# Assessing income redistributive effect of health financing in Zambia

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## A R T I C L E   I N F O

## A B S T R A C T

Ensuring an equitable health financing system is a major concern particularly in many developing countries. Internationally, there is a strong debate to move away from excessive reliance on direct out-of-pocket (OOP) spending towards a system that incorporates a greater element of risk pooling and thus affords greater protection for the poor. This is a major focus of the move towards universal health coverage (UHC). Currently, Zambia with high levels of poverty and income inequality is implementing health sector reforms for UHC through a social health insurance scheme. However, the way to identify the health financing mechanisms that are best suited to achieving this goal is to conduct empirical analysis and consider international evidence on funding universal health systems. This study assesses, for the first time, the progressivity of health financing and how it impacts on income inequality in Zambia. Three broad health financing mechanisms (general tax, a health levy and OOP spending) were considered. Data come from the 2010 nationally representative Zambian Living Conditions and Monitoring Survey with a sample size of 19,397 households. Applying standard methodologies, the findings show that total health financing in Zambia is progressive. It also leads to a statistically significant reduction in income inequality (i.e. a pro-poor redistributive effect estimated at 0.0110 (p < 0.01)). Similar significant pro-poor redistribution was reported for general taxes (0.0101 (p < 0.01)) and a health levy (0.0002 (p < 0.01)). However, the redistributive effect was not significant for OOP spending (0.0006). These results further imply that health financing redistributes income from the rich to the poor with a greater potential via general taxes. This points to areas where government policy may focus in attempting to reduce the high level of income inequality and to improve equity in health financing towards UHC in Zambia.

## 1. Introduction

Equity in health financing remains a major concern particularly in developing countries. The current focus of the international debate is on the need to move away from excessive reliance on out-of-pocket (OOP) spending towards a system which incorporates a greater element of risk pooling and thus affords greater protection for the poor (Mills et al., 2012). This is also the case for Zambia, a developing country in Africa. Although the country has made significant progress in primary health care such as the removal of user fees, Zambia is still struggling with poor progress toward achieving universal health coverage (UHC) (Aantjes et al., 2016). Apart from political will, poor economic growth and poverty contribute substantially to the challenges facing the country in reforming the health sector. "UHC, under different guises, is a long-standing aspiration in Zambia" (Aantjes et al., 2016 p.305). Currently, Zambia is implementing health sector reforms for UHC through a proposed social health insurance scheme. However, the way to identify the health financing mechanisms that are best suited to achieving this goal is to conduct empirical analysis and consider international evidence on funding universal health systems (McIntyre, 2012).

In Zambia, the government, private households and donors account for the bulk of health financing in the country with public funding dominating the other health financing mechanisms (Ministry of Health, 2010). Zambia's share of health services spending in the gross domestic product declined from 6.5% in 2000 to 4.8% in 2012. This is lower than the average for sub-Saharan

Africa region (5.6% in 2012) and low-income countries (5.1% in 2012) (World Health Organization, 2015). However, government spending on health as a proportion of total health spending increased slightly from 47.4% in 2000 to 52.4% in 2012. Similarly, general government expenditure on health as a share of total government expenditure slightly increased from 11.1% in 2000 to 12.6% in 2012 (World Health Organization, 2015). However, this remains below the Abuja target of 15% (African Union Heads of State, 2001). OOP spending has remained at about 30% of total health financing between 2000 and 2012 (World Health Organization, 2015).

Income inequality and poverty remain major challenges facing Zambia as the majority of Zambians (>60%) continue to live in poverty (using food poverty line supplemented by an allowance for non-food needs) and the Gini index of income inequality increased from 0.60 in 2006 to 0.65 in 2010 (Central Statistical Office, 2011) making it one of the highest in the world. There are also inequalities and inequities in the distribution of wealth and socioeconomic infrastructure across the country. This favours the urban areas and adversely impacts on the provision of social services such as health in rural hard to reach areas (Central Statistical Office, 2010b). Because financing health services impacts on income distribution in a country, it is generally accepted that a pro-poor (or progressive) health financing system that places lesser burden on the poor than on the rich, is preferred to a pro-rich (or regressive) system (Ataguba, 2012). This is because regressive health financing is usually regarded as inequitable and unfair (Wagstaff, 2002). Thus, a good financing system contributes to the overall reduction in income inequality through a pro-poor income redistributive process (Ataguba, 2012).

Although the assessments of progressivity and redistributive effect of a tax system have long attracted the attention of researchers (Zhong, 2009), measuring the overall impact of health financing on income distribution is a relatively new area of analysis even in the context of developing countries (Abu-Zaineh et al., 2009). Thus, this paper provides, for the first time, a detailed decomposition of income redistributive effect of three broad health financing mechanisms —general tax, a health (or medical) levy and out-of-pocket spending— in Zambia. Stated differently, the paper assesses the impact of health financing on income inequality in Zambia.

This paper is organized as follows; the next section addresses the methodology for decomposition including the data. Empirical results from the decomposition are presented and discussed after the methods section. Lastly is the conclusion section.

## 2. Methods

### 2.1. Data

Data come from the 2010 Zambian Living Conditions Monitoring Survey (LCMS) that is commonly known as the Indicator Monitoring Survey (IMS). The Zambian LCMS is a nationally representative household survey designed to provide household level data for the evaluation of various government policies on living conditions. The Central Statistical Office collected the LCMS 2010 data between January and April 2010 using a two-stage stratified cluster-sampling strategy (Central Statistical Office, 2010a). The first stage involved the selection of one thousand (1,000) Standard Enumeration Areas (SEAs) with Probability Proportion to Size (PPS). Subsequently, approximately twenty thousand (20,000) households are systematically selected across the SEAs, which comprised both rural and urban locations and the nine (9) provinces. With a household response rate of 98%, the complete dataset contains a total sample size of 19,397 households (i.e. 102,882 individuals)

(Central Statistical Office, 2010a). Areas covered in the LCMS 2010 include households' socio-demographic characteristics, health, economic activities, gross monthly income and expenditures.

### 2.2. Measuring ability to pay

This paper uses per capita annual household consumption expenditure as a proxy for income. This is defined as the final use of goods and services excluding the intermediate use of goods and services in the production of others (O'Donnell et al., 2008). It is inclusive of consumption from sources other than purchases from the market. This is preferred over reported income because of the lack of a well-organized labour market, lack of income for some households and a high variability of income in Zambia. In fact, household consumption expenditure is a better measure than income particularly in developing countries with a large informal sector because of its smoothing effect, which reflects long-term average wellbeing and it is less understated than income (Deaton and Zaidi, 2002).

### 2.3. Computation of health care payments

Health care payments for each household were estimated for general taxes, a health or medical levy and OOP spending. Together, these account for about 88% of total domestic health financing in Zambia. Private health insurance that accounts for about 12% has not been estimated due to absence of any reliable indicator in the LCMS 2010. Basically, for each mechanism, a household's total payments were estimated using standard assumptions made in health financing burden studies (O'Donnell et al., 2008). Tax revenue spent on health comprise only the proportion of tax revenue that is allocated to the health sector (8.2%) in 2010 (Ministry of Finance and National Planning, 2010). So, after extracting each tax category, only 8.2% of that tax revenue is used in this paper to assess the redistributive effect of health financing in Zambia.

The following tax categories were considered in this paper; direct taxes proxied by personal income tax on reported income and indirect taxes proxied by value added tax. Personal income tax was extracted from each adult within a household by applying the appropriate tax rate on reported income depending on the income category of the individual. The marginal tax rate ranges from 0% for the lowest income band to 35% for the highest income bracket. Total household personal tax contribution is the sum of all contributions by eligible adult household members. Value added tax was extracted by applying the appropriate tax rate (16%) on reported household expenditures on items that are not exempted or zero-rated. A health or medical levy is a tax (1%) on all savings accounts in banking and other financial institutions in the country. This is extracted at the household level. OOP spending, estimated at the household level, includes the costs of medicines, fees to medical personnel (e.g. doctors/medical assistant/nurses/dentist, etc.) and payments to hospital/health centre/surgery. It does not include any part of such payments reimbursed by any third party. Also, OOP spending did not include informal payments, which have been reported in Zambia and are often concentrated among the poor (Kankeu and Ventelou, 2016). Per capita estimates for taxes, health levy and OOP spending for each household were computed. Later, the paper conducts a sensitivity analysis to examine the impact of accounting for economies of scale and household composition on the results of the redistributive effect of health financing in Zambia.

### 2.4. Analytical method

This paper uses the Duclos et al. (2003) model (hereafter referred to as *DJA*) to assess the redistributive effect of health