THE EFFECT OF PROPERTY TAX ON WEALTH ACCUMULATION IN DEVELOPING ECONOMIES

Fiyinfoluwa Giwa [*], Ireen Choga [**]

* Department of Economics, North-West University, Mahikeng, South Africa
** *Corresponding author*, Department of Economics, North-West University, Mahikeng, South Africa
Contact details: Department of Economics, North-West University, Private Bag X2046, Mmabatho, 2735 Mahikeng, South Africa

OPEN ACCESS

How to cite this paper: Giwa, F., & Choga, I. (2023). The effect of property tax on wealth accumulation in developing economies [Special issue]. *Corporate Governance and Organizational Behavior Review, 7*(3), 405–414.
https://doi.org/10.22495/cgobrv7i3sip15

ISSN Online: 2521-1889
ISSN Print: 2521-1870

Received: 02.02.2023
Accepted: 01.09.2023

JEL Classification: D14, D31, H20
DOI: 10.22495/cgobrv7i3sip15

Abstract

Wealth accumulation aids in the survival and betterment of disadvantaged households. The majority of African households acquire wealth in the form of properties, which form part of their assets. This study aims to investigate the effect of property tax on wealth accumulation. From 1990 through 2019, the study looks at seven African countries: Cameroon, Eswatini, Madagascar, Mauritius, Morocco, South Africa, and Tunisia. The panel vector error correction model (PVECM) was employed as the econometric technique approach. The variables used in the study are property tax, land wealth, political stability, education, and household income. The findings show that property taxes have a positive and significant relationship with wealth accumulation in the long-run in the seven African countries studied. In the short-run, however, the relationship is negative and statistically insignificant. The study recommends a policy review on land ownership to attain easily landed properties and a reduction in property tax.

Keywords: Property Tax, Wealth Accumulation, Panel Vector Error Correction Model, African Households, African Countries

Authors' individual contribution: Conceptualization — F.G.; Methodology — F.G.; Software — F.G.; Validation — F.G.; Formal Analysis — F.G.; Investigation — F.G.; Resources — F.G.; Data Curation — F.G.; Writing — Original Draft — F.G.; Writing — Review & Editing — I.C.; Visualization — F.G.; Supervision — I.C.; Project Administration — I.C.; Funding Acquisition — I.C.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

1. INTRODUCTION

The issue of wealth continues to pique scholars' and policymakers' interest. Accumulation of wealth aids in the survival and advancement of disadvantaged households. Although wealth is generally associated with those at the top of the income distribution, it may play a more pivotal role in the lives of the poor. Relying on wealth can help keep poor households afloat after an income or expenditure shock, and wealth accumulation can be a cushioning for the most vulnerable (Burger et al., 2006; Achen, 2019).

One of the most troubling social and economic trends is the widening gap between the rich and the rest of the population. Efforts to identify the causes and possible solutions to the widening gap in wealth have sparked a great deal of interest. Although wealth is more unequally distributed in many countries (South Africa, Eswatini, and Cameron), the wealthy continue accumulating wealth considerably (De Nardi & Fella, 2017).

On the other hand, wealth may give access to income-generating opportunities. For instance, households with insufficient accumulated wealth may need help to acquire capital to fund an income-generating venture; hence causing problems that may make the projects unaffordable, thus shutting off a possible escape from poverty. Therefore, wealth plays a significant role in households' poverty exit (Weon & Rothwell, 2020). However, some conditions and situations in Africa may create unfavorable conditions for the vulnerable. Asset

ownership for the vulnerable is becoming more of a challenge, which can affect their overall accumulated wealth.

Zucman (2019) defines wealth as non-financial assets (real estate, land, and buildings) and financial assets (equities, bonds, life insurance, pension funds) over which a person has ownership rights and which provide economic advantages to their owners. Additionally, wealth is calculated as assets less any associated financial obligations (liabilities or debt — mortgages and loans) (Zhao & Burge, 2017). Since assets constitute a significant part of wealth accumulation, one should understand and try to eliminate severe issues which may be a hindrance. Property tax plays a significant role in acquiring assets because this type of tax is levied directly on properties and needs to be considered when purchasing properties. According to Collier et al. (2018), property tax affects wealth accumulation, especially non-financial assets, as this can either attract or deter individuals from purchasing these non-financial assets. Zhao and Burge (2017) also expressed that most studies overlook the possible impact of property taxes, a significant element directly related to property prices. In this regard, for this study, wealth accumulation will be focused on non-financial assets, mainly house, and land properties.

Property tax is a type of wealth tax that is progressive and is levied in every African country except Burkina Faso and Seychelles (Franzen & McCluskey, 2017). Property tax is done annually in Africa; sometimes, it is referred to as recurrent property tax. Furthermore, it is a source of revenue, most especially for local governments in some countries. In South Africa, property tax contributes about 6191.2 million USD. In Morocco, it contributes about 1855.1 million USD. Furthermore, property tax in Africa has challenges, such as administrative issues; however, the administrative challenges have kept contributing to the economy (Collier et al., 2018).

Interestingly, more and more African cities have become metropolitan cities, and property tax has increased over time. In 2009, the four metropolitan cities (Cape Town, Durban, Johannesburg, and Pretoria) in South Africa raised almost 50 percent of the total property tax collected by more than 240 municipalities countrywide. In 2015, eight metropolitan municipalities raised more than 70 percent of the recurrent property tax in South Africa. (Franzen & McCluskey, 2017). This statistic further buttresses how the African continent is evolving — more people are moving from rural to urban settlements. It also highlights that more people are looking for greener pastures, hence the metropolitan cities' rapid growth. The accumulation of wealth is becoming increasingly a concern for individuals to better their lives.

Furthermore, property tax has shown to be a source of revenue for the nation, especially local government in Africa; however, just like other forms of tax, property tax can burden individuals (Choudhury, 2018), hence the accumulation of property/wealth. According to Seim (2017), the property tax may affect wealth accumulation depending on the tax policy. This is supported by Bjerksund and Schjelderup (2019), who believe that individuals and investors may only be willing to pay for financial assets if they are mindful of tax policies and rates. In addition, the property tax issue is of great concern for individuals or investors involved in property investment. Similarly, a high property tax rate may result in the inefficient use of land and properties (Ali et al., 2017).

Wealth accumulation is becoming a priority for individuals seeking to improve their lives. This study considers seven African countries: Cameroon, Eswatini, Madagascar, Mauritius, Morocco, South Africa, and Tunisia, from 1990 to 2019. These countries have the most significant revenue for property tax in Africa (this finding is based on the online data outsourced). Other countries, such as Egypt, have significant revenue from property taxes, but data was insufficient. The econometric technique employed to investigate the subject matter is the panel vector error correction model (PVECM). It should be noted that the study employs land wealth as a proxy variable for wealth accumulation.

The study's contribution to the body of knowledge is that this research study is a panel study focused on Africa. The uniqueness of this research study is that property tax is factored as a critical element in wealth accumulation, of which there are limited studies in the African context.

The rest of the paper is organized as follows. Section 2 reviews the theoretical background. Section 3 presents the methodology. Section 4 provides the results and the discussions. Section 5 presents concluding remarks.

2. LITERATURE REVIEW

The optimal capital taxation theory by Thomas Piketty (Piketty, 1997) can be used as a theoretical foundation for the relationship between property taxes and wealth accumulation. The optimal taxation theory proposes a design mechanism for taxes on capital (wealth) and wealth accumulation. According to Piketty (2014), wealth is distributed more unevenly than income, leading to social inequality. According to the hypothesis, the ratio of wealth to income tends to rise with time, resulting in an increased emphasis on wealth taxation (Stirati, 2017). One of the most significant advantages of the theory is that it inculcates and accentuates the primary dynamics that shape capital taxes. The theory offers a solution to the problems associated with the assessment of the redistributive and redistributing effects of the capital tax. In addition to this, the theory provides a compelling explanation for the unequal link between wealth and income (Saez & Stantcheva, 2018). The theory provides detailed and succinct explanations for the wealth and income gaps that exist in society (Piketty & Saez, 2012).

Furthermore, a significant amount of attention from academics has been focused on the relationship between property taxation and the accumulation of wealth. Numerous studies have investigated the correlation between property taxation and the accumulation of wealth. It is worth highlighting that some scholars interchange property tax with a wealth tax. The empirical study of Jakobsen et al. (2018) examined the effects of wealth taxes on wealth accumulation in Denmark. The study used the difference-in-difference estimation as the statistical method, for the period from 1980 to 2012. The findings revealed that there was a clear reduced-form effect of wealth taxes in the short and medium run, with larger effects on the very wealthy than on

the moderately wealthy. The study showed that wealthy people tend to accumulate wealth through most of their lives; only after they reach 80 years of age does their wealth profile flatten or fall slightly. Similarly, Brülhart et al. (2016) discovered comparable outcomes. The study by Brülhart et al. (2016) investigated taxable wealth using evidence from Switzerland. The study used a panel fixed effect model estimation technique. The result revealed that wealth accumulation is highly sensitive to wealth taxation. Therefore, there is a significant relationship between wealth accumulation and wealth taxation.

On the other hand, Joulfaian (2006) analysed the behavioural response of wealth accumulation to estate taxation using time series evidence. The researcher employed data on the federal government estate tax collections from 1950 to 2000, using the ordinary least squares (OLS) econometric method. The findings suggest that estate taxes/property taxes have a negative effect on the size of a taxable estate. Additionally, the findings of Kopczuk and Slemrod (2000) suggest comparable outcomes with the study of Joulfaian (2006). The article of Kopczuk and Slemrod (2000) examined the effect of the estate tax on wealth accumulation and avoidance from 1916 to 1996. The pooled OLS method was used as the econometric approach to the study. The study discovered that estate tax rate structure is generally negatively correlated with net worth accumulation. However, the findings of Duran-Cabré et al. (2019) suggest otherwise. The study by Duran-Cabré et al. (2019) investigated the behavioural responses to the reintroduction of wealth taxes in Spain for the period 2011–2015 using the fixed effect approach. Findings in the study revealed that wealth tax does not have a negative impact on wealth accumulation; rather wealth taxes encouraged taxpayers to change their asset and income composition to take advantage of wealth tax exemptions.

3. DATA AND RESEARCH METHODOLOGY

This study employed the PVECM as the econometric technique for study from 1990 to 2019. The study used secondary data outsourced from the World Development Indicators (WDI), the Global Economy database, and the Organisation's for Economic Co-operation and Development (OECD) database. The dataset and measurement are shown below in Table 1.

Table 1. Datasets and measurements

Variables	*Measurement*	*Data source*
Land wealth	Percentage of land area	WDI (World Bank)
Property tax	Revenue in USD	OECD Statistics
Political stability	Political stability index	Global Economy
Household gross savings	Percentage of GNI	WDI (World Bank)
Education	Percentage of GNI	WDI (World Bank)
Household income	Current USD	WDI (World Bank)

Note: GNI — Gross national income.

In an attempt to investigate the subject matter, the study adopted and modified the panel study of Polyakov and Zhang (2008) model. The study analysed the effect of property taxes on land use between rural and developed land areas in Louisiana. The following is the model regression utilized in Polyakov and Zhang (2008) study:

$$land_{it} = a_0 + a_1 pt_{it-1} + a_2 ral_{it} + a_3 dl_{it} + a_4 pop_{it} + \varepsilon_{it} \quad (1)$$

where,

– $land_{it}$ denotes *land use*;

– *pt* represents *property tax*;

– *ral* represents the *return on agricultural land and forestry*;

– *dl* denotes *developed land*;

– *pop* denotes *population.*

The modification of the model is presented in Eq. (2) below.

$$LW_{it} = PTAX_{it} + PSTAB_{it} + HSAV_{it} + EDU_{it} + HINC_{it} + \mu_{it} \quad (2)$$

where,

– *LW* stands for *land wealth*;

– *PTAX* stands for *property tax*;

– *PSTAB* stands for *political stability*;

– *HSAV* stands for *household savings*;

– *EDU* stands for *education*;

– *HINC* stands for *household income.*

It is worth highlighting that *land wealth* will be used as the measure for *wealth accumulation* in the study. Due to the inadequate data information on total net wealth, the study, therefore, uses *land wealth* as a proxy for *wealth accumulation.*

In a linear form, the Eq. (2) can be presented as:

$$LW_{it} = \alpha + \beta_1 PTAX_{it} + \beta_2 PSTAB_{it} + \beta_3 HSAV_{it} + \beta_4 EDU_{it} + \beta_5 HINC_{it} + \mu_t \quad (3)$$

where, α — intercept, β_s — slope coefficient with subscript s = 1, 2, 3, 4, 5, and μ — error term.

In natural logarithm, Eq. (3) can be presented as:

$$InLW_{it} = \alpha + \beta_1 InPTAX_{it} + \beta_2 PSTAB_{it} + \beta_3 HSAV_{it} + \beta_4 InEDU_{it} + \beta_5 InHINC_{it} + \mu_{It} \quad (4)$$

where:

– *InLW* is the logarithm of *land wealth* (measure for *wealth accumulation*);

– *InPTAX* is the logarithm of *property tax;*

– *InEDU* logarithm of *education*;

– *InHINC* logarithm of *household income.*

All the variables are logged except *political stability* and *household savings*. This is because *political stability* is an index and it is not necessary to log index variables, while *household saving* is a percentage derived from gross national income (GNI).

4. EMPIRICAL RESULTS AND DISCUSSION

The subsequent discussion will include a tabular presentation of the econometric models, followed by an analysis of those models regarding the models discussed previously.

4.1. Descriptive statistics

Descriptive statistics is a regression analysis that shows the distinctive features of each variable that makes up the dataset (Tukey, 1977). The test helps to know whether the dataset is normally distributed and it shows outliers of the data. The median, mode, and mean are shown by the descriptive statistics. Also, the variance, range, and standard deviation, are equally explained by the descriptive statistics. Additionally, the test reveals measures of normality, this is because the kurtosis measures the peak of the series distribution and the skewness measures the degree of symmetry.

Kurtosis can be of three types: mesokurtic, leptokurtic, or platykurtic. A mesokurtic has a kurtosis of three, a leptokurtic has a positive kurtosis that is more than three, and a platykurtic has a negative kurtosis that is less than three. Furthermore, the skewness can either be normal, positive, or negative skewness. A normal skewness is zero, and the distribution is symmetric. An upward-skewed right tail indicates a positive skewness, whereas an upward-skewed left tail indicates a negative skew. One important aspect of descriptive statistics is that it requires the use of raw data of the variables and not the transformed data (Tabachnick & Fidell, 2007). Table 2 shows the descriptive statistics results for each variable in their raw form.

Table 2. Individual descriptive statistics results

	LW	*PTAX*	*PSTAB*	*HSAV*	*EDU*	*HINC*
Mean	59.48845	592.0514	-0.106801	19.72506	4.472532	-1.28E+09
Median	67.26821	55.80000	-0.210000	18.31133	4.935000	-4.65E+08
Maximum	80.88847	7189.500	1.120000	34.81902	9.230000	1.86E+09
Minimum	19.35648	2.100000	-1.560000	4.099490	1.500000	-1.18E+10
Std. dev.	18.79120	1342.181	0.567660	6.339132	1.641592	2.38E+09
Skewness	-1.150164	2.993972	0.421827	0.219896	0.062805	-2.684052
Kurtosis	3.151826	11.42206	2.877701	2.809572	2.144148	10.13988
Jarque-Bera	46.50239	934.3818	6.358718	2.009704	6.547284	698.2013
P(JB)	0.000000	0.000000	0.041612	0.366099	0.037868	0.000000
Sum	12492.58	124330.8	-22.42819	4142.263	939.2318	-2.68E+11
Sum sq. dev	73799.80	3.77E+08	67.34776	8398.580	563.2183	1.19E+21

Source: Authors' elaboration utilizing World Bank and OECD Statistics database using EViews 10 software.

It is evident that *wealth accumulation (LW)* has a negative skewness and is distributed normally with a kurtosis of 3 (mesokurtic). With regard to *property tax (PTAX)*, the skewness is positive (2.99), and the kurtosis is leptokurtic, which implies that the kurtosis has values greater than 3. *Household income (HINC)* on the other hand has a negative skewness of -2.68 as well as a kurtosis that is more than three (leptokurtic). *Political stability (PSTAB)*, *household savings (HSAV)*, and *education (EDU)* have a positive skewness, and the kurtosis is platykurtic, indicating the variables have an uneven distribution (a kurtosis of less than 3). Furthermore, the kurtosis of the variables *LW, PTAX, HSAV, EDU*, and *HINC* are less than the mean value, implying that more values are observed below the sample mean for each of the variables in question. However, the kurtosis of *PSTAB* is more than the mean value; this, therefore, means that fewer values are observed below the sample mean.

The analysis also shows that the mean score for *LW, PTAX, PSTAB, HSAV, EDU*, and *HINC* is estimated at 59.49, 592.05, -0.11, 19.73, 4.47, and -1.28E respectively. This implies that the average *wealth accumulation, property tax, political stability, household savings, education,* and *household income* fall within those samples.

4.2. Stationarity results

The stationarity of a variable has a considerable influence on its behavior and characteristics. Before the regression model is considered stationary, it must be differenced a certain number of times. Stationarity in this context means the regression model reveals no evidence of unit roots. In light of this, the series shall hereafter be written as *I*(d), and it will be regarded as integrated of order *d*. The formation of a stationary series is the consequence of applying the difference operator to an *I*(d) more than d times. It is said that a time series is stationary if it does not change at all over time. A stationary series is denoted by the symbol *I*(0), whereas a series with one stationarity result is denoted by the symbol *I*(1). *I*(2) is the result that is obtained when differentiating variables twice for the absence of a unit root. This indicates that the variables have been differentiated twice (Cryer, 1986).

A panel series that contains a unit root is referred to as non-stationary. Put another way, the mean and variance of a series with a unit root are not zero-centered. Incorrect regressions may result from using variables that have evidence of a unit root. In order to prevent regression spurious problems from occurring while regressing data, the unit root series must be altered such that it no longer has a unit root (Gujarati & Porter, 2009). The study used the Levin, Lin, and Chu (LLC) unit root test to find the integration of the variables.

Table 3. Panel unit root test (LLC result)

Variables	Level						1st difference						Order of integration
	t-statistics			p-value			t-statistics			p-value			
	Intercept	Trend	None	Intercept	Trend	None	Intercept	Trend	None	Intercept	Trend	None	
LLW	-1.014	0.471	0.145	0.155	0.681	0.557	-2.938	-2.030	-8.650	0.001***	0.021**	0.000***	*I*(1)
LPTAX	-0.848	0.270	3.923	0.198	0.606	1.000	-5.949	-4.604	-8.342	0.000***	0.000***	0.000***	*I*(1)
PSTAB	-0.134	-0.396	-1.421	0.446	0.358	0.077	-7.842	-6.731	-11.088	0.000***	0.000***	0.000***	*I*(1)
HSAV	-0.414	-1.146	-1.636	0.339	0.125	0.050	-7.846	-6.505	-10.865	0.000***	0.000***	0.000***	*I*(1)
LEDU	-1.331	0.061	0.750	0.091	0.524	0.773	-4.959	-2.433	-12.520	0.000***	0.007***	0.000***	*I*(1)
LHINC	-0.650	-1.213	0.174	0.257	0.112	0.880	-7.383	-6.336	-11.247	0.000***	0.000***	0.000***	*I*(1)

*Note: ***, **, * statistically significant at 1%, 5%, and 10% levels.*
Source: Authors' elaboration utilizing World Bank and OECD Statistics database using EViews 10 software.

The LLC unit root test result in Table 3 indicates that at level, the probability values of *wealth accumulation (LLW)*, *property tax (LPTAX)*, *political stability (PSTAB)*, *household savings (HSAV)*, *education (LEDU)*, and household income (LHINC) are statistically insignificant at the ten percent level of significance. Therefore, we fail to reject the H_0, which states that the series are non-stationary, and conclude that *LLW, LPTAX, PSTAB, HSAV, LEDU*, and *LHINC* are not stationary at the level *I*(0).

At first difference, the probability values of *LLW, LPTAX, PSTAB, HSAV, LEDU*, and *LHINC* are statistically significant at the ten percent level of significance. Therefore, we reject the H_0 and conclude that *LLW, LPTAX, PSTAB, HSAV, LEDU*, and *LHINC* are stationary at the first difference *I*(1). Overall, all the variables are stationary at *I*(1).

4.3. Pedroni cointegration test

The test of panel cointegration is used to determine whether or not there is a possible correlation between time series processes over the long-run. The cointegration test determines cointegrating relationships between time series data points. Using the test to discover the cointegration of various time series eliminates the problems that can arise when errors are carried on to the next phase in the analysis (Cross et al., 2011). The cointegration test used in this section is the Pedroni residual cointegration test.

Table 4. Pedroni residual cointegration test results

	Ind. intercept		Ind. intercept & trend		No intercept	
	t-stat	p-value	t-stat	p-value	t-stat	p-value
Within-dimension						
v-statistic	-1.042166	0.8513	2.154114	0.0756*	-3.233410	0.0004***
rho-statistic	2.453277	0.0569*	2.116620	0.0456**	-0.938996	0.1739
PP-statistic	-0.662229	0.2539	-2.651867	0.0493**	-3.123368	0.0009***
ADF-statistic	-1.065348	0.1434	-2.402000	0.0082***	-2.734677	0.0031***
Between-dimension						
rho-statistic	1.911821	0.9721	2.831506	0.0627*	1.195534	0.8841
PP-statistic	-3.084498	0.0010***	-2.930585	0.0268**	-2.404526	0.0081***
ADF-statistic	-4.184143	0.0000***	-2.988930	0.0014***	-2.760962	0.0029***

*Note: ADF — Augmented Dickey-Fuller test, PP — Phillips–Perron-statistic. ***, **, * statistically significant at 1%, 5%, and 10% levels.*
Source: Authors' elaboration utilizing World Bank and OECD Statistics database using EViews 10 software.

The Pedroni cointegration test result in Table 4 reveals that the majority of the probability values are statistically significant at a ten percent level of significance. Hence, we fail to reject the H_0. In conclusion, there is cointegration in the model.

4.4. Panel vector error correction model (PVECM) long-run estimate results

Once the cointegration has been determined, the next procedure is carried out using the error correction approach. It is feasible to understand both long-term and short-term equations using the PVECM method. The PVECM long and short-run estimate is presented in Table 5 and 6 respectively.

The long-run model can be expressed as follows in Eq. (5).

Table 5. Long-run PVECM results

Dependent variable — wealth accumulation (LLW)			
Variables	Coefficient	Std. error	t-statistics
LLW	1.000000		
LPTAX	-0.199828	0.44053	-2.72290
PSTAB	1.116498	0.504198	-2.94770
HSAV	0.348629	0.13581	2.56708
LEDU	0.441220	0.681927	-2.70338
LHINC	0.256907	0.07982	-3.21846
C	-11.52640		

Source: Authors' elaboration utilizing World Bank and OECD Statistics database using EViews 10 software.

$$LLW_{it} = -11.526C - 0.1998LPTAX_{it} + 1.1165PSTAB_{it} + 0.3486HSAV_{it} + 0.4412LEDU_{it} + 0.2569LHINC_{it} \quad (5)$$

Property tax (LPTAX), political stability (PSTAB), household savings (HSAV), education (LEDU), and *household income (LHINC)* are statistically significant in the long-run, according to Table 5. This is because the t-statistic values of these variables are more than two. In Cameroon, Eswatini, Madagascar, Mauritius, Morocco, South Africa, and Tunisia, *property taxes, political stability, household savings, education*, and *household income* all affect wealth accumulation statistically significantly.

Furthermore, the coefficient sign of *property tax* is negative at -0.199528. Therefore, *property tax* has a negative and statistically significant relationship with *wealth accumulation* in the long-run.

A one percent increase in *property tax* decreases *wealth accumulation* by 0.199 percent. The economic implication is that *property tax* impacts the rate at which wealth can be accumulated because *property tax* shapes local housing and land markets by influencing the cost of buying, renting, or investing in homes and apartment buildings (Bischoff, 2012). Therefore, an increase in *property tax* will have a detrimental impact on the land and housing market, which can affect the total *wealth accumulation*.

Moreover, there is a high wealth disparity in the seven African countries under investigation. Hence, increasing property tax will worsen wealth disparity in society, meaning the rich continue to amass properties. At the same time, the poor cannot afford any form of property.

In addition, the optimal capital taxation theory can demonstrate the negative association between *property tax* and *wealth accumulation*. The theory states that the taxation of wealth diminishes the return on wealth, which reduces accumulated wealth. This, therefore, suggests that wealth tax harms a person's overall wealth (Piketty, 2014; Stirati, 2017).

Furthermore, *political stability* has a positive and significant relationship with *wealth accumulation* in the long-run. A one-unit increase in *political stability* increases *wealth accumulation* by 1.117 units in the seven African countries under study. Most countries under investigation, like Eswatini, Madagascar, Mauritius, Morocco, South Africa, and Tunisia, have a stable political environment. These countries have little or no political unrest that may destabilize the country. On the other hand, Cameroon faces political instability categorized by protests and unrest in the country (Ndokang & Tsambou, 2015). Since most countries under investigation are politically stable, it is expected that ceteris paribus, the positive impact of *political stability* on *wealth accumulation*, cut across all the countries. In addition, Asongu (2013) discovered similar results. Asongu (2013) investigated *political stability* and corruption in wealth effects in Africa. The empirical result of the study showed that a stable political environment helps build a coherent and continuous path for wealth development.

Household savings have a positive and significant long-run relationship with *wealth accumulation*. When *household savings* increase by one percent, wealth accumulation rises by 0.349 percent in the seven African countries under investigation. The implication of this is that the more people save, the chances are that the saved earnings are put into buying and investing in housing and land properties. A high saving means high investment, resulting in increased net wealth. Similarly, De Nardi and Fella (2017) discovered similar findings. De Nardi and Fella (2017) examined the dynamics of savings and wealth in the United States. Results revealed that an increase in savings improves *wealth accumulation* in the household and reduces wealth disparity in society.

In the long-run, there is a positive relationship between *education* and *wealth accumulation*. A percentage point increase in education results in a 0.257 percent decrease in wealth accumulation in Cameroon, Eswatini, Madagascar, Mauritius, Morocco, South Africa, and Tunisia. The implication of this is that *education* broadens the minds of people intellectually. *Education* also improves the ability to take financial risks and make beneficial investment decisions. Similarly, Jürges (2010) discovered similar findings. The empirical study compared *education*, *income*, and *wealth* in eleven European countries and the United States. The study's results established that people with higher education are more likely to make financial decisions that can lead to *wealth accumulation*. Hence *education* has a positive relationship with *wealth accumulation*. Furthermore, in the long-run, *household income* has a positive and significant impact on *wealth accumulation*. A one percent increase in *household income* increases *wealth accumulation* by 0.257 percent in the seven African countries under investigation.

4.5. Panel vector error correction model (PVECM) short-run estimate results

The short-run result in Table 6 indicates that the t-statistic of the error correction term (ECT) (-2.08382) is greater than the value of two. This means that ECT is statistically significant. Additionally, the coefficient sign of the ECT (-0.029244) is negative. Overall, the error correction term is negative and statistically significant. This implies that the speed of adjustment towards the long-run equilibrium is achieved at 0.0292 percent in Cameroon, Eswatini, Madagascar, Mauritius, Morocco, South Africa, and Tunisia.

The short-run model can be described as follows in Eq. (6).

Table 6. Short-run PVECM result (Part 1)

Variables	*D (LLW)*	*D (LPTAX)*	*D (PSTAB)*	*D (HSAV)*	*D (EDU)*	*D (LHINC)*
ECT	-0.029244 (0.00044) [-2.08382]	-0.006969 (0.01209) [-0.57624]	0.011432 (0.00856) [1.33491]	-0.572386 (0.17077) [-3.35180]	0.008994 (0.00487) [1.84547]	-1.556033 (0.41415) [-3.75718]
D (LLW (-1))	0.220375 (0.07375) [2.98831]	-1.743773 (2.01173) [-0.86680]	1.900148 (1.42455) [1.33386]	-5.205136 (28.4063) [-0.18324]	-0.618402 (0.81069) [-0.76281]	-32.16875 (68.8908) [-0.46695]
D (LPTAX (1))	-0.001625 (0.00275) [-0.59150]	-0.048864 (0.07492) [-0.65217]	-0.078471 (0.05306) [-1.47902]	1.263537 (1.05796) [1.19431]	0.003027 (0.03019) [0.10026]	1.770136 (2.56577) [0.68990]
D (PSTAB (-1))	0.001732 (0.00391) [0.44294]	0.251334 (0.10665) [2.35670]	0.018309 (0.07552) [0.24245]	1.552604 (1.50588) [1.03103]	0.008567 (0.04298) [0.19935]	-1.329675 (3.65206) [-0.36409]
D (HSAV (-1))	9.32E-05 (0.00019) [0.49141]	-0.005005 (0.00517) [-0.96710]	-0.002253 (0.00366) [-0.61480]	-0.037743 (0.07307) [-0.51653]	-0.000238 (0.00209) [-0.11397]	0.253115 (0.17721) [1.42835]

Table 6. Short-run PVECM result (Part 2)

Variables	*D (LLW)*	*D (LPTAX)*	*D (PSTAB)*	*D (HSAV)*	*D (EDU)*	*D (LHINC)*
D (LEDU (-1))	0.006340 (0.00653) [0.97157]	-0.027526 (0.17801) [-0.15463]	-0.111703 (0.12605) [-0.88617]	0.725403 (2.51355) [0.28860]	-0.259943 (0.07173) [-3.62369]	-14.84421 (6.09584) [-2.43514]
D (LHINC (-1))	3.47E-05 (8.0E-05) [0.43324]	-0.000792 (0.00219) [-0.36211]	-0.001664 (0.00155) [-1.07463]	0.101356 (0.03088) [3.28217]	-0.002252 (0.00088) [-2.55525]	-0.081752 (0.07489) [-1.09161]
C	-0.000125 (0.00065) [-0.19249]	0.065583 (0.01765) [3.71511]	-0.007890 (0.01250) [-0.63117]	-0.195839 (0.24927) [-0.78566]	0.004283 (0.00711) [0.60209]	-0.268105 (0.60452) [-0.44350]

Note: ECT — Error correction term.
Source: Authors' elaboration utilizing World Bank and OECD Statistics database using EViews 10 software.

$$LLW_{it} = -0.0016LPTAX_{it} + 0.0017PSTAB_{it} + 9.32HSAV_{it} + 0.0063LEDU_{it} + 3.47LHINC_{it} - 0.0292ECT_{it} \quad (6)$$

Furthermore, *property tax, political stability, household savings, education*, and *household income* are statistically insignificant in the short-run. This means these variables do not impact *wealth accumulation* in Cameroon, Eswatini, Madagascar, Mauritius, Morocco, South Africa, and Tunisia in the short-run.

The insignificant relationship between *property tax* and *wealth accumulation* may result from the poor, inefficient administration of tax policies. According to Franzen and McCluskey (2017), and Cirolia and Mizes (2019), African countries lack an efficient *property tax* administration which may result in an ineffective impact of *property tax* on the economy. Furthermore, the insignificant relationship between *political stability* and *wealth accumulation* may be because the countries under investigation have enjoyed a relatively stable political environment, which means that the impact of political stability may not be particularly noticeable in the short-run (Ndikumana, 2001; Anyanwu, 2014). Additionally, the insignificant relationship between *household savings, education,* and *household income* may be because the amount of *savings, education*, and *income* generated by households may need to be higher to have any meaningful influence on building wealth.

4.6. Granger causality results

The structure of the causal links between variables was investigated using the Granger causality approach to causation. The Granger causality test is a statistical hypothesis test that is used to determine if one-time series can be used to forecast another time series. Consequently, if the probability value is less than any significance level, the hypothesis would be rejected at that level of significance. Table 7 examines the Granger causality test.

Table 7. Granger causality test

Direction of the causal relationship			
Variables	*Chi-square*	*p-value*	*Decision*
LPTAX → LLW	5.017212	0.0251**	Causal link
LLW → LPTAX	0.858220	0.3542	No causal link
PSTAB → LLW	2.006910	0.0156**	Causal link
LLW → PSTAB	0.810570	0.3680	No causal link
HSAV → LLW	0.839415	0.3596	No causal link
LLW → HSAV	1.205707	0.2722	No causal link
LEDU → LLW	3.209287	0.0732*	Causal link
LLW → LEDU	0.393603	0.5304	No causal link
LHINC → LLW	6.983260	0.0082***	Causal link
LLW → LHINC	0.188148	0.6645	No causal link

*Note: ***, **, * statistically significant at 1%, 5%, and 10% levels.*
Source: Authors' elaboration utilizing World Bank and OECD Statistics database using EViews 10 software.

The results of the Granger causality in Table 7 reveal that the probability values of *property tax, political stability, education*, and *household income* (0.0251, 0.0156, 0.0732, and 0.0082, respectively), are statistically significant at the ten percent level of significance. Therefore, we reject the H_0 of no causality and conclude that *property tax, political stability, education*, and *household income* Granger cause *wealth accumulation*. Similarly, the causality relationship of *LPTAX, PSTAB, LEDU*, and *LHINC* with *LLW* is unidirectional, meaning that the causality is one-directional or one-sided. This is to say that property tax Granger-causes *wealth accumulation*, but *wealth accumulation* does not Granger-cause *property tax*. The same logic applies to *political stability, education*, and *household income*.

The Granger causality implies that any change in *wealth accumulation* can be caused by changes in *property tax, political stability, education*, and *household income*. Therefore, in Cameroon, Eswatini, Madagascar, Mauritius, Morocco, South Africa, and Tunisia, changes in *wealth accumulation* can be traced to changes in *property tax, education*, and *household income*. Furthermore, the Granger causality relationship of *property tax, education*, and *household income* can be traced to the findings of other scholars. Andreasen et al. (2020) analyzed informal land investments, *property tax*, and *wealth accumulation* using Dar es Salaam and Mwanza as a case study. Findings revealed that an increase in property tax significantly impacted informal land investment because households are affected by the tax rate. Also, Jürges (2010) empirical study analyzed education and wealth in eleven European countries and the United States.

Results of the study established that people with higher education are more likely to make financial decisions that can lead to *wealth accumulation*; hence *education* has a positive relationship with *wealth*, and Granger causes *wealth accumulation*. Additionally, Wolla and Sullivan (2017) investigated the dynamics of income and wealth in the United States. Results revealed that higher income increases accumulated wealth, affecting wealth. Furthermore, Asongu (2013) investigated the effects of political stability and corruption on African wealth. The empirical result of the study showed that a stable political environment helps build a coherent and continuous path for wealth development. Therefore, *political stability* affects *wealth accumulation*.

On the other hand, the probability value of *HSAV* is not significant at the ten percent significance level. Hence, the H_0 fails to be rejected, and in conclusion, *household savings* do not

Granger-cause *wealth accumulation*. This finding can be traced to the results by Perret (2021), who investigated wealth taxes in the OECD countries. The researcher discovered that *savings* do not impact *wealth*, but *wealth* has an impact on and Granger causes *savings*.

4.7. Residual diagnostic results

The diagnostic tests are used to determine whether the model applied in this research meets the standards for satisfaction and efficiency. This is shown in Table 8.

Table 8. Residual diagnostic test results

Test	*Type of the test*	*Probability*	*Conclusion*
Heteroscedasticity test	No cross terms	0.8654	Fail to reject H_0
Normality test	Jacque-Bera	0.0781*	Fail to reject H_0
Autocorrelation	LM-test	0.4968	Fail to reject H_0

*Note: * statistically significant at 10% level.*
Source: Authors' elaboration utilizing World Bank and OECD Statistics database using EViews 10 software.

The residuals diagnostic result demonstrates that the probability values of heteroscedasticity, normality, and autocorrelation test are above the five percent significance level. Therefore, we fail to reject the H_0. In conclusion, residuals are homoscedastic and normally distributed, with no serial correlation. Overall, the regression model meets the criteria of satisfaction.

5. CONCLUSION

Accumulation of wealth contributes to the survival and improvement of poor households. Wealth plays a significant role in exiting poverty for households. Most households in Africa acquire wealth in the form of properties, which form part of their assets. Properties and land assets constitute a major part of wealth accumulation. Property tax affects the wealth accumulation, most especially of non-financial assets as this can either attract or deter individuals from purchasing and investing in properties. The study analysed the effect of property tax on wealth accumulation in seven African countries from the period from 1990 to 2019. The PVECM was employed in the study. The study used secondary data from the WDI, the Global Economy database, and the OECD database.

The outcome of the descriptive statistics revealed that wealth accumulation and household income are negatively skewed; while property tax, political stability, household savings, and education have a positive skewness. The stationarity result revealed that all the variables in the regression model were integrated with the first difference *I*(1). The cointegration result using the Pedroni cointegration tests demonstrated that there is cointegration in the model because most of the probability values of the statistical results were less than the 0.10 percent significance level.

Overall, the long-run PVECM indicated that property tax has a negative and statistically significant relationship with wealth accumulation. A one percent increase in property tax decreases wealth accumulation by 0.199 percent. On the other hand, political stability, household savings, education, and household income have a positive and statistically significant relationship with wealth accumulation in the long-run. A one-unit increase in political stability increases wealth accumulation by 1.116 units. A one percent increase in household savings increases wealth accumulation by 0.147 percent. A percentage point increase in education results in a 0.441 percent increase in wealth accumulation, and a one percent increase in household income increases wealth accumulation by 0.122 percent in Cameroon, Eswatini, Madagascar, Mauritius, Morocco, South Africa, and Tunisia.

Furthermore, the short-run PVECM estimate revealed that the error correction term is negative and statistically significant (-0.029242, -2.08382). The implication is that the speed of adjustment towards the long-run equilibrium is achieved at 0.0292 percent in the seven African countries under investigation. Also, property tax, political stability, household savings, education, and household income are not statistically significant in the short-run. This is because the value of the t-statistics is less than the critical value of two. This, therefore, means that property tax, political stability, household savings, education, and household income do not impact wealth accumulation in the short-run in Cameroon, Eswatini, Madagascar, Mauritius, Morocco, South Africa, and Tunisia.

This study recommends reducing property tax and a policy review on land ownership. One of the factors that constitute wealth accumulation is land ownership. The procedures to be a land owner can be stringent, which can cause delays in land ownership. This study recommends reviewing land ownership policies to make it easier for people to own land.

One of the limitations encountered in the study is that the best measure for wealth accumulation is net wealth; however, checking from the World Bank database and other reliable sources, the data was unavailable. The study, therefore, opted to use land wealth as a proxy for wealth accumulation. Areas of future research should employ net wealth to measure wealth accumulation to give a more accurate reflection. Furthermore, other African nations can be targeted, and different estimating approaches can be considered.

REFERENCES

1. Achen, S. S. (2019). *Factors associated with household wealth in Uganda* [Doctoral dissertation, Makerere University]. Undergraduate Dissertations Repository. http://dissertations.mak.ac.ug/handle/20.500.12281/6810?show=full
2. Ali, M., Fjeldstad, O.-H., & Katera, L. (2017). Property taxation in developing countries. *CMI Brief, 16*(1). https://www.cmi.no/publications/6167-property-taxation-in-developing-countries

3. Andreasen, M. H., McGranahan, G., Kyessi, A., & Kombe, W. (2020). Informal land investments and wealth accumulation in the context of regularization: Case studies from Dar es Salaam and Mwanza. *Environment and Urbanization, 32*(1), 89–108. https://doi.org/10.1177/0956247819896265
4. Anyanwu, J. C. (2014). Factors affecting economic growth in Africa: Are there any lessons from China? *African Development Review, 26*(3), 468–493. https://doi.org/10.1111/1467-8268.12105
5. Asongu, S. (2013). Fighting corruption when existing corruption-control levels count: What do wealth-effects tell us in Africa? *Institutions and Economies, 5*(3), 53–74. http://doi.org/10.2139/ssrn.2493247
6. Bischoff, O. (2012). Explaining regional variation in equilibrium real estate prices and income. *Journal of Housing Economics, 21*(1), 1–15. https://doi.org/10.1016/j.jhe.2011.11.002
7. Bjerksund, P., & Schjelderup, G. (2019). *Does a wealth tax discriminate against domestic investors?* (Discussion Paper No. 16/2019). Norwegian School of Economics. http://doi.org/10.2139/ssrn.3491769
8. Brülhart, M., Gruber, J., Krapf, M., & Schmidheiny, K. (2016*). Taxing wealth: Evidence from Switzerland* (NBER Working Paper No. 22376). National Bureau of Economic Research. https://ssrn.com/abstract=2804400
9. Burger, R., Booysen, F., Berg, S. V. D., & Maltitz, M. V. (2006). *Marketable wealth in a poor African country: Using an index of consumer durables to investigate wealth accumulation by households in Ghana* (UNU-WIDER Research Paper No. 2006/138). World Institute for Development Economics Research. https://www.wider.unu.edu/sites/default/files/rp2006-138.pdf
10. Choudhury, M. A. (2018). The nature of well-being objective function in tax-free regime of ethico-economics. *Journal of Islamic Accounting and Business Research, 9*(2), 171–180. https://doi.org/10.1108/JIABR-05-2016-0065
11. Cirolia, L. R., & Mizes, J. C. (2019). *Property tax in African secondary cities: Insights from the cases of Kisumu (Kenya) and M'Bour (Senegal)* (ICTD Working Paper No. 90). International Centre for Tax and Development. https://opendocs.ids.ac.uk/opendocs/handle/20.500.12413/14300
12. Collier, P., Glaeser, E., Venables, T., Blake, M., & Manwaring, P. (2018). *Land and property taxes for municipal finance*. International Growth Centre. https://www.theigc.org/sites/default/files/2017/08/Land-and-Property-Taxes-for-Municipal-Finance-06.07.18.pdf
13. Cross, E. J., Worden, K., & Chen, Q. (2011). Cointegration: A novel approach for the removal of environmental trends in structural health monitoring data. *Proceedings of the Royal Society, 467*(2133), 2712–2732. https://doi.org/10.1098/rspa.2011.0023
14. Cryer, J. D. (1986). *Time series analysis*. Duxbury Press.
15. De Nardi, M., & Fella, G. (2017). Saving and wealth inequality. *Review of Economic Dynamics, 26*, 280–300. https://doi.org/10.1016/j.red.2017.06.002
16. Duran-Cabré, J. M., Esteller-Moré, A., & Mas-Montserrat, M. (2019). *Behavioural responses to the (re)introduction of wealth taxes. Evidence from Spain* (IEB Working Paper No. 2019/04). Barcelona Institute of Economics. http://doi.org/10.2139/ssrn.3393016
17. Franzen, R., & McCluskey, W. (Eds.). (2017). *Property tax in Africa: Status, challenges, and prospects.* Lincoln Institute of Land Policy.
18. Gujarati, D. N., & Porter, D. (2009). *Basic econometrics* (5th ed.). McGraw-Hill Irwin.
19. Jakobsen, K., Jakobsen, K., Kleven, H., & Zucman, G. (2018). *Wealth taxation and wealth accumulation: Theory and evidence from Denmark* (NBER Working Paper No. 24371). National Bureau of Economic Research. https://doi.org/10.3386/w24371
20. Joulfaian, D. (2006). The behavioral response of wealth accumulation to estate taxation: Time series evidence. *National Tax Journal, 59*(2), 253–268. https://doi.org/10.17310/ntj.2006.2.04
21. Jürges, H. (2010). Health inequalities by education, income and wealth: A comparison of 11 European countries and the US. *Applied Economics Letters, 17*(1), 87–91. https://doi.org/10.1080/13504850701719835
22. Kopczuk, W., & Slemrod, J. (2000). *The impact of the estate tax on the wealth accumulation and avoidance behavior of donors* (NBER Working Paper No. 7960). National Bureau of Economic Research. https://doi.org/10.3386/w7960
23. Londoño-Vélez, J., & Ávila-Mahecha, J. (2018). *Can wealth taxation work in developing countries? Quasi-experimental evidence from Colombia*. International Institute of Public Finance. https://www.iipf.org/papers/WealthTaxation_LondonoVelez_JMP.pdf
24. Ndikumana, L. (2001). *Financial markets and economic development in Africa* (PERI Working Paper No. 17). Political Economy Research Institute. http://doi.org/10.2139/ssrn.333321
25. Ndokang, L. E., & Tsambou, A. D. (2015). Political instability in Central African Republic (CAR) and health state of the Cameroon population. *Journal of Life Economics, 2*(2), 113–129. https://doi.org/10.15637/jlecon.73
26. Perret, S. (2021). Why were most wealth taxes abandoned and is this time different? *Fiscal Studies, 42*(3–4), 539–563. https://doi.org/10.1111/1475-5890.12278
27. Piketty, T. (1997). The dynamics of the wealth distribution and the interest rate with credit rationing. *The Review of Economic Studies, 64*(2), 173–189. https://doi.org/10.2307/2971708
28. Piketty, T. (2014). *Capital in the twenty-first century*. Harvard University Press. https://doi.org/10.4159/9780674369542
29. Piketty, T., & Saez, E. (2012). *A theory of optimal capital taxation* (NBER Working Paper No. 17989). National Bureau of Economic Research. https://www.nber.org/system/files/working_papers/w17989/w17989.pdf
30. Polyakov, M., & Zhang, D. (2008). Property tax policy and land-use change. *Land Economics, 84*(3), 396–408. https://doi.org/10.3368/le.84.3.396
31. Rotberg, S., & Steinberg, J. B. (2021). *Tax evasion and capital taxation*. University of Toronto. https://ubcecon.github.io/2021CMSGVirtual/papers/Wealth_tax_evasion.pdf
32. Saez, E., & Stantcheva, S. (2018). A simpler theory of optimal capital taxation. *Journal of Public Economics, 162*, 120–142. https://doi.org/10.1016/j.jpubeco.2017.10.004
33. Seery, E., Okanda, J., & Lawson, M. (2019). *A tale of two continents: Fighting inequality in Africa*. Oxfam GB. https://www.oxfam.org/en/research/tale-two-continents-fighting-inequality-africa
34. Seim, D. (2017). Behavioral responses to wealth taxes: Evidence from Sweden. *American Economic Journal: Economic Policy, 9*(4), 395–421. https://www.jstor.org/stable/26598358
35. Stirati, A. (2017). Wealth, capital and the theory of distribution: Some implications for Piketty's analysis. *Review of Political Economy, 29*(1), 47–63. https://doi.org/10.1080/09538259.2016.1237819

36. Tabachnick, B. G., & Fidell, L. S. (2007). *Experimental designs using ANOVA*. Thomson/Brooks/Cole.
37. Tukey, J. W. (1977). *Exploratory data analysis* (1st ed.). Pearson.
38. Weon, S., & Rothwell, D. W. (2020). Dynamics of asset poverty in South Korea. *Social Indicators Research, 150*, 639–657. https://doi.org/10.1007/s11205-020-02320-z
39. Wolla, S. A., & Sullivan, J. (2017). *Education, income, and wealth*. Federal Reserve Bank of St. Louis. https://research.stlouisfed.org/publications/page1-econ/2017/01/03/education-income-and-wealth
40. Zhao, L., & Burge, G. (2017). Housing wealth, property taxes, and labor supply among the elderly. *Journal of Labor Economics, 35*(1), 227–263. https://doi.org/10.1086/687534
41. Zucman, G. (2019). Global wealth inequality. *Annual Review of Economics, 11*, 109–138. https://doi.org/10.1146/annurev-economics-080218-025852