



Technological Innovation in the Development of Peripheral Regions: the case of the telecommunications in the development of the region of “Alto Trás-os-Montes”

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Context

- The information and communication technologies (ICT) convergence is one of the main economic growth determinants.
- The **important role of the knowledge and information** has a significant impact on developing countries as they seek to become competitive players in a global market.
- Many authors argue that **telecommunications sector is the “nervous system”** of an emerging global information economy...

Context (2)

Peripheral Regions characteristics

- The geographic isolation of the peripheral regions is historically a brake for:
 - the economic development,
 - cultural change and,
 - in general, for the access to services.
- While countries make significant progress in providing access in urban areas, **access in peripheral areas continues to be sparse.**
- This **scarcity of peripheral service** is partly attributable to the unique characteristics these areas present to a telecommunications provider:
 - large geographical distances,
 - low population densities,
 - low levels of economic development, and
 - low levels of skills.
- Then, Telecommunications Operators will be willing **to invest in core-regions** because of the number of inhabitants and therefore the ability to recover cost and make profit...

Context (3)

- There is now growing empirical evidence that the increasing trend for deregulation in the telecommunication sector and privatization of telecommunications providers encourage **the development of advanced telecommunication services based on actual demand, not on social objectives underlying a universal service requirement.**
- This means that metropolitan areas and large cities are better served than sparsely populated areas and small towns.
- Each locality may be connected with internet using telephone or television cables, **but only the largest cities are connected with glass fiber grids that allow for high speed communication of complex information around the globe.**
- Thus, the ubiquity assumption seems not true for advanced ICT infrastructure; **remote areas tend to remain disconnected from them on the local level (the “last mile”).**

Context (4)

- To fully exploit the technological capacity of the new ICTs, **requires the adoption and development of regional human resources and of the institutional structures which support REGIONAL INNOVATION and organized learning.**
- **Clearly, a major challenge in developing the Information Society in peripheral regions is to stimulate demand for the new ICT infrastructures (demand side).**
- The relationships between regional government and industry and other major actors such as the universities and the economic development authorities **all significantly shape regional innovation.**
- For many regions, **telecommunication policy is not normally regarded as a regional policy issue.** More and more regions becoming aware of the need to elaborate strategies for adapting the regional economic base to the challenges of the Information Society.

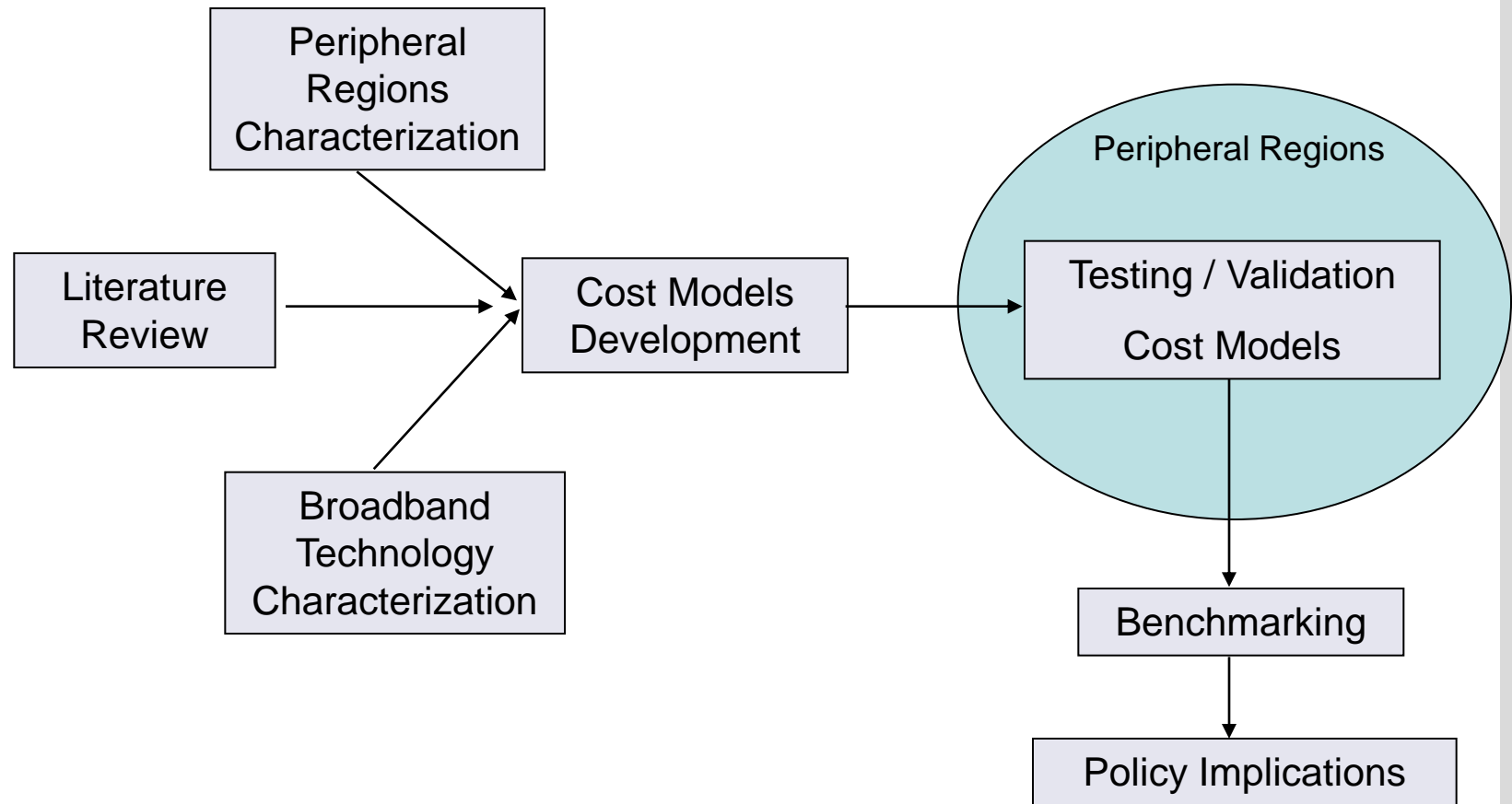
Question

- In this context, we define the following preliminary research question:

“Which is the role of telecommunication infrastructures in the development of peripheral regions?”



Preliminary Framework



Methods (1)

- Focus on Peripheral Regions:
 - Trás-os-Montes: Portugal
 - Castilla y León: Spain
 - And benchmarking with central regions...
- “Alto Trás-os-Montes” region is a peripheral zone, located in the northeast of Portugal with 431,540 inhabitants and an area of 11,122 km² (**corresponds 12.07% of the surface of Portugal**).
- “Castilla y León” is an interior region, situated in the northwest of the Iberian Peninsula with 2.480.369 inhabitants. This peripheral region is limited for nine Autonomous Communities and Portugal. It occupies a surface of 94.223 km² (**corresponds 18.7% of the surface of Spain**), configuring itself as the region most extensive of Spain and third of the Europe. It is constituted by nine provinces: Avila, Burgos, León, Palencia, Salamanca, Segovia, Soria, Valladolid and Zamora.

Castilla y León





Methods (2)

Indicators:

1. Demographic indicators;
2. Economic indicators
3. Social indicators;
4. Technological indicators

• Wholesale

- ADSL accesses
- Wholesale traffic
- Internet
- Average weighted change:
 - Call origination
 - Call termination
- Wholesale leased lines
- Number of leased lines
- Capacity (equivalent to 64 kbps)
- Digital

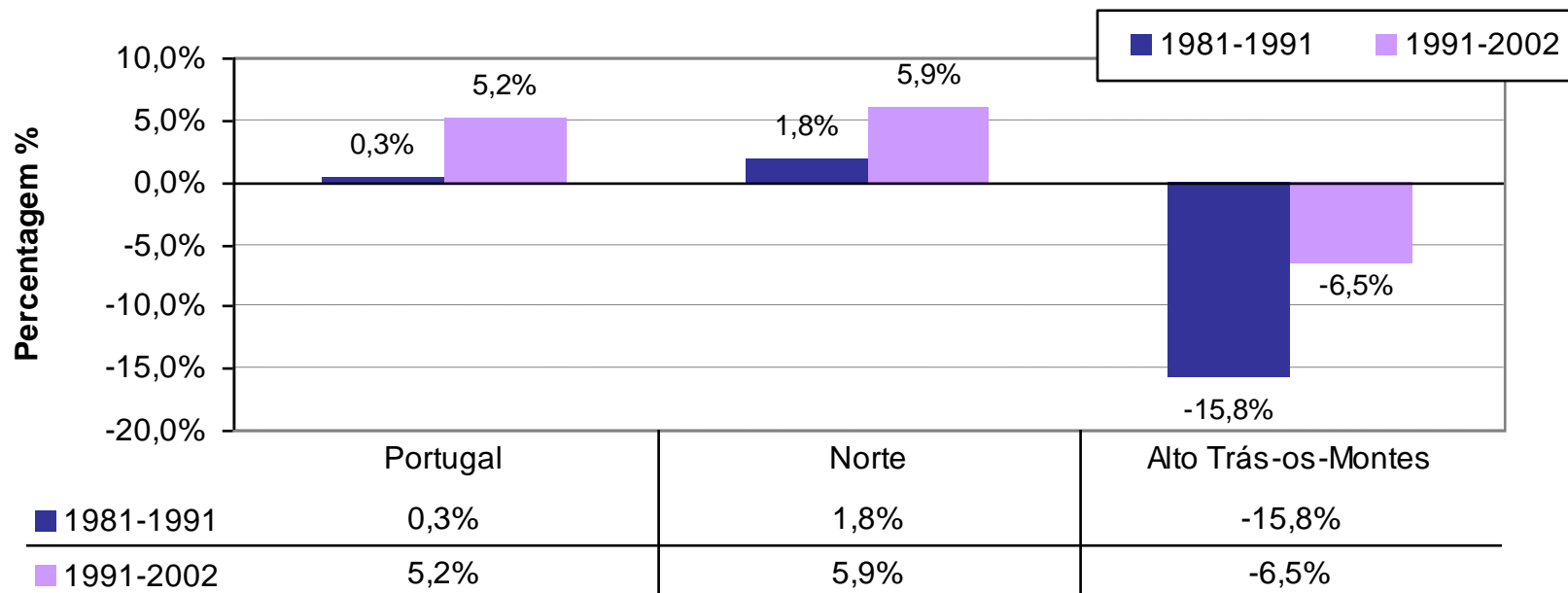
• Fixed Telephone Service

- Total lines
- Main lines in service
- Main lines per 100 inhabitants
- ISDN equivalent main lines
- ISDN penetration rate
- Total traffic, of which:
- Retail
 - Fixed-fixed
 - Fixed-mobile
 - Other
 - International
 - Outgoing
 - Incoming
- Total originated traffic in the fixed network
- Originated traffic per access per day
- Average weighted price change (price basket)

Methods (2.1)

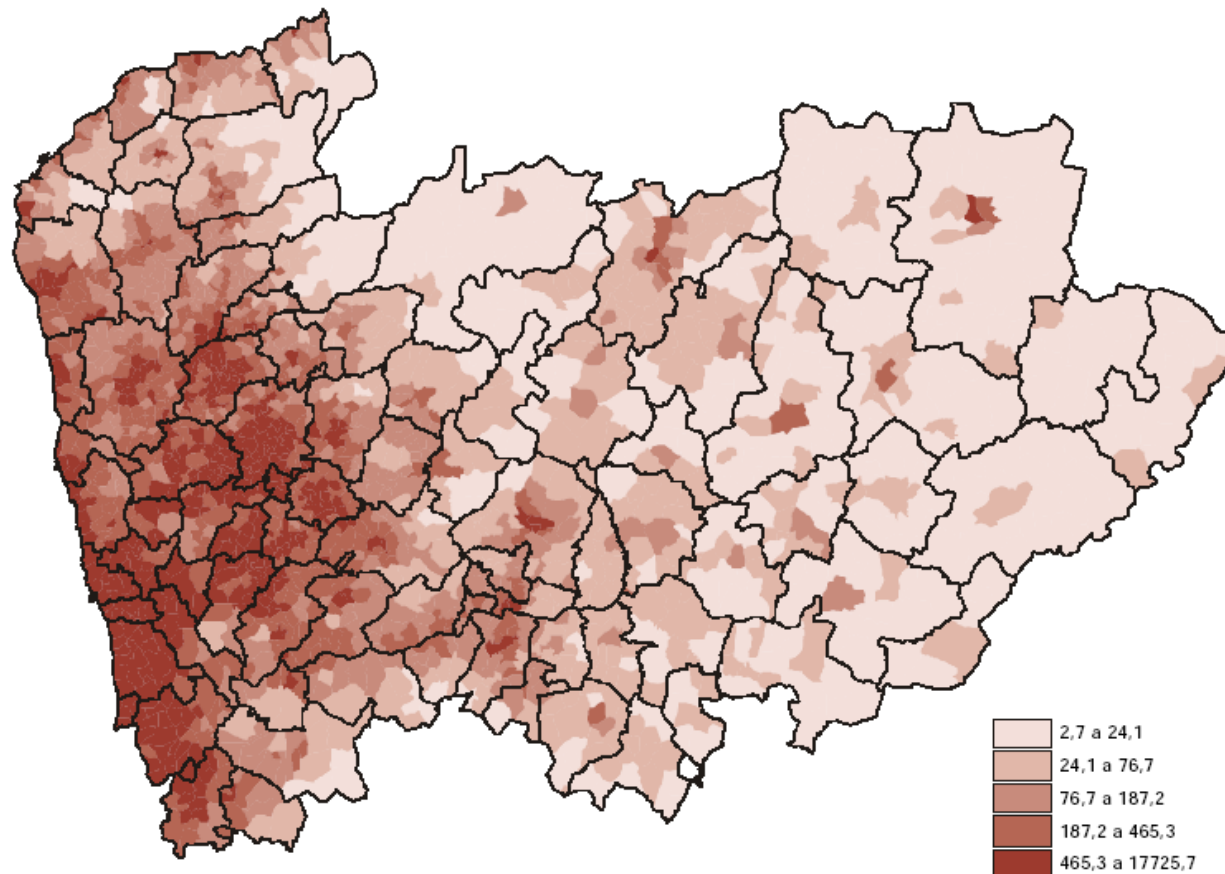
Population variation between 1981-1991 and 1991-2002

Variação da População Residente entre 1981-1991 e 1991-2002, em %



Methods (2.2)

- Population density, in 2001 (hab. / km²)

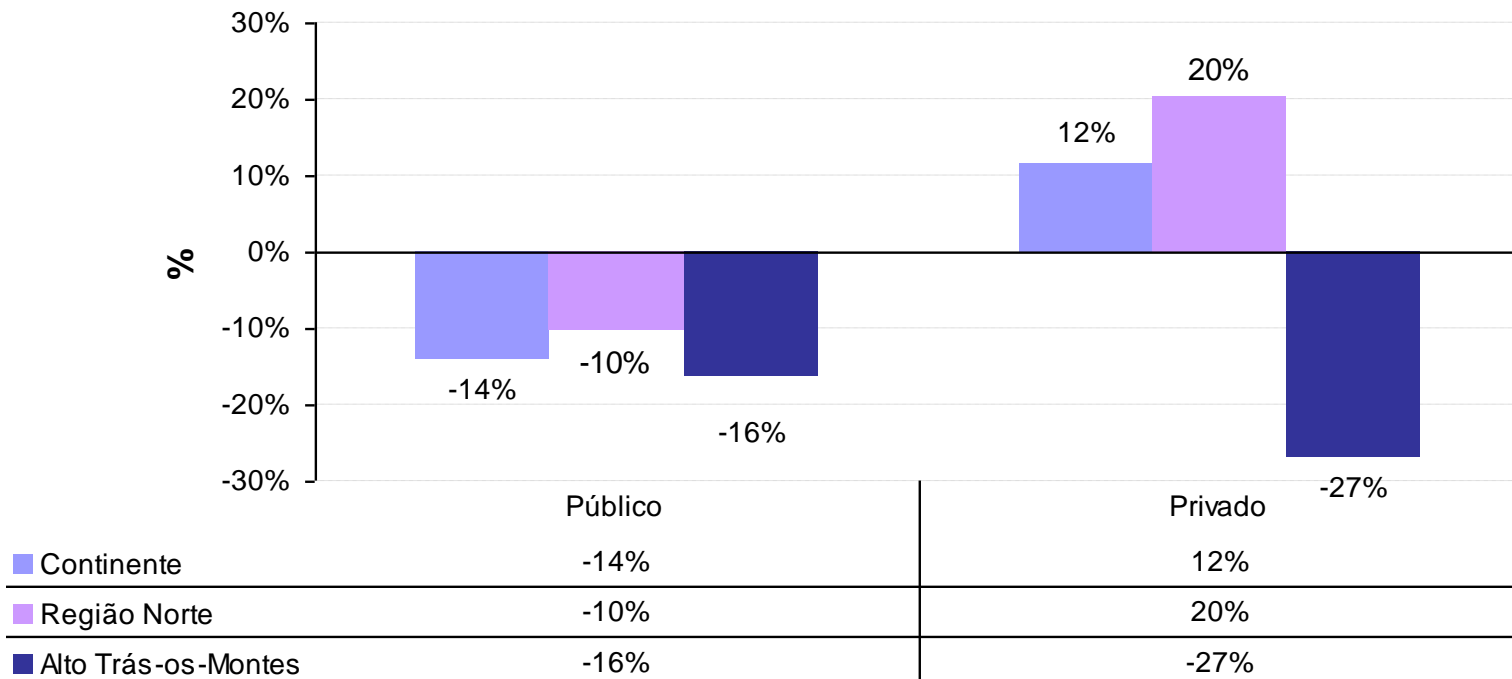




Methods (2.3)

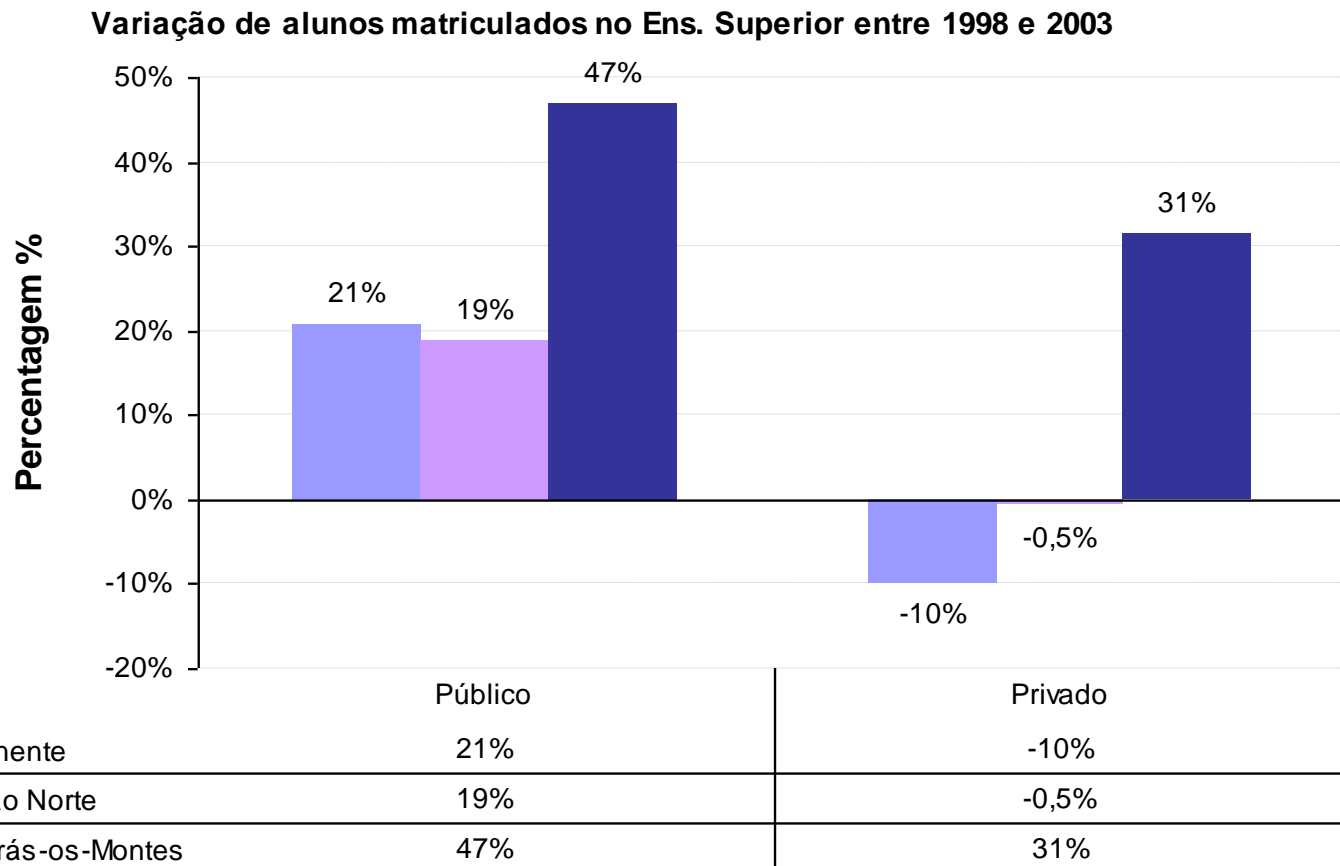
- Students variation in Secondary School between 1998 and 2003 (public / private schools)

Variação de alunos matriculados no Ens. Secundário entre 1998 e 2003



Methods (2.4)

- Students variation in high education between 1998 and 2003



Methods (3)

- Broadband infrastructures in peripheral regions can be supported for multiple technologies:
 - Main technological options for fixed access to broadband:
 - Fiber; cable; xDSL, ...
 - Main technological options for wireless access to broadband:
 - UMTS, WLL, WiFi, Satellite, DVB-T, ...
- The choice is determined for various factors:
 - Clients dispersion;
 - Infrastructure availability;
 - Services to support;
 - And, operation costs of the network infrastructure.
- Critical factors with direct impact in BB development:
 - Prices; Infrastructures; Contents.
- Critical factors with indirect impact:
 - IT skills; Firms modernization; Public Administration modernization.



Methods (4)

- Methodology:
 1. Quantitative, (Sources: Portugal Telecom, UMIC, OCT, ITU, OECD, and surveys...)
 2. Qualitative, (Sources: case studies, and documental content analysis)
- The main problem in collecting data:
 - no available data on regional level;
 - the available information is to national level.
- Two case studies in progress:
 - Trás-os-Montes: Portugal
 - Castilla y León: Spain



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Thank You

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