PRIVATE SAVING IN GHANA: THE COMBINED EFFORTS OF FINANCIAL DEVELOPMENT, INTEREST RATES, AND INFLATION

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ABSTRACT

Understanding private saving behavior of the citizenry is crucial for informed policy decisions in an economy. The reason is not far-fetched; economies gain sustained growth from investment through a positive saving culture. However, much of the available literature is on aggregate savings rather than on private saving behavior. This study looks at the combined effects of financial development, interest rates and inflation rates on private saving behavior among Ghanaians. Data for the study were obtained from the World Bank Development Indicators between 1980 and 2019. Johansen's cointegration test was employed, and attempts were made to ascertain the existence of a long-run relationship among variables using the vector autoregressive (VAR) model. The study confirms a significant positive relationship between private saving behavior and financial sector development. This partly explains the relevance of deepening the financial sector through reductions in costs of performing transactions and initiating contracts to encourage private saving through improved propensity to save by the old and to attract new entrants. A reliance on macroeconomic variables to forecast the behavior of private saving enjoins policy decision makers to consider the implications of their decisions for private saving. Among the recommendations are, lower borrowing costs across the economy, resulting in increased investment and consumption spending, and hence economic recovery in times of stagnation.

Contribution/Originality: Macroeconomic decisions and their influence on the saving behavior of the shadow economy in Ghana is understudied, thus the joint role of financial development, interest rate, and inflation in determining private saving behavior has not had deserved recognition in the extant literature. Therefore, this study will add to the empirical literature by looking at the combined effects of financial development, interest rates and inflation rates on private saving behavior among Ghanaians.

1. INTRODUCTION

Saving has enjoyed prominence in both theoretical and empirical analyses of macroeconomics and policy design across the globe (Bonfinger & Ries, 2017; Kapounek, Korab, & Deltuvaite, 2016). This is partly the result of its ability to accumulate capital for investment and to promote economic growth, and partly due to the elusiveness of a precise measurement. This paper describes saving as an essential feature in every economy that needs considerable policy attention. The saving behavior of the shadow economy is tainted mostly with irrationality and needs various levels of engagements whether in academia, policymaker circles or, particularly, at national deliberations. It is usual in most

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situations to want to believe that global economic wellbeing is a function of the interplay of several economic units, of which private saving behavior ranks favorably but is independent of the reasons for their behavior. Thus, aggregate savings is regardless of private sector dwellers' rational behavior; instead, what matters here are the motivators for saving behavior. Researchers use private saving liberally to embody households and private enterprises to explain its fluctuating behavior (see Figure 1).

Interestingly, 'saving' and savings' have had a loose application among economists. 'Saving' is a flow concept, and 'savings' is a stock item at a given time. Thus, this paper will frequently refer to saving as a flow concept whose behavior is shrouded in ambiguities.

Theories on saving have been replaced and improved over time. One such theory is the Life-Cycle Model of Modigliani (1949), which explains saving as an inevitable and unpredictable variable that enhances productivity and economic growth. Also, a reliance on macroeconomic variables to forecast household saving behavior will mean policy decision-makers will have to consider the implications of their actions for household saving reactions.

This study rides on the backdrop of inadequate empirical studies pointing to outcomes of different macroeconomic policy decisions on private saving in Ghana, except those on aggregate savings tainted with household irrationality. The impact of policy decisions on the joint role of financial development, interest rate, and inflation in determining private saving behavior has not had deserving recognition in the empirical literature. Some authorities in economics have linked household saving behavior to psychological, economic, and demographic factors (Basabose, 2020; Cuaresma, Fidrmuc, & Hake, 2014; Fidrmuc, Hake, & Stix, 2013; Kapounek et al., 2016).

There is a form of symbiosis between private saving and financial development. This paper therefore hypothesizes that financial sector development has a direct relationship with private saving. This is because a well-functioning financial market is adequate grounds for encouraged private saving. Likewise, improved private saving strengthens the activities of financial markets and therefore there is a need to know the weight and direction of the relationship between financial development and private saving behavior through hypothesis building, since extant literature has left a gap to fill, particularly in Ghana. Even with real interest rates, we know that a higher propensity to save due to high rates eventually lowers interest rates, which again is linked to demographic factors Bonfinger and Ries (2017). Again, this study fills a literature gap by identifying the saving-interest rate nexus. Are interest rates the panacea for improved private saving? We hypothesize that there is a direct relationship between saving and interest rates. Economies flourish in a stable financial system and interest rate regime. Researchers believe that with improved private saving, the expected economic growth can be achieved.

1.1. The Trend of Saving in Ghana

In the period from 2006 to 2011, Ghana registered severe instability in the private saving trend, from a five-year average of 6.54 (2001–2005) to an average decline rate of 1.78 between 2006 and 2010 (see Figure 1). This severe instability can partly be attributed to the global financial crisis of 2007/2008 with its spillover effects on the global economy. Despite these developments, private saving improved appreciably in 2012 and witnessed a seven-year astronomical rise until 2019, with minimal deviations (see Figure 1). Saving is a function of financial development, described as improving the quality and quantity of financial services with a comparatively low cost of doing business. A low cost of doing business influences the saving behavior of the average depositor. Güngör (2014) posits that financial development has a positive composite index influence on the private saving behavior of Turkish households. Financial development is also regarded as a deliberate macroeconomic policy that focuses on accumulating liquid assets, acquiring investment information, and strategically allocating resources, leading to positive saving behavior (Levine, 1997). Private saving behavior is divergently positioned. De Melo and Tybout (1986) and Hondroyiannis, Lolos, and Papapetrou (2005) hold contrary views on the relationship between positive saving and financial development. They appear to agree with the earlier position of Griffin (1972), who revealed the elusiveness and unpredictability of private saving. Regardless of the deepening level of the financial sector, the saving behavior of the

average occupant of the shadow economy is not always linear. These unsettled academic brawls need to be examined by researchers.

The ongoing debate on the best interest rate regime for economic growth has not yet been concluded. Some pioneer scholars believe that favorable interest rates are macroeconomic policy measures intended to encourage private saving (Caminati, 1981; Gupta, 1984; McDonald, 1983; Smyth, Montgomery, & Flavin, 1993). Other studies support the hypothesis that negative interest rates are conduits for increased spending and consumption during a recession (Paleyo-Romero, 2020; Smith, 2021). This notwithstanding, one of the studies that this paper draws inspiration from is by Alemayehu and Haile (2003), who studied aggregate savings behavior in Africa. The results confirm the savings–economic growth hypothesis. This study attempts to establish the combined effect of financial development, deposit interest rates, and annual inflation on private saving behavior in Ghana.
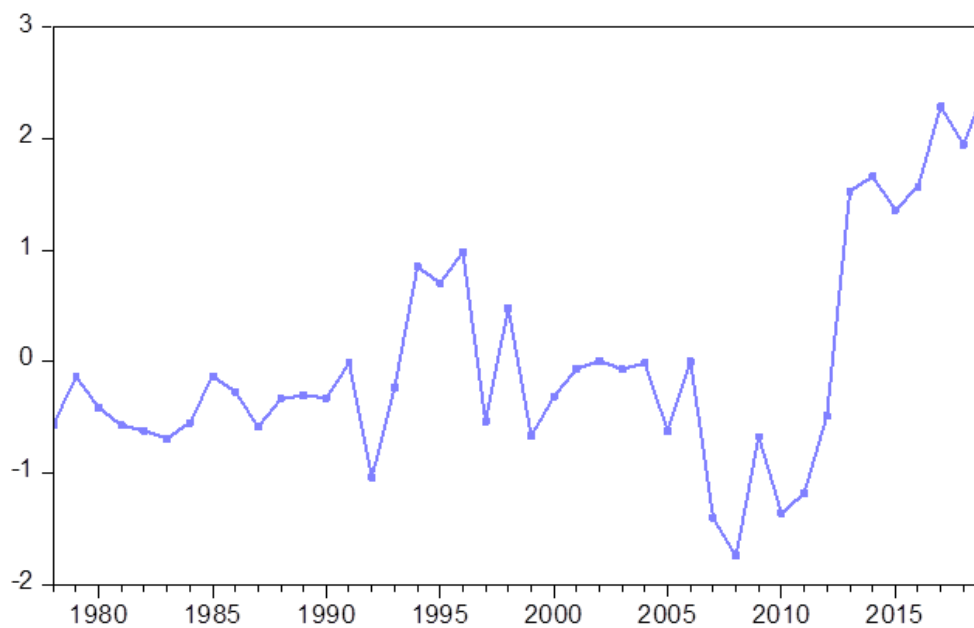

Figure 1. Trend of savings in Ghana (1981–2019).
Source: The World Bank World Bank Development Indicators (2020b).

2. THEORETICAL AND EMPIRICAL LITERATURE

2.1. Theoretical Literature

The early classical economic theories on individual saving behavior before the 1930s linked saving and investment linearly to deposit interest rate (see Caminati (1981) and Smyth et al. (1993)). However, a print controversy rose between (Keynes, 1936) general theory of savings and investment (cited in Richert-Kazmierska (2019)) and the classical economic thought was over saving-investment equality. Keynes's positions on saving are dichotomous; at one level, Keynes sees saving as being equal to investment on their levels. In a different instance, Keynes thinks that only when the economy exhibits equilibrium characteristics will the equality of saving-investment be accepted, replacing classical economic theories. This double approach to saving-investment behavior triggered debates among economists and has led to reliance on the life-cycle theory of consumption and savings by Modigliani (1949); cited in Ando and Modigliani (1963). The life-cycle theory of saving argues that the willingness of people to save only increases with an improvement in income and also affirms the linear relationship between saving and an individual's age. Thus, the demographic characteristics of an individual is a dominant determinant of a potential depositor's behavior. These powerful arguments on what determines saving propensities in an economy have partly mooted the idea to undertake a study verifying the grounds on which these entrenched positions are found. These arguments are not limited to theoretical concerns but have been extended to include several cited empirical studies

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on the roles played by certain macroeconomic variables to either boost or discourage a person's willingness to save (e.g., (Griffin, 1972; Juster & Wachtel, 1972; Larbi, 2013)).

3. EMPIRICAL LITERATURE

3.1. Savings–Financial Sector Development Nexus

Domestic saving is not done just for the sake of it; it is intended for individual and national wellbeing (Bryman & Cramer, 1997). At the individual level, it minimizes financial stress, helps leave a financial legacy, and provides a greater sense of financial freedom. Undisputedly, national saving is partly a function of economic growth (Group Deputies, 1995). Saving does not imply the absence of spending but a deliberate setting aside of part of one's income for an intended purpose in the future. Indeed, the financial sector of every economy is responsible for this fundamental role of saving. Financial development focuses on the process that allows for a low cost of performing business transactions in the financial sector to enable potential customers to deposit their surplus funds to earn interest. As one of the cardinals of this study, the researchers attempt to establish the link between saving and financial development in Ghana. Numerous studies have been undertaken to confirm the presence of a link between private saving (PS) and financial sector development (FSD). Bayar (2014) studied emerging economies in Asian countries and reported that PS and FSD are positively linked. In this study, Bayar appears to support the results produced by Sahoo and Dash (2013) and Horioka and Yin (2010).

The relevance of financial sector restructuring to domestic saving was established by one of the pioneer studies in Ghana. Quartey (2008) equally emphasized the need to deepen financial sector development to boost domestic savings. More recently, Altaee and Al-Jafari (2019) agreed with the results of these strands of studies in their revelation that financial development does not just propel domestic savings in Turkey in the short run but has a long-lasting significant positive effect on the savings culture of the Turkish people. In Nigeria, Ewetan, Ike, and Ese (2015) provided more evidence of a long-run relationship between financial sector development and domestic saving. On the contrary, Horioka and Yin (2010) and Ewetan et al. (2015) studied household saving behavior in OECD countries and its relationship with FD (computed by private credit to GDP) using the life-cycle theory developed by (Modigliani, 1949). He found that FD is key to increasing savings in the environment of moderate interest rates, stable prices, and regularized income.

3.2. Saving–Interest Rate Relationship

As a benchmark, the central bank in Ghana uses the policy rate (PR) to signal the cost of credit (Kwakye, 2010). This is reflected in the financial system through inter-bank transactions on one side and the bank–customer transaction relationship on the other. The old saving-interest rate model is a linear relationship (see (Caminati, 1981; Smyth et al., 1993)). One pioneer article in Uruguay on the relationship between real interest rate and saving is that by De Melo and Tybout (1986); cited in Balassa (1989)). Their results exhibited a positive relationship, albeit weak. The regression estimates showed a t-value of about 1.5. Another study within the same period by McDonald (1983) on 12 selected Latin American countries, including Paraguay, Peru, Mexico, and Argentina, established evidence of a positive relationship between real interest rate and private saving. Similarly, a study conducted by Gupta (1984) on the nexus between saving and interest rate in Asian countries, including India, Korea, Pakistan, Philippines, Singapore, and Taiwan, among others, hypothesized an inverse relationship between interest rate and household saving. Results in most of these countries failed to accept the hypothesis at a 5% significance level.

The elites in the insurance sector have also waded into the empirics of interest rate and saving behavior among households. One such authority is Patricia Paleyo-Romero. In a study of household saving behavior in sixteen European Union countries, Paleyo-Romero (2020) used balanced panel data spanning from 2008 to 2018 to analyze the cross-sectional saving behaviors of households. The study brought forth two interesting revelations: a low (negative) interest regime has both a contractionary effect on saving (substitution effect) and an expansionary effect

(income effect). While the substitution effect lowers the reward on private saving, the desire to maintain financial income causes an expansion in private deposits (Paleyo-Romero, 2020). Stakeholders in the financial sector appreciate the fact that interest rates are among the levers used to maintain balance in every economy, as such, central banks adjust the prime rates to influence individual bank lending decisions. Following these developments, Smith (2021) believes that negative interest rates boost the economy by encouraging consumption and enabling banks to borrow and lend to the public. Smith (2021) further states that negative interest rates fight deflation and save the economy from recession. Low interest rates, Smith emphasizes, make it expensive to hold more money, thereby incentivizing spending. With similar reasoning, Hughes (2016) theoretically advanced an argument that negative interest rates stimulate the economy. The central bank does this through increased lending to commercial banks at lower rates during a recession. Authors who established a negative relationship between interest rates and saving are Osei-Fosu, Osei, and Mensa (2014).

3.3. The Link Between Saving and Inflation

Depending on whether inflation is anticipated or unanticipated, its effect on private saving could either be symmetrical or asymmetrical (Juster & Wachtel, 1972). Thus, consumers are biased in their expectations because the individual does not expect equal changes in incomes as in price levels. Thus, empirical studies associate a positive link between private saving and unanticipated inflation (Juster & Wachtel, 1972). Campbell and Lovati (1979) associate price level increase with improvement in savings. This is because households usually respond to increased prices through cutbacks in borrowing and spending to save money. In a study by Santosh and Kumar (2018), both domestic and private saving were negatively affected by inflation.
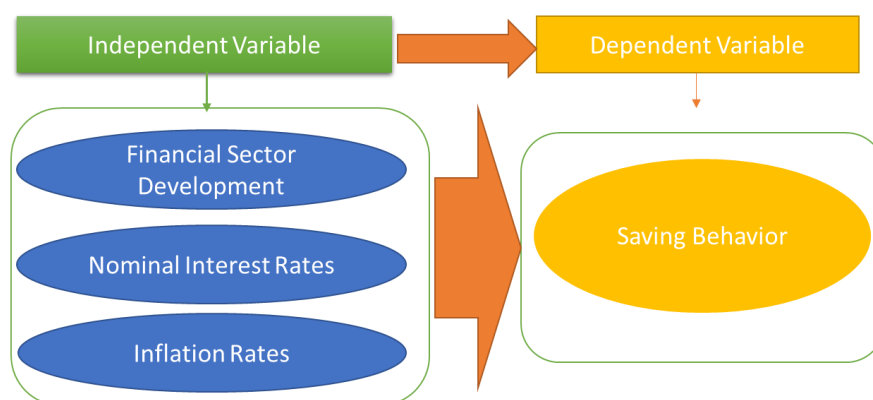

Figure 2. Conceptual framework.

Figure 2 is a diagrammatic representation of the independent variables and how they are regressed onto the dependent variable. The source of the arrow is the regressor variable pointing to the outcome variable, which is private saving.

4. METHODS AND SPECIFICATION OF THE MODEL

This paper assesses the possible effect of financial development (FD), interest rates (IR), and inflation rates (INFLR) on private saving in Ghana. Researchers obtained data from the World Bank Development Indicators (WDIs), the United Nations Development Programme (UNDP), and annual reports from the Ghana Statistical Service (GSS) from 1980 to 2019. While private saving (PS) serves as the outcome variable, FD, IR, and INFLR represent regressors to boost or discourage citizens' desire to save. A series of tests were carried out to standardize the model used; the Dickey and Fuller (1979) unit root test for stationarity of the variables was first used to establish the suitability of the selected variables. Having performed the unit root test, all variables were found to be stationary at order one (see Table 4). Next, the Johansen (1991) cointegration estimation model was used to establish the long-

run relationship among the variables. There was a need to meet a necessary underlying condition before all these tests were carried out, making sure issues of spurious or useless regression did not arise. EViews 9.0 software was used to perform the tests for time series properties.

Table 1. Definitions of variables.

Variables Acronym	Acronym Interpretation	Description
PS/DS	Private Saving/Domestic Saving	Gross domestic savings (% of GDP)
FD	Financial Development	Domestic credit to private sector (% of GDP)
IR	Interest Rate	Deposit interest rate (%)
INFL	Inflation	Consumer price index (annual %)

Source: The World Bank World Bank Development Indicators (2020c).

Table 1 explains all variables of interest used in the study.

4.1. Specification of the Model

Following similar works in the extant literature, a stylized savings model was adopted to enable easy analysis and conclusions to be made (see (Abou El-Seoud, 2014; Adeleye, 2018)).

$$DS_t = \delta + \sum_{t=1}^{k} \beta_1 \, DS_{t-1} + \sum_{j=1}^{k} \phi_j \, FD_{t-j} + \sum_{m=1}^{k} \varrho_m \, IR_{t-m} + \sum_{s=1}^{k} \varphi_s \, INFLR_{t-s} + \vartheta_{it1} \tag{1}$$

$$FD_t = \alpha + \sum_{t=1}^{k} \beta_1 \, FD_{t-1} + \sum_{j=1}^{k} \phi_j \, DS_{t-j} + \sum_{m=1}^{k} \varrho_m \, IR_{t-m} + \sum_{s=1}^{k} \varphi_s \, INFLR_{t-s} + \vartheta_{it2} \tag{2}$$

$$IR_t = \psi + \sum_{t=1}^{k} \beta_1 \, IR_{t-1} + \sum_{j=1}^{k} \phi_j \, DS_{t-j} + \sum_{m=1}^{k} \varrho_m \, DS_{t-m} + \sum_{s=1}^{k} \varphi_s \, INFLR_{t-s} + \vartheta_{it3} \tag{3}$$

$$INFLR_t = \varpi + \sum_{t=1}^{k} \beta_1 \, FD_{t-1} + \sum_{j=1}^{k} \phi_j \, DS_{t-j} + \sum_{m=1}^{k} \varrho_m \, IR_{t-m} + \sum_{s=1}^{k} \varphi_s \, INFLR_{t-s} + \vartheta_{it4} \tag{4}$$

Where:

DS = Domestic Saving.

FD = Financial Sector Development.

IR = Nominal Interest rate on Savings.

INFLR = Annual Inflation Rate.

β_1 = coefficient of each variable in the equation.

$$\sum_{t=1}^{k} = Maximum \text{ Lag Length in each equation (k), while t = lag time for each variable}$$

δ, α, ψ, and ϖ = Constant.

$\vartheta_{it1}, \vartheta_{it2}, \vartheta_{it3}, and \vartheta_{it4}$ are the stochastic error terms known as impulses, innovations or shocks in the system in each equation.

Note: Under the VAR model, the dependent variable is a function of itself and all other variables in the model (Adeleye, 2018).

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5. RESULTS AND DISCUSSION

This study assessed the combined effect of financial development, interest rate, and inflation on private saving behavior in Ghana by considering private saving behavior (PS) as the variable of interest.

Table 2. Descriptive statistics.

Variables	Obs.	Mean	Max.	Min.	Std. Dev.	Jacque–Bera
DS	42	7.398	22.090	-2.960	5.936	5.306 (0.07)
FSD	42	9.009	15.880	1.540	5.244	4.864 (0.08)
INF	42	28.257	122.870	7.130	25.774	88.116 (0.00)
IR	42	16.759	35.760	8.890	7.247	11.882 (0.00)

Source: The World Bank World Bank Development Indicators (2020d).

Domestic saving (DS) proxies gross domestic saving, measured as a percentage of gross domestic product. On average, DS has a figure of about 7%, which is way below the Sub-Saharan African average of 21.102 in the 2019 estimates (The World Bank World Bank Development Indicators, 2020a). There is a corresponding standard deviation of about 6% depicting the variability from the expected normal average saving of a country. The maximum and minimum values of DS stood at 22.09% and -2.96%, respectively; the Lagrange test (Jacque–Bera) probability values for DS and FSD are normally distributed since they are more than 0.05. Those of INF and IR are not normally distributed since their respective Jacque–Bera probability values are less than the alpha value of 0.05. It is observed from Table 2 that the data is normally distributed for domestic saving and financial sector development. With respect to the inflation rate, a higher standard deviation of 25.773 against its mean of 28.257 is reported, which is not sufficient for a developing nation. A higher standard deviation figure tells a story of the inconsistency of datapoints from the mean. Thus, differences in datapoints are markedly noticeable. In fact, this is the reality on the ground in Ghana, even as of 2022 June end, inflation rate rose enormously to 29.8 percent against 7.3 percent June 2021 (Ghana Statistical Service, 2021a, 2021b), signifying non-uniformity from past years' trend. When this occurs, it destabilizes the policy intentions of governments. Interest rate performed comparatively better, with a mean of 16.759 against its standard deviation of 8.89. This describes relative interest stability in the economy, although not satisfactory.

Table 3. Correlation matrix.

Variables	DS	FSD	INF	IR
DS	1	0.779	-0.581	0.602
FSD	0.779	1	-0.599	-0.547
INF	-0.581	-0.599	1	0.619
IR	0.602	-0.547	0.619	1

Source: The World Bank World Bank Development Indicators (2020a).

Table 3 contains the correlation matrix of the variables used in the study. The correlation coefficient is used to determine the level and direction of the relationship between paired independent variables and/or between paired dependent and independent variables in some instances. Where variables are said to correlate inversely when the sign of the coefficient is negative, there is always a direct relationship when the sign of the coefficient is positive. The absolute coefficient figure explains the magnitude of the relationship. A correlation value of 0.8 or more between paired variables raises the issue of multicollinearity and should be fixed. The results in Table 3 have no collinearity challenges between paired explanatory variables. Again, the correlation values are comparatively moderate, but still confirm the absence of multicollinearity issues (see Bryman and Cramer (1997)), except in the case of INF, where DS inversely relates, and it has positive relationships with FSD and IR.

Table 4. Augmented Dickey–Fuller stationarity unit root test results.

Variables	Constant						Constant & Trend					
	Level		First Difference				Level		First Difference			
	ADF t-stat	Critical Value	ADF t-stats	Critical Value Integration	OI		ADF t-sta	Critical Value	ADF t-stat	Critical	OI	Concl. Value
DS	–1.592	–2.935	–8.048	–3.606***	1		–1.592	–2.935	–8.154	–4.205***	1	I(1)
FD	–1.113	–2.935	–7.346	–3.606***	1		–1.113	–2.935	–7.315	–4.205***	1	I(1)
IR	–1.796	–2.935	–6.403	–3.606***	1		–1.796	–2.935	–6.389	–4.205***	1	I(1)
INFLR	–4.733	–2.601	–3.904	–3.633***	1		–4.733	–2.601	–4.456	–4.243***	1	I(1)

Notes: *** under first difference at 1% significance level.
Source: The World Bank World Bank Development Indicators (2020b).

The results in Table 4 indicate non-stationarity at levels of all variables I(0). At first difference, or integration of order one I(1), all variables became stationary, satisfying the necessary condition for the estimation of cointegration and error correction models.

5.1. Determination of the Optimal Lag Length

Another necessary condition for estimating the Johansen cointegration test is the determination of the optimal lag length. Table 5 provides results after running the test.

Table 5. Determination of the optimal lag length.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-548	NA	233	28.3	28.5	28.4
1	-449	172*	336*	24.1*	24.9*	24.4*
2	-441	12.5	517	24.5	26.0	25.0
3	-436	6.69	975	25.03	27.3	25.8

Note: * Indicates lag order selected by the criterion.
LR: sequential modified likelihood ratio (LR) test statistic (each test at 5% level).
FPE: final prediction error.
AIC: Akaike information criterion.
SC: Schwarz information criterion.
HQ: Hannan–Quinn information criterion.
Source: The World Bank World Bank Development Indicators (2020c).

Lag 1 under AIC is appropriate for the model analysis since AIC has the lowest value among the asterisked. This means that if there are shocks or displacements in the system with respect to the regressors, the response variable will take a year to react to the shocks brought about by these explanatory variables (FD, IR & INFL). However, this paper only deals with the short-run analysis since available data failed to establish any long-run relationship among variables, hence the use of the VAR model (see Table 8). Table 6 provides the details of the failure of the trace test to establish long-run characteristics.

Table 6. Johansen unrestricted cointegration test (Trace & Max-Eigen Values).

Trace Test					Max-Eigen Value Test		
No. of CEs Hypothesized	Eigen Value	Trace Stats	5% Critical Value	Prob**	Max-Eigen Stats	5% Critical Value	Prob**
None	0.338	29.127	47.856	0.762	16.140	27.584	0.653
At most 1	0.186	12.986	29.797	0.892	8.036	21.132	0.902
At most 2	0.109	4.951	15.495	0.814	4.523	14.265	0.800
At most 3	0.011	0.428	3.841	0.513	0.428	3.841	0.513

Note: Trace test indicates no cointegration at the 0.05 level.
** MacKinnon, Haug, and Michelis (1999) p-values
Source: Researchers' computation based on The World Bank World Bank Development Indicators (2020d).

Table 7. Simple regression analysis.

Variable	Coeff.	Stand. Err	t-statistic	Prob.
PS (-1)	0.811	0.117	6.931	0.000
FD (-1)	0.467	0.152	3.072	0.016
IR (-1)	-0.464	0.089	-5.213	0.021
INFL (-1)	0.013	0.031	0.419	0.717
Constant	14.936	2.779	5.167	0.000
Variable	PS	FSD	IR	INFL
R-squared	0.597	0.922	0.739	0.319
Adj. R-sq	0.553	0.914	0.710	0.243
F-statistic	13.361	106.963	25.511	4.216
Log-likelihood	-112.382	-73.153	-111.558	-181.912
Akaike (AIC)	5.726	3.812	5.686	9.118
Schwarz (SC)	5.935	4.021	5.895	9.327
Durbin–Watson	2.199	2.392	2.029	2.037

Source: WDI (1981-2019).

5.2. Johansen Cointegration Test

As suggested by Granger (1969), if variables of interest are found to be cointegrated amongst themselves at first difference, then there is a need to ascertain proper statistical inferences through the vector autoregression (VAR) model and the vector error correction model (VECM). Unfortunately, after conducting the Johansen cointegration test, the system failed to establish the presence of cointegration among the variables. As such, the study opted for the VAR model (see Adeleye (2018)). Table 7 presents a simplified version of the regression analysis vis-à-vis variable coefficients and their corresponding *p*-values. It also includes the R-squared, which details the contribution (60%) of the independent variables in determining private saving behavior.

Private saving (PS) serves as the dependent variable with financial development (FD), deposit interest rate (DIR) and annual inflation rate (INFL) subordinating as regressor variables. From past realization, PS significantly increased by 81 percent over the previous performance. Relative to the regressor variables, FD has a significant positive effect on PS, implying that private saving in Ghana is a strong function of financial development. This finding resonates with those of Bayar (2014) and Horioka and Yin (2010). Placing emphasis on the relevance of financial sector development, Quartey (2008) explains that serious financial sector restructuring improves domestic saving. In terms of the interest rate–private saving relationship, this paper reliably estimates an inverse relationship. In making calculations for the same purpose, the old saving model fails to support the results of this paper (Caminati, 1981; Smyth et al., 1993). The results produced in this paper are further discounted by the estimates of De Melo and Tybout (1986), cited in Balassa (1989), as their findings exhibited a positive relationship albeit with weak t-statistic and probability values. The empirical sense of the results in this paper is that, as deposit interest rates increase, ceteris paribus, private saving worsens. Corroborating these results by inference is a study in Ghana by Osei-Fosu et al. (2014), who estimated long-run interest rate elasticity of household savings, which showed a statistically negative value. An interesting strong argument mounted in support of results in this paper, Paleyo-Romero (2020) posits that a low (negative) interest regime has both a contractionary effect on saving (substitution effect) and an expansionary effect (income effect). She used balanced panel data of sixteen European Union countries from 2008 to 2018 to analyze the cross-sectional saving behaviors of households. She starts by explaining that stakeholders in the financial sector appreciate the fact that interest rates are among levers used to maintain balance in every economy, as such, central banks adjust the prime rates to influence individual bank lending decisions. There are other results supporting the negative interest rate–saving behavior. A recent one is that by Smith (2021), who hypothesized that a negative interest rate boosts economic activities by lending at low rates to commercial banks to give out loans to the public to encourage consumption and investment during a recession. Thus, negative interest rates are antidotes to deflation.

Table 8. The VAR model.

Variable	PS	FD	IR	INFL
PS(-1)	0.811 (0.117) [6.93]	0.014 (0.045) [0.31]	-0.007 (0.115) [-0.06]	-0.111 (0.641) [-0.17]
FD(-1)	0.467 (0.152) [3.07]	0.931 (0.058) [16.05]	-0.140 (0.149) [-0.94]	-2.785 (0.829) [-3.36]
IR(-1)	-0.464 (0.089) [-5.21]	0.049 (0.034) [1.44]	0.837 (0.087) [9.62]	-0.446 (0.485) [-0.92]
INFL(-1)	0.013 (0.031) [0.42]	-0.008 (0.012) [-0.67]	-0.001 (0.029) [-0.03]	-0.039 (0.167) [-0.23]
C	14.936 (2.779) [5.16]	0.158 (1.068) [0.15]	4.103 (2.723) [1.51]	61.439 (15.150) [4.06]

Source: World Bank Development Data (1980-2019).

Although this paper finds inflation to influence private saving with a weak but positive t-statistic, it is worth discussing. The position of Juster and Wachtel (1972) supports the positive association with private saving. However, they succinctly state that, depending on whether the inflation regime is anticipated or unanticipated, the effect on private saving could either be symmetrical or asymmetrical. Another study whose results are in tandem with those of this paper is Campbell and Lovati (1979), which associates price level increases with an improvement in savings. This is done through cutbacks in borrowing and spending, thereby having enough to save. Finally, Santosh and Kumar (2018) established results opposite to those revealed in this paper. They found both domestic and private saving to be negatively influenced by inflation in India.

The VAR model results in Table 8 show that PS is the core variable of interest. From the coefficients, it is realized that PS has a strong significant endogenous effect on itself. Thus, it has increased by about 81 percent over the past immediate year performance. This is observed from the t-statistic of approximately 6.9. This reaffirms the assertion by Griffin (1972), that the saving behavior of the depositor or policy maker is elusive and cannot be predicted. In terms of FD, it strongly influences itself, contributing a 93 percent increase of its past realization. Relative to its contribution to the saving behavior of an average household in Ghana, a percentage change in FD will bring about approximately a 47 percent improvement in private saving, thus exhibiting strong endogeneity and signifying that if the government's policies are tilted towards reducing expenses incurred in the financial system through reductions in the average cost of obtaining financial information and enforcing contracts, the floating customers' willingness to save, all things being equal, will improve, and vice versa. In a similar manner, with a percentage fall in interest rates, all things held constant, there will be a deterioration in the saving potential of aspiring depositors. Thus, the willingness of potential depositors will be negatively affected by 46 percentage points as interest rates are seen to negatively influence private savings.

In the case of the inflation rate, there is less to discuss because of its inability to significantly influence private savings, as portrayed by the results in Table 8. From past realization, FD has a strong endogenous effect on itself, influencing its status increase by 93 percent, indicated by its t-statistic. Interest rate is also seen to have a strong influence on itself, depicting an influence strength of about 84 percent.

6. CONCLUSION AND RECOMMENDATION FOR POLICY

This study has provided an update to existing literature on the determinants of private saving in Ghana. Efforts were made to establish the combined role of financial development, interest rates, and annual inflation rate in influencing private saving behavior in Ghana. Among the findings of the study is the significant positive relationship between financial development and private saving. It reemphasizes the need to reduce the cost of transactions within the financial system to boost the willingness of both existing and new customers to save. The results also support the negative lending rates hypothesis by the central bank to encourage consumption and investment in times of recession. Although evidence on the relationship between inflation and saving was positive, it showed an insignificant t-value. It is crucial that policymakers pay attention to macroeconomic variables central in influencing private saving since it helps to grow the economy. Currently, in Ghana, there appears to be less money in circulation with a comparative decade-high inflation rate tied to petroleum product tax compounded by the recent global pandemic that hit all nations. Therefore, a conscious reduction in interest rates by commercial banks could release more money into the system to rejuvenate the once vibrant economy.

7. LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

Since this study is confined to Ghana's situation, the generalization of results is problematic, except where aspiring researchers wish to carry out a comparative analysis of peculiar occurrences in individual economies. Also, the use of more variables would have given more informed results; however, the original intention of the researchers was to establish a link between private saving prospects of citizens and three macroeconomic variables (financial

sector development, inflation rate and interest rates). Having identified these gaps, it is suggested that future studies involving several African economies, or a cross-country analysis, will provide a solution to the knowledge gap. The inclusion of additional variables into the model will, together, place the research in a better position to generalize results.

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