Property Rights and Economic Growth in OAPI[1] Countries: Case of WAEMU[2] Countries

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ABSTRACT---- ***The objective of this paper is to analyse the relationship between property rights protection and economic growth in WAEMU countries. Using panel data on seven (7) WAEMU countries from 1995 to 2013, we apply the Pool Mean Group approach to a linear model and we found that, in the long term, property rights influence positively the economic growth in WAEMU countries. But this relation is negative in the short-term. We apply the endogenous threshold estimation technique* of *Hansen (2000) that focuses on the search for a critical level of property rights.Results provide strong evidence for the existence of such a threshold.Below this threshold the influence of property rights on the economic growth is negative or statistically not significant. But beyond this threshold, this effect is positive and statistically significant.***

Keywords---- Property Rights, Economic Growth, Pool Mean Group, Panel Threshold Regression

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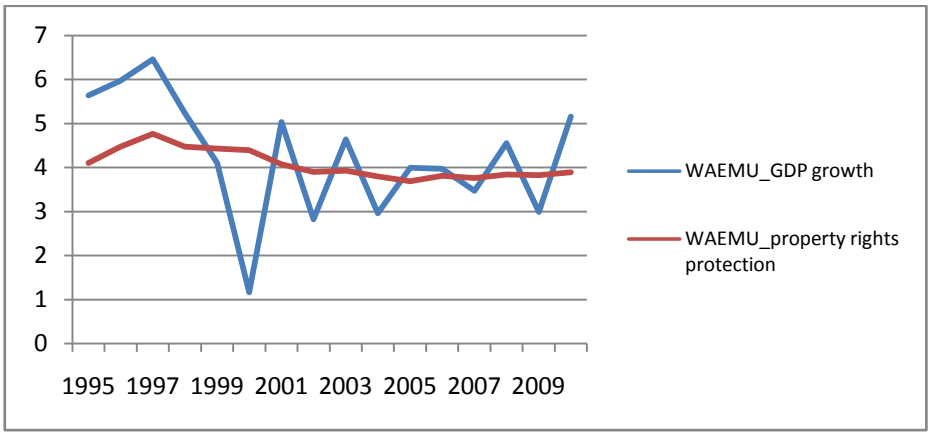
1- INTRODUCTION

The analysis of the determinants of economic growth has been the object of many studies in economics. Neoclassical growth theories and endogenous growth theories showed that labour, physical and human capital and technology are essential for economic growth. In addition of these traditional variables, institutional variables were added to growth models. According to North (1990), the industrial revolution and the beginning of sustained growth has been made possible only from the moment institutions intended to guarantee property rights in general and intellectual property rights in particular were sufficiently developed. Property comes from the Latin proprius meaning own. Property right is the right to use and dispose property in an exclusive and absolute way, subject to the limitations set by law. The nature of these limitations determines the economic system. Intellectual property refers to creations of the mind: inventions, literary and artistic works, and symbols, names and images used in commerce. The strength of the system of property rights in a country is expressed by the term protection of intellectual property rights (Falvey and al., 2006).

In 1962, twelve African countries[3] have established the African and Malagasy Patent Office. This agreement was revised in 1977 to give birth to the Bangui Agreement which created African Intellectual Property Organization (OAPI) regrouping sixteen (16) African countries[4]. The Bangui agreement was also revised in 1999 to take into account TRIPs agreements. Moreover, these countries have ratified all international agreements on the protection of intellectual property. Graph 1 below shows that the average growth rate of the WAEMU countries gross domestic product (GDP) has fluctuated around the level property rights protection of the WAEMU countries. It is important to analyse the relationship between these two variables.

[1]African Intellectual Property Rights Organization
[2] West African Economic and Monetary Union
[3]Cameroon, Central African Republic, Congo, Ivory Coast, Dahomey, Haute-Volta, Gabon, Mauritania, Senegal, Chad, Madagascar and Niger
[4]Benin, Burkina Faso, Cameroon, Central African Republic, Congo, Ivory Coast, Gabon, Guinea, Guinea-Bissau, Equatorial Guinea, Mali, Mauritania, Niger, Senegal, Chad and Togo

Graph1: Evolution of GDP growth rate and property rights protection in WAEMU



Source: Author's computation with World Bank and Fraser Institute data

The analysis of the link between property rights protection and economic growth has a significant political or economic interest in modern economies. According to the Article 2 of the fundamental principles of Bangui Agreement, "*The African Intellectual Property Organization, created by the Bangui Agreement of March 2, 1977, is in charge of promoting economic development of the Member States through the effective protection of intellectual property and related rights*". TRIPS agreements require a minimum of protection of intellectual property rights. It is important to analyse the impact of property rights on the economic growth of African countries.Studies clearly indicate that intellectual property rights protection foster economic growth in developed countries, this is not always the case for developing countries. This study aims to analyse the impact of property rights protection on the economic growth of WAEMU countries. To achieve this goal we tried to answer this question: What is the relationship between property rights protection and economic growth in WAEMU countries?To answer this question, the rest of this paper is organized as follows. In Section 2 we present the literature review. Section 3 describes the methodology. In Section 4 we present data, section 5 analyses results and section 6 concludes the study.

2- LITERATURE REVIEW

Property right is the ability to control the use of one thing to the exclusion of others. Property rights have three aspects: usus, fructus, abusus. Property rights are important for economic growth because they allow individuals to appropriate the benefits of their efforts, encourage investment in the capital, accumulation of knowledge and efficient organization of economic resources. De Soto (1990, 2000) underlines that property rights are particularly important economic institutions because of their role as an engine of economic growth. For him, in developing countries many properties are unproductive or "dead" because property rights are inadequate. Someauthors have proved empirically the relationship between property rights and economic growth.For Falvey et al. (2006) and Janjua and Samad (2007), intellectual property rights protection can have a significant and positive effect on economic growth in the poorest countries.Lewer and Saenz (2005) and Sattar and Mahmood (2011) use panel data to analyse the relationship between intellectual property rights and economic growth. They conclude that a high level of intellectual property rights protection is associated with a high rate of economic growth. The study of Dincer (2007) is particularly interesting because he includes property rights variable in the model of Mankiw and al. (1992).

What is the appropriate level of protection of property rights for a country that can boost economic development? For Chen and Puttitanun (2005), a rational developing country must choose a level of intellectual property rights protection consistent with the level of its economic development. This optimal level could be a compromise between tolerance of counterfeiting of advanced technology from the North and offering guarantees in order to motivate domestic innovations. Falvey et al. (2006), Gould and Gruben (1996), Thompson and Rushing (1999) found a nonlinear relationship between economic growth and property rights. Ginarte and Park (1997) show that intellectual property rights indirectly affect economic growth through capital accumulation. Following the same approach, Thompson and Rushing (1999) find that property rights affect indirectly economic growth in developed countries via the Total Factor Productivity. But this relationship is not significant for developing countries. If the results of these studies clearly indicate that intellectual property rights protection foster economic growth in developed countries, it is not always the case for developing countries. It is important to check the relationship between intellectual property rights and economic growth of WAEMU countries. These authors used linear or non-linear models to analyse the relationship between property rights protection and economic growth.

Economic growth favours the emergence of property rights. Chong and Calderón (2000) show that, the poorer the country, longer will be the implementation of good institutions and higher will be the influence of institutional quality

on economic growth. They also show the existence of reverse causality. Given that the level of economic development and economic growth may influence the level of intellectual property rights protection, conclusions of some studies can in a general way suffer from bidirectional causality problem. Another important problem is the omission of important explanatory variables in growth regressions. Indeed, correlation between property rights and other exogenous variables which in turn can affect growth can lead to spurious regressions. To solve this problem, Gould and Gruben (1996) use an instrumental variable to control the measurement errors. They find that intellectual property rights affect positively economic growth.To quantify the impact of intellectual property rights on economic growth, researchers have used various measures of intellectual property rights. The main measures of intellectual property rights used in the literature are: International Country Risk Guide (ICRG) data, Economic Freedom index of Heritage Foundation, Ginarte and Park index, Gwartney and Lawson index.

Strengthening intellectual property rights induced initially an immediate loss of current consumption and expansion of R & D sector. Then it follows a consumer gain from investments made in R & D. These investments induce innovation and faster economic growth (Kwan and Lai, 2003). But losses and gains of consumption could not be compensated. If losses exceed gains, the strengthening of property rights has a negative effect on economic growth. Mohtadi and Ruediger (2014) used the method of Hansen (2000) and found that a minimum of 5.12 years of schooling and a minimum level of credit to the private sector of 57% of GDP are necessary to benefit from higher intellectual property rights. As well, an index of institutional quality needs to exceed the critical level of 6.09. But below the thresholds mentioned above, intellectual property rights negatively affect economic growth.

3- METHODOLOGY

3.1- Basic model

As Dincer (2007), our modelling is based on the model of Solow (1956). According to Hoeffler (2002) Solow model can be used to analyse the economic growth of African countries on the condition of take into account specific effects of each country and the endogeneity of investment. Our model is based on the model of Dincer (2007) which makes the assumption that the accumulation of net capital stock, physical and human, does not only depends on parts of the output saved to be invested in physical and human capital but also on the degree of property rights protection which is assumed to be exogenously determined. The economic growth equation is:

$$LGDPPC_{i,t} = a_0 + a_1 H_{i,t} + a_2 OPEN_{i,t} + a_3 LINVEST_{i,t} + a_4 PROPERTY_{i,t} + a_5 FDI_{i,t} + \mu_i + v_t + u_{i,t} \ldots (1)$$

Where,

$LGDPPC_{i,t}$ is the logarithm of real gross domestic product per capita of country i at time t. $H_{i,t}$ is the rate of growth of human capital in country i at time t. We use the secondary enrolment rate as a proxy variable for human capital.$OPEN_{i,t}$ is trade openness of country i at time t. It is the ratio of imports plus exports to GDP.$PROPERTY_{i,t}$ is the level of property rights protection in country i at time t. It will be measured by Fraser Institute index and ICRG index. $FDI_{i,t}$ is the share of foreign direct investment in the GDP of country i at time t.$LINVEST_{i,t}$ represents the logarithm of the share of domestic investment in the GDP of country i at time t.

μ_i is the specific effect of each country.

v_t is the time-specific effect.

$u_{i,t}$ is the residual effect.

Previous studies[5] used three methods to analyse panel data: OLS with country specific effects, the difference generalized method of Moments (difference GMM Arellano and Bond, 1991) and the system generalized method of moments (System GMM, Blundell and Bond, 1997). But considering the high risk of cointegration, in this study we use Pooled Mean Group (PMG) method. The PMG model is an autoregressive distributive lag (ARDL) (p, q_1, ...,q_k) model. It can be represented as follows:

$$\Delta y_{i,t} = \emptyset_i \left(y_{i,t-1} + \theta_i^{'} X_{i,t} \right) + \sum_{j=1}^{p-1} \lambda_{ij}^{*} \Delta y_{i,t-j} + \sum_{j=0}^{q-1} \delta_{ij}^{'*} \Delta X_{i,t-j} + \mu_i + \varepsilon_{ij} \ldots\ldots (2)$$

Where,

$$\emptyset_i = -(1 - \sum_{j=1}^{p} \lambda_{it})$$

[5]Kim and al. (2012), Janjua and Samad (2007), Mohtadi and Ruediger (2014).

$$\theta_i = -\sum_{j=0}^{q} \frac{\delta_{ij}}{1 - \sum_k \lambda_{ik}}$$

$\lambda_{ij}^* = \sum_{m=j+1}^{p} \lambda_{im}$; j = 1,2,…,p-1 and $\delta_{ij}^* = \sum_{m=j+1}^{p} \delta_{im}$; j = 1, 2,…, q-1.

Y_t is the dependent variable;

X_t is the vector of explanatory variables;

$\emptyset_i$is the coefficient of error correction term and represents the speed of adjustment to the long-term equilibrium. If $\emptyset_i = 0$ then there would be no evidence of a long-term relationship. Assuming that variables back to their long-term equilibrium$\emptyset_i$ is expected to be negative and significantly different from zero;

$\theta_i'$is also important because it expresses long term relationship between variables.

3.2- Panel thresholdregression

We consider the Panel ThresholdRegression (PTR) of Hansen (2000). This model can be described with the following equation:

$LGDPPC_{it} = \mu_i + \beta X_{it} + \delta PROPERTY_{it} * I(q_{it} < \gamma) + \theta PROPERTY_{it} * I(q_{it} > \gamma) + \varepsilon_{it}$……(3)

Where,

$\mu_i$is a vector of the fixed country effects ;

$X_{it} = (X^1_{it}, \ldots, X^k_{it})$ is the k-dimensional vector of time-varying explanatory variables;

$\beta = (\beta_1, \ldots, \beta_k)$;

$\varepsilon_{it}$is the residual,iid(0; σ^2_ε) ;

i = 1, ..., Ndenotes the cross-section of the panel;

t = 1, ..., T is time-dimension of the panel;

$\gamma$is a common threshold for all countries.

I(.)is an indicator function, with I[.]=1 if the condition in the parentheses occurs, and I[.]=0 otherwise.

In the case of two thresholds, we have:

$LGDPPC_{it} = \mu_i + \beta X_{it} + \delta_1 PROPERTY_{it} * I(q_{it} < \gamma_1) + \delta_2 PROPERTY_{it} * I(\gamma_1 < q_{it} < \gamma_2) + \delta_3 PROPERTY_{it} * I(q_{it} > \gamma_2) + \varepsilon_{it}$……(4)

$\gamma_1$is the first threshold and γ_2 is the second threshold with $\gamma_1 < \gamma_2$.

We adopt a three-step procedure for estimating the PTR model. The first step is to determine the optimum threshold value. First, Hansen (1996, 1999, 2000) suggests removing the individual fixed effects. The aim is to eliminate the permanent differences that exist between individuals over the period and that could bias the results of the estimation. The elimination of the individual effects which are deterministic parameters is to remove specific individual averages. This step is standard in the linear models, however, it requires a more careful treatment in the context of threshold models. This new difficulty is that individual effects depend on the threshold and should be recalculated at each iteration. After eliminating the fixed effects, it should determine the optimal level of threshold γ. It should be estimated by ordinary least squares equation for values of γ. Then determine the vector of residuals $\hat{\varepsilon}(\gamma)$ and the sum of the squared of residuals S_1.

$S_1(\gamma) = [\hat{\varepsilon}(\gamma)]'[\hat{\varepsilon}(\gamma)]$……(5)

Chan (1993) and Hansen (1999) recommended using least squares to minimize the concentrated sum of squared errors. The optimal threshold will be one that will minimize the sum of squared residuals such as:

$\hat{\gamma} = argmin_\gamma S_1(\gamma)$……(6)

In a second step, after the identification of the optimal threshold, the linearity assumption is tested (H0: $\theta = \delta$ versus H1: $\theta \neq \delta$). Under the null hypothesis of linearity, we cannot use standard inferences if there no threshold. To remedy this problem, Hansen (1999) suggests using F-statistics (F1) for comparing models with and without break. Let S0 and S1, respectively, the sum of squared of deviations under the linearity hypothesis H0 and H1 nonlinearity and $\hat{\sigma}^2$ the estimated variance of residuals. Under H0, we have:

$F_1 = \frac{(S_0 - S_1(\hat{\gamma}))}{\hat{\sigma}^2}$ .....(7)

With $\hat{\sigma}^2 = \frac{1}{n(t-1)} S_1(\hat{\gamma})$

The distribution of F1 statistic is derived from a standard nonparametric bootstrap. Moreover, Hansen (1999) proposes to construct a confidence interval based on the maximum likelihood ratio calculated for any γ in order to establish an interval of "non-rejection" of the significance of the threshold:

$LR_1(\gamma) = \frac{(S_1(\gamma) - S_1(\hat{\gamma}))}{\hat{\sigma}^2}$ .....(8)

Hansen (1996, 1999 and 2000) provides an econometric technique that allows the sample data to determine the number and location of thresholds.

4- DATA

Using data from 1995 until 2013 we investigate the possible nonlinear relationship between Property rights and GDP growth. The dataset consists of seven (7)[6]WAEMU countries. Guinea-Bissau is excluded due to lack of data.Real gross domestic product per capita, trade openness (import and export), share of foreign direct investment in the GDP and the share of domestic investment in the GDP are taken from World Development Indicators. Secondary school enrolment rate is taken from World Development Indicators, UNESCO and Promes database.The measure of Property rights is provided by the measure of legal structure and property rights Index provided by the Fraser Institute (Economic Freedom of the World, 2013). We also use ICRG data of PRS Group to build a second property rights protection index.Authors such as Knack and Keefer (1995), Li and Resnick (2003), Jakobsen and Soysa (2006) and Pierpont (2007) use the ICRG data as measure of intellectual property rightsprotection. Thus, based on these previous studies we use the principal component analysis (PCA) to construct another property rights index from the following ICRG variables: Law and Order, Corruption, Bureaucracy Quality, Investment Profile and Government Stability.

5- EMPIRICAL RESULTS

5.1- Unit roots and cointegration tests

We use panel unit root tests as Im, Pesaran and Shin (IPS, 2003), Fisher-ADF and Philips-Perron (Fisher-PP) to determine the order of integration of the model variables. Results of these tests indicate that all variables are stationary in level and first difference at the1%, 5% and 10%significance level. Thus, for FDI and PROPERTY, one test out of three indicates that both variables are stationary in first differences. However, for GDPPC, domestic investment, trade openness and ICRG, the threeunit roots tests indicate that these variables are stationary at level or in first differences. Human capital (H) is stationary at level.All variables are I(0) or I(1). Given these results, PMG approach developed by Pesaran et al. (1999) could be useful because it can be applied irrespective of whether the regressors areI(0) or I(1).

Table 1: Unit root tests results

VARIABLES	ORDER OF INTEGRATION		
	IPS	ADF-FISHER	ADF-PHILIPP PERRON
LGDPPC	I(1)	I(1)	I(1)
FDI	I(1)	I(1)	I(0) constant and trend
INVEST	I(1)	I(1)	I(0) constant and trend
OPEN	I(1)	I(1)	I(1)
H	I(0) constant and trend	I(0) constant and trend	I(0) constant and trend
PROPERTY	I(1)	I(1)	I(0) constant
ICRG	I(1)	I(1)	I(1)

Source: Author's Computation

Cointegration tests of Pedroni (1995, 1996) and Kao (1999)show the presence of a cointegration relationship between these variables. There is a long-term relationship between property rights and economic growth.

[6]Benin, Burkina Faso, Ivory Coast, Mali, Niger, Senegal, and Togo

Table 2: Results ofcointegration test of Pedroni

Alternative hypothesis: common AR coefs. (*within*-dimension)				
	Statistic	Prob.	Weighted Statistic	Prob.
Panel v-Statistic	-1.140068	0.8729	-2.539278	0.9944
Panel rho-Statistic	3.169486	0.9992	3.473197	0.9997
Panel PP-Statistic	**-1.090647**	**0.1377**	**-3.914481**	**0.0000**
Panel ADF-Statistic	**-2.316418**	**0.0103**	**-1.723276**	**0.0424**
Alternative hypothesis: individual AR coefs. (between-dimension)				
	Statistic	Prob.		
Group rho-Statistic	4.219048	1.0000		
Group PP-Statistic	**-4.048815**	**0.0000**		
Group ADF-Statistic	**-3.219312**	**0.0006**		

Source: Author's Computation withEviews 7

Table 3: Results ofcointegration test of Kao

	t-Statistic	Prob.
ADF	-1,831529	
Residual variance	0,001026	
HAC variance	0,001158	**0,0335**

Source: Author's Computation withEviews 7

5.2. Results of the linear model

We reported in table 4 the results of PMG regressions. The results of the estimation of the long-term relationships confirm the influence of property rights on economic growth. In the long term, protection of property rights has positive and significant impact on economic growth of WAEMU countries at the 1% significancelevel. An increase of one (1) point in the level of property rights protection results in an increase of 1.7% of LGDPPC. This result is consistent with the results of Sattar and Mahmood (2011) and Falvey et al. (2006).The results of the estimation of the short-term dynamics indicate that this ARDL specification is particularly well suited to the articulation between the dynamics of short-term and long-term target. The error correction coefficient is negative and significant at the 1%significancelevel. This result confirms the existence of an error correction mechanism. This error correction coefficient expresses the degree to which the economic growth (LGDPPC) variable will be biased toward the long-term target. During one year the adjustment rate is 21%. With this level, all other things being equal, it takes approximately 4 years and 9 months to restore equilibrium after a shock. The adjustment to the long term target is slow.In the short-term, property rights protection has a negative and significant effect on economic growth at the 1%significancelevel. An increase one (1) point of property rights protection causes the decrease of 0.009% of the GDP per capita of the WAEMU countries. It means that the current level of protection of property rights in WAEMU countries is not favourable to economic growth.

The results of the estimation of the PMG2 indicate a positive and significant relationship between economic growth and ICRG. This result confirms the positive relationship between property rights and economic growth found with the estimation of the PMG1. But in the short-term, results of the estimation of the PMG2 indicate a negative and not significant relationship between economic growth and the ICRG variable. The coefficient of property rights found with the estimation of the PMG2 is not statistically significant, but it has the same sign as the coefficient of thePMG1.

Table 4: results of PMG estimations

	Estimation PMG 1			Estimation PMG 2		
	Coefficients	t-statistics	P-value	Coefficients	t-statistics	P-value
Results of the long term dynamics						
PROPERTY	**0,17*** **	7,16	0,000			
ICRG				0,01**	2,28	0,023
LINVEST	0 ,09***	2,87	0,006	0,013*	1,72	0,086
FDI	0,01	1,41	0,116	0,003	0,30	0,763
OPEN	0,005***	2,90	0,004	-0,008	-0,39	0,697
H	-0,003***	-3,73	0,000	0,009***	8,47	0,000
Results of the short term dynamics						
Error Correction term	**-0,21*** **	-2,91	0,004	-0,12***	-2,76	0,006
ΔD_PROPERTY	**-0,009** **	-2,26	0,024			
ΔICRG				-0,002	-0,47	0,641
ΔLINVEST	0,002	1,30	0,195	0,053	5	0,000
ΔFDI	0,001	0,36	0,722	-0,001	-0,72	0,470
ΔOPEN	0,0007	1,19	0,235	0,001	0,60	0,547
ΔH	-0,003**	2,01	0,044	0,006*	1,68	0,094
C	1,35	1,32	0,185	1,40***	2,76	0,006

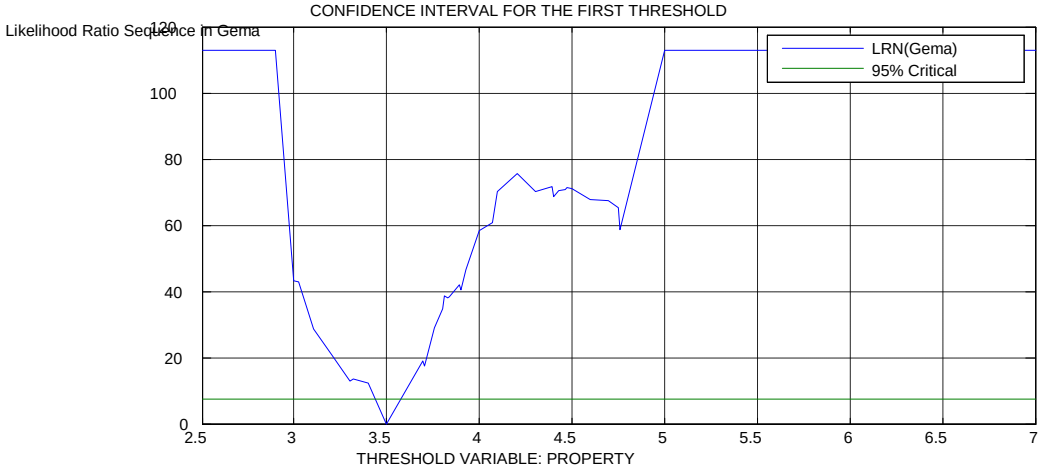
Note:***, **, * denotes significance at 1%, 5% and 10% levels respectively.t-statistics are in parentheses.

Source: Author's Computation withStata 12

5.2. Results of the panel threshold regression

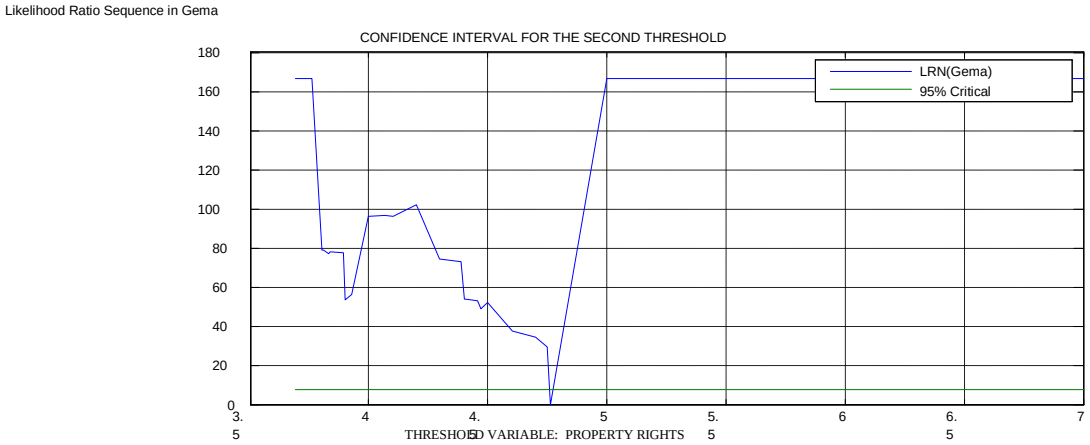
We report in Table 5 the results of the estimation of the PTR model. Results confirm the existence of a nonlinear relationship between economic growth and property rights. The likelihood ratio of Hansen nonlinearity test rejects the existence of the null hypothesis H0 (absence of a threshold effect). Our results suggest the existence of two thresholds. Threshold values that minimize the sum of squared residuals from estimation of sequential least squares are 3.5 and 4.76. This result is consistent with the results of Falvey et al. (2006).The coefficients from the estimation by non-linear OLS indicate that for the first threshold, there is a positive and not significant relationshipbetween protection of property rights and economic growth. For the second threshold, there is a negative and not significant relationship between the protection of property rights and economic growth when the protection level is less than 4.76. But this relationship becomes positive and significant when the level of protection of property rights is higher than 4.76. Thus, an increase of one point in the protection of property rights results in an increase in real GDP per capita of 0.28%. Analysis of the two thresholds shows that despite their low level of development, WAEMU countries do not taking advantage of the low level of protection of property rights in the area. Indeed, some authors suggest that developing countries should adopt a low level of protection of property rights consistent with their level of economic development. But the results of our estimations indicate that if the WAEMU countries decide to adopt a low level of protection of property rights (eg 3.5), this does not significantly affect their economic growth. WAEMU countries do not have a sufficiently developed imitation industry to benefit by a low level of protection of property rights. These countries should raise their property rights protection (eg 4.76) if they want to get positive and significant effect on their economic growth. Confidence intervals (graphs 2 and 3) confirm the existence of two thresholds.

Graph 2: confidence interval for the first thresholdbased on property rights



Source: Author's computation

Graph 3 : Confidence interval for the second threshold based on property rights



Source: Author's computation

Table 5: Results of Panel Threshold Regression

Dependent Variable : LGDPPC					
Variables	Coefficients of Standard OLS Estimation	Results of estimation with the first threshold		Results of estimation with the second threshold	
Threshold		$\gamma < 3,5$	$\gamma > 3,5$	$\gamma < 4,76$	$\gamma > 4,76$
PROPERTY	-0,0705 (-0,65)	0,314 (1,398)	0,185 (1,732)	-0,384* (-1,996)	0,283*** (5,886)
H	-0,008* (-1,997)	0,073*** (5,284)	0,0067 (1,54)	-0,015 (-0,47)	0,024 (1,54)
OPEN	-0,005 (-1,122)	0,0178*** (3,16)	-0,015** (-2,445)	-0,019*** (-3,367)	-0,006 (-0,96)
FDI	-0,027** (-2,545)	0,096 (1,24)	-0,009 (-1,36)	-0,008 (-0,856)	0,139*** (3,35)
LINVEST	0,487*** (7,66)	0,881*** (8,35)	0,560*** (6,895)	0,4745*** (5,586)	1,368*** (4,529)
CONS	1,409 (0,976)	-11,474*** (-3,56)	-0,449 (-0,29)	4,3642** (2,57)	-22,82*** (-3,321)
Bootstrap p-value		0,001		0,037	
R^2	0,49	0,87	0,47	0,57	0,73

Note:***, **, * denotes significance at 1%, 5% and 10% levels respectively.t-statistics are in parentheses.
Source: Author's computation

6-CONCLUSION AND POLICY IMPLICATIONS

This study aims to analyse the impact of property rights protection on the economic growth of WAEMU countries. We use the PMG method to estimate the linear model and we found that in the long run, protection of property rights have a weak positive effect on the economic growth WAEMU countries. But in the short term, the level of protection of property rights has a negative effect on economic growth. This result may suggest that in the short term the current level of protection of property rights is an obstacle to economic growth. According to the Doing Business report (2012), business regulations (including protection and transfer of property) are not favourable to conducting business in WAEMU countries. These results may seem surprising because WAEMU countries are members of WIPO and OAPI and they have ratified international treaties on protection of intellectual property rights. Furthermore, a weak effect or a negative relationship does not automatically mean that property rights are poorly protected in the WAEMU. Indeed, this result may mean that the current level of protection of property rights in WAEMU countries is too high for the current level of economic development of these countries. According to Chen and Puttitanum (2005) and Glass (2010) rational developing country must choose a level of protection of property rights consistent with its level of economic development.

Results also indicate a non-linear relationship between economic growth and protection of property rights. The variable "property rights" has a negative and significant effect on economic growth when the level of protection of property rights is less than 4.76. When the level of protection of property rights is higher than 4.76, protection of property rights positively and significantly affects economic growth.WAEMU countries should improve their property rights protection in order to favour growth. A modern, effectively managed, intellectual property system is required for the technology based economic development. They should choose their level of property rights protection consistent with their current level of development.One limit of this study concerns the measure of property rights. Property rights are considered as one-dimensional concept. The reality of property rights is more complex.

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