

# RELATIONS BETWEEN REGULATION, COMPETITION POLICY & CONSUMER PROTECTION IN TELECOMMUNICATIONS, ELECTRICITY AND WATER SUPPLY<sup>1</sup>

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## INTRODUCTION

The purpose of this article is to discuss the relations between regulation, competition policy and consumer protection these relations in three key sectors of Brazil's infrastructure: telecommunications, electricity and water supply.

A study of the literature points to two general principles. First, the need for consumer protection depends on the "degree of sovereignty" enjoyed by consumers, defined in terms of the cost of consumer organization, consumers' ability to evaluate services, and the level of competition in each sector. Second, the less sovereignty consumers enjoy the more consumer protection institutions are involved with regulation agencies.

The evidence for the Brazilian case apparently corroborates these points. In addition, it is important to stress that consumer complaints in regulated sectors seem to have increased more intensely than in others.

The article is divided into three sections. Section 1 presents theoretical elements and aspects of the relations between regulation, competition policy and consumer protection evidenced by international experience. Section 2 analyzes the Brazilian experience and in particular the available statistics on consumer complaints about telecommunications, electricity and water supply, submitted to Fundação Procon-SP during the nineties. The last section points to possible configurations of the institutional relations between competition policy, regulation and consumer protection, showing how the existing configuration of these areas in the three infrastructure sectors discussed confirms that the theoretical framework proposed has reasonable predictive power.

## 1. CONSUMER PROTECTION: THEORETICAL ELEMENTS AND ASPECTS OF INTERNATIONAL EXPERIENCE

This section presents theoretical elements and aspects of international experience in consumer protection and its relations with competition policy and regulation.

Historically speaking the emergence of consumer protection policies was associated with (i) the development of mass production and consumption, which led to impersonal consumption relations; (ii) rising incomes, which drove an increase in consumption of technology-intensive consumer durables; and (iii) the expansion of services. In these categories, evaluation of product quality, comprehension of instructions for use and infrequent commercial relations are factors that heighten the importance of institutional mechanisms for consumer protection.

In the developed countries, consumer protection policies and institutions emerged during the 1960s and 1970s. The United States saw the rise of a "consumerist" movement led by charismatic personalities like Ralph Nader. Activists known as Nader's Raiders succeeded in obliging auto manufacturers to fit all vehicles with safety equipment, for example.

The belated appearance of consumer protection policies in Latin American countries is attributed by Engel (2000) to the political situation prevailing in these countries throughout most of the century. The

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ideological right, which was hegemonic in much of the region during the period, was too beholden to the large corporations to impose consumer protection, while the center and left rejected the idea of market freedom.

Engel (2000) divides consumer protection activities into two kinds: (i) *consumer protection policy* properly speaking, which is designed to modify the status quo in terms of the information available to consumers; and (ii) *consumer promotion*, geared to education and the creation of institutions and associations for consumer protection advocacy. Information of relevance to consumer protection is disseminated by the media, including special-interest magazines, although sometimes there are conflicts between the information they publish and the interests of their sponsors. Compensation is a powerful institutional mechanism for consumer promotion, but the possibility of obtaining compensation is frequently limited by the high transaction cost of litigation.

Engel (2000) subdivides consumer protection and promotion policies into two main kinds: (i) policies introduced by government, either through public consumer protection agencies or through measures designed to reduce the transaction cost of litigation, or again through the creation of alternative mechanisms for dispute resolution; and (ii) private-sector initiatives such as the creation of customer service centers by corporations and consumer affairs columns in the media.

Insofar as consumer protection and promotion policies oblige business organizations to comply with certain quality standards, *the existence of consumers who actively advocate respect for their rights and institutional mechanisms that provide for such activism reduces the need for more strenuous regulatory intervention*. With regard to trade liberalization and competition, it should be stressed that although arguments for consumer protection have often been used as a form of non-tariff barrier,<sup>4</sup> *trade liberalization and increasingly intense competition in many countries have forced governments and exporters to adopt stricter consumer protection policies*, either because local producers find themselves competing with imported products made to stricter quality standards or because local consumers gain increasing access to technology-intensive products and experience greater difficulty in obtaining information about these products, as well as compensation when appropriate. Lastly, with regard to the competitiveness of local industry, although local producers often complain that consumer protection laws will make their products more expensive and therefore less competitive, *the existence of organized consumers stimulates local producers to comply with higher quality standards, thus enhancing their competitiveness in more demanding markets and reducing the initial investment required to launch a product abroad*.

Robert H. Lande (1996) analyzes the relationship between antitrust and consumer protection law. In his understanding competition policy and consumer protection share a common goal: they are both intended to facilitate the exercise of what he calls “consumer sovereignty” or effective consumer choice. He defines consumer sovereignty as “a state in which consumers can freely take decisions based on their individual interests and in which markets will respond to the collective effect of those decisions” (Lande, 1996, p. 5). Competition policy tends to provide consumers with a competitive range of choices, while consumer protection tends to ensure that consumers can effectively choose among the options available “without their critical faculties being hampered by such violations as deception or omission of material information” (Lande, 1996, p. 2).

Both competition policy and consumer protection are theoretically justified on the basis of the possible occurrence of “market failures”, such as abuse of economic power, asymmetrical information, transaction costs, externalities, entry barriers, and natural monopolies. The author then subdivides market failures into two categories: (i) those external to consumer relations, entailing restrictions to the range of consumer choices which can be corrected within the sphere of competition policy; and (ii) those internal to consumer relations, entailing restrictions to the consumer’s ability to choose freely among the options available which can be corrected within the sphere of consumer protection.

Thus market imperfections such as imperfect information and irrecoverable entry costs, or anti-competitive conduct such as price or reputation predation, price fixing, horizontal restrictions, mergers and vertical restrictions, fall within the exclusive remit of competition policy. On the other hand, the sphere of

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<sup>4</sup> See examples in Engel (2000).

consumer protection covers cases involving complaints relating to product features, warranties and contractual clauses, associated with market failures whose impact harms five types of consumer: those whose freedom of choice is subject to some form of coercion, “vulnerable” groups (such as children), victims of misleading or incomplete information, and consumers who have to deal with information that is hard to understand. There are also certain “hybrid” cases which involve constraints on both consumer choice and the effectiveness of choosing among the existing options. This is the case, for example, with conduct that results in higher search costs, tied sales or resale price fixing.

Lande therefore proposes a “unified” theory with three practical implications. First, the construction of a relevant theoretical framework would help the parties to match a specific issue with the appropriate legal theory. Second, “close functional relationships between action to conserve options and action to preserve freedom of choice among existing options would show why the Federal Trade Commission<sup>5</sup> was created and why its status should remain unchanged” (Lande, 1996, p. 52). Third, a unified body of theory would facilitate the discussion of issues that do not involve only price competition, thus making competition policy more sensitive to non-price competition. This is especially important, for example, in the case of mergers between media organizations.<sup>6</sup>

Lande’s justification for the connection between competition policy and consumer protection is of particular interest to the discussion developed here. The author advocates combination of both activities in a single agency:

“Antitrust and consumer protection functions *can* and *should* work together to safeguard the exercise of consumer sovereignty” (Lande, 1996, p. 56, original emphasis).

According to this author, the problems of competition policy and consumer protection are of the same nature and in practice the interests of both functions converge. As will be shown in Section 3, we take the opposite view: our understanding is that although both functions stimulate each other reciprocally (as in Engel, 2000, see above), there are not necessarily any scope economies to be achieved by combining them. Thus there is no justification for submitting them to common routines. Lande himself anticipates the approach adopted in this discussion:

“It is highly tempting to think about these functions as being very different and related only at the most general and abstract level inasmuch as both bureaus aim in the final analysis to improve the wellbeing of consumers” (Lande, 1996, p. 56, note 122).

Based on the observation that even where the same agency has jurisdiction over competition policy and consumer protection (e.g. the FTC in the United States and the ACCC in Australia) the routines remain independent, we maintain our opposition to Lande, albeit noting that his approach provides important arguments in favor of giving consumer protection agencies more influence over the decisions taken by competition agencies.

In Brazil the problem of how consumer protection, regulation and competition policy interrelate is illustrated by Lopes (2001). Lopes is in charge of consumer affairs at the National Petroleum Agency (Portuguese-language acronym ANP), which regulates the oil industry. In an article published by *O Estado de São Paulo* (Jan. 31, 2001), he criticized the idea of creating a National Competition Agency (ANC) on the grounds that it would not give priority to consumer protection. According to the article, “consumer protection is the poor cousin of economic law”. It goes on to say that the proposed creation of the ANC “merely shows that the debate remains focused on how to defend capital against capital itself through a committee of big business. Little is said about the consumer. Only capital seems to matter” (Lopes, 2001).

Lopes criticizes the draft bill proposing to create the ANC because it does not contemplate inclusion of a Collegiate Executive or Consultative Council for Consumer Protection (article 5) and because the functions of the collegiate body are confined to administrative matters, with the sole exception of clause II (“issuing resolutions on matters pertaining to its jurisdiction”), whose generality is not resolved by any other article in

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<sup>5</sup> It should be stressed, however, that unlike the FTC the Antitrust Division of the U.S. Department of Justice specializes in competition policy and *does not* intervene in matters pertaining to consumer protection.

<sup>6</sup> Strictly speaking, Lande’s paper points to four practical implications, but the fourth is very similar to the first.

the draft bill. Furthermore, Lopes does not see what role can be played by a federal consumer protection agency if consumer law is constituted within the judicial arena, which pertains to the state sphere in Brazil's federal institutional framework. With regard to regulation, Lopes asks how the ANC would relate to the regulatory agencies:

“All the regulatory agencies created so far are restricted to a single economic sector. The new agency's jurisdiction does not pertain to any sector in particular. What role will it play, then, given that it will be suited only to oversee mass consumption in non-regulated sectors? It must be borne in mind that the existing agencies are not consumer protection bureaus, although they are expected to take the consumer's interests into account” (Lopes, 2001).

Lastly, Lopes warns that linking the consumer protection system to a new Competition Agency could relegate consumer protection to a secondary role. According to his article, several cases have been submitted to the Administrative Council for Economic Defense (CADE), an agency of the Justice Ministry, on the initiative of consumers but CADE's decisions have never been directly favorable to them. Lopes recalls a lawsuit heard in 1998 (case no. 46/92), in which a consumer succeeded in winning a judicial annulment of a contractual clause deemed abusive. CADE also investigated the case but decided to focus on two aspects alone: (1) whether the economic agent's practice interfered with competition, and (2) whether its price hikes had actually or potentially eliminated competitors. Lopes concludes that the verdict went against the consumer.

## **2. EVOLUTION OF CONSUMER PROTECTION IN THE NINETIES: COMPLAINTS AGAINST ELECTRICITY, WATER SUPPLY AND TELECOMMUNICATIONS UTILITIES**

This section discusses recent trends in complaints submitted to consumer protection agencies with a view to examining the peculiarities of regulated industries and in particular the selected infrastructure sectors.

### **2.1 THE BRAZILIAN CONSUMER PROTECTION SYSTEM**

The Brazilian consumer protection system was built up under pressure from social movements and broad advocacy of increased access to the courts during the late seventies and early eighties as part of the return to democracy after a long period of military rule.<sup>7</sup>

The key milestones in this process were laws setting up small claims tribunals (1984), public civil suits (1985) and the Consumer Defense Code (Law 8078, 1990). In 1997 the National Consumer Protection System (Portuguese-language acronym SNDC) was created by Decree 2181, comprising the Economic Law Department (SDE) of the Justice Ministry (through its Consumer Protection & Defense Department, DPDC) and other agencies of the Federal, state and municipal governments as well as civil associations of consumer activists. Among the powers of the DPDC set out in article 3 of Decree 2181, it is worth citing clause XII: “calling upon the Economic Law Department to enter into agreements and memoranda of understanding to bring about a change of conduct”.

The Consumer Defense Code established a National Consumer Relations Policy (article 5) in which low-income consumers are guaranteed the right to full legal assistance free of charge through small claims tribunals (now termed special civil courts). This article also called for the creation of special police forces and public prosecutors for consumer protection, as well as fostering the organization of consumer associations.

Other items of the Consumer Defense Code worth mentioning are (i) exemption from court fees and stamp duties for low-income consumers (art. 5); (ii) incentives for civil associations to seek compensation for consumers, again with exemption from legal charges (art. 87); (iii) government's duty to seek judicial review of cases that involve collective or diffuse interests (art. 81); and (iv) importer liability for accidents arising from imported goods (art. 12).

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<sup>7</sup> See Taschner (1996).

Besides the DPDC, the National Consumer Protection System (SNDC) also comprises agencies of all three tiers of government and civil associations. Probably the most important of the latter are the 27 state and more than 500 municipal bureaus of Procon (Coordenadoria de Proteção e Defesa do Consumidor).

In São Paulo State, Fundação Procon-SP was set up in 1978 by Decree 7890, which created the State Consumer Protection System, and State Law 1903, which formulated and institutionalized consumer protection policy. In 1982, Procon-SP was restructured through the activities of the Executive Group for Consumer Protection. The São Paulo State Public Prosecutor's Office set up a Consumer Protection Department in 1983, initially to operate in collaboration with Procon. This department was expanded in 1985, entering into agreements with municipal governments throughout the state and with civil associations. An entirely new department of the São Paulo State Government to handle consumer affairs was set up in 1987, and this in turn created an Inspection Service, now known as the Adjunct Directorate for Inspection & Consumer Protection.

In 1991, Procon-SP changed its name to the Division for Consumer Protection & Defense and was subordinated to the São Paulo State Department of Justice & Defense of Citizenship. Finally, Law 9192 (1995) and Decree 41170 (1996) transformed Fundação Procon-SP into a public-law entity funded out of the state budget plus donations, contributions, internally generated revenue and fines.

## 2.2 CONSUMER PROTECTION IN TELECOMMUNICATIONS, ELECTRICITY & WATER SUPPLY

Figure 1 is a flow chart outlining the process whereby Procon handles consumer queries and complaints. Any citizen can complain to the agency or ask it for information. On receiving an application from a consumer through one of its citizens' advice bureaus (Pontos de Atendimento), Procon contacts the supplier of the product or service concerned. The supplier may or may not accept the complaint. If accepted, the complaint is discharged and not kept on file in Procon's archive of justified complaints. If the supplier does not accept the complaint, the case is investigated by one of Procon's specialized units, of which there are six: food, housing, health, financial affairs, products, and services (public and private).

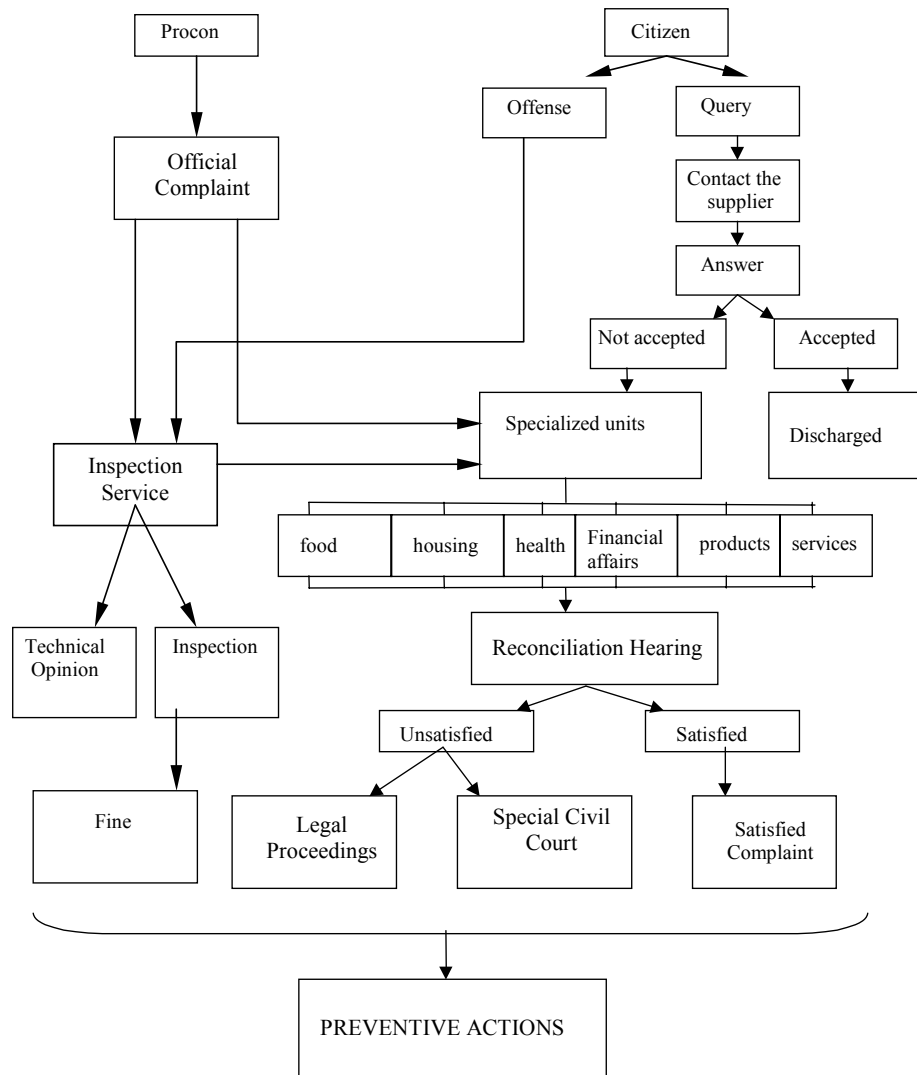
On completion of the investigation, the parties are summoned to a reconciliation hearing. If the complaint is resolved at this hearing, the case is filed away under "satisfied complaints". If not, the case is classified as an "unsatisfied complaint" and depending on the value attributed to it may be directly submitted to a special civil court (i.e. a small claims tribunal) or the complainant may be advised to initiate legal proceedings. In addition, Procon may enter an official complaint against the supplier in its capacity as consumer protection agency. In this case, the official complaint is forwarded to the inspection service, which will collaborate with the agency's technical staff to produce an opinion or carry out an inspection, which may result in a fine. Procon also conducts regular analyses of complaints against specific industries or sectors. These are the basis for preventive actions which include the formation of working groups to discuss quality standards and other aspects of the supply of goods and services. A successful example is the tourism industry, which has standardized the forms and procedures used by travel agents in order to avoid recurrent problems with tourism operations.

Figure 2 shows the total number of queries and complaints submitted to Procon-SP between 1977 and September 2000. The numbers are grouped into two categories: queries (requests for information), and complaints. Complaints are in fact queries that have not been resolved directly by the service center or through correspondence with the supplier and have therefore been forwarded to technical staff for further investigation.<sup>8</sup>

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<sup>8</sup> A detailed flow chart of the procedures for handling queries and complaints submitted to Procon-SP will be found in the appendix.

Figure 1: Flow Chart Procon-SP<sup>9</sup>



It can be seen that the aggregation method has changed during the period. For example, until 1995 “queries” included “direct service and correspondence issued”, while between 1996 and 2000 these activities, sometimes referred to as “MIA Letters”, were classified under “complaints”. Notwithstanding, the total number of queries and complaints increased noticeably at two points, subsequently to 1986 and 1994, probably reflecting the institutional changes described in this article.

Article 44 of the Consumer Defense Code states that consumer protection agencies are obliged to publish an annual list of justified complaints.<sup>10</sup> This obligation has been discharged since 1992, with publication of the list in the São Paulo State Daily Register (*Diário Oficial do Estado de São Paulo*), although in 1992 the document as published contained only data for March-December. The list, officially termed a *Cadastro* in Portuguese, presents general information about the activities of consumer protection services as well as details of justified complaints, grouped according to the companies involved. Both queries and complaints are also broken down into six categories: “Food”, “Health”, “Housing”, “Products”, “Services”, and “Financial

<sup>9</sup> This chart was produced with the assistance of Maria Isabel Vergueiro Pupo, a member of the consumer protection technical staff at Procon-SP.

<sup>10</sup> “Justified complaints” refers to complaints that were not resolved by directly by citizens’ advice bureaus or through correspondence with suppliers and were therefore forwarded to the technical areas of Procon-SP. A flow chart showing the procedures for handling consumer queries and complaints at Procon-SP can be found in Appendix A.1.

Affairs”. In addition, in certain years the document includes items classed as “External to Procon”, meaning cases forwarded to other agencies; “Inspection”, referring to the involvement of inspectors in the investigation; and “CAD/PESQ”, indicating not a complaint as such but consultation of Procon-SP’s records.

Figure 2: Services Provided by Procon-SP, 1977-2000

| YEAR   | QUERIES | COMPLAINTS | TOTAL   |
|--------|---------|------------|---------|
| 1977   | 272     | 1.270      | 1.542   |
| 1978   | 462     | 2.031      | 2.493   |
| 1979   | 2.509   | 3.704      | 6.213   |
| 1980   | 4.326   | 3.921      | 8.247   |
| 1981   | 3.528   | 5.334      | 8.862   |
| 1982   | 9.893   | 6.114      | 16.007  |
| 1983   | 14.756  | 5.913      | 20.669  |
| 1984   | 23.853  | 3.725      | 27.578  |
| 1985   | 40.362  | 4.487      | 44.849  |
| 1986   | 113.396 | 11.301     | 124.697 |
| 1987   | 118.445 | 6.559      | 125.004 |
| 1988   | 96.085  | 6.458      | 102.543 |
| 1989   | 132.520 | 8.496      | 141.016 |
| 1990   | 104.988 | 7.908      | 112.896 |
| 1991   | 115.407 | 7.679      | 123.086 |
| 1992   | 180.801 | 11.320     | 192.121 |
| 1993   | 160.741 | 11.506     | 172.247 |
| 1994   | 256.631 | 12.826     | 269.457 |
| 1995   | 279.419 | 11.182     | 290.601 |
| 1996*  | 247.381 | 55.447     | 302.828 |
| 1997   | 184.382 | 53.942     | 238.324 |
| 1998   | 287.870 | 80.564     | 368.434 |
| 1999   | 235.463 | 54.411     | 289.874 |
| 2000** | 231.688 | 53.539     | 285.227 |

Source: Procon-SP \* Data for the period 1996 -2000 include queries to the list of suppliers and price surveys. \*\* Breakdown of queries/complaints obtained by extrapolation of data for January-September 2000.

Figure 3 shows services rendered by area in the period 1992-1999. Figure 4 shows the evolution of these services in percentage terms by sector in the period 1994-1999, excluding items classed as “External to Procon”, “Inspection” and “CAD/PESQ” (see above for definitions). It can be seen that a decrease in the number of queries and justified complaints relating to “Housing” was more than offset by an increase in the category “Services” and, albeit to a lesser extent, in “Financial Affairs”. Justified complaints relating to telecommunications, electricity and water supply are included in the category “Services”.

Figure 5 shows the data for justified complaints relating to these three infrastructure sectors in the period 1992-1999.<sup>11</sup> In the case of telecommunications, the research project focused on fixed-line and wireless telephony services. The same table compares justified complaints relating to all three sectors with complaints relating to other services and with total complaints.

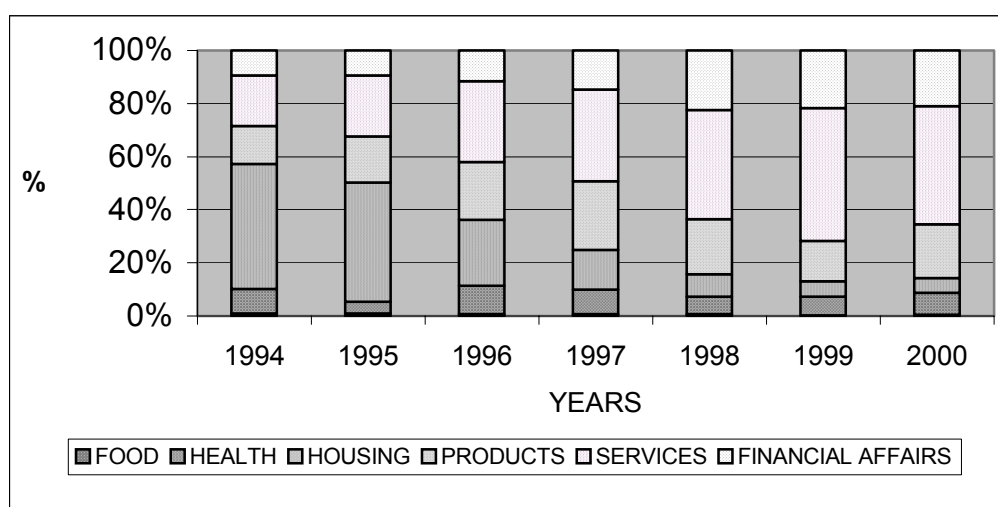
<sup>11</sup> A breakdown of justified complaints by company and by type of complaint can be found in the NPP research report issued by FGV-EAESP, the basis for this article.

Figure 3: Procon-SP — Services Provided by Area, 1994-1999

| AREAS              | 1994    | 1995    | 1996    | 1997    | 1998    | 1999    | 2000    |
|--------------------|---------|---------|---------|---------|---------|---------|---------|
| FOOD               | 2.649   | 2.193   | 1.374   | 1.353   | 1.902   | 692     | 788     |
| HEALTH             | 22.088  | 11.667  | 23.374  | 15.401  | 18.376  | 16.244  | 17.771  |
| HOUSING            | 115.588 | 114.537 | 54.015  | 25.090  | 23.336  | 13.344  | 11.660  |
| PRODUCTS           | 34.506  | 44.760  | 47.853  | 43.672  | 57.863  | 34.864  | 42.487  |
| SERVICES           | 46.943  | 58.641  | 66.159  | 58.140  | 113.666 | 115.299 | 93.767  |
| FINANCIAL AFFAIRS  | 22.965  | 23.836  | 25.290  | 24.853  | 62.576  | 49.951  | 44.437  |
| INSPECTION         | 321     | 321     | 343     | 228     | 329     | 0       |         |
| EXTERNAL TO PROCON | 24.396  | 34.646  | 32.451  | 33.726  | 56.835  | 67.641  | 74.317  |
| CAD-PESQ           | 0       | 0       | 51.969  | 35.861  | 33.551  | 0       |         |
| TOTAL              | 269.456 | 290.601 | 302.828 | 238.324 | 368.434 | 298.035 | 285.227 |

Source: Procon-SP

Figure 4: Procon-SP — Services Provided by Sector of Activity, 1992-1999



Source: Procon-SP

The inconsistencies caused by classifying “correspondence issued” either under “queries” or “complaints” also affects the data in this table. Disaggregated data for complaints about services and total complaints excluding “correspondence issued” are available only for 1994 and 1996-1998. This is why the table has two columns for services (E and F) and two for “total complaints” (H and I), excluding or including “correspondence issued”. Moreover, data for 1995 were obtained by interpolation. Aggregate data for complaints and queries including “correspondence issued” (where available) are given in Appendix A.2.

It can be seen that the total amount of justified complaints against the three sectors analyzed decreased in 1995, but the decrease was accompanied by a proportional fall in the total number of complaints about “services” (column E) and total complaints (column H). In 1999 the total number of justified complaints about telecommunications (telephony) grew very sharply, accounting for 32.4% of all complaints about “services” (column F) and 19.4% of total complaints (column I).<sup>12</sup> Can a difference in the evolution of complaints relating to the three sectors analyzed be observed when compared with complaints relating to other services or with the total number of complaints? Figure 5 illustrates this trend.

<sup>12</sup> In the following year there were 999 justified complaints to Procon-SP about telecommunications. The decrease can be attributed to the fact that Anatel began operating a federal service to receive complaints from any citizen on this subject.



Figure 5: Procon-SP — Total Justified Complaints Relating to Electricity, Telecommunications (Telephony) & Water Supply, by Company, 1992-1999

| YEAR     | TOTAL COMPLAINTS BY SECTOR |                |              | TOTAL<br>A + B + C<br>(D) | TOTAL<br>SERVICES<br>(E) | TOTAL<br>SERVICES<br>(F) | TOTAL<br>(F - D)<br>(G) | GENERAL<br>COMPLAINTS<br>(H) | GENERAL<br>COMPLAINTS<br>(I) |
|----------|----------------------------|----------------|--------------|---------------------------|--------------------------|--------------------------|-------------------------|------------------------------|------------------------------|
|          | ELECTRIC<br>(A)            | TELECOM<br>(B) | WATER<br>(C) |                           |                          |                          |                         |                              |                              |
| 1992     | 76                         | 198            | 320          | 594                       |                          |                          |                         |                              |                              |
| 1993     | 261                        | 461            | 1.299        | 2.021                     |                          |                          |                         |                              |                              |
| 1994     | 114                        | 412            | 525          | 1.051                     | 3.319                    | 12.195                   | 11.144                  | 12.825                       | 40.473                       |
| 1995     | 10                         | 62             | 122          | 194                       | 3.276                    | 14.834                   | 14.640                  | 11.182                       | 47.850                       |
| 1996     | 77                         | 292            | 347          | 716                       | 6.286                    | 17.794                   | 17.078                  | 21.768                       | 55.447                       |
| 1997     | 48                         | 396            | 421          | 865                       | 6.883                    | 18.886                   | 18.021                  | 20.924                       | 53.940                       |
| 1998     | 104                        | 1.987          | 845          | 2.936                     | 12.620                   | 33.513                   | 30.577                  | 30.813                       | 80.564                       |
| 1999     | 268                        | 10.577         | 1.414        | 12.259                    |                          | 32.647                   | 20.388                  |                              | 54.411                       |
| 2000     | 619                        | 999            | 388          | 2.006                     |                          | 18.739                   | 16.733                  |                              | 53.539                       |
| TOTAL    | 1.577                      | 15.384         | 5.681        | 20.636                    | 32.384                   | 129.869                  | 111.848                 | 97.512                       | 332.685                      |
| MÉDIA    | 175                        | 1.709          | 631          | 2.580                     | 6.477                    | 21.645                   | 18.641                  | 19.502                       | 55.448                       |
| DESV PAD | 189                        | 3.376          | 455          | 4.009                     | 3.813                    | 9.165                    | 6.642                   | 7.888                        | 13.536                       |

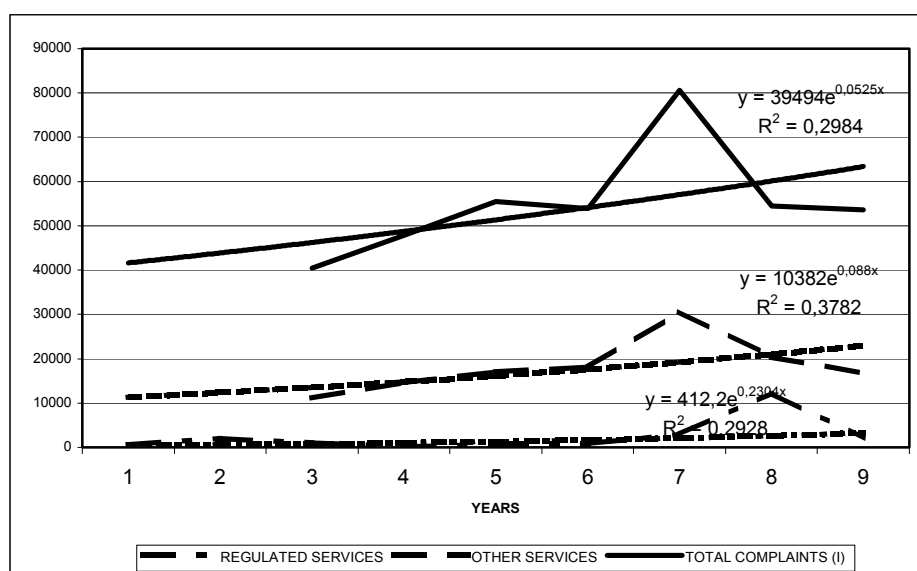
SERVICES (E) e GENERAL COMPLAINTS (H) excludes "sent letters"

SERVIÇOS (F) e RECL GERAL (I) includes "sent letters"

SERVICES (F) AND GENERAL COMPLAINTS (I) in 1995 were obtained through interpolation.

Source: Procon-SP

Figure 6: Procon-SP — Evolution of Justified Complaints Relating to Regulated Sectors Compared with Evolution of Complaints Relating to Other Services & Total Complaints



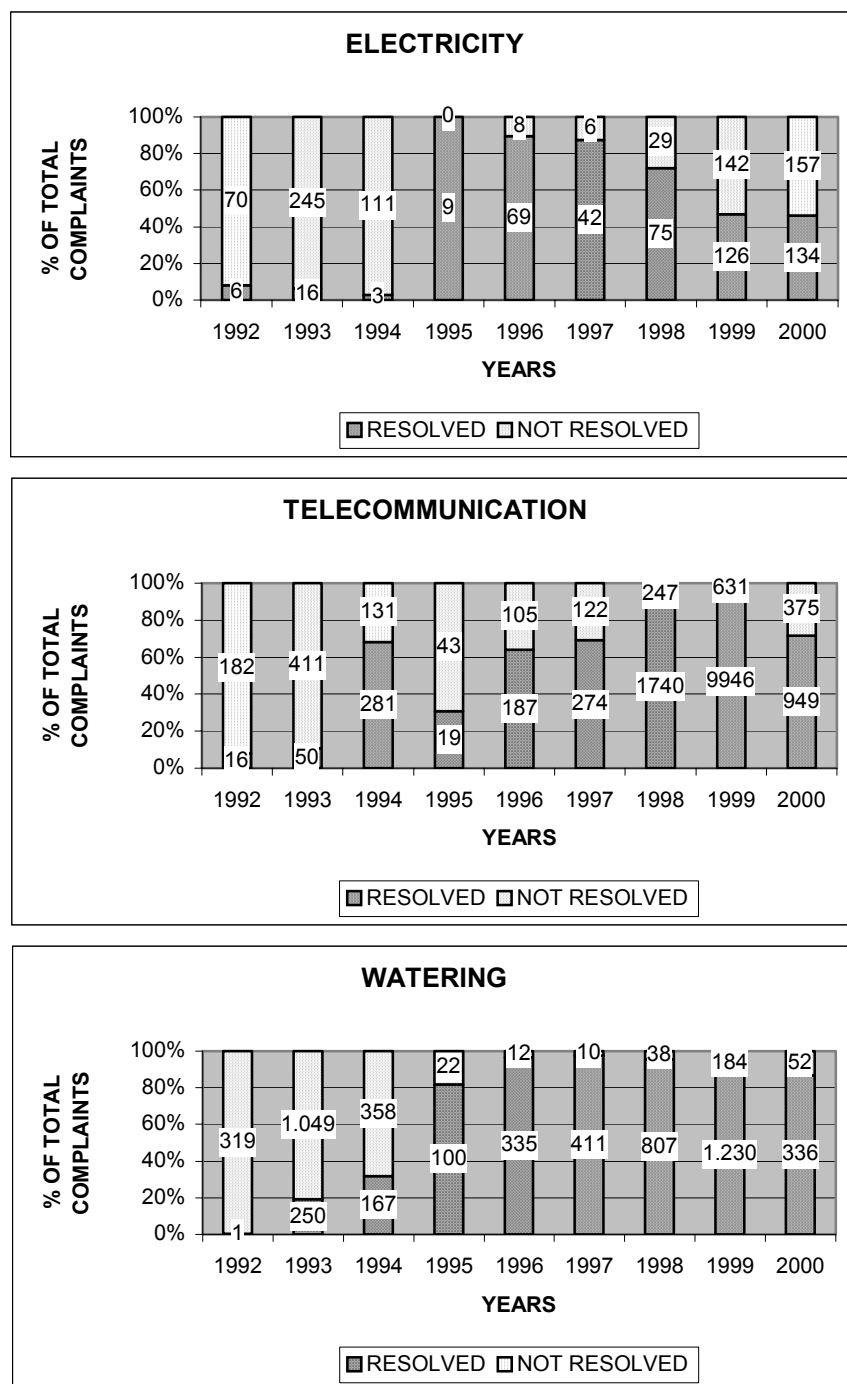
Source: Procon-SP

Figure 6 shows the evolution of justified complaints about the regulated sectors analyzed (telephony, electricity and water supply), compared with justified complaints about other services and total justified complaints. In order to answer the question posed earlier, we plotted a regression for justified complaints against years in the three cases based on a semi-logarithmic specification.

The results corroborate the hypothesis that the number of complaints about regulated services during the period increased proportionally more than total complaints and complaints about other services. The coefficient for the evolution of complaints about regulated services was 0.2304, whereas the coefficient for other services was 0.088 and the coefficient for total complaints was 0.0525. These values translate into the following rates of increase in complaints relating to the three sectors, other services and total complaints for the period 1992-2000: 23%, 8.8% and 5.25% respectively.<sup>13</sup>

Figure 7: Procon-SP — Resolved Complaints in Telecommunications, Electricity & Water Supply, 1992-2000

<sup>13</sup> See regressions in the appendix.



However, it should be noted that (i) the t-test for statistical significance does not reject the null-coefficient hypothesis at 90% significance: p-values are 13%, 14% and 20% respectively; (ii) the data available include “correspondence issued” in complaints about other services and total complaints, unlike complaints about the three sectors analyzed, thus overestimating the increase in the occurrence of these variables; and (iii) “total complaints” includes complaints about other regulated services such as banking and healthcare, thus weakening the conclusion about the trends observed in complaints relating specifically to the regulated sectors in question.

The graphs in Figure 7 facilitate a comparison of complaints received about each of the three sectors analyzed in the period 1992-2000. In percentage terms for the entire period, complaints relating to telecommunications were processed most effectively: 86% were resolved in this case, while the proportion of complaints about electricity and water supply resolved was 38% and 64% respectively.

However, the graphs in Figure 7 point to an even more important trend: the relative share of complaints resolved increased in all sectors during the period, suggesting that consumer protection has effectively increased in importance and has been more effectively enforced in recent years.

### 3. RELATIONS BETWEEN COMPETITION POLICY, REGULATION & CONSUMER PROTECTION

This section is divided into three parts. The first analyzes the functions of regulation, competition policy and consumer protection from a comparative perspective. The second introduces the concept of consumer sovereignty and proposes a method of measuring it in the case of telecommunications, electricity and water supply. The third and last part suggests institutional configurations of the three functions in accordance with the degree of sovereignty in each of the sectors analyzed.

#### 3.1 COMPETITION POLICY, REGULATION & CONSUMER PROTECTION FROM A COMPARATIVE PERSPECTIVE

Figure 8 compares the functions of competition policy, regulation and consumer protection. The regulatory function has broader objectives, which involve technical, sanitary, environmental and economic regulation as well as oversight, inspection and preventive action. Its activities include substitution for market mechanisms and it mainly precedes the consummation of market transactions.

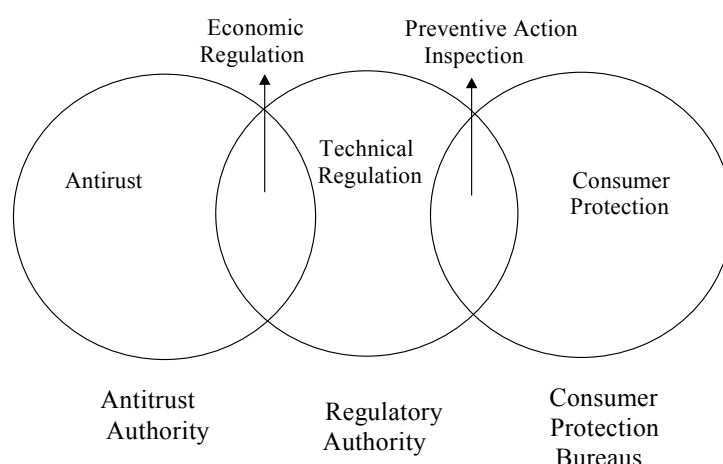
The methods used in consumer protection also involve substitution for market mechanisms, but its objectives are more limited and the activities concerned take place mainly after transactions are concluded. The objectives of competition policy are also more limited but the methods used to achieve them prioritize the use of market mechanisms.

All three functions are justified from the standpoint of economic theory by the existence of market failures. These failures originate in problems of market power, asymmetric information, and the existence of public goods or externalities. The general objectives of the three functions are convergent (promotion of consumer wellbeing), and each agency specializes in carrying out its specific activities. However, some activities are common to the functions of regulation and competition policy (economic regulation), while some activities are common to the functions of regulation and consumer protection (oversight and preventive action).

Figure 8: Comparison of the Functions of Competition Policy, Regulation & Consumer Protection

|   | <b>Antitrust</b>                                | <b>Regulation</b>  | <b>Consumer Protection</b>        |
|---|---|--|-----------------------------------|
| <b>Objectives</b>                           | Narrower: efficiency on allocation              | Broader: services popularization, regional integration, environmental... | Narrower: consumers' perspective  |
| <b>Method</b>                               | Emphasizes market mechanisms                    | Substitution of market mechanisms  | Substitution of market mechanisms |
| <b>Timing and frequency of intervention</b> | "ex-post" (conduct) e<br>"ex-ante" (estructure) | Mainly "ex ante"   | Mainly "ex post"                  |
| <b>Kind of intervention</b>                 | Behavioral and structural measures              | Structural measures  | Behavioral measures               |

Adapted from OECD



With regard to the relations between competition policy and consumer protection, although their general objectives are convergent and the two functions reinforce each other, they do not share a significant number of routines in performing their specific activities. Thus there is no justification for suggesting unification of the two, at least from the standpoint of administrative macro-processes.<sup>14</sup>

Figure 9: Relations Between Competition Policy & Consumer Protection — Optimal Configuration

| Transaction Costs | High          | Low   |
|-------------------|---------------|---|
| Economy of Scope  |               |   |
| High              | Single Agency |   |
| Low               |               | Separated Agencies<br>(Antitrust and Consumer Protection) |

If there are significant economies of scope in the performance of common activities and if the transaction costs are high, there will be incentives for the agencies to share activities. On the other hand, if the transaction costs are high but there are no economies of scope, agencies will tend to perform their activities separately. Figure 9 illustrates this argument. The relations between regulation and consumer protection combine low economies of scope with low economies of transaction costs. In this case, separation of their activities appears to be more efficient. On the other hand, both the relations between regulation and competition policy and the relations between regulation and consumer protection combine low economies of scope with high transaction costs. In both cases, the most efficient institutional configuration is indefinite.

The possible institutional configurations of the relations between regulation and competition policy are analyzed in a previous study.<sup>15</sup> This article emphasizes the relations between regulation and consumer protection. As already mentioned, specific activities can be observed both for the regulatory function (cancellation of utility license contracts, for example) and for the consumer protection function (protection of vulnerable consumers, for example). However, there are also activities which are common to both functions, especially oversight, inspection and protection, which can be shared.

### 3.2 DEGREES OF CONSUMER SOVEREIGNTY

This section discusses the factors that may affect the degree of consumer sovereignty. This concept can be defined as the extent to which market failures can be deemed to exist so that consumers require more or less systematic protection from the state.

<sup>14</sup> Similarly, activities designed to promote competition and maintain macroeconomic stability or attract foreign direct investment are mutually stimulating but this does not mean that mechanisms for coordination of their activities should be created, linking CADE with the Central Bank and the Finance Ministry.

<sup>15</sup> See Oliveira (2001).

There are three basic reasons for which consumer protection is justified from the economic standpoint: (a) information asymmetry; (b) the organizational cost of protecting diffuse interests; and (c) monopoly market power.

The hypothesis advanced here is that in modern economies these factors tend to acquire greater importance and that consumers therefore require state protection. Thus the degree of consumer sovereignty should vary from one sector to another in accordance with the criteria mentioned. The following four subsections discuss consumer sovereignty in telecommunications, electricity and water supply on the basis of each criterion.

### 3.2.1 Asymmetry of information: the difficulty of evaluating goods and services

Evrard & Rodrigues<sup>16</sup> classify services according to the degree of consumer access to information. Based on this classification, services are characterized by three types of attributes:

- (i) search attributes: services whose attributes can be readily assessed by consumers via price and/or quality before purchase;
- (ii) experience attributes: services the consumer acquires knowledge about and evaluates through experience after they have been performed; and
- (iii) credibility attributes: services whose complexity is so great that it is difficult to evaluate their quality even after they have been rendered.

Figure 10: Types of Service Attributes

| Search Attributes   | Experience Attributes  | Credibility Attributes  |
|---|--|---|
| <i>Attributes are identifiable before services are provided</i>                 | <i>Attributes are identifiable after or at the same time services are provided</i> | <i>Attributes are hardly identifiable even after services are provided</i>            |
| Example: visual looking of service's place, personal presentation of employees. | Examples: employees' courtesy and kindness; promptness at providing the service.   | Examples: surgical work precision, use of original auto parts in replacement service. |

Source: Evrard and Rodrigues

This classification scheme is summarized in Figure 10, while Figure 11 shows the results of our survey on the perception of service attributes in telephony, electricity and water supply( the latter is used as a proxy to compensate for lack of information on basic sanitation services).

Figure 11: Results of Survey on Perception of Service Attributes

| Service                       | Attribute  |            |             |
|-------------------------------|------------|------------|-------------|
|                               | Search     | Experience | Credibility |
| Watering repair               | 4 (4,4%)   | 67 (72,8%) | 21 (22,8%)  |
| Gás and electricity provision | 33 (35,9%) | 43 (46,7%) | 16 (17,4%)  |
| Telecommunication             | 18 (19,6%) | 60 (65,2%) | 14 (15,2%)  |

Source: Evrard and Rodriguez

Figure 11 shows that although consumers predominantly perceive experience attributes in all three services, there are gradations in this classification. In water supply,<sup>17</sup> the perception of credibility attributes is also significant (22.8%). This service is indeed more difficult to evaluate than the others. As for gas and electricity supply, search and experience attributes are of roughly equal importance. Evaluation of electricity is more immediate than for other services. Lastly, telecommunications represents an intermediate case in which experience attributes clearly predominate and the other two attributes are of approximately equivalent importance.

<sup>16</sup> Evrard, Y. & Rodrigues, A. : "Uma classificação de serviços baseada na teoria microeconômica da informação" (<http://read.adm.ufmg.br/read01/artigo/evrard.htm#evrard>).

<sup>17</sup> Water supply is taken to represent sanitation, given the similarity between these two services.

### 3.2.2 Consumer organization cost

The relations between consumers and services in telecommunications, electricity and water supply can also be classified in accordance with consumer organization cost. The relevant criteria for consumer organization cost are associated with the cost of mobilizing diffuse interests and the judicial costs potentially deriving from collective action. The more the interests involved are geographically dispersed, the less sovereignty there will be for individual consumers in exercising protection rights. The theoretical problem arising from the question of diffuse interests is that of “free riders”: when organization cost is higher than the *individual* benefits deriving from litigation, individuals underinvest in this type of action. Individual actors prefer to wait for other individuals to take legal action so that they can opportunistically enjoy a “free ride” by taking advantage of other people’s initiatives.

A possible proxy for organization cost is the geographic dispersal of the consumers involved. For example, consider the case of water and electricity consumers who face a problem with quality of service: in general, these consumers will tend to be geographically concentrated, unlike consumers of telecommunications, especially in the case of wireless telephony.

On the other hand, the possibility of collective action by public and private consumer protection agencies reduces organization cost and mitigates the “free rider” problem in dealing with issues of consumer protection.

### 3.2.3 Market power in relevant markets

The last criterion for classifying services from the standpoint of consumer sovereignty is associated with the amount of competition in the markets involved. As discussed in Section 1, the consumer protection and competition policy functions act as mutual stimulants: more competitive economies enable more effective consumer protection inasmuch as they offer consumers more choice and standards for comparison.

Thus the greater the competition and the bargaining power of consumers in a particular relevant market, the greater the consumer’s sovereignty will be. In the case of water supply, consumers of the service in São Paulo are still submitted to a monopoly (Sabesp). Consumers of telecommunications, on the other hand, already enjoy the benefits of gradually increasing competition, both in wireless and in fixed-line telephony. In the case of electricity, the key factor is the difference between free consumers, who now enjoy the benefits of a certain amount of competition, and captive consumers, who do not yet have a choice.

### 3.2.4 Classifying sectors in terms of consumer sovereignty

Figure 12 shows a possible classification of the three sectors analyzed in accordance with the above criteria. The more points an activity has, the lower the degree of sovereignty enjoyed by local consumers in exercising their rights and the greater the need for regulation centralized in the federal sphere.

Some explanation is necessary as an aid in understanding Figure 12. The criterion “evaluation difficulty” is scored using the method propounded by Evrard & Rodrigues. Geographic dispersal is used as a proxy for consumer organization cost in each service. Thus organization cost is higher in telecommunications since consumers of this service are usually more geographically dispersed, making coordination more costly for consumer protection agencies. Market power can be measured indirectly by an indicator of market concentration such as the Simple Concentration Index (e.g. CR4) or the Herfindahl-Hirschmann Index. The greater the market power, the more points are attributed to the service.

Figure 12: Need for Centralized Regulation in Telecommunications, Electricity & Water Supply

|                       | Evaluation difficulty | Cost of Organization | (Lack of) Consumers Bargaining Power | Total |
|-----------------------|-----------------------|----------------------|--------------------------------------|-------|
| Watering              | +++                   | +                    | +++                                  | 8     |
| Telecom               | ++                    | +++                  | ++                                   | 10    |
| Electricity (captive) | +                     | +                    | +++                                  | 6     |

Considering the influence of the three criteria, the higher the total score of a given service, the less autonomy consumers of the service will enjoy in exercising their right to protection. Figure 11 shows that consumers of telecommunications have the least autonomy while consumers of electricity have the most.<sup>18 19</sup>

What is the most efficient way to set up the relations between consumer protection and regulation in each case? The next section presents a “menu” of possible institutional configurations involving the relations between regulation and consumer protection.

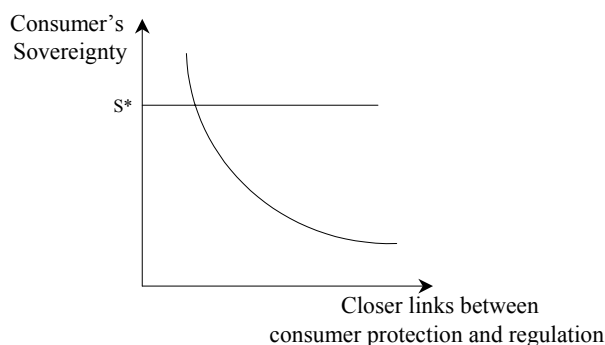
### 3.3 RELATIONS BETWEEN REGULATION & CONSUMER PROTECTION

The purpose of this section is to put forward alternative models for the institutional configuration of the relations between regulation and consumer protection. A hypothesis underlying the construction of these models is that the lower the degree of consumer sovereignty, the closer the links between consumer protection and regulation will tend to be. This hypothesis is represented in Figure 13.

In Figure 13,  $S^*$  represents the maximum degree of sovereignty consumers can obtain in exercising protection rights. When consumer sovereignty is limited, a minimum of regulation will always be necessary, whether it takes the form of public health inspection (performed by the Agriculture Ministry’s Federal Inspection Service - SFI, for example) or safety and technical standards (performed for example by the National Institute of Metrology, Standardization & Industrial Quality - Inmetro, an agency of the Development & Industry & Trade Ministry).

As discussed in Section 3.1, there is an area of intersection in the scope of the activities performed by the agencies in charge of regulation and consumer protection. While some activities performed by regulators and consumer protection agencies are specific to these functions, other activities may be shared. For example, inspection and prevention fall within the scope of both functions.

Figure 13: Consumer Sovereignty vs. Relations Between Consumer Protection Agencies & Regulators



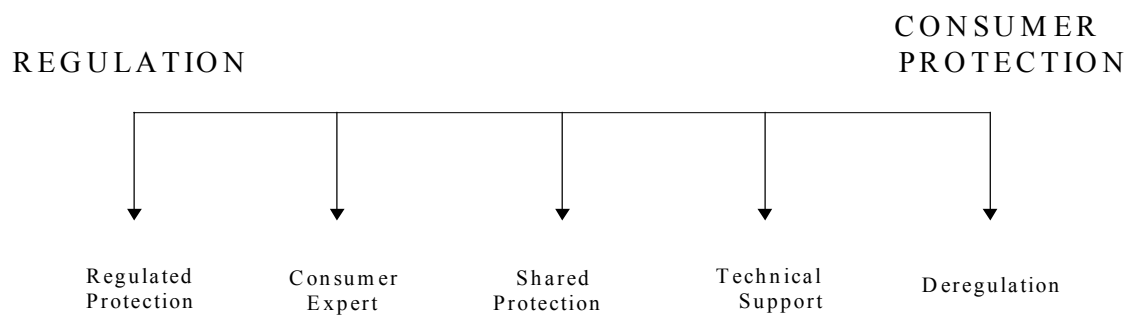
Considering that these common activities could be concentrated in one or another agency, it is possible to conceive of a continuum of institutional configurations between regulation and consumer protection, as shown in Figure 14.

Figure 14 defines five ideal models for the relations between regulation and consumer protection: Regulated Protection, Consumer Expert, Shared Protection, Technical Support, and Deregulation. Each of these models is characterized by an alternative division of the performance of specific and shared functions. Services in which consumers enjoy less autonomy in protecting their rights tend to adopt models more to the left, and vice-versa.

Figure 14: Continuum of Institutional Configurations for Relations Between Regulation & Consumer Protection

<sup>18</sup> For the sake of comparison we have not considered free consumers of electricity. Their organization cost, bargaining power and ability to evaluate the service make them far more autonomous in exercising protection rights than captive consumers of electricity.

<sup>19</sup> The data on complaints processed in appendix would appear to refute this conclusion, since in percentage terms more complaints about telecommunications than electricity were handled.



The five models are schematically shown in Figure 15. In the Regulated Protection model, all common functions are performed by the regulatory authority. In some cases, even the specific Consumer Protection function can be shared with the regulator.

Figure 15: Models for Configuring Relations Between Regulation & Consumer Protection

a) Regulated Protection

|                             | Regulation | Prevention Activities | Inspection | Consumer Protection |
|-----------------------------|------------|-----------------------|------------|---------------------|
| Regulation Authority        | X          | X                     | X          | (X)                 |
| Consumer Protection Bureaus |            |                       |            | X                   |

B) Consumer Expert

|                             | Regulation | Prevention Activities | Inspection | Consumer Protection |
|-----------------------------|------------|-----------------------|------------|---------------------|
| Regulation Authority        | X          | X                     | X          | (X)                 |
| Consumer Protection Bureaus |            |                       | X          | X                   |

c) Shared Protection

|                             | Regulation | Prevention Activities | Inspection | Consumer Protection |
|-----------------------------|------------|-----------------------|------------|---------------------|
| Regulation Authority        | X          | X                     | X          | (X)                 |
| Consumer Protection Bureaus |            | X                     | X          | X                   |



d) Technical Support

|                             | Regulation | Prevention Activities | Inspection | Consumer Protection |
|-----------------------------|------------|-----------------------|------------|---------------------|
| Regulation Authority        | X          | X                     |            |                     |
| Consumer Protection Bureaus |            | X                     | X          | X                   |

e) Deregulation

|                             | Regulation | Prevention Activities | Inspection | Consumer Protection |
|-----------------------------|------------|-----------------------|------------|---------------------|
| Regulation Authority        | -          |                       |            |                     |
| Consumer Protection Bureaus |            | X                     | X          | X                   |

In the Consumer Expert model, most activities are performed by the regulator. The exception is inspection, which is shared with consumer protection agencies. This model is appropriate for situations where consumers enjoy very little autonomy and complex technical knowledge is required. In this case, consumer protection agencies invest in the figure of the expert who will assist them with oversight and inspection. Here the consumer protection activities involved can also be shared with the regulator. This model is appropriate for consumer protection in telecommunications, for example, where consumers enjoy little autonomy and complex technical knowledge is required.

The third model is Shared Protection, where inspection and prevention activities are shared, often through contractual arrangements involving regulatory authorities subordinated to state governments. This model is appropriate for consumer protection in water supply. Although the water companies are generally controlled by municipal governments, regulation depends on state and regional coordination mechanisms involving asymmetry of information between the regulatory authorities and the regulated company.

The fourth model is Technical Support, where most activities are performed at the local and state levels. The exception is prevention, which is shared with the regulator. The fairly high level of technical knowledge required and the need for coordination among segments calls for participation by a central regulatory agency, but because consumers can easily evaluate the service and consumer organization cost is low (low geographic dispersal), consumer protection can be relatively decentralized.

The last model is Deregulation, in which there are no regulatory activities and all activities are conducted by the local and/or regional consumer protection agencies. Given that there will always be some level of regulation, this model is a theoretical possibility only.

In light of the proposed inverse relation between consumer sovereignty and centralization of protection, and considering the degree of consumer sovereignty in telecommunications, electricity and water supply, as shown in Figure 11, the relations between regulation and consumer protection in telecommunications are associated with a more centralized institutional set-up such as “regulated protection” or “consumer expert”. Indeed, consumer protection in this sector seems to be increasingly concentrated within the jurisdiction of Anatel, the federal telecommunications regulator.

In water supply and electricity, the appropriate models would seem to be “shared protection” and “technical support” respectively, given the local nature of service provision on one hand, and on the other hand the relative difficulty of evaluating water supply services.

## 4. CONCLUSIONS

The principal conclusions drawn in this article are as follows: (i) consumer complaints have increased significantly in recent years; (ii) the volume of complaints has increased most in regulated sectors; (iii) the

need for consumer protection depends on the degree of consumer sovereignty, which in turn depends on difficulty of evaluation, market power and organization cost; (iv) the smaller the degree of consumer sovereignty, the greater the need for centralized protection and hence the more regulators will tend to get involved in consumer protection; (v) the actual configurations of the relations between consumer protection and regulatory agencies in the three selected infrastructure sectors (telecommunications, electricity and water supply) match the hypothesis developed in this study; (vi) there are no clearly defined configurations for the relations between regulatory and competition agencies; (vii) the combination of small scope economies and low bureaucratic transaction costs suggests that consumer protection and competition policy would best be kept separate in terms of their operations.

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## APPENDIX

### A.1: Procon-SP: Total Complaints and Queries.

| AREAS             | 1994           |               |               |                | 1995           |               |                | 1996           |               |               |                |
|-------------------|----------------|---------------|---------------|----------------|----------------|---------------|----------------|----------------|---------------|---------------|----------------|
|                   | QUERIES        | SL            | COMPLAINTS    | TOTAL          | QUERIES        | COMPLAINTS    | TOTAL          | QUERIES        | SL            | COMPLAINTS    | TOTAL          |
| FOOD              | 2.221          | 36            | 392           | 2.649          | 1.523          | 670           | 2.193          | 1.056          | 20            | 298           | 1.374          |
| HEALTH            | 15.094         | 2.959         | 4.035         | 22.088         | 10.462         | 1.205         | 11.667         | 15.480         | 3.813         | 4.081         | 23.374         |
| HOUSING           | 110.633        | 4.124         | 831           | 115.588        | 112.788        | 1.749         | 114.537        | 49.268         | 3.172         | 1.575         | 54.015         |
| PRODUCTS          | 23.650         | 7.988         | 2.868         | 34.506         | 41.571         | 3.189         | 44.760         | 29.745         | 11.022        | 7.086         | 47.853         |
| SERVICES          | 34.748         | 8.876         | 3.319         | 46.943         | 55.365         | 3.276         | 58.641         | 48.365         | 11.508        | 6.286         | 66.159         |
| FINANCIAL AFFAIRS | 18.241         | 3.665         | 1.059         | 22.965         | 23.064         | 772           | 23.836         | 19.047         | 4.144         | 2.099         | 25.290         |
| INSPECTION        | 0              | 0             | 321           | 321            | 0              | 321           | 321            | 0              | 0             | 343           | 343            |
| EXTRA-PROCON      | 24.396         | 0             | 0             | 24.396         | 34.646         | 0             | 34.646         | 32.451         | 0             | 0             | 32.451         |
| CAD-PESQ          | 0              | 0             | 0             | 0              | 0              | 0             | 0              | 51.969         | 0             | 0             | 51.969         |
| <b>TOTAL</b>      | <b>228.983</b> | <b>27.648</b> | <b>12.825</b> | <b>269.456</b> | <b>279.419</b> | <b>11.182</b> | <b>290.601</b> | <b>247.381</b> | <b>33.679</b> | <b>21.768</b> | <b>302.828</b> |

| 1997           |               |               |                | 1998           |               |               |                | 1999    |            |                | 2000    |            |                |
|----------------|---------------|---------------|----------------|----------------|---------------|---------------|----------------|---------|------------|----------------|---------|------------|----------------|
| QUERIES        | SL            | COMPLAINTS    | TOTAL          | QUERIES        | SL            | COMPLAINTS    | TOTAL          | QUERIES | COMPLAINTS | TOTAL          | QUERIES | COMPLAINTS | TOTAL          |
| 948            | 78            | 327           | 1.353          | 1.480          | 106           | 316           | 1.902          |         |            | 692            |         |            |                |
| 9.674          | 2.607         | 3.120         | 15.401         | 12.750         | 3.265         | 2.361         | 18.376         |         |            | 16.244         |         |            |                |
| 21.825         | 2.085         | 1.180         | 25.090         | 19.385         | 2.460         | 1.491         | 23.336         |         |            | 13.344         |         |            |                |
| 25.414         | 11.383        | 6.875         | 43.672         | 38.533         | 11.775        | 7.555         | 57.863         |         |            | 34.864         |         |            |                |
| 39.254         | 12.003        | 6.883         | 58.140         | 80.153         | 20.893        | 12.620        | 113.666        |         |            | 115.299        |         |            |                |
| 17.682         | 4.860         | 2.311         | 24.853         | 45.183         | 11.252        | 6.141         | 62.576         |         |            | 49.951         |         |            |                |
| 0              | 0             | 228           | 228            | 0              | 0             | 329           | 329            |         |            | 0              |         |            |                |
| 33.726         | 0             | 0             | 33.726         | 56.835         | 0             | 0             | 56.835         |         |            | 67.641         |         |            |                |
| 35.861         | 0             | 0             | 35.861         | 33.551         | 0             | 0             | 33.551         |         |            | 0              |         |            |                |
| <b>184.384</b> | <b>33.016</b> | <b>20.924</b> | <b>238.324</b> | <b>287.870</b> | <b>49.751</b> | <b>30.813</b> | <b>368.434</b> |         |            | <b>298.035</b> |         |            | <b>285.227</b> |

### A.2. Regressions Results.

It is assumed a log-linear function, as in:  $y = Ae^{\beta x}$  where  $y$  is the number of complaints and  $x$  are years. The table shows results:

|              | Regulated Services | Other Services | Total Complaints |
|--------------|--------------------|----------------|------------------|
| a            | 6,02               | 9,25           | 10,58            |
| s. d.        | 0,76               | 0,32           | 0,23             |
| Beta         | 0,23               | 0,09           | 0,05             |
| s. d.        | 0,14               | 0,05           | 0,04             |
| F            | 2,9                | 3,04           | 2,13             |
| R2           | 0,29               | 0,38           | 0,3              |
| Observations | 9                  | 7              | 7                |