



Regulatory strategic plan for the Romanian Electronic Communications sector for 2007-2010

Original Submission Date: August 27th, 2007

Last Submission Date following the ANRCTI request:
October 26th, 2007

Table of content

1.	INTRODUCTION	3
2.	MARKET OVERVIEW	4
3.	STRATEGIC OBJECTIVES	8
4.	ANALYSIS METHODOLOGY	12
5.	MOBILE MARKET	18
6.	FIXED AND BROADBAND SECTORS	32
6.1.	Overview	32
6.2.	Fixed and broadband segmentation	36
6.3.	Competitive dynamics & deficiencies identification	44
6.4.	Proposed regulatory interventions	53
6.5.	Summary of the fixed, broadband and data sectors analysis	60
7.	TRANSMISSION OF AUDIO-VISUAL CONTENT SECTOR	62
7.1.	Overview of TV sector	62
7.2.	Broadcasting segmentation process	65
7.3.	Diagnosis & market deficiencies identification	71
7.4.	Proposed regulatory interventions	76
8.	INTERTWINING AND EXTERNAL CONDITIONS	81
8.1.	Intertwining conditions and the impact on the diagnosis analysis	81
8.2.	External conditions and their potential impact on the diagnosis analysis	86
9.	TARGET MARKET FORECAST	88
9.1.	Mobile sector forecast	88
9.2.	Fixed telephony sector forecast	91
9.3.	Broadband sector forecast	92
9.4.	Subscription TV sector forecast	94
10.	PERFORMANCE INDICATORS AND INFORMATION SYSTEM	95
11.	SUMMARY	98
12.	SOURCES	105

1. INTRODUCTION

On January 2007, the Romanian National Regulatory Authority for Communications and Information Technology (ANRCTI) initiated the formulation of a strategic regulatory framework for the period of 2007 to 2010, to be conducted by TASC Strategic Consulting, a strategic consulting firm.

The strategic framework sets the course of action by which ANRCTI can effectively promote the development of the electronic communications markets in Romania through the creation of a professional and transparent regulatory regime that considers the unique characteristics of the Romanian telecom market along with the EU regulatory directives. The end goal is to benefit the Romanian consumers and to create a healthy competitive environment.

The work was conducted during the period of March-August 2007, and was based on a structured methodology that was applied to all electronic communications' sectors and included numerous sources: meetings with industry players, different industry associations, information collected from carriers, statistical data, consumer surveys, the ANRCTI's database, EU commission documents and counterparts regulators.

The result is an indicative, yet thorough, analysis of the Romanian electronic communication market, which includes: the setting of regulatory objectives, reviewing markets and forecasting trends and their respective developments, conducting a segmentation process for each sector, analyzing competitive dynamics, identifying market deficiencies, analyzing the current regulatory regime and recommending on suitable remedies.

The analysis presented is strictly indicative and a complete process of regulatory market definition and SMP analysis has yet to be performed.

2. MARKET OVERVIEW

2.1. Current state of the Romanian telecom market

Market comparisons suggest that the Romanian telecom services penetration lags most European markets. The main gaps in penetration appear in broadband services and fixed telephony, while subscription TV is higher than the European average. Exhibit 2.1.1 shows the penetration level of various services vs. the EU25 average, as well as selected countries.

Exhibit 2.1.1: Penetration level of various services vs. the EU25 average ^(1, 11, 12, 13, and 14)

Cellular-penetration rate (population) - Sep 2006		
3	ITALY	133.0%
8	CZECH REPUBLIC	115.4%
	AVERAGE EU25	103.2%
20	HUNGARY	95.5%
21	POLAND	88.7%
27	ROMANIA	74.4%

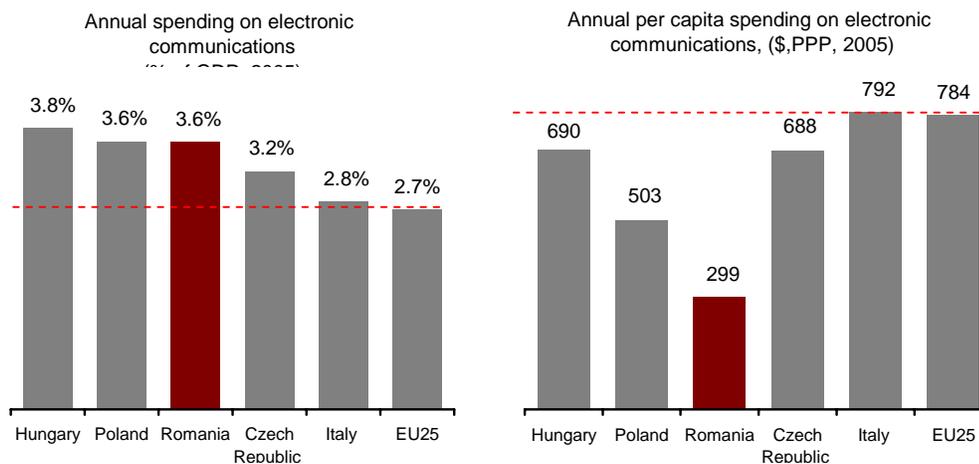
Broadband penetration rate (population) Sep 2006		
	AVERAGE EU25	15.7%
13	ITALY	13.6%
18	CZECH REPUBLIC	9.6%
21	HUNGARY	8.6%
23	ROMANIA	5.5%
24	POLAND	4.5%

Fixed-penetration rate (population) - Sep 2006		
	AVERAGE EU25	52.6%
13	ITALY	48.4%
19	CZECH REPUBLIC	36.0%
20	HUNGARY	34.9%
22	POLAND	31.9%
27	ROMANIA	20.4%

Subscription TV-penetration rate (HH) - 2005		
11	HUNGARY	64.0%
12	ROMANIA	63.5%
	AVERAGE EU25	55.1%
15	POLAND	53.3%
22	CZECH REPUBLIC	24.6%
23	ITALY	20.6%

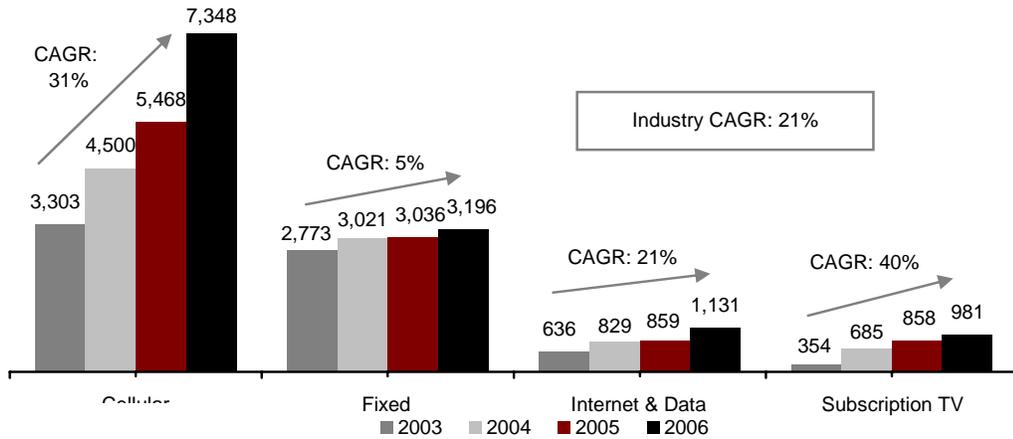
In Romania, annual spending per capita on telecommunication services is relatively low. However, annual spending as a proportion of GDP is relatively high, which indicates the relative importance of telecommunication services for the Romanian citizens. Exhibit 2.1.2 compares the relative spending on telecommunication services.

Exhibit 2.1.2: Relative spending on telecommunication services ^(15, 16)



The growth of electronic communications revenues has reached 21% per annum in the period 2003-2005, while GDP growth stood on 8.1%. Mobile telephony and subscription TV are the key services fueling the growth in the Romanian market. Exhibit 2.1.3 describes the annual growth in revenues of the main telecommunication services.

Exhibit 2.1.3: Revenues of telecom services, by sector ⁽¹⁾
(Million RON, 2003-2006)



The Romanian electronic communication market is still growing at an impressive rate, even outpacing the Romanian economy. Furthermore, due to the relatively low penetration rates it still has significant growth potential. While subscription TV has the highest growth rate, the mobile sector is the most dominant in terms of revenues. Yet, both sectors have reached relatively high penetration levels. In contrast, the broadband penetration rate is low but increasing rapidly; yet in terms of revenues it seems to produce a lower growth rate. Finally, the fixed telephony sector seems to be both low in penetration and in its relative growth rate.

Total gross revenues of the Romanian telecom market have reached nearly 13 billion RON in 2006. The mobile sector possesses more than 55% of total Romanian electronic communications market's gross revenues and its relative share is still growing. Exhibit 2.1.4 describes the breakdown of the different electronic communications services and the key players within each sector.

Exhibit 2.1.4: Romanian telecom revenues, breakdown by operators ⁽¹⁾
(Billion RON, 2006)



2.2. Market trends & challenges

During 2006, the Romanian telecom market has undergone several developments on multiple fronts:

Romtelecom has lost market share in the fixed telephony sector due to aggressive competition from the cable operators. In response, Romtelecom has launched a satellite TV service in order to match cable TV's double and triple play offerings, which now shows a rapid take-up. In the mobile sector, Cosmote has improved its market position through a re-launch and aggressive pricing, while RCS&RDS intends to launch a mobile telephony service by 2009, allowing it to offer all 4 major telecom services. Urban consumers enjoy a competitive environment and higher availability of choice, as opposed to rural consumers who are generally limited to a single player for most services. Orange and Vodafone still control the mobile market with ~90% of the market, and have started to deploy their 3G networks. The interconnect reduction and the mobile number portability plans are expected to increase the competitiveness in the sector. Both companies have received fixed numbers for their fixed telephony offerings, and are continuing to offer triple-play for the business segment.

From a technology perspective faster Internet connections are becoming increasingly available and Romtelecom is expanding its ADSL deployment. Mobile telephony operators have started to promote mobile broadband and 3G expansion is slowly progressing. In addition, fixed-mobile offerings have recently been introduced and have high potential to expand, particularly within the rural areas that will likely be increasingly interested

Looking forward to the next few years suggests that a few major trends are affecting the electronic communications services:

Continued growth in mobile and broadband sectors is expected, which will also be characterized by higher usage levels, higher speeds and growing demand for value added services. Within the TV sector, the shift to digital TV is likely to become more significant. In contrast, the fixed telephony sector is expected to decline.

Bundles providing TV, broadband and fixed telephony (triple play) will be the driving force in the residential sector, led by RSC&RDS. In the business sector, on the other hand, the combination of mobile, data and fixed telephony services are expected to be most influential, and will be mainly led by Vodafone and Orange. The trend will strengthen with the ongoing convergence of services (joint fixed/mobile applications, SIP/IMS, IPTV). Bundling and convergence will dictate the disappearing boundaries between different services and sectors, and are likely to lead towards industry consolidation, with large players that supply a vast range of electronic communications services.

The strong position of leading mobile players like Orange and Vodafone is expected to remain unchanged, since mobile number portability is not expected to have a dramatic affect on the market. TV and broadband enjoy higher levels of competition, and this trend is likely to continue.

No major technology shift is expected in the short term. 3G rollout will continue, while WiMAX is not expected to play a significant role by 2010, and is likely to be used only sporadically. Similarly, IPTV services are likely to remain marginal and will start penetrating substantially only after NGN is deployed.

Given the current state of the Romanian telecom market, the ANRCTI faces several challenges. The proliferation of advanced platforms should be enhanced while ensuring Romanian customers enjoy high degree of innovation, quality and choice. Furthermore, operators should enjoy a certain regulatory horizon and an adequate return on investment.

Secondly, the ANRCTI faces the challenge of promoting infrastructure based competition on one hand while creating the right environment for service based players on the other hand. This is particularly important where these two collide, i.e. the challenges for alternative operators seeking access to Romtelecom's local loop, confronting with the FTTC/ONUs rollout

An additional fundamental challenge is to strive and achieve the widest availability of choice to the Romanian citizens.

Lastly, in spite of the positive competitive direction the Romanian electronic communication market is displaying, the ANRCTI still needs to manage dominance in the different market. The introduction of multiple platforms contributes significantly to this situation, yet, the ANRCTI still need to guide current market forces and decrease levels of dominance in the relevant markets.

The above list is far from exhausting as there are more challenges the ANRCTI is expected to face such as the increasing bundling and convergence trend, the lack of consumer transparency and more.

3. STRATEGIC OBJECTIVES

The set of strategic objectives for 2007-2010 was derived from the ANRCTI's three fundamental objectives (exhibit 3.0.1):

- I. Promote competition
- II. Encourage efficient investment in infrastructure and promote innovation
- III. Protect the end-users' rights and interests regarding the electronic communications networks and services, including the right of access to universal service.

The strategic objectives were based on several aspects: the current Romanian telecom market trends and forecast, leading economic theories and international regulatory best practices.

Since various objectives can be derived through this process, the target market for 2010 was used as a guideline to choose the preferred set of objectives.

The strategic regulatory objectives are integral to the overall strategic work-plan (as seen in exhibit 3.0.2). The regulatory approach and instruments that will eventually be employed will be decided upon and prioritized using the set of strategic objectives as a guideline.

Exhibit 3.0.1: Process of deriving the set of strategic objectives

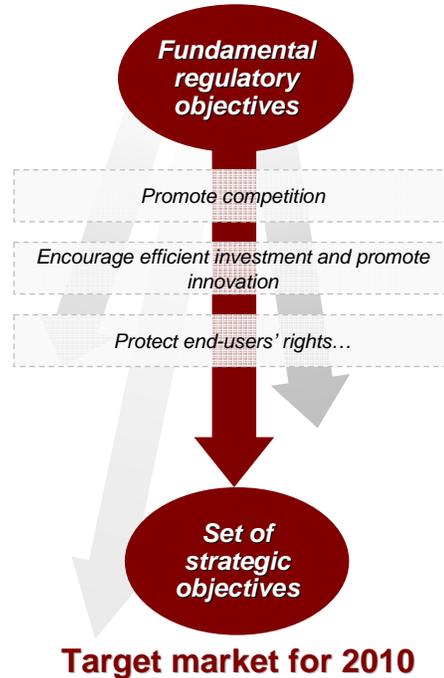
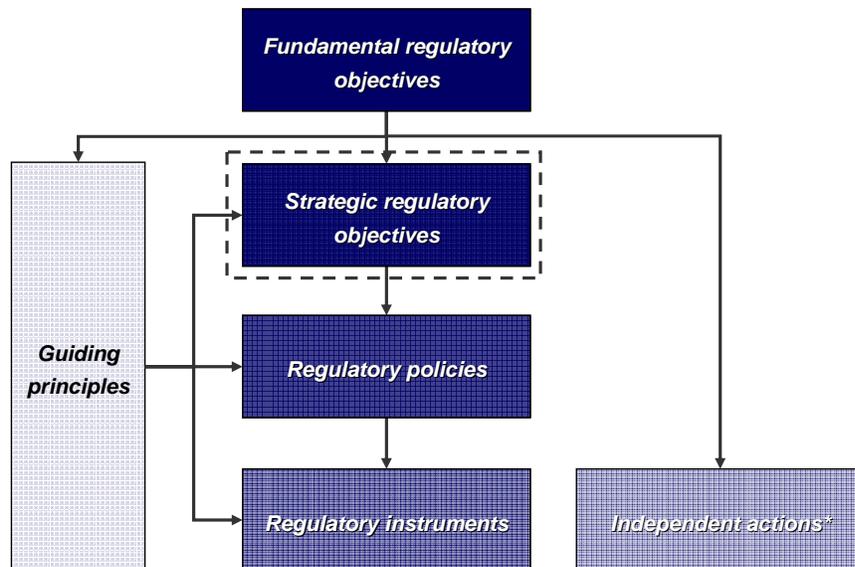


Exhibit 3.0.2: Full strategic work plan



* Actions that are taken with no regard to any specific strategy, but are derived straight from the basic regulatory objective (e.g. monitoring market changes, measuring fulfillment of the three basic objectives)

The Romanian market mapping, consumer surveys and initial analysis, all indicated that several issues represent the most significant gap between the current and the ideal conditions in the Romanian electronic communications market. The issues that were found to be the most outstanding with regards to market optimization are listed below.

- Level of competition – while considerable improvement was made, the level of competition, particularly in the telephony markets are still far from being optimal. Romania lags behind most of its European counterparts in terms of self regulation.
- Innovation – current dynamics put the Romanian electronic communications market on an accelerated path. However, it seems that the level of technology and innovation does not keep up with the demand and Romania is situated behind most of EU25 in terms of broadband penetration and broadcasting transmission digitization.
- Consumer awareness – the consumer surveys pointed out that levels of transparency were relatively low. Telephony customers are generally unaware of the different tariffs and perceive services to be cheaper than they really are. This impedes customers' ability to make rational consumer choices.

Five strategic objectives were derived from the above process, which ought to guide the ANRCTI policy, principles and instruments.

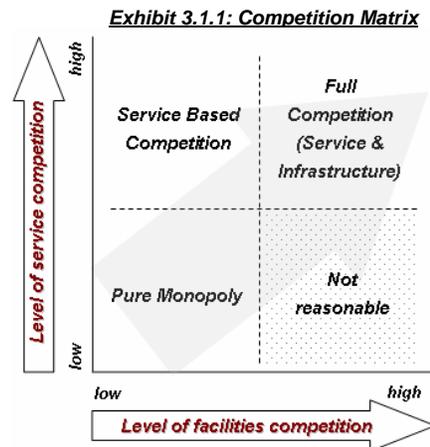
3.1. ANRCTI will strive to create conditions for sustainable infrastructure based competition, whilst, when effective, facilitate service based competition

Various types of competition are possible between telecom providers – competition purely on a service level, infrastructure level or a combination of both.

The principle of minimal regulatory intervention suggests that the type of competition that demands the lowest level of intervention will be most successful in generating results closer to 'perfect competition'. Therefore, infrastructure-based competition is preferable.

International experience shows that there is a stronger correlation between innovation and competition in countries that have independent platforms than in countries where competition is mainly service-based.

Exhibit 3.1.1 shows the different impacts of the different types of competition. Optimal competitive conditions will exist when both infrastructure and service based competition exist.



Current Romanian market trends:

Competition in the telephony markets has showed substantial improvement in the past couple of years. However, different competitive indicators such as market shares, market concentration and various other qualitative and quantitative analyses show that substantial gap still exists between optimal and current market conditions.

Competition on independent platforms is making inroads in the Romanian market

- Two competing access platforms in fixed telephony: Romtelecom is deploying DSL and extending fiber to the curb (part of NGN efforts) that will adversely impact the ability of alternative providers to unbundle the access lines. In addition, cable companies are undergoing consolidation and providing the main fixed access competition
- Four (soon five) mobile platforms – four of which have 3rd generation licenses and three of which have a partial 3G coverage
- Two main platforms for subscription TV – cables and satellite. IP-TV is not expected to significantly impact the market prior to 2010
- WiMAX (D&E) may provide an additional platform for electronic communication services; still such a technological solution is likely to suffer from end equipment scarcity, handoff challenges and low international roaming capabilities
- Competition at the services level has not matured in Romania – CS/CPS, line rental and LLU show very low take ups. They are not expected to significantly influence the market due to their low attractiveness to alternative operators

3.2. ANRCTI will promote the development of broadband services, in particular via multi-product platforms such as IP and strive to reach the largest possible consumer basis

High levels of investment indicate a growing market. However, this is not necessarily sufficient. For investments to be efficient, they must optimize the range and level of services, while minimizing the use of resources.

IP-based platforms enable multiple services to be transmitted via a single platform (e.g. broadcasting transmission, broadband or VoB); therefore, represent an efficient expression of investment.

Additionally, multi-product platform increase customer value as they can offer integrative services that enhances the value customers' can obtain.

An optimal innovative market will be characterized with high levels of efficient investments, which enable to provide high range of products as displayed in Exhibit 3.2.1.

Current Romanian market trends:

The broadband market is in its initial stages of development. It is unclear what are the levels of penetration in the EU common definition perspective (128Kbit and above) is used. Still, it can clearly be said that Romania is situated at the lower end of the scale compared to its European counterparts.

- Most platforms are single-based service platforms, which currently represents an inefficient utilization of resources
- Copper and cable networks (voice & data) display low levels of penetration
- Romania lags behind other EU member states in respect to multiple-products' platforms

3.3. ANRCTI will ensure that different profiles of users (residential and business, urban and rural), get the “best value for money” for electronic communications services

Value of products is derived from the level of innovation, quality of service, products' range and price. Since a direct measure of the 'consumer interest' is hard to create, indirect measures are commonly used.

The regulator has limited direct impact on the level of consumer satisfaction (price, value), since this would entail retail regulatory intervention. Therefore, the direct impact of the regulators' activity is reflected at the level of

Exhibit 3.2.1: Innovation Matrix

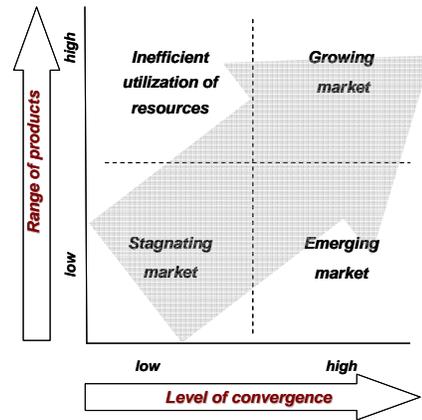
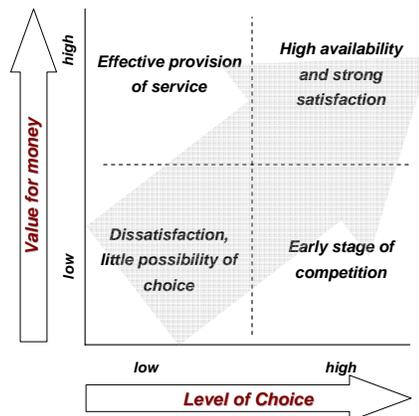


Exhibit 3.3.1: Consumer Interests Matrix



options in the market which offer an indication of the level of availability.

Exhibit 3.3.1 illustrates the consumer interests' matrix:

'Good value at affordable prices' – assesses whether the consumer has obtained sufficient benefits from products and services available at a given price.

Level of choice – points to the level of available alternatives in the service and facilities level.

Current Romanian market trends:

The Romanian market displays continuous improvement of choice and affordability, still at the "axis" of innovation and quality of service it has more room to grow

3.4. ANRCTI will strive to create an environment where information on service availability, supply conditions and pricing, is transparent, non-complex and available to all Romanian consumers

Enhancing consumer information and lowering the level of complexity of tariffs will empower Romanian citizens and, hence, help protect the consumer interest. High price complexity and low level of transparency impedes consumers' ability to make rational decisions.

Current Romanian market trends:

- Growing complexity of tariffs offered to end-users including: multiple pricing plans and tariffs – off / on peak; net / off net; to individual mobile networks / to fixed network; according to destination; and more. This complexity makes it almost impossible for a consumer to track his/her communication expenses and to make rational decisions

3.5. ANRCTI will not interfere in the emergence of bundled services, as long as they do not adversely impact competition or consumer choice

The contribution of bundled services to the evolution of the electronic communication market entails both advantages and disadvantages. Bundled offerings enable more choice from the consumers' standpoint and a more efficient use of resources from the operators' standpoint. They allow new providers to come with a unique selling proposition that challenges the dominant player's position in the market. Additionally, bundled offerings are now allowing existing operators, particularly those in operating in declining markets, to grow horizontally and compensate for the drop in business. However, there are disadvantages linked to the wide usage of bundling. First, the bundles trend increases barriers to entry since it forces new service providers to have substantial financial strength to enter the market at a larger scale. Second, operators may try and discourage end-customers from using the standalone offers by making them highly unattractive, thus, lowering their value.

In this discussion, TASC holds the position that the current bundling trend should not be interfered with. Incentives for investment in effective infrastructure should be provided by assuring the regulatory environment that supports bundles and that will stimulate additional investments, such as in IP-TV or in FMC. Therefore, it is recommended that the ANRCTI will not interfere with SMPs ability to market their services as bundles. The two disadvantages affiliated with the bundles should be handled using various regulatory instruments. First, the ANRCTI should ensure that the standalone offers that compile the

bundles would be offered at reasonable terms so as to minimize adverse impact on the competitive dynamics. Second, wholesale access policy should take into account the necessity for a platform that can carry a double and a triple play services.

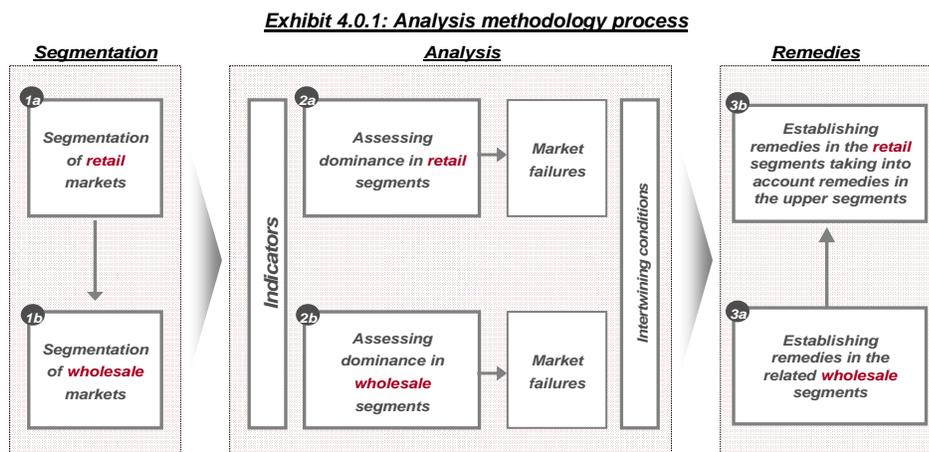
Current Romanian market trends:

- Bundled services are at an early stage of development – double and triple-play packages are becoming more prevalent, both on the residential side (TV, fixed telephony and broadband) and on the business side (mobile & fixed telephony and data)
- Convergence – Currently in its initial stages, no sign that convergence will become a significant trend by 2010

The set of strategic objectives was also verified with international best practices examination of alternative objectives. A thorough international comparative review displayed other objectives which were relevant to the respective countries, but presented less relevance to Romania, due to its unique market characteristics. These objectives included spectrum management, self enhancement and modernization of the NRA, public safety, promotion of convergence, consistency with the EC guidelines, different societal roles and more. While it is believed that these roles are imperative regulatory responsibilities, the gap between the current and ideal situation regarding these objectives was found to be adequate, if non existent at all.

4. ANALYSIS METHODOLOGY

The methodology used for the diagnosis analysis of each sector is based on 4 main phases: (i.) Market overview in which a technological and economic study for each sector (by services) was conducted as well as analysis of market dynamics and trends; (ii.) Definition of segments in which a bottom-up exhaustive segmentation process was undertaken, based on different characteristics of each service; (iii.) Analysis section, in which an assessment of dominance and deficiencies in each sector was formulated, based on a set of pre-defined indicators; (iv.) Regulatory remedies, where remedies were first proposed for the wholesale segments so that the retail markets would require minimal intervention. This methodology process is in line with EU guidelines. Exhibit 4.0.1 describes the analysis methodology.



The analysis was based on statistical data provided by the ANRCTI, consumer surveys conducted on April-May 2007 and information gathered during meetings with industry electronic communication providers.

4.1. Market segmentation methodology

The market segmentation for each sector starts from segmenting the retail services by different categories. The wholesale segments are derived based on wholesale basic components (inputs) that are needed for the provision of the different retail services.

Both retail and wholesale services are further segmented based on the following layers (where relevant) in order to establish whether the sub-services belong to the same segment:

- i. **Functionality of services** – assessment of substitution based on characteristics of services, availability of choice, prices and perception
- ii. **Residential and non-residential** – comparison based on usage patterns of the availability of service, competition levels, and prices in order to establish if sub-services exist
- iii. **Platforms**– comparison of the functionality, prices and perception of a service by the different technologies/platforms it can be provided upon
- iv. **Geographic analysis** – assessment of the geographical homogeneity of a service in terms of availability of services, competition levels, prices and usage patterns

- v. **Interactions with other sectors** – analysis whether intertwining conditions between sectors influence the segmentation results

In the broadcasting transmission sector, the 3rd segmentation layer (residential and non-residential) was replaced with another layer, digital and analogue, which relates to the type of transmission.

In case evidence of substitution between services exists, sub-services are united until a segment is defined.

The segmentation analysis includes both demand side and supply side substitution tests, known as the SSNIP tests (“hypothetical monopolist test”). This test checks whether a hypothetical player, that is the only provider of a relevant product or service in a given geographical area, can profit from imposing a small but significant non-transitory increase in price (SSNIP). If the answer to this question is negative, it is an indication that the services/products in that geographic area are substitutes and ought to be part of the same segment.

4.2. Segment analysis methodology

The analysis of each segment is based on each segment's technological, economical and financial position, as well as indicative trends.

Based on the EU's guidelines, a market is relevant for ex-ante regulatory intervention if 3 conditions are fulfilled:

- The market is subject to high and non-transitory entry barriers
- The market has characteristics that do not promote or allow for effective competition over time
- Competition law, by itself, is insufficient to deal with the market failure (absent ex ante regulation)

Although, in this analysis, TASC did not approach the segments analysis process strictly according to EU legal framework, the three criteria were mostly applied and viewed upon as an important guideline. If all three criteria are met, it is assumed that a dominant player or collective dominance may exist – a single or several firms that enjoy a position of economic strength affording them the power to behave in an anti-competitive manner and, to an appreciable extent, independently of competitors and customers.

For an efficient assessment of the market's performance and for a proper recognition of deficiencies, the following set of quantitative and qualitative indicators were considered;

Quantitative:

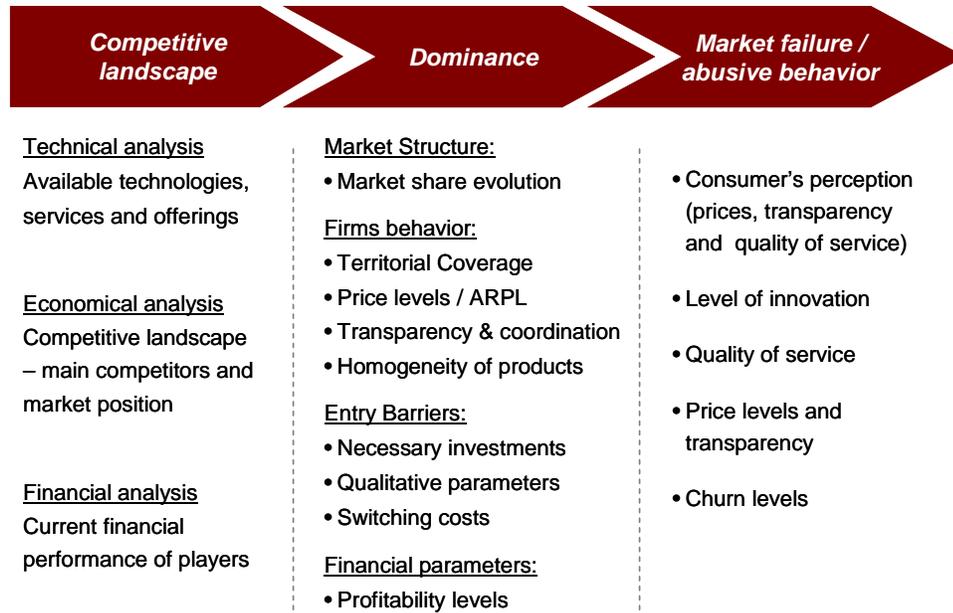
- Penetration levels
- Current market shares and trends
- Profitability levels
- Investment levels
- Churn levels
- Effective prices per minute

Qualitative:

- Innovation levels
- Entry barriers
- Consumers' price perception
- Quality of service
- Expenditure on branding and advertisement

Market dominance is analyzed using a process consisting of a three layered examination analysis: technical, economical and financial, as illustrated in exhibit 4.2.1.

Exhibit 4.2.1: Market power analysis process scheme



Abusive conduct is established by conducting the following tests:

- i. **Excessive prices** – If a dominant player offers very high prices with no reasonable correlation to the economical value of the service
- ii. **Price discrimination** – If a dominant player applies dissimilar conditions to equivalent conditions of different customers
- iii. **Margin squeeze** – whether a vertically integrated dominant player affects competition by offering retail prices that are very close to the wholesale prices, leaving insufficient margins for new entrants to operate
- iv. **Predation** – whether a dominant player deliberately incurs losses in order to reduce the level of competition and eliminate competitors
- v. **Refusal to supply** – whether a dominant player refuses to supply access services or products to downstream customers

If evidences of a dominant player exist, along with evidences of abusive behavior by the player, ex-ante regulatory intervention needs to be considered.

4.3. Remedies recommendation methodology

The set of regulatory remedies that were considered followed a set of principles:

- i. Remedies are forward looking and correlate to the defined strategic objectives
- ii. Remedies are first applied to the wholesale market, so that the retail market will benefit from minimal regulatory intervention

- iii. The level of intervention in the market should be correlated with the level of deficiency
- iv. A minimal level of remedies ought to be imposed, such that all the remedies take into account the trends of the market observed and will only try to correct the inadvertences
- v. When possible, similar policies should be implemented for similar markets such as termination rate for fixed and mobile and price transparency. This will help to increase simplicity, transparency and effectiveness in the electronic communications markets
- vi. Follow the EU guidelines on remedies

For every relevant segment found, the entire set of available and appropriate remedies is placed on a scale, representing the level of regulatory intrusiveness in the segment. Keeping in mind the objectives set, the less intrusive remedy ought to be implied, or if the currently imposed remedy is above the necessary level, the level of intervention should be reduced by alleviating regulation, according to the segment assessment.

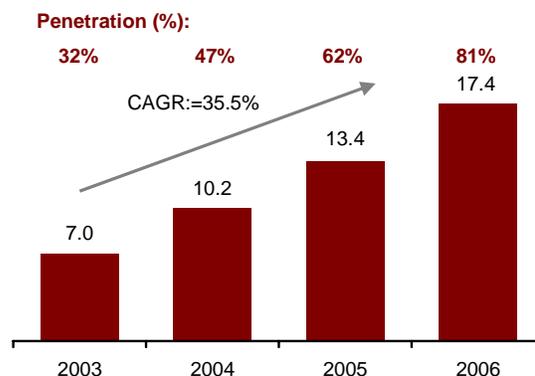
Whenever a remedy is proposed, the potential impact is assessed for the relevant segment and for the entire telecom market, taken into account intertwining conditions between sectors.

5. MOBILE MARKET

5.1. Overview

The Romanian mobile market holds the largest share of the electronic communications market in terms of revenues. It has reached 17.4 million subscribers at the end of 2006, with a penetration rate of 81% of population. The sector has grown on an annual rate of 35.5% in terms of subscribers, in the last four years, as illustrated in exhibit 5.1.1. It is expected to remain the most dominant in terms of revenues. Still, Romania has the lowest mobile penetration in EU 27 and there is an additional growth potential.

Exhibit 5.1.1: Mobile Penetration in Romania ⁽¹⁾

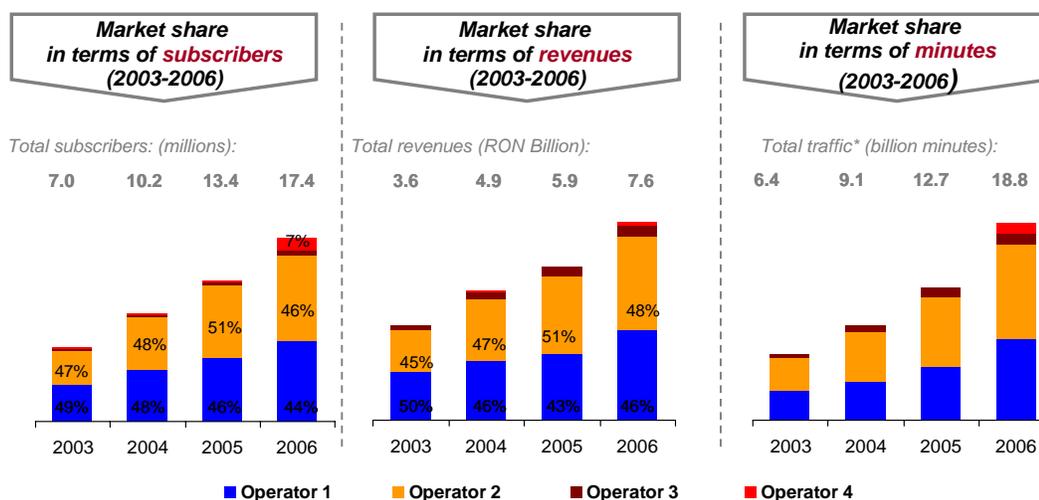


Currently, there are four players in the market: Orange and Vodafone, the largest providers, Zapp, which focuses mainly on the business sector and Cosmote, undergoing an aggressive re-launch, and focusing on low cost and pre-paid customers.

A 5th player, RCS&RDS, the leading cable operator, has won the 3G license tender and is expected to enter the market towards 2009.

In the past few years, market shares were relatively stable as shown in exhibit 5.1.2, with Cosmote penetrates with aggressive pricing in 2006; Zapp maintains a relatively marginal position, while Orange and Vodafone still share over 90% of the market.

Exhibit 5.1.2: Market share evolution in the mobile sector ⁽¹⁾



The mobile technology is a significant parameter affecting the competitive arena:

- Network Technologies – Currently, all players but Zapp deployed GSM based networks. RCS&RDS plans to deploy a GSM network as well. As GSM technologies are widespread in Europe, Zapp suffers from inferiority coming from higher handsets pricing, lower variety and consumers inability to roam internationally. Therefore, Zapp has a limited ability to compete and become a significant player.
- Mobile generations - The most common technology in Romania is GPRS (2.5G). It is available by all players with more than 96% coverage of population. Orange and Vodafone are at the initial stages of deploying UMTS/HSPA networks, while Cosmote is the only player with no 3G license. 2.5G technology is expected to remain a valid option for lower-end consumers for the short and mid-term.
- WiMAX - In addition to the mobile platforms, IP wireless platform (WiMAX 16E), holds the technical potential to become a substitute for mobile services in the next few years. WiMAX encompasses advantages like cost effectiveness, high coverage and large bandwidth. But, since the mobile WiMAX is not operational yet, lacks CPE equipment, does not enable international roaming and will not reach wide scale before 2009, it is questionable whether it will become a valid alternative in the relevant timeframe.

Main trends

Several trends are expected to influence the competitive dynamics of the market:

- Technological developments – Cosmote and RCS&RDS, as low price strategy players, are likely to provide incentive for Orange and Vodafone to differentiate their offering and expand their national HSPA roll-out. Meanwhile, Zapp's technological path is not clear. A slow migration to FMC solutions is expected to occur, offered initially to the business segment and reflected only at the application level (joined voice-mail, double ring, favorite fixed-mobile numbering, etc.)
- Market developments – As mobile penetration reaches saturation, there will be a major focus on shifting subscribers to post-paid plans and on launching new services. Voice ARPU is expected to continue its decline, and will be compensated by a rising data ARPU and other value added services. The bundles trend is also expected to influence the mobile market and will be led by RCS&RDS, once it enters the market.
- Usage patterns developments – The importance of bundles is increasing. Greater popularity of quadruple-play bundles is expected from 2009 onwards, together with a high demand for mobile services in a telecom bundle. In addition, the Fixed Mobile Substitution (FMS) trend continues, driving a steady increase in mobile penetration at the expense of fixed telephony usage.

5.2. Mobile sector segmentation

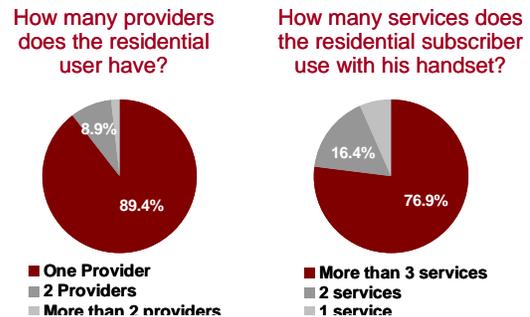
The described methodology for segmentation was used in order to analyze the relevant segments for regulation (see chapter 4).

5.2.1. Retail mobile segmentation

One relevant segment was defined: **cluster of mobile services at the retail level**. This cluster includes the following services: outgoing calls, incoming calls, international calls, roaming, SMS and advanced 3G services.

Demand side analysis, consumers' surveys, supply side analysis and revenues & costs structures suggest that there is no significant distinction between mobile services and that they all constitute a single segment. From a demand point of view, all services are consumed over one handset and through a single network. Exhibit 5.2.1 displays results from the consumer survey, strengthening demand side substitution argument.

Exhibit 5.2.1: Consumers' tendency to switch supplier⁽⁴⁾
(survey results)



From a supply point of view, the handsets functionality (enables all services built in) and the high weight of fixed costs (mostly network costs) in supplying voice services make it economical and natural for one provider to supply all services bundled together.

The following potential segmentations of the cluster market were examined and ruled out:

- No segmentation was found between geographic areas – due to the availability of national services of all operators (as shown in exhibit 5.2.2) and the homogenous offerings in the different geographic areas
- No segmentation was found between residential and non-residential customers - due to the similarity of services. The pricing differences come from the difference in usage levels and often is not discriminative in nature
- No segmentation was found between 2G and 3G, since 3G is a natural development of the 2G technology. Furthermore, 3G is still in its early stages in Romania
- Fixed Mobile Substitution (FMS) – The substitution is a-symmetrical (mobile can be a functional substitute to fixed telephony but not vice versa). Although some level of substitution does exist - both services have different characteristics, pricing and nature to preclude a unified market definition (see chapter 8).

Exhibit 5.2.2: National Coverage of mobile networks, as % of population, Dec 2006^(1, 17)



5.2.2. Related wholesale markets

Three wholesale markets were defined: Access and origination on public mobile telephone networks, Voice call and SMS termination on individual mobile networks and inbound international roaming on public mobile networks

- **Access and origination on public mobile telephone networks (EC’s market 15)**

The market is defined according to the corresponding retail market (the cluster of mobile services) – Currently in Romania, there is neither compulsory nor voluntary MVNOs. Nonetheless, the segment should be defined as relevant for ex-ante regulation in case future access obligations will be necessary.

- **Voice call and SMS termination on individual mobile networks (EC’s market 16)**

A wholesale market exists for call termination in which each operator is a definitive monopoly and, thus, constitutes an individual market. Therefore, the recommendation is consistent with the definition of a wholesale market for call termination on individual networks for each of the four existing networks (this will apply also to the 5th network).

- **Inbound international roaming on public mobile networks (EC’s market 17)**

This service is unique because of the mutual dependency with mobile networks in other countries. Effective regulation on a national level is difficult, due to the complexity and international implications of regulating this market. The European Commission recognized this problem, amended the regulatory framework and added regulation guidelines for roaming in June 2007.

Possible influences on segmentation might come from emerging trends and technologies, such as bundled services, FMC or WiMAX 16E. However, none of these developments is expected to materialize before 2010, thus, they are not expected to influence the Romanian market segmentation.

In summary, as described in exhibit 5.2.3, three markets were identified as relevant for competitive analysis.

Exhibit 5.2.3: Summary of market segmentation in the mobile sector

Applications	Incoming calls (termination)	Outgoing Calls (origination)	SMS	Int'l Calls	Int'l roaming	3G data & video services	
Value chain							
Retail No distinction between customers segments, platforms or geographic areas	Market for the cluster of cellular services at the retail level						Emerging services
Wholesale	4 markets for call termination	Access and origination on mobile networks			Defined according to EC decision		

5.3. Competitive dynamics & deficiencies identification

A competitive analysis has been conducted in order to identify excessive market strengths and dominance positions as well as identify possible market deficiencies.

5.3.1. Analysis of the cluster of mobile services at the retail level

Based on the current competitive dynamics, a possible joint dominance of Orange and Vodafone ought to be examined.

Dominancy analysis

Dominancy was analyzed using a series of tests indicating the level of competitiveness and the relative strength held by the two leading players.

Market structure

Market share analysis, as highlighted in exhibit 5.3.1, clearly indicates dominance of Orange and Vodafone throughout the years. Both companies together stably hold over 90% of the market, both in terms of revenues and subscribers. Furthermore, common concentration indices, such as the 'HHI test' (Operators market share square sum) and 'top two players' market share', show Romania is considered to be a highly concentrated market, compared to other member states that have defined a SMP (see exhibit 5.3.2).

The number of residents per MNO is high compared to Romania's relative size but lower than the large European countries.

Entry barriers analysis

The CAPEX required for a new network deployment reaches €250M¹ and constitutes a high entry barrier to new operators, while the low population density in Romania is another obstacle in the ability to achieve adequate return on investment.

In addition to the financial barriers, there are other operational barriers for a new entrant, such as:

- The dominance enjoyed by Orange and Vodafone in the cities along

Exhibit 5.3.1: MNOs' market share evolution⁽¹⁾

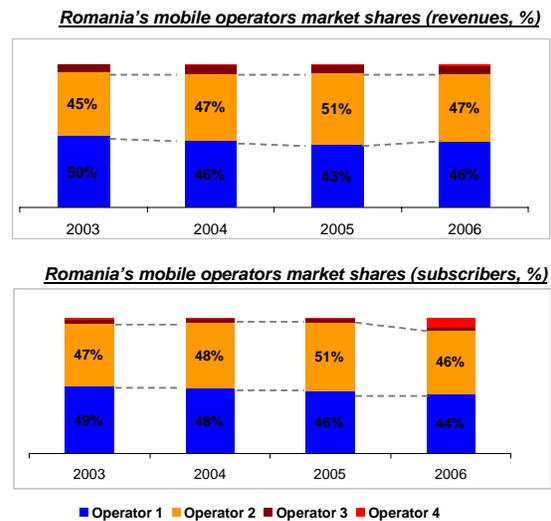
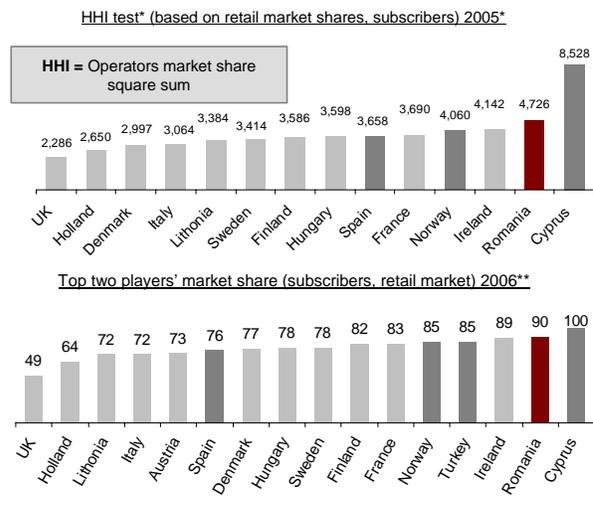


Exhibit 5.3.2: Concentration indices of mobile sectors of EU member states⁽¹⁾



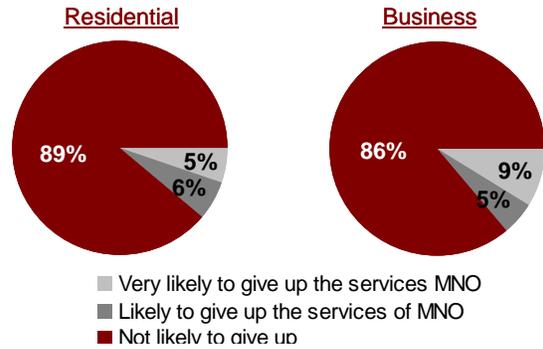
¹ Based on mobile new entrant model developed by TASC

with severe environmental restrictions;

- Due to their international backing, Orange and Vodafone enjoy high bargaining power;
- Spectrum is a scarce resource under current regulation.

From a demand standpoint, there are reasonable switching costs in the Romanian mobile market, yet, both residential and business consumers show low tendency to switch supplier. 89% of residential customers and 86% of businesses say they are not likely to give up their provider's services (see exhibit 5.3.3). The on-net network effect makes it uneconomical for most subscribers to switch to a small network. The high network effect represents a switching barrier.

Exhibit 5.3.3: Consumers' tendency to switch supplier ^(2,4)
(survey results)



Firms' behavior analysis

Orange and Vodafone kept their high pricing levels even after Cosmote and Zapp entered the market with lower tariffs' offerings. In addition, when comparing Romania to other member states (PPP adjusted), prices are among the highest in Europe. Exhibit 5.3.4 shows a comparative display of average revenues per minute in EU member states.

Exhibit 5.3.4: Average revenue per minute comparison (\$) ^(1, 11)



No blatant indications of coordination were found, but similar behavior of both players and similar price trends evidently exist (exhibit 5.3.5). The slow 3G rollout by both Vodafone and Orange is an indication of transparency in competitive moves.

Average income per minute, 2006 (\$, PPP adjusted)**

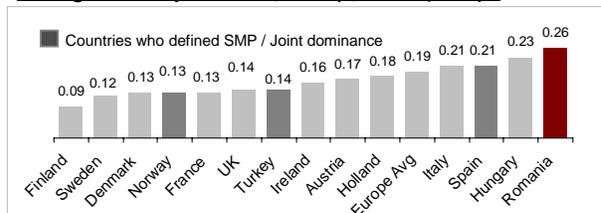
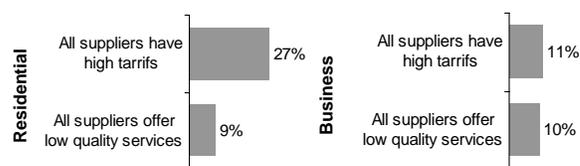


Exhibit 5.3.5: Evidence of price similarity between mobile operators



Homogeneity of the mobile product in Romania enables players to match value offers and provides the ability to reduce competition, this is seen in the similar value propositions, consumers' perception of the offers and the low willingness to switch suppliers since no difference is perceived as shown in exhibit 5.3.6.

Exhibit 5.3.6: The reasons unsatisfied customers do not change suppliers⁽⁴⁾

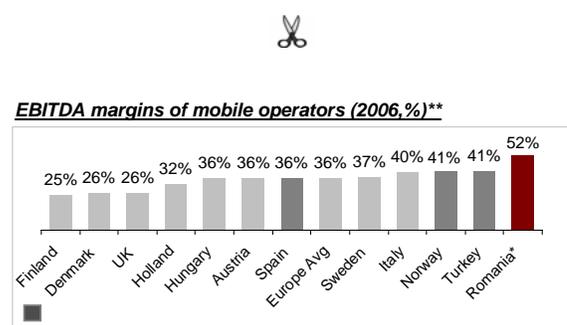


Financial parameters

The low competitiveness of the market is also derived from the high profitability levels (measured by EBITDA margins). The margins of Orange and Vodafone are significantly higher than the margins of Cosmote and Zapp. These EBITDA margins are also significantly higher than European counterparts (even higher than in countries where SMP/Collective dominance was defined – see exhibit 5.3.7). A comparison of EBITDA minus CAPEX also puts Vodafone and Orange in the higher scale of operators.

Exhibit 5.3.7: Comparative display of EBITDA margins^(1, 3,11)

EBITDA margins of Romania's mobile operators (2005,%)



Finally, CAPEX levels as % of revenues seem high in Romania when compared to other European countries. However, the high CAPEX levels are not expressed in 3G network deployment and offering of advanced services. Each network has ~ 30% of 3G coverage.

In summary, there are strong indications of competitive dominance by Orange and Vodafone, and a comprehensive examination of collective dominance needs to be conducted.

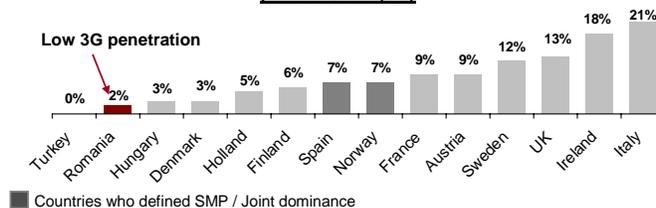
Deficiency analysis

Following the evidence of dominancy, potential failures in the retail market need to be examined. This was conducted using common tests designated at finding whether consumers are affected by the existent dominancy. Three deficiencies were identified – (1) low level of innovation; (2) low transparency and; (3) low "actual" churn levels, all of which are a result of the competitive dynamics in the retail mobile market.

Level of innovation

The low 3G coverage and data usage are indications of low innovation level. Though, to some extent, advanced services in Romania do exist, they are available only to a small portion of the population and 3G usage is also very limited. In general, 3G penetration in Romania is much lower than in other European countries as described in exhibit 5.3.8.

Exhibit 5.3.8: 3G penetration level in Europe, 2006⁽¹¹⁾
(subscribers, %)



Quality of service

The relatively low number of employees per subscriber in Orange and Vodafone suggests that a low service level exists in Romania, when comparing to other countries and operators (exhibit 5.3.9). However, most customers report high level of satisfaction from the services of their mobile operators (exhibit 5.3.10). Therefore, it cannot be distinctly said that the quality of service in the mobile market constitutes a market deficiency.

Exhibit 5.3.10: Price levels compared to Europe – Average income per minute, 2006⁽¹⁾
(\$, adjusted for PPP)

Price levels compared to Europe - Average income per minute, 2006
 (\$, adjusted for PPP)

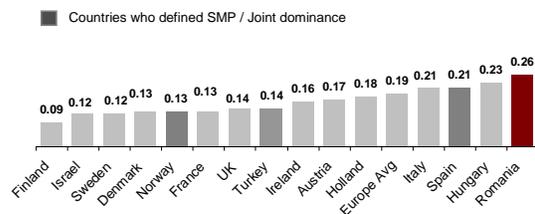


Exhibit 5.3.10: # of subs. per employee in leading mobile operators (2006)^(3, 16)

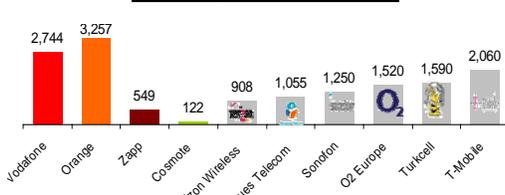
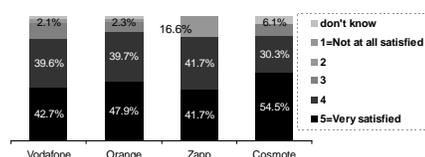


Exhibit 5.3.9: Consumers' satisfaction^(2,4)

Residential survey (Business survey results are similar)



Price levels and transparency

High prices and low transparency prevent customers from making decisions based on rational choices and indicate that the value subscribers are getting is relatively low. According to surveys, transparency levels are low, subscribers are not aware of the price they pay, and believe the service is cheaper than it actually is.

Churn levels

Reported churn levels are similar to some of the European countries, but lower than those of highly competitive markets. Still high reported churn levels vs. the low willingness to switch suppliers suggest that the 'actual' churn levels are low – subscribers, mainly pre-paid, dismiss their SIM card but buy another SIM card from the same operator ("Revolving door syndrome"). The low 'actual' churn levels indicate customers are not facing real alternatives, thus competition level is low. This represents an additional market deficiency.

5.3.2. Related wholesale markets

5.3.2.1. Access and origination on public mobile telephone networks

Currently, there are no players in the wholesale mobile access market. However, since there are indications of dominance in the corresponding retail market, and since the European commission requests answers regarding market 15, the examination of potential remedies ought to be based on results from this diagnosis.

5.3.2.2. Voice call and SMS termination on individual mobile networks

Termination markets on individual networks are monopolies by definition: each operator is the only choice to terminate a call made to one of its subscribers. The originating operator has no choice regarding the termination. Therefore, termination fees need to be regulated (and mostly are so). Only Orange and Vodafone have regulated tariffs, while

Cosmote and Zapp set termination fees freely, with only a transparency obligation. Interconnect tariffs in Romania are therefore asymmetric. This phenomenon is created by the small operators, who try to take advantage of their monopoly status in termination markets in order to cover for their weakness in retail markets, or being taken advantage by the big operators which use their greater bargaining power to push down interconnect fees of smaller players.

However, the situation in Romania created a market failure by causing a long disagreement between Zapp and Cosmote, who supposedly discriminated against each other, and did not reach a mutual agreement regarding the termination of calls – which adversely impacted the Romanian consumers. Additionally, Interconnection tariffs are relatively high in comparison to the effective outgoing minute rate.

5.4. Proposed regulatory interventions

Market deficiencies should be examined in light of the regulatory objectives previously defined (see chapter 3). The two main objectives that are related to the deficiencies identified seem to be:

- **Increasing the level of competition**

Address Orange & Vodafone's dominance in order to repair the existing market failures and prevent future ones – by using tools applicable first at the wholesale level and, if necessary, at the retail level

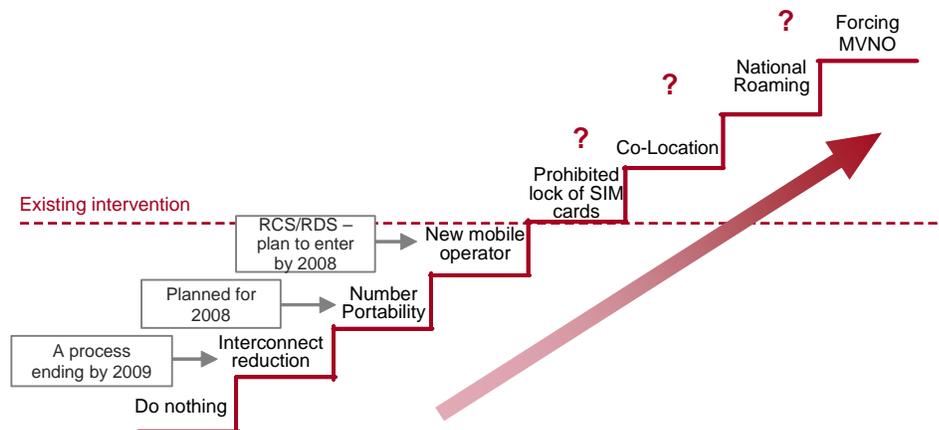
- **Improving transparency**

Increase price transparency to end consumers at the retail level

5.4.1. Increasing the level of competition

There is a range of gradual regulatory interventions that can promote competition as displayed in exhibit 5.4.1, starting with low levels of intervention to the most intrusive ones:

Exhibit 5.4.1: The gradual regulatory intervention steps in the mobile sector



Some of the steps are already in place and might require refinement. The need for further intervention needs to be explored.

Currently, there are several regulatory steps in place, aiming to increase competition. In order for those steps to be as effective as possible, some modifications are needed:

- Interconnect reduction – The planned course of reduction of 30% in three years is likely to reduce the interconnection subsidies and the network effect. However, interconnect is not regulated for the small players and as tariffs go down, asymmetry between Orange and Vodafone to Zapp and Cosmote, might increase. Therefore, the interconnect tariff for both Zapp and Cosmote should be regulated.
- Mobile number portability (MNP) – MNP is planned to be introduced during 2008. Its likely implications would be reducing switching barriers, increasing churn and enhancing the level of competition. In order for it to succeed, the ANRCTI needs to monitor porting costs and duration for end consumers.

- New entrant – 5th network – The new 3G player, RCS&RDS should enter the market by 2008. However, that might take a longer time than stated, due to its difficulty in deploying new sites and the need to reach sufficient coverage. In order to accelerate the process and to increase chances for success, promoting co-location and national roaming obligation should be examined as suitable remedies.
- 3G licenses - Cosmote does not have a 3G license, since it has lost the last tender to RCS&RDS. The lack of 3G services might position Cosmote in the mid-long term as a discount player. This will likely impact competition. Therefore, allowing the use of 1.8GHz for 3G services may be considered.

There are various possibilities to increase the effectiveness of current steps and improve competition:

Interconnect intervention

A 3-step procedure is recommended

Exhibit 5.4.2: Market share of terminated traffic in 2006⁽¹⁾

Step 1: The following obligations should be imposed on every mobile operator (regardless of its size):

- Obligation to interconnect
- Transparency
- Non-discriminatory set prices as the normative price plus a mark up



There are two potential problems regarding Mobile Termination Rate (MTR) at different scales:

- Large operators abuse their position and force lower MTR on the small operators
- Small operators may abuse their position and the fact that understanding between the parties is obligatory and demand excessively high MTRs

A set regulated tariff, as in the MTR of Orange/Vodafone + X% will solve both problems. Additionally it will help transparency and prevent disputes from occurring, thus, prevent market deficiencies. The mark up should be calculated according to an estimation of the needed margin a new entrant requires. The margin should be derived from an elaborated cash flow analysis and verified through international benchmark.

Step 2: Upon reaching 1% of market termination traffic (in minutes based on previous calendar year) a cost based LRIC model ought to be developed. The 1% threshold represents a significant enough traffic to enable a cost based tariff. In addition, the limited number of players enables the implementation of a costing model for mobile players. This reduces the dependency on negotiations, increases transparency and reduces the number of disputes. Exhibit 5.4.2 displays the different MNOs position in the mobile termination market.

Step 3: Upon reaching 5% of market termination traffic – A tariff based on a generic model of hypothetical normative operator should be imposed. The threshold represents a sufficient traffic on which the operator benefits from reasonable economies of scale. According to TASC new entrant mobile model, upon reaching a 5% market share, the new entrant would face costs similar to those set for Orange and Vodafone⁽²⁾.

Mobile number portability (MNP) requirements

MNP is already implemented in most European countries, with various levels of success. The conclusions from international best practices indicate that there are several factors

that increase the potential success of MNP in encouraging consumer choice. The ANRCTI should monitor the developments once number portability is introduced, and offer the following tools if its performance is not optimal:

- Transparency - Users should know their tariff when calling a ported number either by unified tariff or by an alert
- Low porting charge – It is recommended to regulate the price for porting, and make it as low as possible, preferably free. In the current MNP plan the price is not regulated, therefore the ANRCTI should monitor the prices and make sure no excessive prices are charged. If needed, ex-post regulatory intervention should be considered
- Minimum bureaucratic effort – A long bureaucratic process would create high switching barriers. Therefore, the ANRCTI should outline the process boundaries and ensure a quick and simple transfer between providers
- Reliable technological solution - There are several optional technological implementations that differ, among other things, by the reliability of the service and the simplicity of the implementation. The ANRCTI should consider imposing a unified solution, thus make the process more efficient

The European experience shows that even if MNP is implemented effectively, it is not a standalone tool for increasing mobile competition.

The following three potential regulatory tools are aimed to enable an effective entrance of new players

Access obligation, to allow MVNO

Such an obligation is quite an intrusive measure, and was defined only in 2 of the 12 EU countries that completed the analysis of market 15. None of the EU countries that have more than three MNOs have decided to force an MVNO, and it seems that five operators in Romania will be quite sufficient; both in absolute and in relative terms. Therefore, increasing the number of players will not necessarily promote competition. The priority should be to make sure the entrance of the 5th MNO in Romania is effective and that the 3rd and 4th operators are relevant competitors.

Co-location obligation

Obligating a dominant operator to let other operators use its mobile sites /antennas where possible would entail several benefits:

- Solves environmental problems and reduces number of mobile sites in populated areas
- Assists small players to improve their coverage in cities
- Assists new players to deploy their network faster and cheaper

National roaming obligation

Obligating a dominant operator to allow subscribers of another MNO to use its mobile services while outside of their own MNO's network coverage. This has several benefits:

- Enables a new player to enter the market sooner and supply services before it reaches full coverage
- Allows better coverage to all subscribers

In conclusion, if Vodafone and Orange are found to be dominant competitors, it is recommended that the obligation of co-location and national roaming will be considered as an appropriate remedy to increase competition. However, obligatory MVNO is not expected to yield preferable competitive result and so it should not be implemented.

5.4.2. Price transparency

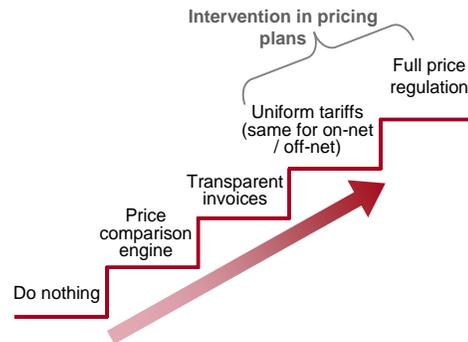
In order to achieve the 2nd objective of price transparency, different degrees of intervention for price transparency were analyzed, as shown in exhibit 5.4.3:

Intervention in pricing plans is very extreme, and some less extreme tools are recommended in the Romanian case, such as:

- Price comparison engine (web based) operated by the regulator and updated frequently to match new offerings
- Transparent invoices – obligation to present the effective price per minute for each destination and the traffic distribution for each price level on a clear and simple to understand format

Transparency should be encouraged by helping consumers understand the effective price they pay, but the ANRCTI should not intervene, at this point of time, in pricing plans of any of the operators.

Exhibit 5.4.3: Degrees of possible regulatory interventions to encourage price transparency in the mobile sector



5.5. Summary of the mobile sector analysis

Market Definition	Relevancy for Regulation	Deficiencies	Suggested Remedies
Retail Markets			
Cluster of mobile retail services	See Access to public mobile telephone networks	<u>Low level of competition:</u> <ul style="list-style-type: none"> ▪ Low "actual" churn levels ▪ Low level of innovation 	<ul style="list-style-type: none"> • Mobile Number Portability (MNP) requirements
		<ul style="list-style-type: none"> ▪ Low transparency 	<ul style="list-style-type: none"> ▪ Price comparison engine ▪ Transparent invoices
Wholesale Markets			
Access and origination on public mobile telephone networks <i>[EU Market 15]*</i>	<u>Relevant</u> Orange and Vodafone hold collective dominance		<ul style="list-style-type: none"> ▪ Co-location obligation ▪ National roaming obligation
Voice call and SMS termination on individual mobile networks <i>[EU Market 16]*</i>	<u>Relevant</u> Each individual network holds dominance	Disagreements between MNOs	<ul style="list-style-type: none"> ▪ Introduce a unified and simplified interconnect policy (for fixed and mobile)
Inbound international roaming on public mobile networks <i>[EU Market 17]*</i>	<u>Not relevant</u>		

* *[EU corresponding market designation based on 2003 market definition]*

6. FIXED AND BROADBAND SECTORS

6.1. Overview

6.1.1. Fixed telephony sector

The Romanian fixed telephony sector is currently stagnant and experiencing a slight decline in penetration with 49.9% of Romanian households in 2006 that have access to fixed telephony (exhibit 6.1.1).

More than 200,000 of residential subscribers churned from the fixed telephony services in the past four years. While, the business segment still views fixed telephony as an essential service and displays a slight increase in the number of fixed connections (102,000 lines added in 2003-2006). Exhibit 6.1.2 displays the evolution of residential and business subscribers in the past 4 years.

From a geographical perspective, there is a gap between the urban and rural customers in terms of fixed penetration. Urban customers have higher availability of choice between different fixed telephony providers. Current trends indicate that the urban segment is rapidly converging towards competition; Romtelecom market share has declined from 100% market share in 2003 to 73% in terms of subscribers in 2006. Contrarily, in the rural areas, Romtelecom is a more significant provider with a stable ~100% market share.

The fixed telephony sector has experienced a decline in other aspects as well - annual consumer spending on fixed telephony services has dropped to 0.7% of GDP in 2006 from 1.2% in 2002 (exhibit 6.1.3). In addition, traffic has decreased substantially; by almost 700 million minutes during 2003-2006.

Exhibit 6.1.1: Penetration rates population and households (2003-2006) ⁽¹⁾

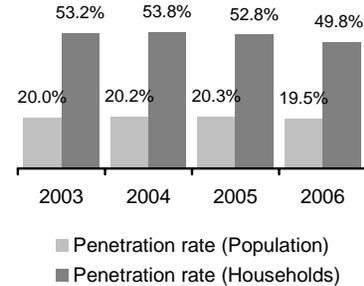


Exhibit 6.1.2: Fixed line connections by segment (2003-2006) ⁽¹⁾

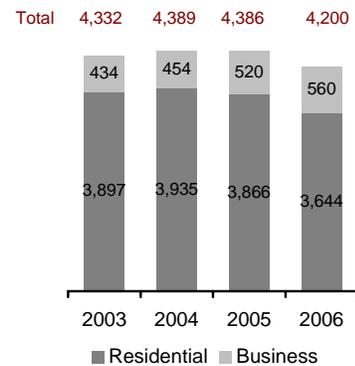
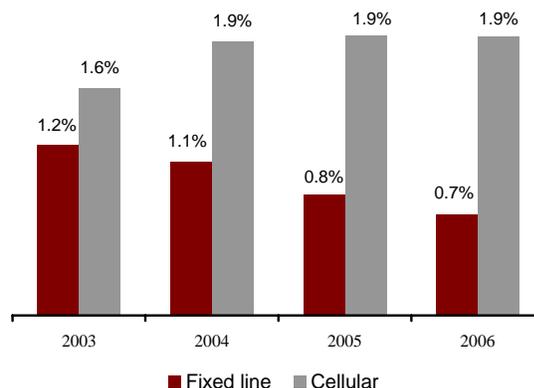


Exhibit 6.1.3: Annual consumer spending (% of GDP) ⁽²⁾



Romtelecom's strong market position is rapidly weakening with 15% annual decrease in the number of subscribers in 2006, though currently it is still the dominant player in the fixed telephony market. In 2006, Romtelecom owned approximately 80% of residential access lines and 83% of business access lines.

In contrast to Romtelecom, RCS&RDS, the second largest fixed player has displayed a substantial annual growth and subscribed over 700,000 customers by the end of 2006. UPC, as the third largest operator, is behind, in terms of subscribers, with approximately 70,000 customers. However, while both Romtelecom and RCS&RDS experienced similar trends in both lines and traffic, UPC's aggressive marketing in the business segment, has gained it a steep increase in volume of traffic of more than 300%.

From a technical point of view **PSTN** is still the most common platform for fixed voice telephony purposes, however, there are several technologies that currently influence the fixed telephony sector and are expected to be more important in the future:

Coaxial cable – Usage of fixed telephony services via coaxial cables is becoming more and more prevalent. Providers of telephony services using cable platform supply this service mainly as a VoIP add-on to the cable TV and Internet services, hence selling the service as a part of a bundle. However, stand-alone telephony offers also exist.

Fixed-Mobile – Fixed-mobile offerings are a recent introduction in Romania, initially by Zapp and recently also by Voadfone. The telephony services are offered over the mobile network with limited mobility at lower tariffs. The relatively low incremental investment needed for the deployment of the fixed-mobile solution and the advantages attributed to their product (e.g. simpler installation, number can be relocated) suggest this solution holds great potential, especially with the rural becoming increasingly areas.

WiMAX – The WiMAX solution offers wireless fixed telephony services over IP platforms. The main distinctive characteristic of the WiMAX technology is that its coverage area per antenna that can reach up to 30km. The relatively simple and low cost deployment of WiMAX, the low penetration of fixed telephony in the rural areas and the wide coverage area of WiMAX antennas make telephony on top of the WiMAX platform a very viable and attractive technological solution to enhance penetration. Some WiMAX licenses were granted, but are used mainly for data transmission purposes; Still, WiMAX is not expected to be a significant alternative in the telephony service markets in the relevant timeframe.

NGN – Next Generation Networks will most likely change the face of the entire electronic communication sector. By bringing fibre closer to the end customer premises (Fiber-To-The-Curb, "FTTC"), providers will enable the provision of 20-25 MB bandwidth, thus, telephony, high capacity Internet and digital television can be supplied. Romtelecom has declared its intentions to deploy FTTC by 2011, but this topology is not expected to significantly impact the sector by 2010.

Main trends

Projections: The fixed telephony sector is expected to decline both in terms of connections and usage, mainly due to continuous fixed-mobile substitution. Furthermore, bundles, especially triple-play, are likely to become more common. Romtelecom's market share is likely to further decline.

IP based networks will become the leading platforms and fixed voice telephony will gradually become a by-product of the broadband and data sectors.

Impact: Penetration rate is expected to remain relatively low. In addition, the rising competition will bring about a diversity of pricing models and bundled offerings. 'Flat rate'

subscription fees (i.e. fee for access with unlimited on-net traffic) will become more common towards 2010.

6.1.2. Internet & Data Sectors

Internet Services

There are two dimensions by which Internet access solutions can be segmented – bandwidth and the form of connection:

Bandwidth: according to the ANRCTI, broadband definition includes Internet access connections that are equal to and faster than 128kbps, while in most European countries 128kbps connections are defined as narrowband.

Form of connection: there are two forms of Internet connections – dedicated connections which are used solely for Internet usage and dial-up connections which are also used for voice traffic.

By the end of 2006, there were nearly 1.5M Internet connections in Romania, out of which 76% were broadband connections (see exhibits 6.1.2.1 and 6.1.2.2). The current ANRCTI broadband definition suggests that the actual share of broadband connection based on the EU definition is lower.

While the Romanian broadband penetration level is one of the lowest in EU27, the average take-up is increasing at a pace of 100% per annum.

Unlike most European member states, DSL is an inferior solution in Romania, mainly due to the late deployment of Romtelecom (exhibit 6.1.2.3).

Nonetheless, Romtelecom has declared its intentions to invest heavily on ADSL deployment in the next two years. Initial data suggest ADSL take up is increasing rapidly.

The dedicated Internet market is characterized by a high number of players. 41% of dedicated Internet customers use the services of more than 700 small providers; RCS&RDS is the largest provider of dedicated Internet access with 30% market share.

Exhibit 6.1.2.1: Internet access subscribers' distribution (Thousands, 2006)⁽¹⁾

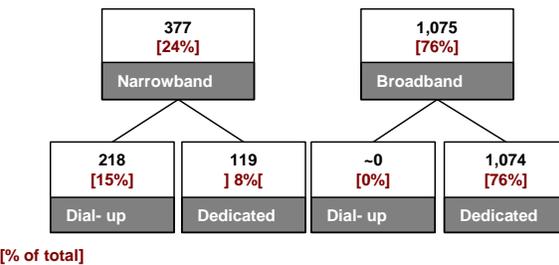


Exhibit 6.1.2.2: Narrowband vs. Broadband number of lines (Thousands, year end)⁽¹⁾

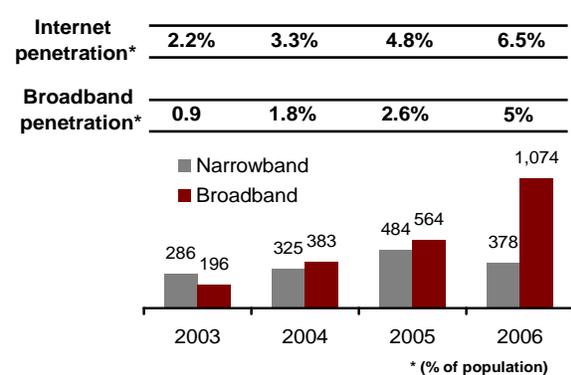
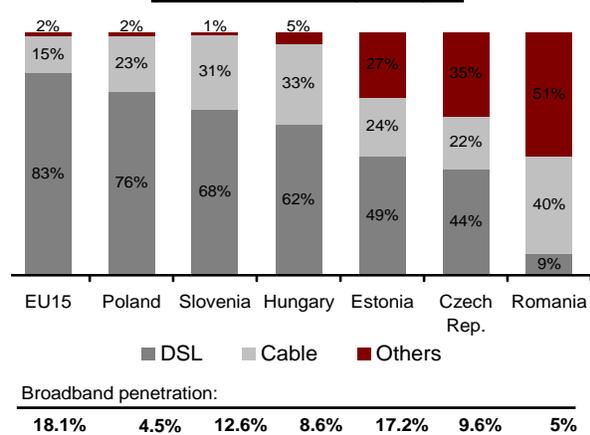
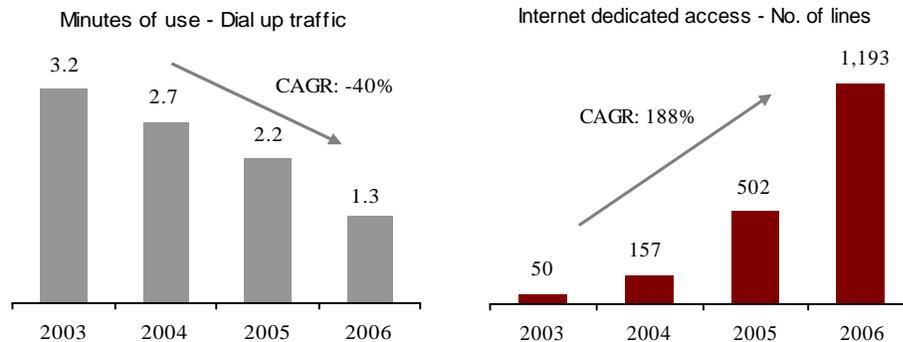


Exhibit 6.1.2.3: Broadband access technology distribution (% of subscribers, Sep. 2006)^(1, 6)



As opposed to the increasing nature of dedicated broadband Internet connections, dial up service is fast declining. During 2003-2006 dial up traffic has declined at an average rate of 40% per annum. Exhibit 6.1.2.4 shows a comparative display of dial-up and dedicated connection Internet usage.

Exhibit 6.1.2.4: Comparison between dial-up and dedicated Internet usage (2003-2006) ⁽¹⁾

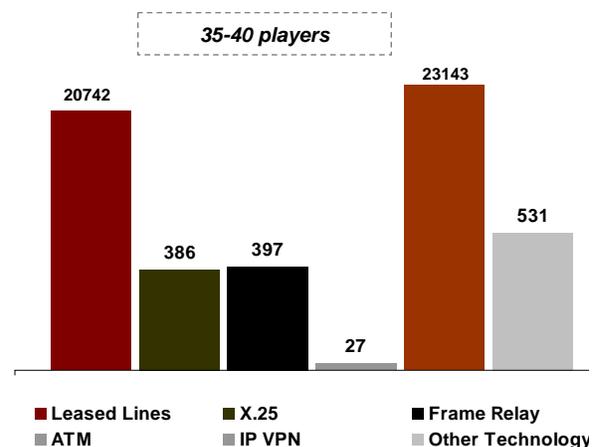


There are more than 100 providers of dial-up Internet connections; however, the majority of Internet connections are supplied by Vodafone which offers the dial up service free of charge to all of its subscribers.

Data transmission services

There are several data transmission solutions for businesses in Romania. IP-VPN and 'leased lines' (i.e. Ethernet) represent the most common solutions in Romania, as illustrated in exhibit 6.1.2.5. In addition, the market is characterized as competitive and has numerous providers.

Exhibit 6.1.2.5: Number of connections Data transmission solutions (2006) ⁽¹⁾



Main Trends

Broadband penetration will continue to increase primarily due to an increase in demand. Along with the market's growth, prices are expected to decrease in order to win market share.

Investments in this market are expected to grow (DSL, NGN), and the growing number of platforms will serve as a means to differentiate offers and introduce value added services.

As the market evolves, broadband will become the primary platform, with multiple players and services (including voice over broadband).

While in the past, establishing WAN (i.e. Intranet) was the primary usage of data transmission services, today 'Remote access' and 'Extranet' are becoming more commonly used.

6.2. Fixed and broadband segmentation

The segmentation process was divided into three phases – (1) retail fixed telephony; (2) retail Internet and data; and (3) related wholesale fixed segments.

6.2.1. Retail fixed telephony segments

The retail fixed telephony sector was broken down into 10 sub-services that were grouped into 3 service markets based on the services' functionality –

- Access – includes access to the fixed telephone network, incoming calls, incoming SMS and Value Added Services (VAS)
- Outgoing domestic calls – includes calls to local, national, mobile, non geographic destinations and domestic outgoing SMS
- Outgoing international calls

6.2.1.1. Access

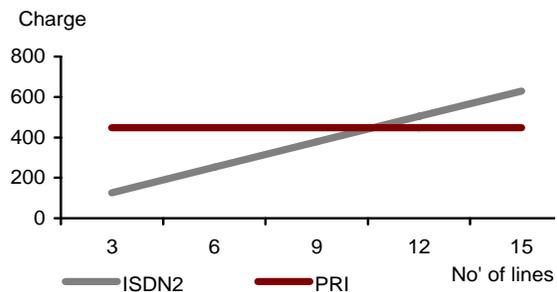
The retail access market was examined according to the segmentation layers:

Business vs. Residential

Most SMEs (which comprise most of the businesses in Romania) have the same offers and availability of choice as residential users. There is an overlap between high-volume residential users and low-volume business users and pricing is mainly 'volume based'. Moreover, SMEs can choose a preferred pricing plan from either business or residential offers. In general, large businesses face different availability of choice and different competitive dynamics. Therefore, the access market was not segmented according to the residential and business customer segments.

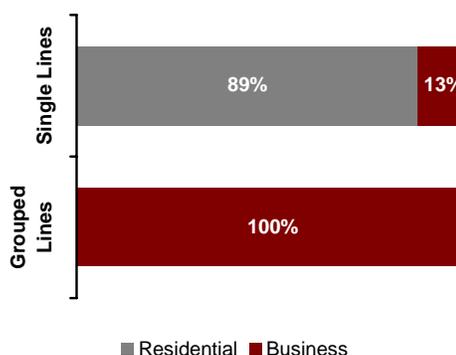
A different approach towards segmentation was reviewed. Due to the different functionality, differentiation between single and grouped lines was considered. 'Single access' lines refer to the PSTN, cable, ISDN2 and fixed-mobile access solutions. The 'grouped access' lines refer to PRI and direct connections access solutions, both of fixed and mobile operators. The different pricing suggests that a customer in need of more than 10 lines will not view single lines as an alternative to a grouped line as illustrated in exhibit 6.2.1.

Exhibit 6.2.1: Breakeven point between ISDN & PRI – 2006, (Euro, per month)⁽⁹⁾



Reviewing the different access solutions in Romania, it is evident that 'grouped access lines' are used solely by large businesses with high usage volumes, as seen in exhibit 6.2.2. This customer segment is more attractive to service providers, thus the level of competition is higher, mainly due to the mobile operators, relatively recent, 'grouped lines' offers via direct connections. Therefore, the access segment was sub-segmented into 'single access lines' and 'grouped access lines'.

Exhibit 6.2.2: Segmentation of access lines according to consumer segments⁽¹⁾



The single access lines market was further examined -

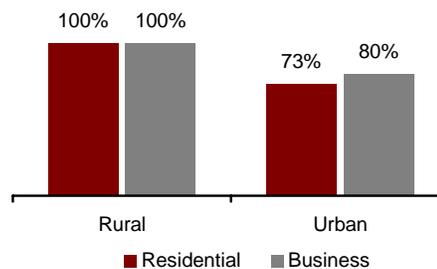
Different platforms

All platforms that provide telephony services at a fixed location with no practical ability to roam during a call were examined according to the hypothetical monopoly test (HMT). The platforms were found to belong to the same market due to similar consumer perception and evidence for cross price elasticity. Therefore, fixed services, such as Zapp's and Vodafone's that are provided over the mobile network, were considered a part of the fixed access markets.

Geographic segmentation

Current competition conditions in Romania differ between the rural and urban areas. While competition becomes more significant in the urban areas, mainly due to the aggressive entrance of the cable operators into the fixed telephony sector, Romtelecom's dominant position in the rural areas is stable (exhibit 6.2.3).

Exhibit 6.2.3: Romtelecom's market share, rural vs. urban (2006)⁽¹⁾



However, recent fixed-mobile offerings are likely to change the competitive conditions in the rural areas due to their attractiveness to the end user. In addition, fixed-mobile solutions demand low level of investment and time from the mobile operators, creating low barriers to entry.

Consequently, the fixed telephony market should not be segmented based on geographical considerations. Yet, the actual take-up of the fixed mobile services in rural areas needs to be monitored.

The market for the provision of access via 'grouped access lines' was also examined but was found not relevant for regulatory intervention. According to the ANRCTI data base, Romtelecom holds a substantial market share (~95%) but this figure does not include the mobile operators' direct connections services. There are indications from Vodafone that the 'direct connection' services are widely used. Therefore, a qualitative approach was taken. Since the customers purchasing this product are the most lucrative for service providers, competition is expected to be stronger and the segment is likely to move towards competition.

6.2.1.2. Outgoing domestic calls

The domestic outgoing calls market was also examined according to the different segmentation layers:

Business vs. Residential

Similarly to the retail fixed access markets, pricing for outgoing domestic calls is volume based. There are no consistent guidelines for the classification of residential and business users. Similarly to the access markets, small and medium businesses may choose between different pricing programs, whether residential or business.

Very high volume usage businesses usually correlate with the 'grouped access lines' users while low to medium usage customers usually use single access lines. Therefore, differentiation between 'single access lines' and 'grouped access lines' was made.

Domestic calls via single access lines were further examined according to the different segmentation layers:

Different platforms

There is no variance between the platforms in terms of the level of service. Theoretically, a customer that has access to different networks will see outgoing calls services as perfect substitutes on the respective networks. From a supply standpoint, alternative calls providers will face no technical barriers to move to an additional platform following a SSNIP, though CS\CPS are only available via the PSTN network. Therefore, the market should be defined in a technologically neutral manner.

Geographical Segmentation

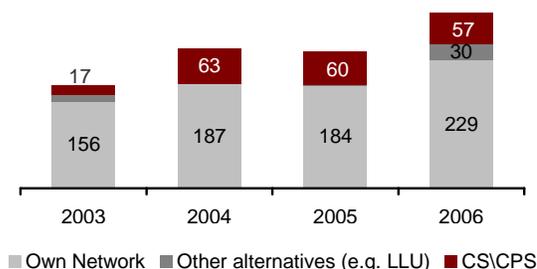
Since usage of alternative calls providers to domestic destinations is negligible, consumers rely on their access providers. Therefore, from a geographical standpoint, the domestic outgoing calls and the access segments are correlated, hence the domestic outgoing calls segment should be defined at a national level.

The segment of domestic calls via 'grouped access lines' was found not relevant for ex-ante regulatory intervention. Due to the low level of alternative call providers, the conclusion regarding this segment will be affected by the competitive dynamics in the 'grouped access lines' segment. Given that the 'grouped access lines' market seems sufficiently competitive and availability of choice exists, the outgoing domestic calls segment is considered competitive as well. Furthermore, since customers are characterized as 'very high usage' customers, they hold countervailing buyer power and can negotiate better terms.

6.2.1.3. International outgoing calls

The international outgoing calls market was found not relevant for ex-ante regulatory intervention. As opposed to the domestic calls market, alternative calls providers are significant and consist approximately 20% of the total international outgoing traffic. Hence, end customers can choose between their access provider and alternative providers. Romtelecom is still the dominant player but is rapidly losing market share. Exhibit 6.2.4 displays the evolution of international outgoing traffic from networks and alternative calls providers.

Exhibit 6.2.4: Total international outgoing (million minutes, 2003-2006)⁽¹⁾



6.2.1.4. Summary of the segmentation process in the retail, fixed telephony sector

Out of the layers of segmentation, two segments were identified as relevant to ex-ante regulation –

- I. Access to the public telephone network via 'single access lines' provided at a fixed location ("Access via single lines")
- II. Provision of domestic telephone services via 'single access lines' provided at a fixed location ("Domestic calls via single access lines")

In addition, three more segments were defined but were found sufficiently competitive, hence not relevant for ex-ante regulation -

- III. Access to the public telephone network via 'grouped access lines' provided at a fixed location
- IV. Provision of domestic telephone services via 'grouped access lines' provided at a fixed location
- V. Provision of international telephone services.

6.2.2. Internet & Data retail markets

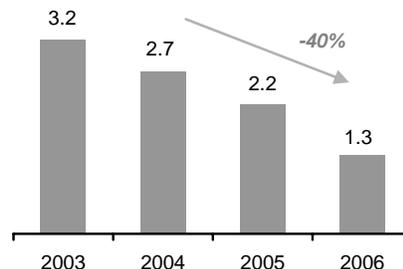
Three segments were defined in the Internet and data retail sectors but none was found relevant for ex-ante regulation –

I. Market for the provision of Internet services

via dial-up access –

the market is characterized by a large number of small players. Vodafone is the most significant player with 30% of market share in terms of subscribers. However, since Vodafone's significant market share is a result of its free offer, its market share in terms of revenues is much lower (10%). Analysis suggests no player holds dominance. Furthermore, as seen in exhibit 6.2.5, usage trends indicate that the market is declining and is expected to become not material in the future.

Exhibit 6.2.5: Dial up traffic (B minutes, 2003-2006)⁽¹⁾



II. Market for the provision of Internet services

via 'always on' access –

A large part of the customers who access the Internet using dedicated connections, purchase this service from small operators (i.e. operators with less than a 1000 users). Though RCS&RDS is a very significant player with 30% market share of subscribers (exhibit 6.2.6), current trends indicate the market is moving towards increased level of competition, mainly due to Romtelecom's ADSL deployment.

Exhibit 6.2.6: Market shares of dedicated Internet connections⁽¹⁾

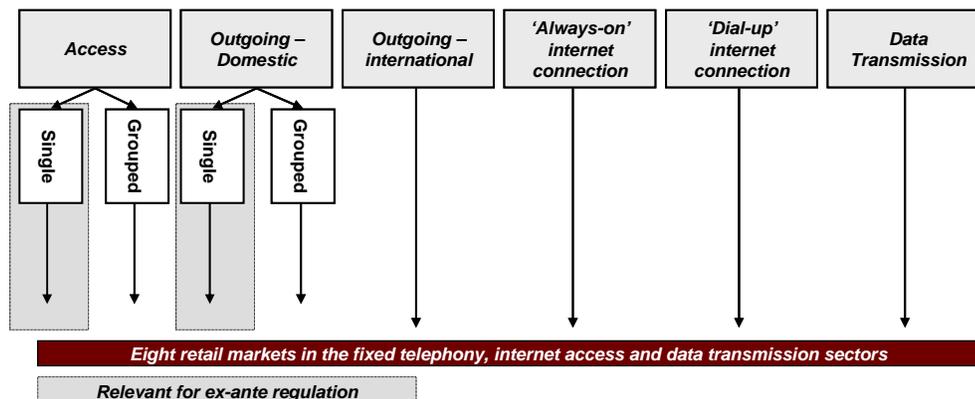


III. Market for the provision of data transmission solutions –

The market consists of diverse products provided by various operators. There are no indications that suggest dominance exists.

In summary, out of the eight defined retail markets in the fixed, Internet and data sectors, only two were identified as uncompetitive and relevant for ex-ante regulation (see exhibit 6.2.7).

Exhibit 6.2.7: Summary of the retail segmentation process



6.2.3. Related wholesale segments

Within the wholesale fixed sector five segments were identified as requiring ex-ante intervention:

- I. Wholesale unbundled access (including shared access) to the public fixed telephone network for the purpose of providing broadband and voice services ("LLU segment")
- II. Wholesale market for call origination on the public telephone network provided at a fixed location ("Call origination segment")
- III. Call termination on individual public telephone networks provided at a fixed location ("Call termination segment")
- IV. National transit services in the fixed public telephone network ("National transit")
- V. Wholesale terminating segments of leased lines

The segmentation layers methodology was applied on the wholesale markets:

6.2.3.1. LLU segment

The LLU solution is currently the only regulatory imposed solution for wholesale access to the fixed telephony network. While, technically, establishing a physical network is an alternative for the LLU solution, the high investments involved in such a deployment suggest that, in practice, it is not an economic substitute.

The obligation to provide LLU was imposed solely on Romtelecom due to its strong position in the retail access market. The market is a 'one player' market and should be defined in the coverage area of Romtelecom's access network, hence at the national level.

6.2.3.2. Call origination segment

An alternative to call origination is to enter the access market either through LLU or by establishing a physical network. Both alternatives entail considerable time and investments, and therefore, are not practical substitutes.

Similarly to the LLU market, Romtelecom was designated with having SMP in the call origination market due to its dominant retail market position. Furthermore, no other fixed network is offering call origination services, thus, no additional segmentation should be made according to platform. In addition, call origination services are offered on identical terms regardless of geographical location, hence, the market should be defined and at the national level.

6.2.3.3. Call termination segments

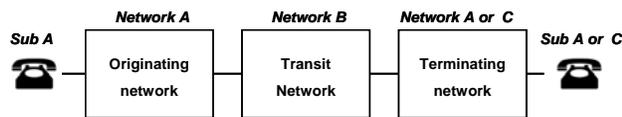
Wholesale call termination is required in order to terminate calls to off-net destinations. There are no alternatives for voice calls termination – every phone number terminates at a specific network. Due to the Calling Party Pays (CPP) principle, it is not likely that the originating network would influence its subscribers to change their usage pattern in the event of a SSNIP of the call termination charge.

The termination call market is unique in that every network represents a separated market.

6.2.3.4. National transit market

Transit services refer to the conveyance of switched calls on the public telephone network provided at a fixed location. There are several definitions for wholesale transit services. The most suited delineation between termination, origination and transit services can be illustrated in exhibit 6.2.8:

Exhibit 6.2.8: Illustration of the 'pure transit' service



According to this, the recommended approach will only consider 'pure transit' (i.e. transit across a third network) as part of the wholesale transit market.

Transit services may be purchased from various networks, and are available throughout the entire country with similar terms.

6.2.3.5. Terminating segments of leased lines

In order to provide end customers with leased lines and other electronic communications services, a provider may purchase leased lines of different lengths from another operator. Different parts of leased lines may be characterized by diverse market dynamics; therefore they are referred to separately:

- Terminating segments – the connection between end user and the nearest point (on the network) of interconnection (NPIC) (i.e. “last mile”)
- Trunk segments – connecting between two NPICs

Exhibit 6.2.9: Illustration of terminating and trunk leased line

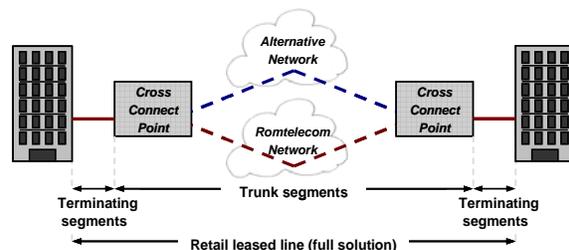


Exhibit 6.2.9 illustrates the boundary between the two types of leased lines.

While many trunk segments are likely to be effectively competitive, high barriers to entry make competitive conditions less likely in the terminating segments of leased lines.

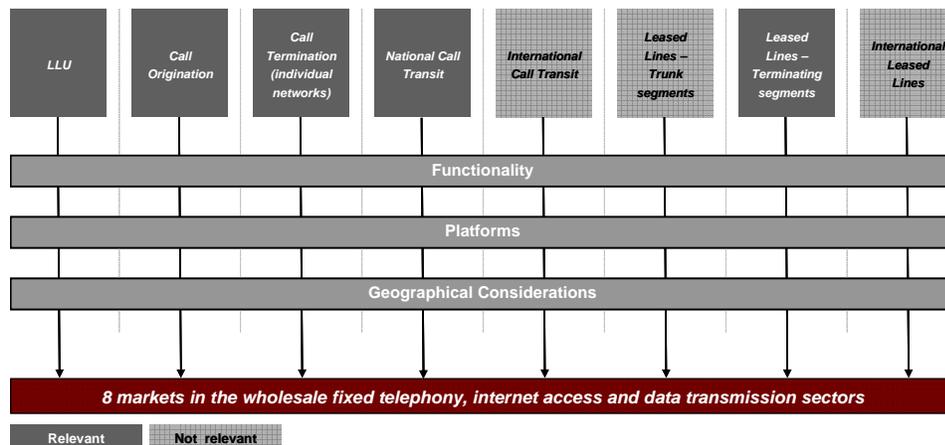
The terminating segments of leased lines are often offered only via Romtelecom's access network (though in urban areas some level of competition exists).

In addition to the identified relevant markets, three more were defined but were found to be sufficiently competitive, thus, not relevant for ex-ante regulation –

- I. **Wholesale trunk segments of leased lines** – There are several networks, in Romania, offering trunk services. A purchaser of trunk services will view their offerings as substitutable. While information is problematic, there are no indications for dominance in this market.
- II. **Wholesale international leased lines** - The market enjoys high levels of competition. Furthermore, providers consist of both national and international players, thus, regulation is problematic.
- III. **International transit services in the fixed public telephone** – International transit services are offered on top of the international leased lines. The strong competition in the market for the provision of international leased lines projects on the competitive conditions in the wholesale international transit market.

In summary, out of the eight defined wholesale markets in the fixed sector, five were identified as relevant for ex-ante regulatory intervention as displayed in exhibit 6.2.10.

Exhibit 6.2.10: Summary of the wholesale fixed, Internet and data sectors segmentation process



6.3. Competitive dynamics & deficiencies identification

A competitive analysis has been conducted in order to identify excessive market strengths, dominant positions, and identify possible market deficiencies.

6.3.1. Analysis of the relevant markets in the retail fixed telephony sector

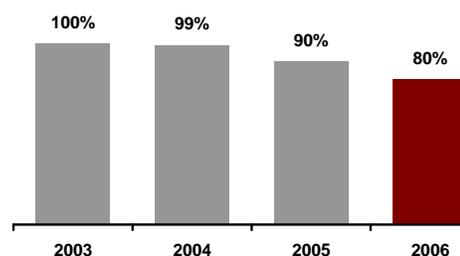
6.3.1.1. Single access lines market

Both quantitative and qualitative analyses indicate Romtelecom is dominant in the single access lines market.

Dominancy analysis

Market share analysis shows that Romtelecom holds 80% of the segment in terms of lines (exhibit 6.3.1). Nonetheless, current trends indicate Romtelecom is consistently losing market share and its dominant position. It is unclear whether Romtelecom's market share will drop below the 50% line in the relevant timeframe.

Exhibit 6.3.1: Romtelecom's single lines' market share, 2003-2006⁽¹⁾



In addition to the market share analysis, demand side considerations and entry barrier analysis were performed –

Countervailing buyer power

Customers in the single access lines market generally consist of households and small to medium businesses, all of which are characterized with low to medium usage. Therefore, it is unlikely that a single customer holds bargaining power against the access provider.

Entry barrier analysis

Building a competing access network requires vast investments and is a lengthy process due to various legal and regulatory barriers (e.g. 'right of way'). In addition, as a result of its nationwide services and number of customers, Romtelecom enjoys significant economies of scale. None of the other operators in this market are expected to achieve sufficient "critical mass" to exploit economies of scale in a comparable manner.

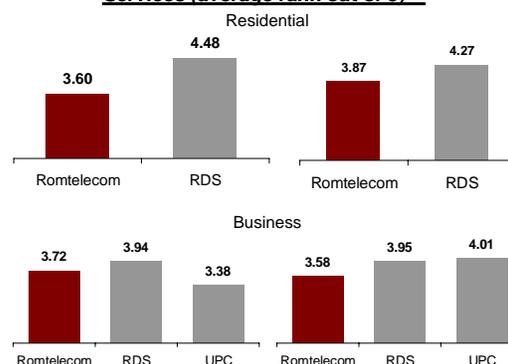
Deficiency analysis

Two deficiencies were identified – low availability of choice and low level of satisfaction, yet, the reasons for the latter are inconclusive since the deficiency may be the result of regulatory constraints.

Level of satisfaction

As displayed in exhibit 6.3.2, Romtelecom's residential users are significantly less satisfied than RCS&RDS'. Results from the business segment were less substantial, though Romtelecom was still ranked the lowest amongst the three largest telecom providers.

Exhibit 6.3.2: Level of satisfaction with Fixed Telephony Services (average rank out of 5)⁽⁴⁾



Low levels of satisfaction indicate a deficiency. However, there may be several reasons for this deficiency, namely –

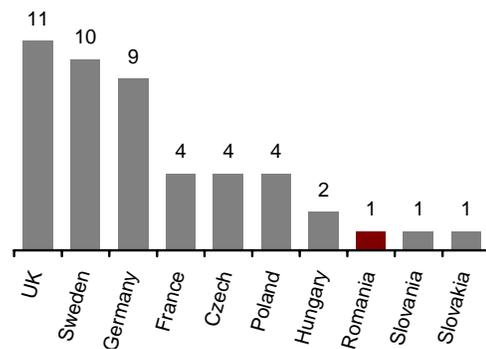
- Romtelecom is indeed exploiting its market power and abuses end-customers
- Regulatory constraints deny Romtelecom the ability to compete on prices (though this is not relevant for the level of service)
- A combination of the two reasons

Availability of choice:

The average Romanian consumer faces significantly less alternatives than the average consumer in other member states. This constitutes an additional deficiency since lack of choice both indicates barriers to entry are relatively higher than other member states and is also correlated with abusive behavior.

Exhibit 6.3.3 displays a comparative analysis of the number of operators that along with the incumbent operator have a combined market share of at least 90% of the voice market.

Exhibit 6.3.3: Number of main players, 2006 ^(1,2, 6)



6.3.1.2. Domestic outgoing calls via single access lines

Qualitative and quantitative analyses indicate Romtelecom holds a dominant position in the domestic outgoing calls segment.

Dominancy Analysis

A simple market share analysis cannot be done since the available data does not relate to the single and grouped access lines differentiation.

In the past four years, the number of alternative calls providers (i.e. CS/CPS) players has increased while domestic outgoing traffic using alternative calls providers services has remained marginal (exhibit 6.3.4). Consequently, end customers, whether using a single or grouped access lines, rely on their access provider for the provision of domestic outgoing calls. It can, therefore, be assumed that the market position in the outgoing domestic calls would be correlated to the position of the single access lines market.

There is a strong correlation between Romtelecom's access and domestic outgoing calls market shares. In 2006, Romtelecom held 81% of total outgoing domestic traffic, while holding 80% of single access lines as expressed in exhibit 6.3.5. Market trends indicate Romtelecom's market power is decreasing, yet it cannot be conclusively derived that market shares will go under the 50% line in the relevant timeframe.

Entry barriers analysis:

As opposed to the single access lines, barriers to entry are significantly lower in the domestic outgoing calls market.

Romtelecom has substantial scale in the production of domestic calls, *inter alia* as a consequence of its nationwide services, customer base, billing and other parameters. However, the scale is of less importance, since alternative operators who use Romtelecom's network also benefit from it, assuming call origination rates are cost-oriented and alternative calls players have reasonable margins.

Furthermore, it is not necessary to control access networks to provide domestic calls. Indirect access, via CS, CPS and LLU is an alternative. However, the marginal entrance of alternative players into the market suggests the market is highly unattractive to new entrants (based on the CPS new entrant model).

Exhibit 6.3.4: Alternative calls providers' market share of domestic calls (minutes) – 2006⁽¹⁾

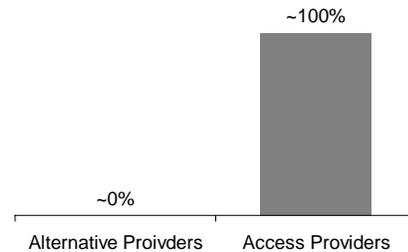
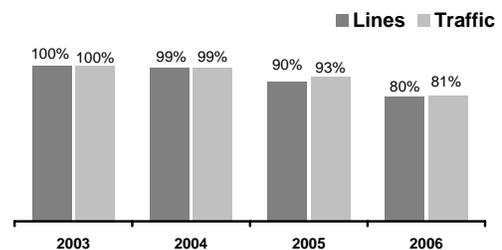


Exhibit 6.3.5: Romtelecom market shares – Domestic outgoing calls (minutes) vs. Single Lines (lines)⁽¹⁾



Deficiency Analysis

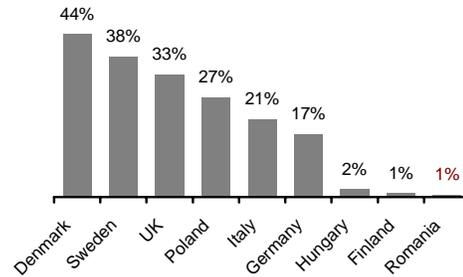
Four deficiencies were identified – low level of alternatives; high tariffs for Romtelecom's users; price complexity and; excessive off-net tariffs. These deficiencies are derived from diverse reasons. It is probable that some stem from regulatory deficiencies.

Level of alternatives

The marginal usage of alternative calls providers (CS and CPS) for domestic calls in Romania, indicates that alternative offers are unattractive to the end customers. This deficiency stems from lack of sufficient margin for CS\CPS players.

Exhibit 6.3.6 displays the usage level CS\CPS providers between EU member states.

Exhibit 6.3.6: Market share (minutes) of CS\CPS players of local calls in other member states (2005) ^(1,7)



Tariffs level

Romtelecom's average revenue per minute of use is four time more expensive than its main competitors (exhibit 6.3.7). Furthermore, customers using Romtelecom services show significantly lower levels of satisfaction with regards to calls tariffs (exhibit 6.3.8).

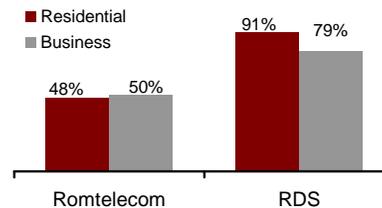
Exhibit 6.3.7: Average revenue per MOU (2006, EURO) ⁽¹⁾



There may be several reasons for this deficiency -

- When purchasing fixed telephony as a part of a bundle, the tariffs for telephony services are cross subsidized by the TV subscription fee
- Due to regulatory restrictions, Romtelecom's ability to compete is impeded (through obligatory minimum prices)
- In places where availability of choice does not exist, fixed telephony subscribers are Romtelecom's captive market

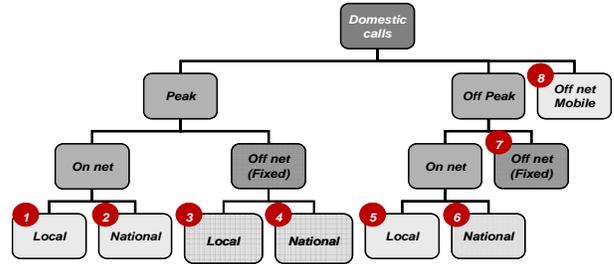
Exhibit 6.3.8: Tariffs satisfaction ⁽⁴⁾, (Responded: Satisfied and very satisfied)



Price complexity

Romtelecom’s customers face eight different basic tariffs that are divided according to destination, receiving network and time of the day (exhibit 6.3.9). It is improbable that with this complex tariff scheme, customers will be able to keep track of calls expenses, thus, be able to make rational customer decisions.

Exhibit 6.3.9: Romtelecom's tariff structure, 2007 ⁽⁵⁾

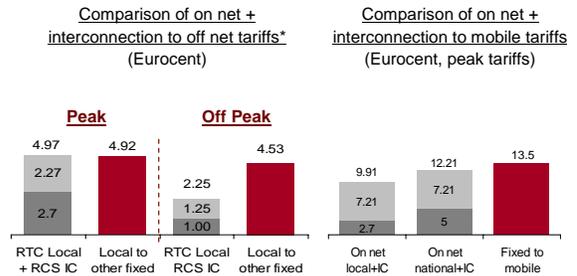


Indications of excessive off net tariffs

Some of Romtelecom's off net tariffs are apparently not cost based, as illustrated in exhibit 6.3.10. This suggests -

Exhibit 6.3.10: Comparison between Romtelecom's on-net and off-net calls tariffs ^(1, 5)

- Abusive behavior - high outgoing off-net tariffs, subsidize outgoing on-net calls
- The high rates for off-net calls strengthen Romtelecom’s network effect hence increase barriers to entry and lower ability for a CS/CPS player to enter the market



Since none of the retail Internet & data markets were found relevant for regulation, no dominance and deficiency analysis was made regarding these markets.

6.3.2. Analysis of the relevant wholesale markets in the fixed, Internet & data sectors

Five related wholesale markets were identified as relevant for ex-ante regulation. A competitive analysis has been conducted within these markets, in order to identify dominant positions and possible market deficiencies.

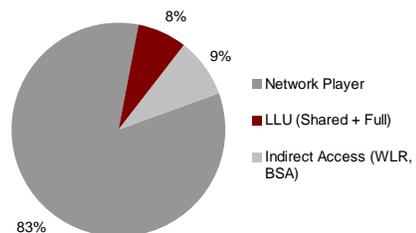
6.3.2.1. LLU Market

Dominancy Analysis

The LLU obligation was imposed on Romtelecom due to its strong position in the retail access markets. There are no indications that suggest the current situation should be altered.

Currently, no network provider, other than Romtelecom, chose to enter this market and so it remains a ‘one-player’ market. Furthermore, Romtelecom is still the dominant player with

Exhibit 6.3.11: Types of access in EU member states (2006) ⁽⁶⁾



regard to fixed access on the retail level. Therefore, Romtelecom should still be designated with having SMP.

When examining Romania's position with relation to other member states (exhibit 6.3.11), Romania is lagging behind in terms of LLU take up.

Deficiency Analysis

LLU take up in Romania is very low (exhibit 6.3.12). 10 providers are using the LLU product (2007) with minor success. The LLU service had no impact as a regulatory solution. There are several reasons that might explain this situation:

Low ADSL readiness:

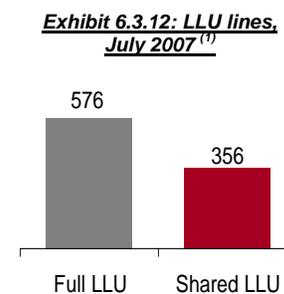
LLU services are dependent on Romtelecom's ADSL network readiness. Since up until recently, ADSL deployment was very low and quality of the copper line not sufficiently good, the LLU solution has not taken up. In the past year, Romtelecom has increased its ADSL capacity and intends to further deploy ADSL, thus, this reason is not expected to maintain its effect.

Entry barrier:

Though in the case of LLU, the CAPEX required from new entrants is lower than establishing a physical network. It still requires significant initial investments in network elements.

NGN horizon:

Active ONU, as part of the NGN deployment, changes the business model and increases the risk of the potential players since the horizon of the investments is not clear



6.3.2.2. Call origination market

Dominancy Analysis

Like LLU, call origination is a regulatory solution aimed to increase competition at the retail fixed voice markets. However, call origination offers indirect connection to the end customer (not based on infrastructure) and in fact represents a less intrusive regulatory instrument. Since inception, almost no other players have entered the market. Furthermore, Romtelecom is still the dominant player in the retail fixed access market and so it should still be designated with having SMP.

Deficiency Analysis

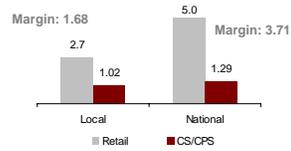
The low level of alternative calls providers using the CS solution and the lack of alternative providers using the CPS solution suggests a market deficiency.

The carrier pre-selection initiative has not led to additional customer choice. As a result, end customers face the same competitive conditions on the outgoing domestic calls market and the retail access market.

Based on an elaborated model for new CPS entrants, the gap between the retail and wholesale prices of Romtelecom's call origination leaves no margins to sustain an effective business model (exhibit 6.3.13 illustrates that).

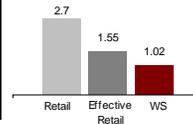
Exhibit 6.3.13: Margins for CS player in Romania⁽⁵⁾

- I. **Though it seems, margins for CS are sufficient, especially for national calls...**
 Retail vs. Wholesale tariffs (per peak minute, Eurocent)
- II. **...RTC subscribers' usage pattern indicate a clear preference for local calls**



- III. **In addition RTC package offers represent effectively much lower call tariff**

Package	Tariff (Euro)	Local/national minutes included	Effective price per minute
Confort 50	7.80	50	0.018
Confort 200	10.00	200	0.0155
Confort Standard	6.90	-	Peak: 0.027, 0.05 Off peak: 0.01, 0.04



From an international perspective, Romania's competition level is positioned very low when compared to other member states (exhibit 6.3.14).

Nevertheless, The CS\CPS solutions were more relevant a few years ago when margins for outgoing traffic were higher. Due to the rebalancing of Romtelecom's tariffs, margins became even less attractive to new operators.

Exhibit 6.3.14: CS\CPS level in other member state (2005)^(1, 7)

	Country	# of CS players	% of operators ⁽¹⁾	# of CPS players	% of operators ⁽¹⁾
	Belgium	13	87%	13	87%
	Denmark	18	42%	19	44%
	Estonia	11	32%	12	37%
	Netherlands	68	65%	24	23%
	Sweden	17	34%	37	37%
	Germany ⁽²⁾	16-44	13%-36%	22-47	22%-47%
	Romania ⁽³⁾	46	56%	0	0%

(1) Number of operators using CS\CPS as a percentage of the number of active operators, excluding the incumbent

(2) Local and Long distance

(3) 2006 data

6.3.2.3. Call termination segments

As previously described, the call termination market is unique in that termination on every network is related to the network owner, hence it holds 100% market share on its respective network. The originating operator has no freedom of choice in its demand for call termination. Therefore, each network has dominance of its own network.

However, the negotiation power of operators is different depending on their market power. Networks with high share of terminated calls may utilize their position to force tariffs upon other operators by retaliating through canceling interconnection agreements.

Over 87% of all voice call termination on fixed networks takes place on Romtelecom's network (exhibit 6.3.15). Therefore, the degree of alternative networks' bargaining power vis-à-vis Romtelecom is low.

RCS&RDS holds 87% of total fixed termination market – it has also reached 'critical mass' which gives it a strong bargaining advantage against operators other than Romtelecom.

Exhibit 6.3.15: Call termination market share by main players (minutes), 2003-2006⁽¹⁾



6.3.2.4. National transit segment

Dominancy Analysis

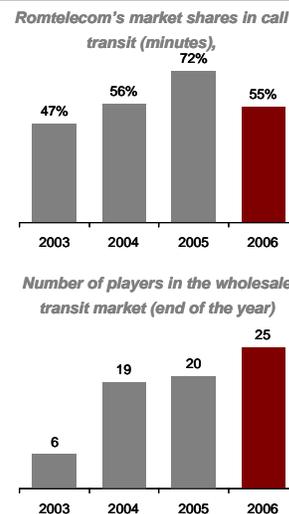
While in the transit service market there are 25 players due to the low barriers to entry once, analysis indicates Romtelecom is the dominant player.

Out of the various market players the leading 5 hold over 85% of the market. As can be seen in exhibit 6.3.16, Romtelecom, as the leading player, has steadily held over 50% of the market since it has the largest network and is the only player obligated to provide the service.

While it is evident that the number of players has increased, it cannot be said that this trend has affected Romtelecom's market position. On the contrary, Romtelecom's market share has, generally, increased.

In 2006, the total market comprised of approximately 870M minutes. The relatively low number of minutes suggests the transit service is not widely used nor is it attractive for telecom providers.

Exhibit 6.3.16: Number of players and Romtelecom's market share in the national transit market (2003-2006)⁽¹⁾



Entry barriers analysis:

Provision of transit services requires a backbone network and interconnection with other operators besides Romtelecom. While establishing a network requires heavy investments, it is unlikely that an operator will view transit services as a 'core business', hence the network would be used for other purposes as well. Thus, transit services may

be considered an additional service layer on top of the 'core' business. Finally, the increasing number of entrants suggests barriers are reasonable.

Other than the existence of dominance in the market for national transit services, no other market deficiencies were identified in this sector.

6.3.2.5. Wholesale terminating segments of leased lines

Dominancy analysis

In 2003, Romtelecom was designated with having SMP in the terminating segments market. The considerations that led to that conclusion focused on:

- Romtelecom's market share (~96%)
- Romtelecom's vast national distribution network
- Romtelecom's ability to benefit from economies of scale
- Very high barriers to entry

Entry barrier analysis:

There are several barriers of entry which suggest, entrance into the terminating segments market is extremely difficult:

Time to market - establishing an access network is a very lengthy process

High investments and risks associated with the investment

'Right of way' may cause significant difficulties in certain geographical areas

No freedom of choice:

For most wholesale consumers, Romtelecom will constitute the only solution for terminating segments of leased lines.

Low countervailing buyer power:

Due to Romtelecom's position and since it is inconceivable that alternative providers will establish a new network – wholesale consumers bargaining power is relatively low.

The market for terminating segments of leased lines is currently fully regulated (i.e. the entire set of remedies is imposed), therefore, no regulatory deficiency was found.

6.4. Proposed regulatory interventions

6.4.1. Relevant objectives

Market deficiencies should be examined in light of the regulatory objectives previously defined (see chapter 3). The main two objectives that are related to the deficiencies identified seem to be:

- **Promoting competition**

Enhance competition both by infrastructure based competition and retail services' competition that will enhance broadband penetration and increase value of fixed telephony services.

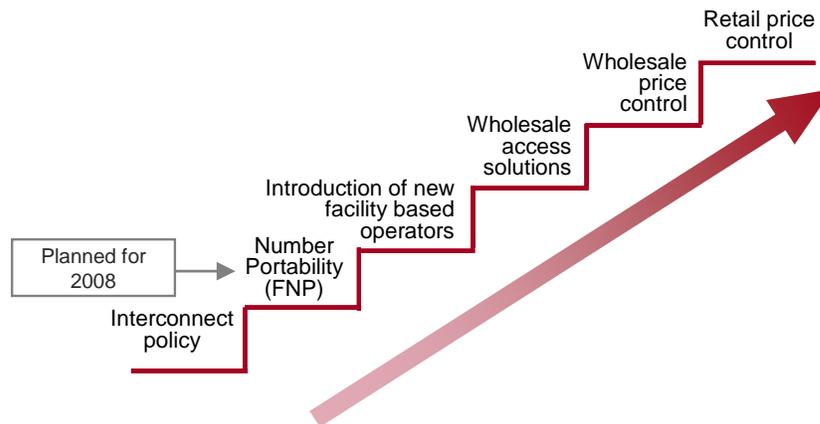
- **Increasing transparency**

Increase price transparency to end consumers at the retail level, including outgoing minute tariffs and interconnect fees so as to allow rational customer behavior.

6.4.2. Potential intervention to promote competition

There is a range of gradual regulatory interventions that can promote competition, starting from low levels of intervention to very intrusive measures (exhibit 6.4.1).

Exhibit 6.4.1: Regulatory instruments for promoting competition in the fixed sector



Interconnect policy

The proposed process, for setting fixed termination rates, includes two steps:

Step 1: Immediately impose all fixed operators the following:

- Obligation to interconnect
- Full transparency
- Non-discriminatory set prices as the normative price plus a mark up

Step 2: After reaching 1% share of total fixed termination traffic, an operator should be obligated to a weighted average of Romtelecom's fixed termination rates (as elaborated below).

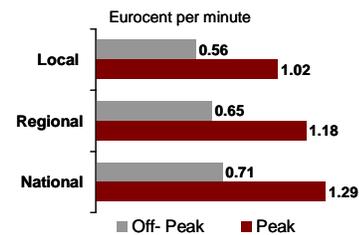
The 1% threshold represents a sufficient traffic on which the network starts to benefit from partial economies of scale.

Notwithstanding, advanced technologies, such as VoIP, are more efficient and therefore cost-based fixed termination rates are expected to be lower than that of Romtelecom's. However, the relative share of VoIP traffic is still very low; Romtelecom, using traditional voice, enjoys significant economies of scale, which may set off the efficiency factor of advanced networks, which are used by some of the new entrants. When the market reaches a significant VoIP termination traffic all termination rates should be revisited.

In case of terminating traffic at fixed location via the mobile network, the mobile operators should be obligated to charge Romtelecom's fixed termination rates as well. Since fixed services offered by mobile networks are marginal to their mobile offering and this is reflected in their lower retail prices for the fixed services, such a termination rate is justifiable.

In addition, since Romtelecom has six different termination rates (see exhibit 6.4.2), we recommend to derive a weighted average rate according to the traffic distribution and to set one termination rate that will be imposed according to the 2nd phase. Romtelecom should be allowed to reduce the number of fixed termination rates (and be encouraged to do so), as long as the weighted average rate is kept.

Exhibit 6.4.2: Romtelecom's 6 termination rates ⁽⁵⁾



The potential implication of this process is that fixed operators might use this tariff scheme to send over a call to the nearest point of interconnection and to force Romtelecom to transit the call for a longer distance. The unified tariff should take into account this scenario to compensate Romtelecom on a more expensive mix of termination.

This process creates several advantages:

Transparent process that gives certainty to new entrants and protect them in negotiations vs. Romtelecom

- One “normative” tariff, which represents an efficient network, will encourage efficient fixed telephony solutions
- One fixed termination rate will encourage simpler retail tariffs

Fixed Number Portability (FNP)

FNP is expected to be enacted during 2008. The current ANRCTI plan does not entail setting regulated retail tariff for the FNP process in the hope that market mechanisms would drive prices to a reasonable level. This approach, naturally, holds the potential for excessive prices to be set so that customers' switching costs are higher. Therefore, retail prices should be monitored, and if needed, regulatory intervention be made.

Furthermore, there are several technological solutions for number portability that differ, among other things, by the reliability of the service and the simplicity of the implementation. The ANRCTI should consider whether an obligation regarding the preferred solution should be made.

Introduction of new facility based operators

New facility based operators will contribute to the diversity of solutions available to end-customers and fuel competition. In this regard, WiMAX technology holds the potential to achieve the greatest impact, especially due to its possible effect in the rural areas.

WiMAX is preferable to other technologies (e.g. WiFi MESH, HSDPA), mainly due to its large coverage area, cost effectiveness and fast rollout. It is recommended that the new WiMAX frequencies will be granted and conditioned on providing both fixed telephony and broadband services in underserved territories first.

Wholesale access solutions

On the wholesale access front, there are several gradual remedies that the ANRCTI needs to promote (exhibit 6.4.3).

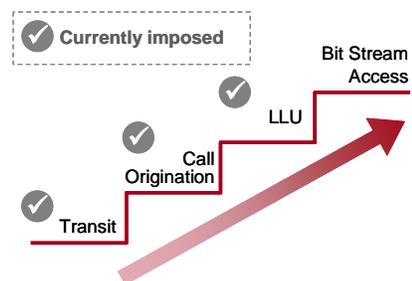
- **Transit**

Due to Romtelecom's dominancy in the market, it shall continue to be obligated to provide transit services.

The transit obligation is an essential service that enables small networks to provide a full service to their subscribers. Currently more than 10% of the fixed traffic requires transit services.

Market conditions indicate that the market is heading towards competition with a substantial decrease in Romtelecom's market share in 2006 and an increase in the number of alternative players. Still, due to Romtelecom's vast network, we believe there are routes with no other alternatives.

Exhibit 6.4.3: Regulatory instruments for promoting competition in the wholesale access market



- **Carrier Selection/ Carrier PreSelection**

Carrier selection is not an effective solution to increase competition in Romania. Only 1.5% of traffic was generated via CS (including international traffic) in 2006. Though CS and CPS have made significant impact in other member states, in Romania, CS has not sufficiently affected competition, while CPS was not introduced at all.

It seems that, though the wholesale tariffs were updated, the latest rebalancing of Romtelecom's tariffs reduced the attractiveness of the CS and CPS offers. Furthermore, up until mid 2007 only 40% of Romtelecom's sites were able to accommodate CPS. Only recently, Romtelecom updated its sites and extended CPS capability to 90%.

Given market prices, the ability to create sufficient margins for CS/CPS players is questionable. However, Romtelecom should continue to be obligated to provide call origination services for the next three years, due to the need for a continuum regulatory strategy, which will allow market players an adequate horizon to return their investment

▪ Local Loop Unbundling

Similarly to the CS\CPS solution, LLU has not been an effective solution to promote competition in Romania with less than 1000 lines (2006). The business model for LLU player is still not very solid:

- Relatively high CAPEX bearing high risk – an LLU player is required to an initial investment of about €12M (in the first 2 years) to provide both fixed telephony and broadband services
- Massive collaboration with Romtelecom - equipment, use of sites, power...
- Future plans of Romtelecom to deploy NGN questions the feasibility of LLU players' investment time horizon.

However, Romtelecom should continue to be obligated to provide cost based LLU services to allow market players an adequate horizon to return their investments.

▪ Bitstream Access

Bitstream access is an alternative access solution, which may be more appealing to a new entrant than LLU in four aspects:

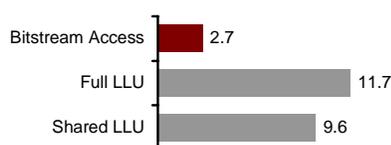
- lower initial investment costs and therefore less risky
- the solution is still relevant in case of NGN
- shorter time to market than the LLU
- not bound to a specific geographical area as with the LLU solution

Bitstream access enables alternative operator to achieve larger coverage of potential subscribers, with less capital investments than in LLU.

However, the bitstream access solution holds some disadvantages. Primarily, since alternative providers have to rely on the designated provider's infrastructure it is not possible to differentiate their services from those of the designated provider (particularly in broadband).

Romtelecom as the dominant player in the fixed telephony access for 'single lines' should have been obligated to provide bitstream access. However, its current position in the wholesale broadband access market clearly suggests it does not hold dominancy.

Exhibit 6.4.4: Total CAPEX of first 2 years (€M) for different access solutions⁽²⁾



The DSL services are expected to be expanded significantly in the near future and, therefore, the ANRCTI should plan and prepare the framework for future examination of the bitstream access as a relevant market and monitor Romtelecom's DSL capacity by the end of 2008 at the latest.

In addition, since bitstream access should constitute a regulatory solution for market deficiencies relating to voice access, the 'full bitstream access' solution should be imposed (i.e. provision of both broadband and voice services using DSL) and not only shared bitstream access.

Wholesale price control

The ANRCTI may use a gradual intervention scheme for wholesale prices (exhibit 6.4.5). It is recommended that the following will continue to be obligated upon designated dominant players:

- Transparency – Make public specified information, such as technical specification, network characteristics, terms and conditions for supply and use and relevant prices, as well as publish a reference offer
- Non discrimination – Apply equivalent conditions, prices, information, and quality of service to all providers
- Account separation - Since Romtelecom is vertically integrated, it should separate its wholesale prices and its internal transfer prices to ensure compliance with non-discrimination and to prevent margin squeeze behavior
- Cost based tariffs
 - Transit – Continuous regulation of prices with constant review for relaxing regulation
 - Call origination – Continuous regulation of prices with constant review for margin squeeze behavior
 - LLU – Cost based tariffs, ought to be introduce
 - Bit Stream Access –Once the market is defined, a cost based tariff should be in place

Currently, regulation regarding wholesale services' tariffs exists. The wholesale tariffs should continue to be fully regulated to avoid margin squeeze behavior and excessive pricing.

Retail price control

The increased competition in the retail access and outgoing calls markets of single lines enables the ANRCTI to relax current retail prices constraints. Therefore, regulated prices should be removed. However, other regulatory instruments should still be imposed on Romtelecom at the retail level:

- Standalone services should be offered

Romtelecom should offer its services as standalone with full transparency and non-discriminatory terms and tariffs. The bundled offers of access

Exhibit 6.4.5: The gradual regulatory intervention steps for wholesale price control

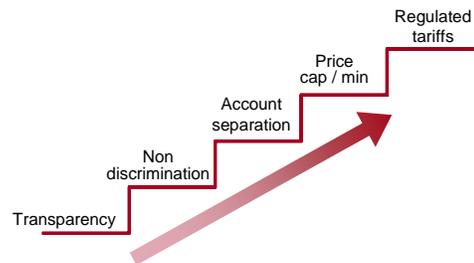
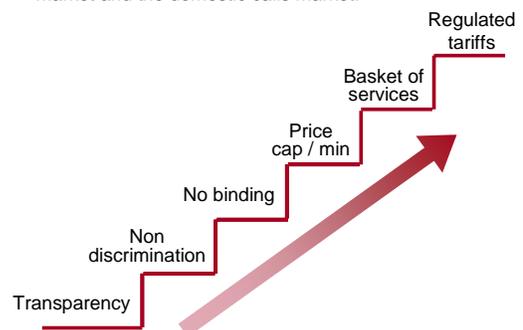


Exhibit 6.4.6: The gradual regulatory intervention steps for retail price control

These options are relevant both to the access market and the domestic calls market:



and outgoing minutes cannot exceed the sum of the standalone services.

- A complementary universal service policy aimed at protecting users with a uniform pricing policy

The 'single-line' access and the domestic outgoing calls via 'single lines' markets serve residential and SMEs customers in both rural and urban areas and ought to be non-discriminatory. Romtelecom's offers should be available to all 'single lines' customers for access and domestic outgoing calls.

The offers may include various price plans that can be tiered by usage pattern, such as number of fixed lines and traffic volume, but cannot differ by geography or customer segment (business/residential).

- Price transparency

Prices and offers should be published and be available to all. Furthermore, offers should be clear and simple to understand by all end customers.

The suggested retail policy holds several benefits from a competitive perspective:

- Enables Romtelecom to compete
- Enables customers to make rationale decisions
- Enables rural subscribers to enjoy the offers and prices available in a competitive urban environment

An additional deficiency that relates to retail price regulation needs to be addressed:

Control over off-net tariffs

In order to prevent Romtelecom from utilizing the relaxation in tariff regulation and raise off-net prices, thus, increasing its network effect, tariffs for off-net calls should be set with a maximum cap. Exhibit 6.4.7 displays Romtelecom's current off-net tariffs and suggests they are not cost based.

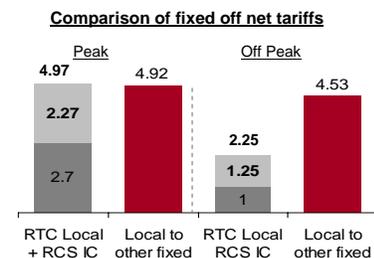
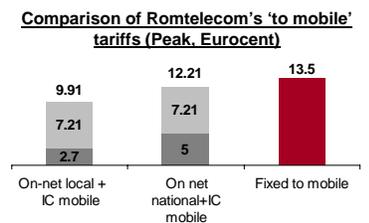
- Off net to mobile

Off-net call tariff to mobile should be set at a maximum level of the sum of the local fixed tariff and the weighted average mobile termination rate.

- Off net to fixed:

Call tariffs to other fixed networks should also be set at a maximum level of the sum of the local fixed tariff and a weighted average of the interconnect tariffs. Thus, Romtelecom will be free to set the on-net tariff as it deems fit, but off net tariffs will be regulated.

Exhibit 6.4.7: Comparison between Romtelecom's on-net and off-net calls tariffs^(1,5)



* The displayed interconnect rates do not represent the weighted average of the interconnect rates Romtelecom faces. The actual weighted average rate is higher

- Off net to non-geographic fixed numbers:

Mobile-fixed offers should be considered as fixed as described in the segmentation section. Therefore, Romtelecom should charge a call to fixed-mobile subscriber as off-net fixed-to-fixed call. (i.e. reduce the interconnect rate substantially).

After regulation on the retail tariffs of Romtelecom will be relaxed, the ANRCTI would not have sufficient information regarding the cost of on-net traffic, thus, imposing a price cap would be difficult. Therefore, it is recommended that the off-net tariff of any price plan would be set as the sum of the effective price of the on-net traffic and the weighted average interconnect rate for that destination.

6.4.3. Discussing proposed steps regarding the transparency objective

Another deficiency in the fixed retail market is the complexity of Romtelecom's tariffs. The ANRCTI should strive to promote simplicity in tariff structures so as to increase transparency.

Currently, Romtelecom's tariff structure for domestic outgoing call includes eight different tariffs. Consumer's tariff awareness is very low, especially when asked to compare between off-net tariffs and other calls.

The ANRCTI should promote consumers tariff awareness and increase ability of customers to make rational consumer choices. This can be done by initiating and operating different methods to actively increase consumer awareness such as a comparative web based engine tool or consumer leaflets.

In addition, Romtelecom should be obligated to provide transparent invoices – that present the effective price per minute for each destination and the traffic distribution for each price level on a clear and simple to understand format.

6.5. Summary of the fixed, broadband and data sectors analysis

Market Definition	Relevancy	Deficiencies	Suggested Remedies
Retail Markets			
Access to the public telephone network via 'single access lines' provided at a fixed location	<u>Relevant</u> Romtelecom holds dominance	<u>Low level of competition:</u> <ul style="list-style-type: none"> • Low availability of choice • Low level of satisfaction 	<ul style="list-style-type: none"> • Implement Fixed Number Portability (FNP) • Keep current regulatory scheme but relax retail price control • Introduce new facility based operators
Access to the public telephone network via 'grouped access lines' provided at a fixed location	Not relevant		
Provision of domestic telephone services via 'single access lines' provided at a fixed location	<u>Relevant</u> Romtelecom holds dominance	<u>Low level of competition:</u> <ul style="list-style-type: none"> • High tariffs level • High off-net tariffs Low level of CS\CPS players 	<ul style="list-style-type: none"> • Implement Fixed Number Portability (FNP) • Keep current regulatory scheme but relax retail price control
		<ul style="list-style-type: none"> ▪ Low transparency 	<ul style="list-style-type: none"> ▪ Create a price comparison engine
Provision of domestic telephone services via 'grouped access lines' provided at a fixed location	Not relevant		
Provision of international telephone services	Not relevant		
Market for the provision of Internet services via dial-up access	Not relevant		
Market for the provision of Internet services via 'always on' access	Not relevant		
Market for the provision of data transmission solutions	Not relevant		

Market Definition	Relevancy	Deficiencies	Suggested Remedies
Wholesale Markets			
Wholesale unbundled access (including shared access) to the public fixed telephone network for the purpose of providing broadband and voice services <i>[EU Market 11]*</i>	<u>Relevant</u> Romtelecom holds dominance	LLU take up in Romania is very low	<ul style="list-style-type: none"> ▪ Current regulatory scheme was found sufficient ▪ Prepare the grounds for Bitstream Access⁽¹⁾
Wholesale market for call origination on the public telephone network provided at a fixed location <i>[EU Market 8]*</i>	<u>Relevant</u> Romtelecom holds dominance	Low level of alternative calls providers	Current regulatory scheme was found sufficient
Call termination on individual public telephone networks provided at a fixed location <i>[EU Market 9]*</i>	<u>Relevant</u> Each individual network hold dominance	Natural monopolies	Introduce a unified and simplified interconnect policy
National transit services in the fixed public telephone network <i>[EU Market 10]*</i>	<u>Relevant</u> Romtelecom holds dominance	Low level of competition	Current regulatory scheme was found sufficient
International transit services in the fixed public telephone	Not relevant		
Wholesale terminating segments of leased lines <i>[EU Market 13]*</i>	<u>Relevant</u> Romtelecom holds dominance	Low level of competition	Current regulatory scheme was found sufficient
Wholesale trunk segments of leased lines <i>[EU Market 14]*</i>	Not relevant		
Wholesale international leased lines	Not relevant		

** [EU corresponding market designation based on 2003 market definition]*

(1) The Bitstream access market should be defined, yet there is no justification for the designation of a SMP. Therefore, ADSL capacity should be monitored

7. TRANSMISSION OF AUDIO-VISUAL CONTENT SECTOR

7.1. Overview of TV sector

7.1.1. Technological and Economical analysis

The Romanian broadcasting market is diverse in terms of the different technological solutions and competitive dynamics. In the television arena, there are 2 national free-to-air television channels, TVR1 & TVR2, and numerous local channels. The Romanian subscription TV market with ~62% penetration rate has one of the highest penetration rates in Europe. It is primarily comprised of cable services, though satellite is gaining more and more popularity. On the radio arena, 17 national channels exist and more than 150 channels in the different regions.

In general, the value chain for the supply of TV and radio services consists of a few main components (exhibit 7.1.1).

1. Content producers

Movie, television and radio production companies

2. Content aggregators

Channels (TVR1, TVR2...)

3. Distributors

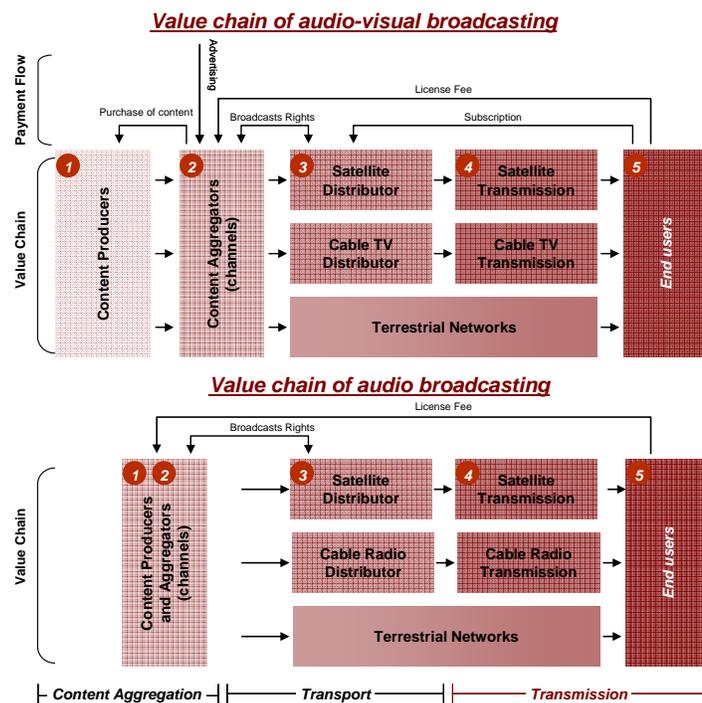
Companies that distribute content to the end user

4. Transmission capacity

Owners of transmission infrastructure:

- Cables - UPC Astral, RCS&RDS...
- Satellite transponder capacity - owners
- Terrestrial analogue and digital transmitters – Radiocom...

Exhibit 7.1.1: Value chains of audio-visual & radio broadcasting



The content broadcasted in radio channels is, generally, produced and aggregated in-house while in TV a large portion of the content is either purchased from other channels or from different production houses. Furthermore, the Internet is a much more common platform for radio services, while Internet-TV hardly exists and due to the relatively low bandwidth, is mostly of low quality.

Within this value chain, players are often active in more than one position, and therefore the distinction between the stages is complex. However, this analysis focuses mainly on the transmission side, in which the players are the cable companies, the satellite providers and the terrestrial radio and television transmission players.

TV broadcasting services in Romania are provided through three main platforms:

Terrestrial, which serves the "free to air" channels, **cables**, which is a wired infrastructure for subscription TV, and **satellite**, which is an alternative for subscription TV, covering also areas where wired infrastructure is not available. Exhibit 7.1.2 describes the availability of the different infrastructure and the relative penetration level of each.

The most significant distinction regarding the platforms is between analogue and digital broadcasting. Analogue transmission is of lower quality, limited capacity and does not enable encryption, while digital transmission enables larger capacity, higher quality and variety, as well as advanced applications, such as Video On Demand (VOD) and interactive TV. Broadcasting digitization in Romania is relatively low. Only 14.3% of TV subscriptions are digitized. Digital TV is mostly provided via satellite which is a purely digital platform. In contrast, cable networks are rarely digitized. Terrestrial broadcasting is also analogue and implementing digital broadcasting is only in its initial stages and not expected to occur in the next five years. Similarly, most EU member states announced analogue switch off by 2012. Exhibit 7.1.3 describes the expected technological evolution of the different platforms.

Exhibit 7.1.2 Broadcast platforms 'Home passed' vs. Penetration (households) ^(1,3)

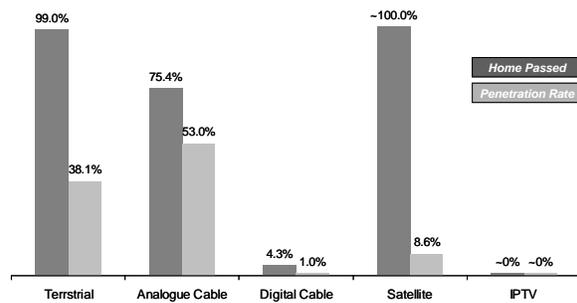
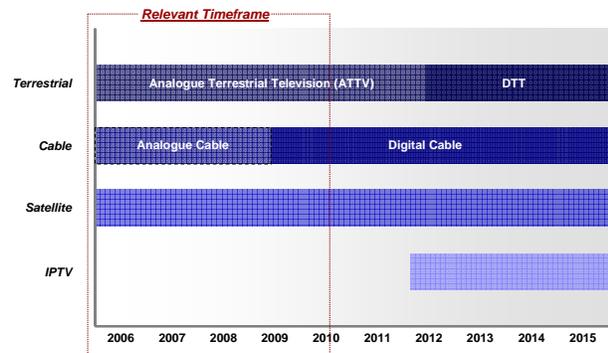


Exhibit 7.1.3: Expected technological development in Romania ⁽²⁾



In addition to the three traditional platforms, two other advanced platforms are available in Romania on a very limited scale.

IPTV – Transmission of video content over IP broadband network. IPTV technology is more efficient than traditional platforms, since it uses the same infrastructure for broadband, TV and fixed telephony and only gives end customers the requested content (as opposed to broadcasting over cable and satellite), but in order to receive sufficient quality and multiple video streams, access bandwidth of 15-20Mb is required.

IP transmission is very sensitive to packet delays, so in order to ensure good quality, a managed service is required. Due to the slow take up of broadband in Romania and the current plans for NGN deployment, managed IPTV services are not expected to be widely available before 2010.

Mobile TV- As a part of the development and the increasing mobile bandwidth, content transmission can be either transmitted on demand (VOD) or by live streaming. At this stage, Romania has low level of 3G penetration and deployment, and mobile TV is not expected to be significant before 2010.

Traditional analogue TV services, whether terrestrial or cable, are still the dominant platform for the consumption of TV services in Romania. According to recent surveys, ~97% of households own a TV set. Though not every TV set is used for receiving transmitted content, it can be assumed that the households that own a TV set and are not using subscription TV services will use the terrestrial platform's free-to-air offering. Therefore, along with the 3.8 million analogue cables subscribers, it can be assumed that approximately 91% of Romanian households receive TV service through analogue transmission.

Notwithstanding, the recent satellite promotion, is rapidly gaining market share and is currently used by 630,000 subscribers. Romtelecom's satellite offer, 'Dolce', has gained more than 250,000 subscribers in its eight months of operation (August, 2007). TV services offered via the satellite platform, which comprise almost 98% of total digital broadcasting, are expected to further enhance digitization in the Romanian market and offer broader availability of choice, thus, an alternative to cable TV.

In Romania, two major subscription TV players, RCS&RDS and UPC, offer both cable and satellite services and together hold almost 70% of the market as shown in exhibit 7.1.4. In addition, there are 629 small, local cable players, mostly comprising of less than 2,000 subscribers. According to the cable companies' reports, the overlapping of coaxial cable coverage is limited and assessed as less than 10%.

It should also be noted that though RCS&RDS has a higher rate of digital subscribers and more subscribers in general, its share in revenues is lower than UPC's, which indicates RCS&RDS' prices are lower.

Exhibit 7.1.4: Market share evolution in the broadcasting transmission sector in Romania and the level of digitization ⁽¹⁾



Main trends

Several trends are expected to influence the competitive dynamics of the market:

- Technological developments - Digitization of the subscription TV platforms is becoming gradually more common mainly via satellite. Cable digitization barely exists and is not expected to be introduced on a wide scale before 2010.
- Market development – Romtelecom's satellite subscription TV offering achieves strong market stance, and drives the cable companies to offer satellite services as well. Competition from Romtelecom leads to continuous growth in subscription TV penetration.
- Usage pattern developments – There is a growing number of triple-play customers, while subscription TV is, currently, the anchor for residential bundles. This trend is likely to continue.

7.2. Broadcasting segmentation process

7.2.1. Retail markets for TV sector

The segmentation process described is based on the layers segmentation methodology described previously (see chapter 4).

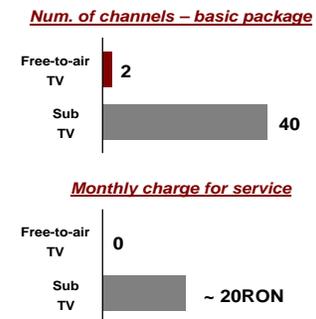
Three retail markets were defined in the retail TV market:

- The provision of 'free-to-air' radio services via terrestrial platform at a local and national level
- The provision of 'free-to-air' television services via terrestrial platform at a local and national level
- The provision of subscription television services via satellite and cable platforms at a local and national level

From a functionality perspective, free to air radio and free to air television are distinct services mainly due to the inherent differences in user experience (e.g. environment of use, content) and supply side considerations. In addition they differ in terms of infrastructure required, such as different antennas and frequencies.

Free to air TV and subscription TV are also distinct services due to substantial differences of the service offered in term of number of channels, contractual terms between end-customers and providers and the payment for the service (non-differentiated and mandatory vs. voluntary and differentiated) as seen in exhibit 7.2.1. Supply side considerations are also inherently different for the two services apart from the different infrastructure required. The spectrum required is an additional issue that relates purely to terrestrial broadcasting. Terrestrial service should be considered as a complementary platform rather than a substitute to subscription TV.

Exhibit 7.2.1: Comparison between free-to-air and subscription TV⁽⁸⁾



The TV-Fee is 4 RON, it is collected as a tax regardless of usage

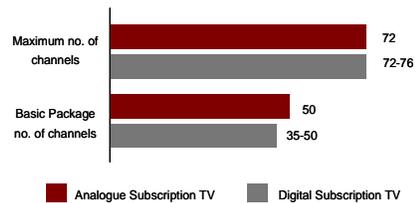
Digital vs. Analogue layer

Since television services via satellite and terrestrial are digital and analogue respectively, this layer is only relevant for services provided via the cable platform. According to the analysis, digital and analogue cable should be included in the same market.

Digitization enables subscription TV providers to create more personalized packages, but from the users' standpoint the main service is still the provision of multi channel TV. While, digitization also enables 'value added services' such as VOD, PVR, PPV, those are currently almost non-existent in the Romanian market and are not expected to be significant before 2010.

Digital cable is perceived as a technical upgrade of analogue cables and not as a different product. Both digital and analogue cable offerings are similar in terms of price and value (exhibit 7.2.2). A recent survey showed that no household receives both digital and analogue cable subscription TV services. Therefore, due to the "upgrade" nature of broadcasting, no differentiation should be made according to this segmentation layer.

Exhibit 7.2.2: Digital vs. Analogue available cable packages in Romania ⁽⁸⁾

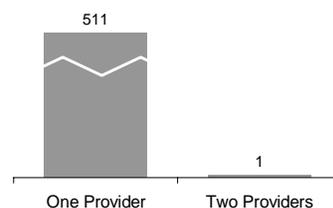


Platform layer

Since free-to-air radio and television transmission services are provided only via the analogue terrestrial platform and IPTV is not expected to be significant in the relevant timeframe, the only relevant service market to be examined is the subscription TV market. Analysis showed that the satellite and cable platforms should be included in the same market.

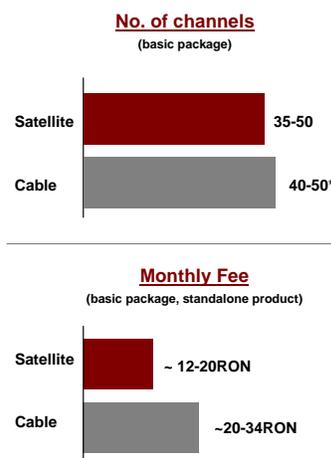
It seems that services provided via the satellite and cable platform are similar from the consumers' point of view. End customers perceive subscription TV packages as being similar regardless of the platform they are transmitted upon. Both platforms provide similar content and choice of channels in their basic packages. Evidence shows that the vast majority of households only use one type of subscription TV platform (exhibit 7.2.3). In addition, cable companies offer the same package both through cable and satellite with similar pricing. However, subscription TV market customers are offered lower prices for the satellite basic offer in comparison to cable basic offer. This is mainly due to recent launch campaigns of satellite. Exhibit 7.2.4 shows a comparative display of the satellite and cable basic offerings.

Exhibit 7.2.3: Number of subscription TV providers per household ⁽⁹⁾



Supply side analysis points to a different direction - due to the significant difference of infrastructure elements (e.g. satellite capacity vs. coaxial cables infrastructure). However, in the Romanian market, cable companies are purchasing satellite capacity and offering subscription TV services via satellite as well (e.g. RCS&RDS, UPC). The entrance of the big cable players into the satellite arena weakens the argument for low substitution from the supply side. Furthermore, according to the methodology, where a contradiction between supply-side substitution and demand-side substitution occurs, demand-side substitution would be considered as having greater weight for the purpose of market segmentation.

Exhibit 7.2.4 comparison between cable and satellite offers ⁽⁵⁾



Geographic layer

Both terrestrial and satellite services are offered nationwide with close to 100% coverage. Therefore, only the cable platform is relevant for this discussion. Still, analysis suggests subscription TV services should be defined at national level.

Since both satellite and cable were found to be substitutes in the 'platform segmentation layer', when assessing the geographical boundaries of subscription TV services, both platforms should be mutually examined.

There are many local cable companies that offer services in a limited area. However, due to the nature of satellite, almost each household has a choice that consists of, **at least**, subscription TV through satellite (Dolce, UPC or RCS&RDS).

Exhibit 7.2.5 Coverage and penetration by platforms, 2006 ^(1, 3)

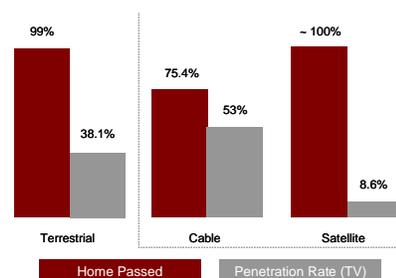
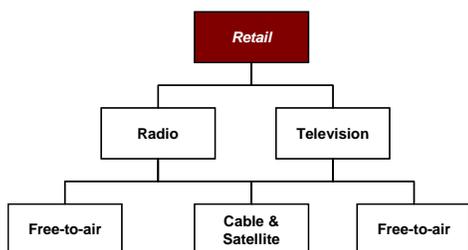


Exhibit 7.2.5 displays the different platforms' coverage and penetration rates (2006).

Regarding the free-to-air radio and television services broadcasted via the terrestrial platform, there are various local channels, (77 local TV channels and ~200 local radio channels) but the national TV and radio channels are available throughout the entire country. Therefore, both free-to-air radio and free-to-air television should be defined at a national level.

In summary, three retail markets were defined in the broadcasting transmission sector

Exhibit 7.2.6: Summary of the broadcasting transmission retail markets



Retail Markets

- The provision of free-to-air radio services via terrestrial platform at a local and national level
- The provision of free-to-air television services via terrestrial platform at a local and national level
- The provision of subscription radio and television services via satellite and cable platform at a local and national level

7.2.2. Related wholesale markets

The wholesale markets were also examined through the same segmentation layers method. Six related wholesale markets were found:

- Transmission services of free-to-air radio broadcasting by terrestrial platform at a national level
- Transmission services of free-to-air radio broadcasting by terrestrial platform at a local level
- Transmission services of free-to-air television broadcasting by terrestrial platform at a national level
- Transmission services of free-to-air television broadcasting by terrestrial platform at a local level
- Transmission services of subscription television and radio broadcasting by cable in the coverage area of the cable operator
- Transmission services of subscription television and radio broadcasting by satellite at a transnational level

The markets were defined using the segmentation layer methodology, in a tiered process. Each layer was analyzed different segments which were further analyzed in the next layer.

Functionality layer

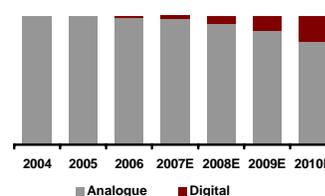
From a functionality perspective, 2 services were identified – transmission services for radio and television broadcasting.

There are several factors that indicate radio and television transmission are distinct services - radio and television are broadcasted over different frequencies, antennas, feeder cables and transmitters themselves are different. Furthermore, the transmission of radio requires a smaller portion of the existing infrastructure, both in terms of the number of masts and the amount of transmission capacity. Therefore, the investment needed is smaller and the entry barriers are lower.

Analogue vs. Digital layer

The “free-to-air” transmission is completely analogue and is not expected to become digital in the relevant timeframe. On the subscription TV side, satellite is only digital and cables are, currently, mostly analogue. Digital and analogue cables were not differentiated in the corresponding retail market. The current and expected relatively low levels of cable digitization (exhibit 7.2.7) indicate that cable digitization will not be significant enough to cause a market differentiation. In any case, digitization of the cable network is an upgrade of the analogue network and supply side substitution analysis also suggests digital and analogue cable platforms should be included in the same market.

Exhibit 7.2.7: Digital cable penetration as % of total subscribers^(1,2)



Platform layer

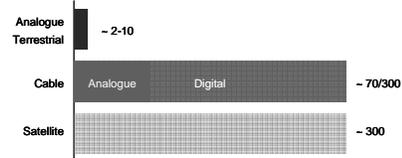
Since radio is mainly transmitted via the terrestrial platform, only the TV service market is relevant for this discussion.

In general, broadcasting channels are mostly carried through multiple platforms. The decision whether to be carried on an additional platform is based on the cost effectiveness of transmission. Analysis indicates that the TV service market should be further segmented into three markets according to the different platforms.

Analysis of differentiation between platforms at the wholesale level is performed in several aspects:

- Target market - While territorial coverage has overlapping areas, every household usually uses a single platform to receive television broadcasting transmission. Since broadcasters want maximum viewer exposure, they would perceive different platforms as complementary rather than substitutes
- Regulatory barriers to entry - Each platform entails different regulatory barriers to entry whether it is spectrum licensing and environmental factors (radiation) for terrestrial, obtaining 'Rights of Way' in the cable platform or spectrum allocation for satellite
- Capacity - Capacity in the terrestrial TV broadcasting frequency bands is constrained, due to the inherent limitations resulting from the available spectrum. On cable and satellite platforms (especially when cable is digitized) capacity is substantially greater as seen in exhibit 7.2.8
- Transmission costs – Broadcasters are usually indifferent to the platform in this respect. The decision whether costs should be incurred mainly depends on the exposure to the number of households and less on a specific platform
- Supply side substitution - From the infrastructure players' standpoint, converting production of transmission capacity from either platform to another would require high capital costs and would be extremely unlikely

Exhibit 7.2.8: Potential capacity of different platforms ^(3, 8)



Geographic layer

The four markets, already defined according to the previous segmentation layers - radio transmission and television transmission differentiated by the 3 platforms, were further segmented into six markets due to differences in the competitive conditions in the terrestrial (both radio and TV) and cable markets. In addition, the satellite transmission market was defined at a transnational level.

- Terrestrial - Licenses for terrestrial TV & radio broadcasting are limited to specific geographic areas and a regional/local broadcaster will find it much easier to obtain a broadcasting license since regional/local frequencies are less scarce. Furthermore, the transmission of TV & radio broadcasting at a regional/local level requires infrastructure at a much smaller scale than at a national level. Therefore, while there is only one broadcast transmission player at a national level (Radiocom) there is a large number at a regional/local level (~ 180 players).

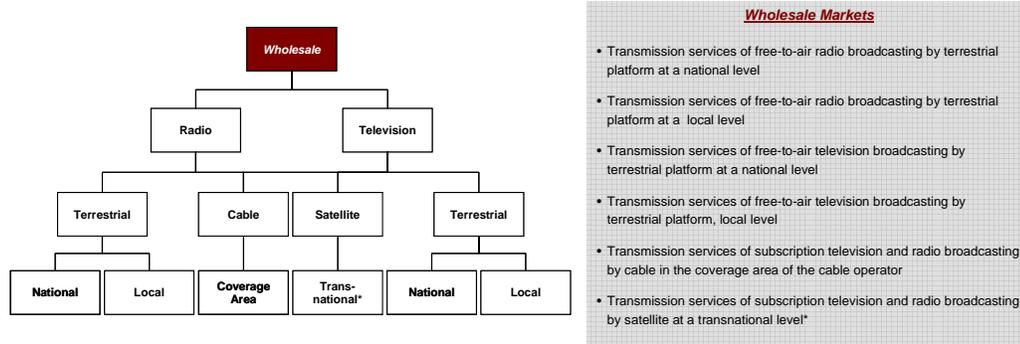
Supply side substitution between the regional/local and national transmission networks is also limited, owing to technical and cost factors, the different range of transmitters, placements of masts, etc. Due to all those factors, local and national 'free-to-air' radio and TV transmission will be separated to distinct markets.

- Cable - Each coverage area creates a market. From a content aggregator's point of view, one area is not an alternative to others. Therefore, the transmission of television by cable operators in their respectable coverage area constitutes separate markets.

- Satellite - A satellite signal directed to Romania can be received from neighboring countries. Since the owners and operators of the satellite platform are predominantly international, the defined, relevant market is not necessarily limited to Romania. This market is defined more according to the satellite's footprint, which varies somewhat from one satellite to another. Therefore, the geographic boundaries of the broadcast transmission services via satellite are transnational and cannot be regulated at a national level.

In summary, according to the above mentioned segmentation process, 6 wholesale markets were defined in the broadcasting transmission market.

Exhibit 7.2.9: Summary of the broadcasting transmission wholesale markets:



7.3. Diagnosis & market deficiencies identification

7.3.1. Retail markets

7.3.1.1. Free-to-air radio and TV markets

Analysis of the 'free-to-air' radio and TV retail markets suggests that these markets are not relevant to ex-ante regulation. Exhibit 7.3.1 maps the competitive situation in the 'free-to-air' services in Romania.

Exhibit 7.3.1: Mapping of free-to-air radio and TV services in Romania ⁽¹⁾

		<u>Revenue Sources</u>	<u># of National channels</u>	<u>Dominance</u>	<u>Spectrum</u>
Provision of free-to-air radio services	State-owned channels	Citizens (Taxes) + Advertisements	2	None	Regulated by the ANRC
	Commercial	Advertisement based	2 broadcasters with national license	None	
Provision of free-to-air TV services	State-owned channels	Citizens (Taxes) + Advertisements	TVR1 (97.5%) TVR2 (45%)	None	Regulated by the ANRC
	Commercial	Advertisement based	PRO TV (77%)** PRIMA TV (72%)** ANTENA 1 (77%)**	None	

t

Due to the business models of the free to air radio and free to air TV, which are based on mandatory charges, the end user does not have the availability of choice, and there is no direct link between the service provided and the charge. However, it seems that no specific channel holds significant market power in terms of audiences' share and therefore cannot influence advertisers' decisions. Commercial radio and TV are also constrained by other kinds of media (e.g. newspaper, television, radio) and therefore, higher tariffs will not necessarily bring about higher profits.

7.3.1.2. Subscription TV

In the subscription TV retail market, three types of players are active: The two leading cable companies, RCS&RDS and UPC, the local small cable companies and the new satellite brand by Romtelecom – 'Dolce'.

The findings from the competitive analysis point to a relatively strong case against the existence of market dominance. Furthermore, the market seems to be self-regulated and competition is expected to be stronger in the relevant timeframe without regulatory intervention.

Dominancy Analysis

Market share analysis shows that the two main players (RCS&RDS and UPC) hold similar market power (exhibit 7.3.2). In their respective areas, the majority of subscription TV users receive TV transmission from the same cable provider, thus

Exhibit 7.3.2: Market share in the subscription TV market, 2006 ⁽¹⁾

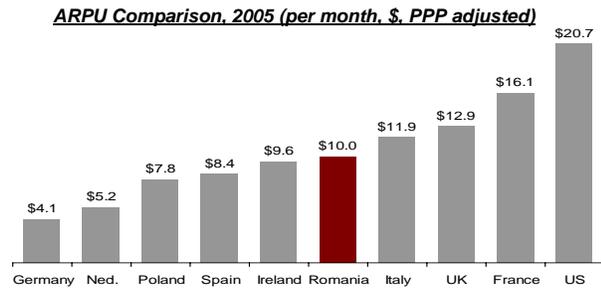


implying that geographic SMP may exist, especially due to the low overlapping coverage area of the cable operators.

However, satellite penetration is expected to be the main “competition generator” and significantly increase the level of competition in this market. The satellite offers will most likely eliminate the geographic dominance and enable availability of choice to the end customers.

Firms' behavior examination displays some indications for coordination between the players. In several cases, RDS&RCS has deployed fiber optic cables in UPC's “territory” but did not offer subscription TV services, only broadband and/or telephony – this is a strong indication of tacit collusion between the cable players. However, while the above mentioned is true for cable offerings, satellite offerings are competing against one another and against cable offerings in all areas.

Exhibit 7.3.3: Average revenue per subscriber in Romania and other EU member states^(1,10)



As seen in exhibit 7.3.3, assessment of the average ARPU in Romania vs. other member states shows that there is no evidence for abuse of power by the market players.

Entry barriers analysis:

This analysis points to a different direction - the investments required, whether for cable or satellite, entail high levels of capital costs. The fact that no overlapping cable coverage exists, reinforces that statement.

There are also two major regulatory obligations regarding the provision of subscription TV:

- "Right of Way" – laying coaxial cables in municipal territories requires permission from the municipality, and can be lengthy, costly and will definitely affect “time-to-market”
- “Must Carry” obligation – Every provider of subscription TV must set aside 25% of its capacity for ‘must carry’ channels

Notwithstanding, overall analysis does not conclusively points to dominance in the market, hence, the market is not relevant for ex-ante regulatory intervention.

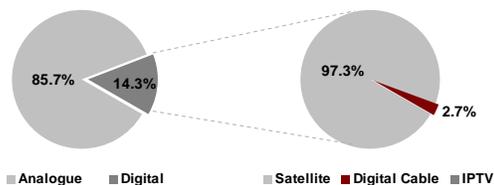
Late digitization of subscription TV

Though the broadcasting services via subscription TV are well penetrated in Romania, the level of innovation and digitization is very low and hardly any advanced services have been introduced (such as PPV, PVR and VOD). Exhibit 7.3.4 compares between different member states subscription TV's digitization position.

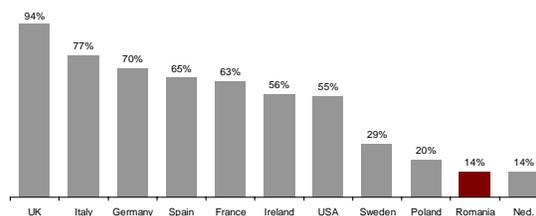
The low level of digitization harms the Romanian consumer, and constitutes a market deficiency. However, this deficiency does not stem from problematic competitive dynamics, rather by other reasons (mainly due to the low purchase power and therefore low ARPUs).

Exhibit 7.3.4: Digitization of subscription TV in Romania and other EU member states ^(1, 10)

The digitization in the subscription TV market is very low:



Digitization level of subscription TV (excluding IPTV)



7.3.2. Related wholesale markets

7.3.2.1. TV and Radio transmission via the terrestrial platform (4 markets defined)

The competitive analysis indicates that out of the four defined terrestrial markets, the national markets are relevant for regulatory intervention.

At the national level, there is a mandatory regulatory separation between channels and the transmission player (Radiocom). According to the license terms, national channels are obligated to use Radiocom and do not own the sites, transmitters or frequencies. The price, however, is determined by Radiocom and is not regulated.

At the regional/local level, channels own the transmitters and transmit independently. Channels use various facilities as sites for transmission: private companies, roof owners or Radiocom facilities.

Regional/local level analysis

Competitive analysis did not show any indication for competitive problems in the local/regional transmission market. There are 254 local/regional TV broadcasting licenses which are held by 77 channels and 604 radio licenses which are held by ~200 channels (Dec 2006).

Sites are evaluated by their location, height and space, and there are many alternatives besides Radiocom's sites. In addition, there are low entry barriers for operating a local license.

Broadcasters complain that Radiocom is sometimes reluctant to let channels use its sites. Still, from an economical perspective, these broadcasters are not competing in any way, so Radiocom has incentives to accept their business. Technically, there may be problems with co-locating broadcasting sites, mainly due to equipment compatibility and frequency interference.

Notwithstanding, there are local licenses that were given with national high power frequency – and there is a possibility that these sites could only be served by Radiocom.

ANRCTI should monitor the local high-power licenses holders and make sure that either Radiocom is not the only alternative available or that the players can reach an understanding to collocate their transmitting equipment at Radiocom's sites.

National level analysis - TVR1, TVR2 and the Romanian radio company are obligated to use Radiocom and Radiocom is obligated to broadcast their content. Radiocom owns the transmitters and frequencies and holds 100% of national television and radio transmission, and no new players are expected to enter the market.

Deficiency Analysis

Excessive Prices

Excessive pricing for transmission creates a market failure since public channels' allocation of resources is not optimal.

Radiocom has a large number of employees in relation to the number of sites it maintains (see exhibit 7.3.5) and this inefficiency is covered by transmission prices.

Furthermore, public TV channels in Romania spend twice as much (as % of revenues) on transmission as public channels in other member states, and therefore fewer resources can be allocated for content production and broadcasting.

Low number of channels

The low availability of terrestrial national television channels constitutes an additional market deficiency.

The average Romanian citizen spends approximately four hours per day watching television. While this number is only slightly higher than average, it signifies the importance of this media to the Romanian citizens. Despite this fact, the ability to choose between different free-to-air channels is very limited in Romania with comparison to other states (exhibit 7.3.7).

This deficiency is especially relevant to rural areas where a big part of the households only watch free-to-air (currently ~38%).

In the terrestrial radio wholesale, the high number of radio channels in Romania indicates that there is no deficiency.

Exhibit 7.3.5: Indication for number of employees in transmission companies ^(3, 8)

Country	Broadcasting company	# of employees	# of Sites
	Radiocom	-2,300	91
	NTL Broadcast	1,300	1,154
	Crown Castle Int'l Corp.*	785	-24,000

Exhibit 7.3.6: Indications for % of transmission costs of revenues ^(3, 8)

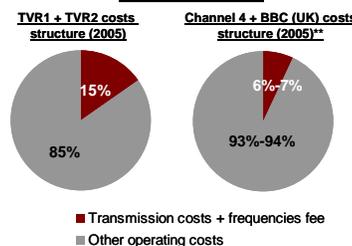
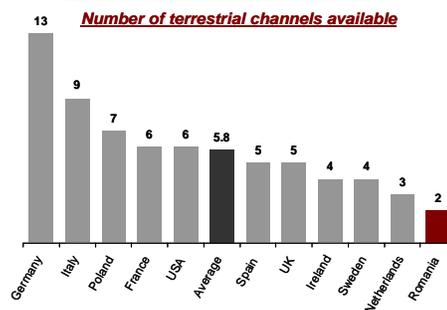


Exhibit 7.3.7: Comparative display of the number of terrestrial channels available ^(1, 10)



No digital terrestrial television option

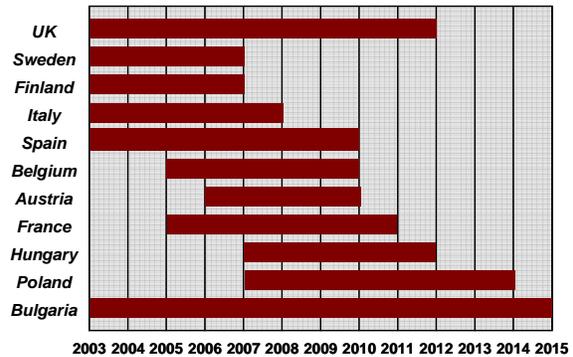
The late roll-out of DTT constitutes an additional market failure as it postpones the potential for better quality, lower prices and wider variety of channels.

Most EU member states have begun their digital terrestrial roll-out and announced a final date for the analogue terrestrial switch off as seen in exhibit 7.3.8. The EU commission imposed a deadline of 2012 for the digital switchover of terrestrial TV broadcasting.

However, according to Radiocom publications, the process of digital terrestrial roll out is only in its experimental stage. In 2005, Radiocom estimated the switchover date to be within the next 15-25 years.

Digitization of radio services (DAB) is also almost non-existent in Romania, however, since the efficiency of DAB is highly argumentative and the situation does not seem to affect the level of choice, this should not be considered as a deficiency.

Exhibit 7.3.8 Member states' roll out of digital terrestrial TV (DTT) and switch off of analogue terrestrial TV (ATT) ^(1, 18)



7.3.2.2. Transmission services via cable

Cable players' analysis

Content providers face one choice only when broadcasting their content to end users, since end customers receive subscription TV from a single operator. Therefore, theoretically, every cable operator may abuse its position and either charge excessive prices or discriminate. However market mechanisms do not allow for this abuse to occur due to the following:

Mutual interests:

Both broadcasters and cable transmission players want content to be viewed. Given that capacity is sufficient, both sides will not benefit from not reaching a mutual agreement. This is further strengthened by the ability of end users to choose between satellite and cable offerings, since an end customer may switch providers if the content offered is not satisfactory.

Countervailing buyer power – some broadcasters are very attractive to end customers and may hold buyer power over the transmission providers. In these cases, not reaching a mutual agreement might harm the transmission provider more than the broadcaster itself.

Lack of “Right of Way” policy

The ‘right of way’ procedure is under the responsibility of municipalities. Due to the lack of unified directions, each municipality holds a different policy– this creates difficulties in planning network deployment, hence increasing entry barriers.

The cost of 'right of way' is neither unified nor consistent and often changes according to the financial needs of each municipality. Therefore, the lack of national 'right of way' policy constitutes an additional deficiency.

7.4. Proposed regulatory interventions

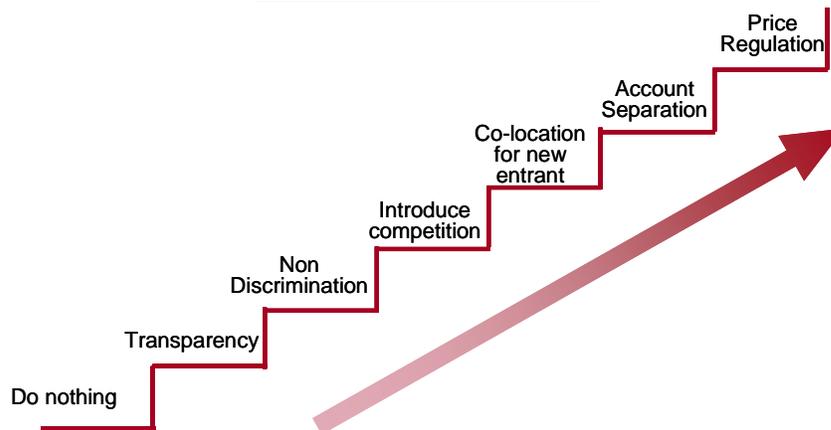
Based on the principles set for regulatory intervention, the identified deficiencies are addressed:

- Indication of excessive pricing by Radiocom
- Late terrestrial digitization
- Low number of terrestrial TV channels
- Late subscription TV digitization
- Lack of "Right of Way" policy

7.4.1. Excessive prices

Radiocom excessive pricing can be handled by a range of gradual regulatory interventions as seen in exhibit 7.4.1.

Exhibit 7.4.1: Degrees of possible regulatory intervention to prevent excessive prices in the national terrestrial wholesale market



- Transparency & non discrimination - These instruments are mandatory, in light of Radiocom's dominant position, since prices are negotiated with only one player: the national TV company holding TVR1 and TVR2. Nonetheless, these instruments are not expected to solve the excessive pricing deficiency.
- Enable competition - Since Radiocom holds the broadcasting licenses along with the allocated frequencies, the national broadcasters can not use any other transmission providers. Currently, there are no other transmission players at the national level and it seems there is no economic incentive due to the limited number of national broadcasters.
- Collocation for new entrant - In case an additional national license is introduced, co-location obligation will enable the new competitor to use Radiocom's sites, which are usually favorable for high power transmitters. ANRCTI should consider

the possibility of forcing collocation also in cases of local high power licenses in locations where Radiocom's site is the only alternative.

- Radiocom should be obligated to allow collocation to its sites in case a new national broadcaster enters and in cases where high power local broadcasters have no alternatives.
- Account separation - Account separation can be performed, but is not mandatory in order to regulate prices. The same purpose can be achieved by costs reporting.
- Price regulation - Mainly due to the fact that both Radiocom and the channels are publicly owned and have low incentives for economic efficiency, price regulation seems necessary.
- The regulated price should be based on transparent and non-discriminatory pricing and on a normative cost model of Radiocom's services. The regulated prices will be both for the full transmission services supplied to TVR1, TVR2 and the national radio and the collocation (access to the sites) which could be provided to future national broadcasters.

7.4.2. Promote terrestrial digitization

There are various alternatives that may promote the digitization switchover process (exhibit 7.4.2).

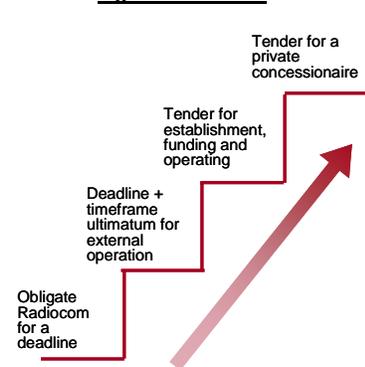
The most non-intrusive measure is obligating Radiocom to a deadline (since the EU has already given a deadline), but since Radiocom seems to be inefficient and has low economic incentive to promote the process, we expect delays in deadline and budget deficits. On the other hand, full privatization of the process through a tender for building, funding and operating, might be more expensive. The third consideration to take into account is the unclarity regarding the current status and whether it is still possible to prevent Radiocom from taking responsibility for the process.

It is recommended that ANRCTI will obligate Radiocom to a deadline and promote the concept of performing the upgrade as an external turnkey project.

Potential benefits of DTT entrance

- Allows more efficient spectrum management and increases the number of channels that could be transmitted over the same frequency, thus enabling better quality of service to the end customer
- Availability of choice will increase as a result of DTT deployment. Furthermore, DTT has the potential of becoming an additional subscription TV platform (with fewer channels). Therefore, DTT will answer the 3rd market deficiency (low number of channels) as well
- The increasing availability will create competitive constraints on subscription TV providers and drive them to promote innovation and VAS so as to differentiate their offerings from the DTT services

Exhibit 7.4.2: Alternatives for promoting digital switchover



7.4.3. Monitor subscription TV digitization

The competitive analysis does not suggest dominance exists in the retail markets of subscription TV. Therefore, no regulatory intervention is needed in the market. However, the delayed subscription TV digitization ought to be examined in the next few years and if needed, the imposition of regulatory instruments should be reconsidered.

However, trend analysis of the subscription TV market suggests that in the future 3 main technological scenarios are likely to incur:

- Increase penetration of satellite – In this case there is no change in the balance of power between the main players and the demand for technology, PVR will have incentives to be introduced to the market, but no VOD service will be available.
- Digitization of cable networks - Once the current competition is utilized to its fullest; the cable operators will differentiate their offerings with advanced services based on digital cable such as VOD, games and other interactive content.
- IPTV – Romtelecom will fully deploy its NGN and differentiate their subscription TV offerings. VOD Games and other interactive content will be introduced. However, this is not expected before 2010, and probably even later.

These scenarios can co-exist in the same market and may lead to competition based on technology and increase the level of innovation. It is recommended to have an additional re-assessment of the market in two years.

7.4.4. Lack of “Right of Way” policy

Since imposing a unified policy for 'right of way' is not a part of the ANRCTI responsibilities, it is recommended that the ANRCTI would strive to promote a reasonable unified "white paper" policy, as a proposed guideline to local municipalities.

7.5. Summary of the broadcasting sector analysis

Market Definition	Relevancy	Deficiencies	Suggested Remedies
Retail Markets			
The provision of 'free-to-air' radio services via terrestrial platform at a local and national level	<u>Not relevant</u>		
The provision of 'free-to-air' television services via terrestrial platform at a local and national level	<u>Not relevant</u>		
The provision of subscription television services at a national level	<u>Not relevant</u>	Though was not found relevant: Low level of digitization	Monitor Market
Wholesale Markets			
Transmission services of free-to-air <u>TV</u> broadcasting by terrestrial platform at a <u>national level</u>	<u>Relevant:</u> Radiocom holds dominance	<u>No competition:</u> <ul style="list-style-type: none"> ▪ Excessive Prices ▪ Low number of channels 	<ul style="list-style-type: none"> ▪ Transparency & non discrimination ▪ Enable competition ▪ Co-location for new entrant ▪ Cost reporting ▪ Price regulation
		<ul style="list-style-type: none"> ▪ Late digital terrestrial television deployment (Doubt Radiocom will meet EU's deadline) 	Obligate Radiocom to a deadline and promote an external turnkey project
Transmission services of free-to-air <u>TV</u> broadcasting by terrestrial platform at a <u>local level</u>	<u>Not relevant</u>		
Transmission services of free-to-air radio broadcasting by terrestrial platform at a <u>national level</u>	<u>Relevant:</u> Radiocom holds dominance		

Market Definition	Relevancy	Deficiencies	Suggested Remedies
Transmission services of free-to-air <u>radio</u> broadcasting by terrestrial platform, local level	<u>Not relevant</u>		
Transmission services of subscription television and radio broadcasting by cable in the coverage area of the cable operator	<u>Not relevant</u>	Though not under the scope of the ANRCTI: Lack of "Right of Way" policy	Promote a reasonable unified policy, as a proposed guideline to local municipalities
Transmission services of subscription television and radio broadcasting by satellite at a transnational level	<u>Not relevant</u> Transnational		

*[The EU has defined only one general wholesale market as "**Broadcasting transmission services to deliver broadcast content to the end-users**", market 18]*

8. INTERTWINING AND EXTERNAL CONDITIONS

The following analysis suggests that currently intertwining conditions between the sectors do exist to some extent but still do not have a significant influence on the segmentation results and the market analysis.

8.1. Intertwining conditions and the impact on the diagnosis analysis

The 2 main intertwining conditions, addressed by most European regulators, are: The fixed-mobile substitution and convergence, and the electronic communication bundles.

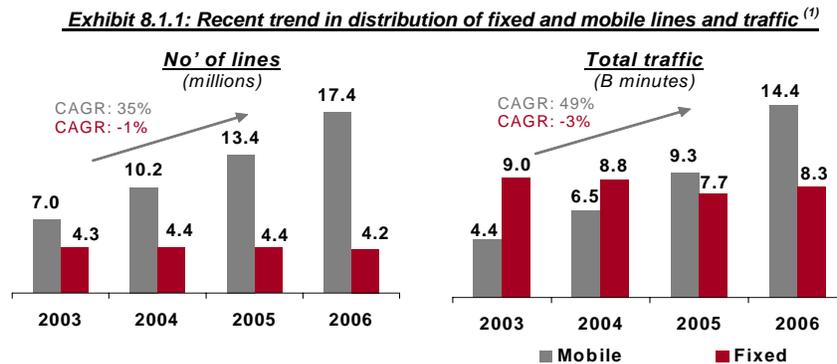
8.1.1. Fixed mobile substitution and convergence

8.1.1.1. Substitution analysis

The Romanian telecom market has experienced continuous substitution between fixed and mobile services:

- Traffic substitution – The increase in mobile traffic is higher than the increase in mobile lines, suggesting a shift in consumers' usage
- Lines substitution - Significant increase of mobile lines and at the same time a decline in the number of fixed telephony lines

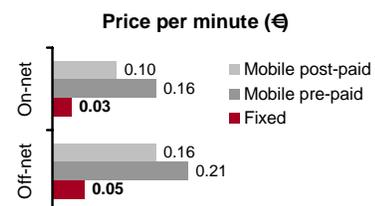
Exhibit 8.1.1 displays the evolution of mobile and fixed services' usage.



- Functionality
 - In general, the substitution is asymmetrical, since symmetrical substitution between fixed and mobile could exist only in fixed locations
 - While the mobile line is an individual line, the fixed is a shared family line or a shared business line
- Prices
 - As seen in exhibit 8.1.2, price differences are significant, and the monthly rental of fixed telephony still affects the line substitution considerations

Considering these parameters, while there are some indications of 'fixed mobile substitution',

Exhibit 8.1.2: Price comparison between mobile and fixed ^(1,2)

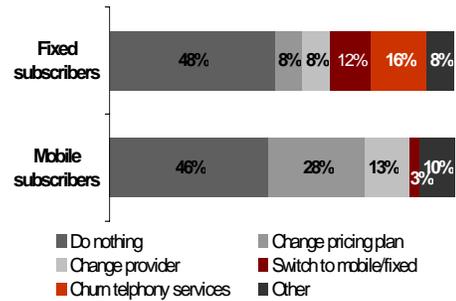


the functionality and the pricing of the two services differ significantly.

Residential

- Due to the relatively low penetration of fixed telephony in the residential segment, a mobile line (and traffic) does not necessarily substitute a fixed line
- Residential customers' response to an increase of subscription tariffs by 5%-10% displayed evidence of asymmetry. 16% of respondents replied they will switch from fixed to mobile while only 3% will switch to fixed following a price increase in the mobile tariffs. (exhibit 8.1.3)

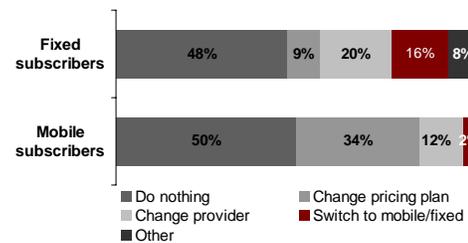
Exhibit 8.1.3: Results of residential survey ⁽⁴⁾



Business

- The business segment is less likely to substitute the fixed line with mobile due to the high traffic volume and the higher prices of mobile calls
- According to the business survey, about 5% of companies use Premicell services to replace fixed to mobile traffic by on-net mobile traffic
- As shown in exhibit 8.1.4, companies' behavior to subscription tariffs increase by 5-10% shows similar results to the residential, i.e. low level of asymmetrical substitution.

Exhibit 8.1.4: Results of business survey ⁽⁴⁾



In summary, some level of fixed mobile substitution does exist, but the analysis shows that the two segments should remain separate and there is no justification to unite them.

Fixed mobile offers in the Romanian market

Additive and strengthening the substitution between fixed and mobile is the development of technological solutions known as Fixed Mobile Conversions (FMC), thus creating a unified experience of using fixed and mobile on one device (not necessarily on the same network). Most of FMC solutions require broadband connection over Wi-Fi. Currently, in Romania there are no advanced FMC solutions, but MNOs recently introduced fixed telephony services over their mobile network both for residential and business customers.

Residential

Since both Vodafone and Zapp offer fixed telephony services and those are used as substitutes of fixed line (and are marketed as such), they should be considered as services offered from fixed locations and should impact the 'single line' access market and the 'single line' outgoing calls market.

Business

Both Vodafone and Orange offer premicell services to businesses. The service bypasses the high termination rates to mobile networks and replaces fixed to mobile traffic into mobile on-net traffic. The expected decrease of mobile termination rates will likely reduce the incentive for businesses to use premicell services.

An additional service to businesses is fixed telephony for the corporate segment. Both Vodafone and Orange offer a "grouped" fixed line telephony via direct connection to their network. These lines have non-geographical numbering and their functionality is similar to traditional fixed line service.

Direct connections to large businesses function as fixed calls that originate from a fixed location and therefore should be treated in a similar manner. They should have a fixed termination charge.

8.1.1.2. FMC solutions in Romania:

Technologically, there are two main levels that enable fixed mobile convergence (FMC) services:

- One device - A phone that acts as a mobile phone outdoors and as a cordless phone indoors. This requires WiFi broadband connection, based on UMA technology, available only for the GSM networks
- Shared network - Shared IP based network for fixed and mobile applications (voice and data), based on SIP/IMS technology

Both levels require Voice connection over WiFi and over Broadband. The low penetration of broadband and WiFi in Romania makes the FMC highly unlikely. Moreover, the relevant telecom operators in Romania currently have no economic incentive to promote FMC:

- Mobile operators are not likely to introduce FMC in the near future due to the high cannibalization risk of outgoing indoor traffic. However, FMC services at the application level for business customers are likely to be offered in the short-mid term (for example: double ring, unified voice mail, etc.). Zapp is technically prevented from offering FMC at the device level (due to the CDMA technology) but could offer solutions at the application level.
- Integrated operators such as Romtelecom and Cosmote are also unlikely to promote that option even though they have higher incentives to do so. With no 3G license, FMC may increase market share to differentiate from competition, with low risk of cannibalization and also a bundle with Romtelecom's ADSL will strengthen the group's positioning. But, due to the relatively low ADSL penetration, the probability of this cooperation is low in the short term.
- Cable operators will have incentive once mobile network (or an MVNO in case of cable companies other than RCS&RDS) is introduced. Still, complexity will push

these solutions further out. RCS&RDS intends to focus on 'voice only' offering first for the short-mid term.

In conclusion, given the state of broadband deployment on one hand and operators incentives on the other, suggest there are no expectations for real FMC solutions in the next few years.

8.1.2. Marketing bundles

Bundles of telecom services are already widespread in the market and are expected to change the market dynamics within the relevant timeframe. Bundles of services have benefits and implications on the market in various aspects:

- Consumers - Increased demand for telecom services, due to benefits of bundles (discounts, single point of contact, one bill)
- Providers - Reduce churn levels and increase customers' loyalty
- Telecom market - Increased penetration of telecom services, while competition will be based more on packages rather than services. The bundle trend is expected to push the market towards consolidation.
- Regulatory authority – Bundles make it harder to monitor and compare prices between multi-players in the market

Residential Bundles

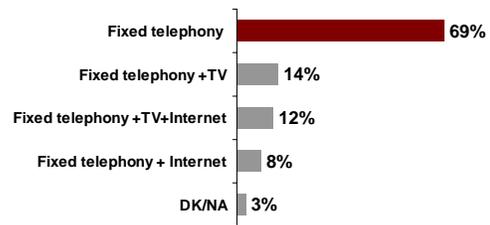
The most common bundles in Romania today are based on shared infrastructure, but recently, with Romtelecom's satellite TV offer, marketing bundles are making in roads:

- Infrastructure based bundles - The leading cable companies offer TV subscription, fixed telephony and broadband in various price plans. Some of the small cable companies also offer the same bundle, while the fixed telephony is based on RCS&RDS fixed telephony service
- Marketing bundles - To stop the decreasing trend of its telephony subscriber base, Romtelecom offers a multi channel TV offer (Satellite based-Dolce) with ~30% discount to its fixed telephony subscribers. After 8 months, Romtelecom enrolled over 250,000 subscribers
- Quadruple-Play - RCS&RDS is expecting to be the first to introduce 4-service-bundle toward the beginning of 2009

According to consumers' survey, 34% of fixed telephony subscribers have some sort of a bundle (exhibit 8.1.5).

Due to actual bundles' penetration, consumers' perception and accessibility of all telecom services also as standalone services, bundles should not be considered as a unique segment yet. Currently, there are 4 options for telecom bundles, and none holds significant market share. With the introduction of 4-play - 11 different type of bundles will be available, so the probability of one bundle type to be significant is unlikely. Given that the residential bundles are still at their initial phase, they should not change the relevant segment definitions.

Exhibit 8.1.5: Distribution of fixed telephony bundles ⁽⁴⁾



Business Bundles

The business sector also enjoys an increasing shift towards bundled offerings:

- Double-Play - SMEs and SOHOs enjoy bundled packages of Romtelecom including: fixed telephony and ADSL line
- Triple-Play - Large businesses are offered fixed telephony 'group lines', data transmission, mainly for WAN, and Internet access via dedicated connection. Vodafone and Orange also offer triple play, which includes: fixed telephony, data lines and mobile offering for the corporate segment

The mobile companies, especially Vodafone, are pushing the market towards bundles, mainly because the mobile companies have significant advantages over Romtelecom's offer and other fixed voice providers:

- Lower tariffs when calling to provider's mobile subscribers - Orange and Vodafone, as holding a significant market share of subscribers and therefore traffic, offer discount for 'to mobile' traffic
- FMC at the application level - since mobile operators use the mobile switch to provide fixed voice services, they can offer converged value added services such as: unified voice mail, double ring (in the fixed and mobile extensions), on-net business packages, etc.

Given the current take up of bundles and lack of dominance of a certain type, the bundled offers should not change the relevant segment definitions also on the business side.

ANRCTI ought to monitor the development of bundled packages as they emerge to become a dominant option and may propose different market segmentation.

8.1.3. Other intertwining conditions:

- Fixed & Mobile Broadband

Mobile Broadband and fixed Broadband might be considered as substitutes. However, mobile Broadband has become the substitute to fixed mostly because of the low supply in fixed Broadband, and is expected to become a mobile solution, only as fixed Broadband strengthens

Analysis Implications: No expected implications on fixed or mobile competitive analysis.

- IPTV & Broadband

Proliferation of broadband and Romtelecom's NGN deployment is expected to enhance IPTV. Increased bandwidth is also expected to shift viewers from cable/satellite TV to Internet based TV content, which offers both VOD and video streaming.

Analysis Implications: IPTV (VOD) is not expected to be a significant platform before 2010 and Internet video is not expected to significantly impact the subscription TV market before 2010.

- Broadband and voice

The expected Internet penetration may increase the usage of unmanaged VoIP (Skype).

Analysis implications: Not expected to have a significant implication on the market before 2010. Its main impact is on international telephony

- TV & Mobile

Vodafone and Orange have started to offer streaming content via the mobile network (using 3G technology); however, the take-up rates of the service are very low due the low level of 3G terminals.

Analysis Implications: The content typically used is designed specifically for use via mobile phones and is not expected to affect the subscription TV market (both demand and supply side substitution do not exist)

8.2. External conditions and their potential impact on the diagnosis analysis

The analysis of the impact of the following external conditions suggests that none of them is expected to significantly influence market segmentation and competitive analysis:

- Macroeconomics

Economic growth projections will have a strong effect on telecom market in general. The transfer to Euro, which is not expected before 2010, will affect price levels and "buying power".

Analysis Implications: Not expected to influence the competitive analysis within the relevant time frame

- Handsets and Mobile Network industry

There is a strong dependency on handset supply and the network industry, which set the prices for network upgrades and entrance of new players. As strong international players, Orange and Vodafone enjoy bargaining power vs. the equipment manufacturers. Cosmote will need to deal with maintenance of a disappearing network – GPRS, Zapp suffers from inferiority due to its CDMA network and its small subscribers' base.

Analysis Implications: Strengthening the dominant position of Orange and Vodafone due to their strength as international players

- TV sets and Cable Network industry

The prices of TV sets in Romania will impact the switch-off of analogue terrestrial TV transmission (though digital terrestrial can be received also via a decoder). Cable network equipment (analogue and digital) will impact the network deployment and the level of digitization in the market.

Analysis Implications: This may affect the players' investments timing and levels

- Romanian advertising market

Increased Broadband penetration is expected to increase local Internet content, which will increase the advertisement spent on Internet partially on the expense of TV.

Analysis Implications: Not expected to affect the local advertising market in the short-mid term

- Content

As data services and content applications become an increasing share of operators' revenues, content suppliers, including websites, portals and TV channels, will play a significant role in the market dynamics. Specifically, local Internet content will speed up Broadband penetration.

Analysis implications: Not expected to strongly influence the competitive analysis until 2010.

- PC penetration

There is a strong dependency between PC penetration and broadband penetration in Romania. Lower prices and availability of lower-end PCs can accelerate broadband penetration while laptops' penetration may increase broadband over WiFi connection.

Analysis implications: The economics growth is expected to affect the PC penetration and enhance broadband penetration.

9. TARGET MARKET FORECAST

Implementing the recommended strategic plan and the proposed regulatory intervention would likely drive the market towards a more effective competitive environment which leads to higher penetration of telecom services, higher availability of choice, increased quality of service and innovation, at affordable transparent prices. The forecast of the Romanian EC market for the relevant time frame is based on these expected positive impacts of this plan.

The forecast is based on the following assumptions:

- **Macroeconomic developments** -The impact of the macroeconomic conditions, such as accession to the EU and growth of the economy
- **Technological developments** - The impact of new technologies and new services, including 3G deployment, digitalization, NGN, etc.
- **Market developments** - The impact of the current market structure and competitive environment, as well as trends and customers' preferences towards bundles
- **Current and proposed regulatory environment** - The current regulatory regime, including the impact of the reduction of the interconnect tariffs and fixed and mobile number portability and the impact of the proposed regulatory intervention described in this report

9.1. Mobile sector forecast

In the coming few years, the mobile sector is expected to undergo several important changes in several aspects, as described also in 5.1

- **Technological developments**- completion of HSDPA rollout and the slow migration of FMC solutions towards the end of the relevant time frame
- **Market developments** – new entrant is expected to start operating in late 2008; with the growing penetration of the service, players are changing marketing focus from increasing market share to retaining customer base. This will result in more post-paid subscribers and various retention price plans.
- **Usage pattern** – fixed-mobile substitution continues, driving a steady increase in mobile penetration, MOU continues to increase and high demand for mobile services in a vast telecom bundle.
- **Regulatory developments** - Reduction in interconnect rates are expected to lead to price increases, though its magnitude is likely to be small. Non transparent tariffs and user habits will adversely impact the expected increase in churn although number portability is in place.

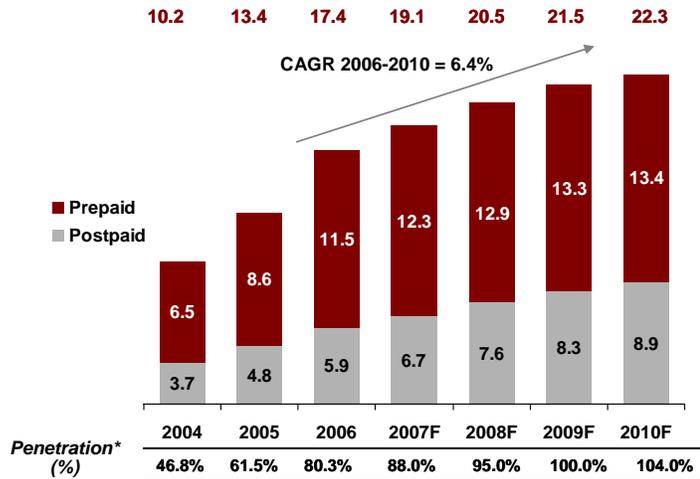
Forecast

Subscribers and penetration

Assuming the new regulations will be in place, their positive impact is expected towards 2010.

The mobile penetration is expected to surpass the 100% mark in 2009 (exhibit 9.1.1). The driving force of this growth is expected to be affected mainly due to the stimulated competition as the 5th player enters the market, offering national coverage, which is enabled by the co-location and national roaming obligation. In addition, mobile number portability is expected also to assist to reduce switching barriers and to increase the level of competition in the market.

Exhibit 9.1.1: Mobile subscribers forecast (millions)^(1,2)



* out of households

Traffic

The increased penetration will be the major driving force for traffic growth, along with the expected price decrease due to the increasing competition, interconnect reduction and t

Exhibit 9.1.2: Mobile MOU forecast (monthly)^(1,2)

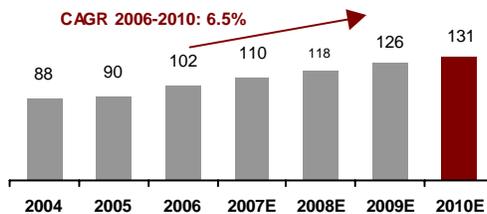
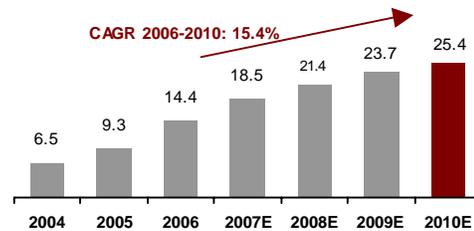


Exhibit 9.1.3: Mobile traffic forecast (b minutes)^(1,2)



uous trend of fixed – mobile substitution (FMS) both in traffic and in lines.

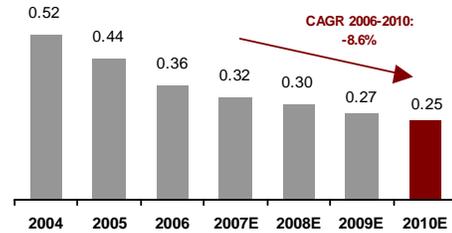
The MOU is expected to have a moderate increase as the price decreasing trend is expected to increase MOU, while as penetration rate increases, lower usage subscribers are enrolled and partially eliminate the expected increase in MOU.

Exhibits 9.1.2 and 9.1.3 show the expected development of mobile traffic and MOU

Price per minute

The increased competition is expected to decrease the average price per outgoing minute, though this is expected to be adversely impacted by the "waterbed effect" created from the decrease in interconnection rate (as seen in exhibit 9.1.4). The proposed regulatory intervention is expected to increase the competitiveness in the market and therefore, push further the expected decrease in prices:

Exhibit 9.1.4: Expected price per outgoing mobile minute, including termination, RON^(1,2)



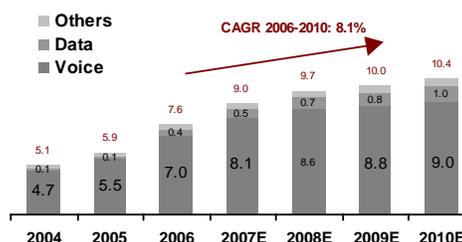
- New entrant offers full coverage service before 2010 focusing on a low price strategy

- Proper number portability in force reduces switching barriers
- New termination rates' policy ensures the continuity and comprehensiveness of the service of the smaller players

Revenues and ARPU

The ARPU is expected to slightly decrease due to the increasing penetration rate with low-usage subscribers and the interconnect reduction. The decrease in voice ARPU is expected to be compensated as 3G penetration and 3G offers increase. The data revenues are increasing from less than 5% in 2006 to more than 8% in 2010. This is expected due to the 3G data services offers and the decrease in voice prices.

Exhibit 9.1.5: Mobile sector revenue forecast, billion RON^(1,2)



In total, the intensified penetration and usage are going to sustain the revenue growth in the market (see exhibit 9.1.5).

9.2. Fixed telephony sector forecast

In the coming few years, the fixed sector is expected to undergo several important changes in several aspects, as described also in 6.1.

- **Technological developments-** Given broadband penetration, VoIP technology is expected to reach significant penetration. This trend will increase convergence between data and telephony services as well as increase uptake of fixed telephony solutions from mobile operators.
- **Market developments** – Aggressive competition, from cable companies on the 'single lines' front and mainly from mobile operators in the 'grouped lines' will cause Romtelecom to lose market share, both in terms of lines and traffic. In addition, the bundle trend is expected to continue and triple play offers would become more widespread both for residential and businesses. Prices are expected to decrease due to the competition and the increase in VoIP.
- **Usage pattern** – fixed-mobile substitution continues, driving a steady decrease of fixed lines and traffic, especially among the residential segment.
- **Regulatory developments** – simple interconnection policy is expected to be reflected in simpler pricing models. The release of Romtelecom's grouped lines market is expected to increase the competition in this market.

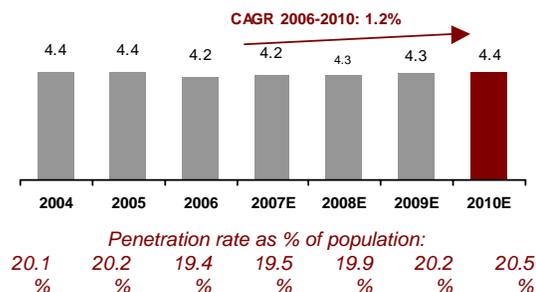
Forecast

Lines and penetration

As seen in exhibit 9.2.1, the fixed lines market is expected to remain stagnate in the relevant time frame due to several opposite trends. The fixed mobile substitution will lead to abandon the fixed line mainly in the residential sector, while the uptake of fixed-mobile offers is expected to increase in the rural areas.

In the residential segment, the fixed telephony is purchased more and more as part of a bundle;

Exhibit 9.2.1: Fixed lines forecast (m)^(1,2)



Traffic

The increasing trend of fixed-mobile substitution (exhibit 9.2.2) reflects the decrease in the fixed MOU per line and the slight increase in total traffic incurred due to the slight increase in number of lines mainly in the business segment.

Revenues and ARPL

The competition in the 'grouped lines', mainly from the mobile operators and in 'single line' from the cable operators, as well as the partial substitution with the mobile lines and traffic, will lead to a price decrease both of the access and of the traffic. The price decrease with only a slight increase in the number of lines will lead to a continuous decline in revenues of this sector.

Exhibit 9.2.2: Fixed vs. Mobile expected traffic (b minutes)^(1,2)

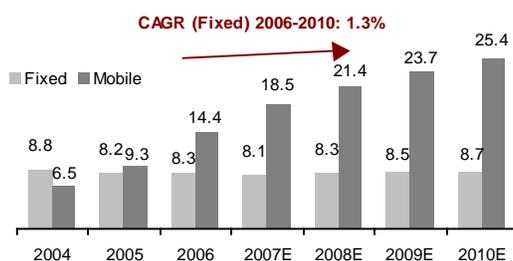
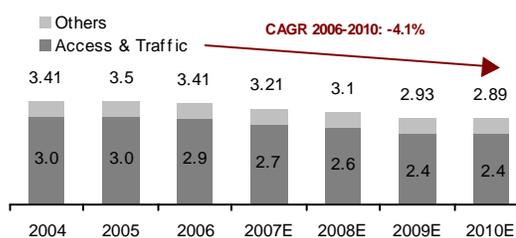


Exhibit 9.2.3: Fixed sector revenue forecast, Billion RON^(1,2)



9.3. Broadband sector forecast

The broadband sector is expected to grow significantly in the next few years, as infrastructure will be available (coverage and bandwidth).

- Technological developments-** Broadband drives the innovation of the telecom sector and becomes the ultimate platform which drives more applications (voice & video) on top of it. Romtelecom deploys fiber (as part of its NGN plans) to have one platform that serves all services, while other players are deploying fiber to the home.

In addition, WiMAX may become an alternative platform mainly in rural areas. Given broadband penetration, VoIP technology is expected to reach significant penetration which will increase convergence between data and telephony services.

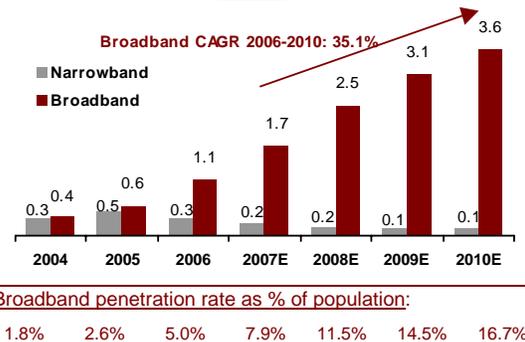
- **Market developments** - Prices go down in order to win market share and are fueling growth. Consolidation in the market is expected, as economics of scale is crucial for broadband services.
- **Usage pattern** – both residential and businesses are purchasing broadband services as a part of a bundle, along with increasing demand for higher Internet connection speeds.
- **Regulatory developments** – Unbundling is not creating a significant impact due to uncertainty regarding NGN and problematic payback horizon. In the longer term, if market conditions allow, bit stream access may become a viable option to promote competition in the fixed access market.

Lines and penetration

The broadband penetration is expected to increase from more than 1 million lines to over 3.5 millions (exhibit 9.3.1). The average bandwidth is expected to grow and by 2010 to exceed 0.5MB (effective download speed). the dial up connections are expected to disappear over time and become insignificant platform in the mid-long term.

Romtelecom is expected to become a significant player with its aggressive DSL deployment.

Exhibit 9.3.1: Broadband and Narrowband lines forecast (m)^(1,2)



Revenue and ARPU

In the short term, competition is expected to lead to price reductions, while in the mid-term, the offerings are expected to vary by bandwidth and value added services rather than by price, leading to stability in terms of ARPU (see exhibit 9.3.2).

The significant expected increase in revenues as seen in exhibit 9.3.3 of this segment is mainly caused by the increase in penetration,

Exhibit 9.3.2: Broadband ARPU forecast, RON per month^(1,2)

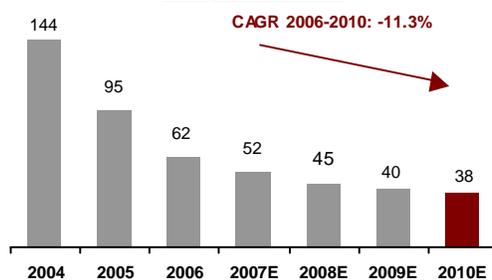
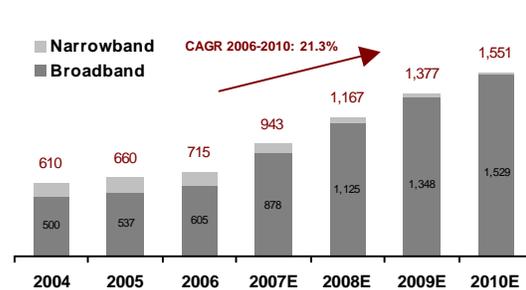


Exhibit 9.3.3: Internet access revenue forecast, Million RON^(1,2)



9.4. Subscription TV sector forecast

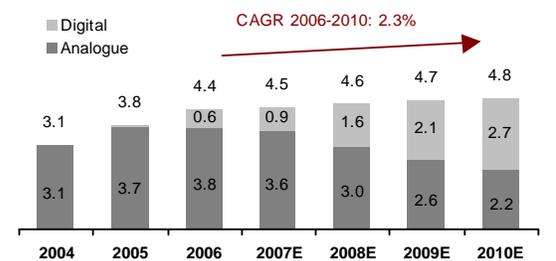
The subscription TV sector is expected to face a reasonable level of competition, as companies shift to triple play offering.

- **Technological developments** - Digitization of the subscription TV market becomes gradually more widespread mainly via satellite, while cable digitization currently hardly exists due to the relatively low prices. It is not expected to make an impact on a wide scale before 2010.
- **Market developments** – The cable industry is expected to undergo consolidation into 2-3 players due to large scale of digitalization investments.
- **Usage pattern** – Growing number of triple-play customers as the TV is expected to be the anchor of the residential bundle offers and towards 2010, introduction of advanced application (i.e. VoD, time-shifted programs) is expected.

Subscribers and penetration

The competition and the entrance of Romtelecom to this segment increase the penetration and stimulate the shift towards digital TV. Exhibit 9.4.1 displays the expected revenues in the subscription TV market.

Exhibit 9.4.1: Pay-TV subscribers forecast ^(1,2) (millions)



Pay TV penetration rate as % of population:
42.5% 52.1% 60.3% 61.7% 63.1% 64.6% 66.0%

ARPU and Revenues

The ARPU is expected to increase due to the increasing portion of the digital subscribers in the subscriber mix. In addition, the introduction of time shifting applications and other tiering pricing plans are expected to increase the ARPU and the sector revenues (see exhibits 9.4.2 and 9.4.3)

10. PERFORMANCE INDICATORS AND INFORMATION SYSTEM

The performance indicators are a tool to monitor the achievement level of the regulatory objectives, as well as review the developments in the telecom sectors, mainly the competition status, penetration of services, technological developments and price levels. Currently the information is gathered from operators and consumers via surveys both for businesses and residential segments.

The current information system was reviewed and the adequate process and indicators were defined in light of the new strategic objectives.

A set of principles guided the process of defining the key performance indicators (KPIs) and establishing the appropriate information system, such that:

- The information system should be a tool for achieving ANRCTI's objectives
- Data needs to be collected from all players in order to have a comprehensive overview of the market
- Providing a clear set of definitions will allow aggregation and comparison of information
- Compliance with EU requirements in terms of scheduling and information required
- Monitoring the market on a regular basis, based on relevant KPIs in a reasonable time frame
- Requiring the minimum set of data from players - asking only for information needed

The information system is composed of 3 components:

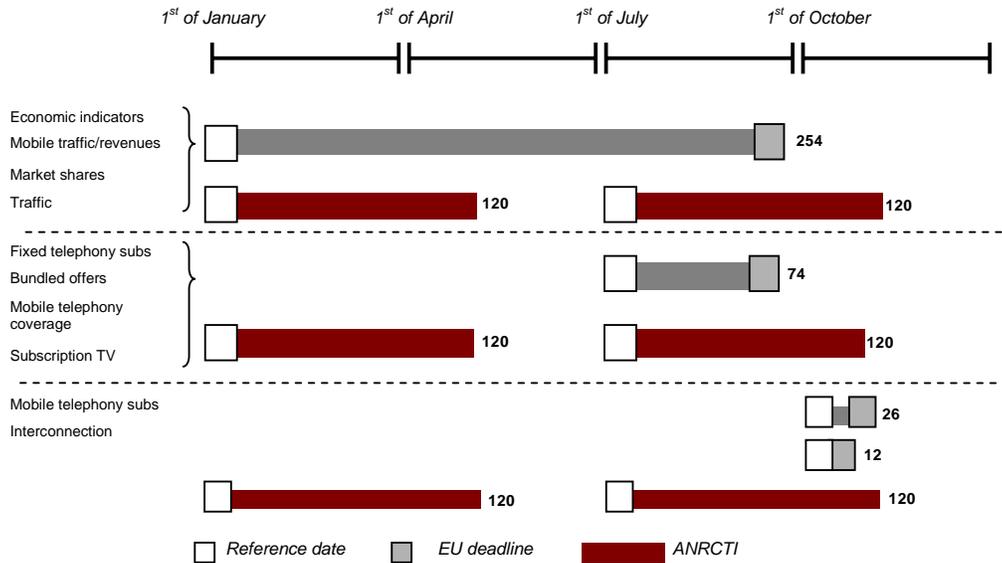
1. Process, which includes the data gathering, the input of the information to the database and quality assurance analysis,
2. The instruments, which include the tools that assists in the process of the different stages in the process, input, quality assurance, database management, analysis of the information and the output,
3. The indicators, which includes the information required and the definition of indicators. Each one of these components was reviewed, analyzed, and recommendations for the appropriate information system are made.

The process and instruments:

The current process of information gathering from the players includes semi annually submission of most indicators, which are different than required by the latest EU report, both in terms of the reference dates and the submission dates of the required information.

The current ANRCTI decision should be amended in order to facilitate the gathering of the EU data, for which the reference date is 1st of October (see exhibit 10.0.1).

Exhibit 10.0.1: Indicators reference and submission dates, ANRCTI vs. EU ⁽¹⁾



In order to meet all EU's submission dates, ANRCTI's instruments require changes. Currently, most of the content is filed manually and consumes valuable time. An electronic submission format, such as a secured online input form or an electronic spreadsheet, would considerably shorten the time needed, would be more accurate and would enable better monitoring of the comprehensive compliance of each operator. Another advantage of electronic submission method is that the human resources employed in data gathering and typing of information can be directed towards quality assurance.

The existent database is not appropriate for the level of analysis required. The database that would fulfill ANRCTI's needs should have at least the following characteristics:

- One holistic database for all the data gathered that will ensure easy cross-analysis
- The new database must be retroactive so all the historical data can be introduced.
- The data gathering format must be synchronized or at least compatible with the database so that the input is automated
- Embedded QA, automated QA flags, i.e. abnormal increases/decreases and missing information
- Ability to perform custom queries

The main indicators and trends of the market performance can be calculated without human intervention, once data is stored in an electronic format. All the periodical reports that use the same indicators and same methods can be done automatically.

Key performance indicators

The analysis of the required information vs. the current parameters requested from the players is based on the strategic objectives of ANRCTI, based on each sector analysis and indicators required by the EU.

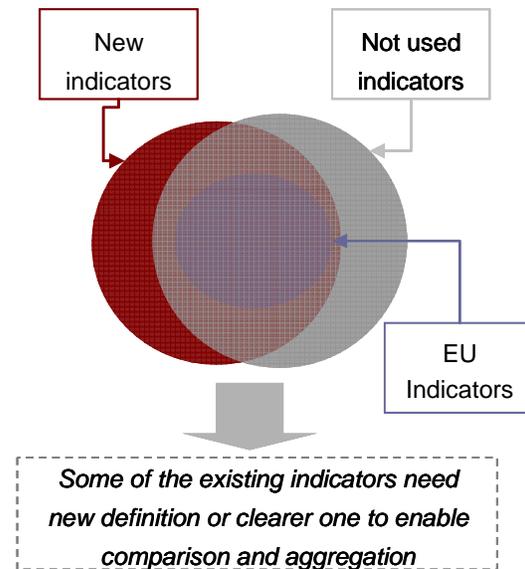
In order to have a good comprehension of the market performance, periodical data should be gathered from the stake holders, including consumers. Periodical surveys need to be conducted in order to show trends of the qualitative indicators such as the level of innovation, perceived quality of service and price transparency. All of the data gathered, from operators and consumers need to be cross-analyzed for a thorough understanding.

The current statistical reporting is lacking information regarding important trends in the market, such as bundles information, which is not only required by the EU, but is the main driver of the market. Fixed-mobile substitution is also an existent trend that needs to be monitored from a market definition point of view. Both of these trends require data to be gathered from the supplier as well as from the demand side.

Although ANRCTI has recently changed the decision regarding statistical data, following Romania's accession into the EU, the new responsibilities as a regulator of a member state along with the new trends the Romanian EC sectors are experiencing, require a new set of indicators, compatible definitions and different reference dates and deadlines. Exhibit 10.0.2 illustrates the need for amendments in the current indicators

In summary, in order for the ANRCTI to monitor the EC dynamic sectors, to meet EU requirements, the statistical data system should be changed in several aspects: change the KPIs and the definition respectively, the reference date and the deadlines for information submission, the tools to support the process, electronic input and an advanced database tool².

Exhibit 10.0.2: Current and Required parameters



² The recommended list of KPIs and parameters are displayed in report number 9 and the MS Excel file annex

11. SUMMARY

The Romanian electronic communications sector is dynamic such that most markets are enjoying high growth rates and a highly competitive environment that stimulates penetration, innovation, quality of service and decreasing prices, while other markets are showing stagnation.

TASC's exhaustive analysis has found signs for several deficiencies, both at the retail and wholesale levels that ought to be addressed by the ANRCTI.

11.1. Mobile sector

The mobile retail segmentation analysis identified one relevant segment, cluster of cellular services at the retail level. The relevancy of this segment ought to be explored due to the indications of collective dominance of Vodafone and Orange.

The results of the wholesale mobile sector segmentation analysis are similar to the current market definition in Romania and are in line with the EU market definitions.

11.1.1. Deficiencies in retail segment

Cluster of cellular services

Signs of collective dominance:

The retail mobile sector has grown both in terms of subscribers and revenues, but since 2002, Vodafone and Orange have held together more than 90% of the market. This potential dominance is reflected in the late deployment of 3G networks, relative high prices and low actual churn levels.

The ANRCTI should strive to increase competition in the mobile sector and level the playing field as much as possible for the other infrastructure based competitors. The ANRCTI ought to initiate a solution based on the wholesale markets before setting regulation on the retail side.

Low price transparency:

According to consumers' surveys, price transparency is low, which adversely impacts consumers from making rational decisions. The low transparency is mainly caused due to multiple tariff plans and multiple tariffs at any given plan. Romanian consumers pay relatively high prices for cellular services compared to other EU states (PPP adjusted) without being fully aware of the real price level.

The ANRCTI should actively promote consumer awareness and enable price comparison between operators but should not intervene in pricing plans at present.

11.1.2. Deficiencies in the wholesale segment

Termination on mobile networks

No defined policy for termination on individual mobile networks

Currently, only Orange and Vodafone have regulated interconnect tariffs, while Cosmote and Zapp set termination fees based on negotiated agreements, with a transparency regulatory obligation. This creates asymmetrical bargaining power between the big and the small players and often causes disputes between operators.

Since each operator is viewed as a natural monopoly on terminating calls to its own network, a unified and simple interconnection policy, would improve operators' visibility.

11.2.Fixed and Broadband sectors

The segmentation process has yielded a fundamental change in the definition of retail fixed telephony markets. Due to the consumer segments' usage habits and inconsistency in the classification of business and residential users, segmentation was altered by the products' functionality and not by consumer segments as before. The new segmentation represents a distinct difference between high-volume users (both in number of lines and in traffic, mainly corporate) which use 'grouped lines' to access the fixed telephony network and the rest of the market which uses the 'single access' lines.

Fixed mobile offers are deemed as fixed products due to their similar functionalities and similar pricing.

Romtelecom is still viewed as the dominant player in the 'single line' access and 'single line' domestic outgoing calls, but may not be defined as dominant in the 'grouped lines' access and outgoing calls. This will enhance Romtelecom's ability to compete in the large and growing business segment.

11.2.1. Deficiencies in retail segments

Fixed telephony access via 'single lines':

Low level of satisfaction:

Romtelecom's residential users are significantly less satisfied than those of other providers in terms of price and quality of service. Results from the business segment were less substantial, though Romtelecom was still ranked the lowest amongst providers. This may indicate the value consumers obtain from Romtelecom's services.

Due to the competitive dynamics, the ANRCTI should consider to relax the retail price regulation imposed on Romtelecom. As long as all Romtelecom's customers are offered non-discriminatory prices and prices for off-net destinations are monitored, Romtelecom should be given the freedom to set its retail pricing.

Availability of choice for fixed telephony and broadband:

The average Romanian consumer faces significantly less alternatives than the average customer in other member states, particularly in the rural areas. This constitutes an additional deficiency since lack of choice both indicates barriers to entry are relatively high and may lead to abusive behavior.

The ANRCTI should continue its steps to increase the level of competition, such as introduce new facility based competition (such as WiMAX and fixed-mobile solutions), support service based competition, implement fixed number portability and constantly review interconnect charges.

Domestic outgoing calls via single access lines

Price complexity:

Romtelecom's customers face eight different basic tariffs that are divided according to destination, receiving network and time of the day. It is probable that with this complex tariff scheme, customers are not able to make rational consumer decisions.

Similarly to the mobile sector, the ANRCTI should promote tariff transparency by enhancing the level of information customers are able to achieve.

Indications of excessive prices:

Some of Romtelecom off-net tariffs are unjustifiably high. The off-net tariffs, both for mobile and for other fixed networks, are above the sum of the on-net tariffs and the respective termination rates. High rates for off-net calls strengthen Romtelecom's network effect, hence, increase barriers to entry and decrease probability of new providers to enter the market.

ANRCTI should obligate Romtelecom to set its off-net tariffs as the maximum of the sum of its on-net tariffs and the relevant interconnect charges. Together with relaxing the price control on its tariffs, this will prevent Romtelecom from utilizing its position to abuse its network effect

11.2.2. Deficiencies in wholesale segments in the fixed, Internet & data sectors

Provision of access to the public telephone network via 'single access lines' provided at a fixed location

Low level of LLU lines:

LLU take up in Romania is very low. 10 providers are using the LLU product with minor success so far. High initial investments and the uncertainty of the investment horizon, due to Romtelecom NGN deployment plans, raises concern on the feasibility of a new entrant business model through LLU.

The ANRCTI should consider obligating bitstream access solution based on the dominance Romtelecom has in the fixed telephony access market. In parallel, ANRCTI should strive to maintain the LLU option to the existing providers and initiate a cost analysis to identify the appropriate cost structure for both full and shared LLU services.

Low level of alternative calls providers using the CS solution:

The low level of alternative calls providers using the CS solution and the lack of alternative providers using the CPS solution suggests a market deficiency. Still, the small gap between the retail and wholesale prices of Romtelecom's call origination leaves no margins for new entrants, particularly after the latest rebalancing of Romtelecom's tariffs.

However, since the CPS solution was only recently enabled on a wide scale, the ANRCTI should monitor developments in this market.

Call termination segments

No defined policy for termination on individual fixed networks:

As in the mobile termination markets, no unified policy have been introduced to prevent utilizing the bargaining power and resolve disputes between players. Pre-set transparent tariffs will help new players, while ensuring an adequate playing field once scale is obtained.

The ANRCTI should promote a unified termination rate policy, also for the fixed market that will enhance predictability of regulation.

Provision of national transit market

No changes observed:

While in the transit service segment there are 25 players due to the low barriers to a backbone player, analysis indicates Romtelecom is still the dominant player.

Since the market is currently fully regulated, no other market deficiencies were identified in this sector.

Provision of wholesale terminating segments of leased lines

No changes observed

Not all players submit reports that are consistent with the ANRCTI terminating segments service definitions, resulting in inconsistencies in the ANRCTI information system. According to current data, Romtelecom still holds the majority of terminating segments, although this ought to be verified with a further diagnosis.

The market for terminating segments of leased lines is currently fully regulated (i.e. the entire set of remedies is imposed), and no regulatory deficiencies were found.

11.3. Transmission of audio-visual content sector

The segmentation process resulted in three national retail segments that were defined at a technological neutral manner: free-to-air TV broadcasting, free-to-air radio broadcasting and subscription TV.

The cable and the satellite subscription TV services were examined thoroughly and were included in the same market following demand and supply side substitution analysis.

On the other hand, the related wholesale markets were differentiated based on the different technological platform, due to the characteristics and market dynamics

Deficiencies in retail segment

Deficiencies in the segment for the provision of subscription television services at a national level

Late digitization of subscription TV:

Though the broadcasting services via subscription TV are well penetrated, the level of innovation and digitization is relatively low, such that few advanced services have been introduced (such as PPV, PVR, interactive applications and VOD).

Lately, digitization in this market has been introduced with the increasing penetration of subscription TV based on satellite, but the cable companies are postponing their cable digitization and promoting their satellite offers.

The low level of digitization adversely impacts the Romanian consumers and constitutes a market deficiency. However, indications are that this deficiency does not stem from problematic competitive dynamics, but rather by the low purchasing power and low ARPU.

The ANRCTI should monitor the development of digitization and the introduction of advanced services in this segment

11.3.1. Deficiencies in wholesale segments

Provision of transmission services of free-to-air TV broadcasting by terrestrial platform at a national level

Radiocom is a sole national broadcasting transmission company in Romania, and holds the frequencies of the 2 national broadcasters.

Indications of excessive prices:

Radiocom has a large number of employees in relation to the number of sites it maintains and this inefficiency is covered by high transmission prices. Excessive pricing for transmission creates a market failure since public channels' allocation of resources is not optimal.

The ANRCTI should consider imposing a normative price regulation to prevent abusive behavior.

Low number of channels:

The average Romanian citizen spends approximately 4 hours per day watching television. While this number is only slightly higher than average, it signifies the importance of this media to the Romanian citizens. Despite this, the ability to choose between different free-to-air channels is very limited. This deficiency is especially relevant to rural areas where a big part of the households watch only free-to-air channels.

No digital terrestrial television option:

The late roll-out of DTT constitutes an additional market failure as it postpones the potential for better quality, lower prices and wider variety of channels.

Most EU member states have begun the digital terrestrial roll-out and announced a final date for the analogue terrestrial switch off. The EU Commission imposed a deadline of **2012** for the digital switchover of terrestrial TV broadcasting.

However, according to Radiocom publications, the process of digital terrestrial roll out is only in its experimental stage. Radiocom estimated the switchover date to be within the next 15-25 years. In Romanian rural areas, which represent a big part of households, receive only national terrestrial TV (only 2 channels) and therefore DTT can increase both the level of choice and broadcasting quality. Digitization of radio services (DAB) is also almost non-existent in Romania, however, since the efficiency of DAB is highly argumentative and the situation does not seem to affect the level of choice, this should not be considered as a deficiency of high priority.

The ANRCTI should promote terrestrial TV digitization in order to by-pass the lack of available national frequencies and meet the EU switch-off deadline.

Transmission services of subscription television and radio by cable

Lack of "Right of Way" policy:

Though the transmission services via cable is not considered as a relevant market, and the 'right of way' is not under the ANRCTI's scope, but under the responsibility of municipalities, this issue needs to be addressed.

Due to the lack of unified directions, each municipality holds a different policy which creates difficulties in planning network deployment, hence, increasing entry barriers. The cost of 'right of way' is also not consistent and often changes according to the financial needs of each municipality. Therefore, the ANRCTI should promote unified guidelines for municipalities so as to increase certainty among transmission providers.

11.4. Intertwining and external conditions

The convergence of telecom networks creates numerous intertwining conditions between the different services, but the most significant trends are the fixed-mobile substitution and the telecommunications bundles.

11.4.1. Fixed mobile substitution

The Romanian telecom market has experienced continuous substitution between fixed and mobile, both in terms of lines and traffic, though in the residential segment this trend is more dominant.

Consumers' surveys show that some level of asymmetrical substitution exist, but not to a large degree. The functionality, price differences and the asymmetrical substitution still suggest that fixed and mobile (access and traffic) are part of different segments.

In the future, when FMC solution are based on a converged network and converged device, the distinction between fixed and mobile access and traffic will continuously be lifted. FMC solutions are not expected to have a significant impact in Romania before 2010.

ANRCTI should monitor the development of the fixed and mobile sectors and assess the level of substitution towards the end of 2009.

11.4.2. Bundles

Bundles of telecom services are already widespread in the market both in the residential and the business segments and are expected to change the market dynamics within the relevant timeframe.

The anchor of the residential bundle is the subscription TV services but the broadband becomes a dominant service in a bundle. RCS&RDS is the leading provider in the residential segment, while in the business segment the mobile operators are promoting triple-play offerings with mobile, fixed telephony and data lines.

Given the current take up of bundles and lack of dominancy, the bundled offers should not change the relevant segment definitions and are not expected to in the relevant timeframe. Still, the ANRCTI ought to monitor the development of bundled packages as they are expected to become more significant for market segmentation towards the end of the period.

11.5.Information system

The current ANRCTI information system of the statistical information is not sufficient to meet the new defined regulatory objectives and the recent requirements of the EU. Deficiencies were found in the information system 3 components:

- **Process:** the reference date and the delivery deadlines ought to change
- **Tools:** the information gathered in hardcopies is typed manually to the database, while the database is very basic and does not allow analytical calculations over time and by player, in addition, the database does not enable quality of information tests
- **Indicators:** In light of new regulatory objectives, not all required indicators are included, some of the information requested by the EU is also absent in the statistical data annexes. Some of the indicators' definitions are not clear or different than the EU requirements.

ANRCTI should plan to upgrade its information system database, process and needed information.

12. Sources

1. ANRCTI database
2. TASC analysis
3. Data inquiries, April-May 2007
4. Consumer surveys, April-May 2007
5. Romtelecom tariff book (May, 2007)
6. European Electronic Communications Regulation and Markets 2006 (12th Report)
7. European Electronic Communications Regulation and Markets 2005 (11th Report)
8. Providers' publications
9. European Information Technology Observatory 2005,
10. Ofcom, International communication Market 2006
11. Merrill Lynch 4Q06
12. Eurostat
13. CIA world factbook
14. Television 2006
15. European Information Technology Observatory 2005
16. World bank
17. Information from providers
18. ERG publications