Institutions, Investment and Economic Growth

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Abstract

The objective of this paper is to study the effect of institutional factors on investment and economic growth of a set of 11 countries in the MENA region during the period 2000-2009, using a model of dynamic panel data. The effect of institutions on the contribution of investment to economic growth has been a second empirical study in this paper. The key findings generated by these two empirical tests stipulate a significant relationship between institutional variables and investment on the one hand and economic growth on the other hand, a positive interaction between political institutions and investment and a negative interaction between political instability and investment.

Keywords: Political rights, Civil liberties, Political instability, Corruption, Investment, Economic growth, Dynamic panel

JEL: O43, O47, C23.

1. Introduction

The relationship between institutions and economic performance has been the subject of several theoretical and empirical studies. Since the pioneering work of North (1991) attention is drawn to the importance of institutional factors in achieving good results in terms of growth and economic development. In empirical work, to study the relationship between institutional and economic growth, a sound institutional environment is able to provide a positive climate that encourages economic agents, both domestic and foreign, to invest more in activities with high added value.

On the contrary, institutions of poor quality can increase uncertainty, unpredictability, instability, corruption and transaction costs. In an institutional setting like this, private enterprise is discouraged especially in terms of tangible and intangible investment. The result is certainly vulnerable economic performances, as the growth mechanisms are blocked and the country's potential is limited. To investigate the relationship between institutions and economic growth on the one hand and between the institutions and investment on the other hand, I will proceed as part of this work, a model of dynamic panel data for a sample of 11 MENA countries (Note 1) over the period 2000-2009.The effect of institutions on the contribution of investment to economic growth will be subject of a second empirical study on the same sample. Before starting the econometric studies, it should begin with a review of the empirical literature on the relationship institutions and economic performance in the first section. The second section of this work will be devoted to the choice of variables, the determination of their sources, the interpretations of results and the study of the interaction between institutional variables and investment.

2. Review of the Empirical Literature

While theorists are still far from complete work on the issue that focuses on channels through which institutional variables influence and can influence the economic sphere. Several empirical studies have emerged, with the aim to provide additional arguments to the controversial association between institutions and economic performances. Indeed, many historical evidence also shows that the countries' economic growth has been associated with the establishment of a sound institutional framework. This finding was supported by sound empirical evidence, which showed the negative effects of institutional infrastructure failing (low respect of law, lack of credibility and corruption, political instability among others) on investment and growth.

However, these studies suffer from a range of issues, the most important are the qualitative aspect of institutional variables, hence the problem of measuring these variables, the reliability of sources and the subjectivity data. I will, in what follows, move to a review of the empirical literature on the subject.

2.1 Civil Liberties, Political, and Economic Growth

Kormendi and Meguira (1985) are among the first researchers who are interested in studying the impact of institutions on economic performance of nations. In fact they have examined the effect of civil and political liberties, among other factors, on economic growth and investment for 47 countries during the period from 1950 to 1977. The result that they obtained is that countries that have a high level of civil liberties are most successful. Subsequent studies made by Scully (1989) and Tullock (1987) found a positive association between civil liberties and economic growth for a large number of countries.

Studies conducted in the 90s to test the relationship between regime type and economic growth has interpreted the index of civil and political liberties published by "Freedom House" as a measure of democracy. Barro (1996) and Helliwell (1994) found that these indices are positively related to economic growth only when some explanatory variables are omitted from the relationship such as: education and investment rate.

Isham et al. (1997) analyzed the impact of the quality of governance on the performance of a hundred projects funded by the World Bank in some developing countries during the period 1974-1993. They found good performances in nations with high levels of civil liberties, as measured by the index of "Freedom House". The fact that a one point increase in this index is associated with an improvement of one point in the rate of return of the project. The civil unrest, approximated by the frequencies of riots, strikes and protests are also negatively associated with performance of projects. Barro (1996), Helliwell (1994), Burkhart and Lewis-Beck (1994) have all concluded that the positive relationship between income and democracy is widely attributed to the effect of income on democracy and not vice versa.

In general, the effect of democracy on economic growth is far from being clear since the results that studies of this relationship led are very heterogeneous. Although attempts to measure democracy have begun since the 80s, notably with the database Bollen (1980) which put at the disposal of statisticians comparable indicators of democracy (available in over 110 countries) established from the indices of political rights and freedoms listed by Banks (1979) and Taylor and Hudson (1972). Because this indicator was not available but for two years, the variable most used today is the Gastil (1986), available for most countries and covers indicators of electoral process, freedom of association and political expression.

So, although these indicators are relatively old, they could not contribute to the elucidation of the role of democracy in the growth process. As a result, we are now witnessing a multitude of results concerning this relationship. Indeed, according to Alesina and Perotti (1994), democracy has no effect on economic growth. They also point out the heterogeneity of the group of authoritarian countries in terms of economic performance.

Borner et al (1995) have identified three empirical studies leading to a positive relationship between democracy and economic growth, from three in the opposite direction and ten which identify no conclusive relationship.

In another study, Barro (1996) sought to test the hypothesis of a nonlinear relationship. He found that a nonlinear relationship between economic growth and these indices are better able to cover all the data, than a linear relationship. The conclusion drawn from this study is that promoting democracy is conducive to growth when the initial level is low and negative when this level is high. Other researchers have resulted in contradictory effects: according to Tavares and Waczairg (2001), democracy on the one hand, increases the accumulation of human capital and reduces income inequality, which accelerates growth. On the other hand, it reduces the accumulation of physical capital and increases public consumption which decelerates growth. Striking result, fertility rates are much lower in democracies, regardless of income level, and they fluctuate in one direction or the other in case of transition from dictatorship to democracy or vice versa. This observation means, as observed Przeworski et al (2000), that even if democracy does not affect GDP growth, it would have on the GDP per capita.

Another conclusion proved: if the economic performance of dictatorships ranging from excellent to disastrous, those democracies tend to be located halfway between these extremes. It is often under a dictatorial regime that the fastest growing were recorded, but no democracy has ever recorded performance as bad as the worst dictatorships (Przeworski et al., 2000). The same goes for poverty reduction. It seems that, in economic, democracy preserves the worst, but it does not guarantee the best.

2.2 Frequency of Political Violence and Economic Growth

The classic study of the determinants of growth of Barro (1991) tested the effect of indicators of political instability, which it considers detrimental to property rights. The two measures of violence used by Barro are: the average number of revolutions (or coups) and political assassinations. The result which leads this work is that these two variables are negatively and significantly related to the growth rate and the share of private investment in GDP between 1960 and 1985.

Alesina and Perotti (1996) also found that political instability weakens the share of investment in GDP. Generally, empirical studies have been conducted to test the said relationship agree, despite the diversity of samples and indicators, on the adverse effects of political instability on economic performance of the country concerned. Thus, studies of Barro (1996), Azam et al (1996) showed a direct negative impact of political instability on economic growth. Guillaumont et al (1999) have shown that political instability is a key variable to explain the systematic underperformance of African countries over the period 1970-1990. De Haan and Siermann (1996) do not contest the effect of instability on growth, but state that this happens mainly by the investment variable. Fosu (1992) emphasizes the variable of human capital as a channel of influence. The addition of interactive variables allows to deduce that it is through the fall of the latter factor productivity (human capital), that growth is permanently affected by political instability.

However, in addition to the heterogeneity of sources of impact, there are some dissenting voices in this empirical consensus. If the study of Londregan and Poole (1990) is the only one that finds a non-negative effect of instability on the level of economic growth, Levine and Renelt (1992), on their part, emphasize the small robust aspect of the results concerning the impact of institutional variables on the economic performances.

2.4 The Aggregate Index of governance and economic growth

In their study, "Governance Matters," Kaufmann et al (1999) studied the correlation between the six aggregate indicators of governance "voice and accountability", "political stability and violence", "effective government", "weight regulation, "" rule of law "and" fight against corruption "and economic performance measured in terms of per capita income, infant mortality and literacy rates. They found that each indicator is positively correlated with the logarithm of GDP per capita and the literacy rate and negatively with the rate of infant mortality. The analysis goes beyond the simple correlation and considering a study that traces the interrelationships between governance and the growth rate of income through a series of cross-sectional regression between this rate and each indicator of governance.Taking as reference the approach set out by Hall and Jones (1999) in which the difference between GDP per capita across countries is attributed to the level of "social infrastructure" in each country which, according to Kaufmann et al, express aspects of governance already mentioned.

Hall and Jones measured the social infrastructure as the average of several indicators of governance from PRS (Political Risk survey) and a variable measuring trade openness constructed by Sachs and Warner. For their study, Kaufmann et al, using the same approach used several indicators of governance, gathered from many sources, to define the nature of the relationship may exist between governance and economic growth for a large sample of countries. They establish a regression between the three dependent variables: the logarithm of GDP per capita, infant mortality and literacy rates and the six governance indicators. The essential conclusion, this study found, is that "good governance is crucial for economic performance. The estimate shows that an increase in standard deviation for one of the indicators of governance leads to an increase of 25 (for "voice and accountability") to 4 times (for "political instability and violence") per capita income and a decrease of 2.5 to 4 times the infant mortality rate and an increase of 15 to 25 times of literacy.

3. Choice of Variables and Estimation Methodology

3.1 Choice of Variables

The theoretical work that attempted to study the relationship between institutional factors and economic growth suggest the existence of a close link, direct and indirect, between institutional quality and economic growth:

- The institutions that provide an environment that protects property rights and equal opportunity are able to offer economic agents, domestic and foreign, the incentive to invest and accumulate skills.

- Optimal use of human capital needs of institutions guaranteeing property rights, contract enforcement and civil liberties, which can hinder the development of rent-seeking activities and corruption.

- Democracy has an indirect effect on growth by boosting the level of education.

- Referring to some indicators of institutional quality, such as the functioning of legal rules, political instability, corruption and bureaucratic quality, some studies were able to show that efficient institutional framework promotes the most productive investments and, eventually, growth.

- The efficient institutions are able to prevent the persistence of bad policies.

- On the contrary, a poor quality of institutions leads to a risky environment, a high transaction costs, lack of investor confidence, lack of predictability and transparency and promotes corruption. Hence a decline in investment and blockage of economic mechanisms.

-   Weak institutions lead to a misallocation and waste of resources and lead to a bias in the choice of individuals. However, the proper functioning of these mechanisms is possible only when favorable conditions are met. Indeed, previous work on the study of the relationship between quality institutions and economic performance have agreed on the existence of three types of effects of political institutions on economic growth. The first is a direct effect on productivity, the second effect operates through the accumulation of capital, and the third through the quality of economic institutions. Political institutions are important "that" as determinants of the efficiency of economic institutions.

Our model incorporates several measures used to control variables. Previous studies have shown that they account for a significant share of national differences in growth rates in recent decades. Thus, the variables used in this study are: *Y:* the growth rate of real GDP per capita. *INV:* the ratio of gross capital formation in GDP. *OPEN:* the ratio of the volume of trade in GDP: (X + M) / GDP. *G:* Government expenditure, approximated by the share of government consumption in GDP.

Financial development

Approximated by the ratio of M2 to GDP.

The political rights (PR)

Defined by the degree of government control by individuals.

Civil liberties (CL)

It is the freedom of the press, freedom of assembly, free of political organizations, free trade unions, religious institutions free and independent judiciary.

Both indicators are measured on a scale of 1 to 7. 1 being the highest degree of freedom and 7 the lowest.

Political instability (PI)

It includes the following: military coups, political tensions, civil wars, social unrest, ethnic tensions, political violence, unpredictable changes in institutions and rules.

Corruption (COR)

It includes the following: frequency of irregular payment to civil servants and judicial practices unfit in the public sphere, corruption in the political system as a threat to foreign investment, incidence of corruption in government.These two indicators are rated on a scale of -2.5 to 2.5. 2.5 being the highest degree of political stability, absence of violence and fight against corruption.

All variables are for the period 2000-2009 due to the availability of data for all countries in the sample. All economic variables are taken from the report on the development in the world [2010], variables related to political rights and civil liberties are taken from Freedom House's annual report on freedom in the world while the variables "Political instability "and" The corruption "are extracted from the database of the governance of Kaufmann (2009).

3.2 Estimation Methodology

In what follows, we propose a dynamic study of the relationship institutions - economic growth. Before proceeding to the estimation of the model and interpretations of results, it is necessary to define the dynamic models and present the model to estimate.

3.2.1 Definition of Dynamic Models

Dynamic models are characterized by the presence of one or more lagged endogenous variables among the explanatory variables. As part of our model, the introduction of past growth rates among the explanatory variables allows us to test the persistence of economic growth of countries in the sample under study since the previous economic growth can influence current economic growth. We take as an example the case where there is only one lagged endogenous variable.

$$y_{it} = \alpha y_{it-1} + \beta X_{it} + \varepsilon_{i,t} \qquad (1)$$

With y the endogenous variable, X the exogenous variables, (α,β) the parameters to be estimated, $\varepsilon_{i,t}$ the error term.

3.2.2 Presentation of the Model to Estimate

According to the above analysis, institutions can influence economic growth through productivity or capital accumulation. Our study therefore uses the following two equations to test the importance of institutions:

$$y_{i,t} = \alpha_1 y_{i,t-1} + \beta_i X_{i,t} + \mu_i INS_{i,t} + \varepsilon_{i,t} \qquad (2)$$

$$INV_{i,t} = \alpha_1 INV_{i,t-1} + \beta_i X_{i,t} + \mu_i INS_{i,t} + \varepsilon_{i,t} \quad (3)$$

With y_{it}: growth rate of real GDP per capita of the country i for the year t.

$Y_{i,t-l}$: growth rate of GDP per capita for the previous year (t-l).

$INV_{i,t}$: the investment rate of the country (i) in the year (t)

INS: a group of four institutional variables and X: a number of control variables, these two types of variable have already been defined above; $\varepsilon_{i,t}$ the error term.

3.2.2.1 The Interpretation of Results

The estimate presented here is the GMM estimation of Arellano and Bond (1998).We prefer to refer 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 estimation results of our model are satisfactory both econometrically and in terms of economic interpretation. The estimation results (table 1) of different equations are expected given the theoretical and empirical considerations already mentioned:

-    The earlier economic growth does not seem to affect subsequent economic growth.

-    Investment positively influences economic growth in these countries, because its coefficient is always positive and statistically significant indicating a predominant effect on economic growth.

-    The coefficient of the variable "trade openness" is sometimes positive, sometimes negative, but still not statistically significant indicating a disconnect between this variable and economic growth in these countries.

-Public spending does not affect the economic growth of countries considered, since the coefficients of this variable are not statistically significant.

-    The coefficients associated with the variable "financial development" are negative and statistically significant in most cases, indicating a negative effect of this variable on economic growth.

In practice, the effects of financial development on growth is far from obvious and may even be negative, especially for developing countries. Thus, Bhatia and Khatkhate (1975), using a sample of 11 African countries over the period 1960-1970, found a positive correlation for some countries, negative (or no correlation) for others. Measurement errors, the small sample and the potential endogeneity of financial development could, in theory, be the cause of this result.

-    "Civil liberties" exert a dominant effect on economic growth. Indeed, the coefficient of this variable is always positive and statistically significant. This result is comparable to several others in this field. Indeed, among the first researchers who are interested in studying the impact of institutions on economic performance of nations, Meguira and Kormendi (1985) examined the effect of civil and political freedoms, among others, on economic growth and investment for 47 countries along a period from 1950 to 1977. The result they obtained is that countries that have a high level of civil liberties are most successful. Subsequent studies made by Scully (1989) and Tullock (1987) found a positive association between civil liberties and economic growth for a large number of countries.

Studies conducted in the 90s to test the relationship between regime type and economic growth have interpreted the index of civil and political liberties published by "Freedom House" as a measure of democracy. Barro (1996) and Helliwell (1994) found that these indices are positively related to economic growth only when some explanatory variables are omitted from the relationship such as: education and the investment rate.

In general the relationship between measures of democracy and economic performance is far from clear, as stated Barro (1996, 1997) and Durham (1999), because on the one hand, economic growth requires a long-term rule of law and protection of civil and political freedoms (North, 1995) and on the other hand political freedom promotes the demands of special interest groups for redistributive policies (Olsen, 1982). The efforts of these groups may produce a legislative deadlock and political sub-optimal, and thus affect growth. In a literature review, Brunetti (1997) compared 17 studies finding a positive, negative or not significant between growth and democracy.

-    "Political instability" does not appear to be correlated with economic growth in these countries. Result, which can find an explanation which states that political institutions will have an indirect effect on economic growth, an effect that goes through the investment and human capital in particular.

-    "Corruption" has a negative effect on economic growth of countries in the sample under study.

This result reinforces the idea of what corruption is a scourge that affects a lot of economic activity and governments, policy makers, public opinion, civil society and the private sector must take measures against this unhappiness.

Equation (3) (table 2) checks whether the institutions have also an indirect influence on economic growth through capital accumulation.

- Trade openness has a predominant effect on investment in these countries that the coefficient of this variable is always positive and statistically significant. This can be justified by the fact that openness to trade encourages investors to invest more through the provision of new opportunities in larger markets.

- "Public spending" has a positive effect not robust on investment.

This is explained by the fact that governments can encourage private investment through the provision of adequate basic infrastructure, institutional environment healthy and skilled human capital.

- The same observation is valid for "financial development", which is expected given that the availability and diversity of funding are able to induce economic agents to invest more, hence the positive effect financial development on investment. This result is comparable to that found by King and Levine (1993) who studied the impact of financial development on economic growth, capital accumulation and total factor productivity for a sample of 80 countries during the period 1960 to 1989. The main result to what has led these authors is that financial development has a positive effect on economic growth, capital accumulation and total factor productivity.

- The "civil liberties" and "political rights" positively influence the investment.

This result is comparable to findings released by Isham et al (1997) who analyzed the impact of the quality of governance on the performance of a hundred projects funded by the World Bank in some developing countries over the period 1974-1993. They found good performance in nations with high levels of civil liberties, as measured by the index of "Freedom House", the fact that a one point increase in this index is associated with an improvement of more than point in the rate of return of the project.

- "Corruption" has a negative impact on investment in these countries. Expected result given that the negative effect of corruption on growth is exerted mainly through its effect on investment.

Mauro (1995) showed a negative correlation between corruption and the investment rate and between corruption and growth rates for 67 countries during the period 1960-1985. Mauro analysis showed also that it is mostly through private investment that corruption reduces growth, that is to say, from the most significant effects of corruption on growth is transmitted through its effects on the total investment, this impact is at least one third of its overall negative effect.

3.3 Interaction between Institutions and Investment

The theoretical analysis proves the existence of a positive interaction between the institutional environment and the productivity of investment. Thus, the latter proves to ameliorate with the amelioration of this environment. This hypothesis implicates that the coefficient of investment, in the specific equation to estimate, is influenced by the country's institutions. So, I am going to examine the effect of institutions on the contribution of investment to economic growth. For this reason, I shall introduce an interactive term into the equation to estimate:

$$Y_{i,t} = \alpha_1 Y_{i,t-1} + \lambda_i X_{i,t} + \gamma_i (INV * INS_{i,t}) + \varepsilon_{i,t} \qquad (4)$$

X_i: a vector of control variables already defined.

INV*INS: interactive variable

INS: vector of institutional variables defined above.

The results of estimating this equation state:

- A positive interaction between investment and the "political rights".

That is to say that investment exerts a positive effect on these countries' economic growth as long as strong political institutions are founded in a way that private initiatives are prompted to invest and that they are freed and protected against any sort of violation. The political institutions can act also on the economic performances in an indirect way through their effects on the economic institutions. Seen that in a healthy institutional environment that ensures the security of property rights and avoid the risks of expropriation, the activities of tangible and intangible investment are prompted, and which act positively on overall economic performance.

- A negative interaction between the "political instability" and investment.

Logical result since usually the theoretical and empirical studies have been conducted to examine the relationship between political instability, investment and economic growth agreed, despite the diversity of samples and indicators on the adverse effects of instability on economic performance of the country concerned. Thus, studies of Barro (1996), Azam et al (1996) showed a direct negative impact of political instability on economic growth.

Guillaumont et al (1999) have shown that political instability is a key variable to explain the systematic underperformance of African countries over the period 1970-1990. De Haan and Siermann (1996) do not contest the effect of instability on growth, but state that this happens mainly by the variable investment. Fosu (1992) thus indicates that with the presence of political instability, the risk of losing capital grows, which reduces the amount of investment achieved effectively. Fosu (1992) indicates that in the presence of political instability, the risk of loss of capital increases, which lowers the level of investment actually undertaken.

For the unstable country, the domestic and foreign investors are turning away from opportunities offered by the national economy because, essentially, uncertainty and risk of expropriation. The impact on growth can be serious: declining investment, deteriorating export performance, difficulties in financing private and public projects and escape of human capital. Then, political instability reduces considerably the temporal horizon, not only of the investor but also of the policy makers; so, the latter contents himself with a managing and opportunistic practice of power, particularly in the economic field. A government with a short temporal horizon may resort to escapism and exercise an economic policy of the worst whereby it hopes to earn fruitful results in the short term. (Failure of its successor). Models of this sort have been developed by Alesina and Tabellini (1989), Cukierman et al (1992), Özler and Tabellini (1991). Finally, in a context of political instability, government, democratically elected or not, may try to pursue a policy based on the establishment of clientelistic loyalties, corruption and the groups likely to support the conservation power (police, army, government, economic circles ...).

4. Conclusion

In this research project, I have tried to make a contribution to solve the fundamental question: Is there any link between a country's institutions, investment, and the economic performances that it achieves? To do this, we used a model of dynamic panel data covering a sample of 11 countries in the MENA region during the period 2000-2009. After studying the relationship between institutions and economic growth and institutions and investment, an interactive variable was introduced to test the effect of institutions on the productivity of investment in these countries. The key findings emerged from this empirical analysis show:

- A positive impact of political institutions (political rights and civil liberties) on economic growth and investment.

- A negative effect exerted by corruption on economic growth and investment.

- A positive interaction between "political rights" and investment.

- A negative interaction between "political instability" and investment.

In general, the mixed results in terms of link between institutional factors and economic growth, which led the empirical tests conducted as part of this research, reinforces the conclusion reached by the empirical literature on the subject, that a clear relationship between institutional sphere and economic sphere is far from being found. The census taken by Borner et al (1995) is in the same context, since, among all the studies done to test this relationship, they identified three empirical studies leading to a positive, three going in the opposite direction and ten which identify no conclusive relationship between democracy and economic growth.

We conclude, without confirmation, that these tests have allowed us, even in part, to show the existence of a relationship between institutional factors and economic performance and to identify some key channels through which could pass the effects of institutions on the economic performances. It is important to note that despite the importance of empirical work which results, shortcomings may arise:

- Other possible mechanisms of the relationship being studied were not considered.

- For lack of data we did not use other institutional variables.

- The problem of causality has not been treated.

- The influence of the threshold level of economic and institutional development has not been tested.

The relationship between institutional factors and economic growth could be better understood once its underlying mechanisms are still being analyzed and the techniques used to quantify them are improved. In light of the current debate on good governance in general and democratic transition in some countries from the MENA region (Tunisia, Egypt) these fields of investigation can be the subject study of several future works.

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Notes

Note 1. Algeria, Bahrain, Egypt, Iran, Jordan, Kuwait, Lebanon, Morocco, Oman, Saudi Arabia and Tunisia.

Table 1. Estimation results of institutions and growth: dependent variable real per capita GDP growth (Arellano-Bond dynamic panel data estimator)

Variables	(1)	(2)	(3)	(4)	(5)
L GDP	0.28	0.15	0.2	0.16	0.2
	(0.67)	(0.38)	(0.49)	(0.37)	(0.49)
INV	0.10**	0.09	0.14*	0.11**	0.22**
	(1.66)	(1.39)	(2.05)	(1.96)	(2.17)
OPEN	0.02	0.03	0.14	0.0014	-0.009
	(1.01)	(1.15)	(0.44)	(0.04)	(-0.24)
G	-0.008	-0.09	-0.06	0.05	-0.06
	(-0.04)	(-0.41)	(-0.27)	(0.2)	(-0.28)
M2/PIB	-0.023	-0.04**	-0.007	-0.05	-0.15*
	(-1.01)	(-1.81)	(-1.33)	(-0.48)	(-2.23)
CL	-	1.82*	-	-	4 .44*
		(2.32)			(2.49)
PR	-	-	1.08	-	-
			(1.06)		
PI	-	-	-	-5.71	-
				(-0.39)	
COR	-	-	-	-	-12.6**
					(-1.66)
T- Sargan	9.03 (43)	5.05 (43)	8.39 (43)	9.56 (43)	2.43 (43)
AR(2)	0.91	0.93	0.77	0.78	0.45

**: Significant at 10%. *: Significant at 5%. t-student in parentheses. LGDP: real GDP per capita growth on t-1.

Table 2. Estimation results of institutions and investment: dependent variable investment (Arellano-Bond dynamic panel data estimator)

Variables	(1)	(2)	(3)	(4)	(5)
INV$_{-1}$	-0.29*	-0.63	-0.43	-0.3	-0.17
	(-2.39)	(-3.35)	(-2.49)	(-2.2)	(-1.4)
OPEN	0.25	0. 26	0. 24	0.23	0.24
	(7.18)	(7.77)	(6.33)	(8.49)	(8.42)
G	0.006	-0.20	-0.065	0.0057	0.88*
	(0.02)	(-0.94)	(-0.33)	(0.05)	(2.46)
M2/GDP	0.13**	0.12 **	0.055	0.085	-0.05*
	(1.86)	(1.68)	(0.96)	(1.48)	(-0.7)
CL	-	1.85	-	-	-
		(3.93)			
PR	-	-	2.28	-	-
			(5.02)		
PI	-	-	-	-0.14	-
				(-0.10)	
COR	-	-	-	-	-12.56*
					(-3.32)
T- Sargan	4.25 (43)	3.29 (43)	6.82 (43)	3.51 (43)	7.47(43)
AR(2)	0.91	0.14	0.08	0.9	0.73

INV$_{-1}$*: Investment on (t-1)*

Table 3. Estimation results of interaction between institutions and investment: Dependent variable real per capita GDP growth (Arellano-Bond dynamic panel data estimator)

Variables	(1)	(2)	(3)	(4)
L GDP	0.42	0.49	-0.19	-0.12
	(1.15)	(1.37)	(-0.45)	(-0.27)
INV	0.06	0.06	0.11	0.12**
	(1.46)	(1.42)	(2.39)	(1.73)
OPEN	0.03	0. 03	0. 001	0.014
	(0.84)	(0.88)	(0.07)	(0.44)
G	-0.05	-0.03	-0.015	-0.070
	(-0.21)	(-0.14)	(-0.06)	(-0.31)
M2/GDP	-0.03	-0.04	-0.11	-0.07
	(-1.18)	(-1.33)	(-2.07)	(-1.54)
INV*CL	0.01	-	-	-
	(1.46)			
INV*PR	-	0.02**	-	-
		(1.95)		
INV*PI	-	-	-0.07	-
			(-2.16)	
INV* COR	-	-	-	-0.06
				(-0.95)
T- Sargan	7.78 (43)	7.98 (43)	6.16 (43)	7.41 (43)
AR(2)	0.5	0.49	0.56	0.4

**: Significant at 10%. *: Significant at 5%. t-student in parentheses. LGDP: real GDP per capita growth on t-1.