

Interconnection and Unbundling in the Brazilian Telecommunications: The Government Proposal for 2006

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Seminário nº 10/2005 – 19/05/2005

**São Paulo
2005**

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D) Introduction

This article addresses the proposed changes on interconnection policy and unbundling in the telecommunications sector in Brazil.

There is no doubt about the relevant role of these changes for the development of telecommunications in the country. Both policies are key to develop competition in the sector, mainly in the fixed local telephone service.

Indeed, just like other international experiences, while competition in the mobile and long distance services looks quite vigorous, competition remains limited at the fixed local telephone service. The following table shows market-shares in the three Brazilian areas by telephones installed and by lines in service.

**Table I - Market-Share in the Brazilian Telecommunications Local Service in
2004 (in Millions)**

Regions	Telephones Installed	%	Lines in Service	%
Region I	22,906	100%	16,14	100%
<i>Telemar</i>	17,35	75,74%	15,12	93,68%
<i>Vésper</i>	4,7	20,52%	0,3	1,86%
<i>CTBC</i>	0,856	3,74%	0,72	4,46%
Region II	11,85078	100%	10,55	100%
<i>Brasil Telecom</i>	10,7	90,29%	9,7	91,94%
<i>Sercomtel</i>	0,16078	1,36%	0,15	1,42%
<i>GVT</i>	0,99	8,35%	0,7	6,64%
Region III	15,679	100%	12,52	100%
<i>Telefonica</i>	14,359	91,58%	12,22	97,60%
<i>Vesper</i>	1,32	8,42%	0,3	2,40%
Source: Teletime				

When we consider market concentration by lines in service, a more appropriate measure, all incumbents have more than 90% of the market, reaching 97,3% in Region III (São Paulo). So, six years after privatization, competition in the Brazilian fixed local telephony is quite limited. The entrants often state that their strategy is not to confront directly the incumbent, but focus on entering unexplored business.

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This is a frustrating result in view of the high expectations posed on the emergence of full-fledge competition in telecommunication by the time of the Brazilian reform and privatization between 1995 and 1998.

However, this is not an exclusive Brazilian phenomena, even if compared to earlier reformers. In the United Kingdom, the telecom regulator, OFCOM, is submitting a consultation about an eventual break-up of the incumbent, privatized in 1984, British Telecom (BT), since its market power remains unbeatable. According to the Economist (2004), BT owns 90% of the gross telephone market, 73% of the residential lines, 60% of the retailer market and 50% of broadband market with several charges of discriminating potential competitors and postponing the collocation of rival equipment in its switching centrals.

Meanwhile in the US, According to Woroch (2002), by the end of 1999, the four Regional Bell Operating Companies (RBOCs) together still owned 88% of US end-user lines. That is why there remain constraints for RBOCs entering the long distance service. To be able to enter this service, the RBOC has to satisfy a checklist. Basically, RBOCs have to demonstrate that they provide non-discriminatory access in their local business and there is facility-based competition in the local service at the area they operate. In November, 1999, Bell Atlantic fulfilled the checklist and was allowed to enter the long distance service, being, however, subject to some conditions. In February, 2000, SBC was able to enter the long distance service in Texas.

The burst of the speculative bubble in the information technology sectors also cooled the perspectives in telecommunications after 2000 everywhere. The natural monopoly characteristics of the local loop in telecommunications is not overcome yet, except for the corporate segment and some very densely populated regions in the big cities.

Furthermore, Brazil followed the policy of constraining entry to two companies in each area at the very beginning of the reform, resembling the UK experience²³. The incumbent and entrant companies were charged with different duties and rights, which is called the regulatory asymmetry policy⁴. For this purpose, the General Law of Telecommunications (GLT) created a somewhat confused classification of the telecommunication services. First, the telecommunications services were divided by its scope: “Collective” or “Restricted” interest (article 62 of the GLT). Second, they were also divided according to their “juridical regime”: Public and Private (See articles 63 and 64 of the GLT). The grants in the first were made under a “concession regime” and the second

² See Herrera (1998), Pires (2000) and Mattos (2001) for a more detailed explanation about these rules. Coutinho and Mattos (2004) make a critique about this temporary duopoly policy in Brazil.

³ Armstrong, Cowan and Vickers (1994) argued that the duopoly policy, even on a temporary basis, was shown not to be a good idea in the UK, since it became harder to overcome BT’s first mover advantage afterwards: “*In important respects, however, it was a decade of lost opportunities. The deliberate restrictions on competition contained in the duopoly policy, together with insufficient attention paid to overcoming BT’s incumbency advantages, acted to preserve the essentially monopolistic character of the old system in the core area of network operation. Neither did the duopoly policy enhance the prospects for competition in the longer term*”. The same must apply to the temporary regional duopoly designed in the Brazilian model and this explains at least part of the failure to foster competition in telecommunications in the country.

⁴ This is explored in more detail in Mattos (2002).

under an “authorization regime”, implying that the public regime compared to the private means more duties and less rights. While the incumbents are classified in the public regime (and, thus, under a concession ruling) as stated in their concession contract, the entrant companies were classified in the private regime (and, thus, under an “authorization” ruling), as stated in their authorization contract⁵.

We present the main elements of the original Brazilian interconnection and unbundling policy in telecommunications in the next section. In section III, we present the main points of the proposed reform of these policies in Brazil in 2004. In section IV, we present a critical assessment of these reforms and section V concludes.

II) Interconnection and Unbundling at the Earlier Years of the Brazilian Telecommunications Reform

In Brazil, the GLT at articles 146 to 150, 152 and 153 regulated interconnection in generic terms, like most countries, leaving to the discretion of the regulatory agency more detailed provisions. The more detailed ruling on interconnection of the fixed telephony service is in Resolução 40/98 and in the concession and authorization contracts⁶.

The main legal provisions regarding interconnection, also standard in other countries, are 1) Compulsory network interconnection to all operators; 2) Non-discrimination, ensuring equal and fair prices to all rivals; 3) Free-negotiation with the possibility of intervention of the Agência Nacional de Telecomunicações (ANATEL) if it is called for by at least one of the parties.

It is important to stress that most regulatory authorities around the world, including Brazil, let the market define interconnection agreements through free-negotiation. However, at the same time, these authorities, in practice, often intervene by obliging at least a minimum agreement to emerge from the negotiations, establishing minimum parameters. Since the negotiations on interconnection in Brazil and worldwide are not often an easy stuff, in practice, the regulator is often called to intervene in several aspects of the interconnection contract.

The General Ruling Toward Interconnection (Resolução 40/98) issued by ANATEL provides in more detail the regulatory provisions of interconnection in Brazil. The main provisions establish i) rules against anticompetitive practices, including inefficient operation, deliberate postponement of negotiations and collusive arrangements; ii) obligation for access providers to make relevant information available; iii) duties regarding interconnection quality, which include the choice of an adequate interconnection point in the network, common planning and supply of information about technical changes and eventual interruptions of the service among the interconnected providers, minimum

⁵ This segmentation between “concession” and “authorisation” under public and private regimes, respectively, were criticised by Brazilian law authors as Di Pietro (1999, p. 125/129), which is a theme out of the scope of this text.

⁶ See clause 14.2 and chapter XXIV of the concession contracts and chapter XIII of the authorisation contracts. They are practically equal regarding the duties on interconnection and determine that the companies have the duty to interconnect.

technical requirements related to interfaces, alternative routes in case of failure of the interconnection points, minimum operational availability of the interconnection points about 99,8% of the time and targets on a minimum number of interconnection points until the end of 2000 to the three regional privatized companies and EMBRATEL (the privatized long distance operator).

This General Ruling also provides detailed rules in the cases where ANATEL is called to arbitrate interconnection negotiation. ANATEL can be asked to intervene after 60 days from the request of interconnection made by an operator. The period of negotiation with ANATEL intervention does not allow the network owners to stop the fulfillment of current interconnection agreements.

ANATEL is able to punish companies that are not fulfilling interconnection requirements. There is a maximum term of 90 days after the agreement to implement interconnection. The delay can imply payment of damages.

Related to interconnection, there is a general guidance about common sharing of infrastructure means. Access providers must consider, when planning the use of their infrastructure (which includes the planning of investment), the availability of interconnection points to other operators.

The basic rules assigned to the payment of interconnection tariffs are established in the “Ruling on the Charges for the Use of Telecom Networks” (Resolução 33/98). They are:

- There are three main definitions: a) TU-RL: Access tariff charged for the use of the local networks; b) TU-RIU: Access tariff charged for the use of the long distance networks; c) TU-COM: Access tariff charged for the use of switchers;
- Charges for Local Calls Between Different Local Companies follows a “partial bill and keep” provision. Only when one of the companies originates more than 55% of the reciprocal traffic, the calls that exceed these 55% will be charged (a TU-RL) to the originating company;
- The maximum values of the TU-RL and TU-RIU in each geographical sector of the country were established by ANATEL. On the best of our knowledge, ANATEL did not explicit the criteria from which it reached the initial maximum values of the geographical TU-RL and TU-RIU in 1998, just after the privatization of TELEBRAS⁷;
- The companies can make discounts in the interconnection tariffs in a progressive way, being forbidden to undertake subjective and discriminatory discounts;
- The maximum interconnection tariffs established to incumbents and entrants in the same area have to be equal;
- There was a final term by the end of 1998 for the signature of the interconnection agreements between the long distance and local service carriers (EMBRATEL and the incumbent regional companies) and a six months term after the

⁷ As we will see in the next section, the Ministry of Communications and ANATEL will make these criteria more explicit in the renewal of the concession contracts in 2005, based on a Long Run Incremental Cost Model.

formal authorization of the entrants to operate. Once more, the concern about the potential delay of interconnection agreements is addressed.

The concession contracts of the regional incumbent companies brought other important provisions, regarding access tariffs. The main ones are

- A default rule for interconnection pricing before agreement;
- The system of yearly tariff review between 1998 and 2005 for end users and interconnection is the price-cap. Future unforeseen contingencies trigger a tariff review of both, interconnection and end user prices, before 2005 were exhaustively detailed in the concession contracts. These contingencies are not correlated with the cost realization, which are under the operator control. So, regulators and the government, at least theoretically, “tied their hands”. Thus, they were not supposed to overrule the yearly tariff reviews within this period, unless changing the concession contract, which could be challenged by the Judiciary branch, or pressing informally the operators to reduce the tariff increase allowed under the contract. As we will see below the new government that got in charge in 2003 tried to overrule the tariff rule of the concession contract through an informal, but open pressure, getting, surprisingly, a temporary help from the lower courts of the country;
- The Maximum TU-RIUs (long distance network interconnection) are established through a price-cap ruling for all privatized incumbent companies. There are two sets of price-caps to review interconnection tariffs, based on the evolution of the General Price Index - IGP.

The first set is a single broad price-cap representing a weighted arithmetic average of different long distance services. This differentiation is made through a combination of a particular distance of the call (denoted by “i”) and a combination of time, days of week and holidays (denoted by “j”). There were i=5 possible distances:

- 1) “Conurbado”;
- 2) Up to 50 Km;
- 3) From 50 to 100 Km;
- 4) From 100 to 300 Km; and
- 5) More than 300 Km.

Furthermore, there were 24 possible combinations of days of week/time.

This weighted price-cap is defined by:

$$\left[\sum_{i=1}^5 \sum_{j=1}^{24} TU-RIU_{ijt} * \left(\frac{M_{ijto}}{M_t} \right) \right] \leq (1-k) * \frac{(IGP-DI_t)}{IGP-DI_{to}} * \left[\sum_{i=1}^5 \sum_{j=1}^{24} TU-RIU_{ijto} * \left(\frac{M_{ijto}}{M_t} \right) \right]$$

(1)

The second set comprises one price-cap for each combination of distance and days of week/time. The second set comprises price-cap constraints for each distance and

day/time combination amounting to (24 possible combinations of days of week/times * 5 possible distance intervals =) 120 cap constraints. The general formula for each is:

$$TU - RIU_{ijt} \leq TU - RIU_{ijto} * 1.05 * \left(\frac{IGP - DI_t}{IGPDI_{to}} \right) \quad (2)$$

for all “i” and “j” combinations, where

- “TU-RIUijt” – Tariff proposed by the use of the long distance network to its owner for the day/time “j” in the group of distance “i”, net of taxes;
- “TU-RIUijto”- Current tariff by the use of the long distance network to its owner for the day/time “j” in the group of distance “i”, net of taxes;
- “Mijto”- Minutes of use of the long distance transmission lines for the day/time “j” in the group of distance “i”, observed since the last tariff review;
- “MT”-Total minutes of use of the long distance network observed since the last tariff review;
- “t”- Date of the proposed tariff review;
- “to”-Date of the last tariff review
- “IGP-DI”- General Price Index issued by Fundação Getulio Vargas
- “k”- One of the X factors in Brazil, being 2% until 31/12/2000, 4% from 01/01/2001 until 31/12/2003 and 5% from 01/01/2004 until 31/12/2005. If the period between tariff reviews differ from the exact periods established for each value of X , a weighted average will be used. After 31/12/2005, ANATEL can establish new values for X .

• The TU-RLs (local network interconnection) are established through a single price cap formula

$$\left[\sum_{j=1}^{24} TU - RL_{jt} * M_{jto} \right] \leq (1 - k) * \frac{(IGP - DI_t)}{IGP - DI_{to}} * \sum_{j=1}^{24} TU - RL_{jto} * M_{jto} \quad (3)$$

where:

TU-RLj –interconnection tariff of the local network for time “j”.

Mjto – minutes of the national and international long distance services that use the local network of the company in time "j" observed since the last tariff review. All other variables have the same meaning of the long distance price formula.

The evolution of the X factor that is being used in the interconnection tariff reviews is given in the table below:

Table - Yearly Factors of Real Interconnection Tariff Decreases in the Wire Telephone System in Brazil (or the Brazilian Price Cap X Factors-Broad and Specific)– 1999/2005

	Until Dec/ 2000	Until Dec/ 2001	Until Dec/ 2003	Until Dec/ 2005
TU-RL	0	0,5	0,1	0,15
TU-RIU (Single broad cap)	2	4	4	5
TU-RIU (120 specific price caps)	-5	-5	-5	-5

Note that the TU-RIU X values for the regional price caps allows for real access price increases up to 5%. Given that the single TU-RIU broad access price-cap defines real weighted average access price decreases, we have that any specific combination of distance and time/day of the week increase must be offset by a more than proportionate tariff decrease in other items.

The general principle of free-negotiation is bounded by these price-cap constraints. Despite the emphasis on free negotiation established in the GLT, the common pattern of all interconnection contracts has been the simple adoption, in the single broad cap, of the maximum tariff values defined above.

The Brazilian regulatory framework in telecommunications also considered an active unbundling policy, establishing for the entrants the right to get access to unbundled incumbent services (and vice-versa). Although this ruling was not directly addressed by the GLT, there were specific provisions in the concession and authorization contracts related to unbundling. Provisions 24.3 and 13.3, respectively, of the concession (incumbents) and authorization (entrants) contracts state that *“The company may turn available to interconnection the net elements at the higher disaggregated level technically feasible”*.

Unbundling can be considered, in some sense, as a more complete interconnection policy with similar purposes. While interconnection could be taken as a leasing of the incumbent’s user line for receiving calls on a minute basis while the rival’s user is connected to the former, unbundling is a (unbundled) leasing of the line and/or other elements of the incumbent’s network on a monthly basis and independent of usage. In this case, as stressed by Armstrong (2002,p. 298), contracts have to more flexible for the combination of the rival’s technology with the leased elements.

Anyway, the point is that this concept was not made operative in the Brazilian regulatory framework until the Despacho 172/2004 that we describe in section III.

Art 96, item II, of the GLT defines that the concessionary (or the incumbent privatised) companies should keep accounting separation by type of service. There is not any provision of this kind in the authorization contract of the entrants. The main purpose of this restriction was to improve the regulator information, avoiding accountancy manipulations between competitive and non-competitive services aiming to implement cross-subsidies that represent anti-competitive practices.

III) The Proposed Changes on Interconnection and Unbundling Policies in Brazil

President Lula issued Decree 4.733 by June, 10, 2003, establishing the guidelines for interconnection and unbundling tariffs in the renewal of concession and authorization contracts of telecom operators from 2005 on.

According to article 7 of the Decree, interconnection and unbundling tariffs will be based on a long run incremental cost (LRIC) model. Despite the forward-looking nature of

the “conventional LRIC”, the Decree establishes that the “amortization of investments” will also be considered. Thus, we can consider the proposal as a “modified LRIC”.

According to the Decree, yearly tariff reviews will be based on “price cap” with a productivity discount (the X factor) calculated on the basis of an optimization cost model.

The Decree also guarantees to the entrant, access to unbundled network elements of the incumbent (and vice-versa), which can also be resold.

Other relevant provisions for competition in Decree 4.733 concerns the requirement of “number portability” for end users and accounting separation between local, intercity and international services of all operators and not only the regional incumbents.

ANATEL has already detailed part of the new rules concerning interconnection through the new concession contracts that will prevail from 2006 on, and are looking forward to detail further complementary rules through two Public Consultations. Public Consultation 549 aims to replace the “General Ruling Toward Interconnection” (Resolução 40/98) and the “Ruling on the Charges for the Use of Telecommunications Networks” (Resolução 33/98). Public Consultation 544 clarify the proposed accounting procedures for the LRIC. Since the changes on the concession contracts and on the quoted rulings are strongly complementary, we present both groups of changes as a single one:

1) LRIC

- The definition of LRIC provided is: “*every long run incremental costs updated to the current value related to the isolated supply of a given service, including the capital cost, distributed according to causality principles to all services supplied, considering the long run for which all fixed costs can be taken as variable*”;
- However, the LRIC methodology⁸ will only be implemented in 2008 and not in 2006, when the new concession contracts will start;
- The LRIC will be defined based on what would be the long run incremental cost of a hypothetical (benchmark) efficient firm;
- The LRIC will not be a pure forward-looking concept since it will also consider current and historical costs;
- Although defining incremental cost of a given product, according to the standard accounting definition established in the economic theory, as the savings that would be obtained if it was not supplied, the methodology to calculate LRIC will be based on a conventional “Fully Allocated Costs” procedure aiming to recoup all incumbent costs, including the “common costs”.

2) “Fully Allocated Cost”(FAC) Procedure Proposed

- The specific FAC proposed is the “Equal Proportionate Mark-Up” (EPMU) defined in the following formula for each product or network element “i”:

⁸ Notice that there is not a single methodology of LRIC. See the survey on Sharkey (2002, section 4).

$$N_i = n_i * A / (A - a)$$

being

N_i - Total cost allocated to the product or network element “ i ”, including the “common costs” share attributed to “ i ”

- Costs allocated to a product or network element “ i ”, net of the “common costs” share of “ i ”;

a - Total “common costs”;

A – Total costs, summing up all costs allocated to each product or network element.

This specific FAC, indeed, recoup all costs of the interconnection or network element supplier. Suppose that there are “ M ” products and/or network elements. Every product or network element “ i ” has its own “ N_i ” and its own “ n_i ”.

By definition, we have that

$$A = \sum_{i=1}^M N_i \quad (\text{III.1})$$

If a particular FAC methodology, indeed, recoups all supplier’s costs, then:

$$A = \sum_{i=1}^M N_i = \sum_{i=1}^M n_i + a \quad (\text{III.2})$$

Using the formula of the EMPU, we have that for all N_i

$$N_i = \frac{n_i A}{A - a} \quad (\text{III.3})$$

So, joining (III.1) and (III.3):

$$A = \sum_{i=1}^M N_i = \frac{A}{A - a} \sum_{i=1}^M n_i$$

$$A - a = \sum_{i=1}^M n_i$$

$$A = \sum_{i=1}^M n_i + a$$

that is precisely the same of (III.2), showing that the EMPU methodology, indeed, cover all supplier’s costs.

3) Price Cap

- The LRIC will be recalculated at each three years;
- However, during these three years, the regulator does not commit not to change the LRIC, unless along the year after some tariff review. This is key since a genuine price cap regime requires that the regulator commit not to change LRIC within a given period (in the case the three years). So, the change can be interpreted as an actual abandonment of the price cap regime.

4) Duplicated TU-RIU

- The TU-RIU is split in two, TU-RIU1 and TU-RIU2. The first one will be charged for the use of a long distance network in a call between two local areas, but in the same code area⁹. The second will be charged for the use of a long distance network in a call between two local areas in distinct code areas. They will be equal until December, 31, 2007.

5) Tying Interconnection Tariffs to End-User Tariffs¹⁰

The new ceilings on interconnection tariffs became attached to end-user tariffs charged by the operator. This aims to avoid anticompetitive practices through high access prices.

Tus	Year	Regulated Maximum TUs
TU-RL	Until 2006	50% of the local call tariff charged of end users
TU-RL	2007	40% of the local service tariff charged of end users
TU-RIU (1 and 2)	Until 2007	30% of their long distance service tariff between 100 and 300 Km charged of end users
TU-COM	Until 2007	50% of the value of the TU-RIU1

Since tariff rules for interconnection will be based on a percentage of end user tariffs until 2007, we make brief comments on these new rules for both, local and long distance services. First, the IGP was also replaced for the sake of updating end user tariffs. The new index is called the Updating Tariff Index (UTI)¹¹ and its formula is still to be defined. Second, “k” is no longer fully pre-established as before, coinciding with the known “X” values of the conventional price cap rules. Now,

$$k=X+FA$$

“X” will be defined in a LRIC basis from 2008 on. From 2006 to 2007, “X” will be defined by ANATEL based, among other variables, on “*physical and economic data linked to the monthly subscription tariff and the “use minute value”, as well as material factors,*

⁹ By the time of Resolução 33/98, there was no distinction between “code areas” and “local areas”. In “code areas”, there is the same code for intercity calls. However, the call within a “code area” can still be considered an intercity call if it is done between different “local areas”. So, the “code areas” may encompass more than one “local area”.

¹⁰ Most of them already established in the new concession contract.

¹¹ Índice de Atualização de Tarifas (IST).

personnel and service expenses and depreciation". In sum, in the period 2006/2007, ANATEL will create an algorithm for the calculus of "X" that can be anything.

Anyway, even if the resulting "X" calculated through this "would be" algorithm for the period 2006/2007 and for the "would be" LRIC calculated from 2008 on turns negative, then "X" will be automatically settled at "0". In other words:

$$X (2006/2007) = \text{Max} \{ \text{"Would Be ANATEL Algorhythm"}, 0 \}$$

and

$$X (\text{from 2008 on}) = \text{Max} (\text{LRIC}, 0)$$

"FA" will vary according to the "UTI". If UTI varies:

- until 10%, then FA =0
- between 10% and 20%, then FA = 1%
- more than 20%, then FA =2%.

So, "FA" would work as an "inflation smoothing factor".

The system of partial and broad ceilings described in section II remains with just minor changes in the components of the formulas. As interconnection tariffs become temporarily tied to end-user tariffs, then the algorithm to be developed by ANATEL for these tariffs will be key to settle interconnection tariffs until 2007.

6) Significant Market Power

- It is provided a definition for "significant market power" (SMP). Players who hold this position is supposed to be able to change significantly the conditions on the relevant market;
- The SMP in interconnection for the fixed telephony will be defined based on the following variables: market-shares on interconnection supply and final service, scale and scope economies, non-duplicable infrastructure control, buyer bargaining power for inputs, equipment and services, vertical integration, entry barriers and funding access;
- The maximum values defined for the TU-RIUs, TU-RL and TU-COM will be defined considering the existence of SMP in specific geographical areas defined by ANATEL¹²;
- These maximum values have to be the same for all suppliers with SMP on a given area;
- If there is no operator with SMP in a given area, interconnection tariffs will be freely negotiated. Note, however, that even in this case, any operator is able to request the intervention of ANATEL in the negotiation.

7) Bill and Keep

¹² While as a default rule, these geographical areas coincide with the three areas of the General Plan of Grants, ANATEL can decide otherwise.

- It introduces a “full bill and keep” provision in the local service. Instead of the “partial bill and keep” system of Resolução 33/98, where access payments for the use of local networks would only occur when the difference on the reciprocal two-way flow of traffic is over 5%, the proposal establishes a “phasing in” period to a full bill and keep rule in the local calls with the following schedule:

Proposed Phasing in to a Full “Bill and Keep” Rule

Periods	“Bill and keep” rule applied to the reciprocal two-way traffic flow
Until December, 31, 2004	60%
From January, 01, 2005 to June, 30, 2005,	65%
From July, 01, 2005 to December, 31, 2005,	70%
From January, 2006 on.	Full “Bill and Keep”

8) Interconnection Tariff Discrimination

- The proposed ruling is more strict than the current rules. Remind that Resolução 33/98 established that interconnection tariff discounts could be offered in a “progressive” (quantity discounts) way and should not be based on “subjective” criteria. The proposal prohibits discounts based on traffic flow between networks or on the volume of interconnection expenses, which eliminates the possibility of quantity discounts;

9) Assisting Small Players Through Interconnection Policy

- All telecommunication operators of “collective interest” code (fixed and mobile, concessions and authorizations) with more than 5% of market-share has the duty to bear the full burden of access cost when interconnecting with an operator with less than 5% of market-share in the same area.

10) Widespread Interconnection Points

- All telecommunication operators of “collective interest” (fixed and mobile, concession and authorization contracts) have to supply at least one interconnection point in each code area.

11) Alternative Interconnection Points

- When an operator requests an “interconnection point” to a second operator, if this last one is not able to provide the particular point requested, than he has the duty to offer an alternative to the first operator. This provision is already in Resolução 40/98. The proposal adds a further provision requiring that the additional costs related to this alternative interconnection point have to be incurred by the second operator.

12) Obligations of the Operator Who Requests Interconnection

- When an operator requires a given volume of capacity of interconnection, he has to occupy at least 70% of the required capacity until 180 days after the interconnection capacity becomes fully available. If this operator does not occupy this

threshold capacity, he will have to pay the operator who provided the interconnection capacity, the values corresponding to the difference with 70%.

13) Unbundling

- ANATEL issued Despacho N° 172/2004 ordering “unbundling” from the regional incumbent operators TELEMAR, BRASIL TELECOM and TELESP. There were two types of unbundling defined in this ruling:

-1) Line Sharing: The operator has to offer the copper wire of the local loop for the supply of services not associated to voice. The owner of the local loop remains providing voice services through this copper wire, while the claimant will be able to supply mainly ADSL services;

- 2) Full Unbundling: The operator has to offer the copper wire of the local loop for the supply of all services, not only ADSL.

According to Noam (2002, p.396) the US telecom Act of 1996 defined seven network elements to be unbundled: 1) network interface devices; 2) local loops (what the Brazilian regulators called “full unbundling”); 3) local and tandem switches; 4) interoffice transmission facilities; 5) signalling and call related database facilities; 6) operation support systems and information; 7) directory assistance facilities¹³. In 1999, the FCC also unbundled the high frequency range on the copper loop, which is equivalent to “line sharing” scheme of the ANATEL’s ruling.

So, by concentrating in the unbundling of the local loop (including the high frequency range), the Brazilian regulator seems to have chosen a more modest approach to unbundling policy compared to the US.

IV) An Assessment of the Proposed Changes on Interconnection and Unbundling Policies in Brazil

1) LRIC

By far, the most important change of the Brazilian regulatory framework regarding interconnection is the adoption of the LRIC. This is the main policy used for interconnection tariffs worldwide, being called TELRIC in the US, FL-LRAIC in Europe and LRIC in Japan.

LRIC can be considered as a sort of long run version of the conventional marginal cost pricing rule. However, two of the most important critiques against the standard marginal cost pricing rule does not apply to LRIC. First, as in the long run all inputs are variable, LRIC, by construction, incorporates the short-run fixed costs. Therefore, LRIC

¹³ In 1999, the FCC dropped this item jointly with the item “sub-loops” from the list.

does not suffer the problem of funding the operator's fixed costs attributed to conventional marginal cost pricing¹⁴.

Second, the analogy of LRIC with conventional marginal cost pricing is also limited by the fact that the former is a "forward-looking" concept, while the latter is usually based on realized past costs. Indeed, LRIC is an estimate of the future full costs (variable and fixed), delinking current prices and past costs. By eliminating the passthrough of past costs to current prices, LRIC provides incentives for efficiency just like the price cap formulas. The operator becomes the "residual claimant" over his cost savings.

However, as we mentioned before, Decree 4.733 established a "modified LRIC", including the "amortization of investments" or, in other words, past fixed costs as a parameter for tariff setting. Thus, it is possible that the operator will gain by inflating artificially his capital base just like the conventional Averch-Johnson effect¹⁵, caring less about the efficiency of his investment expenditures. Anyway, this "modified LRIC" keeps the efficiency properties of the "conventional LRIC", concerning variable cost savings.

On the other hand, as argued by Laffont and Tirole (2000, p. 154/161), in sectors like telecommunications where cost-reducing technological innovations are pervasive and equipment is long-lived and sunk, regulatory attempts to base tariffs solely on the forward-looking most efficient equipment, as is the case of the conventional LRIC, tends to be confiscatory. Indeed, if actual (higher) costs are based on the old technology, but regulated tariffs are based on the new technology with lower costs, since the adjustment process is often a gradual one, the imbalance is clear. The higher the likelihood that a new technology is coming soon, the less willing the operator will be to invest in the present. If the operator invests and the new technology comes, then we have a "regulatory taking". The anticipation of this possibility inhibits investment in the sector when conventional LRIC is the pricing rule¹⁶.

As shown by the model presented by Laffont and Tirole, the optimal access prices before and after the advent of the new technology is higher than the conventional LRIC. The optimal access price will be a positive function of the likelihood of the advent of the new technology over time and on the size of the marginal and fixed costs of the old technology. This last variable provides the theoretical rationale for including "investment amortization" considered in Decree 4.733.

According to the authors, based on a two-period model (p. 155/156), it is like allowing equipment owners to make supranormal profit in the short run in order to compensate for the expected future capital losses caused by the new technologies. This would be an intertemporal cross-subsidization with the current regulated price higher than current LRIC to account for that possible loss due to technological improvements.

¹⁴ See Laffont and Tirole (1993, p. 23/24).

¹⁵ See Simon and Blume (1994, p.443/445).

¹⁶ As argued by Sidak and Spulber (1987, p. 423), criticizing the LRIC in the US, "*the FCC jumped the gun by recommending that access to the local exchange network reflect the most efficient technology before the market makes that technology available...Jumping the gun could slow the introduction of the most efficient technology that the FCC uses as its benchmark*".

But the authors go even further in the argument through another two-period model constructed in Box 4.4, adding a “common cost” variable between the two periods. Optimal access pricing is higher than LRIC not only within the old technology, but also when the new technology comes. And this result holds even if there were no expected further technology cost-reducing technological improvements after the new technology. The rationale for this conclusion is based on the standard theory of multiproduct pricing, considering the service supplied today (with the old technology) and the service supplied tomorrow (with the new technology) as distinct services. By this theory, the burden of the efficient amortization of the current fixed cost based on the old technology must be shared between the present and the future, aiming to “smooth” consumption over time. Thus, we fall in a typical smoothing strategy of the conventional consumption theory. The new model results in two Ramsey formulas for current and future optimal access prices, which depend on price elasticities, the LRICs in both technologies and the common cost variable. As the LRIC with the old technology includes the fixed cost incurred for present consumption, we have once more a rationale to include the amortization of investments in the calculus of the regulated access tariffs as proceeded in Decree 4.733.

Anyway, one of the most important purposes of the authors’ model was not to show how to fix the LRIC methodology, but to demonstrate formally one of its most relevant caveats. In the case of the model of Box 4.4, there are at least two further critiques against the conventional LRIC methodology. One of them is properly handled in the modified LRIC methodology of the Brazilian proposal: the inclusion of “common costs” in the EMPU formula described in section III. When conventional LRIC is used to price unbundled network elements, pricing according to incremental costs (be it in the short run or in the long run), theoretically, disregard common costs, which is also a potential source of a “regulatory taking” in this methodology.

Moreover, there are two further issues related to common costs. First, as common costs are the sources of scope economies, the conventional LRIC would, instead of reward this efficiency, penalize it¹⁷. Second, there is an artificial incentive for the operator to reconfigure its network to reduce the proportion of common costs, even if this is inefficient, which can result in less quality or the “*elimination of some services that are uncompensated*”, as argued by Sidak and Spulber (1997, p.417).

While this critique of the conventional LRIC is resolved by the modified LRIC, there are other critiques that are not. The third critique comes from Sidak and Spulber (1997, p. 407). Since LRIC does not account for transaction costs, including search and bargaining costs, even the modified LRIC would remain confiscatory.

The fourth critique, implicit in Box 4.4 of Laffont and Tirole (2000), also remains in the Brazilian “modified LRIC”: there is no consideration of the demand-side of the market to settle access prices in LRIC (or modified LRIC). In almost all the theoretical work of the

¹⁷ Sidak and Spulber (1997, chapters 9 and 12) make an exhaustive critique of the LRIC based on this argument.

authors on access pricing (1994, 1996 and 2000), they insist on this issue. One of the main messages of the models based on Ramsey formulas is that demand should not be disregarded for the sake of optimizing social welfare in access pricing. High prices on elastic segments of the telecommunications sector (relatively to inelastic segments) increases welfare losses, since the reduction in the demand of these segments will be disproportionate.

In the particular case of access pricing, Laffont and Tirole (2000) stress that the main problem of regulators worldwide is not considering access as a “business”, just like the supply of end-user services. Related to this problem, a LRIC rule increases the incentive of the integrated incumbent to foreclose vertically the market for competitors through non-pricing methods. As the LRIC rule disregards the “business” aspect of the access activity, this becomes a less profitable line of business. Moreover, considering that the entrant can be “stealing” customers from the incumbents in other lines of business (e.g. long distance), then the access business brings more damages than revenues to the incumbent. Assuming that the regulator observes perfectly access prices, but less than perfectly the interconnection quality, then the incumbent will have the incentive to deteriorate quality, which increases the need of regulatory oversight.

Aiming to solve this problem of disregarding the “business” aspect of the access supply activities and to establish an equilibrium among the various lines of business of the operator, Laffont and Tirole (2000 and 2002) propose the “global price caps”. Instead of regulating interconnection, local service and long distance service tariffs separately, as done in the Brazilian regulatory framework after privatization, the authors propose to “bundle” the tariffs of all those services in a single weighted average price cap. Besides the optimization properties of this rule, which would induce a Ramsey price structure (and thus, implicitly, consider demand-side on the rule), the global price cap would avoid the incentive to foreclose entrants through interconnection quality deterioration.

Likewise, Baumol and Sidak (1994) point that the telecommunications regulator transited from an “anti-competition” position before the eighties to an excessive “pro-competitive” position nowadays with entry being considered worthwhile at any cost. So, regulators would have missed the point of pro-competition policies that is to enhance economic efficiency. These authors defend the methodology of the “Efficient Component Pricing Rule” (ECPR), initially proposed by Willig (1979), that bases optimal access pricing not only in the accounting costs, but mainly on the opportunity cost of the access supplied. And opportunity cost is clearly intimately linked to demand behavior. Furthermore, Laffont and Tirole (1994, 1996) show that under perfect symmetry of cost and demand conditions between the access supplier (incumbent) and the access claimant (entrant), the ECPR rule reaches the same results of the Ramsey Pricing problem. In other words, the theoretical optimum is achieved with few informational requirements.

There are also relevant operational critiques against the LRIC as pointed by Noam (2002,p. 407/408). First, even in the short-run there are difficulties in computing marginal costs. In the long-run, the difficulties to measure incremental costs (including fixed costs)

are even greater. The fact that telecommunications have an above average rate of technological improvements and the attempt to look forward the theoretical LRIC of a “benchmark company” also turns that task harder. What is the long run in such dynamic sector? For which volume of service, incremental costs should be calculated? The opportunity cost should be included in the relevant incremental cost or not? If not, LRIC would not equal economic costs. What should be included as costs given the incentive to “move” costs between regulated and non-regulated lines of business? How to incorporate common costs? LRIC should be based on historical, present or future costs? Is the government agency better equipped than market players to know which is the most efficient technology available?

And what about the ECPR to replace the LRIC? There are several critiques against the ECPR, as summarized in Mattos (2003a). Noam (2002, p.407) shows that both, OFTEL in the UK and the FCC in the US consider the ECPR not a pro-competitive access price rule. The main critiques against the ECPR is that the rule i) disregards allocative efficiency by not considering the value of competition, even that stemming from less efficient competitors, and ii) perpetuates monopoly rents in the sector.

Some authors like Sidak and Spulber (1997, chapter 9) defend an interesting departure from the conventional ECPR, called the M-ECPR, which would incorporate these critiques. Instead of the full monopoly opportunity cost, the regulator should consider in the access pricing rule, the opportunity cost of providing access considering in the formula the future emergence of competition¹⁹. While a full assessment of all alternative rules to LRIC is not the purpose of this paper, we think that the M-ECPR could be a good option as a theoretical reference for access pricing.

2) FAC

As we have pointed in section III, the last question related to “common costs” was handled through a particular “Fully Allocated Cost” (FAC) model called “Equal Proportionate Mark-Up” (EMPU). The benefit of such type of rule is that this allows the regulated firm to recoup all its investment. Mainly considering that the “conventional LRIC” may not allow for this recoupment²⁰, the definition of any specific rule signals to investors that the regulator is sensitive to this issue. Moreover, FACs are a very clear and simple way to allocate common costs, which is something to be considered.

Despite these benefits, the critiques of economists to FAC rules (not only EMPU specifically) are known. Indeed, this kind of rule:

¹⁹ According to the authors (p.325) : *“far from taking “prices as given” (as in conventional ECPR), the M-ECPR recognizes that an incumbent LEC’s ability to sell retail services at existing retail prices depends entirely on whether entrants offer lower prices. If such lower prices are forthcoming in the marketplace, the incumbent Local Exchange Carriers (LECs) opportunity costs fall, which causes the corresponding rates for unbundled elements to fall as well”.*

²⁰ According to Sidak and Spulber (1997,p. 341), the FCC stated that access pricing of a network element should be below its “stand-alone cost”.

1) is completely “ad-hoc” in the sense that is merely an accounting rule, not based on any well-defined maximizing economic problem. According to Baumol quoted by Sidak and Spulber (1997, p. 42) *“there can be no excuse for continued use of such an essentially random , or rather, fully manipulable calculation process as a basis for vital economic decisions by regulators”*;

2) is more rigid to any attempt of the firm to rebalance its tariffs in face of market forces; on the other hand, since regulated prices are “ceilings of regulated prices” and not “fixed regulated prices”, the impact of this rigidity tends to be lower in the proposed model;

3) creates cross-subsidies from more elastic to less elastic sectors, becoming an anti-Ramsey rule when there are common costs;

4) does not provide proper incentives for cost reduction; in this case “common cost reduction”; achieves an inappropriate structure of relative prices to fund access deficit, subsidizing inelastic segments relatively to elastic segments; induces excessive entry in specific segments and inefficient bypass.

Once more, Sidak and Spulber (1997,p. 319) points that the M-ECPR would be a suitable theoretical reference to allocate common costs instead of the FACs used by the Federal Communication Commission in the US. Furthermore,

3) Price-Cap

Contrarily to the concession contracts of the period 1998/2006, the regulator now is explicitly not “tying his hands”, being able to review tariff rules within the three-year period between reviews.

The tariff review allowed under the concession contract was explicitly challenged by the Communications Minister of the new government, backed by consumer NGOs, in 2003. ANATEL, whose president had been appointed by the former government, uphold the concession contract tariff rule²¹, which was temporarily overruled by the Judiciary branch, that changed the price index from the IGP to the IPCA.

This interference was undone just one year later through a final decision from the Supreme Court of Justice. Anyway, to avoid accumulate the passthrough of the difference of indices in 2002 with the 2004 tariff review, the Minister of Communications and ANATEL (with a new President appointed by the new government) “negotiated” a “phasing in” of this passthrough in “tranches” with the operators, aiming to spread out the impact of the telecom price increase on inflation. Even backed by their contracts and by a Supreme Court judicial order to incorporate the indice difference in an “once and for all” tariff increase, operators accepted this “negotiation” to avoid confrontation with the government and ANATEL. Of course, even this “negotiation” in 2004, much softer than the conflict that occurred in 2003, undermined the credibility of the price cap regime in the country.

Indeed, price-cap is considered a high-powered incentive scheme to induce productivity gains, which is good for productive efficiency. However, the large profits that often occur in view of those incentives is what, several times, turn price-caps politically unsustainable. Regulator or the government is quite pressed by society to reduce operator’s profits through the passthrough of cost savings to prices. As argued by Sappington and

²¹ See Mattos (2003b).

Weisman (1996, p.181) *“the higher earnings that can arise under many incentive regulation plans can invite ratepayer displeasure. Even if pronounced earnings are due entirely to the firm’s diligent efforts and business acumen, and not to lax regulations or fortuitous events beyond the firm’s control, ratepayers may regard high earnings as unfair”*.

It does not happen only in Brazil. In the UK, the “X” values of the telecommunications (1991) and electric power sectors (1995) were reviewed before its scheduled time. The “X” values were enhanced when the regulator realized that cost savings and, thus, operator’s profits were well above the expected values. So, even in a country with well established “institutional endowments”, price-cap sustainability was not guaranteed.

Also concerning this issue of credibility, Guasch (2004) found that price cap regulation induced a higher percentage of renegotiations of infrastructure concession contracts in Latin America. As operators anticipate this behaviour, regulatory contracts ex-ante and ex-post will not be optimal.

There are other problems with price-caps. When the regulator has imperfect information about the ability of the regulated firm to reduce costs, there is a trade-off between incentives for cost reduction, linked to “productive efficiency”, and rent extraction of the entrepreneur, favoring consumers through lower prices for a given cost function, linked to “allocative efficiency”²². This trade-off may turn the optimum regulatory contract a mix between high (for instance, price caps) and low (for instance, rate of return regulation) powered incentive schemes. The bulk of regulation literature, including the textbook of Laffont and Tirole (1993), focuses this question. Price-cap regulation is more appropriate to stimulate productivity and, thus, enhance productive efficiency, but is not suitable to extract rents from the entrepreneur through prices closer to costs and, thus, is not fine for “allocative efficiency”.

Another potential problem of price-cap regulation is its impact on quality. It is common sense that price-cap regulation (or any other high-powered incentive scheme) reduces the incentive to care about quality issues. The policies and proposals to deal with this problem within price-cap regulation range from the establishment of minimum quality standards as in Brazil to an explicit inclusion of quality measures in the price cap as in the case of the State of Georgia in the US.

So, in view of these factors, a “pure price cap” regime may not, indeed, be the best regulatory mechanism for Brazil. However, while the pure price cap regime is far from perfect, this system, besides the proper provision of incentives for productive efficiency, has a clear and strong advantage: its simplicity and transparency for both, regulators and firms²³. Mainly when we compare price caps to LRIC, these characteristics look even more prominent.

²² This trade-off does not occur when the regulator has perfect information about the ability of the regulated firm to decrease costs.

²³ See Beesley and Littlechild (1997, p.60).

Intermediary solutions can be provided. Sappington (2002), for instance, shows the diversity of the experience in the USA states, which blend high and low powered incentive schemes: 1) Banded Rate of Return; 2) Rate Case Moratoriums; 3) Earnings-Sharing Plans and 4) Revenue-Sharing Plans.

But the most interesting alternative is to think about a menu of contracts. The regulator offers to firms contracts with different incentive power, based on different blends of price cap and rate of return regulation. Regulated firms are supposed to self-select themselves according to their perception about their ability to reduce costs. In the US, the FCC designed a menu for access pricing, according to the table below²⁴.

Regulatory Menu for RBOCs Access Pricing - FCC - 1995

Alternatives	Minimum Gains (%)	Share 50%/50%	Maximum Gains (%)
A) X=4%	10,25	12,25-14,25	13,25
B) X=4,75	10,25	12,25-20,25	16,25
C) X=5,3%	None None	None	None

We think that a “menu of contracts” for regulated access pricing, in the line of the FCC policy of 1995 could be superior to the Brazilian “modified LRIC” in terms of incentive provision, simplicity and transparency.

4) Tying Interconnection Tariffs to End-User Tariffs

As we saw in item 5 of section III, access tariffs were, at least temporarily tied to a (lower than 100%) percentage of the end-user tariffs. The purpose is to avoid that the vertically integrated access suppliers charge excessively high charges.

Local access charges, however, would be more appropriately tied to long distance end-user service tariffs and not to local end-user service tariffs.

²⁴ See Sappington (2002).

Recently, the main Brazilian long distance operators, EMBRATEL and INTELIG, charged the regional incumbents, TELEFONICA, TELEMAR AND BRASIL TELECOM of leveraging their dominant position from the local and access service to the long distance service by charging an access price to long distance operators greater than their own long distance prices. The Antitrust Department of the Finance Ministry²⁵ found that for several combinations of distances/time and days of week, access prices were above or slightly below long distance prices, indicating a foreclosure behavior. Tying access prices to long distance end-user prices in a below 100% percentage would prevent this practice.

Depending on the margin of the long distance price of the regional incumbent to the access cost to his end-user, this access price rule could get close to the ECPR. For instance, if the access price TU-RL ceiling (which we call P_a) was settled at 30% of a given long distance price, which we denominate P_{ld} , then:

$$P_a = 0,3 * P_{ld} \quad (IV.1)$$

In an ECPR rule, given an access cost of “c”, we would have:

$$P_a = P_{ld} - c \quad (IV.2)$$

So, if the rule was compatible with ECPR, then

$$P_{ld} - c = 0,3 * P_{ld}$$

$$P_{ld} = 1,42 c \quad (IV.3)$$

So, if the specific long distance price had a 42% margin over the access cost, then the rule would be equivalent to the ECPR. Moreover, if $P_{ld} > (<) 1,42c$, then the proposed access cost rule would imply a higher access (lower) price than the ECPR.

Noam (2002, p.404/406) show that this approach would allow entrants to compete, but also have its own caveats. If the regulator defines a large discount of access prices over retail prices will require that “*the retail customers of the incumbent to subsidize the entrant and its customers*”. This would, according to the author:

“1) distort the high capacity market, since other large users would presumably engage in efforts to obtain the same favourable rates;

2) result in arbitrage, leading to lower retail prices, which would reduce the wholesale prices further if they are set as a percentage of retail prices, and resulting in a kind of “reverse squeeze” on the incumbent;

3) reduce the incentive to improve efficiency if they lead to a reduction in retail prices which would also result in a reduction in wholesale prices; incumbents may then conclude that the best strategy would be to increase retail prices in order to increase wholesale prices;

²⁵ See SEAE (2003).

4) reduce incentives by entrants to construct physical facilities.....”.

The author suggests that the regulator defines a phasing-out for the discount rate to avoid these undesirable by-products. Anyway, in the US, the range of the discounts across the States is between 17 and 25%. So, based on this benchmark, the 50% to 70% discounts proposed by Brazilian regulators would look, at a first glance, too high to be used in this “wholesale approach”.

5) Changing the Index

Another important change proposed in the new regulatory framework was the replacement of the IGP by the UTI. This came from the fact that the new government got very upset with the high level of the IGP between 2002 and 2003 compared to other price indices. The problem was that the IGP includes a lot of tradable goods and, thus, is very influenced by the exchange rate. Since the flexibilization of the exchange rate in 1999 and mainly in 2002, in view of the overshooting of the exchange rate due to the electoral uncertainty in that year, the IGP went ahead of other indices like the IPCA²⁶, less influenced by the exchange rate. However, this is an ex-post and casuistic evaluation for choosing a new index for utility rates. This signals that if the new index, the UTI, goes ahead of other price indices, the government will, perhaps, again be willing to change indices. And nothing guarantees that this will not happen since there is a natural tendency for the indices to converge in the long run. There is a reasonable likelihood that the IGP will fall behind the IPCA in the next few years and other indices less affected by the exchange rate. This means that the government may regret if its rationale is basically to reduce the inflation passthrough to tariffs in the future.

There are some advantages of the IGP. It is calculated by a non-governmental agency (the FGV/RJ), is a very known index, with a 60-year history in the country. On the other hand, there also known problems with the IGP as shown in Banco Central (2003). The weights of its components are based on the value added of the Brazilian economic sectors in the 50’s and the Brazilian economy has changed dramatically since then. Moreover, the IGP is a curious blend of retail and wholesale price indices, not considered a suitable way to build price indices, being unique in the world.

Anyway, the adoption of a new index which methodology is still unknown like the UTI may likely bring more uncertainty to investors and less transparency for society about tariff yearly reviews.

The best option may be keep the IGP or change for a price index that is already used in the market and not calculated by government bodies.

6) The “X” Factor

²⁶ Índice de Preços ao Consumidor Amplo.

Closely linked to this change on the index, the calculation of the “k” (the “X” value in the RPI –X price cap formula) was also changed. In particular, as we saw in section III, an “inflation smoothing factor” (FA) was introduced.

For the purpose of addressing this point, we use the analysis of Bernstein and Sappington (1999, p.6). According to the authors, while the regulation literature has been providing useful insights on price cap regulation, there are no standard conclusions regarding what should be the optimal X factor. Their paper aims to fill this gap. Assuming some hypothesis, including that the inflation rate is not affected by the regulated prices (absence of feed-back effects), the authors show that the optimal X factor, in order to ensure maximal expected rent extraction (zero expected profits) of the regulated firm, should be given by the following expression:

$$X = \{[\dot{T} - \dot{T}_E] + [\dot{W}_E - \dot{W}]\} \quad (\text{IV.4})$$

being the first term the difference in total factor productivity rates in the regulated industry (\dot{T}) and the rest of the economy (\dot{T}_E) and the second, the difference in input price growth rates between the rest of the economy (\dot{W}_E) and the regulated sector (\dot{W}). This is the basic rationale behind the choice of the US price cap formula in 1997²⁷. As argued by Bernstein and Sappington (1999, p.19), the consumer dividend (the first term on the right hand side of (IV.4)) is based on the productivity growth of the telecommunications sector that exceeds the rest of the economy²⁸.

Departing from the assumptions made above, the authors undertake adjustments in this basic formula. Particularly important for Brazil is dropping the assumption of “no feed-back effects” on inflation. There are two relevant remarks. First, as long as the output of the telecommunications sector are intermediate goods for other sectors, there are important feed-back effects on inflation. Second, this provides a microeconomic rationale for including the macroeconomic target towards low and stable inflation endogenously in the price cap formula. Indeed, the effect of introducing “feed-back effects” is in the direction of increasing the value of X , that is, a higher discount of the inflation rate in the allowed increase of the telecommunication tariff review. The higher the feed-back effect, the less the regulated price should be sensitive to the inflation rate which implies a higher X .

But note that the “inflation smoothing factor” of the proposed reform is completely different from the Bernstein and Sappington proposal. In this last case, the impact of tariffs on inflation is accounted “ex-ante” on the calculation of a pre-established “X”. In the proposed change in Brazil, the “X” factor (“k” in Brazil) is reduced “ex-post” accordingly

²⁷ See FCC (1997).

²⁸ See Crew and Kleindorfer (1996, p. 216/219) for a critique of this procedure. They eulogize the UK system where total factor productivity is not used to set X as in the US. They argue that this reduces the incentives provided by the price cap mechanism. Furthermore, the authors (p. 218) argue that this reflects the fact that the commitment ability of US regulators is lower than the UK ones. Alternatively, the authors propose (p.220/224) a menu of contracts where the company solves a trade-off between the X factor and the sharing of excess profits left for the firm. The higher the ex-ante X factor chosen by the company, the higher the percentage of ex-post excess profits released by the regulator to be appropriated by the firm.

to the rate of inflation. Thus, the telecommunications sector pricing policy is charged with the task of helping the Central Bank to curb inflationary trends, when it gets out of control. This is clearly an inappropriate task for telecommunications (or, in general, utility) regulation. The feed-back impact of telecommunications tariff on inflation is what should be accounted for in the calculation of the “X” factor.

7) The “Significative Market Power” Concept

The introduction of the concept of “significant market power”(SMP) to calibrate interconnection tariffs follows the same practice currently in use by the European Commission (EC). In the EC, the main purpose of appointing players who is supposed to hold SMP is to impose extra-duties on them, aiming to avoid that these players “*use their market power to restrain or distort competition in the relevant market or to leverage this market power to related markets*”.

According to the EC guidelines, an operator will be usually considered as holding a SMP when his market-share is over 40%. An analysis on barriers to entry, just like in the proposal for Brazil, will also be undertaken to address SMP. Interconnection access, unbundling, transparency, non-discrimination, accounting separation, price control and universal service duties are the main obligations to be imposed on SMC operators in the European Union.

For a while, the duties to be imposed on operators with SMP are related exclusively to interconnection tariffs and accounting separation, being specified in the new regulatory framework in the proposed “Ruling on the Charges for the Use of Telecommunications Networks”. It is possible, and even likely, that SMP will be used as a criteria for other imposed duties already in use by the EC. In practice, this means that the same companies who hold a concession contract today (TELEFONICA, BRASIL TELECOM and TELEMAR) will be charged with those duties.

Although, we mostly agree with this approach²⁹, it is important to notice that vertical foreclosure is not a strategy that can be taken for granted. As shown by Armstrong (2002,p. 306/310), the objectives of the vertically integrated incumbent (in telecommunications or in any other sector) will be aligned to the regulator’s in at least two selected standard economic models³⁰ regarding the optimal access price to assure efficient entry in an unregulated market. This is a more general result stemming from the Chicago critique against the vertical foreclosure hypothesis³¹. While the economic literature on the last twenty years have rescued at least part of the theoretical rationale behind the vertical foreclosure hypothesis³², our point here is that this is not a straightforward result, even when the incumbent has a unquestionable SMP.

²⁹ We only think that universal service should not be imposed exclusively upon operators with market power. See Mattos (2002a and 2002b).

³⁰ An “Unit Hotelling demand model” with and without the possibility of bypass and a “competitive fringe model” without the possibility of bypass.

³¹ See Bork (1978) and Posner (1976).

³² See Salinger (1988) and Ordover, Saloner and Salop (1990). See Mattos (2002c) for potential long run rationale of foreclosure in telecommunications based on an information asymmetry setting.

The introduction of SMP as a basic criteria for interconnection tariff regulation points that the Brazilian regulator (just like the European) takes this sort of regulation as a consequence of the existence of market-power of the incumbent operators.

On the other hand, we would like to stress that the modern economic literature does not consider a substantive market power in the conventional sense as the single condition for regulatory intervention on interconnection.

First, as argued by Armstrong (2002, section 3), very small operators may hold market power under certain conditions. For instance, consider an entrant mobile operator who already got some customers attached to his network. If those subscribers i) do not gain utility from receiving calls, ii) do not care about the welfare of the people who call them and iii) do not pay anything for receiving calls (as is the case of Brazil), if they are not easily found through a fixed or another mobile telephone operator, there will be a tendency for this entrant mobile operator to charge very high interconnection charges, which is a phenomena that really happens in Brazil and in other countries. This occurs because if this mobile operator charges a high interconnection tariff, the users attached to him will not lose any utility with the three hypothesis made above and thus will not reduce their willingness to pay for the service. In other words, the clientele of the mobile operator just do not care about the consequences of high interconnection charges. To correct for this market power, which is independent of market-share, the regulator could impose some burden directly linked to the operator's interconnection charges on the receiving party. At the same time, if we relax hypothesis (i), the regulator could also allow for some price discrimination³³ in the originating calls, depending on the access charges of the destination operator. If the receiving party receives a positive utility from calls, he will feel badly when his friends reduce the flow of calls to him in face of the high rate they are paying for.

Second, the regulator may be cautious in considering lack of SMP as a rationale for partial deregulation. As also shown by Laffont and Tirole (2000), the regulator can conclude that as for some specific service, for instance the long distance service in some area, there is no SMP of any operator, price controls should be lifted while access price regulation should be kept. In this case, the rate of return of the long distance and access business may get unbalanced in favor of the former increasing the tendency for vertical foreclosure through quality deterioration, enhancing the need for regulatory oversight. So, long distance tariff regulation should be lifted as long as access pricing can also be lifted.

Third, the literature also points another complimentary rationale for interconnection tariff regulation: the transaction costs of this kind of contract³⁴. Since the interconnection

³³ Laffont and Tirole (2000) show that, when the regulator bans price discrimination by destination, there will be a free-riding problem in access prices that will be higher, the greater the number of operators in the market. As each single access price does not matter much to compound the user charges for originating calls, all operators have an incentive to charge very high access prices.

³⁴ See Noam (2002,p.389). According the author, there are two alternative rationales for state intervention on interconnection: monopoly power conferred by the first-mover advantage of the incumbent and transaction costs. The importance of the first rationale tends to shrink as long as competition is introduced in the local service, while the opposite happens to the second.

contract can be taken as an example of a very “incomplete contract”, with several unforeseen contingencies, being its fulfillment “non-observable” and “non-verifiable” (for the agency and mainly for the courts) in several circumstances, state intervention may be required even if there is no market power at all. As we argued elsewhere³⁵, the General Ruling Toward Interconnection (Resolução 40/98) had the main purpose of filling the gap of this contractual problem, with detailed procedures to safeguard the proper enforcement of interconnection agreements. In other words, ANATEL already have the appropriate tools for intervening in these agreements. Fortunately, the proposal maintains all key provisions.

We think that if the single reason for interconnection regulation is transaction costs, an not incumbent market power at the local loop, the General Ruling Toward Interconnection will be enough as a regulation. So, access pricing could be lifted.

Against this view, we have the potential problem pointed by Laffont and Tirole (1998a, 1998b) and Armstrong (1998) that the access prices in a two-way interconnection setting may generate cartelization. The fact that there is a reciprocal input (access) which is being supplied by both (or all) operators to each other (or to all operators) imply a tendency for an above-optimal access charge. Laffont and Tirole (1998 a b) show that if the operator cannot price discriminate call prices according to the operator destination, there is a typical free-riding problem with everyone charging a very high access price. These authors and Armstrong also show that for few operators, the main problem is a possibility for cartelization using the access price as a tool to coordinate cartel players. When operators combine high reciprocal access prices, they get able to better coordinate their actions regarding prices to end-users. Both raise their rival costs in a coordinated fashion, generating a cartel result³⁶.

This problem, however, should not be overestimated. As pointed by Laffont and Tirole (2000), there are four reasons why we should not be much concerned on this issue:

- 1) the possibility that the players react to high interconnection charges by reducing their end-user tariffs aiming to increase their coverage and reduce off-net calls;
- 2) in a two-part tariff setting to end-users, operators could react to high interconnection tariffs by raising the variable part of the tariff, but reducing the fixed part aiming once more to increase coverage and reduce off-net calls;
- 3) if the operator is able to price discriminate calls by destination (mainly between calls on and off net), he can “punish” operators who charge high interconnection charges, by increasing end-user prices

³⁵ See Mattos (2001).

³⁶ Even in the very beginning of the telephone service in the US, Noam (2002,p. 391) shows that the Kingsbury Commitment, which ordered AT&T to interconnect with its rivals resulted in a cartel in 1913. So, the lesson is that the interconnection policies are not a guarantee for competition in this sector and may imply the opposite result. As the author stress “*interconnection has been a necessary but not sufficient condition for competitive telecommunications*”. Anyway, this problem should not be overestimated as pointed by Laffont and Tirole (2000) in view of other forms of competition that can be fostered if the access prices increase.

for calls that terminate in these operators (and lowering for lower interconnection price operators)³⁷;

- 4) operators can react to high interconnection charges by subsidizing receiving calls for end-users, which also aims to enhance coverage and reduce off-net calls.

These remarks show that to prevent the possibility of cartelization in a two-way interconnection setting, the regulator should also be more flexible in accepting certain operator's practices, mainly those considered in items 2 to 4. In this regard, notice that if the recent demands of politicians and consumer associations to prohibit the fixed part of the telecommunication tariff, an important prevention against cartelization in the sector will be given up³⁸.

8) Bill and Keep

The proposal for a "phasing in" of a bill and keep ruling for two-way interconnection brings ambiguous results. "Bill and keep" save transaction costs (there is no need to negotiate and charge interconnection fees) when there is a two-way interconnection traffic between operators. This provision also introduces an incentive for operators to reduce their receiving calls costs, since they are not able to passthrough these costs for interconnection prices. Bill and Keep may also avoid the cartelization problem pointed in the item above.

On the other hand, a "bill and keep" provision reduces the "business characteristic" of the access activity, falling in the critique of Laffont and Tirole (2000) and Baumol and Sidak (1994) made above. Noam (2002, p.401) also point that "Bill and Keep" induce operators to maximize its outgoing calls relatively to incoming traffic.

Sidak and Spulber (1997, p.248 and 251) state that "Bill and Keep" assist entrants. There is an important remark about that. Suppose that there are a total of "X" potential subscribers, being αX attached to the incumbent and $(1-\alpha)X$ to the entrant network with $\alpha > 1/2$ (the incumbent assumption). Assume that each subscriber will give just one call randomly to another subscriber. Each subscriber has a probability of $1/X$ of receiving the call from anyone given subscriber. The expected access revenue with interconnection of the incumbent can be calculated in the following way. We have to multiply the number of end-

³⁷ This reveals that removing fully price-discrimination in telecommunications may not be a good idea.

³⁸ Not accounting for the consequent increase of the "variable part" that should follow to guarantee the economic equilibrium of the operators and a (minimum) respect to the regulatory contracts. An optimal regulated nonlinear pricing with perfect information of the regulator is always optimal as stressed by Vickers (1998, p.26): "*The benefit of two-part pricing is that it enables the variable price to be closer to marginal cost, while the fixed charge contributes to the firm's fixed costs. Indeed, if no one got excluded from consumption altogether, two-part pricing with variable prices equal to marginal costs could achieve the first best.. This accords with the Ramsey principles.... If demand for access to the service is perfectly inelastic, then all fixed-cost recovery should be done via the fixed part of the two-part tariff, and there is no demand distortion.....Ramsey principles apply not just to uniform and two-part tariffs but also generally to the theory of optimal non-linear pricing*". Thus, regulated price discrimination based on two-part tariffs enhance welfare.

users attached to the entrant network $(1-\alpha)X$ times the probability that an entrant call is an off-net call.

As each subscriber has an $1/X$ probability of receiving any call, the αX subscribers of the incumbent has a joint probability of $\alpha X/X = \alpha$ of receiving any call. So, the expected access revenue of the incumbent (EARI) will be:

$$EARI = (1-\alpha)\alpha X \quad (IV.5)$$

Similarly, the expected access revenue of the entrant (EARE) will be the number of end-users attached to the incumbent network, αX , times the probability that an incumbent call is an off-net call. The $(1-\alpha)X$ subscribers of the entrant has a joint probability of $(1-\alpha)X/X = (1-\alpha)$ of receiving any call. So,

$$EARE = \alpha(1-\alpha)X \quad (IV.6)$$

And then:

$$EARI = EARE \quad (IV.7)$$

In sum, expected access revenues and, thus, access expenses, are neutral to α . Therefore, we cannot state that a Bill and Keep provision assists entry.

On the other hand, as stressed by Noam (2002,p. 401), when, for some reason, originating and terminating usage are unbalanced, carriers with relatively more outgoing calls will benefit, regardless of the overall interconnection costs they impose on the whole telecommunication system. This represents a non-internalized externality. And this is argued that entrants have relatively more new subscribers who call more than receive calls for a substantive period of time. Thus, this would generate an unbalance of interconnection payments that would benefit entrants at least in the short-run.

9) Interconnection Tariff Discrimination

We saw that the new proposed regulation is more strict concerning interconnection tariff discrimination. In general, economic theory is ambiguous about the welfare effects of price discrimination. In the specific case of telecommunications, Ramsey pricing and the global price cap proposal from Laffont and Tirole (2000) quoted above presumes price discrimination. Two-part tariffs is a (second-degree) type of price discrimination. As telephone tariffs comprehend subscription (fixed) and pulse (variable) components, it is also a price discrimination practice.

We think that interconnection tariff discrimination in telecommunications should be prohibited only when this clearly represents a vertical foreclosure attempt based on an essential facility, mainly the local loop. Otherwise, tariff discrimination should be always permitted. On other words, instead of a “per se” rule, interconnection (as well as end-user) tariff discrimination should be addressed on a “rule of reason” basis.

10) Assisting Small Players Through Interconnection Policy

Consistently with the view expressed above that interconnection should also be treated as just another business of the operator and not as a pure device to assist entry, we reject entirely the proposal that operators with a market-share of more than 5% be obliged to bear the full cost of access when interconnection occurs with operators with less than 5% of the market. Besides increasing the incentive for vertical foreclosure through the deterioration of interconnection quality, this increases the possibility of inefficient entry and reduces the incentives of the entrant to grow and increase coverage. Furthermore, investment on new facilities may fall, since the returns on infrastructure are curbed. In sum, this is far from an appropriate way of assisting entry³⁹.

11) Widespread Interconnection Points

The provision that all telecommunication operators of “collective interest” have to supply at least one interconnection point in each code area seems to be based on the idea that State intervention on this issue is also strongly related to the minimization of transaction costs among players and not only to the incumbent market power. Even believing that this should be a general principle, we think that exceptions should be considered on a case by case basis. This is because building interconnection points is costly and, at some specific points, the benefits generated may not be strong enough to compensate the costs. These additional costs will have to be shared with all network users, while the benefits concentrated to a small group of customers.

12) Alternative Interconnection Points

The duty of operators to bear the additional burden of offering an alternative interconnection point when the other operator request another interconnection point may be positive to avoid a lack of goodwill from the incumbent in supplying interconnection.

However, once more we think that exceptions should be addressed by ANATEL in the case when one operator may be “overdemanding” another operator just for the purpose of raising rival costs. ANATEL may be very careful about this. And, also once more, the agency has always to bear in mind that access may be treated as a business, not as burden.

13) Obligations of the Operator Who Requests Interconnection

The requirement that the demanding operator occupies at least 70% of the interconnection capacity is positive to avoid excessive demands from him.

14) Unbundling

³⁹ As argued in Mattos (2002a), most of the initial Brazilian policies of entry assistance were also inadequate.

Finally, unbundling policy has as its main purpose to avoid the practice of a “tie-in selling” as a way to raise rival costs by forcing them to buy unneeded services to get needed services and by squeezing prices, which forecloses market for entrants⁴⁰.

This policy is based on the US Telecommunications Act of 1996. This Act states that the incumbents “*are required to provide “nondiscriminatory access to network elements on an unbundled basis” at any “technically feasible point”*”, including permitting “*competing operators to install (“collocate”) equipment necessary for interconnection or access to unbundled network elements at an incumbent’s central switching office*”. As shown by Noam (2002, p.396) by 2000, unbundling was also well established in the European Union, Japan and even as a basic telecommunication principle in the World Trade Organization.

The main appeal of promoting unbundling entry is that this could avoid wasteful duplication of facilities where it is not efficient, while introducing competition through a gradual move in the direction of the user. Furthermore, Baumol and Sidak (1994,p. 121/124) argued that unbundling “*will encourage specialised, but prospectively significant, forms of competition; it will preclude objectionable tying arrangements that can possibly prevent a prospective competitor from seeking to serve a LEC (Local Exchange Carrier) customer*”⁴¹.

However, the US Telecommunications Act provisions toward unbundling are not an absolute consensus. Sidak and Spulber (1997, p.52) point that the definition of “elements” in telecommunications that is, by its own nature, “a bundle of features”, will necessarily be an arbitrary exercise⁴².

Harris and Kraft (1997,p. 107/109) argue that the US Act is “*excessive and not economically justifiable*”, since “*according to established antitrust law and economics, the only valid reason for requiring unbundling is if a good or service is an “essential facility”; that is it is central and necessary to the production process in a downstream market (meaning that without access to the facility, production is impossible), it is a monopoly or bottleneck, and it is not economically replicable by competitors.....the Telecommunications Act of 1996 went much further, requiring incumbents to unbundle assets which are clearly not essential....such as end office and tandem switching, local transport, operator services and directory assistance. New entrants have built and are continuing to build these types of facilities*”.

⁴⁰ Noam (2002,p. 395) adds the extra-profit to be gained by the incumbent when bundling allows price discrimination based on utilization among users.

⁴¹ To perform those tasks adequately, the pricing of the unbundled services becomes a crucial issue. Baumol and Sidak (1994) propose their basic Efficient Component Pricing Rule (ECPR), while Laffont and Tirole (1998,p. 15/20 and 2000, p. 207/212) defend other rules.

⁴² Sidak and Spulber (1997,p. 413) argue that the most disaggregated unbundling policy is, the greater the decrease in the proportion of non-attributable or common costs in total costs, increasing the confiscatory characteristic of the “conventional LRIC”.

That is why in Canada, according to the authors (p. 111), the regulator restricted the scope of unbundling only to essential facilities defined under an antitrust-type standard. Furthermore, the authors argue that unbundling at cheaper rates enforced by the FCC is promoting “*resale of incumbents’ services and network elements at the expense of delaying or deterring facilities-based entry*”. In other words, there is *trade-off* between both kinds of entry, considering the cheap access rates that FCC imposes on incumbents, involving negative impacts on investment, while the main idea behind this sort of policy is that both kinds of entry be complementary: unbundled-based entry in the short-run as a basis for facility-based entry in the long run.

The critique of Harris and Kraft (1997) based on the US experience is persuasive. Despite saving fixed costs, which is socially valuable when there are strong scale and scope economies, generalised unbundling can dampen investment and expropriate the sunk costs of the incumbent. This suggests that unbundling has to be undertaken very carefully to avoid undermining the incentive to invest.

In this regard, the Canadian measures in the direction of restricting unbundling to the bottleneck elements of the network seem more appropriate. A transparent and rational pricing of unbundled leases, where price regulation is required, is another important measure that has to be considered. The antitrust standards for tie-in selling seem to be appropriate for judgement on a case-by-case basis⁴³. By focusing in the main bottleneck element of the network, the local loop, we think that the modest approach adopted by the Brazilian regulator in the unbundling policy established in Despacho 172/2004 is more appropriate than the US. We are not aware whether ANATEL aims to pursue a tighter and more comprehensive unbundling policy.

Laffont and Tirole (2000) also remind that unbundling-based entry should not be so valued by regulators since it is not as tough as the conventional facility-based entry. This is because entrants depend on incumbent inputs and it is advisable for the former not to compete so fiercely with the latter. Of course, if we consider unbundled entry as a first step for a conventional full facility-based entry, the full realization of the value added brought by the unbundled entry will be just a matter of time.

Sidak and Spulber (1997, p.53) criticize the strong intervention of regulators on the terms of unbundled access. According to them “*by specifying the terms of access, regulators eliminate potential efficiency gains from negotiated access and unbundling. By not relying on market mechanisms to determine the nature and extend of unbundling, regulators run the risk of creating inefficient and inflexible access and interconnection rules that impose costs on all parties and potentially subsidize entrants at the expense of incumbents and, ultimately, consumers..... Such transfers (from the incumbent to the entrant) need not achieve the benefits of competition and because subsidized entry can result in inefficient duplication and bypass of existing facilities*” .

⁴³ For a synthesis of the US antitrust policy toward “tie-in selling”, see Gellhorn and Kovacic (1994,p. 326/340) and Hovenkamp (1993,p. 147/163). See also a description and assessment of the important Jefferson Parish Hospital vs Hyde case in Lynk (1999).

While we think that a deep intervention of the regulators in the terms of access in interconnection and unbundling constitutes an unavoidable aspect of such policies in view of the high degree of incompleteness of those contracts and the incentive for vertical foreclosure, we also agree that regulators may not disregard completely the risks pointed by the authors. The main message that we should keep is that productive efficiency should not be disregarded and this indicates that not all entry is desirable. On the other hand, the (short-run and long-run) competition brought even by less efficient competitors may also enhance allocative efficiency and, thus, the regulator may face a trade-off between those types of efficiencies when calibrating unbundling and interconnection policies, especially its pricing.

V) Conclusions

The proposals to reform interconnection policy in Brazil, in its basics, are not at odds with what other developed and developing countries do.

This does not mean that the reform goes in the right direction. The adoption of a “modified LRIC” instead of a “classical LRIC” looks good if we accept that LRIC is the best alternative. However, as argued by several important economists worldwide, the problems of LRIC do not offset the benefits. We stress mainly the lack of simplicity, transparency and the likely increase on the degree of discretion of the regulator as the worst characteristics of LRIC. As stressed by Noam (2002,p. 411):

“Engineering-based cost models, despite their scientific claims, are only as credible as their underlying assumptions.....In the process of balancing pressures and adding “realism”, models have lost transparency to users and policy makers. They acquired the unmistakable flavour of an administrative tool of a planned economy, even if they were adopted in pursuit of market competition”.

In the current year, 2004, when Kydland and Prescott won the Nobel prize not only because of business cycles theory, but also because of the emphasis on more clear and transparent rules rather than discretion, we believe that LRIC is not a good idea for Brazilian access pricing and unbundling policy.

Moreover, according to Noam (2002,p. 418/419), contrarily to its main purpose, the reduction of simplicity generated by the LRIC complex rules in the US seems to *“have delayed actual local entry, and will continue to do so in the future as the details of the rules will require further clarification, proceedings, regulation, litigation and legislation”.*

The concern on enhancing incentive mechanisms for productivity of the Brazilian Model of Telecommunications Reform after privatization in 1998 simply evaporated in the current reform. Regulators do not commit to “tie their hands” anymore. Even accepting that after the turbulent tariff review of 2003, the space to insist on a high-powered incentive scheme like the pure price cap is not large enough, we think that some incentive mechanism should be thought. In particular, the menu of contracts offered by the FCC could provide an interesting guideline of policy.

Another problem of the proposed reform is a set of provisions treating interconnection only as a tool to promote competition and not as a business. This may dampen the desirable requirement of “leveling playing field” the competitive arena and introduce unnecessary inefficiencies. Investment in the sector may fall in this setting.

Last but not least, the introduction of the concept of “Significative Market Power” (SMP) may be a very interesting tool to regulate utilities. But, our guess is that the SMP assessment will be an useful guideline to allow for a potential requirement for a deep deregulation in the sector, perhaps, by the near future.

Our guess is based on the recent developments on the sector pointing for the actual realization of the so-expected “digital convergence” in computer, fixed and mobile telecommunications and communications. The mobile segment is getting closer and closer as a substitute for the fixed telephony, including the new blended fixed-mobile technologies, offering the best of both services as shown by the Economist (September, 2004). On the other hand, there is a consensus (that we share, at least for the very short run) of the experts in the sector that these segments still not belong to the same relevant market as stated by a recent European Commission (2002) guideline.

Furthermore, VOIP, as celebrated by some analysts⁴⁴, can change dramatically this sector in the next few years. We (and we guess the market) still don’t have a good understanding about how far VOIP will actually change this market.

We think that when regulators conclude for lack of SMP in selected areas in view of the acceleration of the “convergence process”, interconnection tariff regulation should be lifted. Specific provisions in the new regulatory framework may support this possibility, putting SMP as necessary condition for interconnection and end-user tariff regulation.

The purpose is to avoid that the strong regulatory framework of fixed telephony compared to mobile and Internet become a serious handicap against the former in the near future. At the same time, the regulation on the enforcement of interconnection agreements in fixed telecommunications will have to converge with mobile, internet and broadcasting. This will be a worldwide challenge and not only Brazilian’s.

Coming back to Brazilian telecommunications in its current conditions, we think that, with few exceptions, most of the proposed reform in telecommunications interconnection policy in Brazil should be “reformed”.

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⁴⁴ See Possebon (2004) for what is going on in Brazil on VOIP and the role of “Session Initiation Protocol” (SIP) to foster the development of the new technology. .

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