PROPOSITION OF AN INDEX FOR POLICY MAKING: ANATEL’S EXPERIENCE IN QUALITY OF TELECOMMUNICATIONS SERVICES

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Abstract

This paper presents a proposition of a general index used to promote specific policies in the telecommunications market. The index is composed by a series of targets defined by regulators, which also provides weights for each goal set. Setting these goals and weights allows the regulators to implement their regulatory policy, if the regulated companies are interested in obtaining a good performance in these indexes. We then show how this methodology was used in Brazil to implement the enhancement of telecommunications quality of services. As a result, we present how this methodology is enhancing the quality of telecommunications services in Brazil. After that, we show how ANATEL expects to use this methodology to promote the use of Brazilian technology by the telecommunications service providers.

Keywords: Telecommunications, policy making, quality of services.

JEL Classification: L15, L96, L98.
INTRODUCTION

Among the main objectives of the National Regulatory Authorities (NRA) there is the implementation of the regulatory policy, this one established by the NRA or by other body of the government. Aiming to assess the level of implementation of these regulatory policies, NRA’s must define which metrics will be used to monitor and guide efforts for this implementation. If the effects of regulatory policy are seen in different metrics, it is essential that the NRA create indexes for monitoring the implementation of the policy as a whole.

In this sense, it is proposed here a general form for the establishment of a performance index of the regulatory policy. This performance index is defined as a weighted average of the deviations of the observed metrics in relation to a goal established by the NRA. This performance index can be used as a tool for implementation of regulatory policy since the regulated firms have incentives to perform well in that index.

The way this incentive is created is a key point for the NRA. Once the NRA overcomes this issue, the authority can use the targets and the weights of the performance index in order to conduct the regulated companies, guiding their behavior toward the regulatory policy.

This performance index has been used by the ANATEL since 2009, when it created the Performance Index in Consumer Treatment (PICT). The creation of the PICT resulted in the enhancement and harmonization of the quality of telecommunications services in Brazil.

In Section 1 we will show the general form of this performance index ($\mathcal{P}_I$). We then present, in Section 2, how this methodology was used by ANATEL to develop the PICT, and also present the results of the use of PICT since 2009. Section 3 presents how Anatel is planning to use this methodology to enhance the use of national technology by the telecommunication service providers in Brazil. Section 4 is a conclusive one.
1 – GENERAL FORM OF THE PERFORMANCE INDEX (PI)

As noted before, the \( PI \) is composed by a weighted average of the deviations of the observed metrics in relation to a set of goals established by the NRA. Is through the establishment of these goals that the NRA will guide the regulated service providers toward its regulatory policy.

One feature that the \( PI \) will have is that of being a positive indicator. In this sense, \( PI \) won’t indicate the service providers that didn’t obtained desirable performance in a specific period. Instead of that, \( PI \) will indicate the service providers that obtained a performance closer to the optimal performance, which is defined by a set of goals established by the NRA.

Thus, the \( PI \) is defined as to assume values between zero and 100, where the value \( PI \) is directly related to the achievement of the goals set by the NRA. In this sense, a optimal performance by a service provider in a specific period will generate \( PI \) of value 100 in that period for that service provider. So, we define:

\[
PI_{i,t} \in [0,100], \quad \forall i \in I \text{ and } \forall t \in T,
\]

where \( I \) is the set of all firms for which we will compute \( PI \) along period \( T \).

As we noted before, the NRA must define which metrics will compose \( PI \). These are the metrics that will be used to monitor and guide efforts for implementation of the regulatory policy. Thus, we define:

\[
M = \{m^1, m^2, ..., m^N\}_{i,T} \quad \text{as the vector of all metrics that will be computed for each } i \in I \text{ and } t \in T.
\]

Besides the set of metrics that will compose \( PI \), the NRA must establish a vector of goals \( G = \{g^1, ..., g^N\} \), such that each \( g^n \) is a goal for metric \( m^n \). These goals must be consistent with the objectives of the regulatory policy, so that the optimal performance is that one desired in terms of that policy.

Also, the NRA must set a vector of weights \( W = \{w^1, ..., w^N\} \), such that each \( w^n \) is a weight for metric \( m^n \). These weights must be defined in terms priority goals among
those of the regulatory policy. There is not a set of possible values for these weights, so
that the NRA must choose higher weights for those metrics that are most related with the
achievement of the regulatory policy. If all the metrics are equally related to the
achievement of the policy, then all the weights should be equal, independently of its
values. In this sense, it doesn’t matters the absolute value of a weight, but it does
matters the value of this weight in comparison with the other weights established.

Another point that we must stress is that vectors $G$ and $W$ are the same for all $i \in I$ and
$t \in T$. Obviously this is not a necessary condition, however, we will consider hereafter
that vectors $G$ and $W$ don’t vary among individuals and periods of time.

Once that are defined the vectors $M$, $W$, and $G$, the $PI$ is defined as:

$$PI_{i,t} = 100 \frac{\sum_{j=1}^{N} w^j R^j_{i,t}}{\sum_{j=1}^{N} w^j},$$

where $R^j_{i,t} = \begin{cases} 1, & \text{if } \frac{m^j_{i,t}}{g^j} \geq 1 \\ \frac{m^j_{i,t}}{g^j}, & \text{if } \frac{m^j_{i,t}}{g^j} < 1 \end{cases}$

From definition above we can easily see that $PI_{i,t}$ is defined in the interval $[0,100]$.

The establishment of $PI$ is just a first step toward the implementation of the regulatory
policy. The main issue that must be solved by the NRA is to create incentives such that
regulated service providers will aim to obtain good results in the $PI$.

These incentives may be created through reduction of taxes and fees, subsidies, and
other benefits for those service providers that obtain some level of the $PI$. The definition
of this mechanism of incentives is a matter of creativity within the legal powers of the
NRA.

According to Brazilian laws, the telecommunications’ NRA (ANATEL) doesn’t have
legal powers to give subsidies, reduce taxes or fees, or any kind of financial incentive.
Due to this limitation of its legal competences, ANATEL had to create a incentive
mechanism not based on financial benefits in order to implement a regulatory policy of
enhancement of the quality of provided services using the Performance Index in
Consumer Treatment (PICT).
2 – USING THE PICT FOR ENHANCING THE QUALITY IN TELECOMMUNICATION SERVICES

Aiming to implement its policy of enhancement of the quality of telecommunications services provided, as defined in Resolution 516 (ANATEL, 2008), in January of 2009 the Brazilian NRA created the Performance Index in Consumer Treatment (PICT), which uses the methodology presented in Section 1.

The PICT takes into account the ability of the service provider to meet the customers’ demands about quality of services within five days, decrease the amount of claims, reduce disputes with consumers and to avoid repetition of claims by same customers. Thus, the better the performance in meeting the goals established by ANATEL, the higher the PICT obtained by the provider.

In this sense, the metrics (M) and goals (G) chosen by ANATEL for composing PICT where:

1. Total of complaints per thousand of customers – goal of 0,2 for mobile operators, 0,4 for fixed operators and 0,03 for long distance operators;

2. Percentage of repeated claims – goal of 10%;

3. Percentage of pending claims – goal of 2%; and

4. Percentage of solved claims within five days – goal of 82%.

The weights (W) for each of these metrics were defined as:

1. Total of complaints per thousand of customers – weight 10;

2. Percentage of repeated claims – weight 5;

3. Percentage of pending claims – weight 5; and

4. Percentage of solved claims within five days – weight 2.
Once defined the vectors $\mathbf{M}$, $\mathbf{W}$, and $\mathbf{G}$, ANATEL decided to compute the PICT for each provider of mobile and fixed (local and long distances calls) telecommunications services. It was also defined by the Brazilian NRA that PICT should be measured in a monthly basis.

After the establishment of the PICT methodology, the next step toward the implementation of the regulatory policy is to create incentives such that regulated service providers will aim to obtain good results in the PICT.

As noted before, ANATEL doesn’t have legal powers to give subsidies, reduce taxes or fees, or any other kind of financial incentive. Due to this legal limitation, ANATEL decided to create a positive incentive through a wide dissemination of the monthly results of the PICT, creating and making widely known a rank of the best service providers.

This divulgation worked as a positive incentive since it represents a good advertising for the best service providers. In this sense, the service providers started to have incentives in obtaining good results in the PICT, once that if they are well ranked, these service providers will obtain a good advertisement made by the NRA.

On the other hand, this publicity of the PICT brings more transparency for the consumer, which gets more information about the quality of services when choosing among the providers in the market. This increase in the transparency reduces the problems of moral hazard\(^1\) in providing telecommunications services.

The effectiveness of this incentive through positive advertisement of the results of the PICT can be observed not only in the enhancement of the quality of telecommunications services, but also in the use of the PICT results by service providers for signalizing to the market a higher level of quality\(^2\).

\(^1\) Moral hazard is a special case of information asymmetry, a situation in which one party in a transaction has more information than another. Moral hazard occurs when the party with more information about its actions or intentions (service provider) has a tendency or incentive to behave inappropriately from the perspective of the party with less information (consumer) (Mas-Colell, 1995).

\(^2\) Brazilian biggest mobile operator (Vivo) started to publish in its official blog the monthly results of the PICT, signaling to the market its compromise with the quality of services provided. (http://www.vivoblog.com.br/vivo-apresenta-resultados.html)
We can see in the Figures 1, 2 and 3 below how the creation of these positive incentives enhanced the quality of provided services, measured by the PICT. We can note the enhancement of quality when we observe, in Figures 4, 5 and 6, the mean values of the PICT and its dispersion.

Figure 1 – PICT of mobile operators

Figure 2 – PICT of fixed operators
Figure 3 – PICT of long distance operators

Figure 4 – PICT of mobile operators (average and variance)
As we can see in the Figures 4, 5 and 6, the increase in the PICT average values for all the three kinds of service providers indicates that the quality of services increased along the period between March/09 and March/10. The reduction of the dispersion of the PICT, associated with the increase in its mean value, indicates that not only the quality as a whole increased, but also that the quality is becoming better and more homogeneous among the service providers.
When we associate the use of the PICT results by service providers with the wide publication of these results by ANATEL and the notable increase in the PICT results along the period between March/09 and March/10, it is evident that the implementation of this performance index is being a useful measure for achieving the objectives of the Brazilian regulatory policy.

3 – DEVELOPMENT OF A PERFORMANCE INDEX FOR PROMOTING THE USE OF NATIONAL TECHNOLOGY IN BRAZIL

Following the successful use of the PICT, ANATEL is studying the development of a performance index for implementing another regulatory policy, which is the use of national technology by the telecommunications service providers in Brazil and more investment in research and development (R&D), as defined in the Resolution 516 (ANATEL, 2008).

In the first discussions about the creation of the Research and Development Performance Index (RDPI), it was proposed the set of the following metrics (M) for composing the RDPI:

1. $P_i$: Percentage of Net Revenue invested in R&D by firm $i$;

2. $ING_i$: Index of Nationalization of Firm $i$;

3. $Par_i$: Resources transferred by firm $i$ to centers of noted proficiency in R&D.

This Index of Nationalization of the Firm is a weighted average of the index of nationalization of its equipments which can be substituted by some national technology. Thus, we define:

$$ING_i = \frac{\sum_i INE_i Y_i}{\sum_i Y_i}$$

Where $Y_i$ is the price of equipment $i$ and $INE_i$ is defined as:
\[ INE_i = (1 - \frac{X_i}{Y_i}).100 \]

Where \( X_i \) is the value of the imported components of equipment \( i \).

We must stress that the equipments considered for measuring these nationalization indexes are only those that have a national substitute, and not all the equipments used by the telecommunication service providers.

The definition of the vectors of weights (\( W \)) and goals (\( G \)) for measuring the RDPI were not decide yet, but it has been decided that the RDPI will be measured for each telecommunication service provider in a quarterly basis. However, once that \( W \) and \( G \) are defined, the RDPI will be defined as:

\[ RDPI_{i,t} = \frac{[w_P (P_{i,t} / P_g) + w_{ING} (ING_{i,t} / ING_g) + w_{Par} (Par_{i,t} / Par_g)]}{w_P + w_{ING} + w_{Par}}.100 \]

Where \( W = [w_P; w_{ING}; w_{Par}] \) and \( G = [P_g; ING_g; Par_g] \).

After the definition of these vectors, the next step toward the implementation of the regulatory policy is to create incentives such that regulated service providers will aim to obtain good results in the RDPI.

As noted before, ANATEL doesn’t have legal powers to give subsidies, reduce taxes or fees, or any other kind of financial incentive. Due to this legal limitation, ANATEL decided to create a widely known a rank of service providers that invest in national technology. To those companies best ranked, ANATEL is aiming to emit document which will certificate the total resources that these companies invested in R&D.

The objective of this certification is to allow those companies to plead for the fiscal incentives defined in the Law n° 11.196/05, (BRAZIL, 2005). According to this law, the companies that invest in R&D can plead for tax reduction, but to obtain this fiscal incentive, the companies must submit their R&D projects to the Ministry of Science and Technology. Due to the great amount of projects this Ministry has faced some difficulty in certificating the R&D investments in a suitable time interval.
Thus, by certificating these investments in R&D, ANATEL would help the Ministry of Science and Technology, and also create a positive incentive for telecommunication service providers to obtain good results in the RDPI.

We must stress that the definition and the implementation of the RDPI is still being discussed by ANATEL and other Government bodies related with the promotion of R&D and development of national industry. In this sense, the RDPI is only a hypothetical example of how the PI methodology presented in Section 1 may be used for implementing a specific regulatory policy.

4 – CONCLUSION

As we shown in Section 2, the PI methodology presented in Section 1 can be used as a tool for implementing the regulatory policy established by the NRAs. We have shown that the use of the PICT by the Brazilian NRA has not only enhanced the quality of the telecommunications services, but also made this quality more homogenous among service providers.

The main challenge for the NRA in implementing the regulatory policy through the use of the PI methodology is to create positive incentives for the service providers aim good results in this index. Once that this incentive mechanism is established, the regulatory policy can be guided by means of the calibration of weights and goals that compose the PI.

The successful use of the PICT by ANATEL served as a first experience of the use of the PI methodology, which shall be used again for implementing the regulatory policy for enhancing the use of national technology by the telecommunications service providers, as shown in Section 3.
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