**UNIVERSITY OF BOTSWANA**

**Faculty of Social Sciences**

**Department of Economics**

# Out-of-Pocket Health Expenditure and Savings Nexus: Evidence from the Economic Community of West African States (ECOWAS)

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**A Dissertation Submitted to the Department of Economics in Partial Fulfilment of the Requirements of the Degree of Master of Arts in Economics**

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# Approval

This Dissertation has been examined and approved as meeting the requirements for the partial fulfilment of the Master of Arts degree in Economics.

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(Supervisor)

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(Head of Department)

# Declaration

This study was conducted from September 2018 to May 2019. The study is a true reflection of my original work under the guidance of my supervisors. With the exception of references to the work of other people which have been dully acknowledged, this dissertation has neither in part nor in whole been submitted for the award of any degree at any other university.

Author:  Gameli Adika

Signature: …………………….

Date: ………………………….

# Acknowledgements

I am deeply grateful to God who gave me the strength and willingness to return to school after a decade and saw me through the completion of this programme successfully. My sincere gratitude goes to my supervisors Prof. Francis Nathan Okurut and Prof. Brothers Malema for their time, guidance and support throughout the period of this study.

# Dedication

To my wife Adjoa and the children; Kekeli and Klenam. I am grateful for their wonderful support and endurance and for allowing me to take both time and family resources to pursue this programme. May the Lord richly bless and reward them.

# Abbreviations

| | |
|---|---|
| ACBF | African Capacity Building Foundation |
| AU | African Union |
| CDG | Commission on Growth and Development |
| ECM | Error Correction Model |
| ECOWAS | Economic Community of West African States |
| DGLS | Dynamic Generalized Least Squares |
| FDI | Foreign Direct Investment |
| FE | Fixed Effects |
| GMM | Generalized Method of Moments |
| LCH | Life Cycle Hypothesis |
| MFI | Micro Finance Institutions |
| ODA | Official Development Assistance |
| OPH | Out-of-Pocket Health Expenditure |
| PDGLS | Panel Dynamic Generalized Least Squares |
| PDOLS | Panel Dynamic Ordinary Least Squares |
| PIH | Permanent Income Hypothesis |
| POLS | Pooled Ordinary Least Squares |
| PTSLS | Panel Two-Stage Least Squares |
| RE | Random Effects |
| REH | Rational Expectations Hypothesis |
| SDGs | Sustainable Development Goals |
| SSA | Sub-Saharan Africa |
| THE | Total Health Expenditure |
| UHC | Universal Health Coverage |
| WDI | World Development Indicators |

# List of Tables and Figures

Abstract

Borrowing, sale of assets and the use of current income and savings constitute the major sources of health care financing in West Africa. Consequently, a large proportion of health care financing in the sub region consists of Out of Pocket health expenditure. Specifically, between 2000 and 2016, Out of Pocket health care expenditure accounted for 50.2 percent of current health expenditure in ECOWAS. This phenomenon could have implications for achieving Universal Health Care as well as households' capacity to save. This study employed the Panel Dynamic Ordinary Least Square to examine the relationship between Out of Pocket health expenditure and savings in ECOWAS. The empirical estimates of an endogenously derived savings model established that there exists a long run negative relationship between out of pocket health care expenditure and domestic savings rate in ECOWAS. Specifically, a one percent increase in Out of Pocket health expenditure is associated with a long run reduction in the savings rate by approximately 0.1 percentage points. The study, therefore, recommends that any agenda for increasing domestic savings in ECOWAS must necessarily incorporate a strategy for reducing the proportion of Out of Pocket health care payments in the region.

# CHAPTER ONE

# 1 INTRODUCTION

## 1.1 Background of the study

Macroeconomic theories largely affirm the crucial role that savings play in the determination of the level of output in the economy (Boianovsky, 2017). The neo-classical growth theory underscores the central role of savings in spurring investment and economic growth. Higher levels of savings classically translate into higher levels of investments as funds are made available through the financial market intermediation for investment (Cesaratto, 1999). Similarly, endogenous growth theories also emphasize the role of financial development and international financial integration in generating savings for investment and economic growth (Roe, 2003).

Consequently, the Commission on Growth and Development (CDG) noted in its 2008 report that substantial domestic financing of investment through high savings is imperative as a strategy for sustained growth and inclusive development on the continent of Africa (Spence, 2012). Likewise, Aryeetey et al. (2012), in their overview of the macroeconomics of Africa noted that the continued reliance of the continent on Official Development Assistance (ODA) poses an enormous threat to the development efforts of many countries in Africa in light of the uncertainty associated with foreign savings. They emphasized the necessity for an integrated, sound domestic financial markets and increasing domestic resource mobilization as a catalyst for development and a reduction in external dependency.

The empirical literature is also replete with extensive recommendations that emphasize the importance of domestic resource mobilizations through increased domestic savings as a stimulus for investment, economic growth, and development. Thus, the level of savings mobilizations has been found to have a significant impact on the sustainability of economic growth and development. Agenor and Montiel (2008), noted that despite the role of external resources, the bulk of domestic investments in developing countries including Africa are financed by domestic savings. This essentially means that the sustainability of growth and developmental programmes hinges on the capacity for domestic resource mobilization in developing countries.

The need for domestic resource mobilization for sustainable development on the continent is also strongly embedded in the agenda 2063 of the African Union (AU) (Vickers, 2017). However, over the years, Africa has struggled to mobilize sufficient resources domestically to finance and sustain its developmental programmes. This has put the continent on the path of continuous overreliance on external resources. This path is not sustainable and demands a deeper investigation into the determinants of savings on the continent as well as the formulation of a deliberate strategy towards increasing the continent's capacity to mobilize resources domestically.

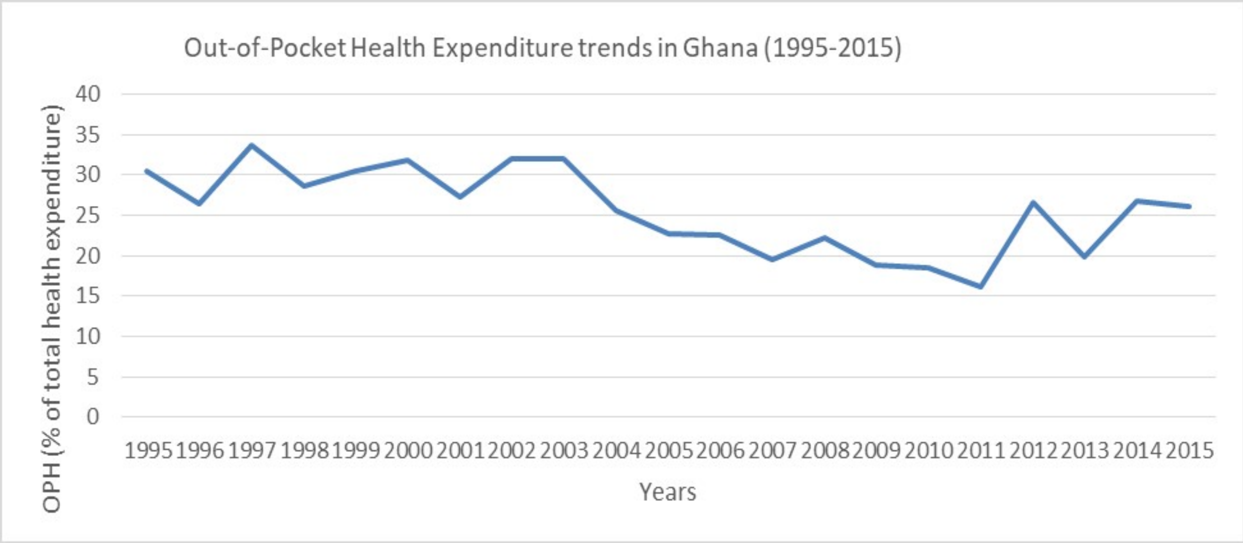
Over the years, Africa's inability to mobilize sufficient resources domestically have been attributed to factors that include the under-developed nature of the financial sector, low levels of income, macro-economic volatilities as well as external shocks that tend to derail efforts towards economic growth and development. In addition, Africa's disease burden and health status pose a great challenge for the continent as well as the global community at large. The continent is home to the world's highest rate of maternal and infant morbidity and mortality, communicable as well as non-communicable diseases including HIV/AIDS (Musango et al. 2013). This gloomy health profile has been subsequently associated with high health expenditures which are financed mostly from private out-of-pocket payments. The corresponding high and increasing out-of-pocket health care expenditure could have significant implications on domestic resource mobilization and hinder the quest to win the continent off its dependence on foreign savings.

In general, health financing mechanisms in most countries in Africa have evolved significantly over the years transitioning from out-of-pocket/user fees paid during the colonial era, through tax-based state financing during the post-colonial era and recently, to micro and mutual health insurance schemes (Owusu et al. 2012). However, the sustainability of tax-based financing during the post-colonial era posed challenges that led to the re-introduction of user fees in most countries. In addition, the level of health care financing through micro and mutual health insurance is still inadequate and under-developed on the continent due to low-profit prospects as well as high administrative costs for most insurance companies and institutions (Ouedraogo et al. 2012). Other challenges relate to households' unwillingness and inability to pay premiums which is attributable to the low levels of income on the continent. This has led to the reliance on out-of-pocket payment as the main mechanism to finance health care expenditures in most countries in Africa.

The continuous reliance on a fee for service in the wake of globally increasing health care costs places a huge burden on the poor segment of the population exposing them to financial impoverishment. The mechanism also provides limited financial accessibility to health care services and hinders efforts towards the attainment of Universal Health Coverage (UHC) and protection from financial impoverishment.

In some countries, health insurance has progressed from the micro and mutual insurance schemes into a national health insurance scheme. However, the effect of such developments on reducing out-of-pocket payments is ambiguous as a significant proportion of health expenditures are still financed by out-of-pocket payment to health care providers at the point of service. In Ghana, a National Health Insurance Scheme was rolled out in 2004. Figure 1.1 below reveals that out-of-pocket health expenditures are still relatively high and unstable in recent years (2011 to 2015). This phenomenon is attributable to poor service delivery at the public and other designated health facilities and discrimination against clients on the national health insurance scheme among others. A number of health facilities have also withdrawn from the scheme due to delay in the reimbursement of claims to service providers. Other challenges relate to the inadequacy of technical expertise in managing the scheme at the various district levels in the country (Owusu et al. 2012). The result of these is that many clients who are registered on the national health insurance scheme prefer to seek better health care from private facilities and are willing to pay out of pocket from their salary, savings or through borrowing.

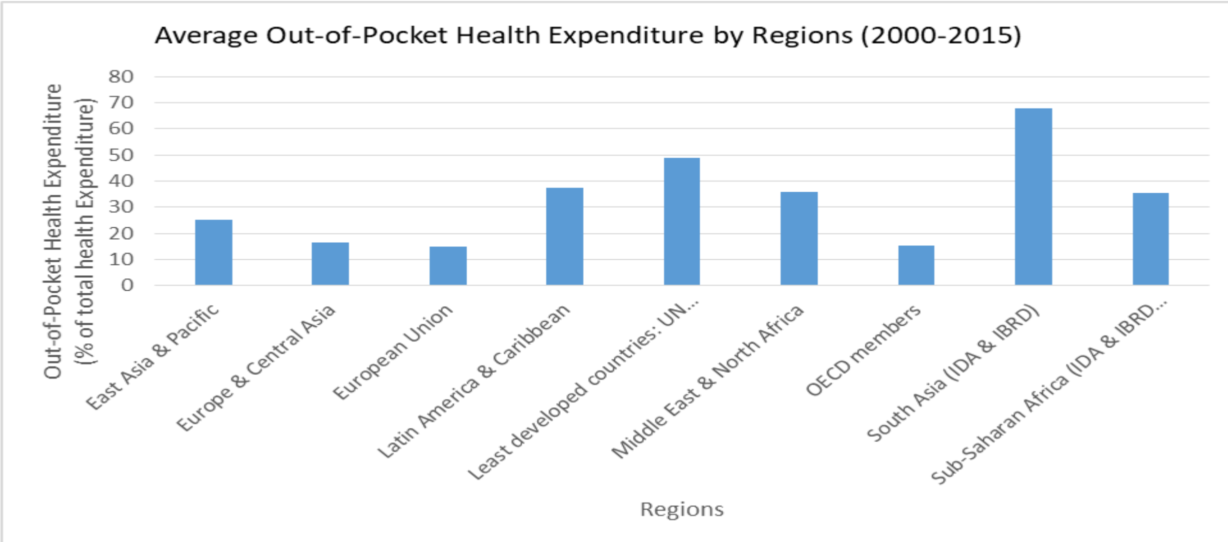
*Figure 1. 1: Out-of-Pocket Health Expenditure trends in Ghana (1995-2015)*




Source: (Author's computation based on WDI data)

Consequently, in most countries in Africa, more than 40 percent of total health expenditure is made up of out-of-pocket payments to health care providers (Musango et al. 2013). Similarly, McIntyre et al. (2018), observed that there is a huge dependence on out-of-pocket payments in many SSA countries that accounts for an average of 36 percent of health expenditure compared to only 22 percent in the rest of the world. The study also noted that the overall health insurance scheme contributions in SSA, together constitute a small share of the total health expenditure. At the country level, Nigeria, Africa's most populous country records an average out of pocket health expenditure as a proportion of total health expenditure at 67.80 percent. The World Bank statistics on health expenditures also indicates that SSA and other developing regions records higher out-of-pocket health expenditure as a proportion of total health expenditure (Figure 1.2).

*Figure 1. 2: Out-of-Pocket Health Expenditure by regions in the World (2000-2015)*




Source: (Author's computation based on WDI data)

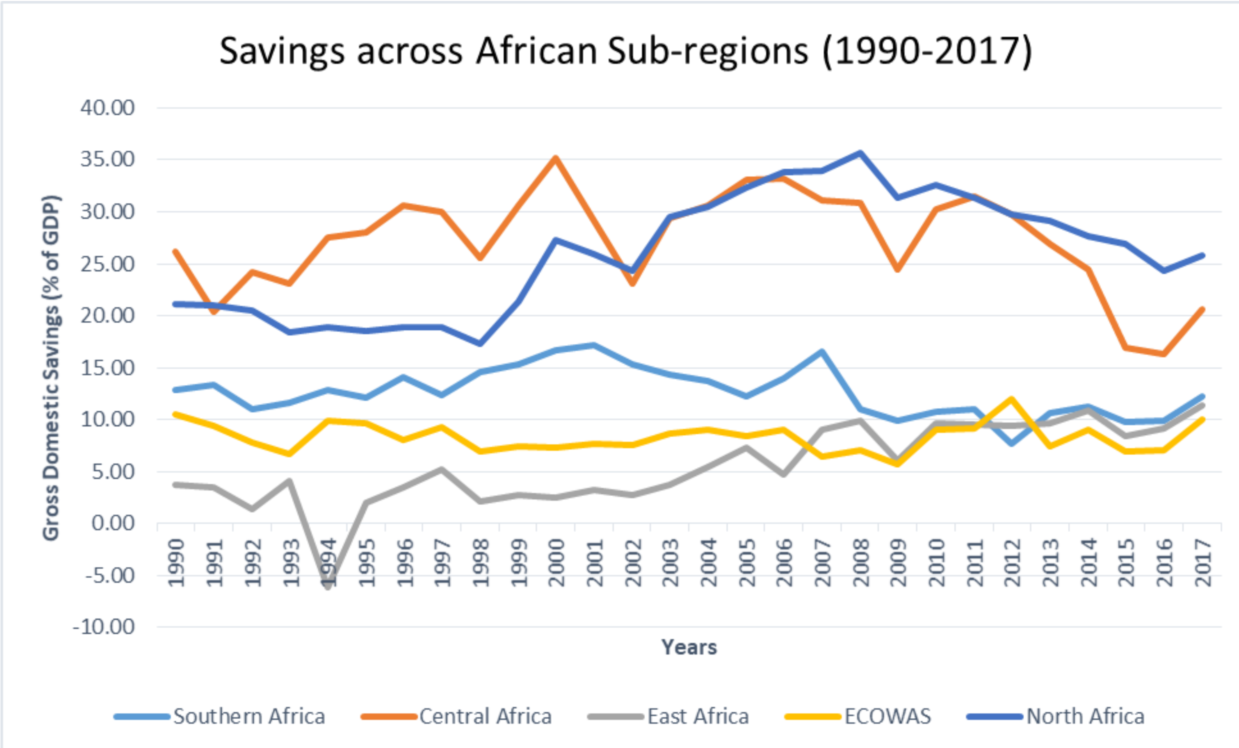
This phenomenon of financing health expenditures from out of pocket payments could have implications for the capacity to mobilize resources domestically in the wake of the globally increasing health care costs. Since savings is the excess of income over expenditures, the debilitating health status and its concomitant high health expenditures financed from out-of-pocket payments could have an adverse effect on the continent's efforts towards domestic resource mobilization.

## 1.2 Statement of the Problem

Despite the wide consensus on the crucial role of savings in promoting and sustaining economic growth and development, domestic savings mobilization in developing countries in sub-Saharan Africa including the Economic Community of West African States (ECOWAS) sub-region is very low. Evidence from the empirical literature suggests that sub-Saharan African countries have the lowest savings rate among developing countries (Dovi, 2008). The 2015 Africa capacity report (ACR) produced by the African Capacity Building Foundation (ACBF) which focused on the importance of domestic resource mobilization also confirmed that when compared with other developing regions, sub-Saharan Africa has the lowest savings rate which continues to trend downwards. The report also noted that aid and external resources will not be sufficient and that domestic resource mobilization is imperative for achieving the Sustainable Development Goals (SDGs) and Agenda 2063 of the African Union.

At the regional levels, the rate of savings in ECOWAS in comparison with other regions of Africa is the lowest on the continent. Using data from the World Bank African Development Indicators, we observe that through the period of 1990 to 2005, the savings rate in ECOWAS was far below 10 percent of GDP and has, since 2007, been the lowest on the continent after East Africa (Figure 1.3). In the period 1990-2005, Central Africa had the highest saving rate of 27.9 percent, followed by North Africa with 22.8 percent. ECOWAS savings rate stayed at a very disturbing low rate of 8.4 percent, only better than East Africa with 3.0 percent. ECOWAS savings rate continued to trend downward and is the lowest on the continent in recent years. In the period 2006-2017, ECOWAS recorded the lowest savings rate of 8.24 percent on the continent below East Africa with 8.98 percent. This phenomenon is very disturbing considering the fundamental contribution of savings in the execution of the region's economic growth agenda.

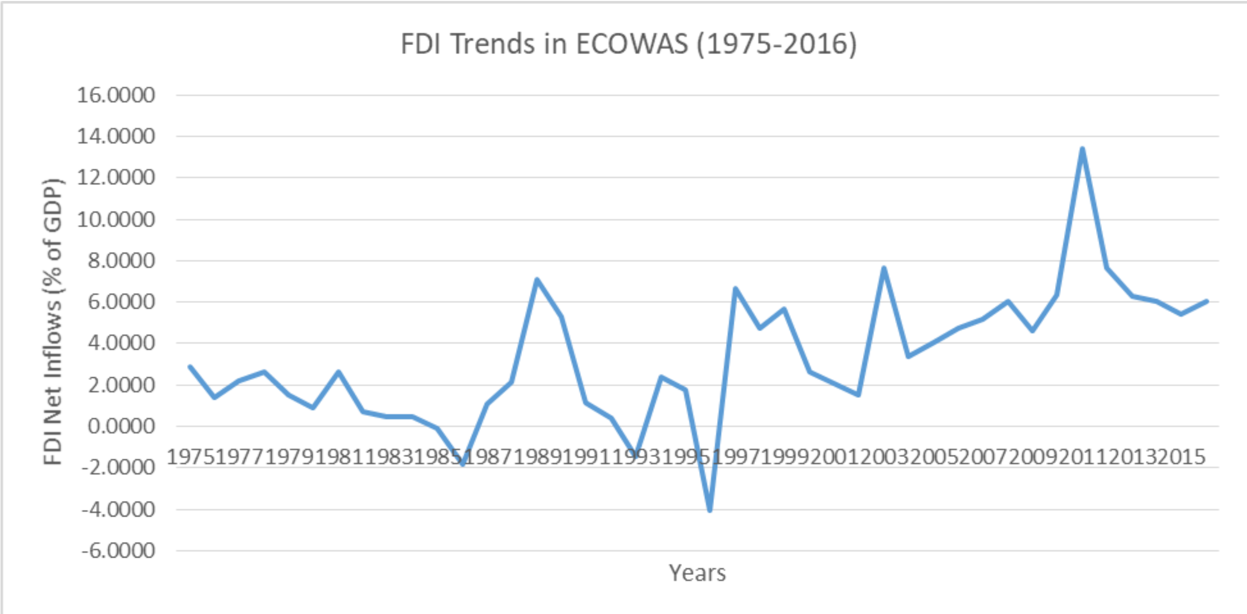
*Figure 1. 3: Trends in Savings by Sub-regions of Africa as a percentage of GDP*




Source: (Author's computation based on WDI data)

A number of studies have sought to explain the low level of savings in Africa and the ECOWAS sub-region. These studies have examined the role of demographic, macroeconomic and financial sector development variables in influencing savings within the region. Some of the policy recommendations from previous studies have emphasized the need for financial sector development. In response, there have been some developments in the financial sector within the region including the influx of micro-finance institutions aimed at increasing portfolio options and access to financial services as well as boosting competition (Steel and Isern, 2012). However, the impact of these financial innovations and developments on the growth of savings has been negligible. This leaves room for further investigations to determine other relevant factors that could help explain the behavior of savings comprehensively within the region. The need for further investigation is also critical in view of the continuous decline in external resources such as Official Development Assistance (ODA) and unstable Foreign Direct Investment (FDI) inflows to the region in recent years as depicted in Figures 1.4 and 1.5.

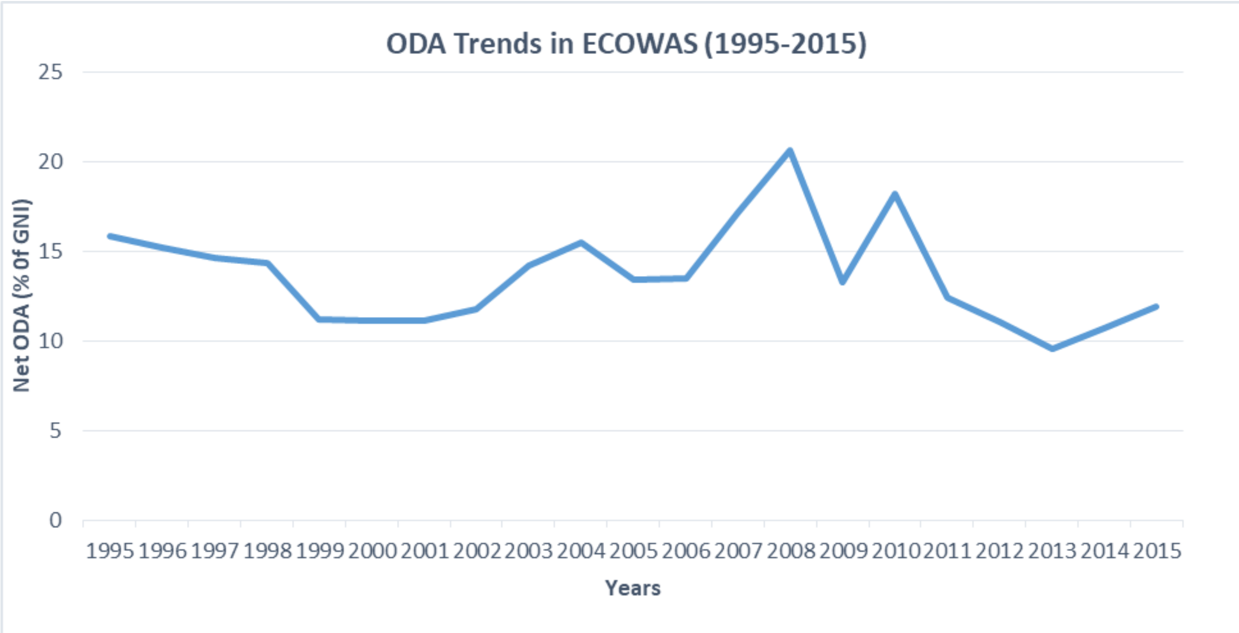
*Figure 1. 4: Foreign Direct Investment Trends in ECOWAS (1975-2016)*




Source: (Author's computation based on WDI data)

As observed from the figure, FDI inflows to the ECOWAS region has been very volatile and unstable over the years. Net FDI inflows to ECOWAS is averaged at 5.47 percent of GDP between 2000 and 2016. Globally, FDI inflows to the continent of Africa in comparison to other regions of the world has been trending downwards in recent years (UNCTAD, WIR 2017). The decline has been attributed to weakening commodity prices. This trend is likely to continue given the huge reliance on the export of natural resources and raw agricultural commodities on the continent and their corresponding high price volatility. Concurrently, Net ODA to the ECOWAS region continues to trend downwards (Figure 1.5). Net ODA to ECOWAS was averaged at 11.14 percent between 2011 and 2015 compared with an average of 16.56 percent of donors' GNI between 2006 and 2010. Other challenges with external aid have been related to the conditionality of support and debates with regards to its overall effectiveness in Africa.

*Figure 1. 5: Official Development Assistance Trends in ECOWAS (1995-2015)*



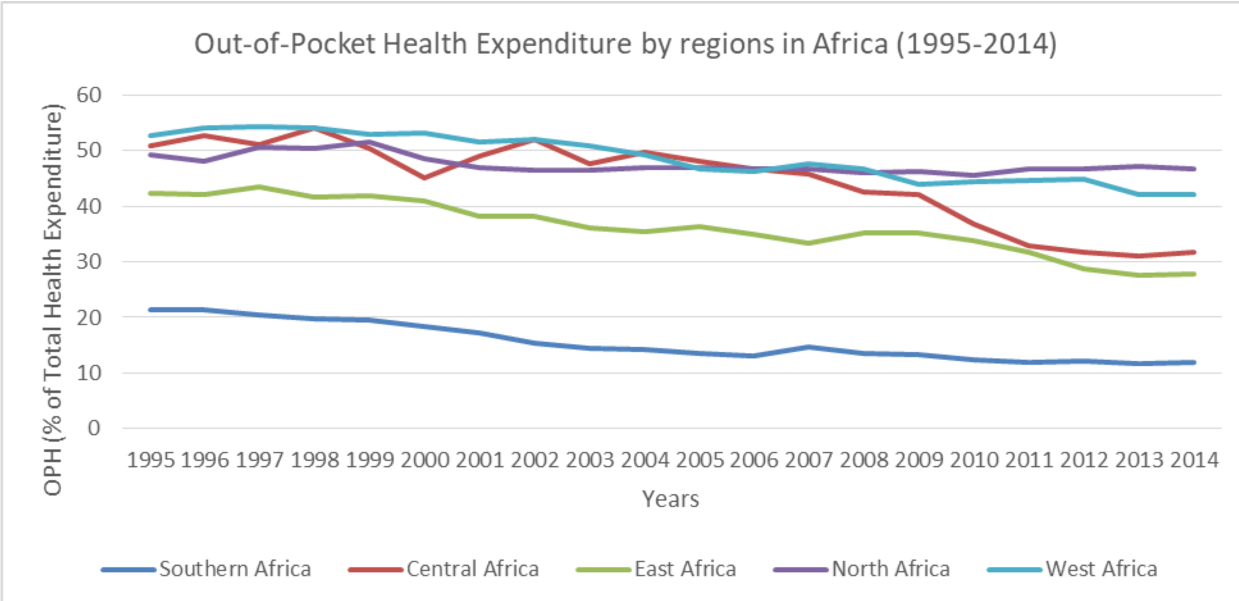

Source: (Author's Computation using WDI data)

The weakness of the traditional models in providing sufficient explanation for savings behaviour in the region calls for the adoption of an endogenous approach in the empirical analysis of savings. There is the need to develop models that incorporate the unique characteristics and specific challenges confronting individual countries and regions on the continent.

As noted, Africa faces huge health challenges which have large macroeconomic implications. A comprehensive macro level analysis must necessarily incorporate the health dimension. One critical challenge in ECOWAS is the high health expenditures in the region. An analysis of savings behaviour should, therefore, incorporate the impact of health expenditure on the savings propensity of households. Specifically, we propose that the high and increasing Out-of-Pocket Health Expenditures[1] (OPH) may have the tendency to inhibit savings mobilization within the region.

[1] Out of pocket expenditure is any direct outlay by households, including gratuities and in-kind payments, to health practitioners and suppliers of pharmaceuticals, therapeutic appliances, and other goods and services whose primary intent is to contribute to the restoration or enhancement of the health status of individuals or population groups. (World Bank definition adopted from WHO)

*Figure 1. 6: Out-of-pocket Health Expenditure by Sub-regions of Africa (1995-2014)*




Source: (Author's Computation using WDI data)

The figure reveals that ECOWAS has the highest average out-of-pocket health expenditure as a proportion of total health expenditure at 48.7 percent in Africa. At the country level, Nigeria, Sierra Leone, and Togo have the highest average out-of-pocket health expenditures as a proportion of current health expenditure at 75.11 percent, 64.13 percent and 63.40 percent respectively between 2000 and 2016. On the other hand, Southern Africa has the lowest proportion of out-of-pocket health expenditure at 14.18 percent of current health expenditure with Botswana and Namibia recording an impressive low out-of-pocket health expenditure as a proportion of current health expenditure at 6.51 percent and 6.66 percent respectively.

A survey of some recent studies has suggested that this phenomenon of high out-of-pocket health expenditure in ECOWAS could have implications for savings mobilization in the region.

Bredenkamp and Buisman (2016), noted that increasing out-of-pocket health expenditures is a leading cause of financial impoverishment and pushes households into poverty. The study which examined the extent of financial protection from financial impoverishment for households also observed that households employ various mechanisms to enable them to cope with increasing health expenditures which included the use of savings. Complementary studies by Schreyogg (2004), Leive et al (2008), and Kruk et al (2009) revealed that most households in developing countries resort to borrowing, the sale of assets and the use of current income and savings for financing health expenditures. These studies observed that increasing out-of-pocket health expenditures expose households to excessive financial risks. In general, the levels of income in developing countries is low. Consequently, most households are constrained and forced to fall on savings and the sale of assets to finance health expenditures.

The literature, therefore, suggests that out-of-pocket health expenditure creates an ‘out-loop’ for savings and constitute a channel for savings depletion and an outflow of potential savings. This observation lends credence to the crucial role and possible impact of out-of-pocket health expenditure on efforts towards savings mobilization in developing countries. Specifically, borrowing to finance health expenditure constitutes a form of dissaving. Similarly, the sale of assets is also a form of dissaving since asset acquisition is considered a form of savings. The use of savings to finance health expenditures, therefore, postulates a negative relationship between savings and out of pocket health expenditures. However, this relationship has not been examined empirically in the study of savings behaviour in ECOWAS.

In defining what constitutes out-of-pocket health expenditure, this study adopts the World Health Organization (WHO) definition. This consists of any direct expenditures by health care consumers to health care providers in exchange for the provision of health care services, pharmaceutical supplies, therapeutic appliances and other goods and services aimed at restoring, maintaining or improving the health status of the consumer. These expenditures include cash payments at the points of sale, as well as in-kind payments and gratuities. It also includes co-payments and co-insurance outlays of health insurance schemes. The composition, however, excludes insurance premiums paid by clients to providers of insurance products.

## 1.3 Objectives of the Study

This study is focused on the Economic Community of West African States which consists of 15 countries. ECOWAS is divided into two sub-regional blocs namely; the West African Economic and Monetary Union (WAEMU)[2] and the West African Monetary Zone (WAMZ)[3]. The WAEMU sub-bloc is a customs union and has a common currency (West African CFA Franc) under one central bank. The WAMZ sub-bloc is working towards the adoption of a common currency (ECO). This division makes the two blocs distinct particularly in the conduct of monetary policy. This distinction in the monetary policy environment has not been explicitly considered by previous studies in the analysis of savings behaviour within the region. This study, therefore, seeks to examine the extent to which OPH expenditure impacts on savings within ECOWAS while accounting for the distinction between the two sub-blocs within the region.

The objectives of this study therefore are:

1. To determine the impact of Out-of-Pocket Health Expenditure on savings behaviour in ECOWAS.
2. To examine the dynamics of savings behaviour within the WAEMU and WAMZ blocs of ECOWAS.

[2] WAEMU includes Benin, Burkina Faso, Guinea Bissau, Côte d'Ivoire, Mali, Niger, Senegal and Togo, mainly French-speaking countries in ECOWAS

[3] WAMZ includes Gambia, Ghana, Guinea, Nigeria, Sierra Leone, and Liberia mainly English speaking countries in ECOWAS

## 1.4 Hypothesis of the Study

In line with the objectives, this study will test the following Null hypothesis:

$H_0$: *Out of pocket health expenditure has no impact on savings behaviour in ECOWAS*

$H_0$: *There is no significant difference between savings behaviour in the WAEMU and WAMZ sub blocs of ECOWAS*

The corresponding alternate hypotheses are as follows:

$H_1$: *Out of pocket health expenditure has an impact on savings behaviour in ECOWAS*

$H_1$: *There exists a significant difference in savings behaviour between the WAEMU and WAMZ sub blocs of ECOWAS*

## 1.5 Significance of the Study

The traditional approach to analyzing the behaviour of savings has for long focused on life cycle variables, external variables and in recent years on financial sector development variables. Consequently, previous studies on the behaviour of savings in ECOWAS have emphasized the role of demographic and financial development factors. The role of health expenditure has been omitted in the analysis. However, OPH expenditure has been established to have a significant impact on savings acting as a loop for the depletion of savings. It is therefore imperative to examine and understand the potential impact of OPH on savings. The exclusion of OPH in the analysis of savings behaviour is a critical omission and limits our broad understanding of the behaviour of savings in the region.

This study is unique and constitutes a departure from the previous approaches by incorporating the role of health and health expenditure in influencing savings behaviour. The study will also provide empirical evidence on the impact of health expenditure on savings in ECOWAS as well as appropriate policy recommendations. Furthermore, this study will provide evidence on the comparative dynamics of savings behaviour within the two sub-regional blocs in ECOWAS.

## 1.6 Organization of the Study

The first chapter of this study highlighted the crucial role of savings in the economy, the problem of low and declining savings in ECOWAS, the objectives of this study as well as the critical contribution of this study to our understanding of savings behaviour. The remainder of the study proceeds according to the following structure. Chapter two provides a review of the performance of the economy of ECOWAS around key macroeconomic and health variables. Chapter three provides a survey of the theoretical and empirical literature on savings behaviour across the globe with a special focus on empirical regional studies. Chapter four focuses on the research methodology with specific emphasis on the theoretical and empirical model formulations. Chapter five covers model estimation and discussion of the empirical results. Chapter six provides a summary of the study with conclusions and policy recommendations.

# CHAPTER TWO

# 2 OVERVIEW OF THE ECONOMY OF ECOWAS

## 2.1 Introduction

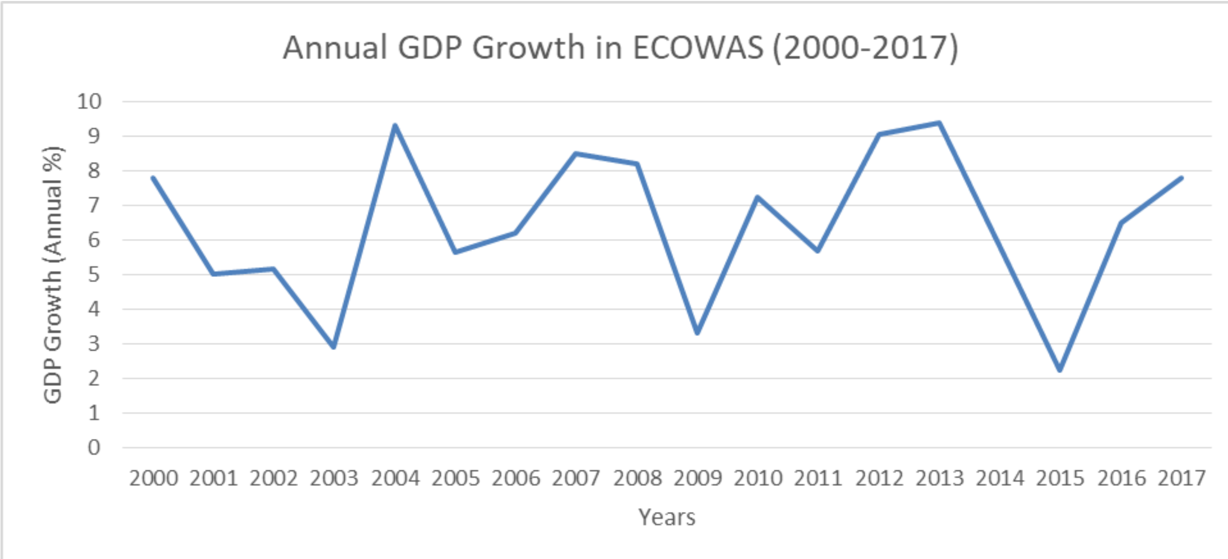
The Economic Community of West African States consists of 15 independent countries with varying degrees of heterogeneity. The scope of diversity ranges from the population density, size of the economy, economic performance, monetary and fiscal policy environment, capacity to mobilize domestic resources as well as the nature of institutions (Aryeetey et al. 2012). Formed in 1975, ECOWAS remains one of the most vibrant and successful regional blocs on the continent of Africa with the aim of promoting economic growth and development and maintaining peace and security among its member states. There are three co-official languages in ECOWAS namely, English, French and Portuguese.

Despite the degree of heterogeneity, this chapter provides an overview of the aggregate performance of ECOWAS on key economic indicators from 2000 to 2017. The statistics and computations are based on data provided by the World Bank World Development Indicators for 2018.

## 2.2 GDP Growth in ECOWAS

Annual GDP growth within ECOWAS has been uneven (Figure 2.1) over the period for most countries within the region with the exception of Burkina Faso, Cote d'Ivoire and Togo whose growth rates have been steady over the past five years. The average growth rate for the region was 4.6 percent between 2000 and 2017. Nigeria, the region's largest economy had the highest average growth rate of 6.6 percent while Togo had the lowest growth rate of 3.1 percent. Most of the countries in ECOWAS like other developing countries in Africa face exogenous terms of trade (Agenor & Montiel 2008). These countries are highly dependent on trade in natural resources and agricultural products such as cocoa, cotton and crude oil. With a concentration of trade in natural resources and agricultural products, sustained economic growth in the region is greatly impacted by external shocks that tend to derail the efforts towards economic growth and development especially for the resource-rich economies in the region.

*Figure 2. 1: GDP Growth trends in ECOWAS*




Source: (Author's Computation using WDI data)

Table 2.1 provides a summary of the performance of ECOWAS in comparison to other regions on the continent. The evidence suggests that the region has the lowest GDP growth rate in sub-Saharan Africa. However, there is significant optimism with respect to other underlying basic economic indicators such as inflation, interest rate and trade volumes that can stimulate savings and economic growth in the region in comparison to other regions on the continent. The relatively low performance in mobilizing domestic savings and sustaining economic growth, therefore, requires further investigation.

*Table 2. 1: Key Economic Indicators by Regions in Africa (2000-2017)*[i]

<table>
<tr><th></th><th>GDP Growth</th><th colspan="2">Inflation</th><th colspan="2">Interest Rate</th><th>Trade</th><th>DEPR</th></tr>
<tr><td>Central Africa</td><td>6.4</td><td colspan="2">5.2</td><td colspan="2">3.9[4]</td><td>99.0</td><td>88.7</td></tr>
<tr><td>East Africa</td><td>6.3</td><td colspan="2">8.1</td><td colspan="2">8.1</td><td>44.5</td><td>91.7</td></tr>
<tr><td rowspan="2">ECOWAS</td><td rowspan="2">4.6</td><td>WAEMU</td><td>WAMZ</td><td>WAEMU</td><td>WAMZ</td><td rowspan="2">73.5</td><td rowspan="2">88.3</td></tr>
<tr><td>2.3</td><td>9.8</td><td>6.7</td><td>12.0</td></tr>
<tr><td>North Africa</td><td>4.3</td><td colspan="2">6.7</td><td colspan="2">4.3</td><td>69.1</td><td>59.2</td></tr>
<tr><td>Southern Africa</td><td>4.7</td><td colspan="2">8.2[5]</td><td colspan="2">8.4</td><td>84.1</td><td>78.5</td></tr>
</table>

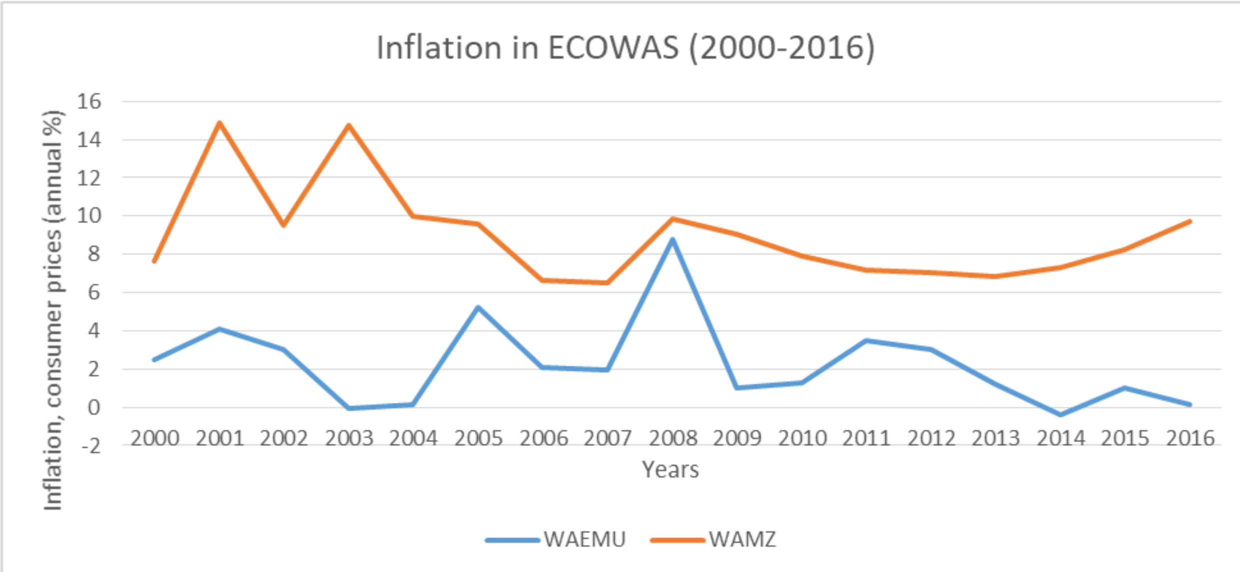
Source: (Author's computation using WDI 2018 data)

## 2.3 Inflation in ECOWAS

The dynamics of inflation vary significantly between the WAMZ and WAEMU sub-blocs within ECOWAS. Average inflation for the WAEMU (West African CFA Franc Zone) for the period was 2.26 against an average of 9.8 for the WAMZ sub bloc. In general, inflation within the WAEMU has been steadily low over the years. This is attributable to the stable monetary policy environment resulting from the common currency union and monetary board for the countries within the sub-bloc. Thus, the West African CFA Franc zone stands out as the continent's most successful story of stabilizing inflation (O'Connell, 2012). On the other hand, inflation within the WAMZ has been very volatile with Ghana recording the highest rate of 32.9 percent in 2001 and an average of 16.2 over the period 2000 to 2017.

[4] This value represents the average Interest rate for the Central African CFA Franc zone and excludes Angola, Congo DR, and Sao Tome and Principe.
[5] Zimbabwe was excluded from the computation as a result of incomplete data

*Figure 2. 2: Inflation trends within ECOWAS (2000-2016)*




Source: (Author's Computation using WDI data)

Notwithstanding the dynamics of inflation in the region, the aggregate average rate of inflation in ECOWAS is relatively low in comparison to other regions of Africa. For example, the average rate of inflation in the West African CFA Franc zone is 2.26 percent compared with an average of 5.2 percent for the Central African CFA franc zone. The rate of inflation is also lower in the region when compared to eastern, northern and southern Africa. This lower rate of inflation in the region is expected to encourage savings as households' gain from a higher real rate of returns on savings. This expectation is however not consistent with the results of empirical studies undertaken in the region. A number of empirical studies undertaken found an adverse positive relationship between inflation and savings rate within the region.

## 2.4 Trade in ECOWAS

One of the fundamental goals of ECOWAS is to promote intra-regional trade among its member countries. However, the region has failed to maximize the benefits from its trade liberalization policies as a result of the existence of artificial trade barriers within the region (Babatunde 2006). A greater proportion of trade in the region is, therefore, extra-regional and extends beyond the borders of the continent. Furthermore, trade in the ECOWAS region is largely concentrated in natural resources such as crude oil and gold and traditional agricultural products such as cocoa, coffee, and cotton. Income from trade in ECOWAS, therefore, varies in tandem with international prices of commodities which tend to affect the stability of export earnings in most countries within the region.

The total volume of trade as a percentage of GDP stands at 73.5 percent. In comparison with other regions in Africa, Central Africa has the highest trade to GDP ratio of 99.0 percent while East Africa has the lowest trade to GDP ratio of 44.5 percent. Notwithstanding the volatility of trade earnings within the region, the relatively high trade ratio is expected to promote domestic savings through increased export earnings from trade.

## 2.5 Interest rates in ECOWAS

The level of interest rates in ECOWAS varies significantly across the two sub-regional blocs in ECOWAS. The average interest rate for the WAEMU bloc is 6.7 percent as against 12.0 percent for the WAMZ sub-bloc. As revealed in Table 2.1, the WAMZ sub-bloc records the highest average deposit interest rate in Africa. The high rate of interest is expected to serve as a pull factor for savings mobilization. Thus, compared with other regions in Africa, ECOWAS, given the relatively high interest rates should provide a greater incentive for savings mobilization. However, this has not been the case over the years as evidenced from Figure 1.3. In addition, some empirical studies have reported a negative relationship between interest rates and savings in ECOWAS. There is a need for further investigation to establish the extent of an impact as well as the relationship between interest rate and savings in ECOWAS.

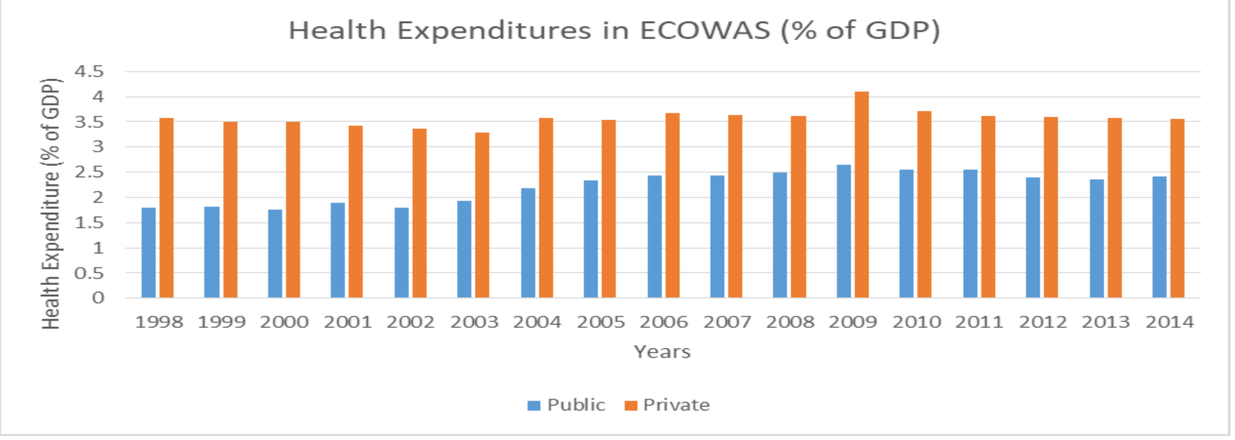
## 2.6 Age Dependency Ratio in ECOWAS

The continent of Africa has the highest dependency ratios in the world (Aryeetey et al. 2012). This is attributable to the high fertility rates with complementary declines in infant and child mortality rates over the years. Age dependency ratio as a percentage of the total working-age population is at a relatively high rate of 88.3 percent in ECOWAS compared with 59.2 and 78.5 in North Africa and Southern Africa respectively. This relatively high dependency ratio could have implications for savings mobilization within the region. The age dependency ratio in East Africa and Central Africa are 91.7 percent and 88.7 percent respectively. This phenomenon is attributable to the high levels of unemployment within the region.

## 2.7 Health expenditures composition in ECOWAS.

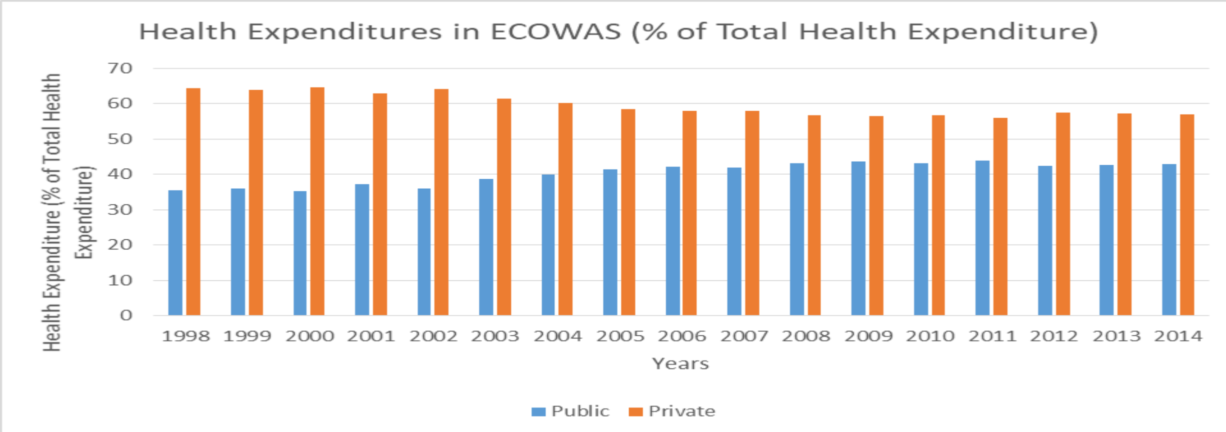
The composition of health expenditure within ECOWAS is largely skewed towards the private sector. Public health expenditure as a percentage of GDP is averaged at 2.2 percent while the private health expenditure is averaged at 3.5 percent of GDP. Similarly, public and private health expenditures as a percentage of total health expenditures in ECOWAS are 40.4 percent and 59.60 percent respectively. These statistics reveal the large composition of private health spending within the economies of ECOWAS. The existing situation is contrary to the World Health Organizations (WHO) Abuja Declaration of earmarking 15 percent of the public budget to health. The average public health expenditure as a percentage of total government expenditure in ECOWAS is 10.0 percent. This places a huge burden on households in terms of health care financing and subsequently impacts their ability to save.

*Figure 2. 3: Public and Private Health Expenditures in ECOWAS (% of GDP)*




Source: (Author's Computation using WDI data)

*Figure 2. 4: Public and Private Health Expenditures in ECOWAS (% of Total H. Expenditure)*



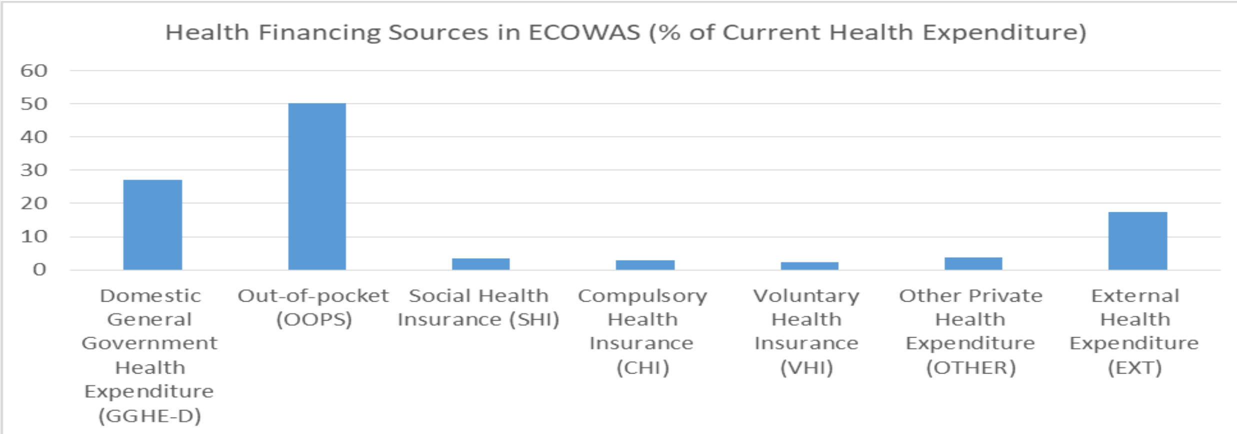

Source: (Author's Computation using WDI data)

In addition, public provision of health services in ECOWAS is filled with numerous challenges which include the poor quality of service delivery, shortage of resources and essential services or medications and financial and geographical inaccessibility. These challenges hinder the efforts and progress towards attaining Universal Health Coverage (UHC) in the region.

## 2.8 Health care financing mechanisms in ECOWAS

A significant proportion of households in ECOWAS as characteristic of other regions in Africa are exposed to financial impoverishment due to high and increasing health expenditures. As revealed in figure 2.5 below, a greater proportion of health care financing in ECOWAS is made up of out of pocket payments. This is due to the limited coverage of health insurance products as well as financial inaccessibility of existing formal insurance packages (Ouedraogo et al. 2012). Out-of-pocket health care expenditure makes up 50.2 percent of current health expenditure while domestic general government health expenditure (including external support received by government agencies) account for 27.1 percent of current health expenditure in the region. Total health insurance funding of health care comprising of Social Health Insurance (SHI), Compulsory Health Insurance (CHI) and Voluntary Health Insurance together constitute 8.9 percent of current health expenditure in the region. Consequently, most households pay a fee for service at the point of sale to health care providers in ECOWAS. With limited coverage of health insurance and general government health expenditure, social protection from medical impoverishment is low within the region.

*Figure 2. 5: Health Financing Mechanisms in ECOWAS (% of Current Health Expenditure)*




Source: (Author's computation from WHO-NHA data (2000-2016))

Overall, the economy of ECOWAS provides optimism and the capacity for sustainable economic growth and development. The region exhibits great potential and capacity for domestic resource mobilization. The inability of the region to mobilize domestic resources, therefore, raises concerns and calls for a thorough empirical investigation to determine the potential hindrances to sustainable and increasing domestic resource mobilization. As observed from our analysis, a greater proportion of health expenditure in the region is funded by the private sector with a high proportion of out-of-pocket health expenditure. The focus of this study is, therefore, to examine the potential threat that the high private and out-of-pocket health expenditures could pose to domestic resource mobilization in the form of savings in the region.

# CHAPTER THREE

# 3 LITERATURE REVIEW

## 3.1 Theoretical Literature Review

One of the basic theoretical frameworks for understanding savings behaviour has been credited to Keynes (2018). According to Keynes, savings and consumption are positively correlated with disposable income. Thus, consumption increases as disposable income increases. However, consumption increases by a less than proportionate increase in disposable income. Consequently, the excess of disposable income over consumption is channeled into savings which results in the positive relationship between disposable income and savings. This proposition is referred to as the Absolute Income Hypothesis (AIH) in the literature. However, early empirical works did not find sufficient evidence in support of the AIH which led to the development of alternative theories from which the savings model for this study is derived.

The savings model used in this study was derived from the ideas expressed in The Life-Cycle Income Hypothesis (LCH) developed by Ando and Modigliani (1963), the Permanent Income Hypothesis (PIH) of Friedman (1957) and the Rational Expectations Hypothesis (REH) of Hall (1978). These three hypotheses combine to produce a savings function that depends on income, wealth and interest rate.

The Life Cycle Income Hypothesis (LCH) and Rational Expectations-Permanent Income Hypothesis (RE-PIH)

The life cycle hypothesis is an inter-temporal consumption model that describes how a rational consumer plans to smooth consumption over time rather than experience feast or famine any time in life. The model assumes that a rational consumer is forward-looking when he makes his current choice of consumption. Thus, the rational consumer plans consumption on the basis of all his resources and allocates his income over time so as to maximize total utility over his lifetime. The model assumes that there is little connection between current income and current consumption. Even if income is erratic, consumers want to smooth their consumption.

According to Ando and Modigliani (1963), households store-up wealth during their working years to meet their consumption requirements in the future when they retire and earn no income.

During the early years of life, individuals earn no income or very low income relative to their consumption. The individual is assumed to borrow to finance their consumption expenditure. Next, during the working years, the individual earns income higher than their consumption expenditure, pays back their debt and saves or invest the remainder for the future. On retirement, the individual earns no income and therefore depends on the savings or returns from their investment during the working years.

The Permanent Income Hypothesis, on the other hand, emphasizes the role of the individual's entire wealth in determining the level of consumption. The argument of the model is that a person's consumption is not determined just by their current income but also by their expected income in the future; their permanent income. Permanent income is defined as the expected long-term average income which is influenced by such factors as wealth, personal attributes, personality, education, and training. The hypothesis emphasizes that changes in permanent income or wealth rather than current income is what drives changes in consumption. The key determinant of consumption and savings is, therefore, an individual's total lifetime resources and not his current income alone.

The Rational Expectations Hypothesis also describes how agents seek to maximize their utility subject to their budget constraint. The model assumes that economic agents pursue rational expectations and form their consumption decisions based on full, relevant and available information. Such information includes the dynamics of prices and interest rates. The model assumes that expectations of agents are consistent with the predictions of the model and therefore errors are minimal. Thus, consumption or savings decisions of households are based on complete knowledge and application of existing as well as perfectly predicted economic conditions. This ensures that households fully maximize utility from consumption subject to the available resources over their lifetime.

To complement the theories that emphasize the impact of Life Cycle variables on savings behaviour, some authors have proposed other factors that impact savings. The McKinnon-Shaw Hypothesis (1973) emphasize the role of interest rate and financial sector developments on savings mobilization. The theory asserts that increases in the interest rate will promote savings mobilization in developing countries. Thus, the development of a robust financial sector with competitive interest rates and diversity of portfolio options could stimulate the mobilization of domestic savings. Furthermore, the Harberger-Laursen-Metzler effect postulates that an improvement in a countries terms of trade position will promote domestic savings and improve the current account and vice versa. This is made possible by an increase in real income and a subsequent decrease and increase in real expenditures and excess income respectively leading to an increase in savings.

In this study, we make an additional proposition. We hypothesize that increasing out-of-pocket health expenditures in developing countries or regions could have dire implications on savings mobilizations. This is because out-of-pocket health expenditures place a huge demand on potential savings. We propose that a reduction in out-of-pocket health expenditures in developing countries could promote domestic savings mobilization.

This proposition is implicitly captured by some studies conducted in developing countries on the impact of high health expenditures on households' welfare and the coping mechanisms adopted by households to deal with increasing and catastrophic health expenditures.

Schreyogg (2004), sought to emphasize the role of a medical savings account as a panacea for rising health expenditures. The study observed that increasing out-of-pocket health expenditures poses financial risks to individuals and households in the form of impoverishment through continuous borrowing and the depletion of savings. In a related study, Leive et al (2008), examined the coping mechanisms adopted by households in 15 African countries in relation to out-of-pocket health expenditures. The study established that borrowing, the sale of assets and the use of income and savings are among the financing mechanisms adopted by households. The study recommended the development of social protection systems such as formal prepayment schemes to ensure financial risk protection and reduce impoverishment associated with health expenditures. Similar results were reported by Kruk et al (2009), who also established that borrowing, the sale of assets and use of savings are the health financing mechanisms employed in forty low and middle-income countries. The study noted that health systems in most developing countries fail to provide financial protection for households, which makes them resort to the use of savings and other mechanisms to finance health expenditures.

## 3.2 Empirical Literature Review

The traditional approach to analyzing savings behaviour has established three categories of variables that impact savings growth. These categories are; Life Cycle variables, Financial Development variables and External Sector variables. Life Cycle variables include age dependency ratio as well as income and per capita income growth. Financial development variables include the extent of financial sector development, interest rate, and inflation while external sector variables include the ratio of exports to GDP, external debt and foreign capital inflows.

Several empirical studies have analyzed the effects of these variables in influencing savings behaviour across the globe. These studies include country-specific, cross-country panel or regional studies, and comparative studies among regions. A wide variety of analytical and econometric techniques have been employed in these studies to establish the impact as well as causality among savings and its determinants.

In a study on SSA countries, Agenor and Aizenman (2004), used the instrumental variable technique to analyze the behaviour of savings. The results indicate that per capita income growth and terms of trade have positive impacts on savings growth. On the other hand, the study found that foreign savings and financial development had negative impacts on savings within the region. The results were based on a panel data for non-oil commodity exporters of sub-Saharan Africa. Similar results were reported by Abu et al. (2014), who analyzed the relationship between political instability-income interaction and low savings in ECOWAS. The study which employed a Panel Corrected Standard Error (PCSE), Ordinary Least Squares (OLS) and Two Stage Least Squares (TSLS) confirmed that per capita income growth, real interest rate, and inflation have positive and significant impacts on savings in ECOWAS while the effect of financial development was negative.

Other authors such as Adewuyi et al (2010), Niculescu-Aron and Mihăescu (2012) and Aric (2015), examined the determinants of savings in ECOWAS, 15 European countries and 16 Asian countries respectively using Pooled OLS and FE techniques. Per capita income, the deposit rate, terms of trade, financial development, and inflation were found to have negative impacts on the rate of savings in ECOWAS. On the other hand, inflation and dependency ratio had a positive impact on savings in Europe while the effect of GDP growth was found to be negative. Per capita income growth, dependency ratio and population growth were found to have positive effects while financial deepening has a negative effect on savings growth in Asia. The techniques employed in these studies overlooked the endogeneity of GDP growth in the empirical model. This oversight could explain the strange results observed within the ECOWAS region and challenges the consistency and validity of the estimates for inferential purposes.

Likewise, Mualley (2011) and Doker et al (2016) employed POLS techniques to examine savings behaviour in 19 SSA countries and 20 transition economies respectively. The results from both studies reveal that GDP growth and population growth have positive and significant impacts on savings. However, these studies failed to account for individual heterogeneity in the cross-country panel analysis which could have implications on the results obtained. Furthermore, the studies did not control for endogeneity of GDP growth in the model. The endogeneity of GDP is due to the reverse causality between GDP and savings established in both theoretical and empirical literature. This oversight challenges the consistency of the reported estimates.

Baldé (2011) examined the impacts of remittances and foreign aid on savings mobilization in SSA. The study which employed the OLS and Two-Stage Least Square techniques observed that GDP per capita and deposit interest rate included as control variables have positive and significant impacts on savings mobilization in SSA. On the other hand, inflation has a negative impact on savings in SSA. Remittances and foreign aid were also found to have a positive impact on savings mobilization in SSA.

Some few studies have incorporated dynamic concepts in their analysis of savings behaviour. The argument lies in the potential for past values of savings and the savings culture to influence the present savings rate. Savings is therefore modelled as following a slow adjustment process and exhibiting inertia. This concept is modelled by the inclusion of a lagged dependent variable as an explanatory variable.

Chowdhury (2015), employed a dynamic Generalized Method of Moments (GMM) to examine the determinants of savings in 45 developing countries drawn from Asia, Africa, and Latin America. The study found that GDP per capita and inflation have positive and significant impacts on savings. In addition, financial deepening and dependency ratio have negative and significant effects on private savings. The study which had the terms of trade as the variable of interest established that terms of trade has a positive and significant impact on private savings.

The sample which covered 16 countries from Africa included 5 countries within ECOWAS. Similarly, Grigoli et al (2016), employed the two-step system GMM to examine the determinants of private savings for a sample of 165 countries. The results reveal that per capita income, GDP growth, inflation and terms of trade have positive effects on private savings. On the other hand, the old-age dependency ratio inhibits and depletes private savings. Both studies found a positive effect of the lagged one period value of savings on current savings.

Hondroyiannis (2006), used the Panel cointegration approach to examine the behaviour of savings with a sample of 13 European countries found evidence for the existence of a long-run savings function in Europe. The findings from the studies suggest that real disposable income, dependency ratio, real interest rate, and inflation have positive effects on savings. Similarly, Agrawal et al (2009), also employed the ECM cointegration and Dynamic OLS (DOLS) techniques to examine savings behaviour in South Asia. The results show that real income per capita, GDP growth, and dependency ratio have positive and significant impacts while the real interest rate has a negative impact on savings in Asia. In a related study which employed the panel dynamic generalized least squares (DGLS), Thanoon and Baharumshah (2012), also established that GDP growth, exports to GDP and foreign savings have positive impacts on savings in Asia. On the contrary, the dependency ratio has a negative impact on savings growth.

Sahoo and Dash (2013) also employed the Panel Fully Modified OLS to examine the impact of financial sector development on domestic savings in South Asia. The study established that financial sector development as well as per capita income has a positive impact on savings mobilization in South Asia.

A review of the literature reveals that a number of country-specific studies have been undertaken to examine the factors that influence savings behaviour in ECOWAS. We present a brief review of some of the country-specific studies undertaken within the region.

Larbi (2013), examined the determinants of private savings in Ghana using Phillips and Ouliaris (1990) residual-based tests for cointegration. He observed that per capita income, financial liberalization and fiscal deficit have a positive and significant impact on savings. On the contrary, the study also found a positive and significant relationship between inflation and savings in Ghana. Similarly, Kwakwa (2013) using Johansen's cointegration technique and error correction model observed that per capita income, financial deepening and terms of trade have a positive and significant impact on savings in the long run. On the other hand, dependency ratio, political instability, and the real interest rate have negative impacts on savings in Ghana. Except for the terms of trade variable, all the other variables namely dependency ratio, political instability, financial deepening, per capita income and interest rate have an insignificant impact on savings in the short run.

Imoughele and Ismaila (2014), analyzed the determinants of private savings in Nigeria using the Error Correction Model (ECM). The study found that income per capita, inflation rate, terms of trade and financial deepening are significant determinants of private savings in Nigeria. Specifically, the study found that per capita income and financial deepening have positive and significant effects on savings while inflation and terms of trade have negative and significant impacts on savings. Similarly, Uremadu (2007) who also investigated the core determinants of financial savings in Nigeria using Ordinary Least Squares (OLS) found that GDP per capita growth, interest rate spread, financial deepening and debt service to exports have a positive and significant impact on savings. On the other hand inflation and real interest rate have negative and significant impacts on savings in Nigeria.

In a study of the long-run determinants of savings rate in WAEMU, Keho (2011) found a positive and significant relationship between per capita income growth and savings in Cote D'Ivoire, Burkina Faso and Senegal. The study which employed the ARDL bounds testing approach also noted that the dependency ratio is negatively and significantly correlated with savings in Benin, Burkina Faso, and Senegal. In addition, inflation contrary to expectations has a positive and significant long-run impact on savings in Benin, Cote D'Ivoire and Togo.

The comparison of the results of the regional level studies with the country-specific studies reveals a high degree of consistency. However, we notice few discrepancies with regards to the impacts of inflation and interest rate which departs from the results of the regional level studies. This lack of consistency will require further investigation in order to inform appropriate policies towards savings mobilization within the ECOWAS region.

However, the survey of the literature reveals that no study has directly examined empirically the relationship between health expenditure and savings behaviour. The focus of this study is to examine empirically the implied relationship between savings and out-of-pocket health expenditure in ECOWAS.

# CHAPTER FOUR

# 4 RESEARCH METHODOLOGY

This section provides a synthesis of the ideas developed in the theoretical literature and the key findings from the empirical. The Life Cycle Hypothesis (LCH), Permanent Income Hypothesis (PIH), and Rational Expectations Hypothesis (REH) discussed in the previous chapter form the theoretical basis for the savings model formulated in this study.

## 4.1 Model Specification

### 4.1.1 Theoretical Model Specification

The theoretical savings model for this study is derived from the two-period households' inter-temporal optimization of consumption and savings. Following Branson (1989), suppose the household's utility function is assumed to be additively separable and takes the form:

$$U = \sum_{t=0}^{T} \frac{U(In\ C_t)}{(1+\partial)^t} \tag{1}$$

Where $U(C_t)$ is the instantaneous utility obtained from consumption at time t and $\partial$ is the time preference discount factor.

The rate of time preference of households plays an important role in their consumption decisions. The higher the rate of time preference, the higher will be the discount factor $\partial$. The rate of time preference is generally expected to reduce with age. Households with a relatively lower rate of time preference will place more value on their future wellbeing and hence reduce current consumption and save towards the future. On the other hand, households with a relatively higher rate of time preference place more emphasis on their present wellbeing and therefore consume more presently and save less.

The inter-temporal total budget constraint of the household based on the combined ideas from the LCH and PIH is expressed as:

$$\sum_{t=0}^{T} \frac{C_t}{(1+r)^t} = A_t + \sum_{t=0}^{T} \frac{Y_t}{(1+r)^t} \tag{2}$$

Where r is the interest rate available to the household for savings or borrowing; $A_t$ is the wealth of the household at time t; $Y_t$ is the stream of labour income, and $C_t$ represents consumption spending. Equation (2) implies that the household's discounted present value of consumption must be equal to their discounted present value of lifetime resources as postulated by the LCH and PIH.

Since the household wishes to maximize their lifetime utility from consumption subject to their total lifetime budget constraint, the Lagrangian function will be as follows:

$$L\ (C_t, C_{t+1}, \ldots\ldots, C_T) = \sum_{t=0}^{T} \frac{U\ (In\ C_t)}{(1+\partial)^t} + \mu \left[ A_t + \sum_{t=0}^{T} \frac{Y_t}{(1+r)^t} - \sum_{t=0}^{T} \frac{C_t}{(1+r)^t} \right] \tag{3}$$

For every current and future value of consumption $C_t$, equation (3) yields a first order condition of the form:

$$\frac{1}{(1+\partial)^t} U'(InC_t) - \frac{\mu}{(1+r)^t} = 0 \tag{4}$$

We assume the household lives for two periods; the present and the future denoted by

$t = 0\ and\ t = 1.$

In the present period with $t = 0$, the first order condition yields:

$$U'(InC_0) = \mu \tag{5}$$

For the future period where $t = 1$, the first order condition yields:

$$U'(InC_1) = \left(\frac{1+\partial}{1+r}\right) \mu \tag{6}$$

From equations (5) and (6), we derive the following relationship between current and future consumption:

$$U'(InC_t) = \left(\frac{1+r}{1+\partial}\right)U'(InC_{t+1}) \tag{7}$$

Under the assumptions of Hall's (1978) rational expectations hypothesis, the household perfectly forecasts and incorporates the level of interest rate in formulating his consumption decision. Consequently, the real interest rate, r corresponds and equals the household discount rate $\partial$. By substitution, equation (7) simplifies to:

$$C_t = C_{t+1} \qquad t = 0,1,2,3 \ldots.. \tag{8}$$

Equation (8) states that the optimal solution requires that, the future expected value of consumption must be equal to the current value of consumption and so on. In other words, all future expected values of consumption equal the current value. Thus, the level of consumption is constant, smooth or stable over the lifetime of the household. In other words, consumption is independent of time.

Substituting equation (8) into the inter-temporal budget constraint of equation (2) we have:

$$C_t \sum_{t=0}^{T} \frac{1}{(1+r)^t} = A_t + \sum_{t=0}^{T} \frac{Y_t}{(1+r)^t} \tag{9}$$

Remark:

$$\sum_{t=0}^{T} \frac{1}{(1+r)^t} = \frac{1}{1 - \frac{1}{(1+r)}} = \frac{1+r}{r} \tag{10}$$

Substituting equation (10) into equation (9) we have the total value consumption at any given time t as follows:

$$C_t = \frac{r}{(1+r)}A_t + \frac{r}{(1+r)} \sum_{t=0}^{T} \frac{Y_t}{(1+r)^t} \tag{11}$$

Equation (11) states that consumption at any time t, depends on the household's expected future stream of income $Y_t$, wealth $A_t$, and interest rate $r$.

Since savings is derived from consumption, equation (11) implicitly provides us with savings as a function of income, wealth and interest rate expressed as follows:

$$S_t = f(Y_t, A_t, r_t) \quad (12)$$

Equation (12) is reinforced by the Classical and Keynesian theories of savings that emphasize the role of interest rate and income respectively in determining the rate of savings in the economy.

### 4.1.2 Empirical Model Specification

The Life Cycle Income Hypothesis reveals that households' age affects the level of savings. Thus households borrow, save and dis-save during their early years, working years and retirement years respectively. To capture the influence of age, the study employs the age dependency ratio as a proportion of the working population in ECOWAS in this study. Additionally, since ECOWAS is prone to uncertainties and macroeconomic volatilities that affect income, we include inflation to capture the level of uncertainty in the economy. Moreover, we noted that Out-of-Pocket health expenditure may have some effect on the capacity for savings mobilization in ECOWAS. The empirical savings model for this study is therefore specified as follows:

$$GDS = \beta_0 + \beta_1 PCY + \beta_2 DIR + \beta_3 INF + \beta_4 DEPR + \beta_5 OPH + U \quad (13)$$

Where:

$GDS = Gross\ Domestic\ Savings\ (\%\ of\ GDP)$

$PCY = Per\ Capita\ Income$

$DIR = Deposit\ Interest\ Rate$

$INF = Inflation, Consumer\ Price\ Index\ (CPI)$

$DEPR = Age\ Dependency\ Ratio\ (\%\ of\ Working\ Population)$

$OPH = Out\ of\ Pocket\ Health\ Expenditure$

$U = Residual\ Term$

## 4.2 Data Type and Sources

Our savings model will be estimated using secondary data from the World Bank Development Indicators (WDI), the African Development Banks' African Development Indicators (ADI) and World Health Organization National Health Accounts. The period of the study is from 1990 to 2016. The choice of this period is informed by the availability of data on the respective variables. The study will consist of a panel data of all the fifteen countries in ECOWAS.

## 4.3 Variable Definitions and Expected Signs.

The variables used in this study are defined according to the World Bank world development indicators. The dependent variable in this study is the savings rate in ECOWAS proxied with Gross Domestic Savings as a percentage of GDP. The explanatory variables and their expected signs are discussed below.

**Dependency Ratio (DEPR)**

Age dependency ratio as a percentage of the working age population captures the extent of dependency and population-induced consumption demand on the incomes of the working age population. A higher dependency ratio implies a huge demand on the incomes of the working age population. Thus, the fraction of income that will be spared for savings will be relatively low. The age dependency ratio is therefore expected to have a negative impact on savings in ECOWAS.

**Deposit Interest Rates (DIR)**

The level of the interest rate on deposits serves as an opportunity cost to current consumption. It is therefore expected that the higher the level of interest rate, the higher should be the rate of savings as it serves as an incentive for savings. However, a higher average rate of inflation relative to the deposit interest rate may provide a disincentive for savings. This is because the real rate of returns on savings will be low. Notwithstanding, we have adopted the deposit interest rate rather than the real interest rate in this study due to the unavailability of data on the latter.

**GDP per Capita (PCY)**

GDP per capita is included to capture the income levels and the standard of living in ECOWAS. The level of per capita income largely determines the capacity of households to save. Most studies on developing countries suggest that the low levels of savings are attributable to the low levels of income in the economy. An increase in income is therefore expected to increase household savings. We, therefore, expect a positive relationship between per capita income and savings in ECOWAS.

**Inflation (INF)**

Inflation, as measured by the rate of change of the GDP deflator, captures the level of income uncertainty and macroeconomic volatility within ECOWAS. Inflation could encourage precautionary savings or serve as a disincentive for savings when the rate of return on savings is less than the rate of inflation.

**Out-of-Pocket Expenditure (OPH)**

Out-of-pocket health expenditure as a percentage of total health expenditure captures households' direct payments/ outlays on restoring, maintaining or improving their health. It captures the outflow of savings and potential savings towards the payment of health care expenditures. It is therefore expected to have a negative impact on savings.

*Table 4 1: Model Variables and Expected Signs.*

| Variables and their Expected signs | | |
|---|---|---|
| VARIABLE | PROXY | EXPECTED SIGN |
| GDS | Gross domestic savings (% of GDP) | |
| PCY | GDP per capita growth (annual %) | + |
| DIR | Deposit interest rate (%) | + |
| DEPR | Age dependency ratio (% of working-age population) | - |
| INF | Inflation, GDP deflator (annual %) | ± |
| OPH | Out-of-pocket health expenditure (% of total health expenditure ) | - |

## 4.4 Model Estimation Techniques

As is the case with most panel data, the regression model for ECOWAS is likely to suffer from heterogeneity. Heterogeneity relates to unobserved country specific-effects or factors that could affect the results obtained from the regression. The sample panel counterpart of equation (13) for the ECOWAS with control for unobserved heterogeneity is given by:

$$GDS_{it} = \alpha + L_{it}\beta + \mu_i + \varepsilon_{it} \tag{14}$$

where:

$L_{it} = vector\ of\ all\ regressors\ (exogenous\ and\ endogenous)$

$\beta = vector\ of\ parameters$

$\mu_i\ is\ the\ time - invariant\ country - specific\ (unobserved)\ effects$

$\varepsilon_{it}\ is\ the\ remainder\ error\ terms$

$it = time\ period\ i\ in\ country\ t$

The empirical literature is rich with techniques for estimating Panel data models. Prominent among the models used are Pooled OLS (POLS) and the standard Fixed Effects (FE) and Random Effects (RE) estimation techniques. The application of these techniques is based on a number of assumptions. Both POLS and RE techniques will not be appropriate for estimating our specified model as a result of the unobserved heterogeneity included. Thus, we expect some degree of correlation between the unobserved effects and the regressors. This is because the countries within ECOWAS were not ‘fished for’ which makes the assumption underlying the RE technique invalid.

In addition to the problem of heterogeneity, the specified regression equation contains an endogenous regressor. Specifically, per capita income growth is endogenous. The endogeneity of this variable is due to simultaneity or reverse causality between savings and per capita income growth. Thus, while per capita income impacts on the level of savings, the savings rate also has an effect on the level of per capita GDP in the long run. Consequently, the application of any of these techniques in the presence of such endogenous covariates will produce biased and inconsistent estimates.

Alternative techniques for estimating panel data in the presence of heterogeneity and endogeneity due to simultaneity, measurement errors or omission of relevant time-varying factors are the Fixed Effects- Two-Stage Least Square (FE-TSLS), Panel Dynamic Ordinary Least Square (PDOLS), Fully Modified Ordinary Least Squares (FMOLS) and Panel Vector Autoregressive Model (PVAR) among others. This study employs the DOLS to estimate the behaviour of savings in ECOWAS. The DOLS has been shown to produce efficient and consistent estimates in the presence of heterogeneity and endogenous regressors.

Furthermore, in line with the objectives of the study, we will estimate an aggregate panel for ECOWAS to examine the impacts of OPH on Gross Domestic Savings in the region. We will subsequently break the panel into the respective sub-regional blocs of WAEMU and WAMZ to enable us to compare the dynamics of savings in the region.

CHAPTER FIVE

# 5 ESTIMATION AND DISCUSSION OF RESULTS

## 5.1 Introduction and Descriptive Statistics

The empirical model estimation is preceded by pre-estimation analysis. These analyses include the descriptive analysis of the data and the tests for multicolinearity, stationarity as well as cointegration. The descriptive statistics of the panel data are presented in table 5.1 below.

*Table 5. 1: Descriptive statistics of the panel data variables*

| ***Variables*** | **Mean** | **Median** | **Max** | **Min** | **Std. dev.** | **Observations** |
|---|---|---|---|---|---|---|
| Gross domestic savings | 6.40 | 7.99 | 39.11 | -141.97 | 19.29 | 405 |
| GDP per capita growth | 1.26 | 1.34 | 91.65 | -50.23 | 7.81 | 405 |
| Deposit interest rate | 8.57 | 7.03 | 54.67 | 0.00 | 6.19 | 405 |
| Age dependency ratio | 9.76 | 4.34 | 134.04 | -29.17 | 18.27 | 405 |
| Inflation | 90.76 | 90.03 | 111.78 | 54.08 | 8.70 | 405 |
| Out-of-pocket health expenditure | 48.94 | 51.20 | 83.14 | 16.15 | 15.85 | 405 |

## 5.2 Panel Tests for Stationarity

The classical econometric modelling requires that all variables in the regression equation should be stationary. However, most economic time series data exhibit non-stationary properties. We begin our analyses by examining the stochastic properties of our series to establish the nature and possible existence of unit root in the series. However, individual cross-sectional unit root tests have been found to have less power in comparison to a panel unit root analysis (Levin et al., 2002). Consequently, this study employs the panel stationarity tests developed by Levin, Lin, and Chu (LLC 2002) and Im, Pesaran, and Shin (IPS 2003) to determine the presence of a unit root in the panel data. The LLC test supports panels that consist of cross-sectional units between 10 and 250 with a time dimension between 25 and 250 and is therefore suitable for our panel. However, it assumes a homogenous co-efficient for all cross sections under the null hypothesis of a unit root for all cross sections (Baltagi, 2008). On the other hand, the IPS test takes into account the presence of unobserved heterogeneity in the panel and also accommodates unbalanced panels (Breitung and Pesaran, 2008). Both tests assume cross-sectional independence but allow for residual serial correlation in the panel (Im et al., 2003). The results of the tests are presented in table 5.1 below.

*Table 5. 2: Panel Unit Root Tests for ECOWAS*

| | *Levin, Lin & Chu* | | *Im, Pesaran & Shin* | |
|---|---|---|---|---|
| *Variable* | Levels | First Diff. | Levels | First Diff. |
| *Gross Domestic Savings* | -3.3148*** | -15.8698*** | -4.6947*** | -15.5256*** |
| *Per Capita Income* | -11.5138*** | -14.2178*** | -12.4956*** | -16.8898*** |
| *Deposit Interest Rate* | -2.3771*** | -4.7385*** | -1.3108* | -5.6634*** |
| *Inflation* | -11.6373*** | -7.52358*** | -11.4412*** | 18.6504*** |
| *Dependency Ratio* | -2.8504*** | -4.57038*** | -0.93658 | -4.45881*** |
| *Out of Pocket Health Expenditure* | 0.29008 | -14.6251*** | 0.06995 | -14.6313*** |

***, **, and * implies a rejection of the null hypothesis of a unit root at 1%, 5% and 10% level of significance respectively.

Source (Author's computation using Eviews 9)

Except for the age dependency ratio, the unit root test results are consistent for both LLC and IPS tests. In general, the results suggest that gross domestic savings, per capita income, inflation, and deposit interest rate are all stationary at levels while dependency ratio and out of pocket health expenditure are first difference stationary. The Akaike Information Criterion (AIC) and the Schwarz Information Criterion (SIC) were chosen in setting the maximum lag length for both LLC and IPS tests.

## 5.3 Panel Tests for Cointegration

The results of the panel unit root analysis reveal that our panel consists of a mixture of both I (0) and I (1) variables. Since the objective of this study is to examine the possible existence of a long-run relationship between OPH expenditure and savings in ECOWAS, we require cointegration among the variables. Pagan and Wickens (1989), Banerjee et al. (1993) and Baffes (1997) suggest that cointegration is possible given the presence of at least two I (1) explanatory variables when the dependent variable is I (0). They suggest that an I (0) disturbance is possible in a model containing an I (0) dependent variable and at least two I (1) regressors. This study employs the Pedroni and Kao residual tests of cointegration to validate the existence of cointegration among the variables. The results of the tests are presented in Table 5.3 below.

*Table 5. 3: Panel Tests for Cointegration*

| *Kao Residual Cointegration Test* | | |
|---|---|---|
| | Statistic | Probability |
| *ADF-statistic* | -2.272566 | 0.0115** |

| *Pedroni Residual Cointegration Test* | | |
|---|---|---|
| | Panel Statistic | Group Statistic |
| *V-Statistic* | -1.445405 | - |
| *Rho-Statistic* | 0.042713 | 1.852996 |
| *PP-Statistic* | -3.405491*** | -3.470033*** |
| *ADF-Statistic* | -3.057418*** | -2.074377** |

****, ** implies the rejection of the null hypothesis of no cointegration at the 1% and 5% level of significance respectively.*

Source (Author's computation using Eviews 9)

The results of the cointegration tests confirm the existence of cointegration among the variables. Cointegration implies the presence of a long run relationship between the dependent variable and the non-stationary explanatory variables including out of pocket health expenditure. The unit root and cointegration tests for the WAEMU and WAMZ sub blocs in ECOWAS are presented in appendices to this study. The results establish the existence of cointegration among the variables in both WAEMU and WAWZ sub-blocs.

## 5.4 Panel Dynamic OLS Estimation

Panel cointegration models are used to study long-run relationships among economic variables. The DOLS[6] is an estimation technique employed on cointegrated regression equations. As noted, we are confronted with the problem of endogeneity in our empirical model. The Panel Dynamic Ordinary Least square estimator allows for the control of endogeneity by including the lags and leads of the changes in the covariates (Kao and Chiang, 2001). In addition, the Panel Dynamic Ordinary Least Squares allows for the direct estimation of a combination of both I (0) and I (1) variables. Kao and Chiang (2000), also noted that the DOLS, when compared with other

[6] The DOLS was developed by Saikkonen (1991) and Stock and Watson (1993)

estimators such as the OLS and FMOLS, is more reliable in the estimation of cointegrated panel regressions irrespective of the degree of heterogeneity in the panel. This is because the lags and leads help to significantly reduce the bias of the DOLS. The long-run co-integration regression of the PDOLS estimator is specified as:

$$GDS_{it} = \mu_i + X'_{it}\beta + \sum_{j=-q_i}^{q_i} C_{ij}\, \Delta X_{it+j} + \varepsilon_{it} \qquad (15)$$

Where $X_{it}$ and β denote the vector of regressors and co-integrating parameters respectively, $\Delta X$ denotes the changes in the regressors. $q_i\ and\ -q_i$ denote the lag and lead parameters respectively, $\mu_i$ denotes the time-invariant country-specific effects and $\varepsilon_{it}$ is the remainder error terms.

The result of the Panel Dynamic Ordinary Least Squares is presented in table 5.4 below. It should be noted that these are the best models as reflected by the highest adjusted R-Squared. Most of the insignificant variables were dropped in the quest to obtain the best models.

*Table 5. 4: Panel Dynamic OLS Results*

| | *Panel Dynamic OLS* | | |
|---|---|---|---|
| *Dependent variable: Savings (% of GDP)* | *ECOWAS* | *WAEMU* | *WAMZ* |
| *Per capita income* | 0.1628*** (2.8581) | 0.5487*** (4.5126) | 0.0426* (1.9143) |
| *Deposit interest rate* | 2.658812** (4.2020) | -0.3935 (-0.9819) | 9.6418*** (16.5274) |
| *Inflation* | -0.0405 (-0.9967) | 0.0941 (1.4519) | -0.3219*** (-5.8048) |
| *Age dependency ratio* | -0.0710 (-0.2984) | -0.507532** (-2.0392) | 0.4323 (0.9543) |
| *Out-of-pocket health expenditure* | -0.1111* (-1.9552) | -0.093299** (-2.4407) | -0.0702 (-1.4873) |
| *Observations* | 405 | 192 | 162 |
| *R-squared* | 0.93 | 0.96 | 0.93 |
| *Adjusted R-squared* | 0.70 | 0.86 | 0.68 |

*Notes: Levels of significance: *** 1 percent, ** 5 percent, * 10 percent. (t-Statistics are in parenthesis)*

## 5.5 Discussion of Estimation Results

Table 5.4 (column 1) presents the estimation results for the ECOWAS region. The results reveal that out of pocket health expenditure has an impact on savings behaviour in ECOWAS. Specifically, OPH negatively and significantly influences savings within the region. This is largely consistent with a priori expectations. The estimated coefficient suggests that a unit increase in out of pocket health expenditure will lead to approximately 0.1 unit or ten percent decline in savings in the long run. The control variables for the savings model include per capita income, deposit interest rate, dependency ratio, and inflation. The results reveal that per capita income and deposit interest rate both have positive and significant impacts on savings behaviour in ECOWAS. These results are consistent with a priori expectations as well as observations from the empirical literature (Agenor and Aizenman, 2004; Abu et al., 2014; Baldé, 2011). On the other hand, inflation and age dependency ratio has negative but insignificant impacts on savings behaviour in ECOWAS.

The results for the two sub-regional blocs are presented in columns 2 and 3 respectively. The results reveal that out-of-pocket health expenditure and savings are negatively correlated. However, the coefficient of the WAMZ sub-bloc is not statistically significant. Per capita income plays an important role in influencing savings behaviour in both WAEMU and WAMZ. In addition, while the dependency ratio has a significant impact on savings in WAEMU, its impact on the WAMZ sub bloc is insignificant. This result is contrary to a priori expectations as it was expected that the high dependency ratio will have a negative and significant impact on savings in the sub bloc.

## 5.6 Dynamics of Savings within WAEMU and WAMZ

A comparison of the empirical results on savings behaviour between the WAEMU and WAMZ reveal that only per capita income has a positive and significant impact on savings in both sub-regional blocs. Within, the WAEMU sub bloc, the age dependency ratio and out-of-pocket health expenditure have negative and significant impacts on savings behaviour. In the case of WAMZ, the impact of these variables are not significant. On the other hand, deposit interest rate and inflation have significant positive and negative impacts respectively on savings behaviour in WAMZ. On the converse, these variables have no impact on savings behaviour in WAEMU. The relative ineffectiveness of interest rate in WAEMU could be attributable to the monetary policy environment in the region which has led to a relatively low and stable interest rate over the years. This could provide an explanation for the non-responsiveness of interest rate to savings behaviour in the region. Thus, the results suggest that the determinants of savings vary significantly between the two sub-regional blocs in ECOWAS.

Since the result of the empirical analysis reveal a statistically significant relationship between Out-of-Pocket Health expenditure and gross domestic savings in ECOWAS we reject our first null hypothesis for the study. Therefore, Out-of-Pocket Health expenditure has an impact on savings behaviour in ECOWAS. Similarly, we observe a significant difference in the determinants of savings between the WAMZ and WAEMU sub blocs and consequently reject the second null hypothesis that savings behaviour does not differ between the two sub blocs in ECOWAS.

# CHAPTER SIX

# 6 SUMMARY, CONCLUSION, AND RECOMMENDATIONS

## 6.1 Summary of the study

This study sought to examine the role of out-of-pocket health expenditure in influencing savings behaviour in ECOWAS. A panel data of all 15 countries in ECOWAS was constructed and the Panel Dynamic Ordinary Least Square technique was employed to estimate the regression equation. In addition, the study examined the dynamics of savings between the sub-regional blocs in ECOWAS namely; WAEMU and WAMZ.

The results of the empirical analysis establish the existence of a long run relationship between OPH expenditure and Gross Domestic Savings in ECOWAS. This is consistent with the implications in the theoretical literature as well as the theoretical proposition for this study. Furthermore, the sign of the coefficients in all models confirms a negative relationship between OPH expenditure and Gross Domestic Savings. Specifically, a one percent increase in OPH reduces Gross Domestic Savings within ECOWAS by about 10 percent. The study also found a significant difference in savings behaviour between the two sub-regional blocs in ECOWAS.

## 6.2 Conclusion and Policy Implications

Apart from its negative impact on health care provision in ECOWAS, high Out-of-Pocket health expenditures have larger implications on the macro economy. Out of Pocket health expenditures has been revealed to inhibit the capacity for domestic savings mobilization in ECOWAS. It is therefore imperative that efforts towards the improvement in domestic resource mobilization must necessarily incorporate a strategy for improving the health status of the population as well as reducing out of pocket health expenditure in the region. Thus, there is the need to develop a comprehensive savings mobilization policy and growth strategy which includes a deliberate focus on restructuring and improving the health systems within the ECOWAS region.

The study also noted that insufficient insurance coverage and inadequate public investment in health contribute to high out-of-pocket health expenditure in ECOWAS. This, therefore, calls for the development of strong institutions and a framework to promote the development of insurance schemes both at the national and community levels. The government must also prioritize and increase its health expenditure as a proportion of total government expenditure in line with the DOHA agreement. In addition, strategies must be put in place to improve the quality of public health care provision within countries of ECOWAS.

Per capita income and deposit interest rates have the greatest and most significant positive impact on savings mobilization in ECOWAS. The development of a sound and competitive financial sector offering competitive interest rate and portfolio diversity would be imperative to promote savings within the region. In addition, a reduction in population growth and subsequent increase in per capita income would yield significant returns on savings mobilization in the region.

Finally, the results of this study suggest that Africa's developmental problems are highly interconnected across different sectors of the economy. Any policy formulation must be comprehensive and integrate all sectors of the economy. There must be a holistic approach to tackling Africa’s developmental problems since what happens in one sector such as health systems and structures have strong linkages with other sectors which ultimately transmit to the macro level.

## 6.3 Recommendations

Based on the findings from this study, we recommend the following initiatives.

- There must be a conscientious effort by governments' and all stakeholders towards increasing health insurance coverage within ECOWAS to reduce the high out of pocket health expenditure in the region.
- Governments must commit to adhere to the Doha agreement and increase health expenditures in their respective countries so as to minimize out of pocket health expenditures.
- The quality of health care delivery especially in the public facilities must be improved.

## 6.4 Limitations of the Study and Recommendations for Further Research

This study has been limited in scope to the ECOWAS region. It would be informative to extend the study to other developing regions. Furthermore, the availability of data restricted the period of the study to 27 years. A longer time period would have been preferred. For further studies, the focus should be placed on increasing the cross sections as well as the time period in other to provide sufficient basis for generalizing the results.

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# APPENDIX A

Table A.1: Panel Unit Root Tests for WAEMU

| | Levin, Lin & Chu | | Im, Pesaran & Shin | |
|---|---|---|---|---|
| *Variable* | Levels | First Difference | Levels | First Difference |
| *Gross Domestic Savings* | -3.03740*** | -10.5513*** | -3.46135*** | -10.1410*** |
| *Per Capita Income* | -10.1455*** | -11.1915*** | -10.7993*** | -14.0075*** |
| *Deposit Interest Rate* | -3.23599*** | -10.2430*** | -0.43891 | -8.50224*** |
| *Inflation* | -8.97604*** | -13.5850*** | -7.62365*** | -14.8749*** |
| *Dependency Ratio* | -2.76744*** | -1.49048* | -1.42590* | -2.91923*** |
| *OPH* | 0.41799 | -10.2927*** | 0.52078 | -10.2781*** |

***and * implies a rejection of the null hypothesis of a unit root at 1% and 10% level of significance respectively.

Table A.2: Panel Unit Root Tests for WAMZ

| | Levin, Lin & Chu | | Im, Pesaran & Shin | |
|---|---|---|---|---|
| *Variable* | Levels | First Difference | Levels | First Difference |
| *Gross Domestic Savings* | -2.18077** | -13.7642*** | -3.60836*** | -14.3447*** |
| *Per Capita Income* | -7.48650*** | -15.0415*** | -6.95025*** | -14.9613*** |
| *Deposit Interest Rate* | 0.47121 | -6.66077*** | -1.80971* | -7.61644*** |
| *Inflation* | -4.89950*** | -19.2716*** | -6.25734*** | -17.9941*** |
| *Dependency Ratio* | -0.76403 | -4.95204*** | 0.45201 | -3.38621*** |
| *OPH* | -0.56194 | -10.6710*** | -0.21489 | -10.0001*** |

***, **, and * implies a rejection of the null hypothesis of a unit root at 1%, 5% and 10% level of significance respectively.

# APPENDIX B

Table B.1: Panel Cointegration Test for WAEMU

| *Kao Residual Cointegration Test* | | |
|---|---|---|
| | Statistic | Probability |
| *ADF-statistic* | -1.588146 | 0.0561* |

| *Pedroni Residual Cointegration Test* | | |
|---|---|---|
| | Panel Statistic | Group Statistic |
| *V-Statistic* | -0.291482 | - |
| *Rho-Statistic* | 1.225742 | 2.315485 |
| *PP-Statistic* | -3.324506*** | -2.570035*** |
| *ADF-Statistic* | -3.143566*** | -3.201378*** |

****, * implies the rejection of the null hypothesis of no cointegration at the 1% and 10% level of significance respectively.*

Table B.2: Panel Cointegration Test for WAMZ

| *Kao Residual Cointegration Test* | | |
|---|---|---|
| | Statistic | Probability |
| *ADF-statistic* | -1.808419 | 0.0353** |

| *Pedroni Residual Cointegration Test* | | |
|---|---|---|
| | Panel Statistic | Group Statistic |
| *V-Statistic* | -0.374763 | - |
| *Rho-Statistic* | -0.495240 | 0.332717 |
| *PP-Statistic* | -2.591882*** | -3.270761*** |
| *ADF-Statistic* | -2.518712*** | -3.292839*** |

****, ** implies the rejection of the null hypothesis of no cointegration at the 1% and 5% level of significance respectively.*

## End Notes:

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[i] The following countries were included in the computations for each region:

- Central Africa: Angola, Cameroon, Central African Republic, Chad, Congo, Dem. Rep., Congo, Rep., Equatorial Guinea, Gabon, and Sao Tome and Principe.
- East Africa: Burundi, Kenya, Rwanda, Tanzania and Uganda.
- North Africa: Algeria, Egypt, Libya, Morocco, Sudan, and Tunisia
- Southern Africa: Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, South Africa, and Zambia.
- West Africa: Benin, Burkina Faso, Cape Verde, Cote d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo.
- Average OPH for the various regions were computed with data from 1995-2014