The Determinants of Domestic savings in Cameroon: what role for institutions?

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Motivation

- Importance of investment in determining economic growth, the latter determined by savings rates (Athukorala and Sen, 2004).

- Higher savings countries have higher/faster economic growth.

- Historically low savings rates in SSA, which have been dropping.

- Cameroon has a high savings rate but low growth in savings.

- **Aim** – to decipher the determinants of domestic savings (private and gross savings) in Cameroon.

Overview of Cameroon

- Lower middle-income country, per capita GDP 1,499.37 USD in 2020, population approximately 27 million, GDP growth rate for 2018 at 4.1%

- Huge informal sector, comprising 90% of total employment; mostly operating in the primary sector (Fomba and Mvolo, 2021).

- The government is the largest employer of the country; employing about 65% of the population.

- World Bank data shows that the growth rate of the population is greater than the poverty reduction rate. This is evidenced by the 12% increase in the number of poor people between 2007 and 2014. Majority of the poor are concentrated in the Northern regions of the country (3 out of 10 regions) where 56% of the poor live.

Fiscal policy framework

- Government controls fiscal policy, which has been generally expansionary for the period under review.

- Government takes both bilateral and multilateral loans and borrows from international capital markets.

- The fiscal system comprises high statutory tax rates and a multiplicity of taxes, perpetuating informality.
  - In 2018, Cameroon ranked 166 out of 190 in the Doing Business Index (DBI) due to the multiplicity of taxes, higher statutory rates and strong administrative bottlenecks.

- The country lags in terms of infrastructural development with uncompleted projects, or projects carried out in a substandard manner.

Monetary policy framework

- BEAC (Bank of Central African States) serves as the Central Bank for Cameroon, as well as other countries in the Central African sub-region (CEMAC).

- BEAC conducts monetary policy in a manner that ensures that the internal and external value of the FCFA, the currency used by CEMAC countries, is stable.
  - Adjusting the supply of money using indirect means (rediscounting, open market operation, key rates), direct means (credit framework) and the imposition of reserve requirements (Kouam, 2020).

Financial sector and policies

- High levels of liquidity, heavy concentration on deposit and loan activity, and a low level of financial innovation (African Development Bank, 2012).

- The banking industry dominates in this sector (15 commercial banks) while just three companies are listed under the Stock Exchange (Douala Stock Exchange).

- Low rate of financial inclusion and increased informal financial services and credit unions: lower interest rates, smaller collateral requirements, lower levels of bureaucracy.

- Low uptake in digitalization of financial services.
  - Increased uptake of electronic means of payment, especially mobile transfers which are currently being handled by the telecommunication companies.
  - Talom and Tengeh (2021) postulate that such transfers helped to increase the financial inclusion rate from 9% in 2012 to 29% in 2017.

Data

- Annual data, 1980-2018
- Savings data: private data and gross savings (WDI)
- Independent variables following the literature (WDI)
  - Public savings rate (SPB); interest rate (RID); broad money as a percentage of GDP (W); log of GDP per capita (LY); GDP per capita growth (GY); inflation rate (INF); terms of trade (TOT); population growth rate (GPOP); and domestic credit to the private sector (FIN).

Estimation strategy

- Estimating equations

$$SPRV_t = \beta_0 + \beta_1 SPB_t + \beta_2 RID_t + \beta_3 GY_t + \beta_4 GPOP_t + \beta_5 W_t + \beta_6 LY_t + \beta_7 INF_t + \beta_8 TOT_t + \beta_9 FIN_t + \mu_t \ldots (1)$$

$$SNAT_t = \beta_0 + \beta_1 RID_t + \beta_2 GY_t + \beta_3 GPOP_t + \beta_4 W_t + \beta_5 LY_t + \beta_6 INF_t + \beta_7 TOT_t + \beta_8 FIN_t + \mu_t \ldots (2)$$

- Estimation is based on the Life Cycle Hypothesis (Ando & Modigliani, 1963) which postulates that the spending and saving habits of an economic agent are dependent on their future incomes over the course of their lifetimes.

Estimator

- Auto-Regressive Distributed Lag (ARDL) technique.
    - Suitable for time series data covering a short(er) sample period.
    - Works well even when the series are a combination of $I(0)$ and $I(1)$ processes.
    - Distinguishes between long-run and short-run effects of independent variables.

Stationarity testing

- Augmented Dickey Fuller (ADF) Test for stationarity.
    - Models include an intercept, intercept and trend, and drift.
- SNAT, SPRV and INF are stationary in levels while the rest are non-stationary.
- All variables are stationary in differences.
- From this, we can conclude that series are made up of a mixture of $I(0)$ and $I(1)$ processes.

Stationarity testing, con'd

	Level		First Difference	
Variable	**Trend**	**Drift**	**Trend**	**Drift**
Gross Savings	-4.406***	-4.532***	-6.287***	-6.691***
Private Saving Res	-5.500***	-5.648***	-5.870***	-6.117***
Public Saving Res	-2.113	-1.785**	-5.409***	-5.511***
Broad Money	-1.173	-1.565*	-4.459***	-4.001***
Domestic Credit to the Private Sector	-1.495	-2.187**	-4.583***	-4.079***
Terms of Trade	-2.218	-1.069	-7.011***	-7.021***
GDP per capita growth	-2.929	-2.639	-5.350***	-5.339***
GDP Deflator	-5.342***	-4.943***	-9.685***	-9.823***
Lending Interest Rate	-0.993	-1.682*	-3.571**	-3.325***
Log GDP per capita	-2.351	-2.709***	-2.430*	-2.017**

Co-integration

- Pesaran et al., (2001) Bounds Test for co-integration.
  - H_0: no long run relationship between variables.
  - H_1: long run relationship between variables.
- Interpretation
  - F-statistic greater than critical values, we reject the null hypothesis.
  - F-statistic less than critical values, we fail to reject the null hypothesis.
- For the private savings regression, we reject the null hypothesis and conclude that a long-run relationship exists amongst our variables.
- For the gross savings regression, we also reject the null hypothesis, hence cointegration.

Co-integration: private savings

	F-Statistic	Private Savings			
		Critical value	1%	5%	10%
1	6.937	Lower Bound Value	3.15	2.45	2.12
		Upper Bound Value	4.43	3.61	3.23
2	8.728	Lower Bound Value	3.15	2.45	2.12
		Upper Bound Value	4.43	3.61	3.23
3	5.221	Lower Bound Value	3.41	2.62	2.26
		Upper Bound Value	4.68	3.79	3.35
4	8.623	Lower Bound Value	3.41	2.62	2.26
		Upper Bound Value	4.68	3.79	3.35

Co-integration: gross savings

	F-Statistic	Critical value	Gross Savings		
			1%	5%	10%
1	7.97	Lower Bound Value	3.41	2.62	2.26
		Upper Bound Value	4.68	3.79	3.35
2	5.84	Lower Bound Value	3.74	2.86	2.45
		Upper Bound Value	5.06	4.01	3.52
3	9.85	Lower Bound Value	3.74	2.86	2.45
		Upper Bound Value	5.06	4.01	3.52
4	12.298	Lower Bound Value	4.29	3.23	2.72
		Upper Bound Value	5.61	4.35	3.77

Long-run estimates

- For each dependent variable, there are 4 different specifications: various independent variables are introduced progressively.

- For the private savings regression public savings, GDP per capita, broad money, GDP per capita growth and domestic credit to the private sector are robust determinants of private savings in Cameroon.

- For the gross savings regression, GDP per capita, interest rate, broad money, GDP per capita growth and domestic credit to the private sector are robust determinants of gross savings in Cameroon.

Long-run results: Private savings

	Private Savings			
	(1)	(2)	(3)	(4)
Log private savings (adjustment term)	-0.763***	-0.901***	**-0.854*****	**-1.052*****
	(0.200)	(0.157)	(0.222)	(0.177)
Public saving	-1.691**	-0.612**	0.083	
	(0.788)	(0.244)	(0.276)	
Log GDP per capita	16.68631*	15.710**		10.839**
	(8.364)	(5.763)		(4.982)
Interest rate	-0.661		**-0.964****	
	(0.460)		(0.415)	
Broad money	0.271**	0.215**		0.339**
	(0.132)	(0.090)		(0.104)
GDP per capita growth	-10.630**	5.949*		0.262**
	(4.541)	(3.459)		(0.116)
Domestic credit		0.126***	0.301*	0.314
		(0.014)	(0.155)	(0.098)
Observations	26	38	26	38
R-Squared	0.803	0.842	0.787	0.816
DW Statistic	2.076	2.250	1.834	1.998
Breusch-Godfrey Test (autocorrelation)	0.203	0.215	0.653	0.968
Breusch-Pagan Test (heteroscedasticity)	0.227	0.435	0.220	0.251

Long-run results: Gross savings

	Gross Savings			
	(1)	(2)	(3)	(4)
Log gross savings (adjustment term)	-0.956*** (0.205)	-0.877*** (0.171)	-0.892*** (0.176)	-0.873*** (0.138)
Log GDP per capita	19.283*** (5.547)	19.533*** (5.926)		
Interest rate	-0.377 (0.301)	-0.318 (0.288)	-0.961*** (0.129)	-0.964*** (0.268)
Broad money		-0.386 (0.239)	0.204** (0.047)	-0.051 (0.182)
GDP per capita growth		-11.289*** (2.636)	0.532*** (0.129)	0.586*** (0.125)
Domestic credit	0.264* (0.130)		-0.110 (0.210)	
Observations	26	26	26	26
R-Squared	0.839	0.760	0.849	0.828
DW Statistic	2.417	2.425	1.72	1.829
Breusch-Godfrey Test (autocorrelation)	0.115	0.156	0.366	0.560
Breusch-Pagan Test (heteroscedasticity)	0.686	0.559	0.281	0.102

Long-run analysis: Diagnostic Tests

- Diagnostic tests are to ascertain the stability of the model.
    - Autocorrelation: Durbin-Watson and Breusch-Godfrey tests. Both tests fail to reject the null hypothesis of no autocorrelation.
    - Homoscedasticity: Breusch-Pagan test. The test fails to reject the null hypothesis of homoscedastic errors.
    - Structural stability tests: CUSUM square tests. The CUSUM square falls within the 5 percent confidence bound, hence stable.

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