Low Savings Rates in the Economic Community of West African States (ECOWAS): The Role of Corruption

Nurudeen Abu, Mohd Zaini Abd Karim[1] and Mukhriz Izraf Azman Aziz

Although many empirical studies have been conducted on the determinants of savings, little has been done to examine the effect of corruption on savings, particularly in the ECOWAS region. This study employs OLS and TSLS-instrumental variable techniques that take into account random effects to investigate the effect of corruption on savings, in addition to examining whether the effect of corruption on savings depends on income levels in the ECOWAS from 1996 to 2012. The results illustrate that lower corruption is associated with higher savings, and the effect of corruption on savings decreases with income level. The results suggest that governments in ECOWAS should employ effective policies that will reduce corruption to raise savings, and raise incomes to reduce the negative effect of corruption on savings.

1. Introduction

Savings plays an important role in economic development of a country (Lucas, 1988; McKinnon, 1973; Romer, 1986; Shaw, 1973; Solow, 1956). More so, savings is an important macroeconomic variable which impacts on capital accumulation, productivity, economic growth, and the dependency or otherwise of a country on external resources (Adam and Agba, 2006). Savings mobilization is also very crucial for most developing countries in long term economic growth (Kohsaka, 1996).

Despite the significance of high savings rates, the World Bank's World Development Indicators (WDI) reveal that many developing regions experienced fluctuations in their savings rates during the 1970-2010 period. Unfortunately, the Economic Community of West African States (ECOWAS) comprising of fifteen countries - Benin, Burkina Faso, Cape Verde, Cote D'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia,

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[1] Professor of Economics Othman Yeop Abdullah Graduate School of Business Universiti Utara Malaysia E-mail: zaini500@uum.edu.my

Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo, turned out to be one of the least successful regions it terms of savings mobilization. For instance, the region's savings rates were lower than those of other developing regions such as East Asia and Pacific, Middle East and North Africa, Latin America and Caribbean, Europe and Central Asia including world average savings rates during the same period. Moreover, many countries in the region and their Sub-Saharan Africa (SSA) counterparts witnessed decline in international capital inflow due to factors such as lending constraints (Elbadawi and Mwega, 2000) and corruption (Brunetti, Kisunko and Weder, 1998), making it difficult for them to reduce the already widened saving-investment gap and foster higher growth rates needed to reduce unemployment, poverty and inequality, just to mention few.

Although the literature has not adequately addressed the role of corruption in savings mobilization, it (corruption) may be an important determinant of savings particularly in ECOWAS countries, many of which have been labeled 'very corrupt' by the notable institutions such as the Transparency International (TI). Corruption can have some impacts on national savings through capital flight. For instance, Swaleheen (2008) illustrated a scenario where government officials that acquire wealth through illegitimate means transfer their assets abroad (capital flight) for the fear of being detected, arrested and prosecuted, and in the process lose such assets to the state. Jain (1988) suggested that capital flight arises from an agency problem where the leadership (agent) that has been vested with the power to borrow funds from abroad to invest in the domestic economy on behalf of the population (principal), borrow more than what is required and then appropriate part of the funds. The resulting capital flight reflects the amount by which national savings is reduced (Lessard and Williamson, 1987; Rodriguez, 1987; Swaleheen, 2008).

Chinn and Ito (2007) argued that corruption (including law and order, and bureaucracy quality) has some impact on the incentives to save and invest. For instance, if the legal system reduces corruption to the minimum (and promotes law and order, as well as guarantee property rights and contracts) it will encourage savings and investment. But if the legal system is weak (to the extent that it is unable to reduce corruption and break-down of law and order, and guarantee property rights and contracts) it will have negative consequences on individual's savings

and investment decisions. Similarly, the lack of good governance (that may results from public sector corruption) tends to reduce public trust in government and affects individual's savings and investment behaviour. In fact, public distrust may discourage people from increasing their savings (or investment) at higher real interest rates (or returns) because there is no assurance that government's future policies will be implemented in the best interest of the people. The situation becomes worsened if savings and investment are taxed arbitrarily and in an unpredictable manner (Aizenman, 2005).

Although numerous studies have been conducted on savings and its determinants, none to our knowledge has investigated the effect of corruption on savings particularly in the ECOWAS region. Whereas Adewuyi, Bankole and Arawomo (2010) empirically examined the determinants of savings rates in ECOWAS countries, the authors did not include corruption in the savings model. Moreover, most studies on savings in the region have focused mainly on individual country (see Nwachukwu and Egwaikhide, 2007; Nwachukwu and Odigie, 2011; Olusoji, 2003; Uremadu, 2007) without any basis for generalization of their findings (Adewuyi, Bankole and Arawomo, 2010). Furthermore, the recent study by Swaleheen (2008) on savings and corruption left out many ECOWAS countries such as Benin, Guinea, Guinea Bissau, Mali, Niger, Nigeria and Togo that are considered to be very corrupt in his analysis.

Besides, studies that examined whether the effect of corruption on savings depend on income level are almost non-existent. Given that low income countries tend to be very corrupt (Mauro, 1995) and have low savings rates as indicated by the WDI, the effect of corruption on savings may depend on income level, so that for low income ECOWAS countries the effect of corruption on savings will be higher. But at higher income levels countries tend to be less corrupt (Gokcekus and Suzuki, 2011), so that the effect of corruption on savings will be lesser. Thus, the objectives of this study are (i) to examine the effect of corruption on savings and (ii) to examine whether the effect of corruption on savings depends on income levels in ECOWAS countries. The rest of the paper is organized as follows. Section two is the overview of savings and corruption in ECOWAS countries, while section three contains the review of relevant literature on savings and its determinants. Section

four is for method and data, while section five consists of discussion of results. Section six concludes the paper.

2. Overview of savings and corruption in the Economic Community of West African States

As mentioned in the introductory section, ECOWAS lagged behind other developing regions and the world in terms of savings rates from between 1970 and 2010. For instance, the ECOWAS region had lower savings rates compared to Latin American and Caribbean, Sub-Saharan Africa and world averages during 1970-2010. Similarly, two regions - East Asia and Pacific, and Europe and Central Asia savings rates were higher than those of ECOWAS in 1980-2010 and 1990-2010, respectively (Figure I).

Figure 1: Savings Rates across Developing Regions
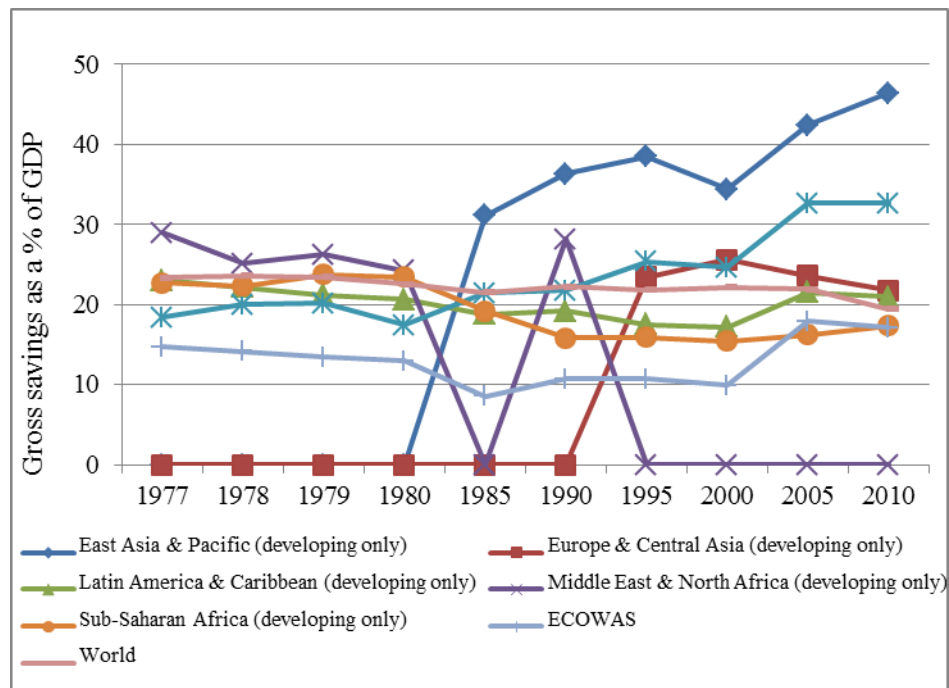
Source: Author

In addition, individual ECOWAS country's savings rates exhibited patterns similar to the region's average. Specifically, savings rates of most countries were not only lower than world averages, they also fluctuated between 1970 and 2010 (Figure II). The low savings rates in SSA countries including ECOWAS have been attributed to factors such as low income per capita, high young-age dependency ratio, and high dependence on aid (Elbadawi and Mwega, 2000).

Figure 2: ECOWAS countries Savings Rates
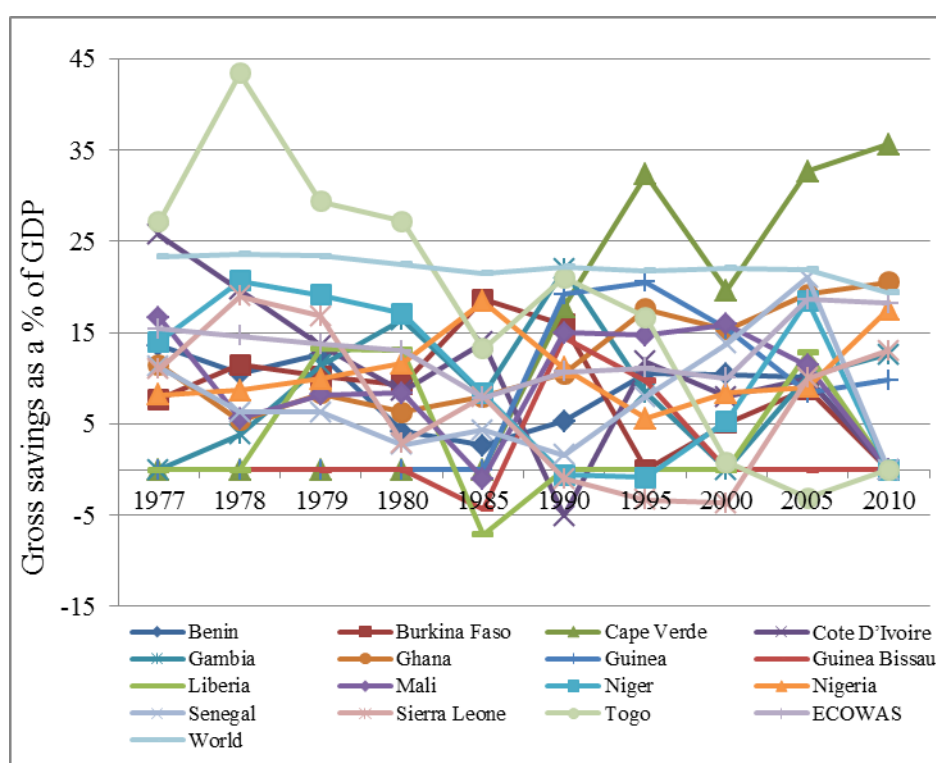
Source: Author

Besides the low saving rates, corruption is a serious problem facing many ECOWAS countries. Although corruption is a global phenomenon, its impact can be more devastating for the poor, majority of who live in developing regions of the world (ECOWAS inclusive). For instance, a report co-authored by Daniel Kaufmann (Director of global programmes at the World Bank) put the value of bribery around

the world at approximately US$1 trillion, with the burden falling mostly on the bottom billion persons living in extreme poverty (British Broadcasting Corporation, 2007). Moreover, Hanson (2009) revealed that corruption costs Africa US$150 billion a year, compared to the US$22.5 billion developed nations gave in aid to SSA in 2008. Also, the Global Financial Integrity (GFI) (2012) report illustrated that illicit capital outflows which results from corruption (including crime, tax evasion, and other illicit activity) cost developing countries US$5.86 trillion, while the growth of illicit capital flows was 23.8% for the African continent from 2001 to 2010. In addition, many ECOWAS countries were reported to have lost several millions of dollars, with Nigeria (the region's largest economy) accounting for US$129 billion and ranking 7th in terms of magnitude of illicit capital outflows during the same period. Thus, for most ECOWAS countries in dire need of resources, losing these funds further limits their ability in reducing the savings-investment gap and enhancing higher growth rates.

Given the adverse effects of corruption on the economy, some institutions/organizations and groups have devoted their time and resources to publish perceived corruption indices for countries. One of such institutions is the TI, and its report on corruption for 2005-2012 for instance, showed that ECOWAS ranked among world's most corrupt regions. The TI corruption perception index (CPI) indicates the extent to which a country is perceived to be corrupt, and ranges between 0 and 10. A higher CPI value indicates lesser corruption, but a lower value implies higher corruption. Moreover, each country's TI ranking is a reflection of its CPI. Thus, a country is ranked very high if it has a higher CPI (a condition of less corruption) and vice versa. The CPI and ranking presented in Table I indicates that countries in the ECOWAS region are facing serious corruption crisis.

For instance, only Cape Verde has maintained a CPI of at least 5.0 on a scale of 10 since 2008, and it was the only country from the region to be ranked among the top 50 in 2012. Unfortunately, 9 ECOWAS countries were at the bottom of the ranking, indicating that corruption is very high in the region. Thus, low income ECOWAS countries appear to be very corrupt including having low savings rates.

Table 1: ECOWAS Countries Corruption Perception Index and Ranking

	Corruption Perception Index								Ranking
Country	2005	2006	2007	2008	2009	2010	2011	2012	2012
Benin	2.9	2.5	2.7	3.1	2.9	2.8	3.0	3.6	94
Burkina Faso	3.4	3.2	2.9	3.5	3.6	3.1	3.0	3.8	83
Cape Verde	N.A	N.A	4.9	5.1	5.1	5.1	5.1	6.0	39
Cote D'Ivoire	1.9	2.1	2.1	2.0	2.1	2.2	2.2	2.9	130
Gambia	2.7	2.5	2.3	1.9	2.9	3.2	3.5	3.4	105
Ghana	3.5	3.3	3.7	3.9	3.9	4.1	3.9	4.5	64
Guinea	N.A	1.9	1.9	1.6	1.8	2.0	2.1	2.4	145
Guinea Bissau	N.A	N.A	2.2	1.9	1.9	2.1	2.2	2.5	150
Liberia	2.2	2.1	2.1	2.4	3.1	3.3	3.2	4.1	75
Mali	3.2	2.9	2.8	2.7	3.1	2.7	2.8	3.4	105
Niger	2.4	2.3	2.6	2.8	2.9	2.6	2.5	3.3	113
Nigeria	1.9	2.2	2.2	2.7	2.5	2.4	2.4	2.7	139
Senegal	3.2	3.3	3.6	3.4	3.0	2.9	2.9	3.6	94
Sierra Leone	2.4	2.2	2.1	1.9	2.2	2.4	2.5	3.1	123
Togo	N.A	2.4	2.3	2.7	2.8	2.4	2.4	3.0	128

Source: Transparency International

3. Review of Empirical Literature on the Savings and its Determinants

Many empirical studies have been conducted to investigate the determinants of savings across countries. For instance, Collins (1991) used a regression analysis to examine the determinants of savings in 10 developing countries during the 1960-1984 period. The results show that income per capita, growth, and the share of youth population have a positive effect on savings. Edwards (1996) investigated the determinants of savings in 36 countries (of which 11 are industrialized and 25 developing nations) from 1970 to 1992. The results of the Instrumental Variable technique reveal a positive impact of income per capita growth, foreign savings, urbanization, and a negative effect of political instability and GDP per capita on savings.

Callen and Thimann (1997) assessed the important determinants of savings in 21 Organization for Economic Cooperation and Development (OECD) countries in 1975-1995 using cross sections and static fixed

effects. The results indicate that income growth and inflation have a positive effect on savings, while direct taxes, old-age dependency, debt-GDP ratio, government transfers and public savings have a negative effect on savings. Similarly, Masson, Bayoumi and Samiei (1998) employed cross section and panel regressions to analyze the determinants of savings in 21 industrial and 40 developing countries from 1971 to 1993. The results demonstrate that savings is an increasing function of growth rate, wealth, per capita GDP and the current account, while public savings, government current expenditure, government investment and age dependency have a negative effect on savings. In the same manner, Haque, Pesaran and Sharma (1999) evaluated the determinants of savings in 21 OECD countries during 1971-1993, using mean group and pooled mean group estimation methods. The results show that public savings and government expenditure have a negative effect on savings.

Elbadawi and Mwega (2000) investigated the determinants of savings with a primary focus on SSA from 1970 to 1995 using the pooled OLS regression. The empirical evidence suggest that gross private disposable income per capita, growth of gross private disposable income per capita, terms of trade growth, real investment rate, and government consumption have a positive effect on savings, while public savings, youth dependency, urbanization, private sector access to credit, inflation, and foreign savings have a negative effect on savings. Adewuyi, Bankole and Arawomo (2010) examined the determinants of savings in ECOWAS countries during the 1980-2006 period, using pooled OLS, fixed effects and random effects estimation techniques. The results indicate that life expectancy has a significant and positive effect on savings. On the other hand, other variables including gross domestic income per capita, deposit rate, financial sector development, inflation rate, budget deficits and terms of trade have a significant and negative effect on savings in ECOWAS countries. Swaleheen (2008) investigated the relationship between savings and corruption across countries using the Ggeneralized Method of Moments (GMM) estimator. The results show that corruption has a negative effect on savings.

A cursory look at the literature suggests that there is paucity of research on savings-corruption relationship, and it seems that none has been done on ECOWAS, a region considered to be among the most corrupt. Even

the recent study on savings and corruption (Sawaleheen, 2008) left out almost half of ECOWAS countries in his analysis. Also, it appears that no study has been conducted to examine whether the effect of corruption on savings depend on income levels. Thus, this study extends the literature by investigating the effect of corruption on savings, and examining whether the effect of corruption on savings depend on income levels in ECOWAS countries.

4. Method and data

In this section, we attempt to establish a link between savings and corruption, followed by the model specification. Swaleheen (2008) presented a situation where corrupt government officials who acquire wealth via unlawful means, know that they would not be protected by the home country's law and face the risk of been detected, prosecuted and even lose their assets to the state. Thus, the corrupt officials will most likely transfer such illegal proceeds abroad (capital flight) (Hutchcroft, 1997; Rose-Ackerman, 1999). On his part, Jain (1988) explained capital flight within the context of an agency problem in a political system. The author argued that, so long as the leadership (agent) is vested with the power to borrow funds from abroad to invest in the domestic economy, he/she may borrow more than what is required on behalf of the population (principal), and in the process appropriate part of the funds. Also, if the economy has a low absorptive capacity relative to the borrowed funds, the return on investment will be lesser and unattractive to (prospective) investors, leading to further capital flight (Swaleheen, 2008). Moreover, it has been suggested that national savings will decline by the amount of capital flight (Lessard and Williamson, 1987; Rodriguez, 1987; Swaleheen, 2008).

Corruption also influences savings in other ways through its effect on government revenue and investment in human capital such as education, provision of social services including subsidies and transfers, private investment particularly the small and medium enterprises (SMEs), rent seeking, international capital or foreign investment, economic growth, unemployment, inequality and poverty. For instance, political corruption (which refers to the use of power by government officials or bureaucrats for private gain) impedes the growth of government tax revenue because funds that ought to go to government's coffers end up in private pockets of government officials. Inadequate revenue reduces government's

capacity to execute projects that would help to reduce poverty and underdevelopment (Ghura, 2002). In less developed countries (LDCs), opportunities to earn income and save are usually very scarce.

Furthermore, corrupt officials connive with households and businesses to provide false information to government including tax evasion, resulting in huge loss of resources available for productive investments (Blackburn, Bose and Haque, 2010). The shortfall in government revenue (relative to expenditure) partly accounts for the annual deficit-budgeting operated in many ECOWAS countries, with its adverse effects on national savings. The African Development Bank statistics pocketbook (various issues) indicates that most ECOWAS countries had deficit budget (public dissaving) in the past few years. Fortunately, a recent study suggested that corruption compels government to operate deficit budgeting (Oto-Peralías, Romero-Ávila and Usabiaga, 2013), which in turn leads to low national savings.

In addition, corrupt government officials ensure that investment in human capital (like education) is less because it does not guarantee maximum private gain like bribes (Mauro, 1995), while a larger percentage of government expenditure and the GDP is voted for the purchase of military arms and ammunitions (Gupta, de Mello and Sharan, 2002). This has wider implications that include reduced access to education, lower labour productivity, unemployment including declining income, all of which in turn reduce people's ability to save. Corruption also promotes rent seeking behaviour, while discouraging skills and knowledge acquisition, including innovation and entrepreneurship. Thus, it is very common to see rich families giving preference to public sector employment like government ministries and agencies (where corruption is rife) with a view to sustaining their rent seeking activities (Dabla-Norris and Wade, 2002). Since only the few close to the corridor of power have access to the nation's resources, many are left with very little and denied the access to adequate government's social services, including subsidies and transfers. Thus, corruption leads to higher income inequality and poverty (Gupta, Davoodi and Alonso-Terme, 2002), and as a result lower savings.

Sometimes, sick patients are required to pay for services such as health even though it is meant to be free. Also, funds set aside for the provision of these services are either embezzled or misappropriated by

government officials (Blackburn and Forgues-Puccio, 2007). Moreover, the masses lack access to income generating opportunities as government officials prefer to investment in capital-intensive projects rather than labour-intensive projects that will contribute to their socio-economic wellbeing (Leite and Weidmann, 1999). In societies where poverty is high, it is difficult for people to finance their consumption and to a large extent save.

Corruption is partly responsible for the high cost of doing business in many poor countries because businessmen have to bribe government officials in order to register their businesses, collect licenses and permits, just to mention few. And for those unwilling to cooperate, they may have to spend weeks or months before they are attended to or have their request/application turned down. This discourages not only private investment, but also reduces the growth potential of SMEs (Tanzi and Davoodi, 2002), leading to higher unemployment, lower income generating opportunities and savings. Moreover, since corruption is a tax on private investment (Everhart, 2010; Shleifer and Vishny, 1993; Wei, 2000), it has a disproportionate impact on transaction costs including reducing profitability (Everhart, 2010; Goorha, 2000). Thus, corruption has adverse effects on private investment (Asiedu, 2006; Asiedu and Freeman, 2009; Mo, 2001; Smarzynska and Wei, 2002; Wei, 2000) and growth (Gyimah-Brempong, 2002; Mauro, 1995; Tanzi and Davoodi, 2002). For entrepreneurs (most of them small business holders) that cannot afford to pay bribes, they are compelled to join the working class, earning very low wages as a result of the high labour supply (Ahlin, 2001; Foellmi and Oechslin, 2007; Blackburn and Forgues-Puccio, 2007), leading to higher unemployment, low income and declining savings.

Given the issues raised above, we argue that savings (GSR) is dependent on the level of corruption (COR). Similarly, given that income varies across ECOWAS countries, it is possible that the impact of corruption on savings depend on the level of income (PCY). Thus, at low income levels the impact of corruption on savings would be higher, but its impact would be lesser at higher levels of income. In order to capture this effect, we included corruption-income interaction (COR*PCY) as a variable in the savings model. In addition, we introduced certain variables that have been found to be important determinants of savings in our model. They include, income growth (GPCY), age dependency

(DEP), inflation rate (INF), real interest rate (RIR), agriculture (AGR).
Thus, the savings model to be estimated is specified as:

$$GSR_{it} = \beta_0 + \beta_1 COR_{it} + \beta_2 PCY_{it} + \beta_3 COR_{it} * PCY_{it} + \beta_4 GPCY_{it} \\ + \beta_5 DEP_{it} + \beta_6 INF_{it} + \beta_7 RIR_{it} + \beta_8 AGR_{it} + U_{it} \quad\quad 1$$

Where: *it* is the time period *t* in country *i*, and *U* is the error term. The
variables are measured as follow:

GSR is measured as gross (national) savings as a percentage of GDP.
The data were collected from the WDI. However, due to unavailability
of savings data on Nigeria in the WDI, the data was obtained from the
Central Bank of Nigeria. The variable has been used in recent studies
(see Abu, Karim and Aziz, 2013; Balde, 2011; Bloom, Canning and
Graham, 2003; Bloom et al., 2007; Cook, 2005).

PCY is measured as income (GDP) per capita. The subsistence-
consumption theories argue that savings rates tend to be higher in high
income countries and lower in low income countries (Metin-Ozcan,
Gunay and Ertac, 2003). Thus, we expect a positive relationship
between income per capita and savings rates. The data were collected
from the WDI.

GPCY is measured as income (GDP) growth rate. The permanent
income hypothesis predicts a negative relationship between income
growth and savings because forward looking consumers anticipate
increases in their future income, and therefore dissave against future
earnings (Friedman, 1957). But the life cycle hypothesis asserts that
increases in income growth has a positive effect on savings since it
(income growth) increases savings of working population relative to
non-working population (Metin-Ozcan, Gunay and Ertac, 2003). Thus,
we expect the relationship between income growth and savings rates to
be either positive or negative. The data were obtained from the WDI.

INF is measured as annual percentage change in price. Athukorala and
Sen (2004) opined that the impact of inflation raises uncertainty about
future income streams, leading to higher savings for precautionary
purpose, particularly for households in developing countries whose

income prospects are much more uncertain than their counterparts in developed countries. Also, if individuals seek to maintain a target level of wealth or liquid assets relative to income, savings will rise with inflation. Metin-Ozcan, Gunay and Ertac (2003) submitted that macroeconomic uncertainty (captured by inflation rate) is expected to have a positive effect on savings, as individuals in such a society would try to hedge against risk by increasing their savings. This view was echoed earlier by Skinner (1988) and Zeldes (1989). Similarly, Hondroyiannis (2006) submitted that in societies where income prospects are less uncertain, higher inflation rate would results in lower savings. Thus, we expect either a positive relationship between inflation and savings rates. The data were collected from the WDI.

RIR is measured as nominal deposit rate adjusted for inflation rate. The life cycle hypothesis asserts that rising interest rate raises the opportunity cost of current consumption, making individual consumer to reduce current consumption and increase savings (substitution effect). But if consumer is a net lender, increases in interest rate would lead to higher income and consumption, and then results in lower savings (income effect). If the substitution effect outweighs the income effect, the relationship between interest rate and savings would be positive (Athukorala and Sen, 2004; Nwachukwu and Egwaikhide, 2007). Therefore, we expect the relationship between savings and real interest rate to be either positive or negative. The data were obtained from the WDI.

DEP is measured as the ratio of population below 15 years plus population over 65 years to working population (aged 15-64 years). Ando and Modigliani (1963) argued that individuals accumulate wealth during their productive/working years and save (or make provisions) for retirement, since income is expected to fall during retirement. Thus, if the working population rises relative to non-working (dependent) population, savings will rise and vice versa. Overall, we expect a negative relationship between age dependency and savings rates. The data was collected from the WDI.

AGR is measured as agriculture value as a percentage of GDP. Given that a larger percentage of ECOWAS population engage in agricultural production, it is obvious that many face uncertainty in their future earnings. Skinner (1988) suggested that greater uncertainty about future

incomes compels consumers to set aside some resources on precautionary grounds. Chowdhury (2001) and Khan and Hye (2010) discovered that agriculture has a positive effect on savings. Thus, we expect a positive relationship between agriculture and savings rates. The data were obtained from WDI.

COR is captured by indices of corruption that include the CPI and International Country Risk Guide corruption index (ICRG) published by the Political Risk Service (PRS). The corruption indices seem to have been endorsed by researchers as many recent empirical studies on corruption employed the indices for estimation purposes (see Abu, Karim and Aziz, 2015; Blackburn, Bose and Haque, 2010; Mauro, 1995; Treisman, 2000). Although the indices have different coverage, methodology and availability, they have been found to be highly correlated with one another and highly correlated with major economic variables, indicating that they are measuring the same phenomenon (Asiedu and Freeman, 2009; Blackburn, Bose and Haque, 2010; Treisman, 2000) and that spuriousness is not a serious problem per se.

Moreover, the various measures of corruption (particularly, the TI and ICRG) have been employed to check for consistency and robustness of results (Swaleheen, 2011). The two indicators have also been employed in previous studies (see Asiedu and Freeman, 2009; Blackburn, Bose and Haque, 2010; Swaleheen, 2011), and in a recent study the control of corruption indicator was employed (see Samimi and Abedini, 2012). The TI corruption index ranges from 0 to 10, while ICRG index ranges from 0 to 6. Higher value indicates lesser corruption and lower value means higher corruption. The data on the third indicator or measurement of corruption (control of corruption index) were collected from the Worldwide Governance Indicators (WGI). The primary source of the data is the Global Insight Business Conditions and Risk (WMO). The control of corruption indicator has a range of 0 to 1, and higher value means lesser corruption and vice versa. Base on past studies (Swaleheen, 2008), we expect a positive relationship between lesser corruption (increases in corruption indices) and savings rates.

COR*PCY refers to corruption-income interaction, and indicates that the effect of corruption on savings depends on income levels. Since low income countries tend to be more corrupt (Mauro, 1995) and have low savings rates, it is possible that the effect of corruption on savings

depends on income levels. Therefore, we expect the impact of corruption on savings to be higher in low income ECOWAS countries, while the impact should be lesser at higher income levels. The inclusion of the corruption-income interaction in the savings models to be estimated can lead to multicollinearity problem due to the presence of corruption and income per capita from which the interaction variable has been calculated. There is a possibility that these variables would be highly correlated. One way to eliminate multicollinearity is to regress the interaction term on the explanatory variables from which it was calculated. Then, the residuals series is taken to replace the interaction variable during estimation.

5. Discussion of Results

The literature has suggested that income (GDP) per capita and/or income growth is endogenous to savings (Baldé, 2011, Sinha and Sinha, 1998), indicating that increases in income per capita/growth lead to higher savings, and increases in savings also lead to higher income per capita/growth. The causality between the variables will result to correlation between the control variables and the error term, thus violating the assumptions of the linear regression model (Baldé, 2011). Moreover, it is impossible to determine the effect of individual variable and isolate its impact on savings, while the estimation of the relationship would result in a potential endogeneity bias. In essence, OLS estimates would be bias.

The problem can be solved using the Two Stage Least Squares (TSLS)-instrumental variable technique to estimate the relationship between the variables. The method involves finding variables that are highly correlated with the endogenous variable, but uncorrelated with the error term. Although, it is not easy to choose appropriate instruments to control for endogeneity, using lagged values of explanatory variables that are also endogeneous can be helpful (Baldé, 2011). Thus, we used income per capita and income growth lagged by one period as instruments for income per capita and income growth. Also, we employed the Hausman test to test if the random effects estimates are significant and preferred to the fixed effects estimates and vice versa. In a similar study, Baldé (2011) found that the fixed effects estimates were correct using the Hausman test, and therefore employed both OLS and TSLS-instrumental variable methods that take into account fixed effects

to analyze the impact of foreign aid and remittances on savings/investment in SSA.

Our initial estimation indicates that random effects estimates were significant and preferred to fixed effects estimates via the Hasuman test. This led us to estimate our relationship using OLS and TSLS techniques which take into account the random effects. The results of estimation presented in Table II demonstrate that declining corruption (measured by increases in the TI and ICRG corruption indicators) has a positive and significant effect on savings.

This finding suggests that lesser corruption increases savings through increased government revenue and possibly reduced deficit budgeting (public dissaving) that has become a common feature of many ECOWAS countries. In addition, lesser corruption raises government expenditure in productive investment and human capital, leading to increased access to education, higher labour productivity and income, as well as savings. Furthermore, declining corruption encourages the private sector and enhances investment growth since businessmen don't have to pay bribes to government officials to collect permits and licences including registration of their businesses (and incur high production costs). This in turn increases employment generation and incomes, leading to higher savings. Also, lower corruption raises the amount of social services, subsidies and transfers, etc, available to the people, leading to lower inequality, declining poverty and higher savings.

The results also show that the corruption-income interaction term is significant and negatively related to savings (using the WMO control of corruption index), indicating that the impact of corruption on savings is higher at low income levels but lesser at high income levels. Thus, the impact of corruption on savings would be larger in ECOWAS countries due to their relatively low income levels. In addition, the impact of corruption on savings would be higher in the region because corruption reduces government investment in human capital such as education, leading to lower productivity, higher unemployment and declining income. Moreover, the effect of corruption on savings will be larger since corruption limits the access of the masses to social services including subsidies and transfers, encourages capital flight, discourage the inflow of foreign capital, drives (prospective) small scale investors

into the informal sector, and even turns employers of labour to job seekers.

Table 2: Estimation Results Using Various Corruption Indicators(Dependent Variable: Savings Rates)

Variable	TI Corruption Index		ICRG Corruption Index		WMO Corruption Index	
	OLS/Random Effects	TSLS/Fixed Effects	OLS/Random Effects	TSLS/Fixed Effects	OLS/Random Effects	TSLS/Fixed Effects
Constant	-15.0920	28.8334	-26.9912	-35.1486	-0.0236	-4.7729
	(19.1302)	(18.2790)	(22.5203)	(24.1511)	(19.2501)	(25.6858)
COR	1.9037***	1.9447***	1.6139*	1.7313*	-2.5892	-5.7559
	(0.6619)	(0.7436)	(0.8268)	(1.0033)	(2.7907)	(4.2257)
PCY	0.0037**	0.0054**	0.0051*	0.0082*	0.0053***	0.0056**
	(0.0016)	(0.0021)	(0.0030)	(0.0046)	(0.0018)	(0.0027)
COR*PCY	-0.0001	-0.0002	0.0051	0.0056	-0.0174**	-0.0178**
	(0.0009)	(0.0010)	(0.0036)	(0.0038)	(0.0084)	(0.0088)
GPCY	-0.0602	-0.4315	0.1465	-0.1188	0.1377**	0.2098
	(0.1474)	(0.3992)	(0.1348)	(0.7388)	(0.0645)	(0.7889)
DEP	0.4764	0.7287*	0.6902	0.7634	0.2717	0.3704
	(0.4133)	(0.3792)	(0.4399)	(0.4765)	(0.3835)	(0.5498)
INF	0.3139***	0.3737***	0.5379***	0.5693***	0.3470***	0.3902**
	(0.0075)	(0.0838)	(0.1589)	(0.1722)	(0.1174)	(0.1540)
RIR	0.2155	0.2470	0.4592***	0.5790**	0.2510**	0.2434
	(0.1555)	(0.1691)	(0.1736)	(0.2915)	(0.1158)	(0.1623)
AGR	-0.1269***	-0.0602	-0.1436**	-0.0409	-0.1901**	-0.1671*
	(0.1269)	(0.0966)	(0.0677)	(0.0855)	(0.0794)	(0.0890)
R^2	0.41	0.38	0.22	0.13	0.34	0.25
F-Stat.	6.76***	8.32***	3.99***	3.22***	10.50***	6.75***
	(0.0000)	(0.0000)	(0.0000)	(0.0024)	(0.0000)	(0.0000)
Obs.	98	98	121	121	174	164

Note: *, **, *** indicates significance at 10%, 5%, and 1%, respectively. TI is Transparency International; ICRG is International Country Risk Guide; and WMO is Global Insight Business Conditions and Risk Indicators.

Another discovery from the results is that income per capita has a significant positive effect on savings. This finding is in line with the

ones reported in previous studies (see Collins, 1991; Elbadawi and Mwega, 2000). The positive sign of the income coefficient suggests that at higher income levels, individuals can finance their consumption and save the remainder. Metin-Ozcan, Gunay and Ertac (2003) submitted that at higher income levels countries are likely to have higher saving rates.

The results also illustrate that inflation rate has a significant positive impact on savings. This finding is line with past studies (see Burnside, Schmidt-Hebbel and Servén, 1999; Callen and Thimann, 1997; Hondroyiannis, 2006; Loayza, Schmidt-Hebbel and Servén, 2000). Thus, rising inflation (a measure of macroeconomic uncertainty) increases the uncertainty regarding future incomes, and compels individuals to raise their savings on precautionary grounds. Athukorala and Sen (2004) opined that, since uncertainty surrounding household's income is higher in developing countries compare to developed countries, they will increase their savings at higher rates of inflation. Thus, for many households in ECOWAS countries who are mostly employed in the agricultural sector, they face higher uncertainty in terms of future incomes, so that they would save for precautionary reasons.

The empirical evidence also indicates that real interest rate has a significant positive effect on savings. This outcome lends support to the one discovered by previous studies (see Athukorala and Tsai, 2003; Burnside, Schmidt-Hebbel and Servén, 1999; Hondroyiannis, 2006). The positive sign of the coefficient of the real interest rate suggests that, at higher interest rate, households would increase their savings so as to earn higher returns in the future. It has been suggested that one of the surest ways to ensure that real interest rates are kept high and attractive is to reduce inflation rate (Edwards, 1996).

Also, the results show that agriculture has a significant and negative effect on savings. This finding in line with the one reported by past studies (see, Ang and Sen, 2009; Muhleisen, 1997). The negative sign of the coefficient of agriculture is a reflection of the underdeveloped agriculture sector, a major employer of labour and contributor to the GDP, still practised at subsistence level, thus generating low incomes for most households in ECOWAS countries. Poor households would frequently draw on past savings (if they have them at all) rather than increasing their savings (Abu, Karim and Aziz, 2013).

Lastly, both OLS and TSLS estimates are identical particularly in the case of the variables of interest (corruption and corruption-income interaction), indicating that the OLS estimates are consistent and unbiased, endogeneity is not a problem in the estimated relationships, and there is absence of simultaneity between savings and income per capita/income growth.

6. Conclusion

This paper employs both OLS and TSLS-instrumental variable techniques that take into account random effects to investigate the effect of corruption on savings, including examining whether the effect of corruption on savings depend on income levels in ECOWAS countries during the 1996-2012 period. The results indicate that declining corruption leads to higher savings, and the impact of corruption on savings is higher in low income ECOWAS countries. Thus, policies aimed at reducing corruption will lead to higher savings via increases in government revenue (and declining public dissavings), lesser capital flight, higher investment in human capital, increased provision of social services including transfers and subsidies to the poor, attraction of foreign investment, encouragement of private investment and growth of SMEs.

Secondly, given that the impact of corruption on savings is larger in ECOWAS countries due to the region's low income, governments should make efforts to permanently raise the income of their respective economies. At higher levels of income, countries have the resources to invest in the fight against corruption, provide social services and increase subsidies and transfers to the poor, raise investment in human capital, and attract foreign investment. These would raise employment, reduce poverty and inequality, and lessen the impact of corruption on savings. Moreover, since low income (poor economic conditions) has been cited as an important factor responsible for high corruption (Gokcekus and Suzuki, 2011), permanent increases in income will increase individuals ability in meeting their basic needs, and therefore reduce corrupt tendencies among them.

Related to inadequate income is the low civil service wages that has been found to account for the high corruption in the public sector. Therefore, the payment of higher wages will lessen corruption in the

government sector (Gyimah-Brempong, 2002; Schumacher, 2013; Tanzi, 1998; Van Rijckeghem and Weder, 2001). In addition, an efficient legal system is important in the fight against corruption and promotion of savings (Chinn and Ito, 2007). However, the legal system in ECOWAS countries is very weak and inefficient, and lack adequate funding. In certain countries such as Nigeria, politicians or public officials alleged to have embezzled or stolen public funds walk freely, with some even occupying elected offices. In fact, the former Chairperson (Mrs Farida Waziri) of the country's own anti-graft agency, the Economic and Financial Crimes Commission (EFCC), once advocated for the setting up of 'Special Courts' to prosecute offenders because of the slow pace of justice delivery by the conventional courts. To this end, governments in the region should establish special courts (where none exists) and increase the funding of anti-corruption agencies and the judiciary to prosecute those found to have helped themselves with state funds.

Thirdly, the cooperation of the international community and developed countries is highly recommended in the fight against corruption in the ECOWAS region. It must also be mentioned that developed countries have not shown serious commitments in the fight against corruption in less developed countries. Many corrupt African leaders and politicians have found European countries such as Switzerland and United Kingdom a 'Safe Haven' where they keep their loots. Thus, the leadership of these countries should monitor the flow of funds in and out of their financial systems to ensure that they are gotten from legitimate sources. The conviction of a former Nigerian Governor (James Ibori) over corruption by the British government was applauded by Nigerians all over the world. Finally, reducing corruption would lead to higher savings, and increasing incomes permanently would reduce the adverse impact of corruption on savings in ECOWAS countries.

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