Analyst of the determinants of national savings in Senegal

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Abstract:

This article analyzes the determinants of national savings in Senegal for the period 1980-2014. Economic development requires investment in the productive system. Investment implies the existence of savings, the key to growth. In fact, abundant and regular savings enable a country to achieve balanced growth. Domestic savings and investment remain insufficient to boost economic growth. This low level is linked both to a rapid increase in fiscal deficits and to a modest mobilization of private savings (Dedewanou[1] F. A., 2015). Few studies were devoted to national savings in Senegal. The results obtained over the period 1980-2014 show that the real interest rate, the economic dependency ratio and the real effective exchange rate have a negative effect on the national savings while the income has a positive effect on the economy. savings for the period from 1980 to 2014.

Keywords: savings, investment, economic growth, economic and social development

Code JEL: D40, L13, L40, L50

1. Introduction

The purpose of this article is to analyze the determinants of savings in Senegal. Economic development requires investment in the productive system. Investment implies the existence of pre-growth savings. Savings continue to finance a large share of domestic investment in most developing countries. In fact, abundant and regular savings enable a country to achieve balanced growth.

The study, carried out by Philippe AGHIO[2] et al. (2006) shows that in poor countries with an open economy, increasing domestic and foreign savings drives a country's economic growth through the financing of development projects.

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[1] Dedewanou F. A. Revue d'analyse des politiques économiques et financières Vol –N°1 Aout 2015 pp 41-68

[2] Aghion P., Comin D. et Howitt P. (2009), « When does domestic saving matter for economic growth ? », Harvard BusinessnSchool, Working Paper, N°09-080

While the weakness of sub-Saharan African banking systems has spared them from the effects of the global crisis, the savings gap and urgent investment needs are a necessity for effective resource mobilization to finance economic development. (Diandy[3], 2018).

In the late 1970s, Senegal was assigned new tasks under the Structural Adjustment Programs. Domestic savings and investment remain insufficient to stimulate economic growth. This low level is linked both to a rapid increase in fiscal deficits and to a modest mobilization of savings.

Since the late 1970s, various programs and plans for stabilization, recovery and adjustment have been implemented to curb the economic crisis facing the country, but these plans have had uneven results.

Since the devaluation in 1994, economic growth has been around 5 per cent. Nevertheless, the level of growth is below what is required to have a significant impact on poverty. This is the major challenge for African decision-makers and their economic partners.

Domestic savings and investment remain insufficient to boost economic growth. This low level is linked both to a rapid increase in fiscal deficits and to a modest mobilization of private savings. Private savings play an important role in financing development and sustainable growth. (Hussein K. M. M. R. A[4]). Few studies were devoted to national savings in Senegal.

The realization of this article will allow Senegalese people a good knowledge of savings practices and needs.

Our objective is to determine the factors that influence the behavior of national savings in Senegal. This general objective breaks down into two specific objectives. Thus, let us analyze the effect of economic and socio-demographic variables, study the role of the informal sector in mobilizing savings, establish the link between the formal and informal financial sectors and their importance in the mobilization of savings and savings. propose involvement policies that will be useful for mobilizing and promoting savings in Senegal.

This article is composed of four sections. The first section focuses on the introduction. The second section deals with the characteristics and evolution of savings in Senegal from 1980 to 2014. The third section is devoted to stylized facts. Section 4 concludes this article.

2. Characteristics and evolution of savings in Senegal

In practice, savings are measured as a residual and face classification, evaluation and measurement problems. Thus, many econometric studies, seeking to identify the determinants of saving, rely on national accounts data. The use of household survey datais difficult, often inconsistent or even non-existent. Private savings constitute the bulk of national savings in developing countries.

However, the disintegration of national savings between private savings and public savings is absent from national accounts statistics. National saving includes business savings, household savings and public savings. In the case of enterprises, the increase in their gross savings in the form of undistributed dividends, increases at the same time the financial wealth of the households holding the capital of these companies. But this wealth effect can also result in the reduction of their autonomous

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[3]Diandy I. Y(2018), Développement financier, Institutions et croissance économique en Afrique subsaharienne : Co intégration et causalité par les VAR en PANEL, Fiance et finance internationale N°10 Janvier 2018

[4]*Hussein, Khaled; Mohieldin, Mahmoud; Rostom, Ahmed. 2017. L' épargne, le développement financier et la croissance économique en République arabe d'Egypte revisités. Document de travail sur la recherche sur les politiques; 8020. Banque mondiale, Washington, DC. © Banque mondiale.https://openknowledge.worldbank.org/handle/10986/26365 Licence: CC BY 3.0 IGO.*

savings, especially if it is fully anticipated. On the other hand, if business saving falls, households holding the capital of these companies may be forced to increase other sources of savings in order to maintain their financial wealth.

In the case of the state, households saving for retirement can use the public pension scheme as a substitute for their retirement savings effort. Under these conditions, the increase in public savings corresponding to the financing of the pensions of the citizens is accompanied by the fall in savings of the households concerned.

The evolution of savings in Senegal in view of the chosen period of study breaks down into six phases. The first phase from 1980 to 1985 is marked by a positive ups and down of savings until 1985, when it decreases between 1985 and 1986, when it declines. This phase is marked by drought and the oil crisis.

We observe a slight change in savings during this period. Note that for this phase from 1980 savings are very low. This period corresponds to the application of the Structural Adjustment Programs (SAP) and the adoption of the new economic and industrial policies. Structural adjustment programs and new agricultural and industrial policies have not yielded the expected results, hence their inefficiency. These programs have been unable to begin a process of sustained and sustainable growth for real development.

Savings increase from 1986 to 1987 when it decreases again. The second phase is between 1988 and 1992. This is explained by an increase in savings, which will be reduced in 1992. The year 1993 coincides with the adoption of the economic emergency plan (1993-95). The third phase is after 1993 and until 2000 and is marked by a positive evolution of savings. Overall, this phase is characterized by prosperity experienced by the Senegalese economy despite the devaluation that occurred in 1994.

 This phase is marked by a significant increase in savings. This period is the post-devaluation period. This period is marked in Senegal by a relative increase in economic growth. However, it should be noted that since the devaluation (1994), especially with the economic stability found a few months later, this trend has improved. However, the resumption of economic growth poses the problem of the fair redistribution of income.

This development could be explained by a good harvest of groundnuts. From 2000 to 2002 national savings decreased. This period is marked by the first alternation with as corollaries a difficult economic situation.

The fourth phase extends from 2002 to 2007 and is characterized by a positive increase in national savings. From 2007 to 2008 the national savings increases but between 2008 and 2009 it decreases. This decline is the result of the economic and financial crisis that appeared during the second half of 2008, and continued during the first half of 2009, plunging the global economy into recession. In fact, national savings fell by 6.88% in 2009. The decline in global economic activity in 2009, particularly in developed countries, led to a contraction in the demand for raw materials from African countries. Africa has also been affected by the decline in remittances (6.6% decline by the WorldBank and the withdrawal of Foreign Direct Investment (FDI).) Despite these negative shocks, the region has economic growth of 2.5% in 2009 (AfDB[5] et al.) Senegal has not been spared by this global crisis.

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[5]Bafd (2009), « Perspectives économiques en Afrique, OECD, African Development Bank, United Nations Development programm,

The fifth phase runs from 2009 to 2012. This phase is marked by growth in national savings. This increase is attributable to the performance of agriculture combined with satisfactory wintering and the government's efforts to supply inputs. Similarly, the implementation of agricultural programs aimed at enhancing productivity and income, in this case the National Agricultural Investment Program (PNIA), the Senegal Agricultural Market Development Program (PDMAS) as well as the program for agricultural development, support for agricultural development and rural entrepreneurship (PADAER). The last phase extends from 2012 to 2014 and is marked by a drop in national savings. This decrease is the result of economic difficulties during this period. Graph 1 shows this evolution.

Graph 1: Evolution of national savings in Senegal from 1980 to 2014.
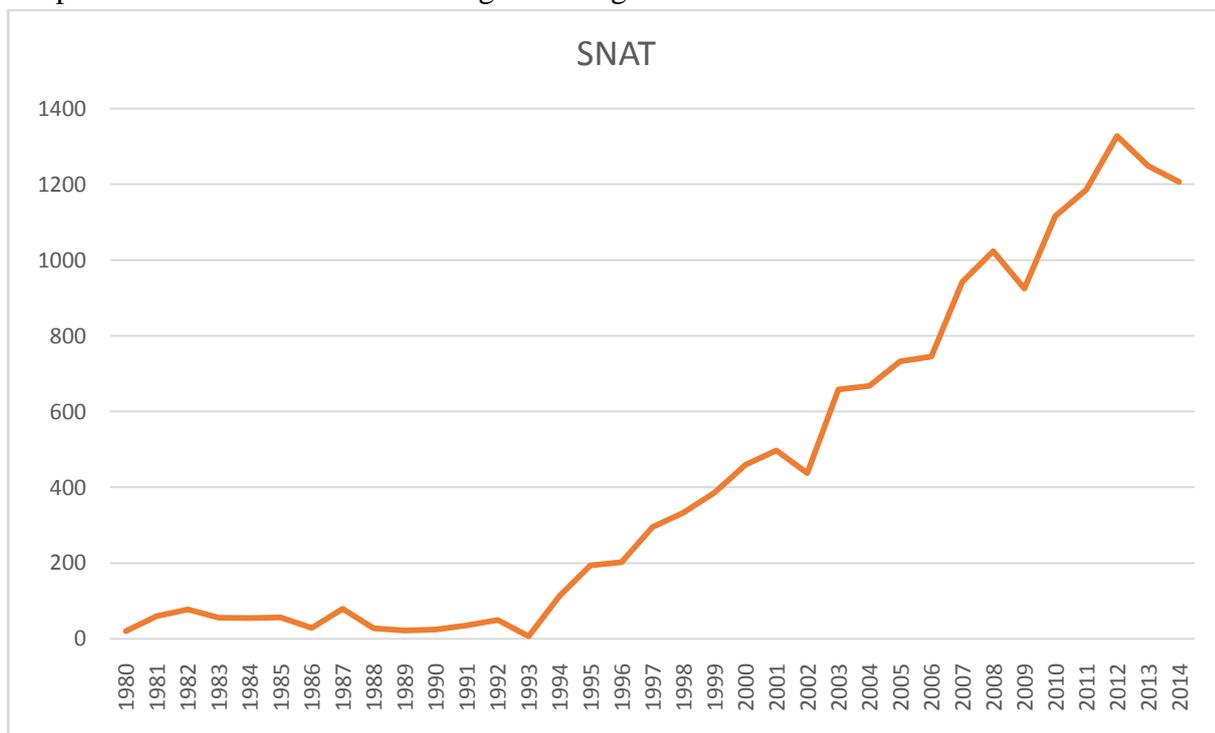
Source: Author's data, ANSD (2014)

3. Presentation of the model and interpretation of the results

3.1 Model's Presentation

The review of the literature allowed us from a number of works to distinguish two categories: qualitative variables and quantitative variables. Only the last will be the subject of our article.

Also, given the specificity of the Senegalese economy but also the unavailability of data for certain variables, the following variables were retained in the context of our thesis: national savings, income, the effective exchange rate real, the economic dependency ratio, the real interest rate and inflation. The model chosen is a synthesis of the models encountered because integrating the variables retained by each other.

Our model is not a true copy of a standard model but a symbiosis of some models, including that of Hadjimichael, Michael and Gura (1995), Ndanshau (1998), Seydi Ababacar Dieng (2016). The equation of the analysis model used in this article is in the following form:

S = f (GDP, INF, TDD, TIR, TCER)

(+) (-)(-) (+) (-)

The signs (+) or (-) under each explanatory variable indicate a priori the expected impact of the variable under consideration on savings.

SNATt = cI + c2 GDPt + c3 INFt + c4TIRt + c5 TDDt + c6TCERt + Ut (1)

Where we have:

SNATt = National savings; GDPt = National income; INFt = Inflation; TIRt = Real interest rate; TDDt = dependency ratio; TCERt = real effective exchange rate;

The model is estimated by the Ordinary Least Squares (OLS) method with the E- Views software. The estimation period is from 1980 to 2014. We use the co- integration technique to clearly identify the true relationship between the variables by looking for the existence of a cointegration vector and eliminating its effect where appropriate. In other words, we first estimate the long-run equilibrium relationships between savings and its explanatory variables, and then estimate the error correction method of the behavior of the variables. The respect of this procedure will testify, not only the reliability of the interpretation of the obtained results, but also the forecasts and policies of implication to be adopted for a better promotion of the savings in Senegal.

3.2 Results interpretation

3.2.1 Stationarity of series

For our model, stationarity tests show that not all variables are stationary. The variables that are the rate of inflation, the real interest rate are stationary in level. On the other hand, the variables national savings, income, dependency ratio and real effective exchange rate are integrated of order 1 therefore non-stationary hence the need for the co-integration test of Pesaran et al. (Table 1).

Table 1 :Unit Root Tests

Variables	En Niveau		En Différence première		Ordre D'intégration
	ADF	PP	ADF	PP	
LSNAT	-3.084	-3.125	- 8.429	- 8.891	I (1)
LGDP	7.485	8.469	- 4.217	- 6.791	I (1)
INF	- 4.076	- 4.070			I (0)
TIR	-4.163	- 4.156			I (0)
TCER	- 1.387	-1.439	-6.254	- 6.251	I (1)
TDD	-2.517	-2.524	-5.906	-5.907	I (1)

Source: Our estimates with E-Views 8.0 software

Based on co-integration techniques and error-correction models, this paper leads to the following results:

3.2.2 Estimation of the long-term relationship

To determine the explanatory variables of national savings in Senegal, we have specified a model in the following equation. This specification includes the variables selected that determine national savings in Senegal:

LOG(SNAT) = - 23.294+ 8.205 LOG (GDP) - 0.023 TCER − 0.027 TIR + 0.168 TDD

(-1.579) (2.594) (-2.313) (-1.777) (1.566)

+ 0.014 TCER (-1) -0.073 TDD (-1) +0.436 LOG (SNAT (-1)) − 5.871 LOG (GDP (-1))

(1.233) (-0.633) (2.477) (-1.855) (1)

With R^2 = 0.94 ; R^2 ajusté = 0.92 ; DW = 2.307 ; F-statistic = 43.364 ;
Prob (F-statistic) = 0.000000

Table 2: Results of estimates of the long-term relationship

Variables	Coefficients	T-Statistics	Probabilities
LOG (SNAT (-1))	0.436355	2.477271	0.0207
LOG(GDP)	8.205365	2.594023	0.0159
TCER	-0.023327	-2.313695	0.0296
TIR	-0.027867	-1.777710	0.0881
TDD	0.168152	1.566715	0.1303
LOG (GDP (-1))	-5.871991	-1.855022	0.0759
TCER (-1)	0.014939	1.233641	0.2293
TIR (-1)	-0.029164	-1.892192	0.0706
TDD (-1)	-0.073412	-0.633736	0.5322
C	-23.29464	-1.579009	0.1274
R-squared	0.94		
Adjusted R-squared	0.92		
Durbin-Watson	2.30		
F-statistic	43.36464		
Prob (F-statistic)	0.000000		

Source : Estimate of our data with EViews 8.0 software

3.2.3 Estimation of the short-term relationship

D (LOG (SNAT)) = - 0.014 − 1.385 + 8.110 D (LOG (GDP)) - 0.013 D (TCER)
(-0.081) (-4.523) (2.742) (-1.367)
+ 0.149 D (TDD) – 5.170 D (LOG (GDP (-1))) + 0.465 D (LOG (SNAT (-1))) - 0.029 D (TIR)
(1.640) (-1.488) (1.857) (-2.000)
0.019 D (TCER (-1))) - 0.078 D (TDD (-1) - 0.022 D (TIR (-1)))
(1.599) (-0.747) (-0.747) (2)
With R^2 = 0.77 ; R^2 ajusté = 0.67 ; DW = 2.258 ; F-statistic = 7.633 ;
Prob (F-statistic) = 0.000038

Table 3: Results of estimation of the short-term relationship

Variables	Coefficients	T-Statistiques	Probabilités
MCE (-1)	-1.385500	-4.523046	0.0002
D (LOG (SNAT (-1)))	0.465529	1.857710	0.0766
D (LOG(GDP))	8.110364	2.742862	0.0119
D(TCER)	-0.013429	-1.367269	0.1853
D(TIR)	-0.029680	-2.000868	0.0579
D(TDD)	0.149492	1.640872	0.1150
D (LOG (GDP (-1)))	-5.170376	-1.488394	0.1508
D (TCER (-1))	0.019789	1.599152	0.1241
D (TIR (-1))	-0.022219	-1.867954	0.0751
D (TDD (-1))	-0.078231	-0.747803	0.4625
C	-0.014280	-0.081706	0.9356
R-squared	0.77		
Adjusted R-squared	0.67		
Durbin-Watson	2.258		
F-statistic	7.633541		
Prob (F-statistic)	0.000038		

Source : Estimate of our data with EViews 8.0 software

(I)

In the short term as well as in the long term, income, savings and the dependency ratio are the main explanatory variables of the function of national savings in Senegal;

(II)

The implementation of structural adjustment reforms from the year 1981, combined with the devaluation of the CFA franc in 1994, has a negative impact on the national saving behavior in Senegal. The assessment of the diagnosis of the Senegalese economy indicates a cyclical evolution during these three decades. Our work has allowed us to highlight a number of macroeconomic and financial determinants of national savings in Senegal.

5. Conclusion

The determinants of savings thus highlighted in the framework of the Senegalese economy make it possible to better identify the constraints that are linked to it. The variables that influence national saving have varied effects. The dependency ratio, the real interest rate and the real effective exchange rate have a negative effect on national savings in Senegal, while income and the current account balance act positively.

These factors, which account for 94 per cent of the behavior of savings, constitute reference points on which policy makers can act to increase and promote the mobilization of national savings in Senegal. Another important problem is the lack of a robust empirical result of the interest rate effect on saving.

The effect of a change in the real interest rate on savings is theoretically ambiguous because of the conflict between income and substitution effects. We can say that the determining variables of national savings in Senegal are significant at the 5 per cent level. Alongside this mobilization of savings, it

would be necessary to complete this study by analyzing qualitative variables, that is to say non-quantifiable through a survey of household behaviors or institutional factors.

The social environment, beliefs should not be neglected. These conclusions necessarily have economic policy implications for mobilizing domestic savings through income, the real interest rate and the dependency ratio.

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