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Review

Governance, financial liberalization and economic growth: Dynamic Panel data approach

Amaira Bouzid

Research Unit in ENVIE, Faculty of Economics Sciences and Management of Tunis, University of Tunisia
Email: am_bouzid@yahoo.fr

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This paper aims to present an empirical analysis of the governance effects on economic growth. Our study presents the direct effect of governance on growth by using a dynamic panel model of nineteen emergent countries during 1990-2005 by using macroeconomic and financial variables. This article consists to discuss the direct effect of governance on the growth. It confirms the results of previous studies that show the positive effect of governance on economic growth for the countries adopted goods governance process and a negative relation for the countries adopted buds governance practice. These results can be influence the decisions of authorities on the economics politics approach.

Key words: governance, economic growth, dynamic panel data and GMM system methods.

INTRODUCTION

In recent years, emerging economies have made substantial macroeconomic performance. To enhance these performances, the authorities of these countries have initiated several institutional reforms affecting the functioning of the economy in general. The major objective of these countries is to achieve the transition to "good governance". Indeed, improving the quality of institutions becomes fatal to reach a level of sustainable development and achieve a high economic growth rates. From a theoretical perspective and empirical, several studies show the existence of a limited relationship between the institutional framework and the growth of gross domestic product per capita (*Laurent Clerc and Hubert Kempf, 2006*). Several economists have argued, in recent years that a major reason why growth rates differ between countries is that the quality of the economic environment in which agents operates are different. This environment includes laws, institutions, rules, policies and government regulations of the country. Good institutions are characterized by structures and laws incentives that reduce uncertainty and support efficiency. They contribute to a stronger economic performance. Indeed, a favorable environment for growth is one that provides adequate protection for property rights and gives agents the incentive to produce, invest and accumulate skills. The empirical studies of the relationship of institutions and growth have developed by the World Bank (2003) on the MENA countries. The study showed that since the 80s, the average annual per capita economic growth in the MENA region was 0.9%, a level below that of Sub-Saharan Africa. The origin of this delay in growth in the MENA region is the gap in governance. Indeed, simulations show that if UM could achieve an average quality of public sector administration comparable to that of a group of successful countries of South Asia-East, its growth rate would be higher, of nearly one percentage point per year. Recognizing the importance of good governance in improving the business environment, competitiveness and attractiveness of the country, and the efficient management of human capital, public authorities in emerging countries have registered, a package of reforms aimed at launching a new impetus to development of the country, to create opportunities for the involvement of different partners and sectors of society and to launch the foundation for a new

management development. Measuring the quality of governance is a difficult task. The World Bank in 2003 developed a set of indicators to judge the quality of several aspects of governance. Today, the dimensions and measures of governance we bring to explore the idea of distinguishing between governance at the macro and the micro-level governance. In terms of macroeconomics, governance means "the traditions and institutions through which authority is exercised in a country" (*Kaufman, Kraay and Zoido-Lobaton, 1999 a and b*). This definition emphasizes that the effective mobilization of resources, formulation and implementation of appropriate policies depend on the ability of leaders. Governance is described as "good" or "poor", according to the mechanism of coordination between government, market and civil society. Good governance is defined by the credibility based on the availability and transparency of information, government accountability and participation in decision-making for society collectively. Instead, poor governance is expressed by the lack of law, the existence of corruption, the asymmetry of information... In terms of microeconomics, "corporate governance" and corporate governance refers to "all the organizational mechanisms that have the effect of delimiting the powers and influence management decisions, in other words, that" govern "their conduct and define their discretionary space "(*Charreaux, 1997, p.1*). By this definition, ownership structure and various corporate partners play a crucial role in determining the organizational framework and rules. This distinction seems difficult in the sense that the quality of corporate governance depends on the quality of corporate governance system which prevails in the country. Thus, the construction of an overall index of governance is not easy because, at the macro level, governance depends on several variables. Indeed, the diversity indicator is due to the complex and multidimensional governance. The study by Kaufman et al. uses at least 250 indicators to measure the quality of institutions in a country. The information collected from twenty five different sources and is produced by eighteen international organizations. This database covers 199 countries for the years 1996, 1998, 2000 and 2002. Each country receives a score that varies between -2.5 and +2.5. A higher value for a given country at a given date corresponds to better governance. In total, the study by *Kaufman, Kraay and Mastruzzi (2003),* the aggregate governance index is calculated as the average of the following six measures: citizen participation and accountability, political stability and absence of violence, the effectiveness of government; the regulatory quality; the rule of law and the corruption. *The citizen participation and accountability:* Measures the ability of a country's citizens to participate and choose the government. It is based on a number of indicators measuring various aspects of the political process, civil liberties and human rights and political; *Political stability and absence of violence*: Measures the likelihood that the incumbent government will be destabilized or overthrown by unconstitutional means and / or violent or threatened by the public as terrorism; 3 - *The government effectiveness*: Measuring aspects of quality and availability of public service, the bureaucracy, the competence of civil servants, the independence of the administration of political pressure and the credibility and transparency of the Government in its reforms, its commitments and policies; *The Regulatory Quality*: Focuses on the policies themselves, including measures of the incidence of anti-market as price controls or inadequate bank supervision and monitoring as well as the perception of blocking imposed by excessive regulation in areas such as foreign trade and the business climate; *The rule of law*: Includes several indicators that measure the confidence of citizens in compliance with laws and rules of society. This includes perceptions of the incidence of crime, efficiency and predictability of the judiciary and the legal enforceability of contracts; *The corruption*: Measuring the extent of corruption, defined as the use of public power for personal interests and private profit in terms of wealth and corrupt gain. The growth phenomenon has been developed by different economic theories. These theories show the importance of physical capital accumulation in the development process. They fall into three different schools of thought. The first approach has inspired of Keynesian theory, whose main proponents *Domar (1946 and 1947) and Harrod (1948)*. The second approach has emerged in the mid-50's take the term "neoclassical", was essentially developed by *Solow (1956).* The third approach is the endogenous growth theory following the work of *Romer (1986) and Lucas (1988)*. After quoting the main theoretical considerations taken by these three schools of thought, our goal in this section is to assess whether financial liberalization has an effect on whether the long-term economic growth. We use an empirical model 'standard' growth. We organize our study as follows. Section II will present theoretical models of economic growth, then, in Section III will cover the theoretical and empirical econometric methods and specify the model used, Section IV will present the empirical results and finally Section V concludes the study.

Empirical modeling

The Solow model considers the investment rate, population growth and technical progress as exogenous. The two inputs, capital and labor are paid their marginal productivities. We assume a Cobb-Douglas production which at time (t) is given by:

$$Y_t = K_t^a \left[A_t L_t\right]^{1-a} \qquad \text{With } 0 < a < 1 \quad (2\text{-}1)$$

Y is the product, K is the capital, L is the labor and A is the technology level. L and A are assumed to grow at rates exogenous (n) and (g):

$$L_t = L_0 e^{nt}$$

(2-2)

$$A_t = A_0 e^{gt}$$

(2-3)

The number of work units thought effective rate (n + g). The model assumes a constant fraction (s) of the product is invested. Let (k) capital stock per labor unit ($k = \frac{K}{AL}$) and (y) the level of output per unit of work is given by:

$$y = \frac{Y}{AL}$$

The evolution of K is such that:

$$K_t^{'} = sy_t - (n + g + \delta)k_t$$

$$K_t^{'} = sk_t^{a} - (n + g + \delta)k_t$$

(2-4)

With δ is the depreciation rate. Equation (2.4) implies that (k) converges to a stationary value (k^{*}) $sk^{*a} = (n + g + \delta)k^{*}$ or defined by:

$$k^{*} = \left[\frac{s}{(n + g + \delta)}\right]^{\frac{1}{1-a}}$$

(2-5)

At equilibrium, the capital - labor ratio is positively related to investment rate and negatively to the rate of population growth. Key predictions of the Solow model concern the impact of investment and population growth on real income. By replacing (k) as in equation (2.5) in the production function and by the logarithmic per capita income is obtained:

$$Log(\frac{Y_t}{L_t}) = LogA_0 + gt + (\frac{a}{1-a})Logs - (\frac{a}{1-a})Log(n+g+\delta)$$

(2-6)

The essential question is whether the data are consistent with the predictions of the Solow model on the determinants of living standards. Thus, Solow assumes that (g) and (s) are constant across countries, with (g) which reflects the level of advancement of knowledge that is not a specific country. The term (A0) reflects not only the technology but resource endowments, climate, institutions. It will differ between countries. (A0) thus contains some factors specific to each country.

Assume that $LogA_0 = \alpha + \varepsilon$

With (α) is a constant (ε) is a shock specific to each country. In this way, the logarithm of per capita income is:

$$Log(\frac{Y_t}{L_t}) = \alpha + gt + (\frac{a}{1-a})LogS - (\frac{a}{1-a})Log(n+g+\delta) + \varepsilon$$

(2-7)

Equation (5.7) is the empirical specification of the basic Solow model. It assumes that the investment rate and population growth are independent of the specific factors that can affect production. In this case, this assumption implies that the equation (2.7) can be estimated by the method of least squares.

For the generalized model, we will incorporate into the base model all the factors affecting growth. Equation (2.1) can be written:

$$Y_t = K_t^{a} H_t^{b} \left[A_t L_t\right]^{1-a-b}$$

(2-8)

Where (H) represents the stock of human capital, other variables are defined as in equation (1.1). (L) and (A) to grow rates (n) and (g) such that:

$$L_t = L_0 e^{nt}$$

(2-9)

$$A_t = A_0 e^{(gt + X_q)}$$

(2-10)

With (X) is a vector of political and other factors affecting the technology level and economic efficiency. In addition, (q) is the vector of coefficients for these policies and other variables.
Let (s_k) and (s_h) fractions of income invested respectively in physical and human capital. The assessment of the economy is determined by:

$$k_t^{'} = s_k y_t - (n + g + \delta)k_t$$

(2-11)

$$h_t^{'} = s_h y_t - (n + g + \delta)h_t$$

(2-12)

With $y = \frac{Y}{AL}$, $k = \frac{K}{AL}$ and $h = \frac{H}{AL}$ are quantities per effective units of work.

It is assumed that the same production function is applied to human capital, physical capital and consumption. Furthermore, we assume that human capital and physical capital depreciates at the same rate (δ).

Equations (2.11) and (2.12) imply that the economy converges to a steady state defined by:

$$k^{*} = \left[\frac{s_k^{1-b} s_h^{b}}{n + g + \delta}\right]^{\frac{1}{1-a-b}}$$

(2-13)

$$h^{*} = \left[\frac{s_k^{a} s_h^{1-a}}{n + g + \delta} \right]^{\frac{1}{1-a-b}}$$

(2-14)

Substituting the values of equations (2.13) and (2.14) in the production function, with logarithmic form, and by putting (), we obtain the per capita income equilibrium:

$$Log\left(\frac{Y_t}{L_t}\right) = Log A_0 + gt + X_q - \left(\frac{x}{1-x}\right) Log(n + g + \delta) + \left(\frac{a}{1-x}\right) Log s_k + \left(\frac{b}{1-x}\right) Log s_h$$

(2-15)

Terms $\frac{x}{1-x}$, $\frac{a}{1-x}$ and $\frac{b}{1-x}$ are the elasticities of per capita income, respectively, compared to growth of population, the fraction of income invested in physical capital and the fraction of income invested in human capital. This model predicts that the sum of the elasticities with respect to (s_k) and (s_h) equals the elasticity with respect to (n + g + δ).

Similarly, the Solow model predicts conditional convergence after controlling for determinants of the steady state. In addition, this model makes quantitative predictions about the speed of convergence. Thus, let (y *) per capita income derived from equation (2-15), the convergence rate is given by:

$$\frac{dLogy_t}{dt} = \lambda \left[Logy^{*} - Logy_t \right]$$

(2-16)

With λ = (δ + n + g) (1 - a - b) is the speed of convergence, is produced by the current head. Equation (2-16) implies:

$$Logy_t = (1 - e^{\lambda t}) Logy^{*} + e^{\lambda t} Logy_0$$

(2-17)

Subtracting (logy0) in Both Sides of equation (2-17) and Replacing (y *) we get:

$$Logy - Logy_0 = (1 - e^{-\lambda t}) \left[\frac{-x}{1-x} Log(n + g + \delta) + \frac{a}{1-x} Log s_k + \frac{b}{1-x} Log s_h + X_q - Logy_0 + gt + Log A_0 \right]$$

(2-18)

With t is a time index.

Thus, from the time index is introduced in the modeling, recent work developed by *JC Berthelemy and Varoudakis A. (1998)*, show that to obtain a satisfactory empirical explanation of real growth, we must introduce other explanatory factors than simply the progression of labor and human and physical capital that appear in the neoclassical model.

To this end, the extension of the Solow growth model allowed us to capture the effects of permanent governance through their effects on total factor productivity.

We consider two production functions (standard and modified) Cobb-Douglas with constant returns to scale and neutral technical progress. They are represented by equations (2.19) and (2.20) respectively:

$$y_t = A_0 e^{gT} k_t^{\alpha}$$

(2-19)

$$y_t = A_0 e^{(g_0 + g_1 GOUV_t)T} k_t^{\alpha_0 + \alpha_1 GOUV_t}$$

(2-20)

GOV: is a measure of governance.

Econometric Methods

Most econometric studies that were relevant to macroeconomic phenomena are limited to the use of static analysis. However, recent research attention has focused on the use of another analysis called "dynamic" to understand the decisions of countries in terms of establishing a financial policy, economic and institutional. Although our empirical modeling takes into account several common variables, it would be prior to the use of dynamic analysis in panel data. Since both approaches (static and dynamic) are complementary, we think it useful to present them to choose the estimation method is most appropriate.

Static method

The static model tests the conditional convergence hypothesis that the level of development is a random variable. The estimate by the method of least squares (OLS) of all data stacked assumes homogeneity of countries, which can lead to biased estimates. Structural differences in productivity levels between countries justify the source of heterogeneity of the model and therefore the non validity of the assumption of homogeneity. Furthermore, it seems important to introduce time dummies control for macroeconomic fluctuations that affect all countries. The panel econometrics to control the heterogeneity of individual observations in their dimensions or by the inclusion of a specific effect assumed certain (fixed effects) or by the inclusion of a specific effect unobservable (random effects). The time dimension is taken into account by introducing dummy variables. The fixed effects estimation that uses deviations from individual means eliminates the differences persist between countries. This procedure favors the intra individual. In addition, it also has the advantage of being able to identify and measure effects that are not directly observable cross-sectional or time series.

However, the fixed effects model is equivalent to introduce dummy variables for each individual and is therefore costly in terms of degree of freedom (*Greene, 1993*). The random effects model assumes for its independence between the error terms that takes into account the specific effects and explanatory variables. Two tests are criticized for validating the model

specification. A Chow test to verify the existence of an individual effect (*Hsiao, 1986*) and a Hausman test, to validate the exogeneity of the specific effect compared to the explanatory variables (*Hausman, 1978*).

The static model is as follows:

$$y_{i,t} = \alpha + \beta Z_{i,t} + \varepsilon_i + \gamma_t + e_{i,t} \quad (3\text{-}1)$$

$Y_{i,t}$: The endogenous variable, which represents the economic growth of country i in period t.
The vector of exogenous variables.

ε_i: Specific effect to control unobservable differences, which between countries.
γ_t: Time effect to control the economic shocks affecting the economies.

$e_{i,t}$: random error, independent identically distribution (iid) and according to law normal with zero mean and variance σ^2.

One of the main problems that may arise in the fixed effects model and random effects are:

- For the random effects model, the problem is the possible correlation between explanatory variables and individual effects. Economically, this correlation reflects the influence of individual structural characteristics (a-temporal) on determining the level of the explanatory variables.
- For the fixed effects model, the problem of the provision of country-specific variables those were constant over time. This is the case of the variable of human capital and the variable GDP / capita. Perform a fixed effect regression would have led to these two variables arbitrarily out of all explanatory (*Eric Bernard, 2000, p 15*).

Dynamic method

The dynamic model is characterized by the presence of one or more lagged endogenous variables among the explanatory variables. In our case, there is only one lagged endogenous variable.

$$y_{i,t} = \alpha y_{i,t-1} + \beta z_{i,t} + \omega_i + e_{i,t}$$
$$\forall i \in [1, N] \text{ And } t \in [1, T] \quad (3\text{-}2)$$

With $y_{i,t}$ is the endogenous variable, exogenous variables, (α, β) parameters estimation; individual heterogeneity [$w_i \rightarrow$ iid N (0, σ^2)] and the error term [$e_{i,t} \rightarrow$ iid N (0, σ^2)].

This approach has the advantage over cross-sectional data used in previous studies, to consider two effects: the effect of time series which allows controlling economic shocks hitting the economy and the specific effect to monitor unobservable differences that exist between countries. Similarly, this method can be regarded as the best way to address the phenomenon of growth because it provides dynamic information for many countries.

We will evaluate the model using three econometric methods: the method of least squares (OLS) with common effects, the method "within" with specific effects and country fixed the method of generalized least squares with random effects specific. To test the existence of individual effects, we will conduct the specification test proposed by *Hsiao (1986).*

The use of panel data approach brings us to verify initially the degree of homogeneity or heterogeneity of the data generating process. To do this, it is first to test the equality of coefficients of the model studied in the individual dimension that is to say, to verify that the model studied is exactly the same for all countries, or conversely that each country has sample of specific individuals.

Our goal is to clarify the nature of the relationship between economic growth as measured by the growth rate of real GDP per capita and governance (GOV) with the introduction of control variables for emerging and N over T waves.

Is the logarithm of real GDP per capita, the governance index and the logarithm of the control variables and we assume that our production function Cobb-Douglass, the general model is written as:

$$y_{i,t} = \alpha_i + \beta_i GOV_{i,t} + \gamma_i Z_{i,t} + \varepsilon_{i,t}$$
$$\forall i \in [1, N], \forall t \in [1, N] \quad (3.3)$$

With $\varepsilon_{i,t} \xrightarrow{iid} N(0, \delta_\varepsilon^2)$

$$\forall t \in [1, N]$$

In economic terms, the specification test is primarily to clarify the possibility of assuming a production function completely identical for all countries (pooled model). In other words, the elasticity of financial liberalization and the control variables are identical for all countries and the technical productivity of the factors measured by the constants is the same for all countries. The model is written as:

$$y_{i,t} = \alpha + \beta GOV_{i,t} + \gamma Z_{i,t} + \varepsilon_{i,t} \quad (3.4)$$

However, the use of aggregate data makes the likelihood that the growth function is strictly identical for all countries studied is quite small. If the assumption of complete homogeneity is rejected, then they should test whether the elasticities of the different factors are identical. Otherwise, there is no a priori structure of common growth across countries. In this case, the use of panel data approach is not justified and may even lead to biased estimates and therefore our estimates are done country by country.

Assuming that there is a similar relationship between economic growth and the explanatory variables for all countries, the problem of heterogeneity of the model can come from constants. However, there is no guarantee that the countries studied have the same level of technical productivity. Instead, some structural factors such as economic, commercial, geographical and political can lead to differences in productivity between countries.

Table 4.1 GMM system Estimate: Total sample

Variables	R. Blundell *et S. Bond* Estimate (two steep)
$LOGGDP_{i,t-1}$	-0.223 (-2.56)**
LOGINV	0.130 (3.75)***
LOGINF	-0.0037 (-1.71)*
LOGH	0.070 (0.96)
LOGOUV	0.013 (0.41)
ILF	-0.0626 (-2.94)***
LOGDEPPUB	-0.122 (-2.24)**
Governance	0.0037 (0.60)
Constante	-0.383 (-0.89)
AR(1)	-1.735
Pvalue	0.0827
AR(2)	-1.3916
Pvalue	0.1640
Sargan test	12.414
p-value	1
Ob. Number	285

*** Significant at 1% ** significant at 5% and * significant at 10%
Values in parentheses are Student's t

It is first to test the hypothesis of a constant common to all countries. If this hypothesis is rejected, the model chosen is a model with individual effects and takes the following form:

$$y_{i,t} = \alpha_i + \beta GOV_{i,t} + \gamma Z_{i,t} + \varepsilon_{i,t} \quad (3.5)$$

GMM system estimation: R. Blundell and S. Bond (1998)

The estimate presented here is the estimated GMM system *R. Blundell and S. Bond (1998)*. We limit ourselves to the results of this estimate because it eliminates any bias rigorously related to unobserved individual heterogeneity and provides therefore a better efficiency of the estimation results. The table below summarizes the main results of the regressions performed: This table shows regressions of economic growth on the lagged endogenous variable and the variables specific to each country. The sample covers 19 emerging countries on a minimum of twelve consecutive years during the period 1990-2005. $LogGDP_i$, t is the logarithm of real GDP per capita. From this variable we calculate the dependent variable, namely the growth rate of real per capita, by subtracting the log of GDP at time (t-1) to the logarithm of GDP of the time (t). (LOGINV) is the logarithm of the ratio (). Loginf is the logarithm of the inflation rate measured by the index of consumer prices. ($ILF_{i,t}$) is the index of financial liberalization, this variable is calculated in Chapter 3. Logouv as *Berthelemy and Varoudakis (1998)* used the logarithm of coefficient of trade openness measured by the ratio. (Logh) is the logarithm of human capital stock, this data was not available. So we chose instead a variable approximate. This variable was calculated by multiplying the total population (1-ratio of the inactive population). This ratio is the sum of the population under 15 years and over 65 percent of the total population. This variable was calculated and already used by Fry (1998) for estimating the growth function of ten Asian countries.

The regressions are conducted with the estimator *Arenallo and Bond (1991)* which uses the generalized method of moments (GMM).

Moreover, the authors proposed the test of Sargan validity of instruments. 2(pk-1) is the degree of freedom. χ This is a test of over-identifying restrictions follows asymptotically i, t is essential that the estimator "GMM" is efficient.νHowever, the hypothesis of no autocorrelation of *Arellano and Bond (1991)* have proposed a test verifying the absence of autocorrelation of the first and second order AR (1) and AR (2) that asymptotically N (0,1). Thus, it is not autocorrelated, this test gives a valuevif the distribution of residual differentiated negative and significant at the first order and second order non-significant.

Table 4.2 Financial liberalization, institutional variables and economic growth

Model	**Blundell et Bond (1998), (two steep)**					
Regression	**1**	**2**	**3**	**4**	**5**	**6**
Constante	-0.758 (-1.24)	-0.373 (-0.73)	-0.557 (-1.15)	-0.531 (-0.70)	-0.487 (-0.65)	-0.619 (-0.97)
$LOGGDP_{i,t-1}$	-0.309 (-2.47)[b]	-0.127 (-1.48)	-0.378 (-2.91)[a]	-0.221 (-3.18)[a]	-0.208 (2.64)[a]	-0.224 (-1.57)
LOGINV	0.149 (3.92)[a]	0.096 (2.17)[b]	0.158 (3.66)[a]	0.128 (3.11)[a]	0.128 (3.31)[a]	0.104 (2.28)[b]
LOGINF	-0.004 (-2.03)[b]	-0.003 (-1.30)	-0.004 (-1.44)	-0.0011 (-0.67)	-0.003 (-1.34)	-0.003 (-1.35)
LOGOUV	0.023 (0.73)	0.012 (0.36)	0.021 (0.71)	-0.016 (-0.59)	0.015 (0.39)	0.008 (0.22)
LOGH	0.137 (1.55)	0.058 (0.74)	0.152 (1.67)[c]	0.112 (0.86)	0.084 (0.70)	0.08 (0.90)
ILF	-0.055 (-2.78)[a]	-0.057 (-3.21)[a]	-0.066 (-2.79)[a]	-0.042 (-2.84)[a]	-0.063 (-3.39)[a]	-0.051 (-2.67)[a]
LDEPPUB	-0.111 (-1.83)[c]	-0.069 (-1.13)	-0.142 (-2.84)[a]	-0.114 (-1.81)[c]	-0.114 (-1.80)[c]	-0.04 (-0.61)
Corruption	0.012 (2.13)[b]					
Rule		0.0033 (1.48)				
Ethnic			-0.015 (-2.15)[b]			
Contrat				0.010 (2.95)[a]		
Risque					0.0038 (1.59)	
Bureaucratie						0.010 (3.07)[a]
AR(1)	-1.2214	-2.0898	-1.4449	-1.8447	-1.7204	-1.7902
pvalue	0.2219	0.0366	0.1485	0.0651	0.0854	0.0734
AR(2)	-1.619	-0.6669	-3.3095	-1.6081	-1.307	-0.9402
p-value	0.1055	0.5048	0.0009	0.1078	0.1912	0.3471
Sargan test	12.506	15.029	9.048	13.934	12.647	14.685
Pvalue	1	1	1	1	1	1
Ob. number	285	285	285	285	285	285

Table 4.1 contains the regression results for the sample as a whole. The results appear conclusive; the three proposed tests (AR (1), AR (2) and Sargan) confirm the correct dynamic specification of the production function of emerging countries in our sample. Indeed, the results of the Hansen test are the instrumental variables are valid, while the autocorrelation test of second order Arellano and Bond autocorrelation indicates a lack of second order.

Several interpretations and conclusions can be drawn from these estimates. First, the negative and insignificant coefficient of the lagged endogenous variable indicates the non-convergence of GDP of these countries studied.

The findings are entirely consistent with model predictions. The coefficients (LINV) and (LINFL) each have the expected signs and both are highly significant. Indeed, investment is considered the engine of economic growth. For the parameter on the inflation variable, it is highly significant and has a negative effect on growth. The introduction of the inflation rate as a predictor of growth is the concept of financial repression. Indeed, a high inflation rate characterizes economies where financial repression is strong, so the real interest rate is negative reducing the weight of public debt. However, high inflation disadvantage of long-term investments and exerts a negative effect on growth. This coincides with the various theoretical analyzes that consider inflation as a factor detrimental to economic growth.

The parameter relating to the human capital variable (LH), as a direct factor of growth, is positive and statistically significant sample of the entire country. This result suggests that slow growth may be due to low human capital.

However, the degree of openness (LOUV) has the positive sign and not significant, indicating that more open economies has a conditioning effect on growth. This result is contrary to what the theory says about it. Insofar as this indicator is not optimal and is not very robust.

Increased public spending LODDEPPUB) is a fraction of significant reduction of economic growth. This result is consistent with that of *Barro (1997)* and contradicts other studies (*Devarajan, Swaroop and Zou, 1996*; *Caselli, Esquivel and Lefort, 1996)*. In general, the relationship between public spending and economic growth is mixed and controversial.

The most important is the result in this regression for variable (ILF). For the total sample the variable has a negative coefficient and significant at 1% and 10% as shown in the regressions in Table 4.1. So the conclusion to be drawn from these estimates is that the positive effect of financial liberalization is conditioned by the existence of an institutional framework, business climate and a macroeconomic environment that can transform the resources available in profitable projects. This result seems inconsistent with the analysis of Mackinnon of the positive impact of financial liberalization on improving the product in developing countries. In the same context, the total effect of governance on growth is negligible and not significant which proves the fragility of institutions. Given the difficulties in the implementation of financial liberalization policies, and result in additional costs in terms of banking and financial crises, it would be useful to reconsider a new financial policy most appropriate for growth, based on endowments institutional.

According to *Acemoglu (2003) and Ball (1999)*, the financial success of policies depends on the quality and functioning of institutions. Also, following criticism addressed to the theoretical financial liberalization, and *Steim Arestis (2005)* suggest that the failure of this policy is particularly focused on institutional issues.

Attempts today to enrich the pioneering work of studying the link "finance-growth" are to retain institutional variables (contract enforcement, law enforcement, corruption index, ethnicity, bureaucracy and level of risk) in our regressions.

The autoregressive term ($GDP_{i,t-1}$) is always negative and significant. This reflects the persistent nature of the growth process. To our surprise, there is no variable that has an influence on economic growth since none of these variables is considered significant, with the exception of two variables "ethnic" and "contract" that have a positive effect on growth.

♦ In a first model, we introduced the "corruption index" over this index, the higher the country is corrupt. This variable is significant and therefore it has an impact on the growth dynamics of these countries. However, analyzes *Gnégné Y. (2009)* showed that "The final effect of the race for the annuity and corruption on economic growth through under-investment and non-productive investments. There are at least three reasons that explain this: first, the race for the rent diverts resources away from investments that have the best social effects (*Auty, 2001b*), and secondly, corruption reduces profits and thus the amount of resources that finance new goods, services and technology (*Romer, 1994*) and thirdly, an environment where corruption reigns there is an uncertain environment. "

♦ In the second model we added the institutional variable "law", this variable measures the degree of enforcement for each emerging market, longer this index, the greater compliance with laws and their degree of application is important. In our case, this variable has a positive sign and slightly smaller, it is not significant. It may be noted, also, that the ILF creates an adverse effect on growth and increases the likelihood of emergence of banking crises and financial fragility.

♦ In the third model we introduced the "ethnic" variable, this index is more, the greater civil liberties and media independence are respected. The coefficient on this variable is positive and statistically significant at 5% so it has significant benefits for economic growth. This result was confirmed by Kpodar (2004): "Ethnic Diversity accounts for about 28% of the growth differential between Africa and Asia." By cons, Easterly and Levine (1997) show that a high level of ethnic diversity is correlated with a low level of financial development, which in turn leads to low growth.

♦ In the fourth regression we added the variable "contract" is to honor the contracts of economic and financial order. The estimation results show that this variable has a positive effect on growth and is statistically significant at 1%. Thus, countries that commit themselves to respect the terms of contracts and honor are those who will experience high growth and sustainable. More importantly, this result is very interesting because it shows us the role of regulation on the implementation of commitments and clauses in contracts.

♦ The last two regressions show that five and six variables "risk" and "bureaucracy" have an important role in explaining economic growth since both variables are significant and have a positive sign.

CONCLUSION

We concluded, sometimes, a divergence in the results. This discrepancy is due to the multitude of indicators for measuring the degree of governance. It is for this reason that we tried in this work to study empirically the relationship between governance and economic growth through the use of indicators measures adequate. To do this, we took a sample of 19 emerging countries during the period 1990-2005. We have used techniques in dynamic panel data.

In conclusion, it is important to highlight that the governance and growth are positively correlated and that the link between these two variables is statistically

insignificant. This means that good governance is vital to any strategy for growth but is not a necessary condition.

The ways in which good governance promotes growth are mainly two in number: it helps the one hand, to accelerate the pace of investment is essential for improving growth and allows, secondly, to strengthen the productive sectors to facilitate capital accumulation and wealth distribution.

Within this framework, the dimensions of governance that require a development priority in order to enhance the efficiency of the production system are, firstly, those relating to the promotion of an enabling environment for investment to accelerate growth Economic and secondly, those relating to the establishment of a regulatory and institutional framework able to improve the effectiveness of public policy development, particularly those oriented towards building production capacity.

For the establishment of a framework conducive to growth, reforms should focus on strengthening the coherence and anticipation in the acts of the State, the establishment of a tax incentive system, putting Establishment of flexible labor legislation, the fight against corruption, reform the judicial system and changes in land tenure.

However, these results vary with the nature of governance "goods" or "buds" and the category of countries. In fact, governance has been the source of failure of financial and real sectors and the emergence of socio-economic discrimination in emerging countries, mainly in Africa.

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```
. xtdpdsys loggpib logpib0 ilf loginf loginv logh logouv logdeppub gouvernance,
>  lags(1) maxldep(6) maxlags(3) twostep

System dynamic panel-data estimation          Number of obs          =       285
Group variable: id                            Number of groups       =        19
Time variable: annee
                                              Obs per group:     min =        15
                                                                 avg =        15
                                                                 max =        15

Number of instruments =      92               Wald chi2(9)           =     53.69
                                              Prob > chi2            =    0.0000
Two-step results
------------------------------------------------------------------------------
     loggpib |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     loggpib |
         L1. |   -.223101    .087212    -2.56   0.011    -.3940333   -.0521687
      logpib0 |  -.0022498   .0092073    -0.24   0.807    -.0202958    .0157962
         ilf |   -.062662   .0213406    -2.94   0.003    -.1044889   -.0208352
      loginf |  -.0037729   .0022054    -1.71   0.087    -.0080954    .0005496
      loginv |   .1308875   .0349159     3.75   0.000     .0624536    .1993213
        logh |   .0704648   .0730664     0.96   0.335    -.0727427    .2136722
      logouv |   .0130901    .032291     0.41   0.685    -.0501991    .0763792
   logdeppub |  -.1221394   .0545361    -2.24   0.025    -.2290282   -.0152506
gouvernance |   .0037336   .0062239     0.60   0.549    -.0084651    .0159322
       _cons |  -.3833367   .4320632    -0.89   0.375    -1.230165    .4634915
------------------------------------------------------------------------------
Warning: gmm two-step standard errors are biased; robust standard
         errors are recommended.
Instruments for differenced equation
        GMM-type: L(2/7).loggpib
        Standard: D.logpib0 D.ilf D.loginf D.loginv D.logh D.logouv
                  D.logdeppub D.gouvernance
Instruments for level equation
        GMM-type: LD.loggpib
        Standard: _cons

. estat abond

Arellano-Bond test for zero autocorrelation in first-differenced errors

+-------+----------+------------+
| Order |     z    |   Prob > z |
+-------+----------+------------+
|   1   |  -1.735  |   0.0827   |
|   2   | -1.3916  |   0.1640   |
+-------+----------+------------+
   H0: no autocorrelation

. estat sargan
Sargan test of overidentifying restrictions
        H0: overidentifying restrictions are valid

        chi2(82)     =  12.41407
        Prob > chi2  =    1.0000
```

```
. xtdpdsys loggpib logpib0 ilf loginf loginv logh logouv logdeppub breaucratie,
>  lags(1) maxldep(6) maxlags(3) twostep

System dynamic panel-data estimation          Number of obs          =       285
Group variable: id                            Number of groups       =        19
Time variable: annee
                                              Obs per group:     min =        15
                                                                 avg =        15
                                                                 max =        15

Number of instruments =      92               Wald chi2(9)           =     88.49
                                              Prob > chi2            =    0.0000
Two-step results
------------------------------------------------------------------------------
     loggpib |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     loggpib |
         L1. |  -.2242612   .1429203    -1.57   0.117    -.5043797    .0558574
      logpib0 |   .0052988   .0123595     0.43   0.668    -.0189255     .029523
         ilf |  -.0518564   .0194469    -2.67   0.008    -.0899716   -.0137413
      loginf |  -.0031474   .0023264    -1.35   0.176    -.0077071    .0014123
      loginv |   .1040975   .0457164     2.28   0.023     .014495      .1937
        logh |    .080222   .0890789     0.90   0.368    -.0943694    .2548134
      logouv |   .0081083   .0364677     0.22   0.824    -.063367     .0795836
   logdeppub |  -.0402107    .066182    -0.61   0.543    -.1699251    .0895036
 breaucratie |   .0109075   .003551     3.07   0.002     .0039477    .0178672
       _cons |  -.6196455   .6414412    -0.97   0.334    -1.876847    .6375563
------------------------------------------------------------------------------
Warning: gmm two-step standard errors are biased; robust standard
         errors are recommended.
Instruments for differenced equation
        GMM-type: L(2/7).loggpib
        Standard: D.logpib0 D.ilf D.loginf D.loginv D.logh D.logouv
                  D.logdeppub D.breaucratie
Instruments for level equation
        GMM-type: LD.loggpib
        Standard: _cons

. estat abond

Arellano-Bond test for zero autocorrelation in first-differenced errors

+-------+----------+------------+
| Order |     z    |   Prob > z |
+-------+----------+------------+
|   1   | -1.7902  |   0.0734   |
|   2   |  -.9402  |   0.3471   |
+-------+----------+------------+
   H0: no autocorrelation

. estat sargan
Sargan test of overidentifying restrictions
        H0: overidentifying restrictions are valid

        chi2(82)     =  14.68563
        Prob > chi2  =    1.0000

.
```

```
. xtdpdsys loggpib logpib0 ilf loginf loginv logh logouv logdeppub   contrat, l
> ags(1) maxldep(6) maxlags(3) twostep

System dynamic panel-data estimation          Number of obs          =       285
Group variable: id                            Number of groups       =        19
Time variable: annee
                                              Obs per group:     min =        15
                                                                 avg =        15
                                                                 max =        15

Number of instruments =      92               Wald chi2(9)           =     98.13
                                              Prob > chi2            =    0.0000
Two-step results
------------------------------------------------------------------------------
     loggpib |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     loggpib |
         L1. |  -.2217533   .0697085    -3.18   0.001    -.3583794   -.0851272
     logpib0 |   -.001014   .0043396    -0.23   0.815    -.0095195    .0074915
         ilf |  -.0427847   .0150594    -2.84   0.004    -.0723007   -.0132687
      loginf |   -.001196    .001794    -0.67   0.505    -.0047122    .0023202
      loginv |   .1288201   .0414313     3.11   0.002     .0476162    .2100239
        logh |   .1129638   .1318309     0.86   0.392    -.1454201    .3713477
     logouv  |  -.0163647   .0275588    -0.59   0.553     -.070379    .0376497
  logdeppub  |  -.1149865   .0633799    -1.81   0.070    -.2392089     .009236
    contrat  |   .0100157   .0033976     2.95   0.003     .0033564    .0166749
       _cons |  -.5317685   .7590223    -0.70   0.484    -2.019425    .9558879
------------------------------------------------------------------------------
Warning: gmm two-step standard errors are biased; robust standard
         errors are recommended.
Instruments for differenced equation
        GMM-type: L(2/7).loggpib
        Standard: D.logpib0 D.ilf D.loginf D.loginv D.logh D.logouv
                  D.logdeppub D.contrat
Instruments for level equation
        GMM-type: LD.loggpib
        Standard: _cons

. estat abond

Arellano-Bond test for zero autocorrelation in first-differenced errors

+-------------------+
| Order |  z    Prob > z |
|-------+-----------------|
|   1   | -1.8447  0.0651 |
|   2   | -1.6081  0.1078 |
+-------------------+
   H0: no autocorrelation

. estat sargan
Sargan test of overidentifying restrictions
        H0: overidentifying restrictions are valid

        chi2(82)     =  13.93462
        Prob > chi2  =    1.0000

.


. xtdpdsys loggpib logpib0 ilf loginf loginv logh logouv logdeppub  corruption,
>  lags(1) maxldep(6) maxlags(3) twostep

System dynamic panel-data estimation          Number of obs          =       285
Group variable: id                            Number of groups       =        19
Time variable: annee
                                              Obs per group:     min =        15
                                                                 avg =        15
                                                                 max =        15

Number of instruments =      92               Wald chi2(9)           =     79.79
                                              Prob > chi2            =    0.0000
Two-step results
------------------------------------------------------------------------------
     loggpib |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     loggpib |
         L1. |  -.3096216   .1255953    -2.47   0.014    -.5557839   -.0634593
     logpib0 |  -.0054301    .010655    -0.51   0.610    -.0263134    .0154533
         ilf |  -.0554149   .0199042    -2.78   0.005    -.0944263   -.0164035
      loginf |  -.0040007   .0019685    -2.03   0.042    -.0078588   -.0001426
      loginv |   .1499238   .0382899     3.92   0.000     .074877    .2249705
        logh |    .137813   .0891777     1.55   0.122    -.036972     .312598
     logouv  |   .0234063   .0322271     0.73   0.468    -.0397577    .0865703
  logdeppub  |  -.111017   .0607226    -1.83   0.068    -.230031    .0079971
  corruption |   .0121492   .0056953     2.13   0.033     .0009867    .0233117
       _cons |  -.7588165   .6114719    -1.24   0.215    -1.957279    .4396464
------------------------------------------------------------------------------
Warning: gmm two-step standard errors are biased; robust standard
         errors are recommended.
Instruments for differenced equation
        GMM-type: L(2/7).loggpib
        Standard: D.logpib0 D.ilf D.loginf D.loginv D.logh D.logouv
                  D.logdeppub D.corruption
Instruments for level equation
        GMM-type: LD.loggpib
        Standard: _cons

. estat abond

Arellano-Bond test for zero autocorrelation in first-differenced errors

+-------------------+
| Order |  z    Prob > z |
|-------+-----------------|
|   1   | -1.2214  0.2219 |
|   2   |  -1.619  0.1055 |
+-------------------+
   H0: no autocorrelation

. estat sargan
Sargan test of overidentifying restrictions
        H0: overidentifying restrictions are valid

        chi2(82)     =   12.5068
        Prob > chi2  =    1.0000

.
```

```
. xtdpdsys loggpib logpib0 ilf loginf loginv logh logouv logdeppub  ethnic, lag
> s(1) maxldep(6) maxlags(3) twostep

System dynamic panel-data estimation          Number of obs          =       285
Group variable: id                            Number of groups       =        19
Time variable: annee
                                              Obs per group:     min =        15
                                                                 avg =        15
                                                                 max =        15

Number of instruments =      92               Wald chi2(9)           =     94.50
                                              Prob > chi2            =    0.0000
Two-step results
------------------------------------------------------------------------------
     loggpib |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     loggpib |
         L1. |  -.3787179   .1300911    -2.91   0.004    -.6336918   -.1237439
     logpib0 |  -.0206085   .0010595    -1.95   0.052    -.0413743    .0001573
         ilf |  -.0668384   .0239258    -2.79   0.005    -.1137321   -.0199446
      loginf |  -.0046572   .0032362    -1.44   0.150        -.011    .0016857
      loginv |   .1589657    .043436     3.66   0.000     .0738327    .2440986
        logh |   .1527263   .0916709     1.67   0.096    -.0269454     .332398
      logouv |   .0212672    .029955     0.71   0.478    -.0374436    .0799779
   logdeppub |   -.142636   .0502168    -2.84   0.005    -.2410592   -.0442129
      ethnic |  -.0015055   .0007012    -2.15   0.032    -.0028799   -.0001311
       _cons |  -.5570592   .4830974    -1.15   0.249    -1.503913    .3897944
------------------------------------------------------------------------------
Warning: gmm two-step standard errors are biased; robust standard
         errors are recommended.
Instruments for differenced equation
        GMM-type: L(2/7).loggpib
        Standard: D.logpib0 D.ilf D.loginf D.loginv D.logh D.logouv
                  D.logdeppub D.ethnic
Instruments for level equation
        GMM-type: LD.loggpib
        Standard: _cons

. estat abond

Arellano-Bond test for zero autocorrelation in first-differenced errors

+-------+----------+------------+
| Order |    z     |  Prob > z  |
+-------+----------+------------+
|   1   | -1.4449  |   0.1485   |
|   2   | -3.3095  |   0.0009   |
+-------+----------+------------+
   H0: no autocorrelation

. estat sargan
Sargan test of overidentifying restrictions
        H0: overidentifying restrictions are valid

        chi2(82)     =  9.048096
        Prob > chi2  =    1.0000

.


. xtdpdsys loggpib logpib0 ilf loginf loginv logh logouv logdeppub  rule, lags(
> 1) maxldep(6) maxlags(3) twostep

System dynamic panel-data estimation          Number of obs          =       285
Group variable: id                            Number of groups       =        19
Time variable: annee
                                              Obs per group:     min =        15
                                                                 avg =        15
                                                                 max =        15

Number of instruments =      92               Wald chi2(9)           =     22.71
                                              Prob > chi2            =    0.0069
Two-step results
------------------------------------------------------------------------------
     loggpib |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     loggpib |
         L1. |  -.1272271   .0859046    -1.48   0.139      -.295597    .0411428
     logpib0 |  -.0005355   .0075841    -0.07   0.944        -.0154     .014329
         ilf |  -.0570258   .0177545    -3.21   0.001     -.091824   -.0222277
      loginf |  -.0030686   .0023518    -1.30   0.192      -.007678    .0015408
      loginv |   .0967997   .0446506     2.17   0.030     .0092862    .1843132
        logh |   .0584895   .0794669     0.74   0.462    -.0972628    .2142419
      logouv |   .0120934   .0337275     0.36   0.720    -.0540114    .0781981
   logdeppub |  -.0698256   .0617383    -1.13   0.258    -.1908305    .0511793
        rule |   .0033012    .002225     1.48   0.138    -.0010598    .0076622
       _cons |  -.3731763    .50979    -0.73   0.464    -1.372346    .6259938
------------------------------------------------------------------------------
Warning: gmm two-step standard errors are biased; robust standard
         errors are recommended.
Instruments for differenced equation
        GMM-type: L(2/7).loggpib
        Standard: D.logpib0 D.ilf D.loginf D.loginv D.logh D.logouv
                  D.logdeppub D.rule
Instruments for level equation
        GMM-type: LD.loggpib
        Standard: _cons

. estat abond

Arellano-Bond test for zero autocorrelation in first-differenced errors

+-------+----------+------------+
| Order |    z     |  Prob > z  |
+-------+----------+------------+
|   1   | -2.0898  |   0.0366   |
|   2   | -.66691  |   0.5048   |
+-------+----------+------------+
   H0: no autocorrelation

. estat sargan
Sargan test of overidentifying restrictions
        H0: overidentifying restrictions are valid

        chi2(82)     =  15.02963
        Prob > chi2  =    1.0000

.
```

```
. xtdpdsys loggpib logpib0 ilf loginf loginv logh logouv logdeppub  risque, lag
> s(1) maxldep(6) maxlags(3) twostep

System dynamic panel-data estimation          Number of obs          =       285
Group variable: id                            Number of groups       =        19
Time variable: annee
                                              Obs per group:     min =        15
                                                                 avg =        15
                                                                 max =        15

Number of instruments =      92               Wald chi2(9)           =     51.17
                                              Prob > chi2            =    0.0000
Two-step results
```

loggpib	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
loggpib						
L1.	-.2087312	.0790615	-2.64	0.008	-.363689	-.0537735
logpib0	-.0012361	.0080051	-0.15	0.877	-.0169257	.0144536
ilf	-.0638811	.0188696	-3.39	0.001	-.1008649	-.0268973
loginf	-.0030971	.0023145	-1.34	0.181	-.0076335	.0014393
loginv	.1289858	.0389202	3.31	0.001	.0527036	.205268
logh	.0846984	.120657	0.70	0.483	-.1517849	.3211818
logouv	.0151025	.0387632	0.39	0.697	-.0608719	.091077
logdeppub	-.1147409	.0636999	-1.80	0.072	-.2395904	.0101086
risque	.0038703	.0024379	1.59	0.112	-.000908	.0086485
_cons	-.4872028	.744375	-0.65	0.513	-1.946151	.9717454

```
Warning: gmm two-step standard errors are biased; robust standard
         errors are recommended.
Instruments for differenced equation
        GMM-type: L(2/7).loggpib
        Standard: D.logpib0 D.ilf D.loginf D.loginv D.logh D.logouv
                  D.logdeppub D.risque
Instruments for level equation
        GMM-type: LD.loggpib
        Standard: _cons

. estat abond

Arellano-Bond test for zero autocorrelation in first-differenced errors
```

Order	z	Prob > z
1	-1.7204	0.0854
2	-1.307	0.1912

```
   H0: no autocorrelation

. estat sargan
Sargan test of overidentifying restrictions
        H0: overidentifying restrictions are valid

        chi2(82)     =  12.64788
        Prob > chi2  =    1.0000

.
```