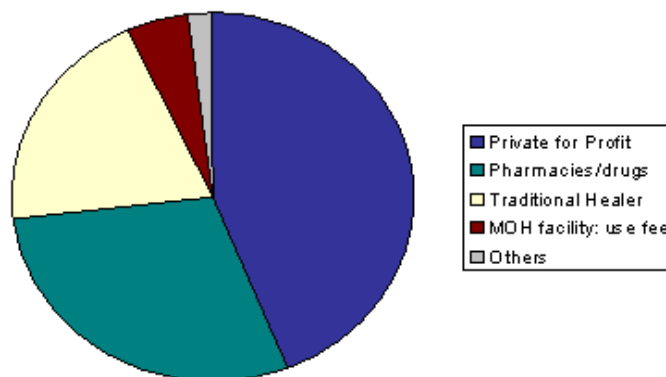
Other players in the health care system are employers and private health insurance. Employers' share of overall health expenditure increased slightly between 2002 and 2004 but remained low at less than 7 percent and is largely through pre-payment schemes. Private health insurance is still minimal with only 0.2 percent of overall health spending is channeled through private health insurance. The coverage was estimated at 30 000 members in year 2004, which represents less than 7 percent of the total formal employment.

3. FUTURE DEVELOPMENT AND PROJECTIONS

3.1 Projection Approach

The study uses the ILO's modular approach to derive the health sub-model and its projections. Figure 1.3.1. page 3 illustrates the model components and its dependency structure.

3.2. Projections of Health Care Determinants

3.2.1. Demographic Projections

The population projection is obtained directly from the revised population projections conducted by the CSO, 2000. Several techniques were employed to smoothen the data in order to obtain population by single age and for each single year. The following table presents a summary of the results.

Table 3.2.1.1. Population by Age Group in Thousands, 2005 - 2025

Population	2006	2007	2008	2009	2010	2015	2020	2025
Total	11,791	12,120	12,452	12,819	13,224	15,079	17,161	19,615
Pre-working age (0-14)	5,288	5,418	5,545	5,707	5,912	6,875	7,713	8,626
Percent	44.8%	44.7%	44.5%	44.5%	44.7%	45.6%	44.9%	44.0%
Working age (15-64)	6,201	6,392	6,591	6,790	6,985	7,830	9,013	10,471
Percent	52.6%	52.7%	52.9%	53.0%	52.8%	51.9%	52.5%	53.4%
Post-working age (65+)	303	310	316	322	328	375	434	517
Percent	2.6%	2.6%	2.5%	2.5%	2.5%	2.5%	2.5%	2.6%
Dependency Ratio								
Youth DR	94.4	91.5	92.7	87.8	85.8	84.6	87.8	85.6
Old-age DR	5.2	5.3	5.3	5.3	4.9	4.7	4.8	4.8
Total DR	99.6	96.9	98.0	93.1	90.7	89.3	92.6	90.4

Source: Own calculations based on the CSO projections, 2000.

3.2.2. Labor Market Projections

The population projections are fed into the labor market model as an input. The following diagram presents the systematic approach employed to derive the labor force components.

Figure 3.2.2.1. Labor Force Projection Overview
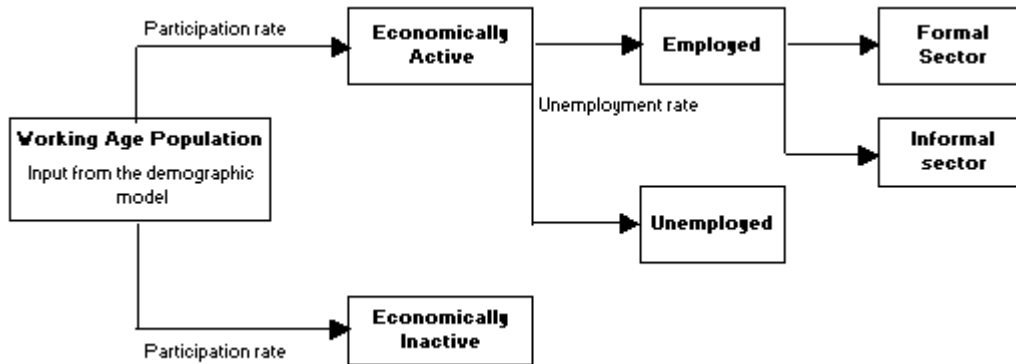
Assumptions were made explicitly on participation rate, unemployment, and the distribution of the employed populations between formal and informal employment. For the participation rate, it is assumed that the most recent labor force participation rates by age group of 2005 will stay the same over the projection period. This would allow only the demographic changes to determine the economically active population. However, for the unemployment rate, it is assumed that unemployment rates are expected to decline with different degrees for all age groups, except the last age-group bracket. As a result, total unemployment rate declined from the 2005 levels of 14 and 17 percent for male and female, respectively to reach by 2025 only 10.56 and 11.06 percent for male and female, respectively. Employed population then is estimated as the residual of the economically active population minus those unemployed.

The formal sector future development is modeled based on two assumptions: firstly, total formal employment as a percentage of overall employment increased over the projection period from 11.38 percent in 2006 to 14 percent in 2025. Secondly, the share of the private sector in the total formal employment increased from 65.14 in 2006 to 70 percent in 2025. As a direct result of these assumptions, the pace at which government employment increases would be lower than that of the private sector formal employment, reflecting the observed trend in Zambia over the past few years.

Table 3.2.2.2. Summary of the Labor Force Projection Results

	2006	2007	2008	2009	2010	2015	2020	2025
Working-age	6,201	6,392	6,591	6,790	6,985	7,830	9,013	10,471
Economically Active	4,978	5,133	5,293	5,455	5,616	6,334	7,250	8,410
Employed	4,288	4,430	4,578	4,728	4,879	5,565	6,421	7,503
Unemployed	690	702	715	727	738	769	829	907
Economically Inactive	1,223	1,260	1,298	1,335	1,368	1,496	1,763	2,061
Participation Rate	80.3	80.3	80.3	80.3	80.4	80.9	80.4	80.3
Employment Rate	86.1	86.3	86.5	86.7	86.9	87.9	88.6	89.2
Unemployment Rate	13.9	13.7	13.5	13.3	13.1	12.1	11.4	10.8
Formal / Employed Ratio	11.4	11.5	11.7	11.8	11.9	12.6	13.3	14.0

Source: Own calculations.

3.2.3. Macroeconomic Projections

Real GDP growth assumed to consist of employment growth and a mark up. The mark up is assumed 2.5 percent in 2007 and decreased linearly to reach 1.5 percent in 2025. Labor productivity growth is derived directly from the real GDP growth. Growth in real wages is assumed to equal labor productivity growth. For inflation, the assumption is that the observed downward trend will continue over the projection period to reach 8 percent in 2025. Real interest rate is projected based on the assumption that it will converge to 4.5 percent by 2025. Nominal indicators are obtained by employing the estimated inflation rate.

Table 3.2.3.1. Summary of the Macroeconomic Projection Results

Economic Indicators	2006	2007	2008	2009	2010	2015	2020	2025
GDP, current prices, bln K	38,586	45,796	54,220	64,000	75,289	159,225	318,819	603,535
Inflation (CPI)	15.00	12.18	11.95	11.72	11.49	10.32	9.16	8.00
GDP growth, real	5.76	5.79	5.76	5.66	5.52	4.87	4.83	4.49
Labour productivity growth, real	0.75	2.42	2.37	2.31	2.26	2.00	1.73	1.46
Employment growth	4.96	3.29	3.31	3.27	3.19	2.81	3.05	2.99
Average nominal wage (monthly)	1,472,191	1,691,535	1,938,506	2,215,781	2,526,161	4,680,417	8,116,299	13,165,932
Wage growth, real	23.78	2.42	2.37	2.31	2.26	2.00	1.73	1.46
Wage/GDP ratio	22.84	23.12	23.40	23.67	23.95	25.34	26.72	28.11
Interest rate, nominal	11.50	9.22	9.43	9.65	9.86	10.91	11.91	12.86

Source: Own calculations.

3.2.4. Public Finance Projections

This study requires an assessment of the overall fiscal space over the projection period. For the year 2007, the study uses the national budget estimates. The study then uses the short-term projections provided by the 2007-2009 Green Paper, published by the ministry of finance. For subsequent years, tax revenues, grants, recurrent expenditure and development expenditures as a percentage of GDP is held constant.

3.3. Health Care Modeling and Expenditure Projections

3.3.1. Model Description

The model is a demand-driven approach, reflecting the government view of health care as a basic human right guaranteed and accessible to every citizen. The first component of the model is to project the development of health care utilization rate. In section 2.2.2, the derived J-curve provides utilization rates by age groups. The shape of the curve is assumed to remain constant over the projection period. The overall utilization rate was projected based on assumptions for the study three scenarios as explained in later sections. The distribution of outpatient cases and inpatient cases among health care providers reflect the pattern described in section 2.2.1. For the government facilities, the model distributes consulted cases among the different level of health care assuming a functioning referral system. A Markov stochastic model has been built to simulate such a referral system.

Figure 3.3.1.1.Probabilistic Distribution of Consulted Cases Among Government Health Facilities
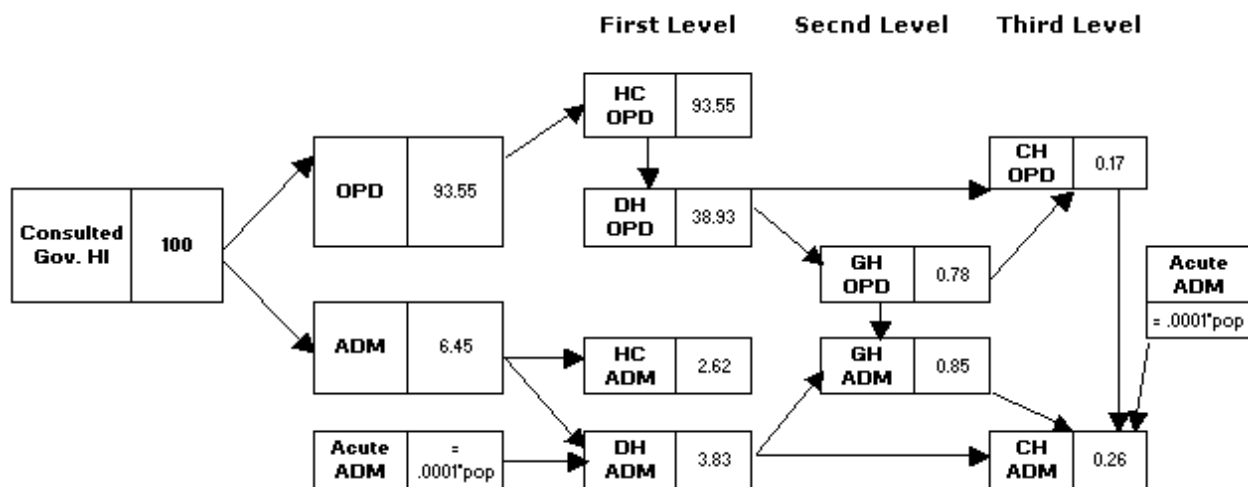
Source: Own calculation based on the cost of health care package, MOH, 2004.

For example, the conditional probability of someone who consulted a government health institution to end up admitted in a general hospital (second level) is 0.85 percent. Multiplying these probabilities with total population who consulted (derived by multiplying utilization rate by the overall population) gives us the demand side on the three levels of health care in Zambia. For the same example, the total number of admitted cases in General hospital in 2004 is obtained by multiplying the total population (11,067,729) with the utilization rate of governmental institution (1.047) and by 0.85 percent, this gives us 98,497 cases. The system also allows for direct acute cases to be admitted directly into second and third level hospitals, the rate uses is 1 case for every 10 000. So for the same example, we have in total admitted cases in general hospitals of 99,654 cases in 2004. The same approach can be used to derive the total cases at any outpatient/inpatient level of health care. Once the utilization rate is projected, the same approach can be replicated for subsequent years. In a similar way, cases in mission health institutions were projected.

The cost structure is projected separately at each level of health care and also for all health care providers.

3.3.2. Assumptions

First: Assumptions for Projecting Costs at Government and Mission Health Institutions

- Cost of outpatient case in a health facility is 40 percent of the bed day cost in the perspective facility.
- Medical staff costs grow with general wage growth plus a mark up of 0.5 percent.
- Non-staff medical costs grow with inflation plus a markup of 1 percent.
- Capital costs grow with inflation, a mark up of 1 percent and the percentage increase in the number of beds.
- Utilization increases with changes in the population structure, 2.5 percent until 2009 to address the impact of the abolishment of user fees, and a mark up of 1 percent.
- Number of beds increases annually to maintain an occupancy rate of 80 percent. For the first level where there is a shortage in beds, the gab will be bridged over a five-year period.

To address the sever shortage in medical staff explained in section 2.2.1, an aggregate projections is used under several scenarios. In addition to the above assumptions, each scenario has specific assumptions.

Scenario I:
- The current population/staff ratio is held constant over the projection period.
- A cap on the wage bill by the MOFNP until 2009, after that, growth of wages follow the general assumption.

Scenario II:
- The current population/staff ratio is held constant over the projection period.

Scenario III:
- The Population/staff ratio increases linearly to reach the recommended establishment illustrated in table2.2.1 by 2025.
- The elasticity of health care utilization to changes in population/medical staff ratio is 1/3.

Second: Assumptions for Projecting Household Health Expenditure

- Household expenditure on drugs and private health care grow with inflation plus a markup of 1 percent.
- The proportion of household expenditure spent on traditional healer decreases linearly from 20 in 2004 to reach 15 percent by 2025.
- The proportion of household expenditure spent on MOH user fee will reach zero by 2010.
- The proportion of household expenditure on other items remains constant.

Third: Assumptions for Projecting Private Health Insurance and Employers Expenditure

- The number of individuals with private insurance increases by three factors: firstly, the percentage increase of the share of the formal sector employment to the total employment. Secondly, the percentage increase of the share of private employment in the formal sector employment. Lastly, a mark up of 0.5 percent.
- Health care coverage by employers is assumed at 95 percent of government employees. For employees in the private sector, the coverage is assumed at 40 percent of those who are not covered by private health insurance.
- Costs grow with inflation plus a markup of 1 percent.

Fourth: Assumptions for Projecting Health Care Expenditure by Donors

- External donor financing as a percentage of government health expenditure will be maintained at the same level.

3.3.3. Projection Results

Per capita expenditure on health care in nominal terms is projected to increase at different paces in the three investigated scenario as illustrated in figure 3.2.3.1.

Figure 3.3.3.1. Per Capita Health Expenditure in Thousand
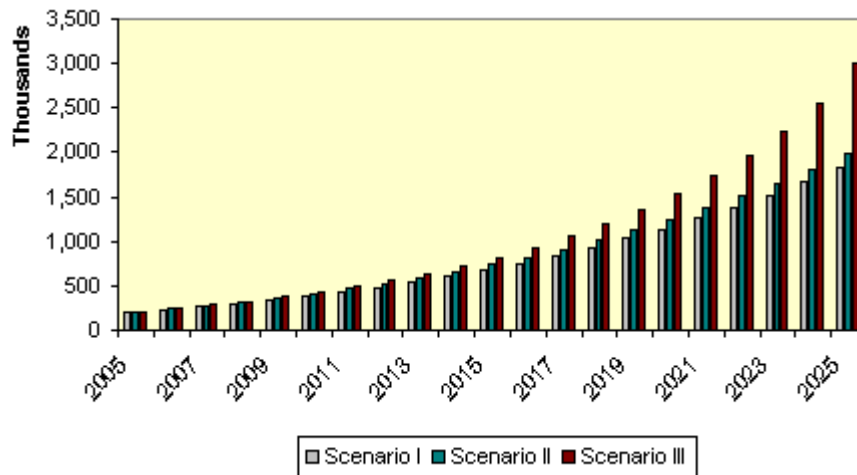
However, only does health care expenditure under the third scenario grow at a rate higher than the growth in the national economy. Moreover, THE under the first and second scenarios are projected to decline as a percentage of GDP.

Figure 3.3.3.2. Total Health Expenditure as a Percentage of GDP
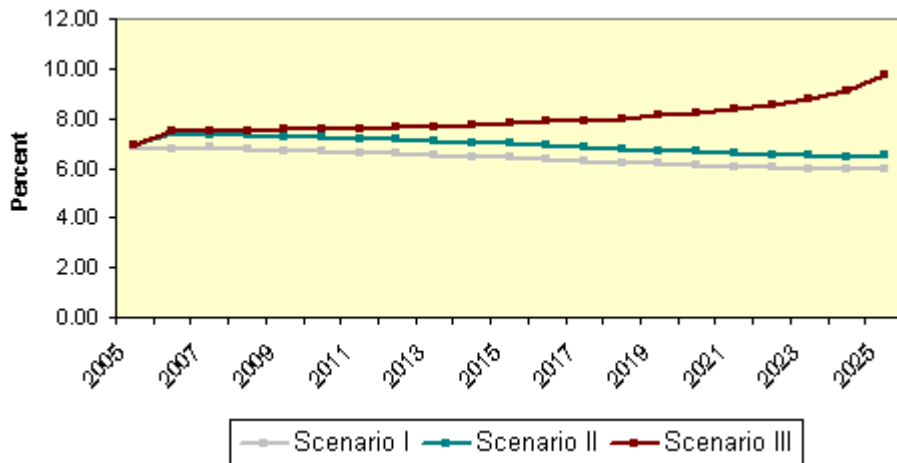
While projections under all scenarios indicate an increase in the GHE as a percentage of GDP, only is the third scenario's projection found to be significant.

Figure 3.3.3.3. Government Health Expenditure as a Percentage of GDP
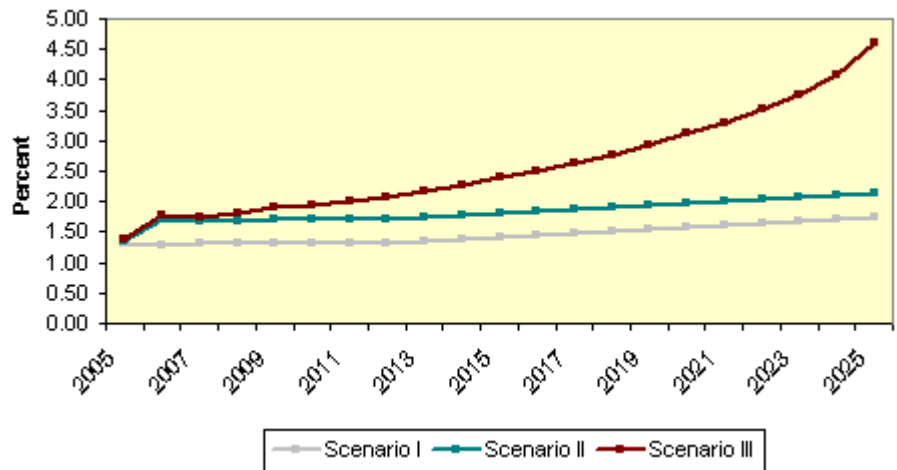
The third scenario will also allow the government to meet its commitment to allocate a minimum of 15 percent of national budget to the health sector by year 2022. Other scenarios will fall short on this commitment.

Figure 3.3.3.4.Government Health Expenditure as a Percentage of Total Government Expenditure
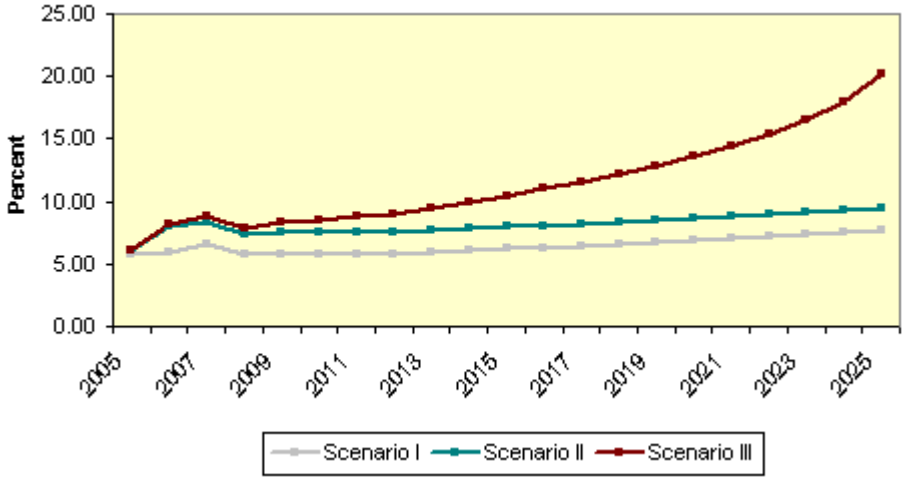
4. SIMULATING HEALTH INSURANCE

In this chapter, we build on the previous analysis and projection to investigate the feasibility and sustainability of integrating a national health insurance into Zambia's health system.

4.1. Rationale for Health Insurance

In general, the establishment of national health insurance can achieve multiple benefits. Firstly, it provides social protection to the covered population and their families through affordable regular prepayment rather than unpredictable payments at time of illness. Secondly, it encourages early consultation and examination and increased use of prevention and health promotion services. Thirdly, it contributes to improvement in the quality of health services and enables the delivery of appropriate health care to meet changing needs. Fourthly, improvements on equity in access to health care, nevertheless, this strictly depends on the scheme coverage and the presence of social assistance component in the system. Lastly, it promotes financial stability and sustainability by sound planning based on predictable revenues from defined contributions and more accurate assessment of needs through pooling of shared risks.

The Ministry of Health has recognized the potential of social health insurance as a major health care financing method through increased cost sharing by the population. It has initiated efforts to learn more about the possibility of benefiting from integrating social health insurance into the health system and the government's overall social protection strategy.

4.2. Features of the Proposed Health Insurance

In order for a national health system to realize all or most of the above benefits, it should optimally aim at reaching a universal coverage within reasonable timeframe. However, achieving this objective might not be reasonable and even possible in the case of Zambia for several reasons: firstly, the current free health service limits the incentive structure to participate in national health insurance. Secondly, even with compulsory participation, it is very hard to administer the informal sector. Thirdly, contributions, even subsidized, might lead to increase poverty.

In order to tackle the incentive structure, the proposed system will provide enhanced health care through improvements in the population/staff ratio and the availability of drugs.
The proposed system will cover the organized formal employment. Formal sector participants will pay a compulsory contribution rate levied on the wage of the breadwinner. The health insurance will then cover the contributor and his/her family. Contributions will be equally shared between employer and employee.

4.3. Assumptions

- Compulsory coverage of the formal employment.
- Compliance among the civil servants will be at 95%. For the private employers, Compliance starts at 25% in 2008 and increases to 50 % in five years before levels off at 80 percent in 10 years.
- The insurance covers the contributor, spouse and children under 15 years old.

- Horizon of 12 years for calculations of contribution rates and fund developments
- Demographic, labor force, and economic developments as projected in the previous analysis.
- Average health costs per capita as projected under the third scenario after taking into consideration the demographic structure of covered families as opposed to the general population. The adjusted per capita cost is then increased by an additional factor to enhance the availability of drugs and supply. This factor is a 50 percent increase in the projected government per capita expenditure on drugs and supplies.
- While over utilization was addressed under the third scenario, another over utilization of 5 percent to address the improved availability of drugs and supplies.
- Administration cost is 5 percent of benefit expenditure.

4.4. Results

4.4.1. Contribution Rate

Over the evaluation period, we found that the PAYG rate fluctuates between 5.18 percent and 6.22 percent. Standard interest theory methods are used to calculate the fixed contribution rate for the 12-year period. Under this rate, the expected value of benefits dispersed is equated with the expected value of contributions collected. It is found at 5.82 percent of insurable wages, to be paid by employers and employees, 2.91 percent each.

Figure 4.4.1.1. PAYG Contribution Rate Vs. Constant Contribution Rate
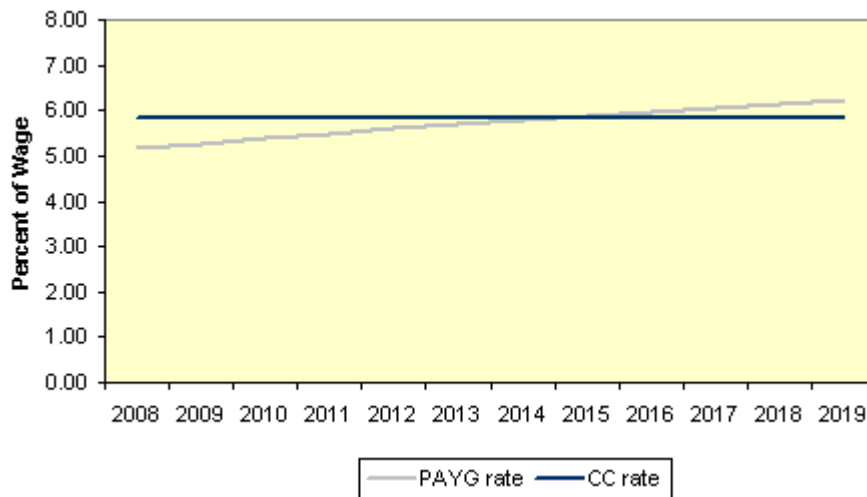
4.4.2. Future Developments of the Fund's Income Statement

Setting a fixed contribution rate means that Fund's income and expenditure would inevitably not match each other for every single year. A build up or maintenance of contingency reserve is necessary to equate the expected values of benefits and contributions over the valuation period. The following table presents the development of the fund's income and expenditure, and the level of reserve that should be maintained.

Table 4.4.2.1. Development of Fund's Income Statement and Reserve, MK

	2008	2009	2012	2015	2018	2019
Income Statement						
Contribution Recivables	423,788	543,798	1,071,103	1,949,119	3,436,799	4,048,579
Benefits Expenditure	359,249	469,568	982,521	1,879,992	3,449,127	4,048,896
	64.539	**74.231**	**88.582**	**69.127**	**-12.328**	**-317**
Administrative cost	17,962	23,478	49,126	94,000	172,456	202,445
Investment Income	0	4,494	23,462	43,327	38,051	21,521
Surplus/Deficit	**46.577**	**55.247**	**62.918**	**18.454**	**-146.733**	**-181.242**
Reserve Development						
Reserve, begining of the year	0	46,577	228,064	397,172	330,491	183,758
Reserve, end of the year	46,577	101,823	290,983	415,626	183,758	0
Reserve Ratio	0.12	0.21	0.28	0.21	0.05	0.00

5. CONCLUSIONS

- The overall social and fiscal environment in Zambia presents an opportunity to improve the health care situation. Positive trends include favorable macroeconomic conditions characterized with sustained increase in real income levels, declining inflation and improvement in interest rate environment. With exception of year 2005, unemployment rates have shown a downward trend since late 1990s. While the broad based young population has been unchanged, fertility rates and hence population growth have shown some declining trends as in many developing countries. The overall position of the government has improved as well. External debt has been lowered to unprecedented low levels and domestic borrowing is being brought under control. The international community has significantly increased its participation in the health sector.

- Improvements in the health care determinants have not been translated immediately into better health care performance. The health care in Zambia is still confronted with worsening disease burden including a high prevalence of HIV/AIDS and Malaria that led to an over whelming demand on the already limited resources and contributed to a major imbalance between the market forces for the healthcare. The capacity of Zambia's health system does not ensure a sufficient provision of services to effectively support significant disease reductions or to curb the deteriorating overall health conditions. The most critical supply side constraint that limits the capacity of Zambia's health care delivery system is the sever shortage of medical staff estimated at less than 50 percent of the recommended establishment. The HR crisis is further worsening with the implementation of the cap on the wage bill by the MOFNP that is projected to lower the personnel emolument's share of the government health care budget from 67 percent in 2004 to less than 50 percent by 2009.

- Despite of the government commitment to evidence-based and cost effective interventions, hospitals in the second and third level of health care enjoy excess capacity. Bed occupancy rates are estimated at only 43 and 29 percent for the second and third level of health care, respectively. In the other hand, the first level of health care suffers a moderate shortage of beds; the bed occupancy rate is estimated at 82 percent, slightly higher than a benchmark of 80 percent. The same conclusion is also drawn from the government spending pattern by level of health care; the BHCP recommended a resource allocation of 77.5 percent of overall health budget to the first level. However, the actual allocation is currently estimated at only 40 percent.

- The government has initiated efforts to improve access equity to health care and remove financial barriers to seeking health care. The policy of abolishing user fee is one example. Nevertheless, the inability of health facilities to dispense drugs they describe presented a major spending item in the household's spending on health care. Another impediment to seeking health care is the proximity to health facilities. This is found significant impediment among rural residents.

- The overall expenditure on health care has increased significantly during the 2000s. As a percentage of GDP, it was estimated at 7.2 percent in 2004. The surge was largely due to significant increase of external funding to the health care. However, the government

funding declined in real term over the same period and stood at only 4.2 percent of the total government expenditure. This is less than one third of the government commitment to allocate a minimum 15 percent of national budget to the health sector in line with the Abuja and Maputo declarations.

- Zambia is ranked favorably compared with other African nations in terms of per capita spending on health care. It also exceeded the WHO estimate for the per capita cost of essential intervention package for health for a low-income country. Nevertheless, the government per capita spending on health is very low and is only 16.7 percent of the estimated cost of the BHCP.

- The projection exercise suggests that overall expenditure on health will increase at a rate less than the growth in the national economy if the current population/medical staff ratio remains constant and even the cap on wage growth is no longer exist. The study investigated the possibility to allow population/medical staff ratio to decline gradually to meet the recommended establishment by 2025. Only under this scenario total health expenditure to GDP increases. Moreover, this scenario will allow the government to meet its commitment in line with the Abuja and Maputo declarations by 2022.

- The ministry of health has recognized the potential of social health insurance as a financing method of the health care. While it is not possible in the case of Zambia to aim at universal coverage for reasons related to incentive structure, administrative limitation and equity concerns, the study recommends a compulsory health insurance through the already existing social security framework of NAPSA for the public and private salaried employees and their dependents. The proposed health insurance would be based on the projection of health care that assumes improvement in population/medical staff ratio and enhanced availability of prescribed drugs. The study calculates the contribution rate at 5.82 percent of the employee's salary, shared equally between employers and employees.

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