Economic Growth Sustainability: Do Institutions Matter, And Which One Prevails ?

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Abstract

This article studies the impact of institutions on economic growth sustainability in a sample of 123 countries, including 85 developing and 38 developed countries, with panel data over the 1960-2003 period. I define sustained economic growth as an episode of positive growth of per capita GDP over five consecutive years. I theoretically show, the respective role of democratic, economic activities regulation, and property rights protection institutions for economic growth sustainability. I reconcile two economic approaches of institutional analysis.

The results indicate that an improvement of the value of an *index of politico-economic institutions*, positively and significantly affects the probability of growth sustainability. This index is a proxy for the general level of institutional quality and measures the combined effect of political and economic institutions. I also obtain a positive and significant effect of democratic, economic activities regulation, and property rights institutions, by testing the respective effect of each institution on growth sustainability. However, when testing the simultaneous effect of these three various institutions, it appears that only the regulation institutions positively and significantly affect the probability of growth sustainability. This indicates that the regulation institutions seem the most important for economic growth sustainability.

My principal results -positive and significant effects of regulation institutions and total factor productivity on growth sustainability- remain robust to alternative methods of estimation, to selected samples, to the use of other institutional quality indexes, to the use of a criterion of high economic growth sustainability, and with taking into account the effects of macroeconomic policies.

Keywords : Institutions, Growth Sustainability, Private Investment, Total Factor Productivity JEL classification : 011, 017, 049, E22

1. Introduction

In 1965, the growth rate of per capita GDP in Niger and Nigeria was respectively 2.1% and 4.2% against 2.9% in Botswana.¹ However, from 1966 to 1969, Niger and Nigeria recorded a negative growth rate, while Botswana continued to experience a positive growth rate over the same period. In 1975, the Republic of Oman recorded 19.4% growth rate, against 5.07% in Botswana. But, from 1977 to 1979, the Republic of Oman recorded a negative growth rate while Botswana continued to experience a positive growth rate over the same period. In 1975, the Republic of Oman recorded a negative growth rate while Botswana continued to experience a positive growth rate over the same period. In 1990, the growth rate of per capita GDP, was 1% in Ghana against 5.2% in Nigeria, but from 1991 to 1994, the growth rate was negative in Nigeria as opposed to Ghana. Why this difference in the evolution of growth episodes between countries? In other words, why growth is more sustainable in some countries than in others?

The answer to this question is fundamental for at least two reasons. First, durable poverty reduction requires sustained economic growth. Second, in the absence of sustained growth, political decision makers need to constantly re-examine their policies. In this situation, private economic agents are also obliged to continually re-examine their projects of investment, which increases the risk of bad economic performances. Thus, political decision makers need to identify the framework allowing them to make sustainable economic growth as soon as they succeed in generating it. This is to ensure durable poverty reduction, but also to avoid re-examining economic policies constantly.

The thesis that I support in this paper, is that economic growth sustainability henceforth EGS- requires the presence of "good" institutions², because "good" institutions enable private investors to seize favourable business opportunities -in form of positive economic growth- which are offered to them. In fact, private investors prefer lower costs for their investments -it is a guarantee of a large wealth creation-; they also want to be able to get the return of their investments when they seize favourable opportunities. These two conditions are satisfied by the presence of "good" institutions, in the absence of which, some favourable business opportunities may not be seized by private investors, what would result in reducing the probability of EGS.

¹ Data on growth rates are from WDI (2005) -World Development Indicators- database of World Bank.

 $^{^{2}}$ In the precise case of this paper, "good" institutions are defined as those which guarantee lower costs of investments and the appropriation of the return of investments to private investors.

Democratic institutions reducing the risk of undertaking distorsive policies -high rate of inflation, high deficit, etc- contribute to the reduction of the costs and the development of private investment. In the same way, institutions guaranteeing an efficient regulation of economic activities enable private investors to seize favourable opportunities by allowing the entry of new investors on the market, and/or by reducing the cost of investments for investors already established on the market. Lastly, a good protection of property rights makes possible to private investors to seize favourable business opportunities, because in this situation investors are persuaded they will be able to get a significant share of the return of their investments. I therefore put forward for EGS, the respective role of democratic, economic activities regulation, and property rights protection institutions. Through this reasoning, I also reconcile the economic approach of institutional analysis privileging political institutions and the one privileging economic institutions.

"Good" institutions by their favourable effects on the private investment level involve an increase in total factor productivity -henceforth TFP- which allows a gain of economic competitiveness, that is necessary for EGS. Such is one of the mechanism by which "good" institutions could induce EGS and that I will test empirically.

This article tackles the general question of the role of institutional quality for the economic performance, treated among others, by *Acemoglu et al. (2001)* and *Hall et al. (1999)*. However, opposite to these two authors who are interested in the effect of institutional quality on the level of per capita income, this article is interesting in the effect of institutional quality on EGS.

I take into account in this article, the objection of *Pritchett (2000)* according to which economies experience various phases of growth in the course of time and that, the calculation of the averages of growth rates over a long period induces a loss of useful information to scholars. As a result, when studying EGS, I do not calculate average growth rates over a long period, but I observe the evolution of growth rates over five consecutive years and try to see whether the institutional quality can explain the evolution.

Empirically, this article is relatively closer to the ones of *Hausmann et al.* (2004, 2005) and *Jerzmanowski* (2005). However, while these authors are interested in the changes of economic growth regimes, then in the sustainability of these changes; this article is interesting only in the durable character of growth, regardless of the fact that this growth characterizes or not a change of economic growth regimes. Moreover, *Hausmann et al.* (2004, 2005) privilege political institutions and find a positive and significant effect of these institutions, on growth accelerations. As for *Jerzmanowski* (2005), he privileges economic

institutions and finds a positive and significant effect of economic institutions on the occurrence of favourable and durable changes of growth regimes. In opposite, this article reconciles the approaches followed by *Hausmann et al. (2004, 2005)* and *Jerzmanowski (2005)*, by testing the effect of a composite index of political and economic institutions on EGS. Lastly, to my knowledge, *Hausmann et al. (2004, 2005)* and *Jerzmanowski (2005)*, do not solve the problem of endogeneity presents in their models, this article tries to overcome this shortcoming.

The results indicate a positive and significant effect of an index of *politico-economic institutions* on EGS. This index is a proxy for the general level of institutional quality and measures the combined effect of political and economic institutions on EGS. My results also indicate that the improvement of the respective quality of democratic, regulation, and property rights institutions is necessary for EGS. However, among all these institutions, that of economic activities regulation seems the most important for EGS. Indeed, it is the effect of this institution which remains positive and significant despite taking into account the simultaneous effect of the three institutions on EGS.

In addition, I obtain a positive and significant effect of TFP, and a positive and significant effect of regulation institutions on EGS in spite of considering the effects of TFP and private investment. This indicates an independent effect of regulation institutions on EGS, for reasons that I mention in the rest of the paper. I also obtain a positive and significant effect of property rights institutions on private investment and this, despite taking into account the simultaneous and positive effects of the three various institutions on private investment. My results resist to several robustness checks and suggest the following economic growth strategy: Initially ensure the protection of private property rights to generate economic growth, then guarantee an efficient regulation of economic activities to make it sustainable.

The remainder of the paper is organized as follows. Section 2 presents the various characteristics of EGS from 1960 to 2003. Section 3 expounds the various theoretical arguments of "good" institutions effects on growth sustainability. Section 4 is devoted to empirical analysis. Section 5 presents the results, first the results of the direct effects of institutions on EGS, then those resulting with taking into account private investment and TFP effects, and finally the results when considering macroeconomic policies effects on EGS. Section 6 is devoted to a case study in which I compare the performances of Botswana, Ivory Cost, and Ghana in terms of EGS and quality of institutions. Section 7 concludes.

2. Economic growth sustainability characteristics

			Prol	pabilities of	economic	growth sust	ainability 1	/		
Periods	Countr	Total	Periodic	Probability	Probability	Probability	Probability	Probability	Probability	Probability
	ies 2/	countries	Probability	DC 5/	UDC 6/	SSA 7/	LAC 8/	ASP 9/	ME 10/	ECE 11/
		3/	4/							
61-64	44	94	0.47	0.75	0.37	0.22	0.40	0.60	0.29	
65-69	44	97	0.45	0.88	0.31	0.21	0.36	0.53	0.00	1.00
70-74	43	100	0.43	0.67	0.34	0.24	0.40	0.53	0.00	1.00
75-79	24	104	0.23	0.18	0.25	0.08	0.20	0.47	0.44	1.00
80-84	26	112	0.23	0.35	0.19	0.11	0.00	0.60	0.19	0.50
85-89	38	114	0.33	0.69	0.20	0.14	0.20	0.40	0.09	0.33
90-94	26	120	0.22	0.17	0.24	0.07	0.28	0.60	0.20	0.00
95-99	53	121	0.44	0.72	0.32	0.38	0.20	0.40	0.27	0.40
00-03	58	121	0.48	0.69	0.39	0.41	0.16	0.47	0.45	1.00
Total	356									
			Duchah	:1:4:	.1		-4-:1:1:4-	10/		
.			Probab	littles of high	gn economi	c growth st	Istainability	12/		D 1 1 11
Periods	Counti	Total	Periodic	Probability	Probability	Probability	Probability	Probability	Probability	Probability
	es	countries	Probability	DC	UDC	SSA	LAC	ASP	ME I	ECE
(1. ()	20	0.4	0.21	0.50	0.01	0.12	0.00	0.00	0.00	
61-64	29	94	0.31	0.58	0.21	0.13	0.20	0.33	0.29	
65-69	29	97	0.30	0.56	0.21	0.13	0.16	0.47	0.00	1.00
70-74	27	100	0.27	0.41	0.22	0.16	0.32	0.20	0.00	1.00
75-79	17	104	0.16	0.18	0.16	0.04	0.04	0.40	0.33	1.00
80-84	13	112	0.12	0.06	0.14	0.11	0.00	0.47	0.00	0.50
85-89	22	114	0.19	0.41	0.11	0.07	0.04	0.33	0.00	0.33
90-94	14	120	0.12	0.06	0.14	0.03	0.08	0.53	0.10	0.00
95-99	25	121	0.21	0.31	0.16	0.14	0.12	0.40	0.09	0.00
00-03	29	121	0.24	0.28	0.22	0.28	0.00	0.33	0.09	1.00
Total	205									

 Table 1: Characteristics of economic growth sustainability from 1960 to 2003

Note: 1/ I define sustained economic growth as positive growth of per capita GDP during five consecutive years. Data on GDP per capita are from WDI (2005) of World Bank. My sample is composed of 123 countries among those, are 85 developing countries and 38 developed countries. But, all the countries do not have at all periods sufficient data to judge the sustainability of their economic growth.

2/ This is the number of countries having experienced positive economic growth during five consecutive years.

3/ Denotes the total number of countries for which I have sufficient number of observations allowing me to conclude about the sustainability of their economic growth during a given period.

4/ The periodic probability of economic growth sustainability is calculated by the ratio of the number of countries having experienced sustained growth, with the total number of countries for which I have sufficient observations to judge the sustainability of their growth during a given period.

5/ Denotes the probability for a developed country -according to the World Bank classification- to experience sustained growth during a given period. This probability is calculated in the same manner as in the general case mentioned above.

6/ Denotes the probability for an underdeveloped country -the ex-communist countries of Europe not classified by the World Bank are also regarded as developing countries- to experience sustained growth.

7/, 8/, 9/, 10/, 11/ Respectively denotes the probability for a Sub-Saharan Africa, Latin America and Caribbean, Asia and Pacific, Middle-East and North Africa, and Eastern and Central Europe country to experience sustained growth during a given period.

12/ By high economic growth, I mean an annual growth of GDP per capita of at least 2% observed during five consecutive years, as *Hausmann et al.* (2004, 2005) support, it is the rate to which should grow an economy to converge towards the industrialized countries.

In table 1, it appears that EGS over the 1960-2003 period is not a rare phenomenon, since the probability for a representative country of my sample to experience sustained growth during this period is 0.36. But, the probability of high growth sustainability is only 0.21 during the same period and for the representative country.³

For the whole sample, the period preceding that of the oil crises -end of the seventies beginning of the eighties- is more favourable for EGS. During the period of the oil crises, the chance of EGS in a country of my sample, relatively to the previous period is almost reduced by half. Soon after the oil crises, the number of countries having experienced sustained growth immediately increased, before diminished during the first five-year term of the nineties. At the end of the nineties and the beginning of the 2000s, the probability of EGS reached its value of the period preceding the oil crises, whereas it was not the case for high economic growth sustainability.

This overall picture of EGS evolution masks differences between groups of countries. In fact, even if the period preceding the oil crises is more favourable for EGS for all the countries, it appears in general that a developed country is more likely to experience sustained growth than a developing country.

The evolution of EGS probabilities in developed and developing countries reveals a difference in the cycle of EGS between these two categories of economies. This difference is observed especially after the oil crises. In developed countries, the five-year term following the oil crises was marked by an increase in the number of countries having experienced sustained growth, whereas the 1990-1994 period was marked by a reduction in this number. Thus, developed countries quickly recovered from the oil crises, but in a non durable way because of the disturbances of financial and exchanges markets that marked European countries at the end of the eighties and the beginning of the nineties. During the last two five-year terms, the probability of EGS in developed countries reached its value of the period preceding the oil crises but a small decline in the value of this probability is observed during the last five-year term.

In developing countries, the recovery from the oil crises was not immediate and it is during the 1990-1994 period that the recovery from the oil crises starts. This recovery was

³ The calculation of these probabilities is carried out by supposing on average that each 5 years, 110 countries have necessary observations to judge the sustainability of their economic growth. With 9 sub-periods of 5 years, the total number of economic growth sustainability possibilities amounts 990.

To obtain the periodic probabilities, I divide the number of countries having experienced sustained growth by the number of countries likely to experience sustained economic growth during a given period.

progressive with a clear improvement of the situation during the last five-year term, when the probability of EGS reaches its value of the period preceding the oil crises. Thus, there is a difference of EGS cycle between developed and developing countries. However, even between developing countries, there are also differences in EGS cycle.

The countries of Asia and Pacific, compared to the other developing countries are atypical in terms of EGS, because in general the probability of EGS for a country of this region is always higher than that of the representative country of my sample.

The evolution of EGS probability for North Africa and Middle-East countries shows that, for this group of developing countries, the most favourable period for EGS is that of the first oil crisis. In this region, the recovery from the second oil crisis was done with delay and in a progressive way. There is a clear improvement of the value of EGS probability during the last five-year term, especially due to the increase in the number of North African countries with positive growth rates.

In Sub-Saharan Africa, the most favourable period for EGS is the last two five-year terms. This could be considered as the effects of economic reforms -structural adjustment, devaluation of CFA franc- and political reforms -beginning of democratisation- introduced into Sub-Saharan Africa during the 1980s and the 1990s. The cycle of EGS, soon after the oil crises in Sub-Saharan Africa is similar to that of developed countries, which to a certain extent reflects the narrow connection between this region's economies and developed countries. In fact, we observe an upturn of economic activities in Sub-Saharan Africa just after the second oil shock and a stop of this upturn five years later, like in developed countries.

In Latin America and the Caribbean, the period preceding the oil crises is more favourable for EGS. The region is essentially marked by the second oil shock during which no country of this region experienced EGS. In Latin America and the Caribbean, the recovery from the oil crises was immediate, and characterized by the increase in the value of EGS probability during the first decade after the second oil shock. This trend of economic activities upturn stopped from the 1995-1999 period, because of financial crises recorded by Latino American economies. The breaking off of economic activities upturn was especially felt in term of high growth sustainability, since during the last five-year term no country of this region experienced high sustained economic growth.

In Central and East European countries, after the oil crises, the last five-year term is more favourable for EGS.⁴ This situation could be understood as the manifestation of positive effects of the reforms introduced into this region at the beginning of the 1990s.

It appears that over the 1960-2003 period, developed countries have more chance than underdeveloped countries to experience sustained growth. I can suspect that this observation reveals that, EGS would need the presence of "good" institutions, as we know that the institutional quality in developed countries, in general, is superior to that in developing countries.

3. Theoretical arguments of "good" institutions effects on growth sustainability

As *Rodrik (2004)* mentions it, sustaining economic growth differs from igniting it. *Rodrik (2004)* supports that political decision makers can ignite economic growth in different ways without necessarily the presence of institutions of high quality. However, for him sustaining economic growth needs the presence of "good" institutions because on the one hand, these institutions make easier the adoption of resilience policies against shocks, and they maintain productive dynamism on the other.

I can also support that there is a difference between igniting and sustaining economic growth. First, there could be growth ignition because of exogenous favourable factors -a positive term of trade shock for example- which do not depend on political decision makers. An ignited growth can be of short duration because it is likely to be stopped when negative shocks occur or because positive shocks are mismanaged. Whereas, sustained economic growth is self maintained, likely to persist independently of the shock affecting an economy, because of productive dynamism.

Secondly, the study of economic growth ignition supposes the determination of ways of favourable economic opportunities creation for private economic agents. Whereas, the study of economic growth sustainability supposes to identify the reasons for which private investors react favourably to the favourable opportunities which are offered to them. *In all cases, there could not be sustainability without ignition of economic growth, but there could be ignition without sustainability of economic growth.* The question is to know, why and how does economic growth become sustainable?

⁴ The value of 1 must not surprise because the available data for this region are generally from Latvia which generally experiences good economic performances. It is only recently that the available data for this region increases.

3.1 An increase in productivity for an improvement of economic competitiveness and growth sustainability

An economy experiences sustained growth when it is competitive⁵ because a gain of competitiveness protects an economy from its rivals on local market as well as on international markets. When an economy is not competitive, even if it records positive growth, it may not last. Indeed, a non competitive economy may record an increase in the volume of its imports, because the imported products are cheaper than the local products⁶. In the same way, a non competitive economy may record a drop in the volume of its exports when its rivals supply on international markets the same products at a lower price. The drop in exports and/or the increase in rival imports are all factors likely to involve a drop in economic activities and so, economic growth unsustainability. As we know from economic literature, an economy can become competitive because of a depreciation of its real exchange rate, or because of an increase in its productivity level. I privilege a gain of competitiveness by the increase in productivity, because a gain of competitiveness by the depreciation of real exchange rate can be of short duration, by the time the rival economies react.

The level of an economy's productivity can increase due to *technological adoption*, *technological innovations*, or to the increase in *total factor productivity* also called the Solow residue, which corresponds to the share of economic growth not explained by the accumulation of production factors. The institutional quality can affect each of these sources of productivity increase. I explore the track of institutional quality effect on TFP.⁷ To do so, I use the theoretical arguments of institutional quality effects on *government failures*⁸ preventing the development of private investment and the theory of endogenous growth a la *Romer* (1986).

⁵ This argument constitutes one of the assumptions of my theoretical reasoning. With such an argument I do not call into question the positive effect of economic competitiveness gain on the level of economic growth as it is often admitted in the literature, but I support that the gain of economic competitiveness can also explain sustainability or the durable character of economic growth.

⁶ I do not deny the positive effect of equipments imports for the development of investment, but I consider as a possible threat any massive import competing with local products.

⁷ Some authors like *Acemoglu et al.* (2002) support that the introduction of technological innovations depends on the nature of political institutions in a country, the stability of political power, and the manner these politicians perceive technological innovations. In addition, *Acemoglu et al.* (2004) support that when a country is not far from the world technological frontier, the political decision makers of this country, can boost the development of technological innovations by promoting the entry on the market of more talented private investors. The same authors support that in contrary when a country is technologically backwarded, it can catch up by adopting the technologies developed by other countries due to the protection granted to the investors already established on the market. *Scarpetta et al.* (2002) and *Stephen et al.* (1994), argue that when a country is technologically backwarded, a strong regulation of economic activities can prevent technological adoption.

⁸ Stern (2001) presents different government failures preventing the development of private investment.

3.2 Institutions for an increase in total factor productivity and growth sustainability

"Good" institutions, by reducing government failures, contribute to the development of private investment. The increase in private investment involves an increase in TFP due to the positive externalities of private investment accumulation on workers skill, because of the learning by doing effect, highlighted by *Romer (1986)*. Thus, there are two levels of TFP endogenisation, as TFP depends on the level of private investment which in turn depends on institutional quality.

The thesis that I defend, is closer to that of *Hall et al. (1999)* who support that in the absence of "good" institutions, some private economic agents allocate part of their resources to the protection of their goods instead of devoting their resources completely to increase their investments, by doing so, the level of economy productivity diminishes. However, contrary to *Hall et al. (1999)* I support that "good" institutions enable an increase in private investment, by increasing private investments return due to the reduction of their costs on the one hand, and by guaranteeing to private investors the appropriation of a significant share of their investments return on the other. Indeed, no increase in private investment is possible if private investors are not sure to make profits and to get a significant share of these profits when they invest.

However, the existence of "good" institutions is not enough to boost private investment, the business opportunities must also be favourable. These favourable opportunities are among others: the level of demand on national and international markets, favourable terms of trade, a competitive real exchange rate, etc. All these opportunities result in concrete terms in economic growth rates for private investors. A positive growth rate reflects the existence of good opportunities and a negative growth rate reflects the absence of opportunities. Thus, study EGS supposes that the business opportunities are initially favourable, then remains to know if these opportunities will last.

When private investors react to favourable opportunities by increasing their investments, we observe an increase in TFP, the improvement of economic competitiveness and EGS. But the reaction of private investors to the favourable opportunities, depends on the institutional quality. As a result, not all favourable opportunities are seized by private investors. Only opportunities in presence of "good" institutions are seized.

So, I support that "good" institutions are necessary to enable private investors to seize favourable business opportunities and to make economic growth sustainable, because "good" institutions reduce the cost of investment -it is a guarantee of a large wealth creation*and guarantee the appropriation of investments return.*⁹ The question is to know what are these institutions and how do they play the different roles that assigned to them?

3.2.1 Institutions for the reduction of private investment costs

When private investors decide to invest, they aim to maximize their profits. One way to achieve this goal is to minimize their investments costs. In an economy, private investors face different investments costs, but I identify especially two kinds of costs: *the costs due to distorsive policies implementation, and costs of new enterprises creation and the achievement of economic and financial transactions*. These two kinds of costs do not depend on private enterprises and are imposed to them by political decision makers. The amount of these costs depends on the quality of institutions in a country, this is why I focus my theoretical reasoning on these costs.

Costs related to distorsive policies -costs of high inflation, high deficit etc- and high costs of new enterprises creation and the achievement of economic and financial transactions, are all obstacles to the development of private investment and are due to government failures. The problem is to find institutional arrangements likely to reduce these costs. For that purpose, I identify *democracy* as a type of political regime likely to assure to private investors lower costs related to distorsive policies. In the same way, *institutions of efficient economic activities regulations*¹⁰ assure to private investors lower costs of new enterprises creation and the achievement of economic and financial transactions.

3.2.1.1 Democracy as a political regime reducing the risk of distorsive policies implementation

Democracy reduces the risk of distorsive policies undertaking¹¹, contributes to the reduction of cost and the development of private investment. By favouring the development of private investment, democracy involves an increase in TFP, so it can contribute to EGS.¹²

⁹ My arguments suppose that private investors who seize favourable opportunities because of good institutions do not have any problem of liquidity constraint. This supposition is coherent with *Tornell et al. (1992)* argument according to which some poor countries are victim of capital flight because of a weak protection of private property in these countries. The capital flight reduces the available capital for private investors.

¹⁰ An efficient economic activities regulation reduces government and market failures while ensuring good market functioning. This means for example, that an efficient regulation of economic activities, is likely to favour the entry on the market of more dynamic and more innovative private investors, while reducing the protection granted to least efficient enterprises.

¹¹ By supporting that democracy reduces the risk of distorsive policies undertaking my argument is as the one of scholars who defend the benefits of democracy on policies choice. In fact, in this domain scholars opinions diverge. In the one hand we have authors like *Nordhaus (1975)* who support that democracy can involve distorsive policies in court period because of electoral considerations. In the same vein, *Barro et al. (1983)*

In developing countries the implementation of distorsive policies has a deep sociopolitic origin and is due to the weakness of political institutions. In fact, in poor countries where leaders have the entire decision making power and are not subject to any political or institutional constraint, these leaders do not hesitate to undertake socially inefficient economic policies to grow rich, enrich their partisans, and to ensure the remain at the head of the nation.¹³ *Bates (1981)* puts forward this argument for African countries in general and for Ghana in particular. In Ghana, *Bates (1981)* supports that since 1958, Nkrumah had among other policies, used an overvaluation of currency policy with the goal to extract resources from cocoa farmers, in order to redistribute them to urban elites who found incentives to support Nkrumah regime and his distorsive policies. Ghanaian leaders continued to undertake distorsive policies -despite the departure of Nkrumah from power in 1966- until 1982, when Rawlings changed policies (see Herbst, 1993 for the way these changes have been operated).

In the case of Nigeria, *Bevan et al. (1999)* argue that the leaders originating from the north of the country have benefited from the1970s oil shock to create public services in the north of the country. When the basic commodities prices dropped, these leaders borrowed on international markets to continue their policies. This situation involved macroeconomic instability, as the real exchange rate on parallel market which appreciated of 0.4% in the 1970s, depreciated of 40% in the 1980s.

Sub-Saharan Africa is not the only developing region where distorsive policies are implemented for socio-politic reasons. Indeed, *Acemoglu et al. (2003)* indicate that in Argentina with the goal to ensure their powers, political leaders do not hesitate to transfer resources from the most productive parts of the country -Buenos Aires and the Littoral- to the rural peripheral part, economically poor but politically strong. To ensure this resource redistribution, Argentinean leaders use several tools including tax policies, microeconomic, and exchange policies. Thus, even if *Acemoglu et al. (2003)* admit that the adoption by Argentina of a currency board made it possible to stabilize inflation in this country, they also

mention temporal inconsistency problems to support the risk of inflation in democratic regimes. On the other hand, we have authors like *Wittman (1989, 1995)* and *Baba (1997)*, who show that, the more a political regime is democratic, the more the process and the process choice of policies are transparent, so the risk of undertaking policies which aim to serve leaders personal interests is reduced. My argument concerning democracy is closer to those authors. *Barro (1996)* reconciles the two possible effects of Democracy on economic performance by showing a non-linear relation between democracy and economic growth.

¹² Some authors like *Rodrik (2000)*, *Acemoglu et al. (2003)* and *Quinn et al. (2001)* show that democracy contributes to the reduction of economic growth volatility. By this way it can also contribute to EGS.

¹³ Seldon (1975) reports that even Milton Friedman, who describes famously inflation always and everywhere as a monetary phenomenon, during a seminar has finally made a difference between the apparent inflation cause - high money supply- and deep causes -political and social causes- of inflation.

support that the currency board made it possible to transfer resources in favour of rural areas. In addition, the rural areas were protected against the negative effects of financial crises that marked Argentina, and affected especially the middle and superior classes of Argentina urban areas.¹⁴

These examples on specific countries illustrate that, distorsive policies are undertaken in countries where political institutions are weak for socio-politic reasons. Thus I can support that, democracy is a political regime where leaders could not undertake distorsive policies for at least three reasons mentioned in literature.

First, in a democracy, the leaders are usually subject to institutional constraints that do not allow them to implement policies of their choices. This argument is mentioned by *Acemoglu et al. (2003)* and especially *Rodrik (1999)* who supports that, in a democracy, the choice of policies to implement, results normally from a political consensus, which limits the power of political leaders to implement policies exclusively favourable to their political groups. In doing so, distorsive policies usually have a limited chance to be implemented in democratic countries unless it is the will of the whole political class.

Secondly, in democracy, elections are regularly organized. In this situation, the leaders have no interest to implement distorsive policies like high inflation, likely to negatively affect the population welfare, otherwise they risk to be sanctioned during the next elections. In this case, democracy exerts a dissuasive effect on political leaders for distorsive policies implementation.¹⁵ Such argument is found with *Rodrik (1997)* who supports that, in democracy the choice of policies reflects the preferences of the median voter.

Finally, *Persson et al. (1997)* use the two theoretical arguments above, to support that the separation of power between executive and legislative power, involves a reciprocal discipline of the both powers and make them accountable to citizens about the choice of policies. Thus, the nation is protected against an abuse of power from politicians. So, with the logic of these authors, the implementation of distorsive policies can be considered as an abuse of power which could not be present in democratic regimes.

¹⁴ Acemoglu et al. (2003) show also that for political reasons, in Peru president Garcia (1985-1990) decided to increase the salaries in public sector, which resulted in the doubling of public deficit which increased from 4.4% of GDP in 1985, to 9.9% of GDP in 1987. In Chile, president Allende (1970-1973) also for political reasons, in 1971 decided an increase from 37% to 41% of workers class wage which involved a rise of public deficit from 3% to 10% of GDP.

¹⁵ This argument can appear as in contradiction with the examples showing that the implementation of distorsive policies enable to be maintained on power. This is indeed an appearance, because when distorsive policies are implemented with the aim for maintaining power, the environment is as that, at best there is no transparent election, so distorsive policies are undertaken to avoid being reversed by force from the power.

Theoretically, it appears that democratic countries are those which would less implement distorsive policies and empirically some authors have indeed found such a result. For this purpose, I quote the work of *Satyanath et al. (2004)* who show on a sample of developed and underdeveloped countries that, democracy is the robustest determinant of macroeconomic stability -measured by the variation of real exchange rate on parallel market or by the inflation rate- in the long term. In the same way, *Hamann et al. (2002)*, out of 51 episodes of successful inflation stabilization, from an annual inflation rate higher than 40%, show that democracy is one of the factors contributing to the successful inflation stabilization. Finally, *Acemoglu et al. (2003)* show that, distorsive policies, economic crises, and weak economic performance, are due to the political institutions weakness.

Thus, theoretically and empirically there are bases which enable to support that the more democratic countries, are those which implement less distorsive policies. So, I can support that democracy can contribute to EGS by reducing the risk of distorsive policies implementation and consequently the cost of private investments.

3.2.2.2 Regulation institutions facilitating the creation of enterprises and the achievement of economic and financial transactions

The costs of new enterprises creation and the achievement of economic and financial transactions, when they are too high, constitute an obstacle to the development of private investment. So, these costs can prevent EGS. Therefore, I argue that an efficient economic activities regulation, is likely to induce EGS by favouring the development of private investment. An efficient economic activities regulation favours the entry of new and more innovative investors on the market. In the same way, an efficient regulation is a guarantee of lower costs of private investment and increases their returns. This is a positive incentive for private investors already present on the market, to seize favourable business opportunities offered to them.

While defending that efficient economic activities regulations are necessary for the development of private investment, my argument is in the same line as the ones supported by *Stigler (1971), McChesney (1987),* and *De Soto (1990)* with the logic of public choice theory.¹⁶

¹⁶ In opposite, *Pigou (1938)* with public interest theory of regulation is based on the existence of market failures -namely negative externalities like pollution, monopoly position on the market etc- to make public intervention in form of strong regulation of economic activities, a need to raise these market failures and ensure good market functioning. For a presentation and a test of various theories of regulation, see *Djankof et al. (2001)*.

Stigler (1971) supports that private investors already established on the market, can offer to political decision makers, advantages like political parties financing, electoral campaigns financing and electoral voices, in order to receive in return a protection of their markets, due to a strong regulation for new enterprises creation. As for *McChesney (1987)* and *De Soto (1990)*, politicians regulate economic activities with the aim to create and exploit rents situations in forms of electoral campaigns financing and electoral voices. These politicians offer in return a protection of markets to the enterprises already present on the market. So, in one case regulation is demanded by private investors and in the other, regulation is offered to private investors. Whatever the situation, a strong economic activities regulation can constitute an obstacle to private investment development.

Empirically, *Giuseppe et al.* show that flexible regulation of products market in the OECD countries favours the development of domestic and foreign investments in these countries. In the same way, *Besley et al. (2004)* show that the Indian States which amended the regulation of labour market in favour of workers are those which record a slow growth of investment, production, employment, and productivity in the formal manufacturing sector. Many other works show that the regulation of labour market explains differences in economic performances among OECD countries [see *Freeman (1988)*, *Blanchard (2003)*, and *Nickell et al. (2000)*].

Thus, theoretically and empirically, there are bases allow to support that an efficient economic activities regulation favours the development of private investment. I argue that by favouring the development of private investment, an efficient economic activities regulation involves an increase in TFP and consequently EGS.

3.2.2 Property rights protection for economic growth sustainability

When private investors decide to invest, they are concerned with the amount of wealth they will create on the one hand and with the possibility to get a significant share of this wealth on the other. If the two conditions are not satisfied, it could lead to under-investment. This leads to question on the institutions likely to guarantee to private investors the appropriation of a significant share of their investments return.

Institutions ensuring the protection of property rights, are necessary for the development of private investment and EGS. When the protection of property rights is assured, the private investors fear of not being able to appropriate a significant share of their investments return, while seizing favourable opportunities is reduced. Consequently, we assist to the increase in private investment, TFP, and therefore to EGS. A similar argument is

mentioned by *Demsetz (1967)* and *Alchian et al. (1973)* who support that a good protection of property rights, constitutes a positive incentive for private investment accumulation. In addition, *North et al. (1976)*, *North (1981)* and *Jones (1981)* show that the property rights protection involves better allocation of private investors resources. By this way, the protection of property rights can also contribute to EGS.

Empirically, *Besley (1995)*, through a study in two villages of Ghana finds that the protection of property rights increases the rate of investment on the cultivated piece. In the same way, *Johson et al. (2002)* show that the protection of property rights is a necessary and sufficient condition for the development of private investment in ex-communist European countries. Finally, *Svenson (1998)* shows that in an environment of political instability and social polarization, the political leaders in place, have little incentive to ensure the protection of property rights, so private investment level decreases.

While supporting that democratic institutions, institutions of efficient economic activities regulation, and property rights protection institutions are all necessary for the development of private investment and EGS, I recognize the importance of economic and political institutions for EGS. So, my theoretical arguments enable me to reconcile the economic approach of institutional analysis privileging economic institutions on the one hand, and the one privileging political institutions on the other.

In addition, by recognizing the respective role of democratic, regulation, and property rights protection institutions for EGS, I can test for EGS, the importance of the various institutions retained in the taxonomy of institutions that proposes *Rodrik (2004)*, because for EGS, I show theoretically the role of *market creating institutions* -property rights protection institutions-, *market regulating institutions* -economic activities regulation institutions-, and *market stabilizing institutions* -democratic institutions-.¹⁷ Thus, my theoretical arguments will enable me to estimate the combined, the respective, and the simultaneous effect of political and economic institutions on EGS.

So, I support as *Rodrik* (2004) that "good" institutions are necessary for EGS, because "good" institutions reducing the cost of private investment, and guaranteeing to private investors, the appropriation of the return of their investments, are necessary for the increase in private investment and TFP. The increase in TFP involves a gain of economic competitiveness which is necessary for EGS.

¹⁷ It is on that point that exists divergence between my taxonomy and that of *Rodrik (2004)*. Because *Rodrik (2004)* considers democracy as a market legitimising institution, whereas I consider it as a market stabilizing institution. My classification is based on the argument and examples showing that democracy reduces the risk of distorsive policies implementation. I recognize that my classification of democracy is debatable.

My theoretical reasoning can be schematically summarized as follows:

"Good" institutions \rightarrow Increase in private investment \rightarrow Increase in total factor productivity \rightarrow Economic competitiveness gain \rightarrow Economic Growth sustainability

This theoretical reasoning implies a following chronology of events:

- 1. At time t, private investors in a country observe the economic growth rate. If the growth rate is positive, it is a revelation of favourable business opportunities for private investors.
- 2. Private investors take into account the institutional quality level before deciding to seize these favourable opportunities. They must be sure that the institutions in place, enable them to create a considerable wealth and to get a significant share of this wealth, while seizing the favourable opportunities which are offered to them.
- 3. When private investors decide to seize the favourable opportunities by increasing their investments, they positively affect the total factor productivity level and the economic competitiveness. By doing so, the probability of economic growth sustainability increases.

4. Empirical strategy

4.1 Description of variables

The theoretical argument that I support makes necessary the presence of "good" institutions for EGS. These institutions are economic as well as political and guarantee a large wealth creation, and the appropriation of a significant share of this wealth. I postulate that, before deciding to seize favourable business opportunities, private investors consider the possibilities of large wealth creation and the appropriation of a significant share of this wealth. The consideration of these various arguments makes necessary to test the combined effect of political and economic institutions on EGS.

Therefore, I test the effect of an index called *index of politico-economic institutions* on EGS. This index is a composite index of economic institutions indexes -regulation, property rights protection indexes- and an index of political institution, democracy index. *The use of the composite index allows to appreciate the apprehension of private investors concerning the costs of their investments, and the appropriation of their investments return*. The weighting coefficients associated with the various elements of the *index of politico-economic*

institutions, are obtained from an econometric estimation of growth equation, making possible to measure the contribution relating to each type of institution to per capita GDP growth.¹⁸ A high value of the *politico-economic institutions index* indicates a high level of general institutional quality, a lower apprehension of private investors. A positive effect of this index on EGS is expected.

The regulation and property rights indexes are those of *Fraser Institute*¹⁹ and cover the 1970-2003 period. The values of these indexes are provided each five years until 2001, date from which their annual values are available. I calculate the average values of these indexes from 2001 to 2003 to complete the data. The regulation index measures the regulation of credit, labour markets, and businesses. The property rights index measures the levels of rule of law and property rights enforcement. The respective value of these both indexes varies between 0 and 10, a high value corresponds to an institution of high quality.

As for the democracy index, I obtain it from *Freedom House* and it measures the citizens participation in political process including the right of voting, the competition for official posts, and the choice by vote of political decision makers with a real power on the choice of policies. The value of this index varies between 1 and 7 with a high value indicating low quality of democratic institutions. The value of this index is provided from 1972 to 2003 and I calculate the five years average values of this index from 1975 to 2003. To reduce the number of missing observations, I consider the value of this index in 1972 as its average value for the first five-year term of the 1970s, and the average value over the 1973-1974 period, as its average value for the second five-year term of the 1970s. In order to make easier the interpretation of the democracy index variation, I take the inverse of its values.

The explained variable, i.e. *economic growth sustainability*, is measured through the observation of per capita GDP growth rates -the data on per capita GDP growth rates are obtained from WDI (2005) database- over five consecutive years for the 1960-2003 period. Thus, a country is considered to have experienced sustained economic growth, if its economic

¹⁸ The estimated equation is: $pcg_{it} = (3.35) \ 0.316*prop_{it} + (2.19) \ 0.325*reg_{it} + (0.14) \ 0.065*dem_{it} + e_{it}$, where pcg_{it} is the average of per capita GDP growth during five years over the 1960-2003 period in country i. Prop_{it}, reg_{it} , dem_{it}, are respectively the five years average values of property rights protection index, economic activities regulation index, and democracy index in country i. The estimation contains a constant not shown and covers all the sample for 693 observations. The figures in bracket are robust t-student. The use of growth equation avoids giving the same weight to each institution in the composite index.

¹⁹ *Fraser Institute* provides a composite index called index of economic freedom. This index is an equal addition of five elements. These five elements are: size of Government, legal structure and property rights security, access to sound money, freedom to trade internationally, and regulation of economic activities. I prefer to consider only two components of this index, because they better measure the institutional aspect that interests me, and because I want to avoid assimiling some macroeconomic policies variables to institutions.

growth rate is positive during five consecutive years. In this case, the dependent variable takes the value of one. However, even for one year of negative growth over five years, a country's economic growth is considered as non sustained and in this case, the dependent variable takes the value of zero. So my dependent variable is a binary variable.

4.2 Specification of the model

The choice of a period of five years to define EGS can seem arbitrary but is imposed by the availability of data on economic institutions which are provided in a broad part each five years period. In fact, there are other databases on economic institutions, but the one from *Fraser Institute* is more adapted to my study. First, the *Fraser Institute* database has a long temporal dimension because going back to the 1970s. To my knowledge, it is the only database on economic institutions with this temporal depth which is available at the moment. Secondly, this database contains exactly the economic institutions that I need for my study.

If the arbitrary character for the duration of EGS definition can be justified, giving a value of zero to the explained variable for a country that has just experienced one or two years of negative growth, despite a good performance during the other years, can constitute another limit of my model. To overcome this limit, I control for temporal fixed effects. In this case, EGS could not be explained any more by a covariant shock which affects at the same date all the economies.²⁰ In the same way, I control for country fixed effects. In this case, EGS could not be explained any more by the structural characteristics of an economy. The consideration of these observations makes the model to estimate be as follows:

$$Prob_{it} \left[(g_{i0}, g_{i1}, g_{i2}, g_{i3}, g_{i4}) > 0 \mid (c, index_{it}, u_i, v_t) \right] = G(c, index_{it}, u_i, v_t)$$
(1)

Prob_{it} measures the probability for a country to experience sustained economic growth. It is the probability for a country to experience a positive economic growth over five consecutive years. Index_{it} measures the value of the *politico-economic institutions index* in country i at time t, u_i measures the country fixed effects, v_t measures the temporal fixed effects, and c is the constant. G is a linear function or a normal cumulative distribution function depending on the specification used.

The beginning estimated model is the one described above with a sample of 123 countries constituted of 85 underdeveloped countries, 38 developed countries and 78 former

²⁰ As a robustness test of my results, I control for term of trade to take into account the specific shocks affecting each country. In this case, my results do not change. Those results are not shown and are available upon request.

colonies.²¹ However, estimating only that model, can be less interesting. In fact, by testing only the effect of the *politico-economic institutions index* on EGS, I could get a less precise measurement of the effect of the various institutions on EGS, since it may be that the observed effect of the *politico-economic institutions index* on EGS that I get is actually that of one or two institutions and not of the whole institutions. Moreover, I mention theoretical arguments according to which I can expect a positive effect of each category of institution on EGS. Then, it would be interesting to test these various theoretical arguments by testing the specific effect of each type of institution on EGS. With this intention, the following equations are also estimated:

- $Prob_{it} [(g_{t0}, g_{t1}, g_{t2}, g_{t3}, g_{t4}) > 0 | (c, prop_{it}, u_i, v_t)] = G (c, prop_{it}, u_i, v_t)$ (2)
- $Prob_{it} [(g_{t0}, g_{t1}, g_{t2}, g_{t3}, g_{t4}) > 0 | (c, reg_{it}, u_i, v_t)] = G (c, reg_{it}, u_i, v_t)$ (3)
- $Prob_{it} \left[(g_{t0}, g_{t1}, g_{t2}, g_{t3}, g_{t4}) > 0 \mid (c, dem_{it}, u_i, v_t) \right] = G (c, dem_{it}, u_i, v_t)$ (4)

 $Prob_{it} [(g_{t0}, g_{t1}, g_{t2}, g_{t3}, g_{t4}) > 0 | (c, prop_{it}, reg_{it}, dem_{it}, u_i, v_t)] = G(c, prop_{it}, reg_{it}, dem_{it}, u_i, v_t)$ (5)

In equations (2), (3), (4), (5) prop_{it}, reg_{it}, and dem_{it} denote respectively the index of property rights, the regulation index, and the democracy index, in country i, at time t. In those equations, the other variables have the same signification like in equation (1). Equation (1) allows to estimate the combined effect of political and economic institutions on EGS, i.e. the observed effect if political and economic institutions act as one and same institution on EGS. Equations (2), (3), (4), enable to estimate the respective effect of each institution on EGS, i.e. the specific effect of an institution, ignoring the effect of other institutions. As for equation (5), it enables to estimate the simultaneous effect of various institutions on EGS, i.e. the observed effect when all the institutions act at the same time but each one with its own effect. By estimating equations (2), (3), (4), and (5), it then becomes possible to identify the most important institution(s) for EGS. Therefore, an institution would be considered most important for EGS, if individually it explains EGS significantly, and that its effect remains significant despite considering the simultaneous effect of the various institutions.

As we can note, my empirical strategy, has several advantages. First, to my knowledge my study constitutes the first which studies the effect of institutions on EGS, as generally in the empirical works researchers study the effects of institutions on the levels of per capita income, growth rate, or on the changes of growth regimes.

²¹ The list of the countries can be found in appendix 1.

Secondly, my study is one of the few papers on the effects of institutions on economic performances with panel data. In fact, generally people use transversal data, because the data on institutional quality often used are of short temporal dimension, and because of a low temporal variability of the indexes of institutional quality. Thus, obtaining a significant effect of institutions on EGS with panel data, knowing the low temporal variability of institutional quality indexes, would be an encouraging result.²²

Finally, as I mentioned it, my empirical strategy makes it possible to estimate the combined effect, the respective effect, and the simultaneous effect of three various institutions on EGS, which is another advantage of my study, because by testing the combined effect, I reconcile two economic approaches of institutional analysis; i.e. the approach privileging political institutions and the one privileging economic institutions. Moreover, I test the effects of political institutions and two kinds of economic institutions. This procedure is also another strong point of my study, because I avoid reducing the institutions to democracy or to the protection of private property rights, as it is often done in the empirical studies. In the same way, the estimation of specific and simultaneous effects of various institutions makes it possible to identify the most important institution(s) for EGS, which constitutes another contribution of my study.

4.3 Methods of econometric estimation

If my empirical strategy has several advantages, the reliability of my various results requires the resolution of the endogeneity problem presents in my models. Indeed, if it is possible that good institutions determine EGS, it is also possible that countries which can experience a sustained growth are also the ones that can offer good institutions. In addition, because of the subjective character of institutional quality measurement, we can not exclude the possibilities of measurement errors in the various indexes of institutional quality, likely to involve biased results. Finally, countries equipped with good institutions can also have other factors favourable to EGS, the omission of which can also involve endogeneity. Thus, the three traditional sources of endogeneity can be present in my data. However I have no suitable

²² For the whole sample, I get the following statistics for the various institutional quality indexes:

Standard deviation over the whole 1960-2003 period: Index = 1.420; Reg = 1.109; Prop = 1.934; Dem = 0.335.

Between Standard deviation: Index = 0.954; Reg = 0.904; Prop = 1.610; Dem = 0.307.

Within Standard deviation: Index = 1.046; Reg = 0.625; Prop = 0.976; Dem = 0142.

As we can note it, the Within Standard deviation for the various institutional indexes is relatively lower. This indicates a low temporal variability of institutional quality indexes in my sample.

natural instruments for institutions, since I use panel data, mainly with fixed effects which require instrumental variables that vary over time.

To solve the endogeneity problem, I resort to GMM system estimator of *Blundell and Bond (1998)*. But this estimator within the framework of my paper, is not without problems, as its application on my data means the use of linear probability model because of the binary character of my explained variable. However, in general when using linear probability models, it may be that the predicted explained variable takes values lower than 0 or higher than 1. That is one of the main limits of the linear probability models, since the value of a probability is supposed to be ranged between 0 and 1. So, the number of observations for which the predicted explained variable is not normally ranged in its interval of variation has to be checked. If for the majority of the observations, the predicted explained variable varies between 0 and 1, the limit relating to the interval of variation of the predicted explained variable when we use the linear probability models is no longer a concern (see Wooldridge 2000, chapter 7).

I also use probit model on my panel data, with interest -in addition of the advantage of unquestionable variation of the predicted explained variable values between 0 and 1- of taking into account the difference of marginal effects according to the starting value of the various explanatory variables, contrary to the linear probability models where the marginal effects are supposed to be identical independently of the starting values of the explanatory variables. But, the version of probit model with specific effects, which is actually programmed on Stata, presents the limit to be applied only with random effects by making the strong assumption of independence of countries specific effects compared to the explanatory variables.²³ In the impossibility to apply the Hausmann test, I present the statistics associated with the test of significance of random effects in probit model.

While following the suggestion of *Wooldridge (2000)*, I also apply OLS on my data in pooling. Wooldridge (Page 236), suggests to always have the results of linear probability

²³ I also apply the logit model with fixed effects on my data. In this case, there is no need to suppose the absence of correlation between explanatory variables and individual specific effects. The obtained results are generally similar to those of probit with random effects and are available upon request. I prefer to report the results of the estimations by a probit model with random effects at the sides of those of linear probability models to make them more comparable. Indeed, in the probit model as well as in the linear probability models, we suppose that the errors have the standard normal distribution, whereas in the logit model, the errors are supposed to have the standard logistic distribution. In addition, the use of the logit model with fixed effects is based on the conditional probabilities with the exclusion of the observations for which the probability is always equal to 0 or to 1, with an aim of solving the incidental parameter problem. Therefore, the exclusion of certain observations no matter what necessary is debatable in the logit model with fixed effects.

model at the sides of those of probit or logit model. In this case, not only I do not control for the specific effects, but also the problem of endogeneity of the explanatory variables remains.

Finally, I will also present the results of my various models estimated with fixed effects method. In this case, I use a linear probability model where I control for individual and temporal fixed effects, but the endogeneity problem of explanatory variables still remains. The use of this last method of estimation enables me to measure the bias resulting from not taking into account the specific effects, by comparing the results of OLS with those of fixed effects method. In the same way, through the use of fixed effect model, I will be able to identify the source of endogeneity in my data, by comparing the results of fixed effect model with those of GMM system.

My various models will thus be subjected to four various methods of econometric estimation, which makes it possible to test the robustness of my results compared to estimation methods. However, of all the results, those obtained with GMM system method are more convincing, because in this case I control for individual and temporal fixed effects and I also solve the problem of endogeneity of my various explanatory variables.

5. Results

Table 2 indicates that an increase in the value of *politico-economic institutions index* positively and significantly affects, the probability of EGS, as I support it theoretically. This result is observed independently of estimation method used, as it appears in columns 1 to 4 of table 2.

The observation of the results indicates that the effect of *politico-economic institutions index* is reduced by half when I do not correct for the endogeneity of this variable. In fact, the coefficient value of the index varies from 0.07 in fixed effect to 0.15 in GMM system, which reveals a problem of endogeneity due to measurement errors of institutional quality indexes. In the same way, through table 2, it appears that for the large majority of observations the predicted value of EGS probability lies between zero and one. In this case, the results of linear probability models in general and those of GMM system in particular can be considered with less reserve.

As for the result of estimation in probit, it also indicates a positive and significant coefficient of the effect of *politico-economic institutions index* on EGS. Moreover, it appears that the variance of random effects is very significant in the probit model. So, the probit model with random effects can be considered as preferable to the probit model without random effects.

Table 2: Results of combined and simultaneous effects of political and economic institutions on economic growth sustainability

	OLS	Fixed Effet	GMM System	Probit (RE)	OLS	Fixed Effet	GMM System	Probit (RE)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
index	0.070 (6.11)***	0.071 (3.25)***	0.155 (4.22)***	0.327 (6.11)***				
reg			()		0.017	0.112	0.104	0.127
prop					(0.85) 0.046 (3.50)***	$(3.72)^{***}$ 0.054 $(2.92)^{***}$	$(1.70)^*$ 0.041 (1.62)	(1.55) 0.164 (3.22)***
dem					0.137	0.158	0.020	0.223
Constant	0.123 (3.25)***	0.156 (1.66)*	0.167 (2.14)**	-1.443 (5.87)***	(1.81)* -0.048 (0.51)	(1.21) -0.323 (1.80)*	(0.10) -0.090 (0.28)	(0.84) -1.381 (3.08)***
Number of observations	877	877	877	877	602	602	602	602
R ²	0.04	0.33	-	-	0.08	0.39	-	-
Number of countries	-	121	121	121	-	118	118	118
Percent of observations 1/	100%	100%	97%	-	100%	91%	97%	-
Sargan test 2/	-	-	0.904	-	-	-	0.368	-
AR (1) 2/	-	-	0.000	-	-	-	0.000	-
AR (2) 2/	-	-	0.597	-	-	-	0.733	-
Log of vraisemblance	-	-	-	-494.735	-	-	-	-388.017
χ^2 of variance test 3/	-	-	-	30.95***	-	-	-	21.43***

Note: ***,**,* respectively denotes coefficients significant at thresholds of 1%, 5%, and 10%. The figures in brackets are robust t-Student. All the estimates except for those with OLS, contain temporal dummies whose coefficients are not shown.

1/ This is the percent of observations for which the predicted value of the probability of growth sustainability lies between 0 and 1.

2/ These figures are the p-values associated with various tests.

3/ These figures are χ^2 values of significance test of random effects in the probit model with random effects. This test also indicates if probit model with random effects is preferable to probit model without random effects.

When Iam interesting in the specific effect of each type of institution on EGS, it appears in table 3 that independently of the estimation method used, each category of institution positively and significantly affects the probability of EGS. Thus, as I support it theoretically, the data seem to confirm that the improvement of the quality of each type of institution is necessary for EGS. Like in table 2, the measurement errors of institutional quality is the source of endogeneity of the various institutions indexes, and the coefficients obtained with probit are also significant. In addition, for the large majority of observations, the probability of EGS lies between zero and one. As for the variance of random effects in the probit model, it remains very significant whatever the specification used.

	$\frac{OLS}{(1)}$				Fixed Effet			GMM system		Probit with random effect		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
reg	0.070 (4.61)***			0.103 (3.85)***			0.142 (1.73)*			0.262 (3.76)***		
prop		0.065 (7.84)***			0.072 (4.23)***			0.044 (1.73)*			0.223 (6.14)***	
dem			0.355 (7.42)***			0.104 (0.88)			0.439 (2.35)**			0.962 (4.99)***
Constant	-0.035 (0.42)	0.006 (0.14)	0.177 (6.90)***	-0.124 (0.80)	0.175 (1.67)*	0.388 (5.75)***	-0.132 (0.30)	0.365 (2.22)**	0.246 (2.46)**	-1.626 (3.93)***	-0.916 (3.55)***	-0.616 (3.62)***
Number of observations	772	751	847	772	751	847	772	751	847	772	751	847
R ²	0.02	0.07	0.06	0.36	0.36	0.33	-	-	-	-	-	_
Number of countries	-	-	-	121	121	118	121	121	118	121	121	118
Percent of observations 1/	100%	100%	100%	99%	99%	100%	96%	100%	100%	-	-	-
Sargan test 2/	-	-	-	-	-	-	0.216	0.131	0.377	-	-	-
AR (1) 2/	-	-	-	-	-	-	0.000	0.000	0.000	-	-	
AR (2) 2/	-	-	-	-	-	-	0.805	0.555	0.929	-	-	-
Log of vraisemblance	-	-	-	-	-	-	-	-	-	-444.731	-425.010	-481.514
χ^2 test of variance	-	-	-	-	-	-	-	-	-	42.00***	21.19***	33.92***

Table 3: Results of specific effects of political and economic institutions on economic growth sustainability

Note: The same as in table 2.

All the institutions exert a positive and significant effect on EGS. But which are the institutions for which the effect on EGS resists to that of the others, in other words which are the most important institutions for EGS? To answer this question, I refer to the results in columns 5 to 8 of table 2. In this case, it appears that in GMM system, only regulation institutions continue to exert a positive and significant effect on EGS at the threshold of 10%, despite taking into account the effect of other institutions. As for institutions of private property rights protection, they are weakly significant whereas democracy is far from being significant. The result in GMM system in column 7 of table 2, indicates that only the effect of regulation institutions resists to the colinearity between various measurements of institutions quality. We can perceive this colinearity between the various types of institutions, by comparing the results in columns 7 to 9 of table 3 with the result in column 7 of table 2. In this last column, the democracy index, is the index of institutional quality which records the greatest fall of its value, reflecting in a certain extent the fact that democratic institutions can contribute to the emergence of good economic institutions, or the fact that they can capture the effects of economic institutions when the effects of those institutions are not taken into account.

The positive and significant effect of regulation institutions on EGS remains, despite taking into account the effects of other institutions. This indicates in a certain extent that the regulation institutions are the most important institutions for EGS.

This result can be explained by the fact that, an efficient regulation of economic activities can allow the entry on the market and the seizure of favourable opportunities by the most dynamic and most innovative private investors. These investors are young investors, who do not have the necessary means to face high costs of new enterprises creation when the regulation of economic activities is too strong. The entry on the market of the more innovative investors could contribute to EGS by affecting positively the level of TFP, not only by its positive effect on the level of private investment, but also by the increase in the global technology level due to the possible innovations introduced.

In opposite, private investors can find alternative solutions to the implementation of distorsive policies and to the weak protection of private property rights in order to ensure EGS. This can possibly constitute a reason for which democratic institutions and private property rights protection do not exert a significant effect on EGS, when I consider the effects of the various institutions simultaneously.

In fact, private investors operating in an environment where prevail distorsive policies, or a weak protection of property rights can continue to seize favourable opportunities by modifying the structure of their investments. In this case, it is possible to have an increase in TFP despite the modification in the structure of private investment, as long as private investors increase their investments.

The results in tables 2 and 3 indicate that an increase in the *politico-economic institutions index* value, positively and significantly affects the probability of EGS. In the same way, these tables indicate that regulation institutions, property rights protection institutions, and democratic institutions are all necessary for EGS. However, only the effect of regulation institutions resists to that of the other institutions. The question is to know whether these results are robust or not.

5.1 Robustness checks

In addition to the robustness compared to the estimation methods, my first results are subjected to further robustness checks. Thus, I test the robustness of my results compared to the level of economic growth. I define the sustainability of economic growth by considering any positive growth rate. However, what may be interest political decision makers is the sustainability of high economic growth, because it is more likely to involve rapid reduction of poverty. Moreover, institutions may not have any effect on the sustainability of high growth as it may be due to other factors.

While testing the effect of institutions on high economic growth sustainability -I recall that it is a positive growth of per capita GDP of at least 2% observed over five consecutive years-, it appears that the *politico-economic institutions index* positively and significantly affects the sustainability of high economic growth. In GMM system, democratic and regulation institutions are the institutions that affect specifically, positively and significantly the probability of high economic growth sustainability. The effects of democratic and regulation institutions remain significant, when I consider the simultaneous effect of the various institutions on high economic growth sustainability. These results are not shown but are available upon request.

The sustainability of high economic growth would require more innovative investors and the absence of distorsive policies implementation, it is possibly, according to the data, that democratic and regulation institutions are the most important institutions for high economic growth sustainability.

I also test the robustness of my results compared to the use of other indicators of institutional quality. In the place of the democracy index, I consider the index of constraint on

executive as political institution index.²⁴ The index of constraint on executive is obtained from *Polity IV*, and is arranged in increasing way between 0 and 7. The new *politicoeconomic institutions index* that I build, positively and significantly affects the probability of EGS, and this no matter which estimation method is used. Independently of the estimation method, it appears that the constraint on executive index positively and significantly affects EGS probability. In addition to regulation institutions, property right institutions also positively and significantly affect the probability of EGS, when I test the simultaneous effect of the various institutions on EGS. The results are not shown but also are available upon request.

My sample includes former colonies countries, and these former colonies inherited institutions of various qualities as *Acemoglu at al. (2001)* underline it. It is then interesting to test the impact of institutions on the sample of former colonies. In this case, it appears that the *politico-economic institutions index* positively and significantly affects the probability of EGS in the former colonies sample. The regulation institutions effect on EGS, remains positive and significant despite taking into account the simultaneous effect of the various institutions. These results are also available upon request.

My sample includes developed and developing countries, and the analysis of EGS characteristics shows that developing countries have much more difficulties to sustain their economic growth episodes. Thus, I test my different models on the sample of developing countries. In this case it appears in table 4 that independently of the method of estimation, the *politico-economic institutions index* positively and significantly affects the probability of EGS. Table 5 indicates that independently of the estimation method used, the improvement of the quality of each type of institution is necessary for EGS in developing countries. Lastly, columns 6 to 8 of table 5, indicate that regulation and property rights institutions are those which exert a positive and significant effect on EGS probability when I consider the simultaneous effect of the various institutions.

Favouring the entry on the market of more innovative investors and ensuring the appropriation of a significant share of investments return, are more important to EGS in developing countries. This is possibly the reason why regulation and property rights

²⁴ Beyond a check of robustness of the results, the use of the index of constraint on the executive makes it possible to test my argument according to which, in a democracy because of institutional constraints, political leaders should not be able to implement all the economic policies of their choices and in particular, socially inefficient economic policies. While following the same logic of determination of the weighting coefficients through an equation of growth, I build a new index of politico-economic institutions with the index of constraint on the executive and the same economic institutions as previously. In addition, I would like to consider other indexes of economic institutions but I do not data with a long temporal dimension.

institutions are the only significant institutions when I consider the simultaneous effect of the various institutions. This result indicates that, in the developing countries of my sample and on the considered period, EGS would require much more "good" economic institutions than political institutions.

Table 4: Results of combined and simultaneous effects of political and economic institutions on economic growth sustainability in developing countries sample

	OLS	Fixed Effet	GMM System	Probit (RE)	OLS	Fixed Effet	GMM System	Probit (RE)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
index	0.050 (3.59)***	0.052 (2.05)**	0.172 (2.27)**	0.285 (3.80)***				
reg	· · ·	· · · ·		· · ·	0.023	0.116	0.175	0.200
prop					(1.03) 0.064 (3.92)***	(3.36)*** 0.062 (2.90)***	(1.78)* 0.076 (1.98)**	$(1.74)^{*}$ 0.239 $(3.43)^{***}$
dem					0.011	0.080	-0.128	-0.011
Constant	0.134 (3.37)***	0.127 (1.25)	0.112 (1.40)	-0.970 (4.69)***	(0.10) -0.136 (1.29)	(0.46) -0.490 (1.96)*	(0.36) -0.821 (1.60)	(0.03) -2.006 (2.94)***
Number of observations	628	628	628	628	458	458	458	458
R ²	0.02	0.30	-	-	0.05	0.40	-	-
Number of countries	-	85	85	85	-	82	82	82
Percent of observations 1/	100%	100%	99%	-	100%	94%	84%	-
Sargan test 2/	-	-	0.816	-	-	-	0.243	-
AR (1) 2/	-	-	0.000	-	-	-	0.000	-
AR (2) 2/	-	-	0.875	-	-	-	0.677	-
Log of vraisemblance	-	-	-	-335.139	-	-	-	-241.854
χ^2 of variance test 3/	-	-	-	24.29***	-	-	-	24.64***

Note: The same as in table 2.

My first results remain robust to various tests. It appears that the improvement of the general level of institutional quality, and of each institution are necessary for EGS. However, institutions of economic activities regulation, are more favourable to EGS. Seeing that the institutions are not physical factors of production, they can affect EGS only through mechanisms, which is advisable to explore.

		OLS			Fixed Effect			GMM System		Probit with random effect		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
reg	0.047 (2.62)***			0.104 (3.29)***			0.364 (2.68)***			0.238 (2.56)***		
prop		0.067 (5.17)***			0.072 (3.91)***			0.151 (1.78)*			0.269 (4.55)***	
dem		()	0.220 (2.70)***			0.084			0.468 (1.80)*		()	0.612 (1.83)*
Constant	0.022 (0.23)	-0.017 (0.30)	0.198 (6.62)***	-0.224 (1.07)	0.044 (0.39)	0.311 (4.47)***	-1.519 (2.07)**	-0.246 (0.70)	0.134 (1.39)	-1.731 (2.86)***	-1.598 (3.91)***	-0.682 (3.28)***
Number of observations	529	512	602	529	512	602	529	512	602	529	512	602
R ²	0.01	0.05	0.01	0.35	0.36	0.30	-	-	-	-	-	-
Number of countries	-	-	-	85	85	82	85	85	82	85	85	82
Percent of observations 1/	100%	100%	100%	98%	100%	100%	76%	87%	100%	-	-	-
Sargan test 2/	-	-	-	-	-	-	0.710	0.322	0.266	-	-	-
AR (1)2/	-	-	-	-	-	-	0.000	0.000	0.000	-	-	-
AR (2)2/	-	-	-	-	-	-	0.962	0.803	0.918	-	-	-
Log of vraisemblance	-	-	-	-	-	-	-	-	-	-286.275	-272.386	-323.771
χ^2 of variance test 3/	-	-	-	-	-	-	-	-	-	34.57***	24.00***	32.59***

Tableau 5 : Results of specific effects of political and economic institutions on economic growth sustainability in developing countries sample

Note: The same as in table 2.

5.2 Mechanisms of transmission of institutions effects on growth sustainability

5.2.1 Effects of institutions on private investment and effect of private investment on total factor productivity

Theoretically, I support that "good" institutions are necessary for economic growth sustainability because they involve an increase in TFP due to their favourable effects on private investment. I will estimate the effects of institutions on private investment in percent of GDP, and the effect of private investment on TFP. So, the following equations will be estimated:

$$Privinv_{it} = a + \zeta X_{it} + v_t + \mu_{it}$$

$$Tfp_{it} = b + \eta \ privinv_{it} + v_t + \lambda_{it}$$
(6)
(7)

Equation (6) makes it possible to estimate the effect of various institutions
$$-X_{it}$$
- on private investment with data in pooling by controlling for temporal fixed effects. Control for temporal fixed effects allows to consider the increase in private investment that all economies experience at a certain time. Private investment data for underdeveloped countries are in majority from Global Development Network Database and cover the 1970-1999 period. To complete my data, I calculate the amounts of private investment for developed countries, as the difference between gross capital formation obtained from WDI (2005), and the sum of government expenditures in capital and government expenditures for fixed assets acquisition. Government expenditures in capital and for fixed assets acquisition, are obtained from Global Development Network Database. I compute the average values of private investment in percent of GDP each five years.

Equation (7) makes it possible to estimate the private investment effect on TFP, that I compute as a residue by the method of economic growth accounting. Concretely, as *Easterly et al.* (2002), I consider the following production function:

$$Y_i = A_i K_i^{\alpha} H_i^{1-\alpha}$$
(8)

Where for country i, Y_i is GDP, A_i the level of technology, K_i the stock of physical capital, H_i the stock of human capital, α the share of physical capital remuneration in GDP, 1- α the share of labour remuneration in GDP. I suppose as in traditional Cobb Douglas function, and like

Hall et al. (1999) that $\alpha = 0.33$. While reasoning per worker and by taking the variations of the various variables over time, equation (8) becomes:

$$(\Delta A/A) = (\Delta y/y) - \alpha (\Delta k/k) - (1-\alpha) (\Delta h/h)$$
(9)

Equation (9) indicates that ($\Delta A/A$) which corresponds to TFP, is the residue of the difference between the variation of GDP per worker and the sum of the contribution of physical capital and human capital, to the variation of GDP per worker. GDP per worker is obtained by using data covering the 1960-2003 period on GDP and on the number of individuals in age to work, from WDI (2005). Human capital stock is measured by the average number of schooling years for individuals of at least fifteen years old. Data on human capital stock are provided each five years from 1960 to 2000 and are from *Barro and Lee (2000)* database. The stock of physical capital is obtained by using the perpetual inventory method through the following equation:

$$K_{it} = (1-\delta) K_{it-1} + I_{it}$$
(10)

With I_{it} the level of investment in country i at time t and δ the depreciation rate of physical capital, that I suppose as *Hall et al. (1999)* equal to 6%. I calculate the stock of physical capital from 1960 to 2003 choosing 1960 as the initial year.

I estimate equation (7) on pooled data and controlling for temporal fixed effects to take into account the increase in technological level that marks all the economies at a certain time. To consider the risk of endogeneity of private investment compared to TFP, I test the effect of an exogenous measurement²⁵ of private investment on TFP. This exogenous measurement of private investment is its predicted value, obtained by the estimation of *politico-economic institutions index* effect on private investment. The use of the predicted value of private investment makes it possible not only to reduce the endogeneity problem of TFP but, also to better test my theoretical arguments. Indeed, in this case, the measurement of private investment level, is the one that we should obtain according only to the general level of institutional quality in the various countries. If the predicted value of private investment positively and significantly affects TFP, then I can consider that the accumulation of private investment could have a causal effect on TFP.

²⁵ By exogenous measurement of private investment, I mean a measurement which could not suffer from endogeneity due to simultaneity error between private investment and TFP.

The results of equation (6) estimation in table 6 indicate that, an improvement of the quality of the *politico-economic institutions index* positively and significantly affects the level of private investment in my sample. Columns 2 to 4 of table 6 indicate that, an improvement of the respective quality of the various institutions is also favourable to private investment accumulation in my sample. As for column 5, it indicates that only property rights protection institutions positively and significantly affect private investment accumulation, when I take into account the simultaneous effect of the various institutions on private investment.

-							
	privinv (1)	privinv (2)	privinv (3)	Privinv (4)	privinv (5)	tfp (6)	tfp (7)
index	0.018 (8.54)***						
reg	(0.0.1)	0.011			0.004		
prop		(3.75)	0.013		0.010		
dem			().24)	0.069	0.022		
privinv				(10.07)***	(1.52)	0.852	
privinv_hat 2/						(3.93)	2.494
Constant	0.125 (15.72)***	0.122 (6.64)***	0.113 (9.57)***	0.116 (17.13)***	0.096 (4.79)***	-0.388 (9.06)***	-0.454 (-4.57)***
Number of observations R ²	484 0.15	384 0.08	359 0.24	469 0.14	316 0.26	423 0.08	420 0.07

 Table 6 : Effects of institutions on private investment and of private investment on total factor

 productivity 1/

Note: ***, denotes coefficients significant at thresholds of 1%.

1/ The estimate is carried out with the total sample and all the estimates contain temporal dummies whose coefficients are not shown. The figures in brackets are robust t-student.

2/ Indicates the predicted value of private investment obtained from the regression of private investment in percent of GDP on the index of politico-economic institutions and a constant.

This last result shows that, the fact that private investors are convinced to be able to get a significant share of their investments return is the most important factor determining the decision-making of private investment. In fact, private investors can find alternative solutions to the costs resulting in distorsive policies implementation or to the existence of strong economic activities regulations. Those alternative solutions can be the change in private investment structure to face distorsive policies, or the corruption of public bureaucrats to face strong economic activities regulation. While finding alternative solutions to the weakness quality of democratic and regulation institutions, private investors can continue to increase the volume of their investments. This is possibly the reason why only property rights institutions

affect significantly and positively private investment, when I consider the simultaneous effect of the various institutions on private investment.

Columns 6 and 7 of table 6 show the results of private investment effect on TFP. It appears in this case that, an increase in private investment positively and significantly affects the level of TFP. A comparison of columns 6 and 7 indicates that, TFP could suffer of endogeneity, since the effect of the exogenous measurement of private investment, i.e. its predicted value, on TFP is much larger. *Therefore, it appears that institutions affect positively private investment level, an increase in private investment involves an increase in TFP. Thus the data seem to confirm the theoretical arguments that I defend.*

5.2.2 Effects of institutions, total factor productivity, and private investment on growth sustainability

I show that institutions affect positively the level of private investment and that private investment accumulation involves an increase in TFP. The question is now to know whether the data will confirm my theoretical argument according to which an increase in TFP affects positively the probability of EGS. Thus, I estimate the following equation:

 $Prob_{it} [(g_{t0}, g_{t1}, g_{t2}, g_{t3}, g_{t4}) > 0 | (c, X_{it}, tfp_{it}, privinv_{it}, u_{i}, v_{t})] = G(c, X_{it}, tfp_{it}, privinv_{it}, u_{i}, v_{t}) (11)$

Equation (11) allows to estimate the effects of private investment, TFP, and institutions on EGS. When I estimate equation (11) would be positive and significant, only the coefficient of TFP, unless institutions and private investment had an independent effect on EGS, i.e. another effect than the one due to TFP.

The results of equation (11) estimate in tables 7 and 8 indicate that independently of the estimation method and the specification used, TFP positively and significantly affects the probability of EGS. *So, the data seem to confirm my theoretical argument according to which an increase in TFP is necessary for EGS*.

As for the fact to know whether institutions and private investment have independent effect on EGS, despite considering private investment and TFP effects on EGS, it appears in GMM system in column 3 of table 7 that the *politico-economic institutions index* positively and significantly affects EGS probability at 10% threshold. This result can be explained by other positive externalities of institutions on EGS.

Tableau 7 : Results of combined and simultaneous effects of political and economic institutions on growth sustainability controlling for private investment and total factor productivity effects

	OLS	Fixed Effect	GMM System	Probit (RE)	OLS	Fixed Effect	GMM System	Probit (RE)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
index	0.016	0.055	0.076	0.256				
	(0.99)	(1.79)*	(1.68)*	(3.58)***				
reg					0.019	0.138	0.280	0.232
					(0.65)	(1.98)**	(1.85)*	(1.56)
prop					0.057	0.093	0.007	0.256
* *					(3.11)***	(2.77)***	(0.14)	(2.80)***
dem					-0.073	0.171	-0.202	-0.316
					(0.68)	(0.69)	(0.52)	(0.68)
privinv	1.918	-0.280	2.042	4.162	1.409	-0.119	1.337	1.549
•	(5.79)***	(0.40)	(1.05)	(2.85)***	(3.28)***	(0.13)	(0.67)	(0.68)
tfp	0.425	0.354	1.214	2.278	0.364	0.426	0.664	2.711
*	(4.52)***	(3.61)***	(2.71)***	(5.33)***	(3.04)***	(3.39)***	(1.70)*	(4.17)***
Constant	0.061	0.473	0.313	-1.813	-0.192	-0.570	-0.875	-1.540
	(1.04)	(3.67)***	(0.88)	(5.68)***	(1.33)	(1.33)	(1.03)	(1.61)
Number of observations	420	420	420	420	292	292	292	292
R ²	0.17	0.46	-	-	0.18	0.58	-	-
Number of countries	-	98	98	98	-	91	91	91
Percent of observations 1/	95%	98%	75%	-	97%	74%	78%	-
Sargan test 2/	-	-	0.440	-	-	-	0.485	-
AR (1)2/	-	-	0.000	-	-	-	0.000	-
AR (2)2/	-	-	0.991	-	-	-	0.284	-
Log of vraisemblance	-	-	-	-196.083	-	-	-	-132.832
χ^2 of variance test 3/	-	-	-	2.05*	-	-	-	7.49**

Note: The same as in table 2.

In fact, in an environment of "good" institutional quality, private investors can trust one another and cooperate together more easily, which would induce an improvement of their investments productivity, their capacity for future investment, and consequently an increase of EGS probability. This cooperation can, for instance, take the form of credits between private investors, not residing the same localities and not having necessarily any parental relation between them. It is not sure that this kind of cooperation can exist in an environment of bad institutional quality, where prevail mistrust and asymmetry of information involving commercial relations based on geographical proximity or parental relations. (See North, 1991).

		OLS			Fixed Effect			GMM system		Prob	oit with random	effect
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
reg	0.042 (1.72)*			0.113 (1.87)*			0.254 (1.95)*			0.327 (2.46)**		
prop		0.048 (3.58)***			0.106 (3.55)***			-0.012 (0.27)			0.241 (3.67)***	
dem			0.134 (1.81)*			0.038 (0.17)			0.104 (0.35)			0.558 (2.02)**
privinv	1.958 (5.40)***	1.438 (3.72)***	1.798 (5.19)***	-0.216 (0.28)	-0.403 (0.49)	-0.254 (0.35)	-0.755 (0.30)	2.772 (1.02)	3.747 (1.42)	5.067 (2.57)**	1.991 (1.07)	5.510 (3.78)***
tfp	0.426 (3.84)***	0.376 (3.22)***	0.405 (4.32)***	0.410 (3.91)***	0.374 (2.94)***	0.345 (3.42)***	1.041 (2.49)**	1.488 (1.94)*	0.956 (2.22)**	2.948 (4.95)***	2.423 (4.39)***	2.267 (5.23)***
Constant	-0.134 (1.09)	-0.083 (1.03)	0.063 (1.17)	-0.082 (0.24)	0.186 (1.03)	0.549 (3.49)***	-0.363 (0.60)	0.495 (0.80)	0.072 (0.22)	-2.449 (3.16)***	-0.999 (2.30)**	-0.987 (3.57)***
Number of Observations	335	325	415	335	325	415	335	325	415	335	325	415
R ²	0.17	0.18	0.17	0.55	0.52	0.45	-	-	-	-	-	-
Number of countries	-	-	-	96	94	97	96	94	97	96	94	97
Percent of observations 1/	95%	97%	95%	96%	88%	99%	79%	83%	76%	-	-	-
Sargan test 2/	-	-	-	-	-	-	0.309	0.745	0.601	-	-	-
AR (1)2/	-	-	-	-	-	-	0.000	0.000	0.000	-	-	-
AR (2)2/	-	-	-	-	-	-	0.786	0.504	0.827	-	-	-
Log of vraisemblance	-	-	-	-	-	-	-	-	-	-152.230	-151.389	-199.398
χ^2 of test of variance 3/	-	-	-	-	-	-	-	-	-	9.26**	4.86**	3.22**

 Table 8: Results of specific effects of political and economic institutions on growth sustainability controlling for private investment and total

 factor productivity effects

Note: The same as in table 2.

Column 7 of table 8 shows that, regulation institutions have a positive and significant effect on EGS probability and this, despite taking into account TFP and private investment effects. In the same way, column 7 of table 7 shows that only regulation institutions have an independent, positive and significant effect on EGS probability despite considering the simultaneous effect of the various institutions.

This independent effect can be explained by other positive externalities of regulation institutions on EGS. In fact, an efficient regulation of economic activities can favour the entry on the market of new investors who will exploit new sectors of activities complementary to the already exploited sectors. This complementarity between private investments can increase their productivities, the capacity for future investments, and consequently EGS probability.

It appears that TFP exerts a positive and significant effect on EGS. In the same way, *politico-economic institutions index* and regulation institutions have independent effect on EGS. Iam going to test the robustness of these results.

5.3 Robustness checks of institutions, total factor productivity, and private investment effects on growth sustainability

As done previously, I submit my last results to further robustness checks. In this case, it appears that the effect of TFP and the independent effect of regulation institutions on EGS, are robust. In fact, by considering a criteria of high economic growth sustainability, other indexes of institutional quality, or by testing my models on only the sample of former colonies or underdeveloped countries sample; TFP and regulation institutions, still exert a positive and significant effect on EGS probability. I show below in tables 9 and 10, the results in underdeveloped countries sample, but the other results are not shown and are available upon request.

The last robustness check I carry out and that I also present, is taking into account of macroeconomic policies variables. Until now, I test the effects of institutions, private investment, and TFP on EGS. But, it is possible to overestimate the effects of these variables by being unaware of macroeconomic policies effects. However, when I want to control for macroeconomic policies variables, the problem is to identify the variables which should be considered. To my knowledge, for instant there is no theory studying the impact of macroeconomic policies on EGS, but I can take advantage on my theoretical arguments to identify the policies variables likely to affect EGS. I recall that, theoretically I support that, it is for the gain of economic competitiveness that TFP could affect positively EGS. From this point, each policy variable which can affect the level of economic competitiveness can also

affect EGS. This last assumption makes it coherent to test on EGS the effects of the following policies variables:

Tableau 9 : Results of combined and simultaneous effects of political and economic institutions on growth sustainability controlling for private investment and total factor productivity effects in developing countries sample

	OLS (1)	Fixed Effect (2)	GMM System (3)	Probit (EA) (4)	OLS (5)	Fixed Effect (6)	GMM System (7)	Probit (EA) (8)
index	0.008	0.010	0.017	0.179				
	(0.41)	(0.27)	(0.17)	(2.14)**				
reg					0.035	0.133	0.184	0.392
-					(1.16)	(1.78)*	(1.71)*	(1.77)*
prop					0.075	0.081	0.030	0.355
					(3.41)***	(1.83)*	(0.53)	(2.52)**
dem					-0.225	-0.192	0.355	-1.544
					(1.37)	(0.47)	(0.55)	(1.82)*
privinv	1.764	-0.018	4.284	4.665	1.019	-0.195	0.141	1.173
	(4.98)***	(0.02)	(2.04)**	(2.79)***	(2.22)**	(0.16)	(0.11)	(0.38)
tfp	0.333	0.215	0.379	2.089	0.231	0.253	0.437	2.600
	(3.57)***	(2.14)**	(2.01)**	(4.09)***	(2.14)**	(2.09)**	(1.72)*	(2.79)***
Constant	0.060	0.213	-0.183	-0.741	-0.285	-0.463	-0.565	-2.746
	(0.97)	(1.40)	(0.64)	(2.02)**	(1.86)*	(1.14)	(0.84)	(2.01)**
Number of chamistions	210	210	210	205	100	100	100	101
Number of observations	510	510	310	303	188	188	188	191
K ⁻	0.13	0.44	70	60	0.16	0.62	66	64
Number of countries	-	12	0 206	69	-	00	00	04
Server test 2/	0.390	0.390	0.390	-	0.034	0.034	0.634	-
Sargan test $2/$	-	-	0.233	-	-	-	0.604	-
AR (1) 2/	-	-	0.000	-	-	-	0.000	-
AK (2) 2/	-	-	0.476	-	-	-	0.744	-
Log of vraisemblance	-	-	-	-144.297	-	-	-	-86.324
χ^2 of variance test 3/	-	-	-	2.04*	-	-	-	10.01***

Note : The same as in table 2.

Real exchange rate, which I denote in my models by "RER" is obtained from CERDI dataset. I compute the five years average values of this variable over the 1960-2003 period. An appreciation of real exchange rate involves a loss of economic competitiveness, and consequently could exert a negative effect on EGS.

Size of Government, measured by government final consumptions in percent of GDP, is the second policy variable that I consider and is denoted "cons" in my models. This variable is obtained from WDI (2005) database, and covers the 1960-2003 period. I calculate its five years average values. An increase in government final consumptions can possibly involve inflation, likely to affect negatively economic competitiveness. So, a negative effect on EGS of government final consumptions is expected.

Table 10: Results of specific effects of political and economic institutions on growth sustainability controlling for private investment and tot	tal
factor productivity effects in developing countries sample	

	$\frac{OLS}{(1)}$			Fixed effect			GMM system		Probit with random effect			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
reg	0.044 (1.62)			0.120 (1.82)*			0.241 (2.56)**			0.395 (2.03)**		
prop		0.068 (3.49)***			0.087 (2.25)**			-0.047 (0.45)			0.376 (3.35)***	
dem			0.071 (0.54)			-0.108 (0.42)			-0.047 (0.09)		. ,	0.344 (0.69)
privinv	1.444 (3.46)***	1.170 (2.85)***	1.773 (4.87)***	-0.097 (0.12)	-0.295 (0.32)	-0.030 (0.04)	2.002 (1.53)	4.446 (2.00)**	5.366 (2.35)**	5.037 (1.68)*	2.693 (1.15)	6.508 (3.71)***
tfp	0.295 (2.83)***	0.242	0.325 (3.46)***	0.257	0.185	0.210	0.371 (1.88)*	0.299	0.260	3.753 (3.40)***	2.479 (3.11)***	2.146 (3.90)***
Constant	-0.128 (0.94)	-0.148 (1.47)	0.058 (0.98)	-0.278 (0.78)	0.048 (0.24)	0.281 (1.88)*	-1.004 (1.68)*	-0.089 (0.16)	-0.354 (1.25)	-1.875 (1.53)	-1.568 (2.53)**	-1.172 (3.42)***
Number of observations	228	220	305	228	220	305	228	220	305	228	220	305
R ²	0.12	0.14	0.14	0.57	0.54	0.43	-	-	-	-	-	-
Number of countries	-	-	-	70	69	71	70	69	71	70	69	71
Percent of observations 1/	0.539	0.559	0.403	0.539	0.559	0.403	0.539	0.559	0.403	-	-	-
Sargan Test 2/	-	-	-	-	-	-	0.126	0.509	0.215	-	-	-
AR (1) 2/	-	-	-	-	-	-	0.004	0.003	0.001	-	-	-
AR (2) 2/	-	-	-	-	-	-	0.761	0.276	0.528	-	-	-
Log of vraisemblance	-	-	-	-	-	-	-	-	-	-92.639	-93.410	-138.030
χ^2 of test variance3/	-	-	-	-	-	-	-	-	-	15.07***	6.61***	4.00**

Note : The same as in table 2.

Finally, I consider a variable of trade openness measured by *the sum of imports and exports in percent of GDP* and denoted "Open" in my models. This variable is obtained from WDI (2005) database for the 1960-2003 period, subdivided in sub-periods of five years. The effect of this variable on EGS, is ambiguous. Because an increase in exports can be perceived as a signal of a competitive economy, whereas an increase in imports competing with the local products can mean a loss of economic competitiveness.

Table 11: Results of combined and simultaneous effects of political and economic institutions

 on economic growth sustainability controlling for private investment, total factor productivity,

	OLS	Fixed Effect	GMM System	Probit (EA)	OLS	Fixed Effect	GMM System	Probit (EA)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
index	0.025 (1.43)	0.032 (0.99)	0.053	0.270 (3.47)***				
reg		()	()	()	0.017	0.159	0.209	0.276
prop					0.066 (3.30)***	$(2.26)^{**}$ 0.085 $(2.56)^{**}$	$(2.16)^{++}$ 0.012 (0.26)	(1.33) 0.301 (2.84)***
dem					-0.010	0.211	0.295	-0.100
privinv	1.844 (5.23)***	-0.471 (0.65)	-0.667	4.151 (2.74)***	1.122	-0.202 (0.22)	-0.429	0.878
tfp	0.451	0.362	1.279	2.370	0.376	0.429	0.592	2.858
rer	-0.014	-0.072 (2.60)***	-0.049	-0.009	0.006	-0.053	-0.031	0.068
open	-0.010	-0.206	-0.009 (0.03)	0.155	(0.31) -0.087 (0.82)	-0.413	-0.246	-0.179
cons	-0.865	-2.034	-1.142	-2.757	-0.771	-0.365	-0.684	-2.545
Constant	0.209 (2.25)**	0.893 (3.27)***	1.022 (2.76)***	-1.436 (3.19)***	-0.051 (0.29)	-0.334 (0.72)	-0.218 (0.41)	-2.221 (1.99)**
Number of observations	387	387	387	387	274	274	274	274
R ²	0.18	0.47	-	-	0.19	0.59	-	-
Number of countries	-	91	91	91	-	85	85	85
Percent of observations 1/	95%	92%	80%	-	96%	70%	80%	-
Sargan test 2/	-	-	0.140	-	-	-	0.158	-
AR (1)2/	-	-	0.000	-	-	-	0.001	-
AR (2)2/	-	-	0.682	-	-	-	0.642	-
Log of vraisemblance	-	-	-	-180.053	-	-	-	-123.425
χ^2 of variance test 3/	-	-	-	0.99	-	-	-	8.95**

and policies effects

Note : The same as in table 2.

		OLS			Fixed effect			GMM System			Probit with random effect		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
	0.055			0.126			0.170			0.284			
reg	0.055			0.136			0.1/9			0.384			
	(1.92)*	0.070		(2.23)**	0 101		(2.34)**	0.070		(2.41)**	0.204		
prop		0.062			0.101			0.069			0.304		
		(4.28)***	0.221		(3.43)***	0.102		(1.82)*	0.276		(3.84)***	0.752	
dem			0.221			0.102			0.376			0.752	
	1 550	1.0.50	(2.71)***	0.405	0.000	(0.44)	0.501	2 000	(1.43)	4.105	1 (12	(2.35)**	
privinv	1.759	1.258	1.609	-0.405	-0.323	-0.462	0.701	2.890	0.904	4.195	1.613	4.946	
2	(4.43)***	(3.09)***	(4.41)***	(0.54)	(0.38)	(0.60)	(0.39)	(1.27)	(0.58)	(1.89)*	(0.80)	(3.11)***	
tfp	0.462	0.377	0.426	0.433	0.327	0.363	0.899	0.617	0.922	3.151	2.448	2.357	
	(3.86)***	$(3.18)^{***}$	$(4.13)^{***}$	(3.83)***	(2.67)***	(3.40)***	(2.23)**	(1.97)**	(2.93)***	(4.90)***	(4.20)***	(5.18)***	
rer	-0.013	-0.004	-0.009	-0.064	-0.052	-0.076	-0.055	-0.003	-0.054	-0.075	0.028	-0.052	
	(0.74)	(0.20)	(0.48)	(2.28)**	(2.18)**	(2.63)***	(-1.14)	(0.06)	(0.91)	(0.55)	(0.21)	(0.54)	
open	-0.127	-0.074	-0.020	-0.377	-0.434	-0.245	-0.179	0.538	-0.245	-0.446	0.107	0.003	
	(1.28)	(0.78)	(0.26)	(1.30)	(1.34)	(0.96)	(-0.78)	(1.29)	(0.63)	(0.92)	(0.25)	(0.01)	
cons	-0.173	-0.938	-1.147	-0.214	-2.503	-2.169	-0.481	-3.444	-0.292	0.741	-4.229	-3.182	
	(0.33)	(1.80)*	(2.50)**	(0.20)	(1.83)*	(2.34)**	(-0.30)	(1.79)*	(0.20)	(0.26)	(1.61)	(1.44)	
Constant	-0.043	0.069	0.253	0.140	0.763	1.009	-0.008	0.047	0.682	-1.374	-0.771	-0.485	
	(0.27)	(0.63)	(2.86)***	(0.36)	(2.52)**	(3.76)***	(-0.01)	(0.10)	(2.10)**	(1.36)	(1.30)	(1.11)	
Number of observations	315	305	382	315	305	382	331	305	382	315	305	382	
R ²	0.18	0.19	0.19	0.56	0.54	0.46	-	-	-	-	-	-	
Number of countries	-	-	-	92	88	90	92	88	90	89	88	90	
Percent of observations 1/	96%	96%	95%	91%	85%	91%	81%	74%	79%	-	-	-	
Sargan Test 2/	-	-	-	-	-	-	0.684	0.271	0.237	-	-	-	
AR (1)2/	-	-	-	-	-	-	0.000	0.000	0.000	-	-	-	
AR (2)2/	-	-	-	-	-	-	0.820	0.866	0.779	-	-	-	
Log of vraisemblance	-	-	-	-	-	-	-	-	-	-141.327	-140.372	-181.822	
v^2 of variance test 3/	-	-	-	-	-	-	-	-	-	10.30***	5.27**	2.48*	

 Table 12: Results of specific effects of political and economic institutions on economic growth sustainability controlling for private investment,

 total factor productivity, and policies effects

Note : The same as in table 2.

Tables 11 and 12 indicate that, independently of the estimation method and the specification used, TFP positively and significantly affects the probability of EGS despite taking into account macroeconomic policies variables. In the same way, in tables 11 and 12, it appears that regulation institutions have an independent effect on EGS despite taking into account the effects of policies variables. Control for policies variables, does not change my principal results which therefore remain robust. Taking into account policies variables has as an effect, to involve a light fall but not to affect the significativity of the coefficients associated with TFP and regulation institutions.

An analysis of the coefficients of policies variables indicates that, they are in major part negative but no of them is significant when I correct for endogeneity and this whatever the specification used. This result is disappointing and worrying for two reasons: First, it indicates that macroeconomic policies such as they are implemented in the various countries of my sample, would not have independent effect on EGS. In other words, macroeconomic policies would have, at best an independent, very short term effect on economic growth. It is a disappointing result because the reduction of poverty requires sustained economic growth. The other worrying aspect of the absence of an independent effect of macroeconomic policies variables on EGS, is to reveal that the variables that political decision makers can affect quickly are not those which are likely to ensure EGS. Indeed, institutions are the ones that have positive and significant effect on EGS, but political decision makers can not or are not ready to change quickly the institutional framework in the various countries.

The analysis of EGS characteristics indicates that developed countries that in general have "good" institutions have much more chance than underdeveloped countries, to experience EGS in my sample, over the 1960-2003 period. I make the assumption that "good" institutions are necessary for EGS. The empirical analysis seems to confirm my assumption. I will present a case study, to illustrate the effect of "good" institutions on EGS.

6. Case study

My case study is based on the comparison of three African economies: Botswana, Ivory Cost, and Ghana²⁶ and consists in comparising of their institutional qualities and their economic performances in terms of EGS.

 $^{^{26}}$ I recall that these three African countries are economies with rents, that Botswana is a landlocked country, contrary to Ghana and Ivory Cost. Botswana is a southern African country exporting diamond, contrary to Ghana and Ivory Cost, which are from west Africa and export cocoa and coffee. The choice of these three countries for my study case is based on a study of *Acemoglu et al.* (2003) who compare the institutional performances of these three countries and propose explanations on the causes of their institutional performances differences.

Countries	Periods	Sustained	High Sustained	Regulation 1/	Property	Democracy 3/	Constraint on exécutive 4/	
		Growth	Growth		Right 2/			
	61-64	Yes	Yes					
	65-69	Yes	Yes				5.0	
Botswana	70-74	Yes	Yes			2.3	5.0	
	75-79	Yes	Yes	6.3		2.0	5.0	
	80-84	Yes	Yes	6.9	6.3	2.0	5.0	
	85-89	Yes	Yes	5.9	6.3	1.6	6.0	
	90-94	No	No	6.1	6.4	1.6	6.0	
	95-99	Yes	No	7.0	6.8	2.0	7.0	
	00-03	Yes	Yes	7.3	7.0	2.0	7.0	
-	-	1		1				
Ivory Cost	61-64	No	No				1.0	
	65-69	No	No			6.0	1.0	
	70-74	Yes	No			6.0	1.0	
	75-79	No	No	6.2		6.0	1.0	
	80-84	No	No	5.8	5.7	5.6	1.0	
	85-89	No	No	4.9	4.8	6.0	1.0	
	90-94	No	No	5.1	5.4	6.0	2.0	
	95-99	No	No	5.4	3.9	6.0	2.0	
	00-03	No	No	5.5	3.5	5.8	3.0	
	-	1		1				
Ghana	61-64	No	No				1.0	
	65-69	No	No				0.0	
	70-74	No	No			6.6	3.0	
	75-79	No	No	5.3	2.8	5.8	2.0	
	80-84	No	No	4.4	2.7	5.6	2.0	
	85-89	Yes	No	4.7	5.8	6.4	1.0	
	90-94	Yes	No	5.7	5.6	5.0	1.0	
	95-99	Yes	No	5.9	4.4	2.8	4.0	
	00-03	Yes	Yes	6.0	4.6	2.0	6.0	

Tableau 13 : Comparison of performances of Botswana, Ivory Cost and Ghana

Note: 1/2/ Indicate the averages of respective values of the indexes of regulation and private property rights protection institutions obtained from Fraser Institute on the web site: http://www.freetheworld.com. The values of these indexes vary in an increasing way between 0 and 10, a low value indicates a low quality of regulation and property rights protection institutions.

3/ These figures are the averages of the values of democracy index as calculated by Freedom House and obtained from the web site: http://www.freedomhouse.org. The value of this index varies in a decreasing way between 1 and 7, a high value of this index indicates weak democratic institutions.

4/ These figures are the averages of the values of constraint on executive index calculated by Polity IV and obtained from the web site : http://www.cidcm.umd.edu. The value of this index lies between 0 and 7. A high value indicates the existence of real politico-institutional constraints on the executive.

Through table 13, it appears that the most efficient country among the three, in term of EGS is Botswana. Over the 1960-2003 period, Botswana has experienced sustained economic growth during 8 five-year terms over 9, and during 6 consecutive five-years terms, Botswana experienced high sustained growth. Over the 9 five-year terms, only the 1990 decade was not that of high sustained economic growth in Botswana. Contrary to Botswana, Ivory Cost experienced sustained economic growth only during the 1970-1974 period, and any period of high sustained economic growth. As for Ghana, it experiences sustained economic growth since 1985, and high sustained economic growth, during the last five-year term. Why this difference of performances between these three African economies?

The success of Botswana compared to Ghana and Ivory Cost in term of EGS is due to the quality of its institutions. Indeed, as we can observe in table 13, in term of political institutions -democracy and constraint on executive-, as well as in term of economic institutions -property rights protection and regulation-, the quality of institutions in Botswana is better than in Ghana and in Ivory Cost, whatever the considered sub-period. *Acemoglu et al. (2003)* argue also that the good economic performance of Botswana, compared to other African economies in general, is due to the quality of institutions in Botswana.

During each sub-period, it is in terms of political institutions that the superiority of Botswana institutional quality compared to Ivory Cost and Ghana, is clearly observed. However, it is especially in term of regulation institutions that the advantage of Botswana, is better maintained and reinforced over time. This is an illustration of a significant role of regulation institutions in Botswana EGS.

The importance of regulation institutions can also be put forward, by comparing the performances of Ghana and Ivory Cost. As we can note it, from 1985, Ghana records sustained economic growth but also a beginning of an improvement of its various institutions especially regulation ones, compared to Ivory Cost. Contrary to property rights protection institutions, regulation institutions have been continually improved in Ghana since 1985. This is also an illustration of the role of regulation institutions in Ghana EGS.

This case study, illustrates that the existence of "good" institutions is necessary even essential for EGS and corroborates, the results from the analysis of EGS characteristics and from the empirical analysis of EGS.

7. Conclusion

In this paper, I study the effect of institutions on economic growth sustainability (EGS), in opposite to most of works that are interesting in the effect of institutions on the level of per capita income, on economic growth, or on the changes of economic growth regimes. I support that "good" institutions by allowing the development of private investments, induce an improvement of TFP which is necessary for EGS. My theoretical arguments reconcile two economic approaches of institutional analysis, and allow me to test the effect of various institutions, as well as distinguishing the most important institutions for EGS.

The results of econometric estimates indicate a positive and significant effect of an *index of politico-economic institutions* on EGS. This index is a proxy for the general level of institutional quality and measures the combined effect of political and economic institutions. In the same way, my results show that an improvement of the respective quality of democratic, property rights protection, and regulation institutions is favourable to EGS. This shows that all the institutions are necessary for EGS. However, among all the institutions, that of economic activities regulation seems the most important for EGS, because it is the effect of regulation institutions that remains significant when taking into account the simultaneous effect of the various institutions. The persistent effect of regulation institutions despite considering the simultaneous effect of various institutions, is due to the fact that an efficient economic activities regulation could favour the entry on the market of new investors, more innovative and more dynamic. This market entry of TFP.

In addition, I obtain a positive and significant effect of TFP on EGS. This effect of TFP is due to its favourable effect on economic competitiveness. The effect of regulation institutions on EGS remains despite considering private investment and TFP effects. This indicates an independent effect on EGS of regulation institutions. The independent effect of regulation institutions could be due to the complementarity between private investments, which would result from the entry on the market of new investors exploiting new sectors complementary to the sectors already exploited. This complementarity between private investment of private investment of EGS.

I also obtain a positive and significant effect of property rights protection institutions on private investment and this, despite considering the positive and simultaneous effects of the various institutions on private investment. My principal results -positive and significant effects of TFP and regulation institutions, on EGS probability- remain robust to alternative methods of estimate, to the retained samples, to the use of other institutional quality indexes, to the use of a criteria of high economic growth sustainability, and to the consideration of macroeconomic policies effects.

Through my econometric results, the following economic growth strategies can be suggested. First, ignite economic growth by ensuring the protection of private property rights, to create markets and to favour the development of private investment. This proposition is based on the fact that, I show that property rights institutions are more favourable to the development of private investment, which is favourable to economic growth as it is often admitted in the economic literature. Second, implement institutions which guarantee an efficient regulation of economic activities in order to make sustainable economic growth, by favouring the entry on the market of more dynamic and more innovative private investors. To ensure the sustainability of high economic growth, in addition to regulation institutions, it

is also necessary to ensure the development of democratic institutions or other political systems reducing the risk of distorsive policies implementation.

Thus, my results point out a suitable role of various institutions for EGS. This is coherent with the idea defended initially by *Gerschenkron (1962)* for the suitable role of various institutions in the process of economic development, and highlighted recently by *Acemoglu et al. (2004)* concerning the role of institutions in technological innovations and technological adoptions.

This study opens tracks for new researches. For growth economists, it would be interesting to study other mechanisms through which TFP affects EGS, as I suppose that one of this mechanism is the gain of economic competitiveness. For institutionnalists economists, studies of the effects of regulation institutions on the entry of new investors on the market, like on the complementarity between private investments, and on technological innovations could be interesting tracks of research. In the same way, it is necessary to know why some countries do not have "good" institutions and how to manage to ensure the emergence of "good" institutions in these countries.

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Appendix 1: List of Countries

Albania, Algeria, Argentina, Australia, Austria, Bahamas, Bahrain, Bangladesh, Barbados, Belgium, Belize, Benin, Bolivia, Botswana, Brazil, Bulgaria, Burundi, Cameroon, Canada, Central Africa, Chad, Chile, China, Colombia, Congo Democratic, Congo Republic, Costa Rica, Côte d'Ivoire, Croatia, Cyprus, Czech Republic, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Fiji, Finland, France, Gabon, Germany, Ghana, Greece, Guatemala, Guinea Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungry, Iceland, India, Indonesia, Iran, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kenya, Kuwait, Latvia, Lithuania, Luxembourg, Madagascar, Malawi, Malaysia, Mali, Malta, Mauritius, Mexico, Morocco, Myanmar, Namibia, Nepal, Netherlands, New Zeeland, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Panama, Papua New, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Russia, Rwanda, Senegal, Sierra Leone, Singapore, Slovak Republic, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Syria, Tanzania, Thailand, Togo, Trinidad, Tunisia, Turkey, Uganda, Ukraine, United Emirate , United King, United State, Uruguay, Venezuela, Zambia, Zimbabwe.