

Assessing the effectiveness of Price Cap regimes for the regulation of  
fixed telephony markets:

Has it been successful in achieving competition?

By

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# 1 Introduction

On 1<sup>st</sup> January 1998 the European markets for voice telephony were fully liberalised. Genuine competition between market participants has been one main goal of the liberalisation of the European Telecom markets. A comprehensive legal and regulatory framework provided for safeguards against unfair competition. New operators have been free in entering any segment of the market for fixed telephony services. The incumbents had to provide access services and network capabilities under equitable and non-discriminatory terms and conditions at cost-oriented rates on an unbundled basis. Today, 10 years after the liberalisation of the fixed telecommunications sector in Europe most retail markets for fixed telephony are considered to be competitive. As a result, regulators have continuously withdrawn ex-ante regulation from these markets. Rather they rely on ex-post control and regulation of wholesale markets for ensuring competitive outcomes.

In achieving competitive retail markets in the fixed sector different regulatory approaches have been applied, being successful to a different degree: While most regulators have applied some form of price cap regime, the details of this regulatory tool have been very different. Moreover, ex-ante regulation at the retail level was accompanied by various forms of wholesale regulation. Given these differences the question arises which lessons can be learnt from the experience in European countries? How shall other countries with less competition regulate their retail (and wholesale) markets?

The paper is organised as follows. The first section briefly describes the rationale for tariff regulation and the main elements of price cap regulation. Thereby also the issue of rebalancing is considered. The second section provides an analysis of tariff approaches chosen by selected European countries. The focus is on price cap regimes as an important regulatory tool for creating competition on voice telephony markets. The third section examines the question whether price cap regulation been successful in view of achieving the objectives aimed at. The fourth section draws some conclusions as to lessons learnt for encouraging competition on less developed telecom markets.

## 2 Tariff Regulation, Rebalancing and Price Caps

### 2.1 The Rationale for Tariff Regulation

It is generally considered that regulation is necessary in the absence of competition.<sup>1</sup> When markets are perfectly competitive, tariffs of services would be efficient in the sense that the tariff structure would cover the costs of provision and earn a normal rate of return for an efficient telecommunications operator. The tariffs could be expected to decline due to greater economies of scale and decreasing average cost of a unit of telecommunications output as the network expands. Market intervention is then required only on an ex-post basis to prevent operators with significant market power to abuse this power – for example by setting retail prices below costs in order to prevent competitors to successfully enter the market

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<sup>1</sup> See for example the "Concept of Contestable Markets" by Baumol et al., 1988.

(Knieps, 1997, pp. 325).

In countries which have just liberalised their telecom markets, competitive conditions do usually not exist in the first place. For instance, in European countries key tariffs have been subject to regulation after the liberalization because most services have been delivered by dominant operators being former monopolists. Thereby, tariff policy followed two main goals (Intven & Tétrault, 2000, pp144):

1. to ensure that monopolistic or dominant operators optimize their performance and do not abuse their market position by setting prices too high; and
2. to ensure that tariffs are affordable for as much of the population as possible.

There might be a conflict between these two goals: If tariffs are set on a level below costs, operators will not be able to cover their costs for those services. As a consequence, operators need to find ways to finance the resulting losses by other means, e.g. by setting higher prices for other services. Yet, in the long run, with increasing competition in high margin markets the source of such cross-subsidies will erode. The operator will then lose the means to further finance investments.

On the other hand, if tariffs are purely based on the specific costs, certain tariffs, especially those for access and local calls, might increase substantially leaving a (large) part of the population without the ability to pay for telephony services. To avoid such a conflict most countries have adopted policy approaches where they deal with the social objectives for sector development separately. Their approach has been to promote competition in the first place because competition leads to fast network expansion and rapid tariff decreases thus achieving already social benefits. In addition, they have flanked the liberalisation of their national telecom markets with measures to safeguard social objectives. Here, a number of elements have been combined, a universal service fund to finance network expansion in rural areas, the obligation for operators to provide flexible tariff schemes for low usage or special discount schemes for target groups, and a rebalancing policy.<sup>2</sup> The following section will briefly describe the rebalancing as one of the key issues in any tariff reform.

## 2.2 Why Countries rebalance their Tariff Structure

Tariff rebalancing is the process of adapting the system of political and social prices of public monopolists to a new system of cost- and utility oriented prices of competitive private operators. In a competitive market, prices cannot deviate for long from the individual costs of providing a service to the customer. Therefore tariff rebalancing reflects the cost development of modern technologies in telecommunications. Major cost trends are that total costs for telecommunications services of a certain quality go down, usage of networks becomes less costly than access to the network, and costs for international and long distance calls are falling faster than costs for local calls.

From an economic perspective, optimal tariffs are those that are based on the cost of

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<sup>2</sup> There are numerous references to universal service/ access policies and related measures, for instance, ITU (1998): *World Telecommunication Development Report: Universal Access*, and ITU (2003): *Trends in Telecommunication Reform: Promoting Universal Access to ICTs — Practical Tools for Regulators*.

providing the service (costs include a reasonable rate of return). However, it is very difficult to define what a cost orientated tariff should be for most telecommunications services (Fredebeul-Krein, 2002, pp. 14). This is due to the fact that accounting systems of operators are usually not very sophisticated and most costs are common costs in the sense that they cannot be directly attributed to any particular service. What is fairly clear, however, is that tariffs in many countries with non-liberalised telecom markets are generally not cost-orientated. This imbalance is due to a variety of factors, the main reason being that the former tariff structure reflected the original distance-dependent telecommunications cost structure.

At the start of the liberalisation of European telecom markets 10 years ago, most countries had tariffs that were grossly unbalanced, with almost all telecommunications revenue coming from international (or domestic long distance) call charges. Grossly unbalanced tariffs pose a particular problem where a country is liberalizing telecommunications. This is because:

- ❑ The whole competitive environment is distorted, long distance and international business is often attractive to new entrants, but there is no profit in local services because of the distorted tariff structure.
- ❑ Interconnection pricing becomes more complicated or even impossible because cost-based interconnection tariffs have no relation to the retail tariffs (when they should have the same basis).

Therefore, a primary requirement for any tariff reform has been to rebalance the tariff structure. However, it is difficult to immediately reform the whole structure because of political reasons and very little consensus on what balanced cost based tariffs are. There has been a tendency for regulators to give a general direction for tariff re-balancing and to allow operators to re-balance tariffs within a price control framework such as the price cap.

### **2.3 Price Cap Regimes as the preferred Approach of Tariff Regulation**

The price cap regulation has been the de facto standard for price regulation.<sup>3</sup> A price cap is an upper limit of tariff increases or lower limit for tariff decreases for a bundle of regulated services. It takes into account productivity gains and also ensures a rate of return for the operator. The advantages of the price cap model are specifically:

- ❑ Provision of incentives for greater efficiency: The formula contains a factor (the x-factor) for productivity increases. The operator has to meet these targets but is also free to exceed the target. If he exceeds the targets the benefit is up to his own disposal – to further decrease tariffs below the price cap or to generate higher margins to be used for further investments or to be distributed to shareholders.
- ❑ Greater transparency of regulation and reduced possibility of micro-management by the regulator: The Price Cap formula provides the operator with information to which extent he can increase or decrease tariffs over the next years. This makes planning much easier for the operator.

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<sup>3</sup> For more details of the price cap regulation see for instance, Sappington and Weisman (1996) and also Levin and Schmidt (2006).

- ❑ Greater price flexibility: Tariffs are generally not determined for single services, although special “sub-caps” can be defined for services where different development patterns for productivity increases can be expected. The operator is therefore free to elaborate tariff models that fit specifically the need of a defined customer segment.
- ❑ Consumer Protection: Tariff increases or decreases have to be in line with productivity development. Therefore, the operator cannot arbitrarily increase or decrease tariffs. Due to declining per unit costs in telecommunications, tariffs are expected to decrease over time. Consumers will automatically share the expected productivity gains.

In the following chapter we will consider various countries where price cap regimes have been implemented as part of the sector reform: Germany, UK, Czech Republic and Hungary. Thereby we will examine the effectiveness of price cap regimes in view of achieving two main goals of tariff regulation: 1) cost orientation and 2) ensuring affordable tariffs.

## 3 Price Cap Regimes in selected European countries

### 3.1 Germany

#### 3.1.1 Retail Tariff Regulation

The legal framework ruling retail price regulation of telecommunications services in Germany is set in Part 2, Chapter 3 of the Telecommunications Law (TKG) from 1996 which was amended in 2004. In addition the Tariff Regulation Ordinance applicable since 1998 acts as secondary regulation regarding tariffs. Under the TKG 1996, tariffs (including tariff-related business terms and conditions) for the telecommunications services of SMP providers and their affiliates were subject to special regulatory oversight and control. The tariffs of all service providers in Germany have been subject to European and German laws of general application, including competition and consumer protection laws and ordinances.

The TKG determines that the tariffs (retail and wholesale) shall be based on the cost of an efficient service provision. The TKG determines that in secondary legislation detailed provisions will be included regarding issues such as “forms of approval of price regulation” and the “procedure of price regulation”. Accordingly, further details are laid down in the Tariff Regulation Ordinance, which was repealed by the TKG amendment in 2004. Tariff regulation can take the forms of ex-ante approval of retail prices or ex-post approval. As to ex-ante tariff regulation the TKG provides two basic approaches: a price cap approach and an approach involving individual approvals based on cost of efficient service provision. Ex ante approval is limited to markets in which sustainable competition is not expected to develop in the foreseeable future. A company with significant market power (SMP) intending to introduce or change the price for a retail service must also submit a corresponding wholesale offer to its competitors which satisfies the requirements of anti-competitive pricing controls.

#### 3.1.2 Price Cap Regulation

Since the opening of telecom markets in 1998 retail prices of Deutsche Telekom’s (DT) voice telephony services have been regulated via a price cap mechanism. In 1997, it was decided by the regulator to have a  $CPI-X = 1.7\% - 6\%$  for the period 1998 until 2000. Two baskets have been distinguished – residential and business, both covering the following services: City Call, Regional Call, Long Distance, International, Monthly Rental, and ISDN Basic Rental. In December 2001 the regulator decided on the price cap regime for the period

January 1, 2002 - December 31, 2004. This time, it has grouped telephony services in the following four baskets (BNetzA Annual Report 2001):

- ❑ Line rental in Basket A (CPI +1%);
- ❑ Local call services in Basket B (CPI - 5%);
- ❑ Long-distance calls in Basket C (CPI - 2%);
- ❑ International calls in Basket D (CPI - 1%).

Notwithstanding DT's right to submit price proposals at any time, RegTP had to check on 1 January 2002, 1 January 2003 and 1 January 2004 whether or not price changes are required. If so, they had to take effect by 30 April 2002 in the first price cap period (2002), and by 31 March of the respective year in the second (2003) and third price cap period (2004). Scope for change in the price of lines was allowed to be carried forward to the next price cap period. Over fulfilled price cutting targets for call charges could also be carried forward. It was not possible, however, to carry forward unused scope for increasing call charges. DT was required to report to the regulator twice yearly, on 1 April and 1 October, on trends in revenues and volumes and on average use of the discount tariffs not included in the baskets.

Since 2006 price cap regulation is no longer applied by BNetzA (former RegTP) (Cullen International, Market Analysis Database). Most retail services of DT are now only subject to ex post price controls in the form of notifying BNetzA of tariffs two months in advance. BNetzA considered that such a light-handed regulatory instrument is not only a means of transparency, but also a sufficiently effective mechanism to prevent anticompetitive pricing (predatory pricing, price squeeze, illegal bundling, or excessive prices). The obligation to have approved ex-ante tariffs would be too burdensome for DT. For international telephone services BNetzA has withdrawn existing regulations due to effective competition.

### 3.1.3 Tariff Rebalancing

The situation just before the liberalisation of the German fixed telecom market was characterised by rather high tariffs for voice telephony: In 1997, for international calls to countries within the OECD Deutsche Telekom still charged a price of nearly one Euro per minute (OECD, 1999, p. 177) and for a long-distance call customers had to pay a price between 12 and 30 Eurocents (RegTP, 2000, p. 9). However, this situation changed very soon with the market entry of numerous firms. The liberalisation of telephony markets in 1998 led to a sharp reduction of tariffs for voice services. Between January 1998 and April 1999, Deutsche Telekom lowered its average prices in the daytime by 62% (Brunekreeft and Gross 1999, p. 17). In the following years, prices for fixed voice telephony services were lowered further (1999: -20,5 %, 2000: -9%, 2001: -4,3 %). During the whole period since markets have been liberalised the strongest price decline has taken place in the sub-market for international calls (in average 75%).<sup>4</sup> But also in the market for national calls price declines have been substantial. From these figures one can conclude that during the first years of market liberalisation the price decreases exceeded the mandated price cuts of the

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<sup>4</sup> In 2006 prices for international calls to many of the European neighbour countries but also for calls to the United States can be made for less than 1 €-cent per minute (BNetzA, 2007, p. 73).

price cap regime by far.

The situation was different for local call charges and monthly line rental. At the beginning of the liberalisation tariffs for local calls were very low which is why they have hardly changed between 1998 and 2003. Also, during this period alternative operators were only able to offer such services via unbundled local loop. Call-by-call selection and pre-selection were both not possible until then. The situation changed in 2003, when Deutsche Telekom was obliged to provide call-by-call selection and pre-selection for local calls. Once established in April 2003, many new service providers entered this market segment, putting pressure on tariffs. Consequently, during the years from 2003 to 2006 prices for local calls dropped by 10,3%.

In January 2002 DT announced that it would rebalance its charges for monthly line rental. In May 2002, the subscriber line rental for the analogue line was raised by 5% from € 10.94 to € 11.49 (excluding VAT). In October 2002, DT asked RegTP to authorise a further increase in the monthly subscription fee by € 0.99. However, RegTP authorised only a € 0.33 increase (to € 11.82) in the analogue phone line fee from February 2003. RegTP said it could not approve a rise of € 0.99 in the monthly line rental since this was outside the price-cap regime. The following table provides an overview of tariff changes for different fixed line services between 2003 and 2007.

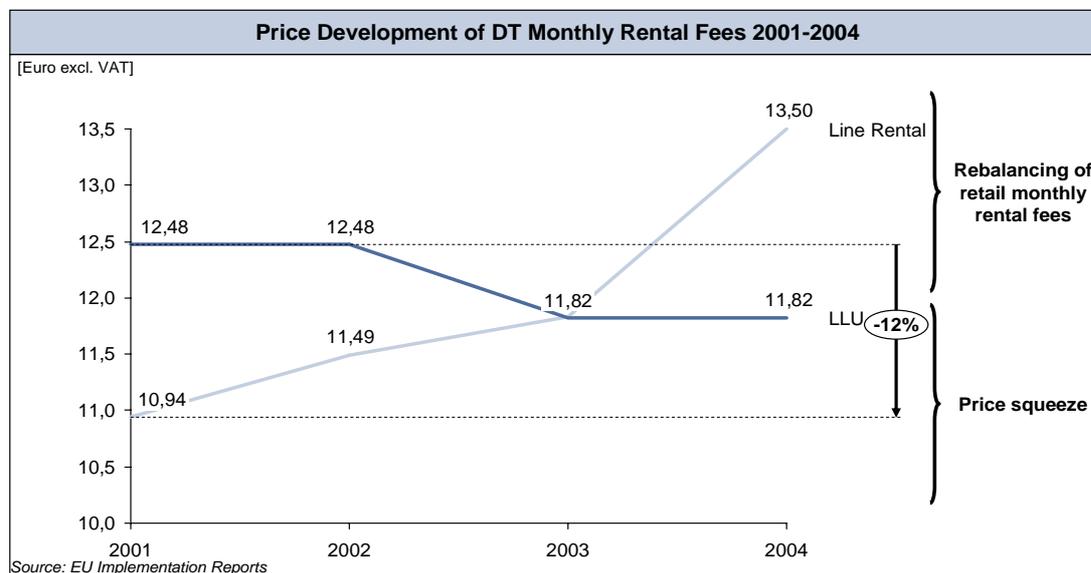
Fixed-line telephone services	Price changes to previous year, in %				
	2003	2004	2005	2006	2007
monthly subscription charge	10,2	6	0,8	+/- 0,0	1,8
local calls	-5,6	- 4,8	+/- 0,0	0,2	2,3
national calls	-6,1	- 7,2	0,3	+/- 0,0	1,9
international calls	-0,8	- 0,8	- 0,2	- 0,9	0,5

Table 1: Price changes for fixed-line voice services (Statistisches Bundesamt, 2007)

Prices for access to unbundled local loops (ULL) have led competitors to argue that DT has been subjecting them to a price-squeeze. The negative margin between the € 12.48 new entrant competitors had to pay DT until April 2003 to rent the relevant ULL product for the provision of the analogue line and the € 11.82 DT was charging its customers for the analogue subscriber line resulted in "price squeeze" difficulties for competitors.<sup>5</sup> The access price payable to DT was reduced to € 11.82 in May 2003 as a result of a RegTP decision of April 2003 which was based on a cost study. Moreover, in July 2003 BNetzA changed the cap on line rental in Basket A to RPI + 5% for both 2003 and 2004 (for 2004, CPI was set at 1.0%, i.e. DT was allowed to increase the line rental by 6.0%). According to BNetzA, the amended cap on line rental would allow DT to fully remove the access deficit which has been

<sup>5</sup> For this reason, in May 2003 the European Commission imposed a fine of € 12.6m on DT for abusing its dominant position through unfair prices for access to its local network (Decision 2003/707/EC, OJ 2003 L 263, p. 9). The Commission found that DT charges new entrants higher fees for LLU than what DT's subscribers pay for fixed line subscriptions.

calculated at € 1.41 per loop (RegTP, 2003, p. 789). Consequently RegTP approved Deutsche Telekom AG's increase in the monthly rental for an analogue line to EUR 13.5. As a result of lowering the charge for ULL access to EUR 11.8 on 1 May 2003, the monthly retail price for an analogue line was now €1.7 more (OECD, 2004, pp. 29-30).



**Figure 1: Rebalancing steps and price squeeze**

According to the BNetzA's Communication Nr. 2012003 published in RegTP-Journal Nr. 15/2003 on 30 July 2003 the tariff rebalancing process was completed.

## 3.2 United Kingdom

### 3.2.1 Retail Tariff Regulation

The general regulatory framework for price regulation has been embodied in the 1984 Telecommunication Act, which was amended several times since 1984. UK's transposition of the new EU directives into national law has been done under the UK Telecommunications Act 2003. Particular issues regarding tariffs are regulated by means of regulations (Open Network Provision – Voice Telephony) Regulations, 1998 – Statutory Instrument 1998 No. 1580 and Telecommunications (Licensing) Regulations, 1997 – Statutory Instrument 1997 No. 2930. The regulator Ofcom is authorised to set a retail price control on a basket of prices from the BT (Ofcom, 2006, p. 1). Following these Statutory Instrument, the tariffs for the provision of voice telephony services should follow the principle of cost orientation and a cost accounting system to ensure cost oriented prices.

Within the market analysis Ofcom (former OFTEL) identified BT and Kingston Communication as providers having significant market power (SMP) on these markets and imposed the following obligations: Both BT and Kingston: non-discrimination, publication of charges, terms and conditions of supply. BT: an annual ceiling for charges equivalent to the retail price index increase until July 2006 (RPI - RPI i.e. no increase in real terms). Cost accounting in respect of residential analogue line access and all call markets. Also, BT had to ensure that its net revenues in any relevant year (i.e. including discounts) from all residential customers in the bottom 80% by expenditure are equal to or less than the net

revenues received from those customers in the previous year, calculated for constant volumes and services in the basket.

### 3.2.2 Price Cap Regulation

The UK has the longest experience with price caps in Europe. Ofcom has been applying retail price controls since 1984 due to insufficient competition in the retail market to exert downward pressure on prices. Within the whole period of price control the incumbent's residential call prices have fallen by over 50% in real terms. Between 1984 and 2001 five distinct price control periods can be identified. The table below summarizes the price cap plans of BT from 1984 until 2001.

Duration of price control	X-Factor [RPI-X]	Services subject to price caps (price cap baskets)	Other main pricing constraints (price sub-caps)
1984-89	3.0	Line rentals; local and national calls	Residential line rentals (RPI+2)
1989-91	4.5	Line rentals; local and national calls	Line rentals (RPI+2); Connections (RPI+2); Private circuits (RPI+0)
1991-93	6.25	Line rentals; local, national and international calls; volume discounts	Residential and single line rentals (RPI+2); Multi-line rental (RPI+5); Connections (RPI+2); Private circuits (RPI+0); Median residential bill (RPI)
1993-97	7.5	Line rentals; local, national and international call; connections	All line rentals (RPI+2); All individual prices in basket limited to RPI incl. connection charges; private circuit basket (RPI)
1998-01	4.5	Residential connection subscription; local, national and international calls. Based on expenditure patterns of lowest spending 80% of residential customers.	Business assurance package, incl. subscription (RPI), analogue private circuits (RPI)

**Figure 2: Summary of BT's price cap plans (McCarthy Tetrault, Telecom regulation Handbook, Module 4 Price Regulation, 2000)**

In June 2002 Ofcom issued a Statement, setting out the conclusions of its review of competition in the provision of fixed telephony services. Ofcom continued to ensure that consumers are protected through a price control of RPI – RPI, focused on the expenses of the bottom 80% of residential customers and by extending the scope of the low user scheme to cover the lowest spending three deciles of residential customers (Ofcom, 2003, p. 164). Once a commercially viable wholesale line rental product would be fully implemented by BT in line with a determined product specification and actively used by service providers, the price control would be modified to RPI +/- 0%. The regulator required the incumbent to provide a new wholesale line rental product, which would enable new entrants to provide a single bill that covers both line rental and telephone calls. This was due to Ofcom's findings that competition was not yet effective although steadily increasing. The wholesale line rental had to be offered on cost-based and non-discriminatory conditions.

The last price cap in UK was applied in the period August 1, 2003 - July 31, 2006. In the context of the conclusion of the fixed narrowband retail services market review mentioned above, a price control of RPI - RPI (i.e. no increase in real terms) has been introduced on BT. BT had to ensure that its net revenues in any relevant year (i.e. including discounts) from all residential customers in the bottom 80% by spend are equal to or less than the net revenues received from those customers in the previous year, calculated for constant volumes and services in the basket. The control has been based on a basket of residential services in the following markets in the UK (excluding the Hull area) where BT has SMP: Analogue exchange line services, local calls, national calls, calls to mobiles, operator assisted calls, calls to retail international direct dialing (IDD) routes which are competitive at the wholesale level ("category A calls"), and calls to retail IDD routes which are not competitive at the wholesale level ("category B calls" on a route-by-route basis).

More than 20 years after price caps were imposed, on 1 August 2006, Ofcom removed all retail price controls that were applied to BT residential retail services<sup>6</sup> – including analogue exchange lines, local and national calls, calls to mobiles, international and operator assisted calls. Ofcom stated that the removal of retail price controls in 2006 was enabled by the rapid growth of competition and continued reductions in the cost of phone services to customers. This deregulation meant a move away from a 22-year price cap approach that was implemented at the time when BT was privatised (Ovum: UK Country Regulation Overview, 2007).

BT remained subject to price cap regulation for a very long time, but as illustrated above, there have been significant changes over the years. The X-Factor has been increased from 3% in the earliest period of price control to much higher factors in recent years. These adjustments have been a result of "better-than-expected performance" by BT. In other words, as in the case of Germany also in the UK price decreases in the early years were higher than required by the regulator. It might be argued that the regulator had to make experience with this form of regulation, particularly with respect to the determination of the X-Factor. Yet, it must also be assumed that BT would not have lowered its tariffs if it was not forced to do so. Since price reductions went beyond regulatory obligations, the conclusion can be drawn that this was due to competitive pressure on retail markets.

### 3.2.3 Tariff Rebalancing

In UK, rebalancing was conducted mainly in the eighties. Immediately after the start of the privatisation process in UK in 1984 it was evident that large cross-subsidies existed from long distance to local calls. At this time rental charges were low, reflecting the typical promotion of telecommunications among residential customers. Hence BT asked the regulator for permission to rebalance its charges on the grounds that they were not in line with the corresponding costs.

However, Ofcom (which was called OFTEL at that time) feared that rebalancing could be unacceptable for low-income families and rural areas, but on the other side, it could undermine the liberalisation process as BT could rebalance the tariffs only on the segments it expected competition. For this reason, in 1984 BT was constrained in the rebalancing of its line rental tariffs. A separate cap of RPI+2% on line rentals represented a sort of

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<sup>6</sup> Ex-ante price regulations of retail services for business customers were already removed some years before.

compromise, giving the freedom to achieve some degree of rebalancing, subject to non-discrimination among similar categories of users all over the country (Armstrong et al., 1994, p. 223). This price control took the form of a single basket that allowed BT relatively wide discretion to rebalance tariffs. The figures in the table below show that BT undertook a substantial and reasonably rapid rebalancing of its tariffs in the years prior to full market opening.

	1984/85	1985/86	1986/87	Cumulative change over three years
RPI - X-Factor	3.0%	3.0%	3.0%	-9.3
Local peak calls	1.6	-0.5	16.0	17.3
Rental charges	1.9	1.4	1.2	4.6
National peak calls	-18.2	-12.3	-18.0	-41.2

**Figure 3: Changes of BT's selected retail price 1984-1987 (Oxera Consulting, 2005)**

Nevertheless, the tariff level of line rentals and connections continued to be below costs and had to be subsidised out of call charges. In this period the regulator identified that line rental and connection charges needed to be in individual price caps. In assessing the need for individual price caps, the Director General acknowledged that a basket formula, unlike individual caps, provides flexibility to change different prices at different rates. As a result Ofcom did not change the single price caps and did not increase business line rental and connection charges by more than RPI+2%. In addition BT was required to introduce a low-user scheme mitigating the impact of the tariff rebalancing on qualifying users.

The price cap for the period comprised a further tightening of the single basket – from RPI-6.25% to RPI-7.5%. Within this basket BT was constrained by regulation in its freedom to set prices through a series of secondary caps, limiting the price increase of individual elements in the basket. The changes to the price in this period represented a strengthening of regulation, compared with the second price control. At the end of the nineties tariff rebalancing had been completed, but the regulator stated that line rental income is not yet sufficient to cover fully allocated costs. However, Ofcom believes that BT's residential line rental charge now covered the incremental cost of providing the line.

### 3.3 Czech Republic

#### 3.3.1 Retail Tariff Regulation

In the Czech Republic, retail prices for telecommunications services have been historically regulated by means of a maximum price control. Subject to this price regulation were among others the following services: Charges for the establishment of telephone connection, monthly rental, local, long distance and international calls, operator assisted services and inquiry services.

In 2001, CTO ("Czech Telecommunications Office") Price Decisions 01/US/2001 and 02/US/2001 established a price cap. Maximum prices set in the parallel Price Decision were a default price ceiling in case the incumbent would not submit to CTO prices calculated based on the price cap formula.

In 2006 the regulation by setting a maximum price was abandoned and cost orientation of prices for residential access was imposed. According to the Price Decision issued on May 2, 19<sup>th</sup> ITS European Regional Conference, Rome

2006 Telefónica O2 CR had to apply cost-oriented prices based on fully distributed costs and eliminate within one year the cross-subsidising of its lowest retail tariff “Mini” as under this tariff residential services are provided below cost. On May 14, 2008 CTU [adopted](#) final decision to remove cost orientation obligation as the Mini tariff plan had been withdrawn and the cross-subsidisation of retail prices no longer existed (Cullen International Quarterly Update CEE, January 2008).

### 3.3.2 Price Cap Regulation

Regulation of maximum prices of retail services provided by Telefónica O2 CR by means of a price cap was introduced in November 2001 by the CTO. The subsequent CTO Price Decision 02/US/2001 of December 2001 set out the details of the price cap formula for 2002. It allowed for a 3.7% increase of the overall price level of services constituting universal service, whereas the following price changes were allowed within individual sub-caps:

- monthly rental of standard residential main telephone line “Home Standard” – 72.7% increase
- monthly rental of low-usage residential main telephone line “Home Mini” – 8.6% increase
- monthly rental of standard business main telephone line “Standard” – 76.7% increase
- Public Pay Phones – 0%
- Operator assisted services – 0%
- Inquiry services – 6%.

The decision regulated local call prices for residential and business users by setting the maximum price.

The price cap formula applied to Telefónica O2 CR was  $PI+X-Z$  where;

- PI = Price Index of Industrial Manufacturers
- X = Correction Coefficient
- Z = Unavoidable Cost Increase,

unlike in most other countries, where the CPI (Consumer Price Index) was applied.

The price cap regulation was seen to be applied for a temporary period. CTO saw that price cap regulation should be withdrawn as soon as competitive conditions were established in order to enable price flexibility in the future. The price cap has been abandoned in 2005 when CTO adopted the Price Decision No. 01/2005 setting maximum retail prices for voice telephony services regulated under the universal service regime. Today, price cap regulation does not apply in Czech Republic any longer due to the results of strong price control in the past and effective and supportive remedies such as cost-orientation, accounting separation and carrier selection.

### 3.3.3 Tariff Rebalancing

In 1994, the Ministry of Transport and Communication recognized the rebalancing as a crucial condition needed to be set in order to pave the way for a full liberalization of telecommunication markets. Therefore, the new National Telecommunication Policy initiated

rebalancing during 1995-2000 for monthly line rental, local, long distance and international services.

Telefónica O2 CR was rebalancing its line rental prices by minor increases in course of several years, as is shown by the figure below. Prices were raised significantly for the first time in 2002. At that time Telefónica O2 CR also introduced a distinction between business and residential rental. However, no further increase of the monthly line rental price has been permitted by CTO up till 2005. The inability to continue rebalancing during this 3-year period has been criticized by Telefónica O2 CR (Czech Telecom Annual Reports 2003, 2004 and 2005).

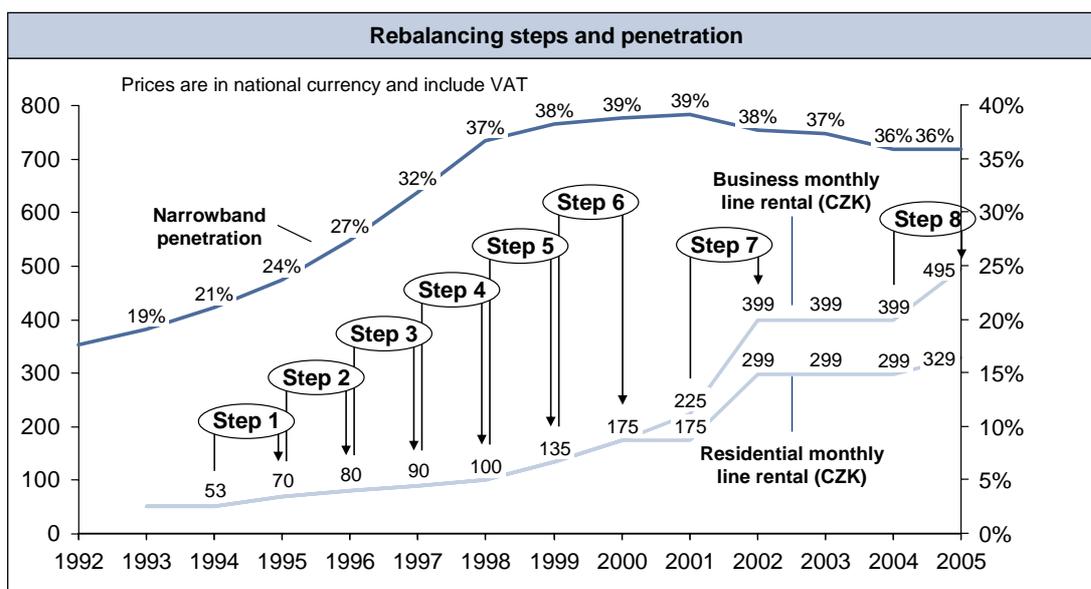


Figure 4: Rebalancing steps and penetration development<sup>7</sup>

As shown by the exhibit below, the price of local calls almost tripled while long-distance calls raised temporary before heavy competition forced prices down in 2003/2004. In 2002, Telefónica O2 CR increased monthly line rental for residential subscribers by 73% and by 79% for business subscribers. The tariffs for international calls dropped significantly between 2000 and 2004, by 65% for residential customers and by 74% for business subscribers (Teligen (2004), Report on Telecoms Price Developments from 1998 to 2004).

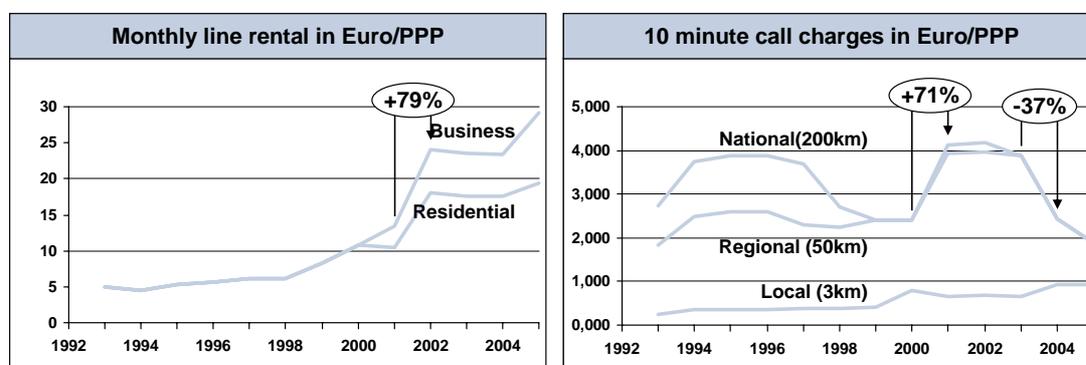


Figure 5: Retail price development

<sup>7</sup>Source: ITU database, Teligen Report, Eurostat, Detecon analysis

With the full liberalization, Telefónica O2 CR introduced new tariff schemes for different groups of customers from April 1, 2001 offering trade-offs between reduced call charges and increased fixed charges. A large variety of tariffs and bundled packages which were tailor-made to subscribers calling habits was offered. Some packages were disputed by competitors, in particular bundling of monthly rental with free minutes. After a lengthy dispute, in October 2005, the Czech Antimonopoly office UOHS imposed a fine of CZK 205 million (€ 7 million) on Telefónica O2 CR for abusing its dominant position. Unregulated tariff packages whereby the monthly rental included free minutes of calls and reduced telephony prices to Telefónica O2 CR's subscribers opting for its Internet Express service, were deemed to constitute an unlawful bundling.

### 3.4 Hungary

#### 3.4.1 Retail Tariff Regulation

In November 2003, Hungary adopted a new Act on Electronic Communications, replacing the old regulatory framework for telecom markets. The Pricing Act and numerous ministerial decrees set out the details of price regulation. Since 2007 retail price regulation applies only to monthly line rental. For this service the regulator NHH proposed to carry forward the existing regulatory obligations prohibiting the operators from applying unjustifiable excessive prices (defined as an annual price increase greater than the consumer price index) and requiring the operators to offer CS/CPS. As to the retail markets for fixed local, national and international calls NHH has not imposed any retail obligations beyond the requirement to offer CS/CPS. NHH found that competition has become more intensive since the first round market analysis carried out in 2005 (Cullen International, Market Analysis Database).

#### 3.4.2 Price Cap Regulation

Already since 1993 tariff regulation in Hungary has been based on the price-cap method. In 1993 a price cap was introduced, which assumed a productivity gain of 0 percent (CPI-0%). In 1997 the productivity factor was raised to 2 percent (CPI-2%). In 2001, after taking into account a 2.9 percent Magyar Telecom's productivity factor and a 2.9 percent correction factor, Magyar Telecom's aggregate price cap for tariff increases in 2001 was 6 percent. The correction factor was applied in order to compensate for the under-estimated consumer price index defined by the government as 6 percent for 2000, while the relevant October to October index was 10.9 percent. The correction factor was two-thirds of the difference (Magyar Telecom, 2001).

In February 2002 the price cap regulation was redefined. A new decree set forth price regulation rules for three years in advance, from 2002 to 2004. This decree, in line with the new Act on Electronic Communications, has been modified to limit the scope of the price regulation to the maximum tariffs of universal services. The aggregate price cap was still set by reference to the forward-looking consumer price index forecasted by the Government, determined for 2002 as 7 percent, and decreased by the productivity factor (3%) minus the correction factor. The residential price cap was no longer distinguished. Tariff rebalancing was regulated by setting the maximum increase of the residential main line subscription fee

to an average 5.2 percent in 2002 and an annual 10 percent in 2003 and 2004. Tariff rebalancing was also restricted by setting a maximum of 5 percent increase for local usage fees in 2002, which was lifted to 6 percent in 2003 and 2004. Also in 2002 an access deficit financing regime was introduced according to which a surcharge of maximum 2 HUF (0.44 Eurocent; exchange rate 2002) per minute could be applied on all call origination and termination traffic until December 31, 2004. This access deficit financing regime was designed to help reducing the potential losses due to incomplete rebalancing (Magyar Telecom's Annual Report 2003).

Since February 2005, the price cap is restricted to retail prices for access to the public telephone network at a fixed location for residential and non-residential customers. It does not apply to retail prices for fixed local, national and international calls for residential and non-residential customers. Retail price increase cannot exceed the inflation rate (assumed productivity gain 0%).

### 3.4.3 Tariff Rebalancing

The Act in 1990 prepared for rebalancing. The Telecommunication Act in 1992 led to the rebalancing scheme and a concession contract agreeing a price cap. As discussed in the previous chapter, the regulator defined the price cap targets allowing for rebalancing. The following table summarizes regulatory limitations of price changes.

	1994-1997	1998	1999-2000	2002	2003- 2004
Monthly line rental	+5%	+0,5%	+10%	+5,7%	+10%
Local and regional	+7%	+5,7%	+6,4%	+5%	+6%
National and international	-4%	-4%	-8%		

Figure 6: Retail price changes (Decree 31/1997 (XII.20), Detecon analysis).

The price caps exerted little downward pressure on tariffs, but allowed for rebalancing. Until Magyar Telecom accomplished the rebalancing in 2005, its monthly line rental was raised in 7 steps. As shown by the exhibit below, during the major rebalancing period in 1995-2001, the monthly line rental increased by 170% for business subscriptions and by 125% for residential customers in PPP terms. In PPP terms, local and regional call charges increased slightly. National long-distance call charges were more than halved from 1994 until 2003 (ITU database, Teligen Report, Detecon analysis).

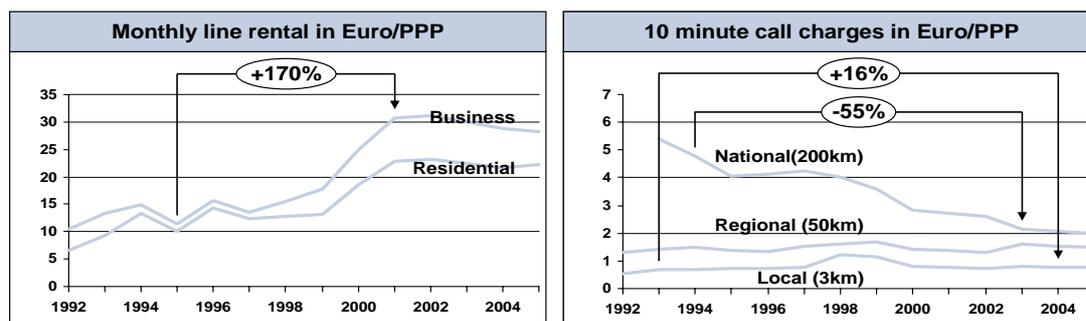


Figure 7: Retail price development

Prices of the international call basket fell for residential and business subscribers by 44%. The national call basket stayed relatively constant. Between 2000 and 2005 residential national usage costs have increased by a slightly higher rate than those of business customers (Teligen (2004), Report on Telecoms Price Developments from 1998 to 2004).

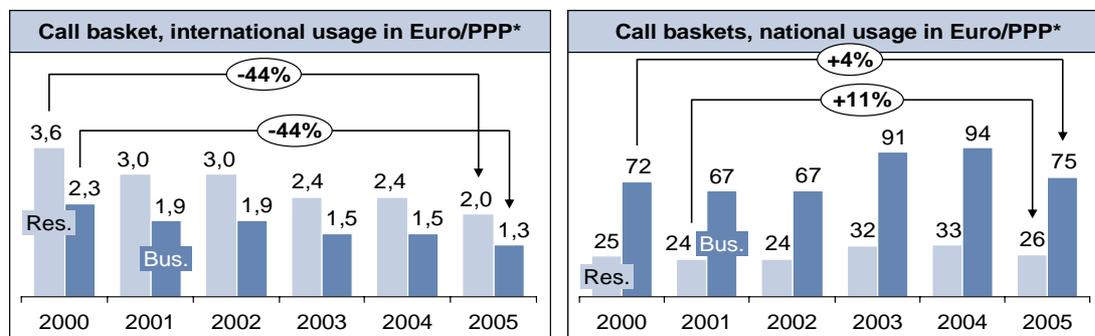


Figure 8: National and international call baskets (VAT excluded, 2005 exchange rate)

## 4 Has Price Cap regulation been successful?

The historical review of price regulation on retail markets shows that regulation has become softer over years. Regulatory authorities were moving from setting the maximum price through price caps to price notification requirement until they eventually fully phased out any retail price regulation. As competition becomes stronger, regulators rely on wholesale market regulations and carrier selection obligation, which are both important safeguards ensuring effective competition on the retail markets. Hence, in the most advanced telecommunications markets with a long regulatory track record sector specific retail tariff regulation was or is being removed. Retail markets in those countries are now subject to general competition law.

This is the case for example in UK, where after 22 years of regulation, all ex-ante price control was removed in 2006 on the grounds that relevant markets became competitive. In Germany, ILD calls markets are no more regulated since 2006 and on the remaining retail markets for access, local and national calls only advance notification and / or ex-post regulation apply. In the Czech Republic, all retail markets are considered competitive seven years after the full liberalization. In Hungary, price control in the form of a price cap remained only for retail access services whereas all call services have been deregulated.

What can we learn from this when applying price regulation to countries with less liberalised telecom markets? Has price cap regulation been effective in the past? Did the approach prevent incumbents from abusing their dominant position, i.e. by not bringing down retail prices to competitive levels? Did it ensure the affordability of certain services?

### 4.1 Preventing the abuse of market power

As has been said above, one purpose of the price cap regimes was to prevent the abuse of market power by incumbents. Before the liberalisation of the telecom market national monopolists were considered to charge prices far above costs, in particular for international and national long distance calls. When voice telephony markets were opened there has been a big price drop in these market segments, offset to some extent by increased charges for

monthly line rental and connection. Against this background, one may conclude that price caps have been very successful in view of the objectives aimed at.

One reason for the huge downward pressure on prices for all type of voice calls is certainly that the average cost of a unit of telecommunications output has been reduced significantly over the last 10 years, due to greater economies of scale and decreasing prices of telecommunications equipment over time. Yet, the cost reduction triggered only a potential for lower tariffs. In order for this to take place firms must either react to competitive pressure forcing prices down to costs or they must be subject to price controls. Because price cuts for voice telephony services by far exceeded those prescribed by the price cap regime, they are to a large extent the consequence of competition between operators. For instance, in Germany the deregulation triggered a rapid growth in competition: A large number of new operators and/or service providers have succeeded in entering the German voice telephony market since its opening to competition almost one decade ago.<sup>8</sup> These service providers were rather successful in shifting market shares from DT to them.

When analysing the emergence of intense competition on German retail markets for voice telephony one needs to take a closer look at the various regulatory measures on wholesale markets. Right from the start of liberalisation DT was obliged to provide carrier selection and pre-selection and has been subject to obligations of access, cost orientation and non-discrimination in the fixed wholesale markets for call origination, termination and transit. Comprehensive regulatory provisions on Local Loop Unbundling (LLU) allowed alternative operators to offer their customers the subscriber line. Moreover, barriers to switching suppliers hardly existed for customers, which is why competition on voice telephony markets is not hindered by entry barriers. One reason for the very low switching costs when using call-by-call has been the introduction of third party billing. Thereby, a caller using carrier selection on a call-by-call basis would pay the service provider via their normal telephone bill of DT, even if it was for just one call. This rule made it very easy for the customer, as he only had one bill, and easy for the service provider who did not have to set up separate payment and credit systems for their customers. From the new entrants' perspective, the rules on third party billing represent a very low barrier to market development. This system helped to drive competition.

In such a competitive environment the price cap system on end-user tariffs used in Germany had very little effect on actual market developments. Price cuts in the competitive national long distance and international call markets took place anyway and were – driven by market forces – much larger than required on the basis of price cap regulation. In other words, policy driven price rebalancing was not really necessary and had a lower impact on the telecoms sector because of the early and strong occurrence of competition after opening the market. Within a rather short period, retail markets became sufficiently competitive which is why ex-ante price regulation of these markets has been reduced significantly. Thus, in view of this objective the price cap system in Germany was not very effective.

The objective of preventing the abuse of market power was more successfully achieved with price cap regimes in countries where fixed telecom markets were not fully liberalised. For instance, in Hungary the telecommunications market was not completely opened to

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<sup>8</sup> Today there are more than 150 alternative providers of telephony services in Germany.

competition until the end of 2001. The incumbent fixed operator Magyar Telekom had a monopoly on the provision of domestic long distance and international call services and only some local operators had a few fixed subscribers (around 10%). Wholesale services were not subject to strict regulatory rules, allowing the incumbent to exert market power on retail markets. Here, prices were reduced only to the extent as it was prescribed by the price cap.

Also in the UK the situation was different from the one in Germany. BT conducted retail rebalancing between 1984 and 1997. During this period the fixed telecom markets were gradually liberalised with only a limited number of new operators being allowed to enter the market. Accordingly BT was able to keep a large market share of up to 90% for telephone services (see figure below). This is partly because competitors were given only limited wholesale access rights (interconnection but not LLU). Under such circumstances a price cap regime can be effective in the sense that it forces the incumbent to bring down its tariffs for voice services such as international and long distance calls.<sup>9</sup> BT's retail prices were hence significantly more cost-reflective prior to the emergence of fierce competition in the late 1990s when markets were fully liberalised. In the following years of price control the level of competition in the provision of fixed line calls steadily increased. Consumer had a wide range of choice from other telecoms suppliers and benefited from lower call and connection prices. BT's market share was gradually being eroded as it is illustrated in the figure below.

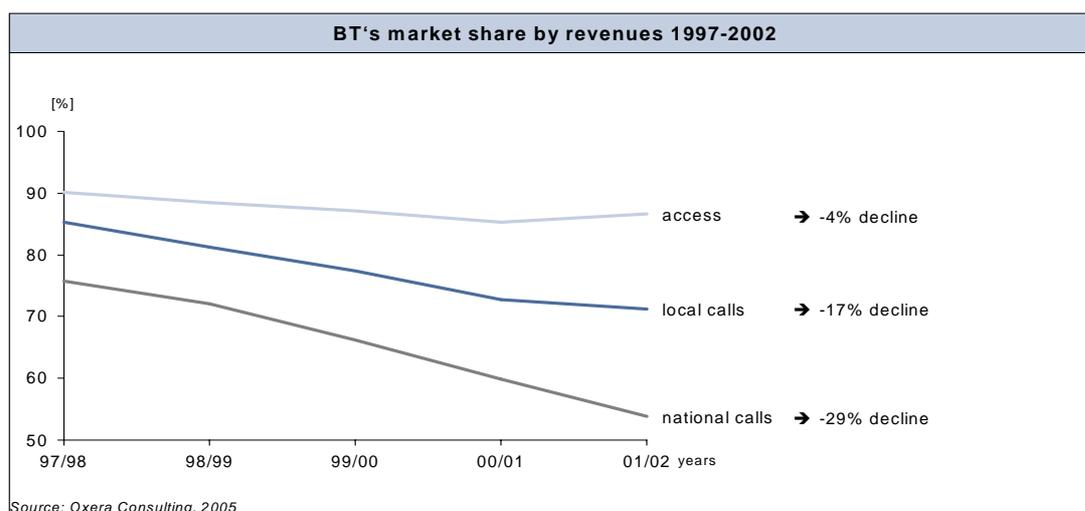


Figure 9: BT's market shares by revenues

#### 4.2 Rebalancing and Affordability

As to services which originally were charged well above costs, evidence suggests that operators rebalance quickly, no matter whether regulatory provisions require doing so or not. This is because in a competitive environment they need to adapt to market conditions anyway. In most benchmark countries, rebalancing was at most facilitated by price caps. Price cap regimes in UK and Hungary enabled accomplishing full rebalancing and went in line with incumbents' requirements and ultimately with needs of the market regarding a

<sup>9</sup> Yet, even in the UK the price constraints given by the Price CAP regime were not fully used by the incumbent BT. For instance, the sub-cap on line rental allowed a real increase of 2 % per annum. However, from 1984 – to 1992 line rental increased in real value by 2.6 % in total. This price increase was thus significantly lower than allowed by the price cap. (Armstrong et al., 1994, pp. 224).

balanced price structure.

As to services which originally were charged well below costs, the general trend observed in the benchmark countries has been a continuous increase of monthly rental (and partly local call prices) towards cost based levels. Thereby the increase was usually as high as a sup-cap allowed for. For instance, in the UK between 1984 and 1987 the maximum increase in prices of local calls took place and reached more than 17% in real terms. In Germany and the Czech Republic, price caps partially limited incumbent's possibility to rebalance tariffs. For example, due to the limitations of the line rental increase by Deutsche Telekom given by the price cap, Deutsche Telekom was imposed a high penalty by the European Commission. Just this legal case ultimately led the regulator allowing line rental increase, which terminated the price squeeze penalized by the European Commission. The example shows that the affordability constraint is an ongoing obstacle to tariff rebalancing, having negative consequences for the development of competition on telecom markets. If a government intends to ensure affordability it should therefore apply other measures (i.e. social benefit schemes) to achieve this objective.

While in liberalized markets rebalancing is necessary to some extent to bring the price of retail access in line with costs, it has to be acknowledged that there are also limits to rebalancing. Evidence is given by the Czech Republic and Hungary, where an increase of monthly rental and local calls charges had negative effects on fixed line penetration. As is shown by the figure below, in Hungary major rebalancing efforts (1996-2000) took place before mobile competition became dominant. Accordingly, the fixed line penetration grew from 1994 until 1999 despite of rebalancing. Yet, the tariff changes in 2001 and 2003 together with increasing mobile competition had a strong negative impact on number of subscribers. Also in the Czech Republic fixed penetration grew from 1994 until 2000 despite of rebalancing. Yet, since the turn of the new millennium the number of traditional fixed lines in the Czech Republic has fallen dramatically. The number of the incumbent's fixed subscribers fell from 3,842,000 in 2001 to 3,661,000 in 2002 and 3,585,000 by 2004 (Telegeography, 2007). By 2007 Telefónica O2 CR only had 2.1 million fixed subscribers. There is strong evidence that the fixed tariff changes in 2001 and 2002 had contributed to the fall of fixed line penetration. However, the huge churn of subscribers ever since is also to a large extent due to strong fixed-mobile substitution, accelerated by an extensive use of wireless technologies for both data and voice in the Czech market. The country penetration rate reached 120% in 2006 making Czech Republic one of the counties with very high mobile penetration rates in Europe (Telegeography, 2007).

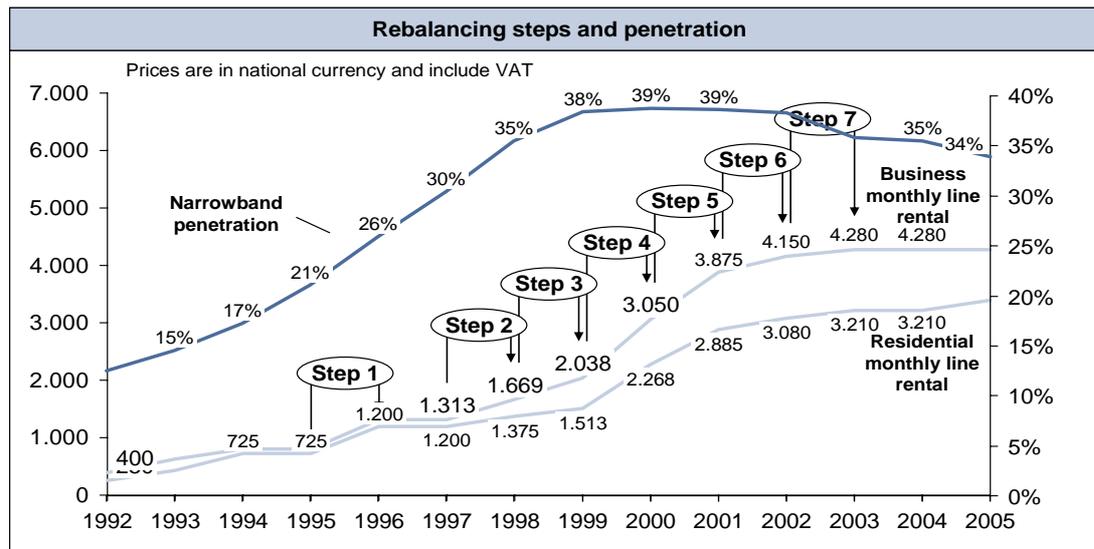


Figure 10: Rebalancing steps and penetration in Hungary<sup>10</sup>

Today, fixed operators all over the world face strong mobile competition. In such a case the possibility of tariff rebalancing by smoothly increasing tariffs for some services is limited due to churn of fixed subscribers to mobile operators. The take-up of new technologies such as IP and mobile telephony provides other alternatives for consumers and further reduces the possibility to rebalance. For instance, Magyar Telekom in Hungary faced competition by VoIP providers, which as early as in 2002, processed half of international call minutes. Such constraints will be even stronger as tariffs for mobile telephony continue to decline. Hence, soft rebalancing grows in importance. For instance, incumbents in Hungary and Czech Republic were able to compensate for the losses of narrowband subscribers by targeted retail offers and marketing campaigns and by focusing on broadband roll-out. Thus, competition and in particular fixed-mobile substitution makes rebalancing more difficult.

Another trend to be observed is that retail tariffs continue to change. However, this is not always attributable to an ongoing rebalancing but rather to commercial pricing decisions of incumbents. While the Czech Republic proceeds with increasing its local call rates, countries which have accomplished retail tariff rebalancing such as Hungary, Germany or UK, are decreasing their local call charges. This is due to effects of competition on the price level on liberalized markets with functioning market forces. The competition continues to drive the prices of domestic and international call rates down.

<sup>10</sup> Source: ITU database, Teligen Report, Magyar Telecom, Eurostat, Detecon analysis

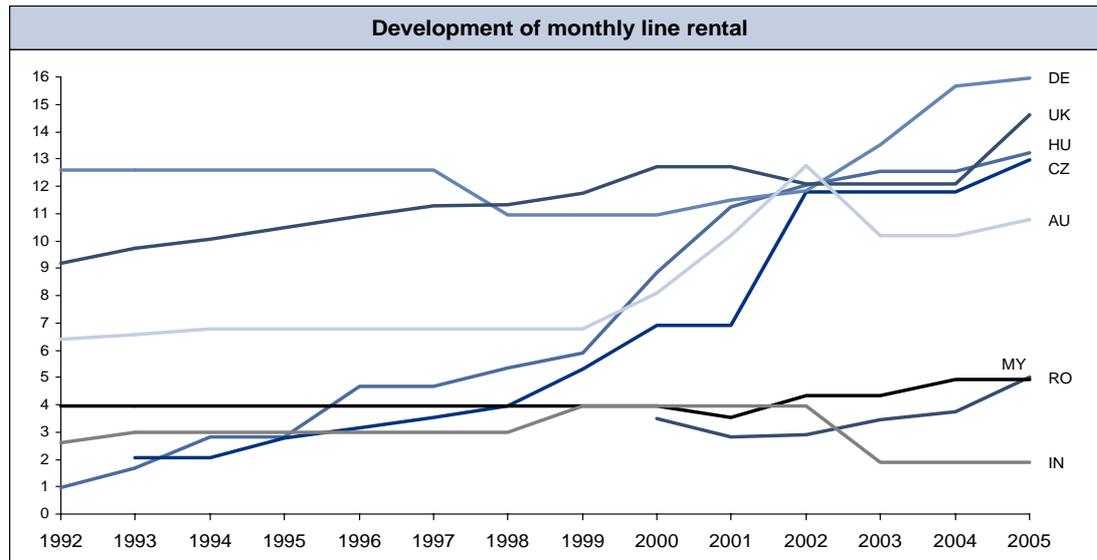


Figure 11: Monthly line rental comparison

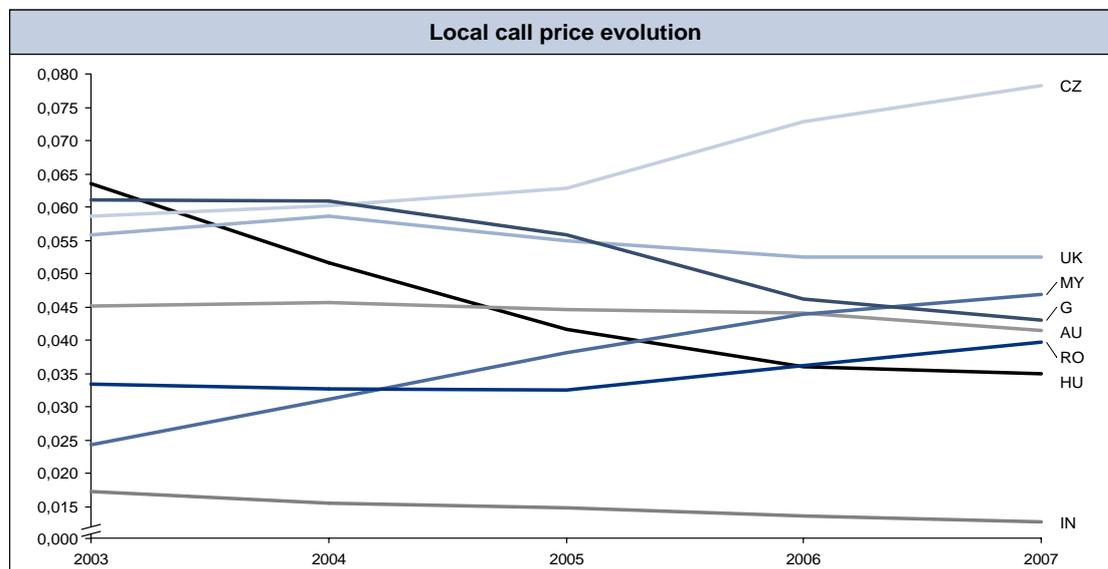


Figure 12: Local call charge comparison

## 5 Regulatory implications for other countries

The economic rationale for tariff regulation is to ensure that operators with a dominant market position can not abuse this position by offering prices above a level that can be found on truly competitive markets. Before regulating any tariffs regulators should consequently investigate whether market dominance exists on a given market. In case of significant market power on a retail market a regulator should give priority to wholesale remedies. As part of our benchmark analysis we have demonstrated that in countries with comprehensive regulatory rules for network access, alternative operators were able to freely enter the market and compete with the incumbent on equal terms. This has led to fastest decreases of the price of an average service basket of telecommunication services. An effective wholesale regulation of non-competitive market segments (i.e. access and interconnection rules including cost orientation of wholesale prices) is therefore the main measure to ensuring competition on

retail markets. Among the most important aspects to be addressed within a coherent regulatory framework are:

- ❑ a licensing regime that allows potential competitors to freely enter any segment of the telecom market
- ❑ access to network services (including interconnection and local loop unbundling) under equitable and non-discriminatory terms and conditions,
- ❑ a tariff regime setting of cost-oriented wholesale rates on an unbundled basis, including co-location of interconnect equipment if requested, and
- ❑ regulatory provisions on other issues such as number portability, and carrier selection on a call by call and pre-selection basis.

Should a country be able to fully adopt corresponding rules, competition on retail markets will develop within a very short time. But also in countries where neither fixed telecom markets have been fully liberalised, nor comprehensive wholesale regulation is in place, it is no longer possible to charge tariffs for international and national calls which are well above costs. This is because the situation is in some ways different from the one in Western countries when they liberalised their telecommunications markets about 10 years ago: Mobile services are increasingly becoming substitutes for fixed services with prices for calls often being lower than fixed calls, thus increasing competitive pressure in the fixed sector. Also, telecom markets have gone through some technological revolutions (shift from PSTN towards IP networks to mention one of the technological changes), which have in turn a strong effect on the economic shape of telecom markets and therefore effect regulation. For instance, VoIP service providers such as Skype are able to offer substitutable services at very low prices. For this reason competitive pressure will steadily increase in the international call segment, but also in other (local and national) call segments.<sup>11</sup> Moreover, even the monthly subscriber charge is increasingly becoming subject to competitive constraints. The cases of Czech Republic and Hungary demonstrate that the already low penetration rates for fixed lines have gone further down when tariffs were substantially increased. In other words, with regard to the original goal of applying the price cap regulation in order to prevent market dominant incumbents from overcharging end-users, there may not be an urgent need to apply regulatory price control to retail markets.

Yet, a country may (for political or administrative reasons) not be willing or able to quickly adopt comprehensive regulatory rules for wholesale markets. Both the establishment of such rules and its implementation are time consuming processes requiring substantial resources. It might be the case that such implementation takes several years in a country. Against this background it is unlikely that highly competitive retail markets on a broad scale will develop in the short run. Some kind of regulatory action on retail tariffs may then be necessary at least for a transitional period. The shape of such regulatory action depends on two critical issues:

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<sup>11</sup> Even in countries where legal barriers for market entry exist, internet telephony cannot be fully avoided. For instance, while in some countries computer-to-phone and phone-to-phone VoIP service have not been approved yet, the ISP provision of overseas calls from computer-to-computer on VoIP is still possible.

1. The extent to which rebalancing is needed, and
2. The type of price regulation.

Ad 1) If prices for different retail services are strongly unbalanced some form of **rebalancing** fixed line telephony services needs to take place. This is critical in fostering competition. If prices in rural and remote areas are kept artificially low through continued cross-subsidization, these areas will be less likely to attract competitive service provision. Moreover, if retail rate rebalancing has not been fully implemented in a country, cross subsidization of the monthly rental and local calls by revenues from other services will no longer be possible once all markets are liberalized. This situation would harm incumbents. It is therefore necessary that regulatory measures pursue the goal of rebalancing retail tariffs.

Ad 2) The **type of price regulation** depends on the extent of competition in the market. As the market for a service becomes increasingly competitive, the level or scope of regulation in that market should be reduced proportionately. Therefore, the level of price (or any) regulation should be inversely related to the degree of competition. Based on the findings of the market analysis of relevant markets, a regulator may implement a price cap regime for a transitional period. It is a transparent and predictable instrument which has been favoured by most regulators in the world. Thereby it is important that the regulatory authority plays a supportive role in rebalancing and allows incumbent to increase line rental (and eventually local call prices) to the cost based level over time. Price caps should define basket of services in such a way that the incumbent can adapt price changes to the market and achieve rebalancing as effectively as possible. The price cap should be lenient enough to allow for increases of monthly line rental proportionally to the drop in prices of other services. The most sensitive services can be regulated by a special sub-cap.

Once retail markets are considered to be sufficiently competitive, the regulator should quickly adapt a softer approach and define remedies whereas compliance with these remedies would be controlled ex-post. A practical example of such an approach is that the regulator would enforce the cost orientation requirement by application of cost based tariffs on upstream markets (ULL monthly rental and IC prices) while applying antidumping measures such as minimum prices on retail services (downstream).

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