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Adjusted Net Savings (ANS) and economic growth in WAEMU

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Résumé

L'objectif de cet article est de mesurer la contribution de l'ENA dans la croissance économique des pays de l'UEMOA. Les résultats de l'estimation du modèle de données de panel à effets communs ont révélé, contrairement à l'hypothèse retenue, que le coefficient de l'ENA par tête est négatif et significatif au seuil de 5 %.Ainsi, d'une année à l'autre, si la croissance de l'ENA baisse de 0,105 point, alors, *ceteris paribus*, la croissance du PIB augmente d'un point. Ce résultat peint fidèlement la situation des pays de l'UEMOA, caractérisée par une tendance baissière dans presque tous les pays de la zone. Cette baisse est la conséquence de l'épuisement des ressources forestières, énergétiques, minières et les dommages causés par la pollution. Or cet épuisement des ressources – exploitation des mines pour créer de la richesse – et ces dommages dus à la pollution – utilisation des véhicules pour le transport des marchandises – contribuent grandement à l'accroissement du PIB.

Les résultats ont aussi montré le rôle positif et très significatif au seuil de 1 % de la formation brute de capital fixe (FBCF) sur le taux de croissance économique de l'UEMOA. Ainsi, une augmentation de 1 % de la FBCF par tête génère une croissance par tête supplémentaire de 0,527 point. Ces résultats devraient conduire les autorités communautaires, notamment la BCEAO, à créer les conditions favorables à l'accroissement de l'ENA.

Classification JEL : O550, C130

Abstract

The objective of this paper is to measure the contribution of ANS in the economic growth of the WAEMU countries. The results of the estimate to the common effects panel data model revealed, contrary to the assumption that the ANS head coefficient is negative and significant at the 5% threshold. Thus, from one year to another, if the NAS growth down 0.105 points then, ceteris paribus, increases GDP growth by one point. This result faithfully painted the situation in WAEMU countries, characterized by a downward trend in almost all countries in the region. This decrease is a consequence of the depletion of forest resources, energy, mining and damage caused by pollution. Now this resource depletion - Mining to create wealth - and the damage caused by pollution - use of vehicles for the transport of goods – contribute greatly to GDP growth.

The results also showed positive and significant role in the 1% of gross fixed capital formation (GFCF) on the economic growth of the WAEMU. Thus, a 1% increase in GFCF per capita growth generates additional head 0.527 points. These results should lead the Community authorities, including the BCEAO, to create conditions favorable to the growth of the NAS.

JEL Classification : O550, C130

Introduction

Several reports - including those of Brundtland (1987) and IPCC (2015) - have particularly highlighted the degradation of soil quality, depletion of resources, pollution and climatic disturbances[1]. These facts constitute credible threats to the environment and thus ultimately on the future of the human species. These have promoted economic development approach taking greater account of environmental capital and advocating a rational use of resources and respect for nature. It is in this perspective that the concept of adjusted net savings (ANS) was developed and proposed by the World Bank.

ANS or genuine savings integrates different forms of capital - physical, human and naturally to assess the level of sustainability or sustainable development of countries[2]. Pearce and Atkinson (1993) were the first to offer an empirical illustration of the ANS.

According to the World Bank (1999) ANS is equal to net national saving - corresponding strictly to physically capital increased human capital accumulation and reduced depletion of the stock of natural resources and damage caused by pollution - carbon dioxide and particulate pollutants. Human capital is considered here only to current expenditure on education.

The theories underlying the ANS are optimal growth and weak sustainability property. Sustainability can be defined as maintaining or increasing social welfare, apprehended by the value of all components of the ANS. The weak sustainability property stipulates the substitutability of different components of the ANS. Thus, a decrease in the natural resource base can be offset by investment in human or physical capital gains from the exploitation of some of these[3]: it is the rule of Hartwick (1974) or Hicks rule-Solow-Hartwick or weak sustainability rule. Hamilton and Clemens (1999) and Dasgupta Mäler (2000) and Asheim and Weitzman (2001) are the main authors that contributed to the ENA theory.

The richness of this concept - especially compared to traditional national savings - and issues relating to the future of humanity and its ecosystem justify the interest that we should give him, especially for the developing countries (DCs) and in particular the countries of the West Africa Economic and Monetary Union (WAEMU). Indeed, WAEMU countries are mainly based on long-term renewable resources to develop. But sustainable development seems to necessarily pass through the promotion of ANS, including through its environmental component. This leads us naturally to study the impact of ANS on economic growth in WAEMU countries.

The relevance and legitimacy of this question resident, first, in the fact that the various theories of growth have shown the important role of the three components of the ANS in economic growth[4]. Then, two recent empirical studies have suggested including ANS in the

[1] 1 See the Brundtland Report (1987), French version, p. 14 and the IPCC (2015), pp. 39-54. You can also read with interest and Adjakidje EbongEnone (2011) for the specific case of sub-Saharan Africa.

[2] See the Institute for Sustainable Development (IDD). "Qu'est-ce que l'épargne véritable ? " In indicators for sustainable development, No. 01-1, January-February 2001, 3p

[3] Stiglitz (1974) estimates that the substitution plausible hypothesis is advancing two non-contradictory justifications: the reserves are inexhaustible because of their abundance; technical progress and economies of scale allow a net increase in the stock of natural resources. To Dasgupta and Heal (1974) and Hamilton (1995), Hartwick rule is valid only when the elasticity of substitution between physical capital and natural capital is greater than unity.

[4] This is the Keynesian and neoclassical growth models (physical capital), endogenous growth models (human capital) and theories of optimal growth (physical capital, human capital and natural capital).

determinants of economic growth. Ngégné (2010) showed that the NAS has a significant positive effect on economic growth in developing countries. Agbahoungbata and Dieng (2014) found an unambiguous causal link NAS towards economic growth in some countries of the WAEMU.

This article aims to assess the contribution of ANS in economic growth in WAEMU countries. Our hypothesis states that the ANS positively and significantly affects economic growth in WAEMU countries. The data used in this study are taken from the base WDI 2013 edition of the World Bank for the ANS. The estimation period is 1990-2010. The rest of the article is organized as follows: section 2 is devoted to the presentation and the descriptive analysis of the model variables. Section 3 analyzes the results of the correlation, econometric tests and estimates. Section 4 concludes while offering recommendations.

2. Presentation and descriptive analysis of the model variables

The model used to measure the impact of the ANS on economic growth in WAEMU countries is a panel data model. ANS is the main explanatory variable and the rest are control variables traditionally recognized as determinants of growth by growth theorists and different authors cited in the literature review. The specified model is[5]:

$$\ln(PIB\_tete) = H + a*\ln(FBCF\_tete) + b*\ln(ENA\_tete) + c*\ln(OUV\_comm) + d*\ln(CR\_urb) + e*\ln(IPC) + f*Dumm$$

The selected variables are:
- Production per capita (PIB_tete)
- The capital per head (GFCF / total population) (FBCF_tete)
- Adjusted net savings, excluding damage resulting from the emission of particles per head (ENA_tete) Adjusted net savings are equal to net national savings plus education expenditure, minus energy depletion, mineral and forest resources and less damage from carbon dioxide. This set excludes damage caused by particulate emissions.

The degree of trade openness, which means the ratio of the sum of exports (X) and imports (M) and GDP (OUV_comm = (X + M) / GDP)
- The urban growth rate: This is the annual growth rate of urban population
- Inflation designated by the consumer price index (CPI)
- Dummy variable that takes the value 0 before 1994 and 1 after 1994 to assess the impact of devaluation on economic growth.

The model is already specified, it is important to perform a descriptive analysis uni and bivariate of the model variables over the period 1990-2010.

Table 1 shows the descriptive statistics for different variables. The average value of the ANS stood at 135.17, with a minimum of 45.79 and a maximum of 276.79. The CPI has the highest relative dispersion (CV = 4.63) compared to other variables in the model. This significant fluctuation in the CPI values shows that price convergence process in the WAEMU zone is far from complete. The average GDP per head is 478 FCFA; which remains very low compared to other least developed countries. The minimum and maximum values of per capita GDP of the area are 163.64 and 1282.27 respectively FCFA.

[5] Note that in estimated ln (variable) rating is the (variable). Also, the variables are expressed in constant 2005 FCFA units.

Table 1: Descriptive Statistics Variable

Variables	Mean	Standard deviation	Coefficient of variation (CV)	Minimum	Maximum
pib_tete	478,0634	253,6993	1,8843702	163,6401	1282,267
ena_tete	135,1674	42,86061	3,15365087	45,78715	276,7927
fbcf_tete	83,62334	48,20789	1,73464012	12,711663	293,3188
ouv_comm	0,60008573	0,1794698	3,34365854	0,2837402	1,024848
cr_urb	4,278483	0,9639223	4,43861813	2,77475	6,92715
Ipc	78,05586	16,84698	4,63322566	38,25	105,22

The WAEMU countries have achieved an average gross per capita investment of 83.62 CFA francs over the period[6]. The dispersion of GFCF per capita values around their average is 1.73. This resume with that of GDP per capita remains the lowest of all the variables under review. The average trade openness is 0.6 and presents more pronounced fluctuations (CV = 3.34) than those of GDP per head, per head of ANS and GFCF per capita. The average growth rate of urban population is high compared to the average rate of economic growth of the area since it stood at 4.28%, with extreme values of 2.77 and 6.93%. This high growth rate of the urban population may, all things being equal, contribute to reducing the impact of economic growth on the amount of income per head. Also, the dispersion of the urban growth rate is more pronounced after the CPI.

3. Analysis of the results of the correlation, econometric tests and estimates

In this section, we will first comment on the results of the correlation matrix. Then we clear the need briefly to certain econometric tests and interpret their results. In the end, the results of econometric estimates will be presented and analyzed.
Table 1 below provides the results of the correlation matrix. Analysis of the level of correlations between the different variables in the model allows us to detect the risk of multicollinearity in case of strong correlations between certain variables. Reading this table shows that gross fixed capital formation per capita (FBCF_tête) is the most correlated variable growth rate per head.

Table 1: Correlation Matrix

	pib_tete	epa_tete	fbcf_tete	ouv_comm	cr_urb	Ipc	Dumm
pib_tete	1,000						
ena_tete	-0,0877	1,000					
fbcf_tete	0,7648	0,0323	1,000				
ouv_comm	0,4563	0,2027	-0,2670	1,000			
cr_urb	-0,4083	-0,1631	-0,2360	-0,5654	1,000		
Ipc	0,3184	0,3017	0,4761	0,2869	0,0803	1,000	
Dumm	0,0440	-0,1393	0,1592	0,2613	0,0571	0,7809	1,000

The correlation between these two variables is positive and relatively high. This result confirms a priori theoretical predictions affirming the importance of investment to economic growth. However, the correlation between GDP per capita and most of the other variables is low or very low. It is thus found that the ANS is weakly negatively correlated with GDP per head. Trade openness is positively and weakly correlated with GDP per capita while the urban growth rate is negatively

[6] We had to estimate GFCF of Côte d'Ivoire for the past two years (2009 and 2010) because they are missing values.

correlated with low GDP per capita. We also note a high positive correlation between the CPI and the dummy variable.
The results also show a low correlation - often very small - between the explanatory variables. Finally, the existence of colinearity between explanatory variables is excluded; making it plausible use in the model chosen.
Using a panel data model previously required verifying the conditions of stationarity of variables and homogeneity.

To study the variables stationary, unit root test Levin, Lin and Chu (LLC) one of the most relevant tests, was used. The null hypothesis of this test admits the presence of unit root. The test results are shown in the LLC box above.

Table 2 : Test de Stationnarité de Levin-Lin-Chu

Variables	p-value
lpib_tete	0.9966
lfbcf_tete	0.9924
lepa_tete	0.1751
louv_comm	0.4635
lcr_urb	0.0186
Lipc	0.0000

The results of the stationary test LLC indicate a stationary raw series lCR_urb and LIPC variables at the 5% threshold. For all other variables in the model, we accept the null hypothesis of unit root presence and therefore their non-stationary. After the differential natural logarithm these variables, we used the LLC test whose results are shown in Table below.

Table 3: Stationary Test Levin-Lin-Chu for differentiated series

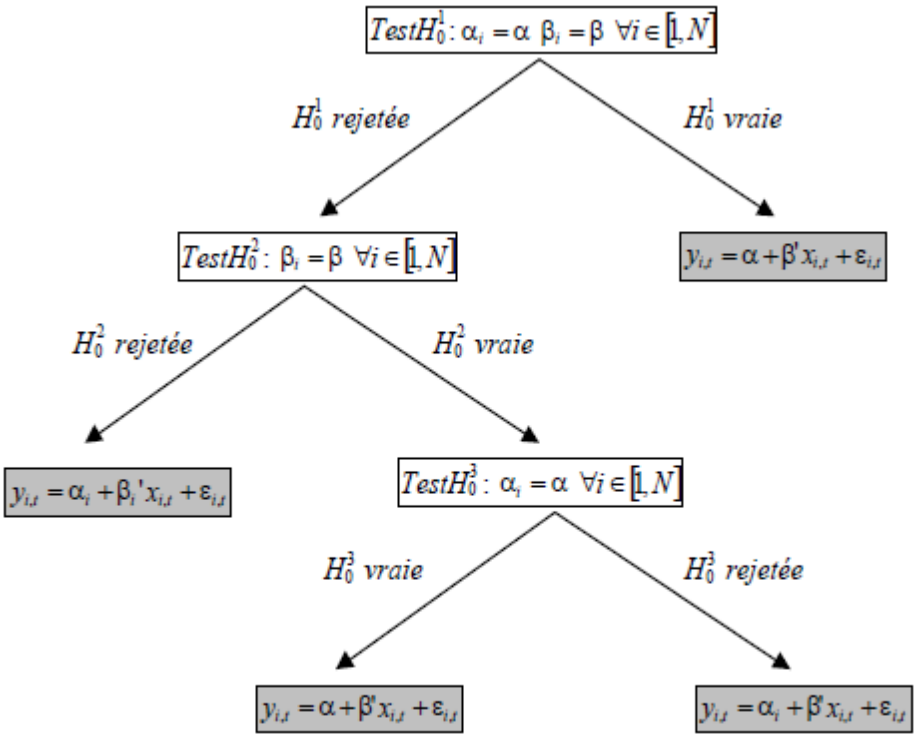
Variables	p-value
dlpib_tete	0.0000
dlfbcf_tete	0.0000
dlepa_tete	0.0001
dlouv_comm	0.0000

The letter d is placed before the names of the series meant for it is differentiated series.

The p-values values show that all series differentiated variables are stationary at the 1%. Once solved the problem of stationary variables, the model used is as follows:
dlpib_tete=H + a*dlfbcf_tete +b*dlepa_tete +c*dlouv_comm + d*lcr_urb + e*lipc+f*dumm

The use of the homogeneity test is fully justified insofar as it simultaneously allows assessing the relevance of using panel data for modeling and determining the most appropriate panel data model. To recap, there are three types of panel data models: the model common effects, the fixed effects model and random effects model.

According Hurlin (2004), the test procedure follows the logic defined via the following tree:



Source : HURLIN (2004)

Critical values obtained by applying the test are shown below:

PvalueH_0^1 = 0. 62906471 PvalueH_0^2 =0.48754831 PvalueH_0^3 = 0.99902804

Under the rules of the test, these results suggest not to reject H_0 ^ 1in threshold of 5%.This implies at the same time the justification of the use of panel data and the choice of common effects model as the best among the three possible models. It is important then to proceed then to the estimation of this model. The estimation results of this model are shown in Table 1 Annexes.

The model is good because the exogenous variables explain 62% of variations in GDP per capita. The critical probability of Fisher test indicates that the model is globally significant. The interpretation of the coefficients requires first that are carried out error normality tests, Ramsey reset, heteroscedastic and autocorrelation errors.

The result of the error normality test shows the normality of residuals at the 5% level while your Ramsey reset confirms the very threshold of significance that no important explanatory variable was omitted in the model chosen. The test of heteroscedasticity affirms the constancy of error variances (homoscedasticity) at the 5% threshold. According to the order autocorrelation test 1, the errors are not autocorrelated at the 5% threshold.

After checking all the tests necessary to validate the model, we present below the results of the estimation:

dlPIB_tete = -0,3493899 + 0,5268995*dlFBCF_tete - 0,1046499*dlENA_tete - 0,4867923*dlOUV_comm

(0,143) (0,000) (0,020) (0,000)

+ 0,024547*lCR_urb + 0,0777133*lIPC-0,0177346*Dumm

(0,486) (0,196) (0,661)

The results of the estimate to the common effects panel data model shows that gross fixed capital formation per capita has a positive and very highly significant (at 1% level) on the growth rate of GDP per head. Thus, a 1% increase in gross fixed capital formation per head entails additional growth by 0,527point head. ANS coefficient per capita is negative and significant at the 5% threshold. Before interpreting this negative coefficient, it is important to remember that the ANS is taken into differentiated natural logarithm. The interpretation will therefore be a percentage point. Thus, from one year to another, if the NAS growth down 0.105 points then, ceteris paribus, increases GDP growth by one point.

This result faithfully painted the situation in countries of the WAEMU. Indeed, over the period from 1990 to 2010, ANS recorded a downward trend in almost all countries in the region except Senegal, Benin, and to a lesser extent, Niger. This decrease is a consequence of the depletion of forest resources, energy, mining and the damage caused by CO2. Now this resource depletion - Mining to create wealth - and the damage caused by pollution - use of vehicles for the transport of goods - contribute greatly to GDP growth. This analysis helps to understand the inverse relationship between the ANS growth rate and GDP. Thus, when the ANS growth decrease, inversely the GDP increases.

This result reverses our research hypothesis that affirmed the existence of a positive influence of ANS on economic growth in the WAEMU. This unexpected result can be explained by the preponderance of the exhaustion of the natural resource base and damage caused by pollution on the other components of the ANS.

Trade openness has a negative impact and very highly significant (at 1% level). An increase of 1% of trade openness rate creates 0.487 percentage point of growth per capita in least for the zone. It should be noted that this negative and very significant impact of trade openness is also verified in several empirical studies on African countries such as those of Yanikkaya (2003) and Ackah and Morrissey (2013). The latter two authors showed that the significant efforts undertaken trade liberalization since the 1980s in most African countries have fostered a widening trade deficit. This reflects the obvious lack of competitiveness of the economies of the area, more specialized in the export of primary products with very low added value.

The growth rate of the urban population as well as the consumer price index had no significant effect on the growth rate of GDP per head. Also, the devaluation of the CFA franc in 1994 had no significant impact on economic growth in the WAEMU zone.

Moreover, if we consider the estimates by country, we see that the results are identical to those of the common effects model, except for three variables. First, only Senegal recorded a significant coefficient for the main explanatory variable of our model. Indeed, ANS per capita is positively and significantly (at the 5% level) on economic growth per capita. A 1% increase per head of ANS produces 0.387 point in addition head growth for Senegal. Then, on trade opening, Burkina Faso and Niger have negative coefficients but not significant. Finally, the CFA franc devaluation had a negative and significant effect at the 5% threshold of the Beninese economy.

4. Conclusion

Climate disturbances and their litany of negative consequences for the human species

and its ecosystem fostered an awareness of the need for better use of renewable resources and development that respects nature. It is in this context that the World Bank has developed ANS, composed of physical capital, human capital and environmental capital. It is a relevant indicator for assessing the sustainable development level of a country.

Measuring the contribution of ANS in economic growth in WAEMU countries is the focus of this article. The results of the estimation of panel data model for common effects have shown, contrary to the hypothesis originally considered that the ANS has a negative and significant effect at the 5% threshold on growth in the WAEMU zone. Indeed, the results have rather shown an inverse relationship between the ENA growth rate and GDP. Thus, when the ENA growth decreases by 0.105 points, the GDP increases by one. The importance of natural resource depletion and damage caused by pollution in relation to other components of the ENA - net national savings and human capital accumulation - explains the nature of this relationship. This result also puts implicitly highlight an unfortunate reality in environmental policy in the UEMOA area.

The results also revealed positive and significant role at the 1% of GFCF on economic growth rates of the UEMOA. Thus, a 1% increase in GFCF per capita growth generates additional head 0.527 points.

The implications of these results in terms of economic policy for WAEMU countries can be summarized in four points. First, the BCEAO should ease monetary conditions to further promote private investment and increasing the ANS through its physical component. Then the eurozone countries have interest in adopting a more sober behavior for operating expenses to increase the volume of their net savings. Then, at Community level, states could encourage, through targeted and appropriate tax incentives, companies based in the sub-region to adopt a more judicious and responsible natural resource management. So it is urgent to take corrective measures to ensure that the increase in the income of a eurozone countries may be accompanied by investment in physical capital can compensate for the depletion of natural resources. Finally, each member state would do well to substantially increase spending on education to promote human capital essential component of ANS.

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Annexes

Tableau 1 : Estimation du modèle effet commun

					Nombre d'observation	140
					F (5, 134)	36,77
					P-value	0,000
					R^2	0,6239
					R^2 ajusté	0,6069
					Root MSE	0,08926
dlpib_tete	Coefficient	Ecart-type	T	p-value	Intervalle de confiance 95%	
dlfbcf_tete	0,5268995	0,447246	11,78	0,000	0,438436	0,6153631
dlena_tete	-0,1046499	0,0444201	-2,36	0,020	-0,1925112	-0,0167887
dlouv_comm	-0,4867923	0,0779323	-6,25	0,000	-0,6409394	-0,3326453
lcr_urb	0,024547	0,0351132	0,70	0,486	-0,0449056	0,0939996
Lipc	0,0777133	0,059783	1,30	0,196	-0,0405352	0,1959618
Dumm	-0,0177346	0,0402997	-0,44	0,661	-0,0974459	0,0619767
constante	-0,3493899	0,237071	-1,47	0,143	-0,8183073	0,1195274

Tableaux 2 : Résultats des tests

Test de normalité

Variable	p-value
Résidu	0,6671

Test de Ramsey-Reset

Statistique Calculé	P-value
2,51	0,0525

Test d'hétéroscédasticité

Statistique Calculé	P-value
3,42	0,0521

Test d'autocorrélation

Statistique Calculé	P-value
2,752	0,8773

Tableaux 3 : Estimation par pays

BENIN

					Nombre d'observation	20
					F (5, 134)	59,97
					P-value	0,000
					R^2	0,9651
					R^2 ajusté	0,9490
					Root MSE	0,03404
dlpib_tete	Coefficient	Ecart-type	T	p-value	Intervalle de confiance 95%	
dlepa_tete	0,1445994	0,1576479	0,92	0,376	-0,1959783	0,485177
dlfbcf_tete	0,9982528	0,0596254	16,74	0,000	0,8694399	1,127066
dlouv_comm	-0,2529924	0,1171181	-2,16	0,050	-0,5060106	0,0000258
lcr_urb	-0,2083014	0,1009727	-2,06	0,060	-0,4264398	0,0098369
lipc	0,1175388	0,057722	2,04	0,063	-0,007162	0,2422397
dumm	-0,1234695	0,0480105	-2,57	0,023	-0,2271898	-0,0197492
Constante	-0,1113273	0,23084	-0,48	0,638	-0,6100267	0,3873721

BURKINA FASO

					Nombre d'observation	20
					F (5, 134)	3,78
					P-value	0,0212
					R^2	0,6355
					R^2 ajusté	0,4672
					Root MSE	0,10758
dlpib_tete	Coefficient	Ecart-type	T	p-value	Intervalle de confiance 95%	
dlepa_tete	-0,1380933	0,244607	-0,56	0,582	-0,6665346	0,3903479
dlfbcf_tete	0,6669031	0,196803	3,39	0,005	0,2417361	1,09207
dlouv_comm	-0,4760217	0,2969686	-1,60	0,133	-1,117583	0,1655401
lcr_urb	-0,126494	0,3306402	-0,38	0,708	-0,8407986	0,5878107
lipc	0,2899107	0,2813386	1,03	0,322	-0,3178845	0,8977059
dumm	0,0066206	0,1254614	0,05	0,959	-0,2644223	0,2776634
Constante	-1,030408	0,8639828	-1,19	0,254	-2,896929	0,8361139

COTE D'IVOIRE

					Nombre d'observation	20
					F (5, 134)	4,07
					P-value	0,0162
					R^2	0,6526
					R^2 ajusté	0,4922
					Root MSE	0,09109
dlpib_tete	Coefficient	Ecart-type	T	p-value	Intervalle de confiance 95%	

dlepa_tete	-0,0735482	0,0969131	-0,76	0,461	-0,2829163	0,1358199
dlfbcf_tete	0,4707882	0,1174316	4,01	0,001	0,2170927	0,7244837
dlouv_comm	-0,6864346	0,3775188	-1,82	0,092	-1,502015	0,1291452
lcr_urb	-0,4129973	0,2718416	-1,52	0,153	-1,000275	0,1742807
lipc	-0,2330241	0,2170913	-1,07	0,303	-0,7020213	0,2359732
dumm	0,0819182	0,1218777	0,67	0,513	-0,1813827	0,345219
Constante	1,461115	1,120201	1,30	0,215	-0,9589313	3,881162

MALI

					Nombre d'observation	20
					F (5, 134)	2,91
					P-value	0,0503
					R^2	0,5733
					R^2 ajusté	0,3763
					Root MSE	0,12764
dlpib_tete	Coefficient	Ecart-type	T	p-value	Intervalle de confiance 95%	
dlepa_tete	-0,2833444	0,2120998	-1,34	0,204	-0,7415582	0,1748693
dlfbcf_tete	0,3631005	0,1960039	1,85	0,087	-0,0603402	0,7865411
dlouv_comm	-0,693279	0,2399561	-2,89	0,013	-1,211673	-0,1748852
lcr_urb	0,5816368	0,727843	0,80	0,439	-0,9907724	2,154046
lipc	-0,1844169	0,437524	-0,42	0,680	-1,12963	,7607964
dumm	0,0304686	,1628772	0,19	0,854	-0,3214061	0,3823433
Constante	-0,097356	1,231762	-0,08	0,938	-2,758416	2,563704

NIGER

					Nombre d'observation	20
					F (5, 134)	3,46
					P-value	0,0286
					R^2	0,6153
					R^2 ajusté	0,4377
					Root MSE	0,10434
dlpib_tete	Coefficient	Ecart-type	T	p-value	Intervalle de confiance 95%	
dlepa_tete	-0,0535042	0,2018554	-0,27	0,795	-0,4895862	0,3825779
dlfbcf_tete	0,4751624	0,1936632	2,45	0,029	0,0567785	0,8935464
dlouv_comm	-0,4691902	,3105996	-1,51	0,155	-1,1402	0,2018194
lcr_urb	-0,0556477	1,03781	-0,05	0,958	-2,297701	2,186405
lipc	0,1266846	0,5437143	0,23	0,819	-1,047939	1,301308
dumm	-0,0505636	,2145858	-0,24	0,817	-0,514148	,4130209
Constante	-0,4326708	,9892871	-0,44	0,669	-2,569896	1,704554

SENEGAL

					Nombre d'observation	20
					F (5, 134)	14,16
					P-value	0,0000
					R^2	0,8673
					R^2 ajusté	0,8060
					Root MSE	0,6163
dlpib_tete	Coefficient	Ecart-type	T	p-value	Intervalle de confiance 95%	
dlepa_tete	0,3869906	0,1491988	2,59	0,022	0,0646662	0,709315
dlfbcf_tete	0,7016554	0,1092484	6,42	0,000	0,4656387	0,9376722
dlouv_comm	-0,7151833	0,1868195	-3,83	0,002	-1,118782	-0,3115842
lcr_urb	-0,1093146	0,3404334	-0,32	0,753	-0,8447762	0,6261471
lipc	0,2099909	0,2399733	0,88	0,397	-0,3084399	0,7284216
dumm	-0,1043196	0,1518416	-0,69	0,504	-0,4323535	0,2237143
Constante	-0,7131115	0,7284008	-0,98	0,345	-2,286726	0,8605028

TOGO

					Nombre d'observation	20
					F (5, 134)	10,39
					P-value	0,0003
					R^2	0,8275
					R^2 ajusté	0,7478
					Root MSE	0,07367
dlpib_tete	Coefficient	Ecart-type	T	p-value	Intervalle de confiance 95%	
dlepa_tete	-0,1487026	0,0860282	-1,73	0,108	-0,3345552	0,0371499
dlfbcf_tete	0,5047545	0,0867465	5,82	0,000	0,3173501	0,6921588
dlouv_comm	-0,5100398	0,2324527	-2,19	0,047	-1,012223	-0,0078563
lcr_urb	1,466085	1,151613	1,27	0,225	-1,021823	3,953993
lipc	0,0660495	0,1424095	0,46	0,650	-0,2416074	,3737064
dumm	-0,035442	0,1266092	-0,28	0,784	-0,3089647	0,2380806
Constante	-2,242065	1,644575	-1,36	0,196	-5,794952	1,310823