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SPPI for Telecommunications in France

NACE rev2 61

Denis Gac  
INSEE, France

## 1) **Definition of the service being priced**

The French classification system for products and services (NAF rev 2) states that "this division includes the provision of telecommunications and related services, i.e. the transfer of voice, data, text, sound and images. The facilities for transmission for these services may be based on a single technology or on a combination of several technologies. The services categorised in this division have the common characteristic of transmitting content, without being involved in creating it."

This division is now organised according to the type of infrastructure used (fixed-line, wireless or satellite) while previously it was organised by the type of message being transmitted (voice messages, data, images, television signals, radio signals...)

Nevertheless, the former group "64.2" exactly matches the new division "61" in the 2008 classification:

- [61.1 Fixed-line telecommunications services](#)
- [61.2 Wireless telecommunications services](#)
- [61.2 Satellite telecommunications services](#)
- [61.9 Other telecommunications services](#)

Although the main goal of telecommunications was to enable users (the general public) to have remote conversations using a transmission cable (the fixed line), telecommunications services have greatly diversified with the emergence of new technologies. The mobile network has taken over from the fixed line, and the internet network is now also able to transmit telephone calls.

**Services to businesses** concern voice and data transmission and internet access.

A with regard to **internet access**, businesses need higher transfer speeds (hence high-speed, or even very high-speed connections) than private users, and completely secure and reliable connections.

B the **voice** services required by businesses are similar to those for private users, but with more sophisticated features, such as conference calling, premium rate services...

C in terms of **data transmission**, the services available depend on several variables: geographical distance, the quantity of information transmitted, transfer speed and the level of security. In general, large companies need to have access to complex, strategic and above all secure transmissions. The transmission of audiovisual or radio programmes fits in perfectly here.

It should be borne in mind that it is when the data or voice transmission becomes independent from the medium or the technology transmitting it, that the classification defines the existence of different technologies.

The service price to be measured is therefore the data transmission price (by volume, measured in megabits, by time), with quality and security options, over a given distance. In many cases, it will be noted that the volume and the distance do not have any bearing on pricing parameters, only the size of the pipe may have a significant effect.

## 2) **Pricing unit of measure**

As regards **telephony**, the call length, the distance and the time of the day are the variables which most influence the price of the service. Operators' wish to stagger the load of calls can lead to variations in price according to what time a call is made (the weekend, evening), and the length of the call is a fundamental criterion. The recipient may also have to pay his share of the service when it comes to international calls (*roaming in and roaming out*).

For related services (SMS transmission), the transmission distance is often immaterial, and there may be a flat rate, whoever the recipient is and wherever he lives (over a given area, generally a country). Special types of SMS may also incur over-billing, for instance advertising, promotional operations, etc...

For **data transmission**, the prices depend on the volumes transferred, the speed, the average transfer rate, but also the responsiveness of the technical teams, etc, of the network configuration installed for each business customer. In this market the participants have a certain influence, and buyers are always on the lookout for new ways to cut costs. The **TV and radio transmission** markets work a lot like the data transmission markets. There are a few, well-known companies operating on a market which is very open to international trade.

### **Market conditions and constraints**

#### **a. Size of the industry**

2300 companies generate a turnover of €56bln and employ 150,000 staff. It is a particularly dynamic sector, subject to very frequent technological readjustments, but also a very concentrated sector. Waves of innovation, as well as the liberalisation of the sector and opening up to competition have made the sector strong.

Results of the annual 2005 survey into services (all customers, households and businesses):

	Number of companies	Turnover (€bln)	Employees
<b>Telecommunications</b>	<b>2 309</b>	<b>56 510</b>	<b>149 562</b>
Fixed-line and mobile telephony	1 539	50 931	<b>136 115</b>
Internet access providers	527	1 788	<b>3 595</b>
Radio and TV programme transmission	103	2 388	<b>6 176</b>
Other telecommunications services	140	1 403	<b>3 676</b>

These are the results for the companies which listed telecommunications (including radio and TV transmission) as their main activity in 2005.

The annual survey into telecommunications operators by ARCEP (the French telecommunications and postal regulator) makes it possible to differentiate the turnover of operators according to the final customer. It transpires that businesses only consume 38% of fixed-line telephony services, 28% of mobile telephony and 12% of internet access.

It goes without saying that data transmission services are the exclusive preserve of businesses.

Répartition des revenus par type de clientèle en 2006								
Millions d'euros	G.P.	%	Entr.	%	Op.	%	Total	%
Téléphonie fixe	6 982	61,4%	4 397	38,6%			11 378	100%
Internet	3 276	87,6%	463	12,4%			3 739	100%
Services mobiles	12 028	71,3%	4 831	28,7%			16 859	100%
Services à valeur ajoutée	1 600	64,5%	879	35,5%			2 480	100%
Services de renseignements	114	75,0%	38	25,0%			153	100%
Liaisons louées			696	45,8%	822	54,2%	1 518	100%
Transport de données			1 873	100,0%			1 873	100%
Terminaux	1 569	69,5%	690	30,5%			2 259	100%
Revenus accessoires	1	0,2%	731	99,8%			732	100%
Hébergement					36	100,0%	36	100%
<b>Total marché des Communications électroniques</b>	<b>25 571</b>	<b>62,3%</b>	<b>14 598</b>	<b>35,6%</b>	<b>859</b>	<b>2,1%</b>	<b>41 028</b>	<b>100%</b>

Fixed-line telephony
Internet
Mobile services
Value added services
Information services
Leased lines
Data transfer
Terminals
Subsidiary income
Hosting
<b>Total Electronic Communications Market</b>

**b. Special conditions or restrictions**

**Developments in the market**

Telephony represents the key activity in this sector which is currently seeing the clash of 3 processes: mobile telephony, traditional fixed-line telephony and Voice over Internet Protocol (VoIP), which has particularly developed since 2005.

**Mobile telephony** is the driving force in this market, with strong growth since the early 2000s. To stimulate demand, operators have worked hard to substantially widen the range of services on offer, with new technologies (3G, 3G+) which have opened up new perspectives for customers, especially private users, about multimedia exchanges. Although only three operators currently share the market (with suspicions, to say the least, about illegal agreements to share out the market at the beginning of the 2000s, which led to hefty fines), competitors are having trouble getting a foothold.

a the MVNO (Mobile Virtual Network Operators), which buy volumes of call minutes at a bulk price from the three leading operators to sell them on to retailers. Currently they do not even account for 3% of the market.

b a fourth UMTS licence may be created by the national authorities and sold, but the market shares currently seem well established, and a newcomer would have major difficulty in making a success of it. The bidding has not yet finished.

**Internet telephony** (VoIP) is developing strongly. As part of "multi-play" internet packages (using a "hub" for TV, internet and telephone, known as triple-play, pending the arrival of quadruple-play hubs with the addition of mobile telephony as part of the same package), VoIP calls already represent 23% of fixed-line communications. This service is particularly used by households.

This has had a clear impact on **fixed-line telephony**, i.e. a drop in the market share of this type of communication. The monopoly of France Télécom, the "historic" French operator, has been damaged by unbundling which has allowed alternative operators to eat into its market share. At the moment 50% of fixed-line customers benefit from network access using unbundled connections. All of this is leading to a decrease in turnover for fixed-line telephony.

Another important point: in 2006 more than half of fixed-line telephony revenues were from fixed charges (line rental, access charges) and additional services, i.e. services not connected with providing calls.

**Internet access** now benefits from ADSL connections, which are clearly faster and allow unlimited connections, contrary to what was possible with low speed access. This type of access is dying out (only 17% of the access).

**Data transfer** services are focussing on **IP-VPN**, based on the **MPLS (MultiProtocol Label Switching)** method - the transfer of data on private secure virtual networks -, to the detriment of previous systems, X25, Frame Relay and ATM which are collapsing, due to the considerable fall in prices after the appearance on the market of this new data transfer method, which accounted for 94% of access in 2006.

### c. **Record keeping practices**

This particular point can be related with the established method for calculating this index, taking into account the fact that access to data is one of the main difficulties when calculating the index.

For **telephony**, the "unit value" method is generally recommended for this price index - calculating the average sale price per minute for the most homogenous call categories. In France, the existence of a telecommunications regulator (ARCEP) simplifies data gathering since an agreement between the regulator and the INSEE ensures a regular supply of statistical information for calculating indices.

Alternative methods - the "bill method" or the "rate method" - are not used in France, at least not for calculating the producer price index. Telephone companies are therefore not directly monitored by the statistical service, but via the sector's supervisory authority.

For **data transmission** and **audiovisual transmission** services, which ARCEP does not cover, the information is requested at the companies' headquarters.

### 3) ***Standard classification structure and detail related to the area – does the standard include necessary product detail based on identified price determining characteristics?***

We still do not release a producer price index in this sector. However, work on this area started in 2004 aimed to make it possible to calculate quarterly indices for telephony. The rapid development of telecommunications services has meant overhauling how this activity is covered through indices, so that the sector is covered as well as possible.

In **NAF rev 1** the classification which was used to support our calculations was the following:

<b>64.20 telecommunications services</b>	
64.20.1	message or data transmission
	a telephony services
	b specialist, dedicated networks, data transmission services
	c internet access provision
64.20.2	other telecommunications services
	a television transmission services
	b radio transmission services
	c interconnection services
	d other telecommunications services
64.20.3	cable transmission of radio and television programmes

Only calculating the indices for the portion consumed by businesses (although when it comes to telecommunication the question arises about the interest of only concentrating on services produced for companies' intermediate consumption) only concerns telephony and cable transmission services, since the other services are almost exclusively provided to companies.

The transition to **NAF rev2** meant that the translation of the old indices into the new classification had to be brought forward:

- 61. telecommunications services
  - 61.1 fixed-line telecommunications services
  - 61.2 wireless telecommunications services
  - 61.2 satellite telecommunications services
  - 61.9 other telecommunications services

Transition from NAFrev1 to NAF rev2	61.1 wired	61.2 wireless	61.3 satell	61.9 others
message or data transmission				
a telephone services	yes	yes		
b specialist, dedicated networks, data transmission services	yes			
c internet access provision	yes			
other telecommunications services				
a television transmission services	yes	yes	yes	
b radio transmission services		yes		
c interconnection services (1)				
d other telecommunications services				yes
cable transmission of radio and television programmes	yes			

Interconnection services are a type of intra-sectoral consumption.

#### **4) Evaluation of standard vs. definition and market conditions.**

One of this telecommunications market's characteristics is that it is extremely active, dynamic, and in perpetual change. As a result, the classification systems put in place are often quite rapidly out of step with the actual situation.

a/ When communication takes precedence, the way it is achieved is often secondary: a call can very easily pass through a cable or over a satellite depending on the availability of lines or beams.

b/ "multi-play" communication products are increasing. For a single type of flat rate package (using a "hub"), it is now possible to access the internet, telephone over an internet connection and watch television. Soon it will be possible to use quadruple-play offers, meaning the user will also be able to switch over from a fixed-line to a wireless call, and vice versa.

C/ fixed-mobile convergence: deals between specialists in the unbundled fixed-line sector and mobile operators are enabling a smoother transition between the two types of telephony.

D/ VoIP is developing, and telephoning via an internet connection as well. With the arrival of ADSL, the volume measurement unit is no longer the number of minutes.

E/ mobile operators aim to be different from each other and to differentiate the scope of their products. Or at least the sector's very energetic advertising campaigns want to make consumers believe this. Unlimited access to the web is now possible.

F/ unlimited usage products are developing, as much for private users as for businesses. The service provided (especially in the mobile sector) is no longer purely defined by the length of the call. Some packages give the possibility, according to certain conditions, to make unlimited calls to certain numbers, at certain times.

In the telecommunications sector, any system of classification risks being rapidly outpaced by the actual situation in the market. Services are becoming difficult to categorise in a straightforward way, since packages including new, varied services are developing very rapidly. Connection types are superimposing each other, taking over from each other, the medium replacing the content: hence defining the service is becoming increasingly difficult and complicated.

#### **5) National accounts concepts and measurement issues for the area related to GDP measurement**

The sector's production measurement is calculated by adding the two sub-sectors NAF 642C (telecommunications except audiovisual programmes) and NAF 642D (transmission of radio and television programmes).

This way of measuring production has two advantages:

It is very compact: the 10 largest companies account for 84% of turnover. The large companies are well known, and individual monitoring is possible, even necessary, due to the frequent business combinations which affect them.

Parallel approaches are taken to measuring production by INSEE's annual company surveys and by ARCEP's annual and quarterly surveys.

At the same time the ARCEP annual surveys enable a fresh approach to the turnover generated and production volumes (minutes), as well as a breakdown of jobs in these services, either to households or companies. Intra-sectoral production and consumption are also measured.

The producer price index for companies has been used by national accountants (for the annual accounts) since 2005. Previously, it was the consumer price index for family households which acted as a deflator for the sector's production.

The main reason why this index was used was that it seemed, because of how it was calculated, to be more in line with the reality of changing telecommunications prices (in practice, the cost of telephony).

## 7 Pricing method(s) and criteria for choosing various pricing methods –

In 2004 the decision was taken to calculate a producer price index for telephony using the unit pricing method. The reasons were that

1/ at the time it was felt that the consumer price index previously used to deflate the sector's production did not reflect the supposed fall in prices.

2/ the method used in foreign countries in this field clearly favoured using the "unit value"<sup>1</sup>, as opposed to the "bill method" (using representative bills) or the "rate method", due to the huge increase in pricing offers available on the market. The Eurostat OECD Methodological Guide also recommends using this method, accepted as more solid, but also recognises that "*the unit value method also requires cooperation of telecommunication suppliers and/or industry regulators*", which can't always be taken for granted...

3/ the existence of regular surveys by ARCEP (annual, itemized by final-customer type, and quarterly) means that exhaustive, regular information about the telephony market is available, and that a new statistical system does not need to be set up, which would be bound to be unwieldy, and would add to operators' workload.

Index	Sub-index	Method	Source	Weighting in the index
<b>fixed telephony</b>	National calls	Unit price per minute	ARCEP	7.9%
	International calls	Unit price per minute	ARCEP	1.7%
	Calls to mobiles	Unit price per minute	ARCEP	5.6%
	Line rental	Average line rental price (regulated)	France Télécom	16.1%
<b>mobile telephony</b>	Calls	Unit price per minute	ARCEP	34.8%
	SMS	Unit price per SMS	ARCEP	2.8%
<b>internet</b>		Average access price	ARCEP	2.1%
<b>data transmission</b>		Company-specific surveys	INSEE survey	22.7%
<b>TV and radio transmission</b>		Company-specific surveys	INSEE survey	6.2%

<sup>1</sup> "Price indexes for telecommunications services", Gregory Deuchars(US BLS), Kuniko Moriya (Bank of Japan) Voorburg Group- Orebro-2001



The overall index (of telecommunications for companies) is therefore based on three sources:

ARCEP - regulatory authority	55.0%	unit prices
France Télécom	16.1%	administered price
INSEE surveys	28.9%	INSEE survey

A/ calculation of **unit prices** (price per minute for calls, unit price per SMS) using ARCEP data for

- Fixed-line national calls
- Fixed-line international calls
- Fixed-line calls to mobiles
- Mobile calls
- SMS

The **annual** surveys from ARCEP provide for each operator:

- The "companies" turnover for each item
- The "private users" turnover for each item
- The "companies" volume of calls (in minutes) for each item
- The "private users" volume of calls (in minutes) for each item

The **quarterly** surveys provide:

- The TOTAL turnover for each item
- The TOTAL volume of calls for each item

The differences in prices observed in the annual survey, by final-consumer type (company or private user) makes it possible, using the indicators from the previous year, to calculate quarterly unit price estimates (turnover/ number of minutes) for the current year (but with a delay of one or two quarters).

Only operators active throughout the whole of the current year are considered, and each operator has a weighting reflecting its turnover made with companies over the previous year.

A Laspeyres method is used for the index with the weighting from the previous year.

The same method is used to calculate SMS prices.

B/ **the line rental price** for fixed lines is taken directly from the France Télécom internet site.

C/ for **transmissions** (data, TV, radio).

Electronic communications come under the activities monitored by ARCEP (though not audiovisual communications). Telecommunications operators are therefore also questioned annually and quarterly about their data transmission turnover. However, it is difficult to use this information because of the lack of volume units which can be used to recalculate the unit values.

The INSEE therefore uses the classic method (sampling, contact with companies, protocol validation with each of the companies after the visit of an engineer/researcher) to calculate a producer price index for data transmission and audiovisual transmission.

Sector	Number of companies	Turnover covered by the companies in the sample questioned	Number of services monitored:	Type of services monitored:
<b>Data transmission</b>	7	€3,436,000 K	40	Generally <b>ARPA</b> (average revenue per access) or <b>ARPL</b> (average revenue per line). The price also depends on the type of transfer rate, the market type, the length of the market
<b>Audiovisual transmission</b>	6	€1,236,000 K	40	<b>Highly technical</b> issues requiring regular and complicated contact with operators -Price of contracts for transfer rate (1 Mbps for 1 year) -“Rate cards” with discount rates for some customers -price per megabit via satellite in times of high demand -price per megabit via satellite in times of low demand -revenue per satellite dish -...

After reviewing the experiences of other countries and the methodology guides for telecommunications producer price indices, the main problems raised are:

- 1 Is calculating unit prices more appropriate for a telephony producer price index than an index based on rates (rate method) or on representative bills (bill method)?
- 2 If the unit price is the right method, what is the smallest group of similar services for which the unit price makes sense?
- 3 Can a consumer price index calculated using another method (the always useful method of monitoring the minimum spending necessary to satisfy the specific uses of 54 representative profiles) be coherent, in the framework of a supply-use ratio, with a production deflator which has been calculated completely differently? Is the aim for a telecommunications consumer price index to converge with a producer price index?
- 4 Does the unit price properly take into account the huge increase in pricing offers, combining more and more electronic communication related services? the example of multiple-play offers? of VoIP...? Will the measurement of the price per minute hold out much longer against the reality of a service price which is increasingly independent of duration, with unlimited offers?
- 5 Or isn't the huge rise in the products only a smoke-screen created by marketing professionals to make this oligopolistic and lucrative market more opaque?

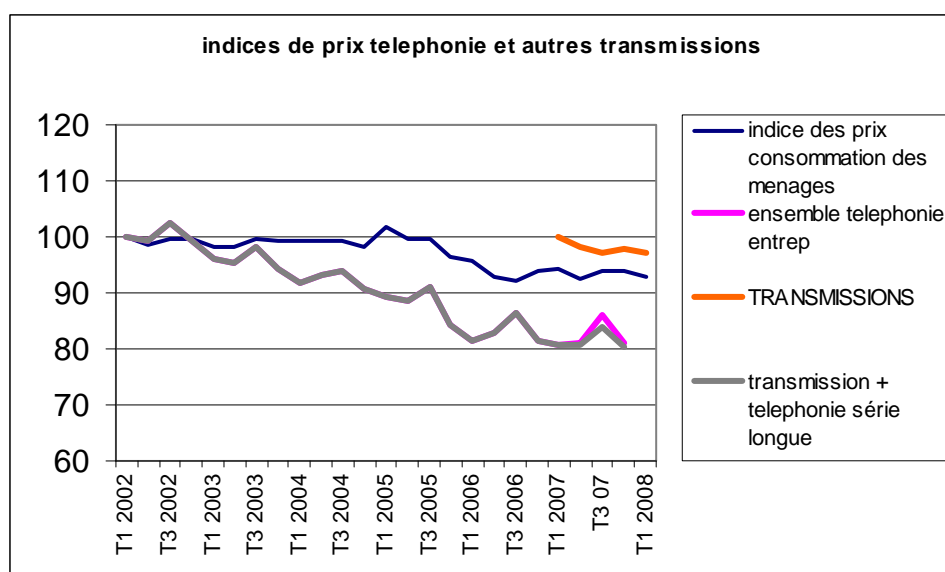
By using the unit price, for example a call minute, as a measurement of the service price it is assumed that the operator's production is proportional to the duration of the call. It is certainly not as straightforward as that. A thousand one-minute calls are without a doubt

more expensive for the operator than one thousand one-minute calls, and the production in the first case differs without a doubt from the production in the other case. But access to a price statistic by call duration is currently not possible.

In the same way, it would be a good idea to itemize in more detail the layers of distance for wireless calls, to differentiate the price per minute for a national and international call.

The problems raised by calculating this index are just as much technical as economic. The lack of an accepted specific telephony index (there is frequent confusion between the producer index and the consumer index) fuels uncertainty about the real changes in prices, pitting the professionals (who claim that mobile prices have dropped by 28% from the sources published by ARCEP) against consumers organisations which complain about inadequate competition (they say the mobile price per minute has only fallen by 21% since 2000... but the charges paid by each user have risen starkly..).

### Prices indices for telephony and other forms of transmission



Consumer Price Index for Households  
Total Business Telephony  
TRANSMISSIONS  
transmission + telephone / long version

### 8 Quality adjustment methodology(s) – depending on the pricing mechanism and item substitution practices

The cost unit of telephony (the call minute) does not correspond with consumer's real use, but has undeniable advantages over other methods (the huge rise in related services, conditions attached to calls, pricing methods after a fixed time-limit, with a variable pace..., unlimited under conditions, with a certain number of SMS free... for the "rate methods", difficulty of approaching discounts for the "bill methods". The call minute provided by the operator definitely represents the minimum production unit sold, and in this sense can be used as a yardstick for measuring prices.

The mix of products can, however, raise some problems:

The example of **triple-play packages** offering unlimited access to the internet, TV and telephone according to certain conditions (national, fixed-line only):

ARCEP does not identify “triple-play” services but averages out the price of the service as follows:

$$\text{triple-play service} = y\text{€} = x\text{€} + m \cdot a\text{€}$$

x€		internet access
n minutes	0€	minutes of communications (free if part of a package)
m minutes	a€	minutes of communications (payable if not part of a package)
0€		TV

The (n + m) minutes are counted in the ARCEP volume statistics, and at a variable price (either 0€, or a€ per minute),

Internet access is counted as internet access.

Thus it is possible to incorporate the components of the “triple-play” mix individually, but without accounting for the TV service, which in theory should be part of the calculation of the TV service price. Question: does the introduction of the TV offer have an effect on the price of the telephone service or on that of the TV?

The mix of services will pose more problems in the future (TV on mobile phones, internet access on mobile phones...). Using cost units in our calculations has the advantage of making it possible to measure identifiable services, within the same group of services. The mix of products included in the “all-inclusive” packages is already difficult to deal with, but this problem will create even more difficulties when the services included will be from areas of classifications other than telecommunications (e.g. TV).

**Upstream**, the service’s quality should also take into account more complicated and qualitative factors such as:

- The land cover of the operator (coverage maps of the network)
- The portability of numbers (from one operator to another)
- The obligations of universal service (price levels for social services)
- The existence of a universal high-quality telephone directory
- The existence of a high-quality information system
- The existence of a payphone service
- The existence of a high-quality network (low call-failure rate, waiting time)
- The speed of response for installation and maintenance

Some indicators estimated by France Télécom

Indicator	Target	2005	2006
Time it takes to provide the initial connection	8 days	7.9 days	8.1 days
Call failure rate	0.7%	0.2%	0.2%
Call set-up time	2.90 s	1.22 s	1.30 s
Billing complaints	0.05%	0.05%	0.08%
Response time for information services	75%	88%	87%
Rate of working payphones	60%	55%	72%

source: ARCEP

This aspect of the quality of the service is not yet dealt with, but could be.

## 9 Evaluation of comparability with turnover/output measures

The national accounts estimate the sector's production as the sum of the two components 642C (telecommunications except audiovisual transmissions) and 642D (transmission of audiovisual programmes).

The output of the national accounts also uses the turnover as a basis for calculating the price indices.

double counting for interconnection services, rented connections between operators

double counting started in 2005, due to the end of the "bill and keep" system, when mobile operators did not charge each other for call terminations (assuming that these costs would cancel each other out)

value added services (itemised billing, three party calls...)

advanced services (free for the caller, premium rate services...)

information services, telephone directories and advertising revenues.

Simplified supply-use ratio:

Activity (2002)	Output	Import		Intermediary consumption	Household consumption	Export
	Supply (1000€)			Use (1000€)		
642C	44 300	1 500		28 000	16 300	1 500
642D	2 200	200		1 800	0	600

When the INSEE publishes an index, it will probably be a single index covering the two sub-activities in the sector.

## 10 Summary

The price of telecommunication services (or more specifically the price of mobile telephony) has still not been satisfactorily resolved in France, because of the market structure. Yet this type of service only accounts for 35% of the calculated telecommunications index.

The supervisory authority only regulates the retail prices of mobile calls in exceptional cases (apart from when it comes to *roaming*) since it mainly acts on the wholesale markets. The cuts imposed by the authority on the rates which operators charge each other (wholesale rates) can therefore be directly passed on to retail prices, such as the rates charged by mobile operators to fixed-line operators for transferring their calls, or those which mobile operators charge each other for handling SMS.

Although this organization has access to a huge amount of information on the subject, it still does not have a method to calculate the price index, whether this is a consumer price or a producer price index.

This shows that it is a sensitive issue, and that publishing a telecommunications index, even a general one, would not be completely uncontroversial. But it is true that the price

per minute is very remote from the concerns of the consumer, often overwhelmed by all the different options of free calls to certain numbers, the number of SMS, unlimited calls, billing by the second...