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Analysis of the relationship between institutional quality, natural resources and economic growth

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Analysis of the Relationship between Institutional Quality, Natural Resources and Economic Growth

por:
Carlos Andrés Díaz Valdivia y
Javier Aliaga Lordemann

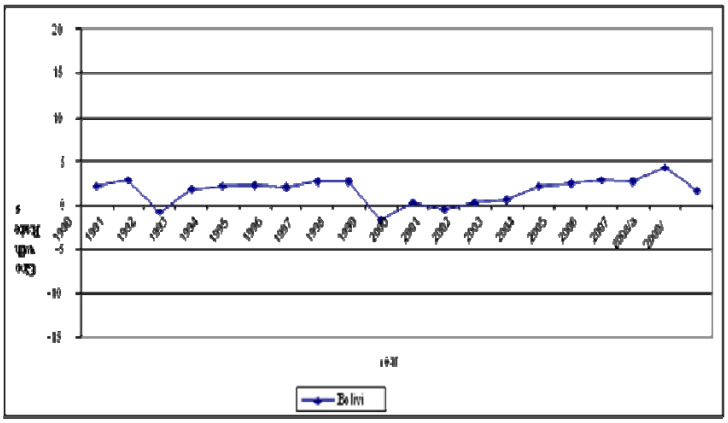
Analysis of the Relationship between Institutional Quality, Natural Resources and Economic Growth

Background

Throughout its history, Bolivia has traditionally been a country exporter of natural resources, mainly minerals and hydrocarbons. The historical exporting overview of Bolivia can be drawn in three stages. First, Bolivia exported silver until the early twentieth century. In a second stage, it exported tin until the 1980's. And currently, it exports natural gas and a variety of minerals.

Like Bolivia, many other countries in the world, such as Chile, Norway, Nigeria, Venezuela and Yemen, have followed the same extractive growth pattern based on the export of natural resources. However, even though Bolivia has exceptional natural resource exports, its growth rates and economic performance have been very poor throughout its history in comparison to other countries.

Figure 1: Growth rates of GDP per capita at constant prices: Bolivia (in porcentages)



Source: CEPAL

In the case of Bolivia, although growth has been stable since the 1990's to date, growth rates have ranged between 2% and 5% and have been insufficient to significantly improve living standards of the population. A clear example of Bolivia's economic performance under the context of a natural resource export economy can be seen in Table 1. This table shows the average annual and cumulative growth of GDP per capita in various countries between 1950 and 2000. The country with the lowest growth rate is Bolivia. According to the country study "Strengthening the growth to increase employment" made in Bolivia by the World Bank in 2006, Bolivia has had a cumulative decline of GDP per capita of 1% in the last 50 years. Comparing the performance of other countries, Bolivia's growth is, at the very least, worrisome.

***Table 1*:**
Real GDP per capita growth for selected countries (1950-2000)[1]

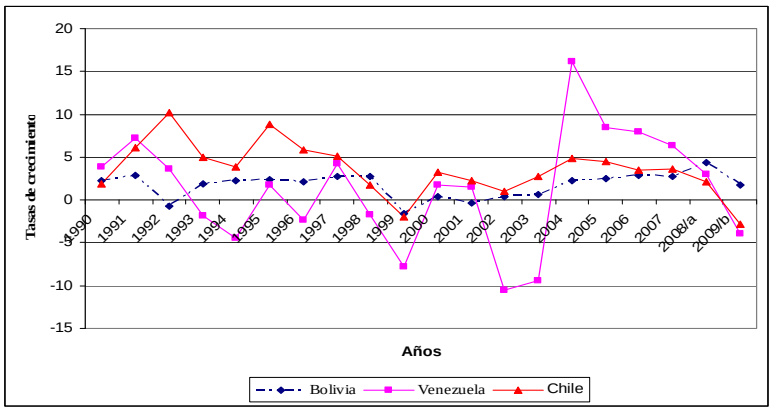
Develping Countries			Industrialized Countries		
	Average Anual Growth	**Cumulative Growth, 1950-2000**		**Average Anual Growth**	**Cumulative Growth, 1950-2000**
Argentina	1,1%	73%	Australia	2,1%	183%
Bolivia	-0.02%	-1%	Austria	3,5%	458%
Brasil	3%	338%	Belgium	2,8%	298%
Chile	2,2%	197%	Canada	2,2%	197%
Colombia	1,8%	144%	Denmark	2,3%	212%
Costa Rica	1,7%	132%	France	2,9%	318%
Ecuador	1,5%	111%	Ireland	3,7%	515%
Mexico	2,2%	197%	Italy	3,4%	432%
Paraguay	1,4%	100%	Japan	4,9%	993%
Peru	1,2%	82%	Portugal	4%	611%
Uruguay	1,2%	82%	Norway	2,9%	318%
Venezuela	0,2%	11%	Spain	3,8%	545%
South Korea	5,4%	1287%	Sweden	2,3%	212%
Taiwan	6,3%	2022%	United Kingdom	2,2%	197%
Thailand	3,9%	577%	United States	2,3%	212%

Source: World Bank, calculated over Penn World Tables

Issue

There is a firm idea that countries with large reserves of natural resources have a great advantage over countries with limited natural resources. This is due largely to the idea that natural resource abundance would increase the wealth of a country and its purchase power, and it is expected that investments, and therefore growth rates, would also increase in the long term. However, this does not happen in reality; on the contrary, there seems to be evidence that resource abundance is a brake on economic growth.

Figure 2: Growth rates of GDP per capita at constant prices: Bolivia, Venezuela and Chile (In percentages).



Source: CEPAL

[1] Fretes-Cibils, Vicente y Carrizosa, Mauricio. Redoblando el crecimiento para multiplicar el empleo (2006). Banco Mundial. Pág. 42.

Sachs and Warner (1995), in their work "Natural Resource Abundance and Economic Growth," empirically demonstrate this theory by analyzing the case of 20 countries with large natural resources exports (oil, mining and agriculture) in proportion to their GDP. The authors concluded that abundance of natural resources depresses growth. What remains now is the question: Why do countries with large exports of natural resources, like Bolivia, have such low growth rates?

While the theory on "the natural resources curse" proposed by Sachs and Warner explain, at first glance, cases like Bolivia or Venezuela, when analyzing the performances of other countries with similar characteristics, like Chile or Norway, more questions arise. Chile is the country with the highest levels of human development and higher growth rates in the region. Yet, over 50% of its exports respond to the exploitation of copper, making it the largest copper exporting country in the world.

Moreover, in 1960, Norway was lagging behind with lower growth rates compared to its peers, Denmark and Sweden. However, in 1970, Norway found large reservoirs of oil and in nearly 20 years managed to overcome all of the Scandinavian countries, thus achieving the highest standards of living and GDP per capita of the Scandinavian region[2].

Thus, the conclusions of the work of Sachs and Warner do not apply to all economies with abundant resources. In this sense, it is demonstrated that there is a dichotomy in the performance of economies with abundant natural resources. On the one hand, economic performances based on the exploitation of these resources can achieve high growth and major development rates (Norway or Chile). On the other, similar extractive patterns can result in low growth rates and impoverished development (Bolivia or Venezuela).

And so, more questions arise: Why do some economies rich in natural resources seem to progress so much more than others? To answer this question, Erling Røed (2004), in his work "Escaping the Resource Curse and the Dutch Disease? When and Why Norway Caught up with and Forged ahead of Its Neighbors," explains that the structure of institutions, both political and economic, are fundamental for the growth of any country. The author emphasizes that these institutions are even more important in countries where there is a large flow of income from the exploitation of natural resources.

In the last decades, there has been a renewed interest in the role that institutions play in economic performances. Douglass North, one of the most important proponents of institutional economics in recent times, explains that institutions are the rules that exist in a society. More formally, they are the constraints devised by human beings that shape human interactions. According to the author, these institutions structure the incentives under which exchanges take place in society. Conclusively, institutional change determines the way societies evolve throughout time, and are therefore significant to explain the growth patterns of a country[3].

Institutional Economics: North's Model

Institutions:

Institutions are the rules that govern a society, or put another way, they are the constraints devised by mankind that shape human interaction. Consequently, these institutions structure

[2] Røed Larsen, Erling. Escaping the Resource Curse and the Dutch Disease? (2004). Statistics Norway, Research Department.

[3] North, Douglass. Institutions, Institutional Change and Economic Performance (1990). Cambridge Univerity Press. Pag. 3

incentives in exchange, whether political, social or economic. Conclusively, institutional change determines the way societies evolve throughout time, and are therefore significant to explain behavioral patterns of a country. Still, current economic theory has not yet created an analytical framework that allows an integration of the analysis of an institutional structure's role on economic performance. In this regard, North (1990)[4] provides a brilliant framework that links institutions and economic development.

Institutions reduce uncertainty, since they provide a structure for daily living. They are guidelines for human interaction and vary according to countries. These institutions can be formal, such as laws and regulations, or informal, such as customs and codes of behavior. Institutional constraints determine what individuals are prohibited from doing, and under what conditions we can perform certain activities. Therefore, institutions are the framework under which all human interactions are generated. A key aspect of institutional functioning is the ability to detect violations to these norms, and the severity with which they are punished.

It should be noted that there is a difference between institutions and organizations. We might say that institutions are the rules of the game, while the organizations are the players – we must differentiate the rules from the players.

The institutional framework determines the existence of such organizations and how they evolve over time. In turn, a cycle is created, in which organizations determine the manner in which the institutional framework is developed over time. Therefore, it is necessary to emphasize the interaction between institutions and organizations.

Meanwhile, the main role of institutions is to reduce uncertainty by providing a stable structure (not necessarily an efficient one) for human interaction. The fact that institutions are stable does not mean they do not change. In fact, institutions are in a constant process of change, which is complicated because it involves changes in laws, informal rules and in the compliance with these norms.

However, although formal rules of a society can be changed quickly as a result of political or judicial decisions, the informal constraints of a society are rooted in the culture and customs, and are much more difficult to transform. These cultural constraints connect past, present and future, and are therefore essential for explaining a historical pattern of behavior.

In this sense, there are several historical patterns that have shaped the course of various societies and their known differences. An example of this is the economic performances of Chile and Bolivia that we noted above. Thus, the fact that there are rich and poor economies, or developed and developing countries, is party a consequence of these institutional patterns.

According to North, the explanation focuses on the differences between institutions, organizations, and the relationship between these, since they determine the direction of institutional change. Institutions, along with basic ideas of economic theory, determine opportunities in a society. Organizations are created to exploit these opportunities, and as organizations evolve, institutions do as well. Thus, the pattern of institutional change is determined by: (1) the relationship between institutions and organizations, in which the latter evolve as a result of the incentives provided by the institutions, and (2) the feedback process whereby individuals perceive and react to changes in their range of opportunities.

The incentives granted by the institutional framework in many of the underdeveloped economies are now characterized by political and economic opportunities directed toward activities promoting redistribution and creation of monopolies at the expense of promoting

[4] Douglass North. Institutions, Institutional Change and Economic Performance (1990). Cambridge University Press.

productive and competitive activities. This situation, instead of creating greater opportunities for individuals, restricts them. Consequently, organizations that are formed in this institutional framework end up creating a less productive society.

Human Behavior and Institutions

While economic theory based on rational behavior has achieved numerous successes in explaining the economic phenomenon, it is deficient in explaining human behavior. In this sense, there two important points to consider: (1) Motivation is key in the description of human behavior, since the individual not only acts with a maximizing attitude, as there are also incentives of justice, free riding, etc. (2) The environment of the individual, because individual models are subjective, and since they are made with incomplete information, there is a need to create patterns of interaction that allow us to mitigate the uncertainty and complexity of the world. These patterns are called institutions.

Transactions Costs

Economic theory, from Smith to this day, does not introduce into its models the costs involved in the exchange process. The institutions theory that is being exposed is based on the theory of human behavior that we discussed above and the theory of transactions costs that will be presented next. The key in transactions costs are the costs of information. The latter include: (1) measurement costs, which refer to the costs associated with the determination of the attributes of what is actually being settled and; (2) the costs incurred in the protection of property rights and the monitoring of such agreements (compliance with the norms). These measurement and monitoring costs are the basis of social, political and economic institutions.

As these transaction costs are part of the productions costs, it is necessary to modify the production relation. The total productions costs are comprised of: (1) the spending on inputs of land, labor and capital oriented towards the physical transformation of an asset and; (2) transaction costs, protection, identification and compliance of the property rights set on such asset. Thus, production costs are the sum of transformation and transaction costs.

An important aspect of transaction costs focuses on the costing of measurements. Because the exchange value is the sum of the different and varied attributes encompassed in a good or service, there is a cost in measuring and determining such attributes. In a more general way, we can say that the commodities, services and performances of people have many attributes, and these vary from agent to agent. The measurement of these attributes is expensive, and it is reflected in the costs of information. As there are many information asymmetries between agents, the combination of these and the human behavior noted in the previous section have important implications for economic theory and the study of institutions.

Measuring costs along with monitoring costs determine transaction costs. Measurement costs are defined by the variety of attributes that a good may have. Since resources are destined to quantify these attributes, the implementation of monitoring mechanisms is needed in order to ensure that these attributes are met. This monitoring can occur through codes of conduct, social sanctions, or legal norms.

If there is no strong institutional base that frames all of these costs, individuals may fear that the agent with which they are dealing may or may not comply with the agreement, so they may feel the need to terminate any kind of exchange.

Informal Constraints

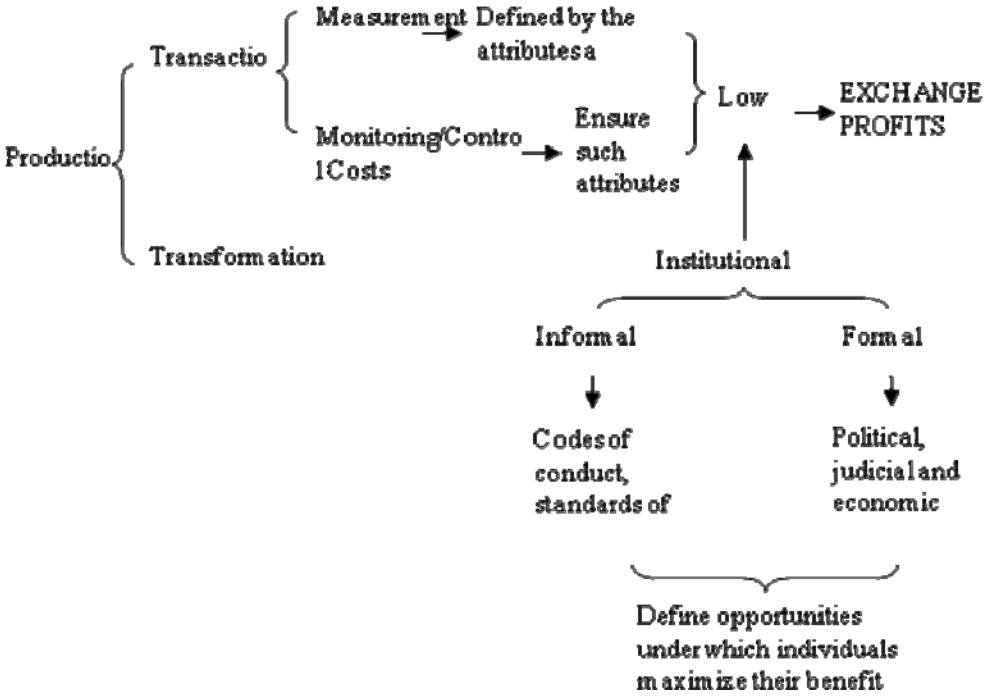
A lot of the times we believe that the economy is ruled by formal norms (laws). However, these formal norms are only a small part (albeit an important one) of all the limitations that exist in our society. Thus, we can see that all human interaction is governed by informal rules. These rules are codes of conduct, standards of behavior and customs. These informal rules are the guidelines for our choices in daily interactions. It would be a mistake to identify such rules as mere appendages to formal norms, since they are part of the cultural heritage of a society.

By making a little introspective, we can see that the omnipresence of these rules is unquestionable. Since these constraints are mechanisms that facilitate human interaction, we can say that: (1) they are extensions, modifications or foundations for formal rules, (2) they are socially sanctioned norms of behavior and, (3) they are internal forces that dictate conduct standards.

Formal Constraints

The difference between formal and informal constraints is one of degree. Formal constraints are based on constitutions and laws, whereas informal ones encompass customs, taboos and traditions. Formal rules can complement and increase the effectiveness of informal constraints. Such limitations may also reduce information, monitoring and control costs. At the same time, formal rules can be enacted to amend, revise or replace informal constraints.

***Diagram 1*: Institutions and Production Costs**



Source: Own elaboration

Enforcement and Monitoring

Monitoring or enforcement mechanisms are deficient in a way that affects transaction costs and in the ways in which contracts are made. The inability to develop effective and low cost implementation mechanisms of monitoring or enforcement mechanisms is the most important reason of stagnation and underdevelopment of countries. In this sense, when measurement costs are high and there are no performance guarantees, incentives to cheat, defraud or violate the agreements outweigh the incentives for cooperative behavior. For this reason, it becomes clear that in order to create profit count with cooperative behavior in exchange, the existence of a third agent (like the state) that provides for efficient implementation is necessary.

In developed countries, there are legal mechanisms that give agents full confidence that results will not be determined by private interests. In contrast, in developing countries, where institutions are weak, the implementation and enforcement of these mechanisms is defined by an uncertain environment characterized not only by legal loopholes, but also by biased behavior of a the state along with corruption.

Institutions, Transaction and Transformation Costs

Now that we have analyzed the relationship between institutions, transaction costs and exchange, let us see what the relationship between institutions and production of goods and services is. In economies in which institutions are inefficient, the effects are not limited to increased transaction costs. They extend to using technologies with minimal fixed capital that do not involve long-term agreements, all this due to the insecurity in property rights.

By comparing the transaction costs of developing and developed countries, we can see that the costs are much higher in the former. This happens because the institutional structure in these countries lacks a formal structure that underpins efficient markets. However, in these underdeveloped economies, there are informal sectors that provide a structure for exchange. This causes a big problem, since this structure is characterized by high costs that impede trade, and it then becomes the institutional setting that establishes the basic structure for production that tends to perpetuate underdevelopment.

The companies responsible for production arise thanks to the incentives defined by the constraints in the economy. When property rights are insecure, law enforcement is poor and barriers to entry and monopolistic restrictions exist, companies tend to have short term prospects, minimum fixed capital and very small scale. Under these circumstances, the most profitable activities are the ones devoted to the redistribution of wealth, or the black market. The only large companies with considerable fixed capital function under the shadow of the state, in which protection, subsidy and inefficiency take place.

Institutions Theory and the Resource Curse

To further understand the role of the quality (efficiency) of the institutions, we need to focus on the struggle that exists between the production and the special forms of profit-seeking. In order to do this, we will explain the Mehlum, Moene and Torvik model[5]. This model asserts that any form of rent-seeking is always harmful to economic growth, but not in the same degree. Thus, we will discuss two cases: (1) the case in which production and profit-seeking are competitive activities, and (2) the case in which they are complementary activities.

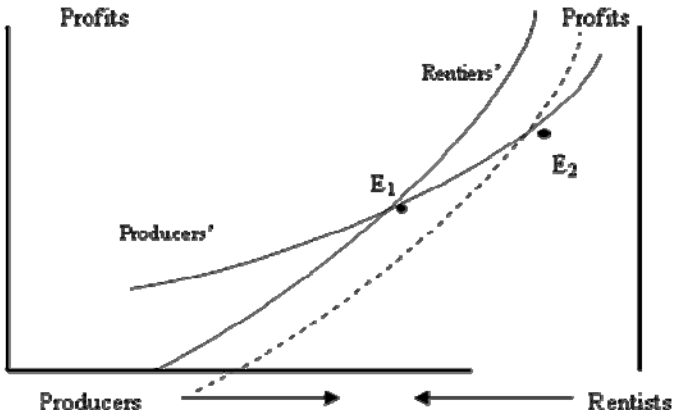
[5] Mehlum, Halvor; Moene Karl y Torvik Ragnar. Cursed by resources or institutions (2006). The World Economy Journal.

Production and rent-seeking activities are competitive if: (a) the most effective profit-seeking activities are outside the economy's productive apparatus and (b) they are in the hands of politicians and policy makers. In this case, profit-seeking activities will actually be profitable if the institutions are of poor quality or inefficient. For example, democracies with dysfunctional growth allow the political appropriation of resources, the lack of transparency allows corruption, weak property rights allow eminent domain, etc. All these forms of misuse of wealth are possible because of poor quality institutions, or the so-called "lawbreaker institutions."

When institutions are lawbreaker, it becomes a disadvantage to be a producer looking for income from natural resources. In contrast, when institutions are of better quality, or "protective," it is difficult to obtain profit unless there is a real producer. In this sense, the rule of law, good quality bureaucracy and low corruption in government would ensure that the pursuit of income from natural resources happens for legitimate reasons. In this case, production and profit-seeking activities are complementary.

Figure 3 shows how the returns of producers and rent-seekers are related to the decision that entrepreneurs make about whether to be producers or rent-seekers. The X axis of this graph represents the total number of entrepreneurs in the economy. From left to right, the axis shows the number of entrepreneurs who choose to be producers, and from right to left, it shows the number of entrepreneurs who decide to be rentists. The Y axis shows the levels of profit or return. For producers, the only way to generate more revenue is by increasing the number of producers, as this increases the demand. Alternatively, the only way for rentists to take higher profits is for the number of rentists to be reduced, i.e. for a portion of the rentists to become producers.

***Figure 3*: Business Decisions**



We assume that the yield curve of rentists is steeper than the yield curve of producers. We make this assumption because it is much more harmful to rentists than to producers that a producer becomes a rentist. This happens because the returns of rentists are inversely related to the numbers of rentists in the economy. Another important aspect is the point of intersection between the two curves, E_1. This point shows the situation in which there is no incentive of being a producer or a rentist. This point is a state of equilibrium.

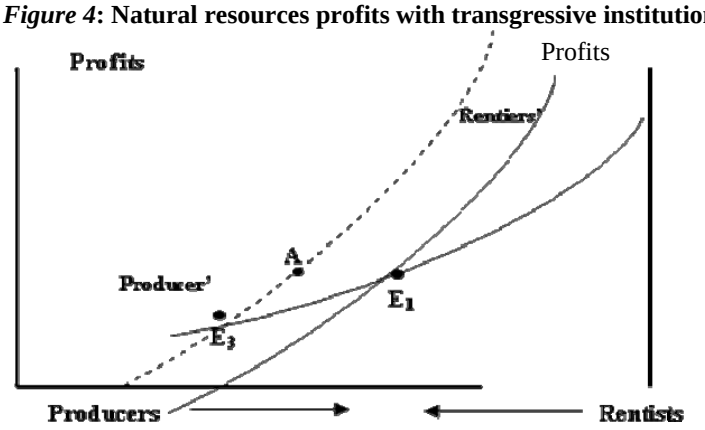
Point E_2 shows the situation in which there are more producers and fewer rentists, but both have a higher return. This is the effect of institutional change that restricts the rentist activity. Paradoxically, the remaining rentists are in a better financial position. The reason for

this is that an institutional change encourages rentists to become producers. This reduces the numbers of rentists in the economy, but increases their profitability.

- **Transgressive Institutions**

Let us now consider an economy that finds large reserves of natural resources. Under a transgressive institutional context, these resources become a new source of income for rentists, thereby displacing the yield curve of rentists up.

***Figure 4*: Natural resources profits with transgressive institutions**

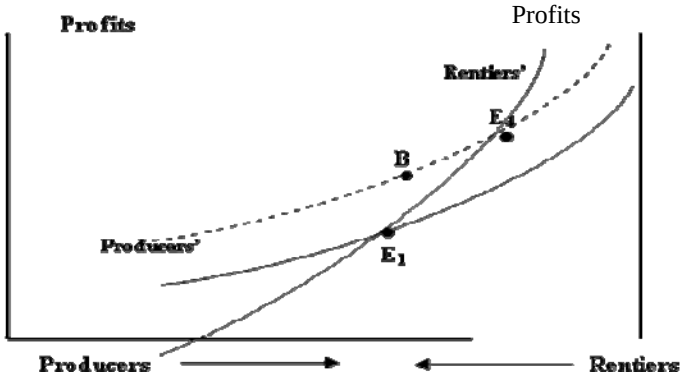


The equilibrium point moves to E_3, in which there are more rentists, less producers and lower profits for everyone. Thus, we are faced with a natural resource curse, in which the discovery of new natural resources leads to a worse situation because it reduces income and profit for all. This paradox is explained due to the fact that the discovery of new resources reduces production and reduces the opportunity cost of being a rentist. The discovery of new resources encourages producers to become rentist.

This is reflected in point A, in which the producers' return has dropped beyond its original level, which is why the rentist's return is still higher than that of the producers. With poor quality institutions, more resources attract more people to become rentists, eliminating even more the incentives to produce.

- **Protective Institutions**

***Figure 5*: Natural resources profits with protective institutions**

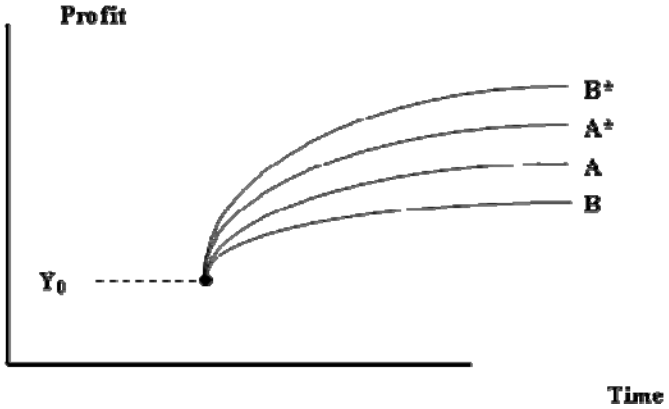


Let us now consider the opposite case, in which there are good quality institutions that protect the producers. The discovery of new natural resources provides a new financing source for producers, which increments the profits for producing.

Figure 4 shows that, after discovering new natural resources, the equilibrium moves to point E_4, where we find more entrepreneurs and fewer rentists. An interesting aspect is that the total increase of profit is much larger than the return of resources from the new reserves. The profit rise from these new resources is reflected in the distance $E_1 - B$. However, these revenues are even more increased (point $B - E_4$) because as there are more producers, profits increase, which attracts more producers. When a country has good quality institutions, natural resources stimulate production, and therefore, growth.

- **Growth Patterns**

Figure 6: **Growth Patterns**



For a better illustration of the implications of the model on growth patterns, let us simulate four countries. Country A is a country with low natural resources and transgressive institutions. Country A* is a country with low natural resources and protective institutions. Country B is a country with plenty natural resources and transgressive institutions. Country B* is a country with plenty natural resources and protective institutions.

We assume that all four countries have an equal initial income level Y_0. In previous graphs, we have proven that countries with good quality institutions have higher performances than countries with poor quality institutions. And so, we can see that Country B* has a higher growth pattern than Country B.

Given that in a country with poor quality institutions and large reserves of natural resources, these resources turn into a curse, we can see that:

Starting at point zero, in which all incomes are equal, a country with no resources, like Country A, will have a higher growth pattern than a country with plenty of resources, like Country B. However, when countries have good quality institutions, the performances change. Country B* has a higher growth pattern that country A*. In this model, countries with plenty of natural resources become either big winners, or big losers (B* and B).

Panel Data

This section will focus on the empirical testing of theories previously developed by panel data estimation. In this sense, we will try to find and quantify, through an econometric analysis, the

impact of institutional quality on economic growth in countries with intensive natural resource exports, such as Bolivia. The analysis period covers 13 years, from 1995 to 2007.

Once the main countries producers of natural resources were identified, their quality as "intensive exporters of natural resources" was verified. Following Sachs and Warner (1995), we define that a country is an intensive exporter of natural resources if the percentage of its exports of natural resources (minerals and hydrocarbons) represents at least 10% of its GDP.

Finally, the availability of statistical data was checked. At this point, twenty-five out of twenty-eight countries were selected: Saudi Arabia, Australia, Bahrain, Bolivia, Cameroon, Canada, Chile, Ecuador, Indonesia, Iran, Kazakhstan, Kuwait, Libya, Malaysia, Mongolia, Nigeria, Norway, Oman, Peru, Qatar, Russia, Syria, Trinidad and Tobago, Venezuela and Yemen.

Variables Specification

In order to obtain a consistent and coherent estimation, the variables used in this panel data estimation have all been obtained from a common source, thus guaranteeing information homogeneity. The following is a summary of the variables used.

The governance indicators were drawn from statistical information in The Worldwide Governance Indicators (WGI) Project[6], dependant of the World Bank. This project succeeded in formulating six aggregated indicators for 212 countries to assess key aspects of governance. In this context, governance is defined as "the traditions and institutions by which the authority in a country is executed."[7] Since these indicators measure critical aspects of what "traditions and institutions of a country" are, they are considered a valid approximation to institutional quality in each country. In consequence, we will assume that such indicators reflect institutional quality from the different angles that will be explained below.

Table 2: **Variables Summary.**

Dependant variable	**Explanatory variables**				
Real GDP growth	**Natural Resources Exports**	**Investement**	**Public Spending**	**Governance Indicators**	**Population**
Variables description					
Gross domestic product per capita growth, in real terms. For each sample country. 95-07 period.	Exports of natural resources (oil and mining) as a percentage of GDP. For each sample country. 95-07 period.	Fixed investment as percentage of GDP. Result of the sum of gross capital formation and changes in inventories. For each sample country. 95-07 period.	Public spending as percentage of GDP. For each sample country. 95-07 period.	Six governance indicators to evaluate aspects related to institutional quality. For each sample country. 95-07 period.	Total population. For each sample country. 95-07 period.
Source: FMI-IFS	Source: IFS, WTO	Source: IFS	Source: IFS	Source: BM-WGI	Source: Unicef

The first two indicators evaluate the processes under which governments are elected, monitored and changes. These indicators are: (1) Free Speech and Accountability, which measures the degree in which the country's citizens can participate in the selection of government, as well as freedom of speech, freedom of association and freedom of press. (2)

[6] http://info.worldbank.org/governance/wgi/index.asp

[7] Kaufmann, Daniel; Kraay, Aart y Zoido-Lobaton Pablo. Governance Matters (1999). World Bank Institute.

Political Stability and Absence of Violence, which measures the perception of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means in a given country. In this regard, Laserna (2005)[8], in his study of rent-seeking in Bolivia, shows that the state's institutional weakness and its inability to establish and safeguard the rights of the individuals are key sources of rent-seeking. This rent-seeking, as the author asserts, is a consequence of major social conflicts. Therefore, the existence of social conflicts can be interpreted as rent-seeking activities against a weak institutional framework, as it was mentioned earlier. These indicators have a range of ratings between -2.5 to 2.5 (2.5 representing political stability and perfect absence of violence), and negative values for this indicator represent an inefficient institutional structure.

Indicators three and four evaluate a government's ability to formulate and implement policies. These indicators are: (3) Government Effectiveness, which measures the quality of public services and public administration as well as their degree of independence from political pressure. On top of this, it measures the quality to formulate and implement policies, as well as the credibility for the government's commitment to respect such policies. (4) Regulatory Quality, which measures the government's ability to formulate and implement policies and regulations that allow for, and promote private sector development.

As it was mentioned earlier, incentives granted by the institutional framework in many underdeveloped economies are now characterized by political and economic policies directed towards redistribution. On top of this, these policies induce to the creation of state monopolies at the expense of promoting productive and competitive activities led by a solid private sector. Institutional frameworks that encourage inefficient redistributive activities will be reflected in very low values of these two indicators.

Finally, the last two indicators reflect the respect that citizens and the state have for the institutions that govern the economic and social interaction between them. These indicators are: (5) Rule of Law, which measures the degree to which individuals confide in and abide by the rules of society. In particular, it measures the quality of contract enforcement, as well as the quality of the police and judicial courts. (6) Corruption Control, which measures the degree to which public officials exercise their power for private gain. This includes small and large scale corruption activities, in addition to the "capture" of the state by elites and private interests.

The last two indicators are closely linked with the monitoring and enforcement mechanisms explained above. An impartial intervention of the state is necessary, so that agreements are met through effective monitoring mechanisms.

These last two indicators are closely linked to the monitoring or enforcement mechanisms. As it has been mentioned, it is necessary for the state to be impartially involved in order to ensure that agreements are met through these mechanisms. When monitoring and enforcement costs are too high, these mechanisms are inefficient and do not create guarantees for cooperative exchange. In such an environment, institutional quality is poor. Therefore, when the values of these two indicators are low, it means that the state does not guarantee compliance with the implementation and monitoring mechanisms in an impartial manner and that the institutional quality is bad.

The basic sources of these indicators are surveys to individuals, domestic businesses, nongovernmental organizations (NGO's) and business risk rating agencies, which have firsthand knowledge on the state of governance in each country. These surveys also capture

[8] Laserna, Roberto. La Trampa del Rentismo (2005). Fundacion Milenio.

the analysis of multilateral development agencies (International Monetary Fund, World Bank, Inter-American Development Bank, etc.) established in each country.

It is important to note that this information, collected through surveys and impressions, is somewhat subjective. The reason why subjective information is used for the development of these indicators is that it is impossible to find objective information on issues so difficult to quantify, such as corruption or compliance to property rights.

Model Specification: Growth Equation

The objective of this research is to grasp an approach on the determinants of growth and institutional quality in countries with intensive exports of natural resources like Bolivia. The growth equation used in the econometric estimation for panel data that allowed for empirical evidence for the theory exposed is:

$$CREC_{95-07} = c + \beta_1 Inv_{95-07} + \beta_2 Gasto_{95-07} + \beta_3 ExpRN._{95-07} + \beta_4 Pob_{95-07} + \beta_5 Inst(proxy)_{95-07} + \varepsilon$$

As it is shown, we assume that the real per capita growth is a function of private investment (as percentage of the GDP), public spending (as percentage of the GDP), exports of natural resources (as percentage of the GDP), the total population of each country and a proxy for institutional quality for the 25 countries the sample. In addition, because there are very high correlations between indicators of governance and in order to avoid multicollinearity problems, we assume that all indicators have more or less the same information. Since each indicator reflects the same information, we consider just one indicator as a proxy for institutional quality for this estimate. The indicator taken was the one that fit the model the best. The term ε represents the model error and it includes the omitted variables in the model.

Table 3: **Results of the econometric estimation**

Dependent Variable: CREC				
Method: Panel Least Squares				
Date: 05/27/10 Time: 12:31				
Sample (adjusted): 1996 2007				
Periods included: 10				
Cross-sections included: 25				
Total panel (unbalanced) observations: 227				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-0.775589	0.145003	-5.348771	0.0000
INV_PIB	0.664751	0.223281	2.977190	0.0033
EXP_RN_PIB	0.426208	0.154099	2.765812	0.0062
GASTO_PIB	0.891720	0.460838	1.934996	0.0544
POB_MILL	0.011209	0.003191	3.512498	0.0006
IND_3	0.129123	0.054596	2.365059	0.0190
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	**0.302820**	Schwarz criterion		-0.845102
Adjusted R-squared	0.200190	Hannan-Quinn criter.		-1.115093
F-statistic	2.950587	Durbin-Watson stat		1.480199
Prob(F-statistic)	0.000005			

Source: Own elaboration

Before executing the estimation, a Haussman test was made to see whether a fixed effects or random effects estimation was more appropriate. The fixed effects estimation was proven to be more convenient. This estimation uses a different constant term for each country and assumes that individual effects are independent of each other. This model assumes that the explanatory variables (investment, expenditure, exports of natural resources, population and institutional quality) affect equally to all countries in the sample, and that they differ by their own characteristics, measured through the intercept.

Results

As it is shown, the results of the econometric estimation provide evidence for the existence of a positive relationship between institutional quality (as reflected by indicator 3) and economic growth in per capita terms (dependent variable). Even though the variable coefficient is not very high, it is still significant. This result provides clear evidence of the importance of institutional quality in economic growth.

On the other hand, we can see that investment; natural resources exports and government spending all play a role in the growth of these economies. This can be evidence by the coefficients and high significance levels for these variables.

Table 4: **Results Summary**

Dependent Variable	**Explanatory Variable**				
Growth	***Investment***	***NNRR Exports***	***Spending***	***Population***	***Institutions***
Sign	+	+	+	+	+
Impact	Strong	Strong	Strong	Low	Moderate

Source: Own elaboration

Table 5: **Results of the econometric estimation (Investment)**

Dependent Variable: INV_PIB				
Method: Panel Least Squares				
Date: 05/27/10 Time: 12:10				
Sample (adjusted): 1996 2007				
Periods included: 10				
Cross-sections included: 25				
Total panel (unbalanced) observations: 227				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	0.243396	0.009886	24.61906	0.0000
EXP_RN_PIB	-0.088514	0.035529	-2.491352	0.0135
CREC	0.064420	0.020498	3.142683	0.0019
CUATRO	0.026381	0.009669	2.728325	0.0069
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	**0.730491**	Mean dependent var		0.219644
Adjusted R-squared	0.693924	S.D. dependent var		0.066405
S.E. of regression	0.036738	Akaike info criterion		-3.654958
Sum squared resid	0.268587	Schwarz criterion		-3.232497
Log likelihood	442.8377	Hannan-Quinn criter.		-3.484489
F-statistic	19.97701	Durbin-Watson stat		0.733741
Prob(F-statistic)	0.000000			

Source: Own elaboration

It is clear the there is a direct, positive relationship between economic growth and institutional quality. The next step is to check if there is some indirect relationship between institutional quality and growth. In this regard, North explains that when there is an inefficient institutional framework, a production pattern is created, which reflects short term investments of little capital. This production pattern is what ultimately defines and impedes development.

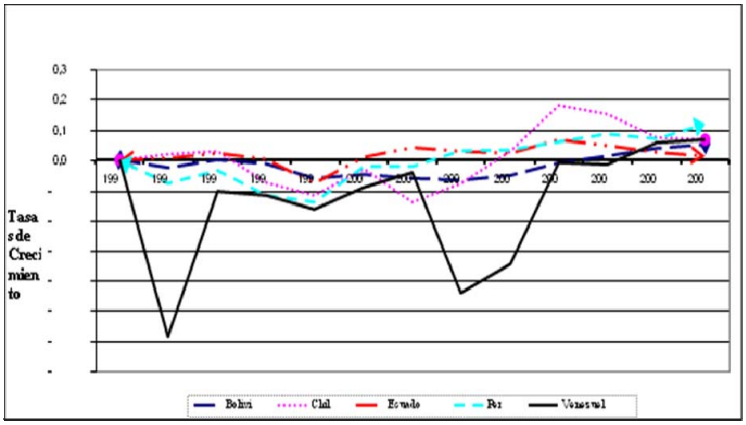
Because of this, we will now analyze the role played by institutional quality in investment in countries which export natural resources. For this, the variable for investment will be used as a dependent variable. The estimation is based on natural resource exports, economic growth and the indicator 4 as a proxy for institutional quality.

The results show that the variable representing institutional quality (indicator 4) has a significant and positive relationship with investment. This confirms North's theory in the sense that investment, whether as physical capital, technology, or ideas, depends on the support to provide the institutional framework of rights that involve investments.

The case of Bolivia

The case of Bolivia will be analyzed in this section, analyzing what the relationship is between real per capita growth, exports of natural resources, and institutional quality. As noted above, Bolivia has one of the poorest performances in its region. Comparing the per capita growth rates of Bolivia with that of other countries, including Peru, Venezuela, Ecuador and Chile (all with intensive natural resource exports), one can see that the Bolivia's economic performance leaves much to be desired in the last 15 years.

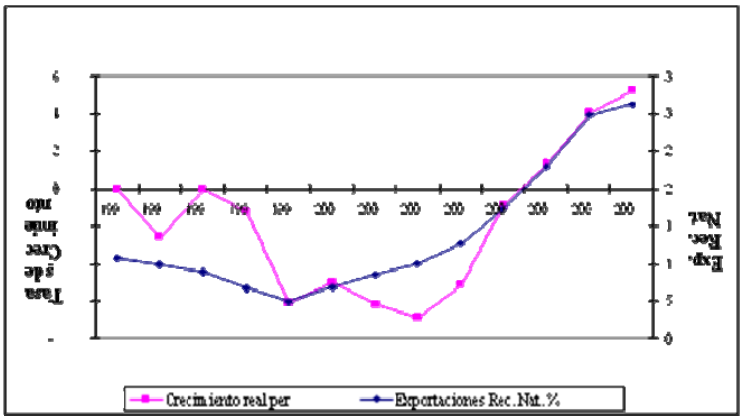
***Figure 7*: Real growth rates per capita of countries exporters of natural resources in the region (1995-2007)**



Source: Own elaboration based on IMF-IFS data

Figure 8 shows that in Bolivia, exports of natural resources and real growth rates have been closely linked since 1995 to date. The graph shows that between 1995 and 2000, these two variables had a negative tendency; but from 2001, they began to show positive trends. This result implies that the early growth of Bolivia's economy is heavily influenced by the behavior of our natural resource exports.

***Figure 8*: Relationship between per capita growth (in percentages) and natural resources exports as a percentage of the GDP in Bolivia (1995-2007)**



Source: Own elaboration based on IMF-IFS data

Next, we will make an analysis of each indicator specifically for Bolivia. It is necessary to clarify that each indicator is measured between -2.5 and 2.5, in which the maximum score is 2.5.

The first indicator collects information about the culture of free speech and accountability in the country. As it is shown, this indicators show values close to zero in all years. This implies that in Bolivia, accountability is not a common practice.

The second indicator evaluates aspects of political stability and absence of violence. In this case, all indicators are negative and decrease over time. This means that as the years passed, from 1995 to 2007, the perception of stability and absence of violence has been increasingly deteriorating. The political stability has been extremely affected since the riots in 2000, the resignation of former president Gonzalo Sanchez de Lozada in 2003, the subsequent resignation of former president Carlos Mesa in 2005, the appointment of presidency to former president Eduardo Rodriguez Beltze in 2005, and the appointment of presidency to current president Evo Morales in 2006.

***Table 7*: Governance indicators for Bolivia (1995-2007)**

Year	Ind. 1	Ind. 2	Ind. 3	Ind. 4	Ind. 5	Ind. 6
1995						
1996						
1997	0,34	-0,20	-0,20	0,81	-0,30	-1,00
1998	0,27	-0,20	-0,10	0,30	-0,30	-0,40
1999						
2000	0,08	-0,20	-0,30	0,15	-0,40	-0,60
2001	0,07	-0,20	-0,30	0,00	-0,40	-0,90
2002	0,00	-0,60	-0,40	-0,10	-0,50	-0,80
2003	-0,17	-0,67	-0,58	-0,15	-0,61	-0,79
2004	-0,20	-0,11	-0,80	-0,60	-0,90	-0,80
2005	0,13	-0,94	-0,73	-1,00	-0,90	-0,50
2006	0,02	-0,99	-0,79	-1,18	-0,97	-0,49
2007	-0,01	-1,02	-0,81	-1,02	-1,12	-0,47

Source: WB-WGI

Regarding the evaluation of non-violence, in recent years, there is empirical evidence on the increase of social conflicts that are parallel to the discovery of new natural gas reserves in Bolivia (Laserna 2006). As natural gas proved reserves have been increasing, conflicts have also been rising.

The third indicator measures aspects related to government effectiveness. This indicator also has negative values, rising close to negative one for the later years. This means that in recent years, the perception of the quality of public services and public administration in Bolivia has declined.

The fourth indicator assesses the regulatory quality aspects related to the private sector promotion. This indicator shows that between 1995 and 1999, there is a significant improvement in this area, with positive values close to one. However, from the year 2000, these indicators begin to decline. This means that the perception of individuals and employers regarding the regulation and promotion of companies has been deteriorating. Looking at the facts, this low perception is reflected in the level of investment in Bolivia, which has not changed in the last 15 years.

The fifth indicator measures the Rule of Law that exists in Bolivia, measuring the degree to which private and state agents trust and abide by the rules of society. In particular, it measures the quality of contract enforcement, as well as the institutional quality of the police and judicial courts. This indicator shows negative values close to zero at the beginning of the sample, with a decreasing performance towards the end. This means that the perception of the Rule of Law and the trust in rules and laws have deteriorated in the last 15 years.

In short, after analyzing each indicator of governance for Bolivia, we can say that the institutional quality reflected in these indicators has declined since 1995. As it was found, all indicators show increasing negative values, demonstrating an institutional framework that is constantly weakening. This fact holds important implications for the economy, reflected in low growth rates and poor levels of investment.

Table 8: **Econometric Estimation for Bolivia**

	CREC	C	d BOL	B1*INV _PIB	B2*EXP_RN _PIB	B3*GASTO _PIB	B4*POB _MILL	B5*IND _3
1996	-0,026	-0,776	0,364	0,108	0,096	0,119	0,088	-0,026
1997	0,000	-0,776	0,354	0,131	0,090	0,124	0,089	-0,013
1998	-0,012	-0,776	0,318	0,158	0,084	0,127	0,090	-0,013
1999	-0,061	-0,776	0,333	0,125	0,072	0,132	0,092	-0,039
2000	-0,050	-0,776	0,343	0,121	0,078	0,130	0,093	-0,039
2001	-0,061	-0,776	0,338	0,095	0,085	0,140	0,094	-0,039
2002	-0,069	-0,776	0,320	0,109	0,092	0,142	0,095	-0,052
2003	-0,052	-0,776	0,357	0,088	0,109	0,147	0,097	-0,075
2004	-0,008	-0,776	0,421	0,074	0,133	0,145	0,098	-0,103
2005	0,013	-0,776	0,395	0,095	0,152	0,142	0,099	-0,094
2006	0,041	-0,776	0,419	0,093	0,178	0,128	0,101	-0,102
2007	0,052	-0,776	0,426	0,101	0,178	0,125	0,102	-0,105

Source: Own elaboration

Finally, we perform the econometric estimation of fixed effects for the case of Bolivia. The constant term for Bolivia was obtained by including a dummy variable (dBOL). This variable allows us to quantify the individual effects and characteristics of Bolivia in the estimation. The econometrics estimation shows that in Bolivia, natural resource exports and capital investment positively affect the growth of the country. On the other hand, the effect of institutions on the economic growth of Bolivia is, in magnitude, much smaller than the effect on investment or of natural resources exports on the economic growth. However, the interesting thing in the case of Bolivia is that poor quality institutions discourage economic growth, which is evidenced in the fact that the coefficients have negative signs every year. As we can see, the institutional variable is the one that causes negative signs in the economic growth of Bolivia in most cases.

Conclusions

An institutional framework that encourages trade, investment and production constitutes a good quality structure. If the institutional framework does not encourage exchange and production, but encourages redistributive activities that harm production, then it is a weak structure that hinders economic growth.

As a result, the institutional framework of a country with intensive natural resource exports is crucial for its economic growth. This is evident based on the results from the econometric estimation of institutional quality and economic growth in 25 countries with such exports. These results showed that the institutional factor is a crucial one in explaining why countries with similar characteristics have such different growth patterns, such as Bolivia or Chile. While one holds institutions aimed at redistributing wealth, rentism and the transgression of rules, the other holds institutions that promote production and respect of norms. Consequently, it is the institutional framework that provides incentives in the economy that encourages or discourages production.

Investment is a key aspect in how institutions affect the economic growth of a country, as there is a direct relationship between investment and institutional quality, which then indirectly affects growth. When an institutional framework is of good quality, investment is attracted due to the fact that there is compliance with the law and respect for property rights. In contrast, when the institutional framework is poor, investment is low and of short-term, since there is an underlying insecurity in the institutional structure. A clear example of this is Bolivia, where the investment level has not changed in the last fifteen years, and where the productive enterprises are of small and medium scale. As a result, it is clear that a weak institutional framework holds back economic growth in the long term.

In the case of Bolivia, we can way that the institutional weakness of the country affects directly and negatively to the economic growth. As shown in the governance indicators developed by the World Bank, the institutional framework under which Bolivia makes its transactions has been deteriorating for the past fifteen years. In this sense, the appearance of great wealth from the exports of natural resources and the absence of strong and efficient state institutions have promoted rent-seeking by different social groups, causing various social conflicts.

This institutional quality is the result of path dependency. Therefore, it is not correct to assess that the current institutional framework in Bolivia is the result of one government's policies or of a few immediate issues. This institutional framework is the result of the history of the country since colonial times. Still, there is no doubt that the quality of the Bolivian institutional framework and the security given by this structure have declined in the later years. This is a result from the nationalizations of private enterprises and other state entrepreneurships. All of this means that as long as Bolivia fails to build efficient institutions that promote production instead of supporting redistributive activities, the country's economic growth will have the same trend for the next fifteen years.

Finally, it is necessary to state that although the governance indicators used as proxies for institutional quality in the estimation have provided evidence of the effect of institutions on the growth of economies, it is important to find other tools and approaches to corroborate these results. It is difficult to find objective indicators of institutional quality, but the results presented in this research along with new indicators that make up for faults in the already used indicators might become very useful in deepening this subject.

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