

*Study of fixed telephony
costs in Argentina*

Methodology and considerations

GENERAL CONSIDERATIONS

The following points are essential considerations:

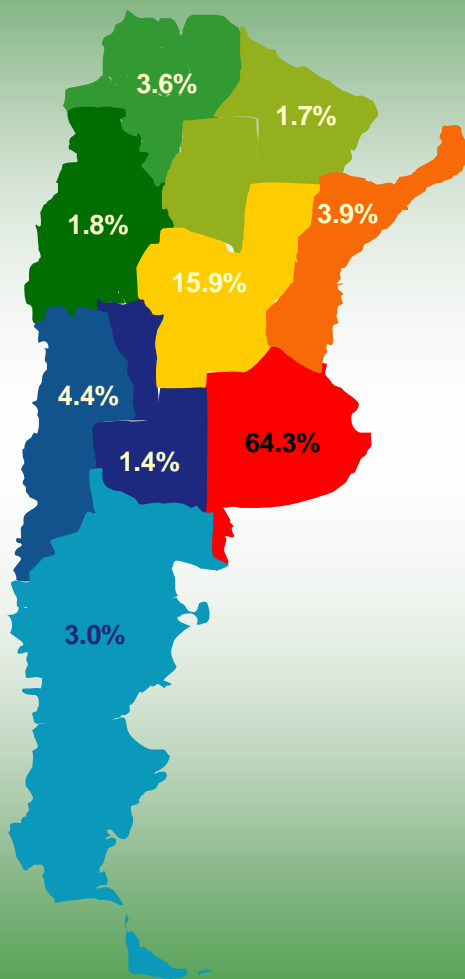
- **Each model and study has to be adapted to the country's economic reality, and has to take account of different social profiles.**
- **Every investment in the sector has to aim at generating a multiplier effect that is consistent with the country's potential for balanced development.**
- **It has to be kept in mind that the application of costing models already established is not always the ultimate solution.**










***WITHIN ARGENTINA'S CURRENT ECONOMIC GROWTH
CONTEXT:***

■ **Measuring fixed telephony costs in order to broaden the spectrum of analysis is crucial in order to lay a solid basis for study, so as to strengthen the analysis carried out by the regulator and thus plan the actions that need to be pursued in order to achieve the desired level of economic growth. This involves in particular:**

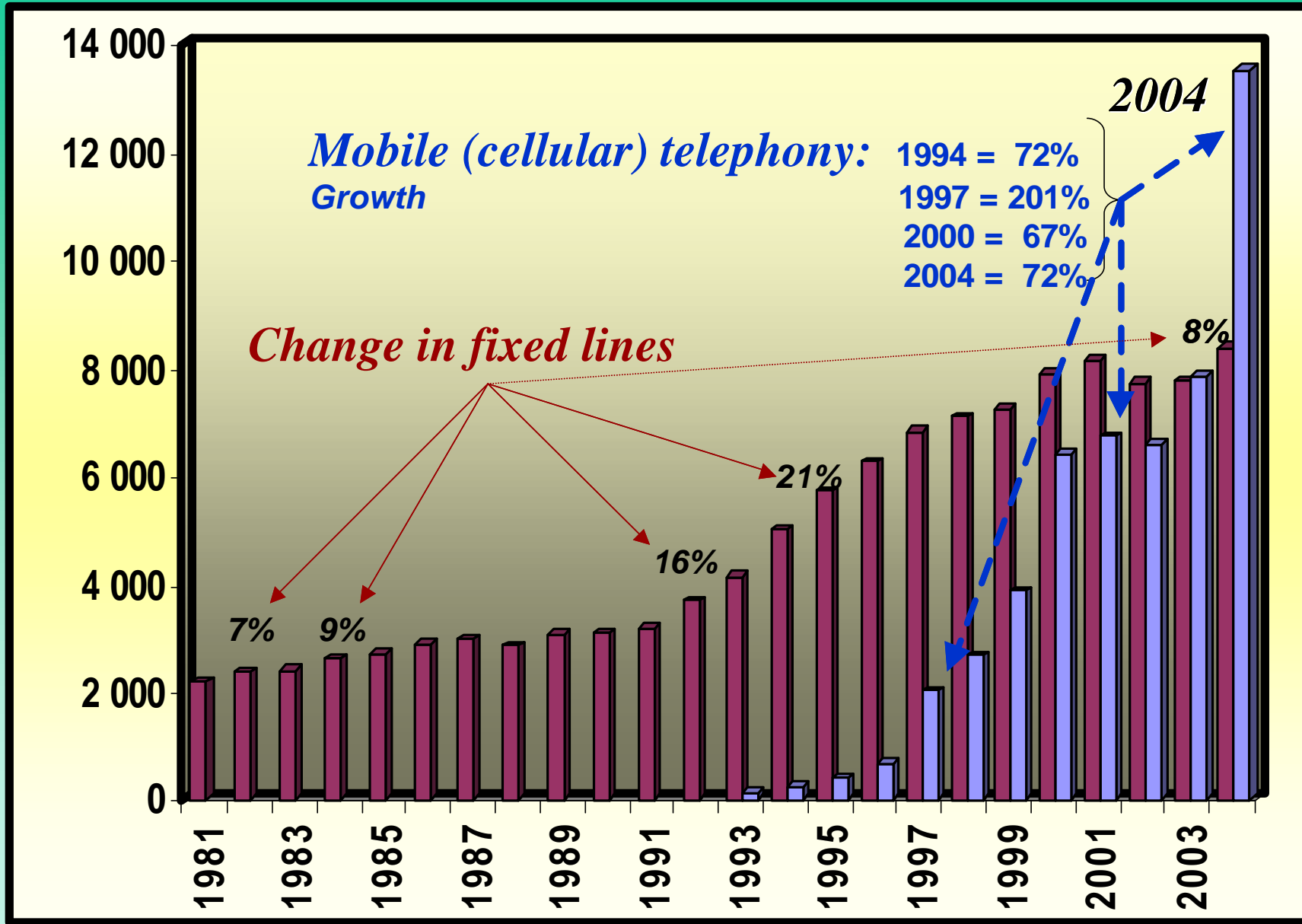
- **Characterization of the data.**
- **A methodology of objective and uniform criteria, through ongoing communication with services and service providers.**
- **Sustainability over time.**

FIXED TELEPHONE SERVICE (2004)







| City and region | Lines in service |
|--|------------------|
|  Buenos Aires (metropolitan area) | 5 375 086 |
|  Centre (La Pampa, San Luis) | 117 239 |
|  North (Jujuy, Salta, Tucumán) | 304 499 |
|  Northwest (Catamarca, La Rioja, San Juan) | 147 527 |
|  Northeast (Chaco, Formosa, Stgo del Estero) | 140 891 |
|  North-Central (Córdoba, Santa Fe) | 1 329 826 |
|  Two Rivers (Misiones, Corrientes, Entre Ríos) | 326 651 |
|  Centre-West (Mendoza, Neuquén) | 371 983 |
|  South (Chubut, Río Negro, Santa Cruz, Tierra del Fuego) | 250 317 |
| Total | 8 364 019 |

Lines (thousands)



How have we set about analysing costs?

Conceptual basis:

a)  technology → expansion of networks,  costs and  demand → recovery of investment 

But ... there are various different behaviours involved.

b) ***For the installed network, even if it may not be used fully, figures indicate that components are only replaced when they are 8 or 9 years old.***

c) ***Thus, companies are holding off on replacing equipment, and do so only when it becomes unavoidable owing to new technical advances.***

- d) As well as the value of the technology, the way it is used and the length of time it is used, the value and behaviour of current and medium-term demand are also used as a measurement factor for new investments.**
- e) The rate of return is beginning to be measured in terms of historical costs, with the result that figures are weighted heavily against users that do not have access to new technology.**
- f) New investments are directed to highly concentrated niche areas, while the other areas mentioned are experiencing disinvestment to some degree.**
- g) Measuring costs in this way can produce service inefficiencies. The benefits of new investment in certain sectors are set against other users as a whole, in addition to whatever economic limitations may be generated within the sector itself.**

Drawbacks of the Hybrid Cost Proxy Model (HCPM) of the US Federal Communications Commission

- a) The network is made up of a great many local areas that have significant differences between them (teledensity, land area, type of soil, concentration of lines, etc.).***
- b) It is hard to obtain digitized georeferenced maps that are complete and of acceptable quality (there are difficulties involved in adapting the map database, a task that would require some 50 000 person-hours of work).***
- c) The HCPM is a static model which cannot reflect the dynamic evolution of the telecommunication network.***
- d) The HCPM is based on teledensity and topology parameters that are used in the United States, which do not match those used in Argentina. Reprogramming the HCPM is difficult.***
- e) There is a practical difficulty in obtaining a complete client database, and this hampers comparison with the network designed for the model.***

An analysis has been done, based on the objectives and drawbacks cited:

- ***by studying operating costs, and using up-to-date detailed information on such costs, together with proper amortization of capital assets based on their useful life,***
- ***by applying current market values to the communication network, and taking into account values based on the adoption of new technology.***

Elements considered in developing the analysis

- ***Total programmed cost (CTP):***

$$\mathbf{CTP = CED + CNAED + CRBK}$$

CED = *Direct operating costs (connection, operating, administrative and marketing costs)*

CNAED = *Costs that cannot be allocated to direct operating costs (charges for provisions and taxes; includes amortization for the financial year being evaluated)*

CRBK* = *Capital asset replacement costs (handling of cumulative amortization from financial years prior to the year being evaluated, with data from the companies and suppliers concerned)*

Analysis of capital asset replacement cost (CRBK)

$$\text{CRBK} = \text{VPB}_1 - (\text{VOB}_0 - \text{AA})$$

VPB₁ = present value of the asset (Moment 1)

VOB₀ = original value of the asset, in constant pesos (Moment 0)

AA = updated cumulative amortization of the asset

Amortization is calculated as:

$$AA = ? \quad VOB_0 \times \frac{(1 - Y)^n}{AL}$$

Y = Annual depreciation rate for the asset during the period “n” (expressed as a decimal).

AL = Total useful life according to supplier or manufacturer.

n = Sequential cumulative periods analysed.

- ***This model sets out a clear and up-to-date analysis of operating costs, as well as costs that cannot be allocated directly to operating costs, and also addresses the calculation of the replacement cost both for investments already made and for investments yet to be made by the service provider.***

Methodology

- ***Introduction***

- Study of service providers' costs, 1991 to 2004
- Growth in the number of fixed lines installed and in service, the number of subscribers, and traffic
- Number of urban long-distance and international calls
- Consideration of mobile telephony as an alternative service
- Analysis of service by zone, by region and by province
- Survey of all switching centres, by region

- ***Operating costs***

Broken down and tabulated on the basis of requested data

Itemized categories:

- Specific inputs and materials
- Electricity and services
- Maintenance of digital exchange
- Insurance
- Repairs and facilities
- Radio spectrum
- Rental, fuel, lubricants
- System maintenance
- Borrowing and bank charges
- Tax on gross income
- Publicity, services
- Other maintenance
- Staff costs
- Contracts to outside suppliers
- Rentals
- Collection costs
- Communications
- Professional fees
- Stationery and office supplies
- Research and development
- Satellite communication

- ***Technical amortization of capital assets***

- Intensive study of a mass of data.
- Reduction of the complexity of investment cost estimates by grouping capital goods equipment used as values in developing the model.

It needs to be made clear that, with a view to optimizing the efficiency of the network, technology changing alternatives were studied, particularly at the level of the transmission process.

Breakdown of the assets considered

When the useful life of a capital asset has elapsed, the technical amortization with respect to the value of that asset is considered to be 100 per cent.

a) Switching equipment: Exchanges, remote terminals, co-location, networks and services, metering equipment, small exchanges, satellite networks. Estimated time: 12 years.

b) Power equipment: Electrical generating equipment, civic infrastructure, and grounds relating to telephone service. Estimated time: 15 years.

c) Telephony infrastructure: Public telephone booths, access controls, earth cable, rural telephony, point to multipoint, modems, telephone services involving multiple payment mechanisms. Estimated time: 12 years.

d) External plant and equipment: Copper cable, boxes, ducts, splices, operating labour, household installations, instrumentation, broadband adapters, primary distribution frames, test bench, guides, ADSL modems, etc.

Estimated time: 28 years for cable and 12 years for equipment (with recycling taken into consideration for the copper cable).

e) Optical fibre: Labour in street works, home installations, instrumentation, broadband adapters. Estimated time: 28 years.

f) General installations: Additional equipment, radio-link, satellite transmission, offices. Estimated time: 15 years.

g) Transmission equipment: Fibre, radio, underwater cables, wireless telephone access, data transmission. Estimated time: 11 years.

h) IT systems: Administrative function. Full depreciation is assumed to take 10 years for purposes of estimating the useful life of the equipment. Estimated time: 10 years.

i) Vehicles: Full depreciation is assumed to take 8 years for purposes of estimating the useful life of the equipment. Estimated time: 8 years.

j) Software: Estimated software cost, according to data from the main companies. Estimated utilization period: 10 years.

k) Furnishings: Furniture and supplies of all kinds. Estimated time: 15 years.

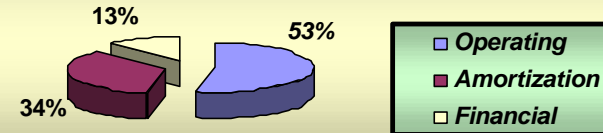
l) Buildings: Estimated time: 75 years.

Summary table – Year 1 of the model

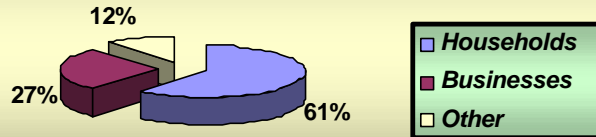
Total billing



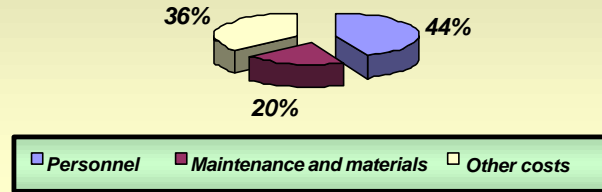
Total costs



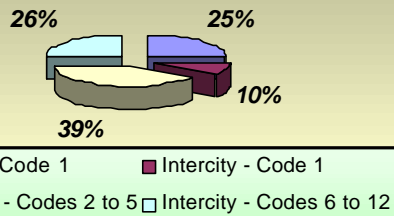
Subscriber billing



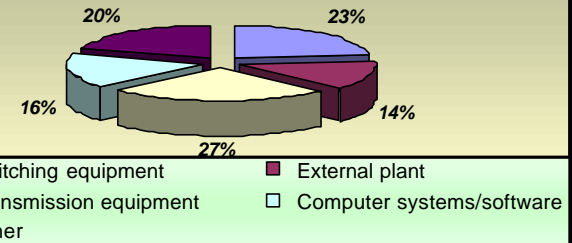
Operating costs



Traffic billing



Technical amortization, capital assets



Presentation of the proposed study

Year 1

(Subject to change)

- ** Telecommunication company with fixed telephone service***
- ** Number of lines installed: 8 300 000***
- ** Percentage distribution of subscribers***
- ** Monthly billing per subscriber, by category***
- ** Urban and interurban traffic billing (per code)
(regular and reduced schedules)***
- ** Breakdown of operating costs***
- ** Breakdown of capital investment and amortization***
- ** Exchange rate:
1 US dollar (USD 1.00) = 2.95 Argentine pesos (ARS 2.95)***
- ** Constant currency as at December 2002***

***Conclusions of the study done for the
company's first year of business***

Initial investment

ARS 18 335 000 000

Revenue

From subscribers

ARS 1 557 712 000

From traffic

ARS 3 360 331 000

Total billing

ARS 4 918 043 000

Billing per line

ARS 593 (=USD 201)

Costs

Operating costs

ARS 1 946 397 000

Operating costs per line

ARS 235 (=USD 79)

Amortization cost

ARS 1 259 500 000

Amortization cost per line

ARS 152 (=USD 51)

COSTS

Financing cost **ARS 458 400 000**

*(Loan for 100 per cent of capital
invested for 12 years at a nominal
annual rate of 2.5 per cent)*

Financing cost per line **ARS 55 (=USD 19)**

Total cost **ARS 3 664 297 000**

Total cost per line **ARS 441 (USD 150)**

Result

ARS 1 253 746 000

Result per line

ARS 152 (USD 52)

Utility margin with respect to costs 34.2 per cent

Utility margin with respect to revenue 25.5 per cent

Conclusions

- ***In measuring costs according to the method proposed, the aim is not to place constraints on modernization or on requirements placed upon the system by global technological change; nor is it intended to hamper companies' planning and business activities.***
- ***The aim is to find ways whereby an independent cost can be determined, so as to eliminate the information asymmetries with which regulators must contend and increase the transparency of information.***
- ***Further aims include making provision for and encouraging different development schemes and putting infrastructure expansion policies in place, taking into account the cost differences identified in the various regions according to the country's macroeconomic planning.***