Aspects of the Independence of Regulatory Agencies and Competition Advocacy

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1. INTRODUCTION

This paper aims at assessing the degree of independence of sectoral regulatory agencies of a sample of countries of the International Competition Network (ICN).

Independent regulators are important for the advocacy work insofar they are less subject to be captured by specific groups and by political interest. Therefore, competition concerns tend to be given more attention by independent regulators.

Moreover, literature on the institutional design assumes that a good regulatory policy stimulates efficiency and private enterprise. The manner in which the political and social institutions of a country interact with the regulatory process influences economic conditions, directly affecting investors' confidence and the performance of the regulated sectors. In fact, the Organization for Economic cooperation and Development (OECD, 2002, p. 95) identified that sectors with independent regulatory agencies had better benefits with the opening of the market, suggesting that independence is an important characteristic for regulation.

Nevertheless, there is not a standard way to measure independence. Neither is there a systematic data bank containing relevant information about the different aspects of independence.

This paper approaches independence of sectoral regulators in three ways. First, we summarize how the literature has measured agency independence. Second, we propose a methodology for calculating an independence indicator, II, and apply it to a sample of countries of the ICN. The information obtained will be available for researchers and delegates and may help future studies, including the elaboration of alternative independence indicators. Third, we compare our indicator with the results of other studies and test a few preliminary hypotheses about agency independence.

The work is organized into six sections, including this introduction. In Section 2 we discuss the importance of regulatory agencies acting independently, not subject to political and economic pressures. Section 3 contains a review of the literature on independence indicators, describing the characteristics which are associated with an independent institution. Section 4 suggests a methodology to construct an independence indicator. In Section 5 we apply this indicator to a sample of 29 ICN member countries and test a few hypotheses. Section 6 contains final remarks and suggestions for further research.

2. WHY IS INDEPENDENCE IMPORTANT?

The purpose of this section is to show the importance of the independence of regulatory agencies.

The matter is addressed in Levi and Spiller (1996) for a sample of countries for the telecommunications sector. These authors see regulation as a problem of regulatory framework, presenting two main elements. Firstly, regulatory governance concerns the social mechanisms because contains the discretionary action of the government and settle disputes between companies and regulators. Secondly, the regulatory incentive involves specific rules related to systems that concern prices, subsidies, competition policy, import barriers, among other instruments. Both elements are choice variables of the government for implementation of reforms in the public sector, given the institutional structure of the country. Thus, the credibility and effectiveness of a regulatory structure varies according to the country's political and social institutions.

According to Viscusi (1995, pg. 302), regulation is a limitation that is imposed upon the discretionary decisions of the economic agents, which is assured by the power of sanction. This limitation is necessary in situations with market failures as in the case of public goods, market power, externalities or asymmetric information. In infrastructure sectors such market failures are frequently present albeit in different degrees, indicating the need for regulation.

The problem is that regulators might be captured by specific groups or by political interests. Similarly, there may also be a principal-agent problem. The regulator might not implement the policy, which is needed to cope with the market failure problem. Instead, he or she might follow his or her own bureaucratic agenda. In this context, independence can be conceived as the set of mechanisms, which minimizes the risk of capture, be it economic, political or bureaucratic.

The independence of regulatory institutions must not the understood as autonomy for developing actions and programming policies ignoring the government, but rather as the probability of implementing policies without the interference of political agents or of agents of the private sector (Baudrier, 2001, pg. 5). In theory, the independent regulatory agents do not use the regulatory policy as a mechanism for favoring a particular group, whether the public sector at the time of an adjustments of rates or the industry when favoring certain agencies. (Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), 2003, pgs. 12-15).

Gilardi (2003) and Genoud (2003b) view the gain of credibility as the major factor suggesting an improved performance of a regulated sector as a result of an independent regulator. According to these authors, the following benefits would result from independence of the regulatory agencies:

(i) **Expertise*:*** independent regulatory agencies would be closer to the regulated sector than the traditional bureaucratic agencies, and could thus compile and analyze better the relevant information. Furthermore, their more flexible organizational structure would create a more attractive working environment for sector experts.

(ii) **Flexibility:** the autonomy would enable swifter adjustment to changes in the sector.

(iii) **Credibility commitment**: on account of the regulatory agencies being more protected from political and electoral influence, they could adjust their regulatory policies in the long term and create a more stable and predictable regulatory environment.

(iv) **Stability*:*** the decision process is more open and transparent than that conducted by the ministries and is more sensitive to consumers' interest.

(v) **Efficiency*:*** one ascertains cost reduction for the decision transaction. When delegating the burden of decision taking to the independent regulatory agencies, particularly in situations where the advantages and/or political costs of the process are not clear, the transaction costs that are associated with the time spent in debates and ideological discussions are reduced.

(vi) **Agency as the scapegoat*:*** independence makes it possible for politicians to blame agencies when unpopular decisions have to be taken.

Thus, the existence of these factors in the institutional design of the regulatory agencies would affect the performance of the regulated market in different degrees, depending on the final format of the governance structure.

> *"The delegation of regulatory tasks to independent regulatory agencies is supposed to have a positive impact on both policies and politics, by enhancing the credibility and the efficiency of the regulatory intervention (policy*

> *argument), while relieving principals from being blamed when regulation goes wrong (politics argument)."* (Genoud, 2003a, pg.3)

Although the performance of the regulated market is an important indicator of the performance of the regulatory agencies, the objectives of the agencies can be multiple and conflicting. For example, frequently the interests of companies in the sector conflict directly with the consumer's welfare. The challenge for the regulator is to combine and maximize different objectives.(Gilardi, 2003, pg. 69).

Another question discussed by Genoud (2003a) is the relationship between credibility and independence. The author uses this relationship to understand the importance of independence in the regulatory context:

> *"Credibility is essentially a time-consistency problem. Politicians and governments are constrained by the political agenda and are therefore subject to change their policy preferences. To increase their commitment to a policy, and thus its credibility, politicians and governments give their discretion and delegate elements of their power to independent agencies and commit themselves to more fixed rules"* (Genoud, 2003a, pg.3).

However, the author understands that the role of independence and its efficiency in the regulatory process are not clear. Gilardi (2002) also points out that not only independence generates a determining factor for the performance of the regulated sector. Factors like international interdependence, the level of advancement of privatization and the number of players also have major influence on the performance of the regulated sector, which would explain why regulatory agencies with similar levels of independence are in sectors with different performances.

> *"If indeed a casual link is drawn between the independence of the IRA*[1] *and the policy outputs, no explicit assumptions are formulated to tell how credibility is achieved and how regulation is performed. In other words, it is expected that independence of the IRAs plays a role in the policy process, but nobody knows what role, and how this role is performed in reality. Despite this shortcoming, delegation theories do provide some rudimentary elements of behavioral hypothesis about the impact of IRAs in the regulatory process".* (Genoud, 2003a, p.4).

[1] Independent Regulatory Agency.

Despite the relative lack of knowledge of the true role and of the effects of the independence on the operation of the regulatory agencies, there are beneficial aspects from the presence of this characteristic. According to Genoud (2003a), independence is an important attribute in sectors having rapid technological development, where flexibility for quick adjustment of the rules in the face of the dynamism of the sector is important.

The importance of the independence of the agencies is associated with the following elements:

(i) Independence is considered to be beneficial for the regulatory agencies as a necessary attribute to ensure that the regulatory role will be carried out effectively, free from the short-term interest of the agents. (GTZ, 2003; Baudrier, 2003);

(ii) Positive effects on the regulated sector result the existence of several attributes, such as professional expertise, more flexibility for adjustment to changes in the sector, as well as stability and credible commitment to long-term policies. (Gilardi, 2002).

(iii) Governments whose policies lack credibility might resort to independence more often.

However, it is not yet possible to determine precisely the effect of independence of the agency on the performance of the regulated sector, despite incipient empirical evidences showing that the there are advantages from the existence of this characteristic (Genoud, 2003a).

A first step towards a better understanding of the role of independence is to measure it in a consistent and systematic way. Next section shows how different authors have undertaken this task.

3. HOW THE LITERATURE HAS MEASURED INDEPENDENCE

The purpose of this section is to describe the different forms by which literature has sought to measure the independence of the regulatory agencies.

Gilardi (2003) suggests investigating the credibility in order to assess the importance of the independence of the regulatory agencies. According to this author, the higher the level of independence of the regulatory agency, the higher the credibility.

However, obtaining this information is not a trivial task. Another method consists of ascribe qualitative scores to certain desired parameters of independent institutions. Such evaluation can be made in a historical or compared perspective. Pedersen and Sørensen (2004) discuss the process of transformation of the European regulatory agencies of the petroleum and gas sector, comparing the historical and institutional perspective of each one the countries. The data was gathered in interviews held with thirteen regulators, where the independence of the regulatory agencies was defined according to four dimensions containing a specific set of indicators. It must be stressed that the authors emphasized that these characteristics do not in themselves ensure that the agency is independent from political interests. The dimensions can be described as follows:

- **Dimension A: Independence from the Government**

  Assesses if the nomination of the regulators occurs for long and fixed periods, avoiding that they be re-appointed due to political reasons. Another aspect is the credibility of the agency, attained through a transparent relationship between the agency and the government, avoiding short-term political interventions that affect investor's perception of risk.

- **Dimension B: Independence of Stakeholders**

  The regulated agents can "capture" the regulatory agencies by offering important positions and salaries so as to favor the practices of the industry. The industry can also manipulate the agency due to information asymmetry.

- **Dimension C: Independence in Taking Decisions**

  Regulators must have the freedom to take decisions without the fear of political punishment or sanctions. (Pedersen and Sørensen, 2004, pg. 8). One must differentiate the regulatory agencies from those that are mere consulting agencies. In order to be true regulatory agencies, they must have decision-taking power.

- **Dimension D: Autonomy of the Organization**

  The autonomy of the regulatory organization strengthens the authority of the regulatory agency. An organization has more autonomy when it controls its resources. Thus, a stable source of resources, as a fee charged to the regulated industries and the authority to control assignment, promotion and salary policies, are considered to be important resources (Pedersen and Sørensen, 2004, pg. 9).

The independence index calculated in this case is nothing more than the average obtained from the above four dimensions, with values varying from 0 to 1. A higher value indicates a greater level of independence. Appendix I contain the results obtained for a sample of countries.

The methodology developed in Gilardi (2001b) relates credibility and independence. When delegating functions to the regulatory agencies the government believes that they confer more credibility on the policy (credibility assumption). According to Gilardi (2001b), there is no clear empirical evidence that can justify this assumption. In order to corroborate empirically the credibility assumption, this same work investigates the level of independence of the regulatory agencies. For this, he constructs a general independence index that can be applied to any regulatory agency.

> "*I argue that this (a single independence index) is very much needed because, so far, to a large extent we have had only a blurred understanding of what independence means. Further, this is as an unavoidable step for any research that aims at studying independent agencies in a comparative way. This is particularly important because the institutional design of independent agencies, as is often stressed (Morisi, 1997, pg. 230), is characterized by extreme empirical heterogeneity*." (Gilardi, 2001, pg. 2)

According to Gilardi (2001a, pg. 7) the studies on the subject are not specific as the application of the index. Hence, the author uses the independence indices developed by central banks as a proxy. (Grilli, 1991; Cukierman *et al*, 1992a; Cukierman and Webb, 1995; Kreher, 1997), with some adaptations.

> "*In my opinion these operationalizations of the independence of central banks as a good starting point for my purpose, notably because they have been widely used in the literature. It is however clear that, before using them to measure*

the independence of the much broader and more heterogeneous category of regulatory agencies, a profound adaptation and refinement is required" (Gilardi, 2001, pg. 8)

Gilardi (2001a) uses the model of Cukierman *et al* (1997), with some adaptations, to construct the independence index. The analysis distinguishes between formal and informal independence. The former is divided into four dimensions:

i. Status of the director of the agency,
ii. Status of the board of directors,
iii. Relationship with the government and legislative; and
iv. Financial and organizational autonomy.

Each indicator is appraised in a scale of 0 (lowest level of independence) to 1 (highest level of independence). Following this, each indicator is aggregated, representing the simple average of the indicators of each dimension.

Informal independence is measured by the degree of power delegated to regulators. This strengthens the level of independence of the agency since it is plausible to find agencies that are formally independent, but with little power, practically without any regulatory role.

However, Gilardi's work (2001a) does not assess the operating relationship between regulatory agencies, and is restricted to the formal aspects of the independence index. The complete structure of this independence index is shown in Appendix 2.

The work carried by Gual (2003) proposes the development of two deregulation indices and two concerning the independence of regulatory agencies, which combined have the purpose of analyzing in a multidimensional form the process of reforms that can introduce the regulatory agencies. The two independence indices of the regulatory agencies are based on the following items:

i. The degree of responsibility of the regulatory agency concerning certain policies;
ii. The degree of independence of financial resources of the agency in relation to the government;
iii. Rules for appointment of the director of the agency and its board of directors;
iv. Duration of the term of office of the director and of the members of the board of directors;

v. Rules on obligations of reporting to the government, the legislature or to other official agencies.

The work by Cukierman *et al* (1992) assesses the independence of the central banks using an extensive sequence of criteria (legal, institutional, cultural and personal), some of which are difficult to quantify and cannot be observed by the researcher.

The independence index developed is made up of three dimensions:

i. Formal independence: consisting of formal rules and laws that show the level of independence that the executive government and the legislature are willing to confer on the Central Bank.

ii. Real independence: measured by the turnover of directors/presidents of the Central Bank.

iii. Questionnaires sent to the monetary policy experts appraise the level of independence of the institution.

In this way, it is possible to assess the institutions under three different perspectives, producing three different rankings. For development of the final index, each one of these dimensions receives a differentiated weight, according to its relative impact on the final objective of the institution (Cukierman *et al*, 1992a, pg. 370).

> *"The concept of independence (...) is not the independence that the CB*[2] *pleases. It is rather the ability of the bank to stick to the price stability objective even at the cost of other short-term real objectives."* (Cukierman *et al*, 1992a, pg. 370)

Formal independence is assessed by using the following groups of variables:

i. ***Chief Executive Officer (CEO):*** Variables concerning designations (appointments), removals and time the president of the bank remains in office;

ii. ***Policy Formulation (PF):*** Variables concerning the solution of conflicts between Executive Government and the Central Bank and the degree of participation of the Central Bank in the development of monetary policies and the budgetary process;

iii. ***Final Objectives (OBJ):*** Final objectives of the Central Bank as formally defined;

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[2] Central Bank

iv. ***Limitations on Lending* (LL):** Legal restrictions for loans from the public sector, such as volume, maturity and interest rates.

The classification and valuation of the variables are in Appendix 3.

Real independence is influenced by subjective aspects such as tradition, personality of the president and of the directors of the bank. Thus, an objective measure to assess the true independence of the central bank would be through the turnover of presidents and directors of the Central Bank. This indicator is based on the assumption that a greater turnover indicates a lower level of independence.

Lastly, the questionnaire sent to monetary policy experts of each country complements the measurement of the level of formal independence. Even though presenting variables that sometimes are repeated in the form for legal independence, this questionnaire seeks to assess what actually takes place in the daily routines of the institutions:

> *"The questionnaire variables reflect the judgment of specialists on monetary policy. This judgment is based on legal as well as on other pertinent information. As a consequence these variables may at times overlap with some of the legal variables. But they also reflect information about actual practice and independence that is not captured by the legal variables. For example, the legal limitation on lending may be tight but easy to adjust, or to evade, in practice."* (Cukierman *et al*, 1992a, pg. 389).

The index for the questionnaire is obtained from the weighted average of the subjective and arbitrary weights. Appendix 5 shows the format of the questionnaire and the weights ascribed to each question.

Cukierman *et al* (1992a) emphasizes that the independence indicators found reflect the reality for a given period of time and that in addition to the mentioned factors others also influence in the independence of the central bank, such as the proficiency of the research department of the institution, measured by the quality of its annual reports; the degree of development of the financial markets of the country (where for the more developed ones more independence can be observed); the degree of freedom of the foreign exchange levels (the more restricted indicate more independence) and the volume of open market transactions (directly proportionate to the independence).

Lastly, the index developed by Gheventer (2003) takes into account the following factors:

i. **Decision making process:** This attribute characterizes the nature of the decision making process, which can be individual or collective. Some agencies have members of the civil society, an ombudsman. In this case the value attributed to the variable would be higher.

ii. **Budgetary autonomy:** It is assumed that the existence of own resources reduces the degree of subordination of the agency in relation to the direct administration.

iii. **Designation process:** This attribute differentiates the process of designation between individual and collective. If collective, this variable will present a higher value.

iv. **Technical specialization:** Reputation and knowledge of the industry on the part of the regulators. This should reduce the risk of capture and increase the legitimacy of the decisions.

v. **Stability of the leadership:** The stability of the positions means that the regulators are relatively protected from political pressures. Factors that influence the political stability of the regulators are the existence and duration of a fixed term of office.

vi. **Political interference in the decision process:** The interference of the direct administration in the agency's procedures. The possibility to appeal to a minister or to the president, for instance, diminishes the degree of independence

vii. **Capability of enforcement:** Adequate instruments to implement the legislation, sanctions specifically.

The criterion ascribes a value of 1.0 for each element. In the case of absence of an institutional element that favors independence, one ascribes value 0. For intermediate cases a value of 0.5 is ascribed.

Chart 1 summarizes the various alternatives presented in this section.

CHART 1: Summary of different methodologies

Author	Methodology	Variables	Results
Pedersen and Sorensen (2004)	Interviews with thirteen Europeans regulators of the Oil and gas sectors	Government independence Stakeholders independence Decision-making independence Organization autonomy	Simple average of the four dimensions, ranging between 0 and 1
Gilardi (2001b)	Relationship between credibility and independence Based on Central Bank Independence. Applicable to any sector	Agency head status Management board status Relationship with government and parliament Financial and organizational autonomy	Each indicator is analyzed ranging between 0 and 1, followed by a simple average aggregation
Gual (2000)	Comparison between two deregulation indexes and two independence indexes	Agency responsibility over some policies Financial budget independence Mandate duration Obligation rules to report actions to government and other organisms	Simple and weighted averages of the results
Cukierman *et al* (1992a)	Central banks independence evaluated by formal independence index and questionnaire sent to specialists	Nomination rules Policy formulation Final objectives Loans limitations Decision-making process	Weights each variable *ad hoc* Simple and weighted averages as indicators
Gheventer (2003)	Independence of regulatory agencies	Budget autonomy Nomination process Technical background Political interference on the decision-making process Enforcement	Simple average of the variables, varying between 0 and 1

The main conclusions concerning the way by which independence of the regulatory agencies has been measured in the literature are the following:

(i) Of the various methods presented, the majority is based on an assessment of the level of formal independence of the agencies, sometimes limited to developing indices for one single sector (Pedersen and Sørensen, 2004), or universal independence indices (Gilardi, 2001b; Gheventer, 2003);

(ii) There are few attempts to capture informal independence (Cukierman *et al.* 1992a)

(iii) Some indices use *ad hoc* weighting, and evaluation of specific segments of the community regarding the degree of independence (Cukierman *et al)*, 1992a; Gilardi, 2001b);

(iv) The authors show interest in relating the independence with some performance indicator in the sector, whether the actual objective of the institution (Cukierman *et al*, 1992a) or the regulatory environment (Gual, 2003).

4. A PROPOSAL OF AN INDEPENDENCE INDICATOR

The objective of this section is to propose an independence indicator which reflects the different characteristics of independent regulation mentioned in Section 3. In order to do that, we formulate a questionnaire to different jurisdictions and regulators, contemplating the relevant topics to assess institutional independence.

Appendix 6 contains the questionnaire that should allow a comparison of the degree of independence of regulatory agencies among different jurisdictions. In contrast with part of the literature, we avoid questions which would require subjective answers without reference to a clear parameter.

Nevertheless, the questionnaire contains the same *ad hoc* weighting limitations mentioned in Section 3 in regard to Cukierman (1992) and Gilardi (2003). The results depend on the importance given for each item of the questionnaire. We decided not to include distinct weighting among the questions, so all of them have the same weight in the independence indicator.

The first question concerns the appointment process. The criterion used was whether the appointment occurs with participation of the Legislative, or with the exclusive responsibility of the Executive Government. If Legislative participates, the agency receives 1 point; if not, it receives zero.

The second question assesses if there is minimal technical background in the relevant area required for the executive to occupy the office. If legislation does not require academic or professional experience, it is deemed that the agency has a low technical requirement, receiving a zero grade. Otherwise the agency receives one point.

The third question attempts to measure the term of office of the main executives. The question was subdivided in to three parts. The first verifies whether the term of office is fixed. If positive, the agency receives one point. The second verifies the possibility of the executive having a second term of office. If negative, the agency receives one point. The third distinguishes between long and short term of office. In this case, long term of office (of four or more years) has preference over short ones (less than four years) in terms of independence, thus receiving one point.

The fourth question assesses the budgetary autonomy of the regulatory agency. In this case it was established that 30% of the agency's budget should come from own resources (fees and public services fees). For any percentage higher this minimum, the agency receives one point.

The fifth question assesses whether or not the decisions are collective. If affirmative, the agency receives one point.

The sixth question assesses whether appeal of agency's decisions is restricted to the judiciary, excluding the possibilities of a hierarchical appeal to ministries or to other bodies of the administration. If affirmative, the agency will receive one point.

The seventh question assesses the degree of transparency of the decisions of the regulatory agency. In this case four sub-questions are used. The first verifies whether or not the decision sessions are public. The second verifies whether or not the decisions are published on the internet. The third, examines if there are public consultations. Lastly, the forth question verifies whether public hearings exist for important cases. For each positive answer the agency receives one point. The average of the sub-queries is computed as being the results for the transparency field.

The purpose of the eighth question is to verify whether the regulator is submitted to a period of quarantine upon leaving the position in the agency. One point is ascribed if there is a period of quarantine.

Lastly, we ask a qualitative question to understand the interaction between the competition authority and the regulatory agencies. This question was not considered in the Independence Indicator. In this question, the respondent should opt among the following alternatives:

a. *Antitrust exemption*: The regulatory agency has exclusive jurisdiction over the regulated sector in question.

b. *Competitive competences*: Both regulatory agency and competition authority have jurisdiction over the regulated sector.

c. *Complementary competences*: Both regulatory agency and competition authority have jurisdiction over the regulated sector, without overlapping of functions but with a precise definition of the division of labor between the two.

d. *Antitrust regulation*: The competition authority has exclusive jurisdiction over the regulated sector in question in matters regarding application of competition law

In order to capture the independence characteristics described previously, a second measuring criterion was used: value 1 is ascribed for each of the eight elements of independence. The lack of an institutional characteristic that favors independence will be captured by the value zero. For questions with more than one item (questions 3 and 7) the result represents the average of values for each item. Lastly, the partial points are added and II is obtained as shown in Equation 1.

$$II = \sum_{i=1}^{8} a_i; \qquad (1)$$

Where *i* represents each individual question, so that

$a_i \in [0; 1]$ represents the score obtained; and $0 \leq II \leq 8$.

The closer the score is to eight, the higher the independence indicator is. Note that this indicator captures only formal independence. The extent to which the regulatory authority is independent in practice is not directly reflected in II.

5. LEVEL OF INDEPENDENCE OF A SAMPLE OF COUNTRIES

The objective of this section is to describe the major results achieved applying the independence indicator (II) proposed in the last section to a sample of ICN countries. This section is organized as follows. First, we comment the general results. Second, we rank the countries according to the II numbers. Lastly, we discuss individual questions which refer to the different attributes of independence of the regulatory agencies.

The questionnaire was sent to the 86 ICN member countries, obtaining answers from 29 countries (33% of the population). Chart 2 shows the average value of *II* for all of the regulated sectors presented in the questionnaire. In addition, it also shows the number of times that the sector appeared in the sample.

Note that the respondents are competition authorities. Although the answers may not be considered officialand safe from errors, as underlined in the last section the questions are objective and does not allow significant deviation. In any event, if there is some leeway for different interpretations of a particular question, competition authorities are presumably more capable of providing an impartial and external view.

Note that the competition authorities´ role on regulation is quite substantive. Chart 3 reports the answers to Question 8. The majority of the replies (70% of 86 sectors) showed that both the competition authority and the regulatory agency interact in order to implement competition law in regulated sectors. Indeed, 43% interact with a precise definition of responsibilities and without function overlapping.

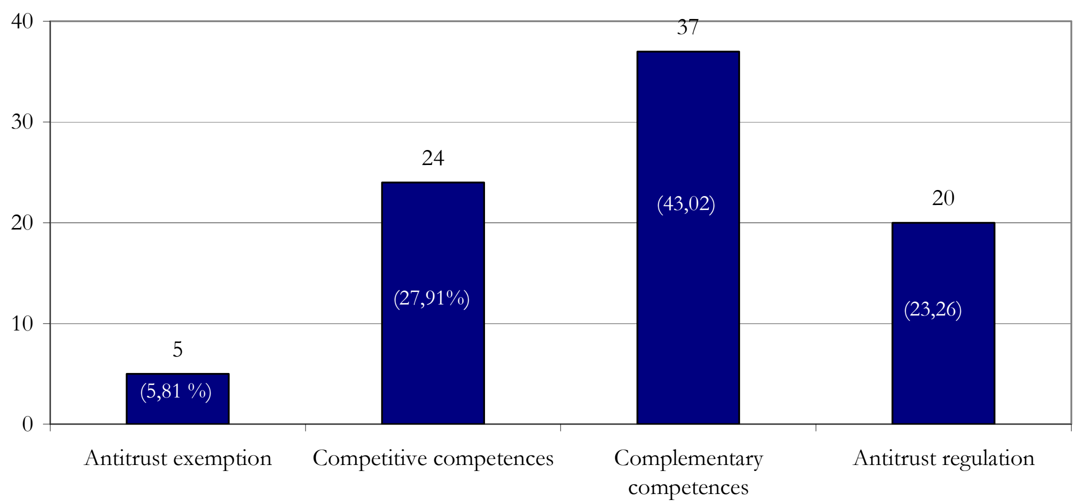
The replies of a total of 117 regulatory agencies of various countries were analyzed. Twenty-eight pertain to the telecommunications sector, 27 to the electricity sector, 25 to the fuel sector, 20 to the transportation sector and 17 to other sectors. One perceives a high concentration of agencies in four sectors, which account for 85.47% of the questionnaires received.

CHART 2: Independence index of agencies, by sector

Sector	AVG II	Number of agencies
Other	6.63	2
Cigarettes and beverages	5.92	1
Securities	5.67	1
Electricity	4.91	27
Telecommunications	4.90	28
Gas	4.85	25
Postal services	4.79	2
Banking	4.78	3
Sample	**4.60**	**117**
Sanitation	4.25	1
Transportation	3.69	20
Public utility	3.33	1
Water	3.21	2
Aviation	2.96	4

Source: The authors

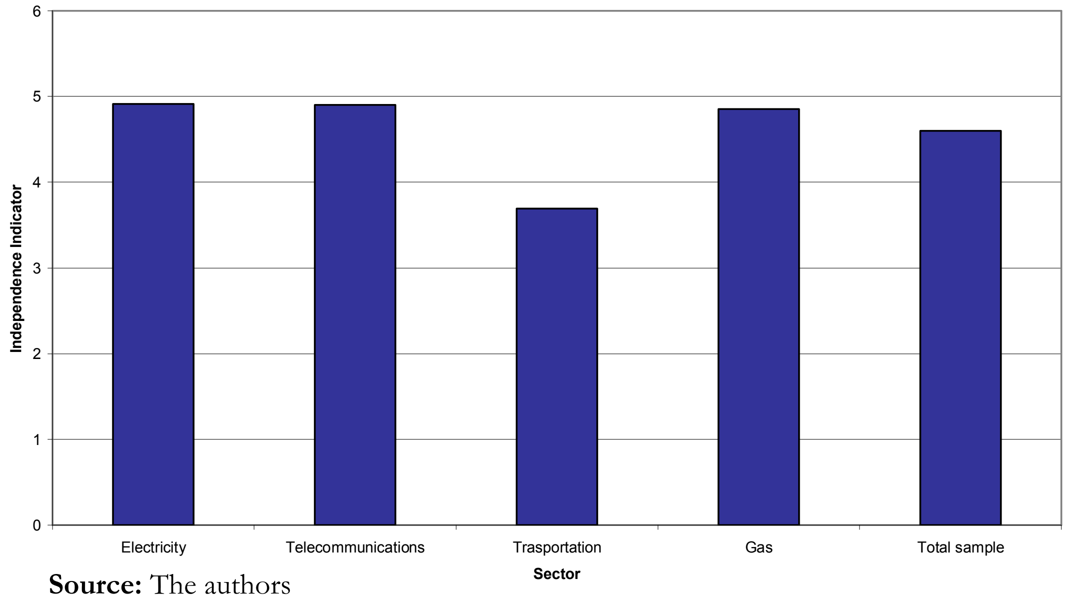
CHART 3: The interaction between the competition authority and the regulatory agency – Total values and percentages



Source: The authors

Chart 4 compares the value of II of the four most relevant segments with the average of the sample. Electricity (4.910), fuel (4.850) and telecommunications (4.896) show values that are higher than the total average. Transportation presents II lower than the average.

CHART 4: Independence indicator for selected regulated sectors



Source: The authors

It is rather surprising that the II results do not vary in line with the development levels. One would initially think that developed countries would present a higher II than developing nations.

Chart 5 shows the ranking of countries, obtained from the arithmetic average of the regulatory agencies of the respondent countries. It is noteworthy that the averages of II obtained by developed countries. Japan (2.83) and Sweden (3.17) did not present high independence indices, while Germany (5.17) and the U.S. (4.93) presented mean values and France (7.55) and Italy (7.18) high values. This suggests that there is not a relation between the level of development and the level of independence[3]. Brazil (6.67) presents a high level of independence of its agencies, according to the variables surveyed.

A possible explanation for this differentiation can be found in the previous discussion of Section 2. It is the very lack of credibility which leads several governments to resort to a greater delegation to independent agencies.

[3] The analysis conducted in Charts 21 and 22 attempts to respond to this question.

CHART 5: Independence index by country

Country	II average	Number of agencies
Serbia	7.75	1
France	7.55	3
Latvia	7.41	4
Italy	7.16	3
Portugal	6.75	4
Brazil	6.66	4
Turkey	6.50	4
Bulgaria	6.44	3
Cyprus	5.54	2
Hungary	5.44	4
Germany	5.17	4
Estonia	5.12	5
Lithuania	5.07	5
United States*	4.94	4
Spain	4.83	3
Sample	**4.60**	**117**
Argentina	4.54	7
Australia	4.42	5
Zambia	4.38	5
Pakistan	4.03	5
Mexico	4.02	5
Netherlands	3.42	4
Tunisia	3.25	1
Uzbekistan	3.19	7
Sweden	3.17	4
Ireland	3.17	4
Japan	2.83	4
Chile	2.53	5
Poland	1.88	4
Taiwan	1.75	4

* The U.S. respondents indicated that questions 4.1 and 4.2 were not applicable. In this case, we assumed those to be 0.

Source: The authors

Chart 6 analyses the frequency of independence attributes in the legal form of the regulatory agencies. The participation of the legislative in the nomination process of the agency directors appears in only 34.19% of the cases. Another infrequent attribute is the existence of a public session provided by law in only 33.61% of the cases. Frequent items are the publication of decisions (81.2%), the existence of terms of office with long duration (78.8%) and the possibility of appealing a decision (77.8%).

CHART 6: Average rate of evaluation criteria – total sample (%)

Criterion		**AVG**
Nomination process		34.19
Technical background		62.39
Director's Tenure	Fixed term	70.09
	Possibility of a second term	25.69
	Duration	78.76
Budget autonomy		61.21
Collective decision		68.38
Appeal only to the courts		77.78
Transparency	Public session	33.61
	Decisions published	81.20
	Consultation	62.93
	Hearing	56.03
Quarantine		58.09
Average		58.04

Source: The authors

Chart 7 shows the average scores for each criterion by regulated sector. Of the four most relevant sectors, three present a value that is greater than the sample average. Electricity (62.2%), fuel (62.1%) and telecommunications (60.5%) present a higher proportion of characteristics of independence in their agencies.

CHART 7: Averages by sector

			Director's tenure						Transparency				
Criterion	Nomination Process	Technica Background	Fixed	Second term	Duration	Budget autonomy	Collective decision	Appeal	Public session	Decisions published	Consultation	Hearing	Quarantine
Telecom	0,36	0,71	0,75	0,22	0,79	0,68	0,71	0,71	0,36	0,79	0,71	0,54	0,54
Electricity	0,41	0,63	0,78	0,24	0,85	0,63	0,70	0,85	0,37	0,89	0,67	0,63	0,44
Gas	0,36	0,56	0,76	0,26	0,83	0,68	0,72	0,88	0,36	0,92	0,68	0,64	0,42
Transportation	0,20	0,45	0,45	0,24	0,67	0,40	0,50	0,75	0,25	0,70	0,60	0,55	0,45
Aircraft	0,00	0,50	0,50	0,50	0,75	1,00	0,50	0,25	0,00	0,25	0,25	0,00	0,00
Banking	0,33	1,00	0,67	0,33	0,33	0,67	1,00	0,67	0,33	1,00	0,67	0,67	0,00
Postal services	0,50	1,00	1,00	0,00	1,00	0,00	1,00	1,00	0,50	0,50	0,50	1,00	0,00
Water	0,50	0,50	0,50	0,00	0,50	0,00	0,00	1,00	0,00	1,00	0,50	0,00	0,50
Other	0,50	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	0,00	0,50	0,50
Sanitation	0,00	1,00	1,00	1,00	1,00	1,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00
Cigarretes beverages	1,00	1,00	0,00	0,00	1,00	1,00	1,00	1,00	0,00	1,00	0,00	0,00	0,00
Public utility	0,00	1,00	0,00	0,00	1,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00
Securities	1,00	0,00	1,00	0,00	1,00	0,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Source: The authors

Chart 8 shows the results for the telecommunications and electricity sectors in a 27-country sample.

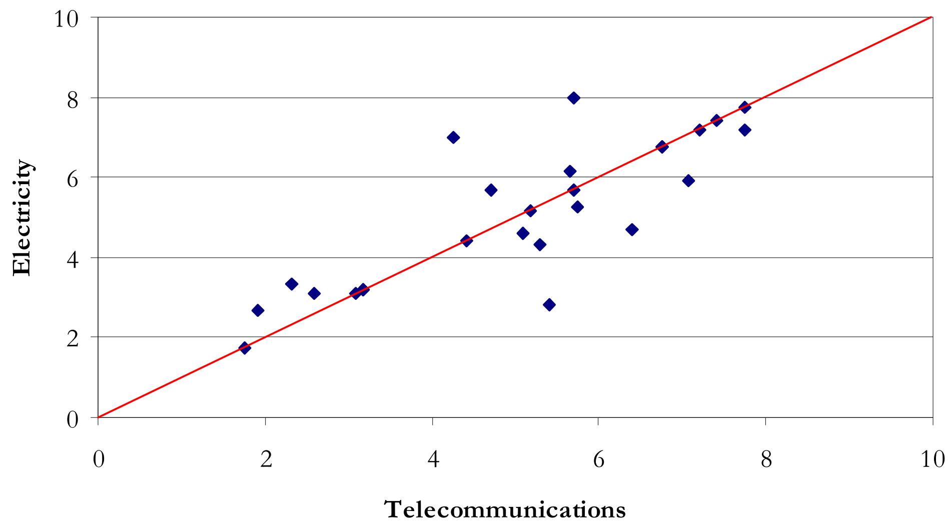
CHART 8: Independence Index for electricity and telecommunications sectors

Country	Independence Index Electricity	Independence Index Telecommunications
Argentina	5.75	5.25
Australia	4.42	4.42
Brazil	6.75	6.75
Bulgaria	5.70	8.00
Chile	2.58	3.08
Cyprus	6.40	4.70
France	7.75	7.16
Germany	5.17	5.17
Hungary	4.25	7.00
Ireland	3.17	3.17
Italy	7.20	7.20
Japan	3.08	3.08
Latvia	7.41	7.41
Lithuania	4.70	5.70
Mexico	5.40	2.80
Pakistan	5.30	4.30
Poland	1.91	2.66
Portugal	6.75	6.75
Sample	**4.88**	**4.94**
Serbia	7.75	7.75
Spain	5.66	6.16
Sweden	3.17	3.17
Taiwan	1.75	1.75
Tunisia	-	3.30
Turkey	7.08	5.91
United States	5.70	5.70
Uzbekistan	2.33	3.33
Zambia	5.08	4.58

Source: The authors

Chart 9 is a dispersion graph that associates the values of II for the telecommunication and electricity agencies. It assumes that the regulatory agencies of the countries consulted present similar independence attributes. Of the total of questionnaires received, 48.1% obtained the same II for the two sectors. The closer to the 45º line, the more similar are the characteristics of independence of the agencies.

CHART 9: Comparison of II between the electricity and telecommunication sectors



Source: The authors

Chart 10 compares the results obtained from the ICN questionnaire with the work of Pedersen and Sørensen (2004, see section 3). As the methodology used among these two works are different, we have used an approximation to compare the data. The two indicators vary between 0 and 1. The results are similar.

CHART 10: Comparison between Pedersen and Sørensen (2004) and the ICN questionnaire

	Government independence	**Stakeholders independence**	**Decision-making independence**	**Organization autonomy**	**AVG**
Pedersen e Sørensen	0.61	0.54	0.79	0.78	***0.68***
ICN questionnaire	0.54	0.46	0.72	0.61	***0.58***
ICN questionnaire - Gas	0.57	0.44	0.78	0.68	***0.62***

Source: The authors, Pedersen e Sørensen (2004)

With the purpose of assessing the existence of a relationship between the level of independence and certain attributes of the regulatory agencies, the following model was tested:

$$II = \beta_1 + \beta_2 AGE + \beta_3 HDI + \beta_4 SECTOR + \beta_5 FAMILY \qquad (2)$$

Where,

AGE: Series of data with the legal age of each regulatory agency[4];

HDI: Series of data with the human development index of the country of the regulatory agency;[5]

SECTOR: Vector of dummy variables that identifies the regulated sector;

FAMILY: Vector of dummy variables that identifies the legal family of the country.[6]

We want to test the following hypotheses:

- If the age of the agencies is associated with the maturity and the development of some independence attributes;
- If countries with lower degree of development delegates more power to independent agencies in order to reduce a possible credibility deficit;
- If the regulated sector has explicative power and;
- If legal tradition of the country has explicative power.

The estimate for the model proposed in Equation 2 used the series in the logarithmic form, obtained through a monotonic transformation. Additionally, the observations of agencies with up to one year of age were eliminated. One can note that in the last decade a certain format for the regulatory agencies was established that follows a trend of more (formal) independence of the regulatory bodies.

The result showed that the dummy variables for the regulated sector did not appear to be significantly relevant. Likewise, the dummy variables for the legal families of the regulatory agencies did not appear significantly relevant. The attained result is reported on Chart 11.

[4] The information was obtained directly from the Internet pages of each regulatory agency.
[5] The data was gathered from the World Bank for year 2004.
[6] According to Djankov et al (2003) the legal families of the countries are German, English, French, Scandinavian and Socialist.

CHART 11: Regression 2 final result

Dependent Variable: LNII
Included observations: 82

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNIDH	-0.051753	0.366320	-0.141279	0.8881
LNID	-0.062973	0.086141	-0.731048	0.4672
ALE	-0.053951	0.192594	-0.280127	0.7802
BK	-0.007496	0.249312	-0.030067	0.9761
C	1.516915	0.215247	7.047315	0.0000
ELE	0.014706	0.122806	0.119753	0.9050
ESC	-0.214391	0.224378	-0.955490	0.3426
FRA	0.271213	0.109257	2.482332	0.0155
ING	0.055208	0.152636	0.361695	0.7187
OUT	-0.013471	0.221148	-0.060912	0.9516
TEL	0.012441	0.124301	0.100084	0.9206
TRA	-0.232247	0.141314	-1.643486	0.1048

R-squared	0.179145	Mean dependent var	1.487933
Adjusted R-squared	0.050153	S.D. dependent var	0.407366
S.E. of regression	0.397019	Akaike info criterion	1.124793
Sum squared resid	11.03368	Schwarz criterion	1.476996
Log likelihood	-34.11651	F-statistic	1.388809
Durbin-Watson stat	1.309976	Prob(F-statistic)	0.197650

Source: The authors

The results indicate the need to specify a new model. For that reason we modeled a new regression with logarithmic shape (equation 3):

$$II = \beta_2 AGE + \beta_3 HDI \qquad (3)$$

Chart 12 shows the regression obtained by OLS.

CHART 12: Regression final result (Equation 3)

Dependent Variable: Log(II)
Included observations: 78

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Log (AGE)	0.648843	0.044864	14.46256	0.0000
Log (HDI)	-0.922187	0.393712	-2.342292	0.0218

R^2	0.492920	Mean dependent var	1.484896
Adjusted R^2	0.512564	S.D. dependent var	0.414243
S.E. of regression	0.509462	Akaike info criterion	1.514385
Sum squared resid	19.72595	Schwarz criterion	1.574814
Log likelihood	-57.06102	Durbin-Watson stat	0.933380

Source: The authors

The result obtained from the Durbin-Watson statistics raises doubts about the possibility of existence of positive correlation of the residues, a fact that would cause the result to be biased. To eliminate this hypothesis we have run the Lagrange Multiplier Test (LM) of serial correlation of the residues of Breusch-Godfrey[7]. Chart 13 shows with the "Obs*R-square" statistic that there is no probability of existence of serial correlation of the residues for the estimate presented in Chart 12, thereby validating the results.

CHART 13: Breusch-Godfrey LM test

F-statistic	16.557	Probability	0.000001
Obs*R-squared	23.298	Probability	0.000009

Source: The authors

Although preliminary, the results obtained suggest a few points. First, the existence of positive relation between the II and the age of the regulatory agency shows that in the course of time the independence attribute becomes a characteristic that is present in the legal format of the regulatory agencies.

Second, the existence of negative relationship between the HDI and the II could validate the credibility hypothesis. Developing countries lack credibility in their institutions. Therefore their governments resort to a higher and not lower degree of delegation to the regulatory agencies.

The sector and the legal tradition do not seem to have a great influence at least in terms of formal independence which is the type of independence we are being able to capture at the moment.

[7] For more details see Wooldridge (1990).

6. CONCLUSION

The existence of independent regulators is important for the advocacy work. In principle they should be more sympathetic with competition authorities in their effort to promote competition.

However, we note that there is not an uniform way to conceive and measure independence. Moreover, we have not yet been able to capture real independence, but rather we have been able to measure formal independence.

In any event, we think that this work has contributed in three ways:

i) The information contained in the questionnaire database shall be useful for future research. One can develop her or his own independence indicator using objective parameters of independence. Furthermore, it would be important to submit a questionnaire of this type on a regular basis so that there will be adequate information for inter-temporal comparisons and panel data analysis;

ii) The independence indicator proposed seems to contemplate all relevant dimensions associated with the reduction of risk of capture of the regulatory agencies' and;

iii) Our preliminary evidence suggests that there is not a positive association between development levels and independence of regulatory agencies. This could indicate that the credibility hypothesis is valid. The present study is just a first step. Further research should go in at least two complementary directions:

1. Independence can be influenced by several historical factors. Therefore, national and sectoral studies may reveal important characteristics of agencies independence.
2. A more refined indicator of independence could include variables which capture not only formal independence but real independence.

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Appendices

APPENDIX 1: Rank of regulatory agencies in Pedersen and Sorensen (2004)

	A Rank	B Rank	C Rank	D Rank	Total Rank Index	Rank
Austria	0.68	0.5	0.93	0.63	0.68	7
Denmark	0.44	0.33	0.87	0.63	0.57	14
Finland	0.58	0.33	0.83	0.88	0.59	12
France	0.94	0.83	0.89	0.75	0.86	2
Greece	0.78	0.33	0.92	0.75	0.69	6
Ireland	0.69	0.58	0.88	1	0.79	3
Italy	1	0.75	0.89	1	0.91	1
Luxemburg	0.5	0.63	0.58	0.75	0.61	11
Netherlands	0.63	0.33	0.82	0.88	0.66	8
North Ireland	0.44	1	0.88	0.63	0.74	5
Norway	0.53	0.21	0.5	0.75	0.50	15
Portugal	0.75	0.67	0.64	0.88	0.76	4
Spain	0.61	0.58	0.36	0.75	0.58	13
Sweden	0.67	0.33	0.72	0.88	0.65	10
Great Britain	0.17	0.46	0.99	1	0.66	9
Average	**0.61**	**0.54**	**0.79**	**0.78**	**0.68**	

Source: Pedersen and Sørensen, P. 11, 2004

APPENDIX 2: Formal independence of regulatory agencies: in Gilardi (2001)

Variable	*Indicators*	*Numerical coding*
A) Agency head status	*1) Term of office*	
	• over 8 years	1.00
	• 6 to 8 years	0.80
	• 5 years	0.60
	• 4 years	0.40
	• fixed term under 4 years or at the discretion of the appointer	0.20
	• no fixed term	0.00
	2) Who appoints the agency head?	
	• the management board members	1.00
	• a complex mix of executive and the legislature	0.75
	• the legislature	0.50
	• the executive collectively	0.25
	• one or two ministers	0.00
	3) Dismissal	
	• dismissal is impossible	1.00
	• only for reasons not related to policy	0.67
	• no specific provisions for dismissal	0.33
	• at the appointer's discretion	0.00
	4) May the agency head hold other offices in government?	
	• No	1.00
	• only with permission of the executive	0.50
	• no specific provisions	0.00
	5) Is the appointment renewable?	
	• No	1.00
	• yes,	0.50
	• yes, more than once	0.00
	6) Is independence a formal requirement for the appointment?	
	• yes	1.00
	• no	0.00
B) Management board status	*7) Term of office*	
	• over 8 years	1.00
	• 6 to 8 years	0.80
	• 5 years	0.60
	• 4 years	0.40
	• fixed term under 4 years or at the discretion of the appointer	0.20
	• no fixed term	0.00
	8) Who appoints the management board members?	
	• the agency head	1.00
	• a complex mix of executive and the legislature	0.75
	• the legislature	0.50
	• the executive collectively	0.25
	• one or two ministers	0.00
	9) Dismissal	
	• dismissal is impossible	1.00
	• only for reasons not related to policy	0.67
	• no specific provisions for dismissal	0.33
	• at the appointer's discretion	0.00
Variable	*Indicator*	*Numerical*

Variable	Indicator	Numerical coding
	10) May management board members hold other offices in government?	
	• No	1.00
	• only with permission of the executive	0.50
	• no specific provisions	0.00
	11) Is the appointment renewable?	
	• No	1.00
	• yes,	0.50
	• yes, more than once	0.00
	12) Is independence a formal requirement for the appointment?	
	• yes	1.00
	• no	0.00
C) Relationship with government and parliament	*13) Is the independence of the agency formally stated?*	
	• yes	1.00
	• no	0.00
	14) Which are the formal obligations of the agency vis-à-vis the government?	
	• none	1.00
	• presentation of an annual report for information only	0.67
	• presentation of annual report that must be approved	0.33
	• the agency is fully accountable	0.00
	15) Which are the formal obligations of the agency vis-à-vis the parliament?	
	• none	1.00
	• presentation of an annual report for information only	0.67
	• presentation of annual report that must be approved	0.33
	• the agency is fully accountable	0.00
	16) Who, other than a court, can overturn the agency's decision where it has exclusive competency?	
	• none	1.00
	• a specialized body	0.67
	• the government, with qualifications	0.33
	• the government, unconditionally	0.00
D) Fiscal and organizational autonomy	*17) Which is the source of the agency's budget?*	
	• external funding	1.00
	• government and regulated firms	0.50
	• government	0.00
	18) How is the budget controlled?	
	• by the agency	1.00
	• by both the agency and government	0.50
	• by government	0.00
	19)Who decides on the agency's internal organization?	
	• the agency	1.00
Variable	***Indicator***	***Numerical coding***
	• the parliament	0.50
	• the government	0.00
	20) Who is in charge of the agency's personnel policy?	
	• the agency	1.00
	• the government	0.00

Note: the higher the code, the more independent the agency. For cumulated index, each variable counts for ¼

Who is competent for a specific regulatory function?	*Numerical coding*
• the agency only	1.00
• agency and other independent authority	0.75
• agency and parliament	0.50
• agency and government	0.25
• agency has no competence	0.00

Source: Gilardi (2001, p. 10-11).

APPENDIX 3: Variables for Legal Central Bank Independence in Cukierman *et al* (1992)

Group	*Description of variable*	*Independence levels*	*Numerical coding*
CEO	**Term of office**	1. Over 8 years	1
		2. 6 to 8 years	0.75
		3. 5 years	0.5
		4. 4 years	0.25
		5. Under 4 years and at the discretion of the appointer	0
	Who appoints the CEO	1. Board of central bank	1
		2. A council of the central bank board, executive branch, and legislative branch	0.75
		3. Legislature	0.5
		4. Executive collectively (e.g. council of ministers)	0.25
		5. One or two members of the executive branch	0
	Dismissal	1. No provision for dismissal	1
		2. Only for reasons not related to policy	0.83
		3. At the discretion of the central bank board	0.67
		4. At legislature's discretion	0.5
		5. Unconditional dismissal possible by legislature's discretion	0.33
		6. At executive discretion	0.17
		7. Unconditional dismissal possible by executive's discretion	0
	May CEO hold other offices in government	1. No	1
		2. Only with permission of the executive branch	0.5
		3. No rule against CEO holding another office	0
Policy Formulations (PF)	**Who formulates monetary policy?**	1. Bank alone	1
		2. Bank participates, but have little influence	0.66
		3. Bank only advises government	0.33
		4. Bank has no say	0
	Who has final word in resolution of conflict?	1. The bank, on issues clearly defined in the law as its objectives	1
		2. Government, on policy issues not clearly defined as the bank's goals or in case of conflict within the bank	0.8
		3. A council of the central bank, executive branch, and legislature bank.	0.6
		4. The legislature, on policy issues	0.4
		5. The executive branch has on policy issues, subject to due process and possible protest but the bank	0.2
		6. The executive, unconditionally	0
	Role in the government budgetary process	1. Yes	1

		2.	No	0
Objectives (OBJ)		1.	Price stability is the major or only objective in the charter, and the central bank has the final word in case of conflict with other government objectives	1
		2.	Price stability is the only objective	0.8
		3.	Price stability is one goal, with other compatible objectives, such as stable banking system.	0.6
		4.	Price stability is one goal, with potentially conflicting objectives, such as full employment	0.4
		5.	As normas do Banco Central não contêm nenhuma obrigação para a instituição	0.2
		6.	No objects stated in the bank charter	0
		7.	Stated objectives do not include price stability	
Limitations on Lending (LL)	**Advances (limitation on nonsecuritized lending)**	1.	No advances permitted	1
		2.	Advances permitted, but with strict limits	0.66
		3.	Advances permitted, and the limits are loose	0.33
		4.	No legal limits on lending	
	Securitezed lending	1.	See Advances	
	Terms of lending	1.	Controlled by the bank	1
		2.	Specified by the bank charter	0.66
		3.	Agreed between the central bank and the executive	0.33
		4.	Decided by the executive branch alone	0
	Potential borrowers from the bank	1.	Only the central government	1
		2.	All levels of government	0.66
		3.	Those mentioned above and public enterprises	0.33
		4.	Public and private sector.	0
	Limits on central bank lending defined in	1.	Currency amounts	1
		2.	Shares of central bank liabilities or capital	0.66
		3.	Shares of government revenues	0.33
		4.	Shares of government expenditures	0
	Maturity of loans	1.	Within 6 months	1
		2.	Within 1 year	0.66
		3.	More than 1 year	0.33
		4.	No mention of maturity in the law	0
	Interest rates on loans must be	1.	Above minimum rates	1

	2.	At market rates	0.75
	3.	Below maximum rates	0.5
	4.	Interest rate is not mentioned	0.25
	5.	No interest on government borrowing from the bank	0
Central bank prohibited from buying or selling government securities in the primary market?	1.	Yes	1
	2.	No	0

Source: Cukierman (1992a, p. 373-375).

APPENDIX 4: Weights used on the pondered independence index (LVAW)

The results are aggregated in two indicators: one representing the average of the values (LVAU) and other representing the weighted average of the values (LVAW). To calculate the LVAU the variables are initially aggregated in two groups (CEO, PF, OBJ, LL). Following this, the arithmetical averages of the results obtained are taken. Lastly, a new arithmetical average of the groups is calculated. For LVAW, the index weighted with arbitrary and subjective weights, according to their degree of importance for accomplishing the final purpose of the Central Bank.

Formal variable		***Weight***
ceo	*Chief Executive Officer*	0,20
pf	*Policy Formulation*	0,15
obj	*Objectives*	0,15
lla	*Limitations on lending* - Advances	0,15
lls	*Limitations on lending* - Securitization	0,10
ldec	*Limitations on lending* – Who decides	0,10
lwidth	*Limitations on lending* - width	0,05
lm	*Limitations on lending*- others	0,10
		1,00

Source: Cukierman *et al* (1992a, p. 373-375).

APPENDIX 5: Variable description and weights for Cukierman *et al*, 1992.

Variable	*Numerical Coding*
1. Tenure of central bank CEO overlap with political authorities	
Little overlap	1
Some overlap	0,5
Substantial overlap	0
2. **Limitations on lending in practice**	
Tight	1.00
Moderately tight	0.66
Moderately loose	0.33
Loose	0.00
3. **Resolution of conflict**	
Some clear cases of resolution in favor of bank	1
Resolution in favor of government in all cases	0
All other cases	0.5
4. **Determination of central bank budget**	
Mostly cental bank	1
Mixture of central bank and executive or legislative branches	0,5
Mostly executive or legislative branches	0
5. Determination of salaries of high bank and the allocation of bank profits	
Mostly by bank or fixed law	1
Mixture of central bank and executive or legislative branches	0,5
Mostly executive or legislative branches	0
6. Quantitative monetary stock target	
Such targets exist, good adherence	1
Such targets exist, moderate adherence	0,66
Such targets exist, poor adherence	0,33
No stock targets	0
7. Formal or informal interest rates targets	
No	1
Yes	0
8. Actual priority is given to price stabilization	
First priority	1
First priority assigned to a fixed exchange rate	0,66
Price or exchange rate stability are among the bank's objectives, but not first priority	0,33
No mention of price or exchange rate objectives	0
9. Function as a development bank, granting credit at subsidy rates?	
No	1
To some extent	0,66
Yes	0,33
The central bank is heavily involved in granting subsidized credits	0

APPENDIX 5: (Cont.)

Variable	**WEIGHT**
Tenure of central bank CEO overlap with authorities	0.10
Limitaitons on lending in practice	0.20
Resolution of conflict	0.10
Financial stability	0.10
Intermediate policy targets	0.15
Actual priority to price stability	0.15
Subsidized credit	0.20
	1.00

Source: Cukierman *et al* (1992a, p. 373-375).

APPENDIX 6: Questionnaire of independence of regulatory agencies – International Competition Network

Question	Answer	Electricity	Telecom.	Transportation	Gas	Other (Specify)
1. Name of the regulatory agency						
2. Nomination process?						
1. Participation of Congress and legislative branch	YES (1)					
	NO (0)					
3. Technical background required?	HIGH (1)					
	LOW (0)					
4. Director's tenure						
4.1 Fixed term of office	YES (1)					
	NO (0)					
4.2 Possibility of a second term	YES (0)					
	NO (1)					
4.3 Duration of term of office	LONG (1)					
	SHORT (0)					
5. Budget autonomy?	YES (1)					
	NO (0)					
6. Collective decision?	YES (1)					
	NO (0)					
7. Appeal only to the courts?	YES (1)					
	NO (0)					

8. Transparency?		Electricity	Telecom.	Transportation	Gas	Other
8.1 Public session?	YES (1)					
	NO (0)					
8.2 Decisions and rationales published on the Internet?	YES (1)					
	NO (0)					
8.3 Public consultation?	YES (1)					
	NO (0)					
8.4 Public hearing?	YES (1)					
	NO (0)					
9. Quarantine after completion of term	YES (1)					
	NO (0)					
10. How does the regulatory agency named in item 1 interact with your competition agency? (Mark one of the alternatives)						
(a) Antitrust exemption						
(b) Competitive competences						
(c) Complementary competences						
(d) Antitrust regulation						
(e) Other (specify)						
11. This questionnaire was answered by?						

Name

Email

Institution