

Annexes

to the

COMMISSION STAFF WORKING DOCUMENT

Evaluation of the Performance of Network Industries Providing Services of
General Economic Interest

2005 Report

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Working Paper of the Services of
Commissioners Almunia and McCreevy
in cooperation with the services of
Commissioner Kyprianou

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Introduction

These annexes provide the factual and analytical bases supporting the second horizontal evaluation report on network industries providing services of general economic interest. In accordance with the methodology adopted by the Commission (COM (2002) 331), section 1 considers the key developments in the legislative and competitive framework since 2004. The assessment of market performance considered in section 2 includes the evolution of the market structure, mainly in terms of market shares and access, the evolution of prices, cross-country comparisons of prices, employment and productivity, resource productivity and eco-efficiency and finally investment in network industries supplying services of general economic interest. The performance of the ten new Member States relative to the old Member States (EU15) is considered in section 3. Section 4 discusses the results of a study carried out for the Commission by Copenhagen Economics on the effect of market opening on performance as measured by changes in prices and productivity. Finally, section 5 sets out the results of consumer satisfaction surveys.

1. The evolution of the competitive and legislative framework

Three key developments in the area of services of general economic interest were the follow-up to the 2004 White paper, the work of the Commission on public-private partnerships, and the “Altmark package”.

The 2004 White Paper on services of general economic interest drew a number of conclusions from the public consultation that was launched by the publication of the Green Paper in 2003.¹ The results of the public discussion on the Green Paper demonstrated a general consensus on the need for high-quality services of general interest. The White Paper highlighted that the division of tasks and areas of competence between the Union and the Member States leads to a shared responsibility. However, details such as the definition of which services will be provided and the delivery of those services must remain the responsibility of the Member States. In addition, based on the results of the public consultation, the White Paper highlighted that services of general interest need to be organised and regulated as closely as possible to the citizens that rely on them, and that open and competitive markets are compatible with high quality, accessible and affordable services. The White Paper also stressed that services of general economic interest are essential for the promotion of social and regional cohesion. As regards evaluation, the current transparent and systematic evaluation and monitoring approach is vital to maintain and improve these essential services.

The European Economic and Social Committee² and the Committee of the Regions³ adopted their opinions on the White Paper in February 2005. Both bodies were supportive of the general principles that were set out in the White Paper, but at the same time, both called for an overarching legal framework for services of general interest at the European level. The role of services of general interest has been an important issue in the debate on the proposed Services Directive, both in the European Parliament and in other forums. However, the European Parliament has yet to give its views on the Commission’s White Paper.

Following the Green Paper on public-private partnerships (PPPs), the Commission published a Communication in November 2005. It proposed to develop, among other initiatives, an interpretative communication aimed at clarifying the application of public procurement rules both for the establishment of mixed capital entities intended to perform services of general economic interest and for the participation of private firms in existing public companies which perform such tasks. Preparation of the interpretative document on PPPs is planned for 2006.

¹ COM(2004) 374.

² CESE 146/2005

³ ECOS-040 / CdR 327/2004

On the basis of the Court judgment in the Altmark case, in July 2005 the Commission adopted a set of documents known as the “Altmark package”, which relate to the financing of services of general economic interest. The package reduces the administrative burden on providers of services and increases legal certainty, in particular for small and local providers, who are exempt from the notification requirement provided that compensation for the public service covers only the true cost of its provision plus a reasonable profit margin.

1.1. Telecommunications

The regulatory framework for telecommunications builds on principles of EU competition law and takes account of the convergence of technologies.⁴ It provides technologically neutral regulatory principles which, when fully operational in the Member States, will help the market to deliver choice and value for consumers.

The Commission has promoted implementation of the EU framework vigorously through reporting, cooperation with Member States, and, where necessary, infringement proceedings.⁵ Additionally, the Commission has investigated under competition rules the wholesale international roaming tariffs charged between mobile network operators by UK and German operators. It has also urged regulators to complete analyses of the markets for call termination on individual mobile networks and wholesale international roaming as quickly as possible.

The EU15 Member States were required to transpose the core EU regulatory framework for telecommunications by 24 July 2003, and the ten new Member States by 1 May 2004. By July 2005, twenty-four Member States had transposed the regulatory framework, and a further fifteen Member States had already notified regulatory measures. The Commission decided to initiate the first bundle of infringement proceedings in 2004. Following publication of the 10th Implementation Report, further infringement proceedings were opened in 2005. Last year, these proceedings mainly concerned the powers of National Regulatory Authorities to carry out market analysis, number portability and transitional regime questions. In 2005, proceedings were mainly concerned with the independence of the NRA, interconnection regimes and protection against spam. The Commission will continue to initiate proceedings for non-conformity and incorrect application cases.

1.2. Electricity

The new Electricity Directive (2003/54/EC) is designed to speed up the liberalisation of the electricity sector. In particular, the directive requires market opening to all non-household customers by 1 July 2004 and to all customers by 1 July 2007. This new Electricity Directive (2003/54/EC) was due to be transposed by Member States by July 2004. A majority of Member States have already fulfilled many of the requirements of this directive. However, as of September 2005, Greece, Luxemburg, Portugal and Spain had still not fully notified the Commission of the legal measures taken for the purposes of transposition. Several Member States are reported to have achieved 100% market opening in electricity (see Table 13).

⁴ The new regulatory framework consists of six Directives and an important Decision: the Framework Directive (outlines the general principles, objectives and procedures); the Authorisation Directive (replaces individual licences by general authorisations to provide telecommunications services); the Access and Interconnection Directive (sets out rules for a multi-carrier marketplace, ensuring access to networks & services, interoperability, and so on); the Universal Service Directive (guarantees basic rights for consumers and minimum levels of availability and affordability); the e-Privacy or Data Protection Directive (covers protection of privacy and personal data communicated over public networks); the Directive on Competition (consolidates previous liberalisation directives) and the Radio Spectrum Decision (sets out the principles and coordination procedures essential for the development of a coherent EU radio spectrum policy).

⁵ See the Commission's 10th implementation report on the telecommunications regulatory package 2004, COM(2004) 759

In November 2005 the Commission published the **report on the functioning of the Internal Market in electricity and gas**. The report confirmed that cross-border competition was not yet sufficiently developed to provide customers with a real alternative from the nationally-established suppliers. Key indicators in this respect were the absence of price convergence across the EU and the low level of cross-border trade. It was due to the failure of Member States to implement the second electricity Directives on time or with sufficient determination. Furthermore, inadequate use of existing infrastructure and - in the case of electricity - insufficient interconnection between many Member States prevents real competition from developing, despite the political commitment of the European Council made in 2002 to achieve an import capacity of at least 10% of internal consumption. In addition, the gas market continues to suffer from a lack of liquidity of both gas and transport capacity. The Commission will carry-out detailed country-by-country reviews of the effectiveness in practice of legislative and regulatory measures in connection with market opening, including specific additional national measures. This will lead to a report by the end of 2006 and, if necessary, proposals to redress any remaining requirements.

In June 2005, the Commission launched a sectoral **inquiry into the electricity and gas sectors** aimed at identifying any possible distortions of competition in these sectors.⁶ The initial findings published in November 2005 highlight the areas where gas and electricity markets are not functioning well. These are the following five areas:

- gas and electricity markets in many Member States continue to be concentrated, creating scope for incumbent operators to influence prices;
- many wholesale markets are not liquid either because of long term contracts (gas) or because companies are active both in production and in the retail market limiting the development of wholesale markets (electricity). There is also an inadequate level of unbundling of network and supply activities ;
- barriers to the cross border supply of gas and electricity prevent the development of integrated EU energy markets;
- a lack of transparency on the markets that benefits incumbents and undermines the position of new entrants. Lack of transparency also aggravates the mistrust;
- there is little trust by industry and consumers in the specific price formation mechanisms on energy wholesale markets and prices have increased significantly.

A preliminary report will be presented in early 2006. The final results are expected for the second half of 2006.

1.3. Gas

The new Gas Directive (2003/55/EC) was adopted on 26 June 2003 and sets out further measures to liberalise the gas sector. As in electricity, the new gas directive requires market opening for all non-household customers from 1 July 2004 and for all customers from 1 July 2007. Many measures have been taken by Member States to implement the directives but there are still obstacles to competition, such as the concentration of upstream players. Five Member States have not yet notified transposing measures to the Commission: Ireland, Luxembourg, Spain and Estonia.

The European Union has recognised that further measures are necessary to ensure the completion of the internal market and the development of effective competition. In particular, the Commission is taking steps towards introducing more regulatory measures. The Regulation on conditions for access to natural gas transmission networks has recently been adopted and will enter into force in July 2006.

⁶ For more information on the enquiry, please see the following website :
http://www.europa.eu.int/comm/competition/antitrust/others/sector_inquiries/energy/

1.4. Transport

Efforts at EU level to liberalise the transport sector have been strongest in the area of rail transport.⁷ The opening of the market for the international transport of goods by rail has been a reality since 15 March 2003 on most international lines. From 1 January 2006 it will be extended to the entire rail network. One year later, on 1 January 2007, it will be the turn of national markets to open up to competition. For passenger transport, the “third railway package”, presented by the Commission in March 2004, proposes a progressive opening-up of the market.

The Commission also hopes to remove three operational obstacles to the European railway area. First, the weaknesses in interoperability between networks and national railway systems will be addressed (rail electrification systems in Member States are different, as are the signalling systems, etc.). The second barrier is the diversity of rail traffic rules, and, in particular, safety regulations, which the Commission proposes to harmonise through the introduction of common objectives and common safety methods. Finally, physical interconnections have to be ensured, notably concerning TEN railway cross-border bottlenecks. Provision has been made for measures to accompany the different phases of the opening-up of rail and passenger transport to competition. Community directives provide, as with electricity and gas, for different organisational entities to be responsible for transport activities and for infrastructure management. This involves guaranteeing non-discriminatory access to the rail networks of the different operators. The essential functions of sharing railway capacity, collecting fees for the use of the infrastructure and granting licences to companies are all areas requiring regulatory attention. The emergence of competing operators in rail is still very limited and there is an overwhelming dominance of incumbent companies.

Finally, in July 2005, the Commission adopted a regulation on public transport services by rail and by road (COM (2005) 319 final). It introduces clear and simple rules for calculating the financial compensation to be granted to public transport operators. Such compensation must reflect actual costs plus a reasonable profit. It also offers the legal certainty needed to develop high quality public transport and to help improve mobility and the environment, mainly through limited duration contracts with operators and also through transparent and competitive tendering processes. By complying with these rules, local authorities will not need to notify compensation under the State aid rules. This is consistent with the measures the Commission adopted earlier in July 2005 in the “Altmark package” for public services in other sectors of activity.

1.5. Postal services

An evaluation report on the application of the Postal Directive was published in March 2005 [COM(2005) 102]. It summarises the main conclusions drawn from the analysis provided in the Commission Staff Working Paper [SEC(2005) 388], which assesses in detail the overall transposition of the Postal Directive in the Member States, the application of key elements of the Directive as well as general market trends (including economic, technical, social, employment and quality of services aspects). In addition, it provides an outline of the perspective and recommendations for future policy development.

The report confirms that overall the reform of the postal sector in the EU is well on track. Though not yet completed, it has already resulted in a number of significant improvements, notably as regards quality of services, improved business efficiency, and the separation of regulators from operators. The role of postal services remains vital in delivering the benefits of the Internal Market to citizens, consumers and business. The evaluation report recommends respecting the timetable of the second directive, monitoring market and regulatory developments, intensifying cooperation on regulatory issues and promoting an in-depth debate on future postal services policy.

⁷ Current activity in the field of transport is based on the White Paper entitled “European transport policy for 2010: time to decide”, published in September 2001.

In this sector, it may be necessary to monitor the authorisation procedures in the Member States in order to ensure that they are not used to restrict competition. These procedures may act as a possible barrier to market entry if they are difficult to comply with and therefore restrict the ability of new entrants to compete effectively with the universal service provider. This suggests that authorisation regimes may be so restrictive that they effectively establish a reserved area in excess of the limits permitted by the Directive. An important question is whether these restrictions are necessary for the provision of a universal service. If they are not necessary and if they do actually establish a reserved area in excess of the limits permitted by the Directive, this undermines one of the main aims of the Postal Services directives, which is to achieve effective competition in the letter market. Postal services are characterised by significant economies of scale and scope that are especially important when operators are required to provide minimum levels of service. This may therefore limit the possibility of attaining a competitive market in particular in the letter market if competitors are not granted non-discriminatory access to the networks of the incumbent postal operators.⁸

As of September 2005, 24 Member States had fully transposed the 2002 Postal Directive into national law. Estonia still had to notify the Commission of transposition (see Table 15).

2. Market performance

The aim of market opening to competition is to enhance performance by improving productivity and bringing prices closer to costs. In this section we first consider the evolution of market structure as an indicator of the emergence of competition. However, market structure on its own may not be sufficient to ensure better market performance. So next we consider the evolution of prices. Lower prices may indicate greater competition but they may also be the result of technological change or lower input costs without any significant change in competition or mark-ups. In section 2.2.4, we present the results of a study conducted by Copenhagen Economics, which employed statistical techniques to control for these factors while trying to assess whether market opening has a downward effect on prices. Next, we consider employment and productivity, again presenting the work of Copenhagen Economics in this area. Finally, we discuss the Commission strategy to ensure adequate infrastructure investment in the liberalised network industries.

2.1. Evolution of the market structure

“Incumbent operators”, who often used to be State-owned monopolies, have traditionally dominated network industries. In theory, opening up network industries to competition should change market structures, leading to new entry, more players and decreasing market shares of the incumbents.

Last year’s evaluation showed that, following massive entry in previous years, the telecommunications sector consolidated between 2001 and 2003. However, in 2004, the situation has reversed. The number of authorised public fixed voice telephony in the EU15 rose again to reach a total of 1 237 players in 2004 (from 1 202 players a year before). The figure for the EU25 was 1 608. In any case, the number of major competitors remains low in most countries and market shares of incumbents remain high (Table 17).

In the energy sector, a similar pattern can be observed: consolidation in the early 2000s and an increase in entry in 2004. Last year’s evaluation highlighted two waves of mergers and acquisitions in the energy sector, the first one around 1985 and the second one around 2000-2001. These two waves, which to a large extent involved bidders from within the sector (both domestic and foreign), followed a general trend that affected most sectors and countries.

The pattern of consolidation and entry in the energy sector has resulted in the presence of large pan-European energy players (see Table 18). This emerging pattern carries a risk of dominant positions

⁸ This issue will be examined further by the Commission.

and calls for increased scrutiny from regulatory and competition authorities to ensure that there is effective competition at European as well as national level. Indeed, a worrying factor is that empirical evidence seems to support the view that some of these mergers have significantly increased the market power of the parties involved.⁹ For example, the acquisition of GDP by EDP and ENI was prohibited by the Commission in December 2004¹⁰ as it would significantly reduce or pre-empt the effects of liberalisation of the electricity and gas markets in Portugal. Further measures might become necessary on a sectoral basis. Other obstacles to competition in energy include inadequate regulation, insufficient unbundling, access to the network and a lack of integration between networks.¹¹

Rail transport is also gradually being opened to competition. Some of the competition issues that arise in the railway sector are similar to those in electricity and gas; for example, the unbundling of network ownership from providing passenger and freight carrying services and third party access issues.¹² The liberalisation process of rail travel remains far behind telecommunications, electricity and gas, although effective competition in passenger and freight carrying services already exists in five Member States (DE, DK, NL, SE and UK). However, even in these Member States the market share of the incumbent generally remains high. In the other EU15 countries, problems with access to the international network (PT), the lack of an adequate regulatory framework (AT, BE, ES, FR, EL, IT) or simply the low attractiveness of the market (FI, LU, IE) limit the emergence of competition.

In postal services, the current EU regulatory framework allows for estimated market opening of around 11% of all mail, leaving incumbents with the largest share of the market. However, by January 2006, when the reserved area will be limited to 50g letter, around 25 % of the mail market will be opened to competition. Additionally, it is worth noting that the United Kingdom, the Netherlands and Germany, which account for almost half of Community letter post, are considering the possibility of abolishing the reserved area before the end of 2007. When also taking into account other Member States with no or only minimal postal monopoly, complete liberalisation of about 60% of EU letter post by the end of 2007 could be expected.

2.2. Evolution of price performance

In the medium to long-term, the expected effect of opening up markets to competition is a downward convergence in prices that should reflect marginal costs, if other factors are held constant. However, the degree of competition is not the only determinant of the evolution of prices and technological developments; evolution of the regulatory framework or the use of prices as a policy instrument will also influence price levels. The speed of market liberalisation across segments and countries will also affect competition and prices. Therefore, price convergence may be shadowed in the short term by these factors. Any evaluation of the performance of network industries should therefore look at the evolution and possible convergence of prices across countries. It should also try to disentangle the effect of market opening on prices from the influence of external elements. Although opening up markets to competition has been accompanied by palpable benefits in terms of price cuts in some segments, such as international telecommunications, some stakeholders have raised concerns about possible uneven distribution of those benefits across types of users. This section investigates in more depth these various issues, making use of both factual data and appropriate econometric techniques.

⁹ EWI working paper No 04.03 “Market power in the German wholesale electricity market”

¹⁰ Commission Decision of 9/12/2004 is published on the following website:

http://europa.eu.int/comm/competition/mergers/cases/decisions/m3440_20041209_610_en.pdf

¹¹ These obstacles to competition are highlighted in the latest sectoral evaluation of implementation of the gas and electricity internal market, which reveals that only five countries had no major obstacles to competition (SE, FI, DK, NO, UK).

¹² See Table 14 on legal and effective market opening in the railways sector.

2.2.1. Prices in network industries

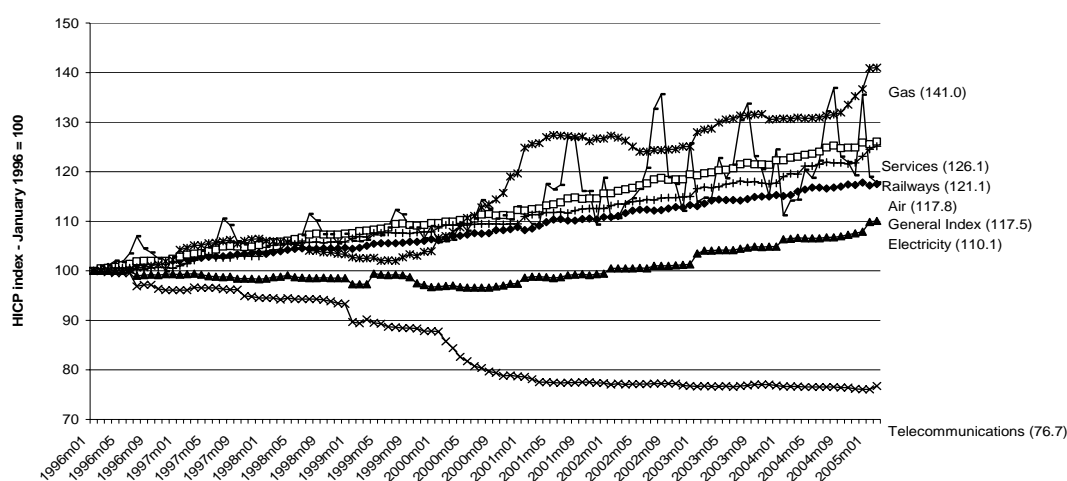
The evolution of prices

The results observed in the previous report on the long-term evolution of prices are confirmed. Since 1996, prices in telecommunications in the EU15 have decreased by an average 2.9% per year (see Figure 1). Telecommunications prices are 23.7% cheaper now than in 1996. When taking into account the general evolution of prices in the economy, the change is even more impressive, as relative prices (i.e. corrected for the evolution of the harmonised consumer price index) in telecommunications are about 35% cheaper than nine years ago. However, the decrease in prices seems to have come to an end. Whereas the average yearly decrease was about 3.2% between 1996 and 2000, speeding up to about 6.3% between 2000 and 2002, prices since then have been relatively flat. Although, even in this context of stable prices, relative prices have actually continued to decrease, it is still unclear whether the full potential of price cuts in fixed lines has been reaped or whether further steps such as cuts in fixed price of subscription or technological developments could bring further price decreases.¹³

The situation in electricity is to some extent comparable. Between 1996 and 2000, prices decreased by an average of 0.8% a year. Since then, prices have increased (notably with every new year) by a yearly average of 1.9% between 2000 and 2002 and 3.1% between 2002 and 2005. However, in real terms electricity prices are still 6.3% lower than in 1996.

Prices in the gas sector have followed another pattern, probably because prices in the sector are usually based on long-term contracts indexed on the price of oil. Dramatic increases in 2000-2001 and over the most recent period have pushed gas prices up to 41% above their 1996 level. Finally, notwithstanding large seasonal effects in air transport, prices in the transport sectors have generally closely followed general inflation in recent years.

Figure 1 : Evolution of prices in EU15 Network Industries



Source: Eurostat

Note: the prices are based on based on incumbents' standard tariffs

Comparing prices expressed in euros across countries is a simple way of assessing whether a commodity is more expensive in one country than another. However, such classification may sometimes distort reality given that other currencies may be over- or undervalued against the euro. To

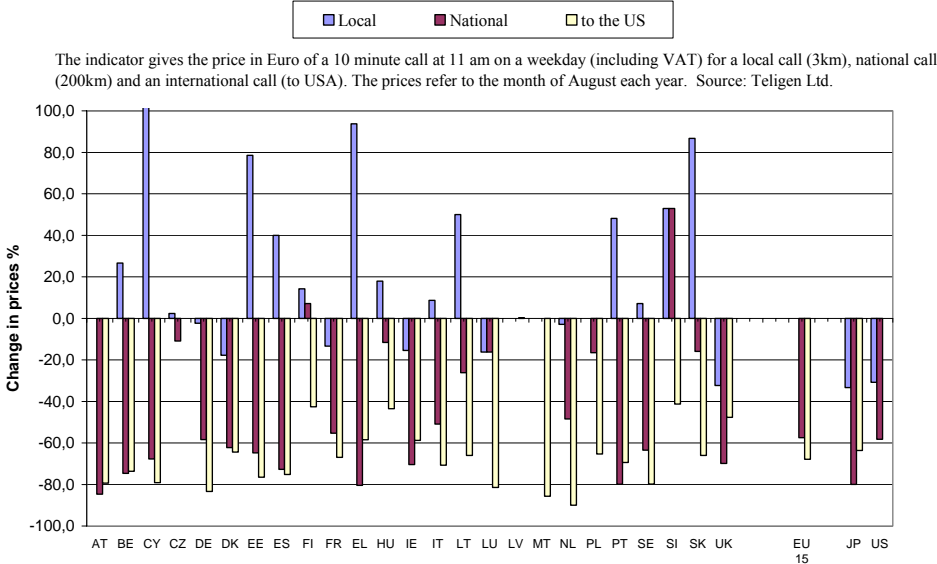
¹³ Call prices that form part of packages, including voice, data and value added services, continue to fall. However, these extra services are only applicable to a sub-set of consumers.

allow for more meaningful comparisons, Eurostat calculates purchasing power parities (PPP) as the rates of currency conversion in order to balance the purchasing power of different currencies by eliminating the differences in price levels between countries. By dividing PPP by the corresponding exchange rates, Eurostat then calculates price level indices (PLI).¹⁴ For deflating the prices, PPP at the level of total GDP have been used.

Telecommunications

Although prices in telecommunications have generally come down, this general trend hides uneven developments across segments. Whereas prices for international calls to the USA and for national calls have fallen respectively by 67.9% and 57.4% on average for the EU15, the average price for local calls stayed unchanged between 1997 and 2004. Indeed, although some countries (UK, DK, LU, FR, NL and DE) have experienced falling prices for local calls, tariff rebalancing may have been the reason behind price increases in several other Member States (BE, ES, EL, IT, PT, and SE - to name EU15 Member States only). It is interesting, however, to note that the fall in national call prices is not a peculiarity of European countries. Price cuts of 58% and 80% have been recorded for US and Japanese national calls respectively, suggesting that worldwide technological developments may have played a major role in reducing prices. In addition, these two countries have also registered dramatic falls in the price of local calls.

Figure 2 : Evolution of telecommunications prices 1997-2004



Source: Eurostat structural indicators for CY, CZ, EE, HU, LT, LV, PL, SI, SK period is 2000-2004 for MT period is 2002-2004 NB: the prices are based on incumbents' tariffs

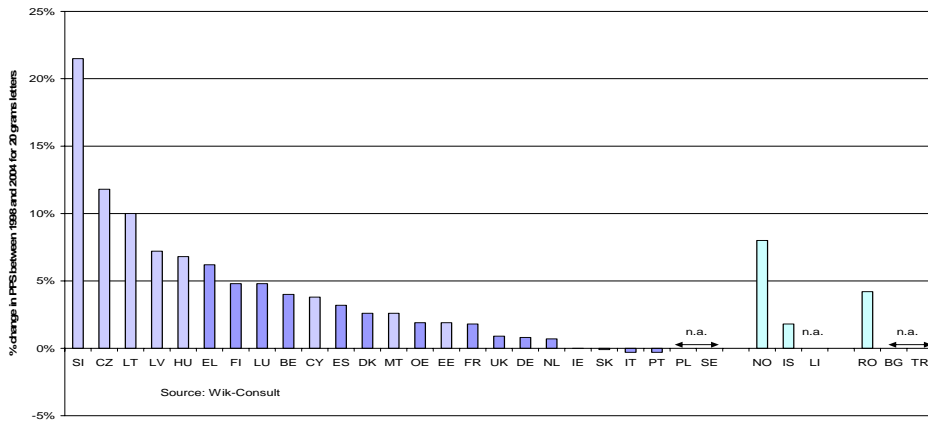
Postal services

The situation in postal services has been slightly different, with large increases in prices (PPS) for several new Member States (in particular SI, CZ and LT).

For other countries, such as IE, SK, IT or PT, prices have followed general inflation rates quite closely. It should be recalled that prices in the reserved segment are often still regulated.

¹⁴ Price Level Indices measure the difference in price levels between countries. They are expressed in relation to the EU average price level, EU25=100. PLI and PPS are not exempt from problems when comparing across countries and time and should therefore be taken as indicative. (See Eurostat's publications on recommended and non-recommended uses for more information). However, despite these problems, they are the most convenient indicators to use.

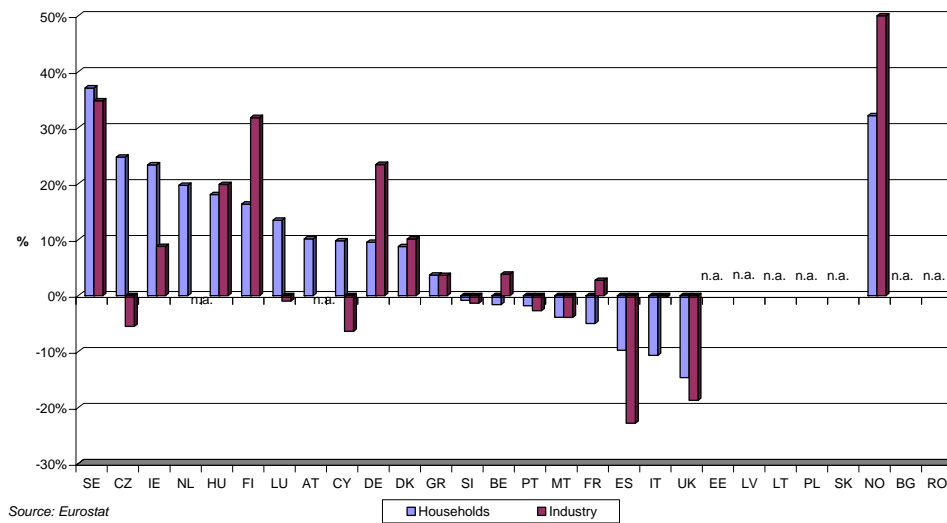
Figure 3 : Evolution of price of 200g letters in PPP (1998-2004)



Energy

Household electricity prices increased the most between 2000 and 2004 in SE, CZ and IE. Price reductions have been the most pronounced in the UK, IT and ES. Gas prices generally registered large increases in most Member States over the same period. These prices for electricity and gas cannot be directly compared, at least not for the purpose of analysing price developments due to liberalisation. Prices for households are still regulated in most countries.¹⁵

Figure 4 : Evolution of Purchasing Power Standards in electricity (2000-2004)

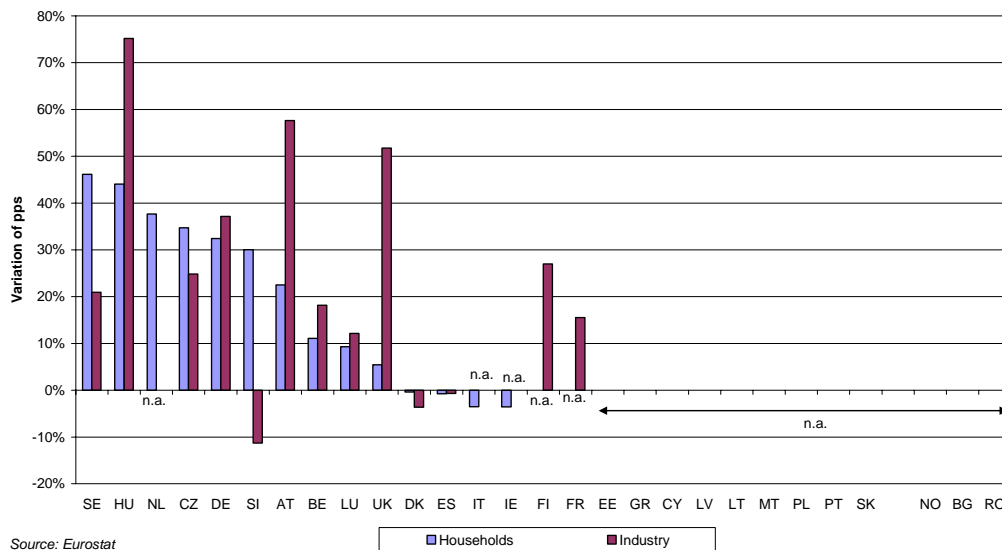


¹⁵ For reference see: http://europa.eu.int/comm/energy/electricity/benchmarking/doc/4/sec_2004_1720_en.pdf

Figure 5 : Evolution of gas prices in Purchasing Power Standards (2000-2004)

Industry: Annual consumption: 41 860 GJ; load factor: 200 days, 1 600 hours

Households: Annual consumption: 83.70 GJ



2.2.2. Have prices converged across countries?

Economic integration of network industries in Europe should bring some price convergence. However, price convergence is a long-term goal that might not be achieved in the short-term for a number of reasons. First, the process of opening up markets to competition has occurred at different paces across countries and this may lead to differences in the rate at which prices adjust in segments where prices did not previously reflect costs because they were regulated or because they were the outcome of monopoly positions. Furthermore, price and cost differences between Member States may persist even after these adjustments because of other factors, including differences in how the sectors are regulated, differences in input costs and technologies and insufficiently connected infrastructure leading to incomplete markets.

To investigate price convergence across countries and over time, we have employed a number of statistical and econometric techniques. The econometric analysis shows strong mean convergence in telecommunications, especially for international and local calls. For these two segments, prices are converging at a rate of 20% each year. The half-life (i.e. the average time needed to halve the difference with the average prices) is 3 – 3.5 years. Convergence in national calls is also found although at a slightly slower pace. The econometric analysis also reveals a slight convergence in prices of transport (which includes road and air) and electricity for households but no evidence of convergence in gas for households.¹⁶

Box 1 : Econometric technique to assess price convergence

Convergence can be formally assessed by looking at the following model:

$$Y_{i,t} - \bar{Y}_t = \phi(Y_{i,t-1} - \bar{Y}_{t-1})$$

where $Y_{i,t}$ is country i 's log of price level at time t .

\bar{Y}_t is the unweighted average of the log of price level for the sample at time t .

¹⁶ A recent ECB working paper finds downward trends in average prices in network industries for the EU15, with convergence (as measured by the coefficient of variation) in local and national calls and gas for small household users but divergence in international and mobile calls and electricity for large industrial users. See Martin, Reiner, Roma, Moreno and Isabel Vansteenkiste (2005), "Regulatory reforms in selected network industries", ECB Occasional Paper, No. 28.

Then, $(1-\phi)$ represents the rate of convergence of country i 's price level to the sample's average price level. Furthermore, the half-life x (i.e. the time needed to halve the difference to the mean) is the ratio of $\log(1/2)$ to $\log(\phi)$.

After transformation, we estimate the following model:

$$\Delta Z_{i,t} = -\theta Z_{i,t-1} + \varepsilon_t$$

with $Z_{i,t} = Y_{i,t} - \bar{Y}_t$, $\Delta Z_{i,t} = Z_{i,t} - Z_{i,t-1}$ and $\theta = (1-\phi)$.

θ gives us the rate of convergence in prices across countries. The half-life tells us the average time needed to halve the difference in prices.

Table 1 : Price convergence in the EU25

EU25	Rate of convergence θ	t-stat $H_0: \theta = 0$	Half-life	Countries	N. Obs.	Adj-R ²	F (prob)
Local calls	0.204	6.56***	3.038	25	100 (2000-2004)	0.296	0.00***
Nat. calls	0.098	2.75***	6.720	25	100 (2000-2004)	0.062	0.007***
Calls to US	0.171	3.70***	3.491	25	100 (2000-2004)	0.117	0.000***
Transport	0.038	2.44**	17.89 2	25	100 (2000-2004)	0.047	0.017**
Electricity	0.050	1.95*	13.51 3	20(exc. EE, LV, LT, PL, SK)	100 (1999-2004)	0.028	0.054*
Gas	0.042	1.13	16.15 4	15 (exc. CY, EE, EL, FI, LT, LV, MT, PL, PT, SK)	60 (2000-2004)	0.005	0.264

Source: based on Eurostat data. *, ** and *** indicate significant at 10, 5 and 1% levels respectively. Due to the estimation procedure, one lag is necessary. Therefore a 6-year period will bring 100 observations.

2.2.3. Does market opening drive price changes?

Establishing a link between market opening and the evolution of prices is difficult and needs appropriate statistical techniques to disentangle the effects of technical progress, the type of regulation, or simply the influence of the general economic environment. In a study commissioned for the purpose of this horizontal evaluation exercise, Copenhagen Economics (hereinafter CE) developed static and dynamic panel data models to estimate the statistical relationship between a quantitative indicator of market opening and the price performance of the sector.¹⁷

The study reveals that in most cases market opening is a statistically and economically significant determinant of price reductions. Electricity prices are estimated to be around 8% lower than they would have been without liberalisation. This figure jumps to 20-25% for rail transport and telecommunications. The impact has, however, been much smaller for urban transport, air, gas, and postal services.

The Copenhagen Economics study aims to establish the influence of regulatory and market opening changes on industrial electricity prices. External factors such as the cost of fuel inputs, the share of nuclear generation capacity, the cost of investment and certain weather variables are included to act as control variables. The estimations show a significant effect of market opening policies on the pre-tax electricity price. The regression suggests that, all other things being equal, these policies directly decreased industrial real-term prices by just under 8% between 1990 and 2001. The study finds that independent regulators have a significant impact on price performance, suggesting that market opening should be accompanied by sound regulation and effective competition to deliver the maximum

¹⁷ The Copenhagen Economics Study (2005), «Market Opening in Network Industries», is described in more detail in chapter 4. It covers the EU15 over the period 1990-2001.

beneficial effect. Finally, the econometric analysis indicates that price effects are much larger in the long run than in the short-run, highlighting that there is a penetration effect before market opening translates into reduced prices.

The effect of market opening on prices is smaller for gas. The CE study estimates that prices are 1% lower than they would have been in the absence of liberalisation. Private ownership seems to matter for reducing gas prices but, at the same time, ending the linkage between gas and oil prices may have pushed prices up. The overall result is, however, a cut in gas prices. The results of the study also suggest that the timing of liberalisation matters, as early and fast reformers have recorded lower prices than late and slow reformers, even if they end up at the same degree of market opening.

For telecommunications, the CE study considers the price of a basket of telecommunications services for a medium-size user. The model also includes several variables to control for the cost structure (cost of capital, cost of inputs), technologies (share of digital lines, patents, public investment in technologies) and market structure (market share of leading operator). The results are impressive, with mobile telecommunications prices that are 21% lower than they would have been in the absence of market opening and overall telecommunications prices that are 22% lower. The regressions find that market opening has a significant influence on market structure, especially on concentration. However, the direct influence of market structure on price performance is found to be insignificant.¹⁸ As with electricity, the results suggest that prices adjust slowly to market opening and that the long-term effect is much larger than the short-term effect.

In air transport, estimates have been difficult to carry out because of scarce data and of low variability in market opening across Member States. This reduces the precision of the estimates and makes it more difficult to find statistically significant relationships. Unlike the results for electricity and gas, there is no difference between the short-run and long-run price effects. The results for other transport sectors are slightly different. For urban transport, the model finds that both actual competition and threat of entry reduce prices. This feature ties in with the fact that in the majority of cases competition takes the form of competition for the market via tendering for time-limited contracts rather than more instantaneous competition in the market. Still, market structure is found to influence price developments as a larger competitive share of the market and a lower market share of the incumbent reduce urban transport prices. The influences of tendering procedures and market structure are also significant in rail transport. Removing price regulation in this sector and allowing for foreign ownership appear to have reduced prices. However, the results also suggest that prices adjust to market opening with some lags.

Finally, market opening in postal services has led to large productivity gains that have not been translated into lower prices; in fact, prices are estimated to have increased by 4% over 1990-2001 despite a 28% increase in productivity.

However, taken together the results of the econometric work indicate that in most network industries, having controlled for external parameters, market opening leads to lower prices.

It should be stressed that the CE study looks at ex-post results from market opening and at the level of prices that would occur if liberalisation had not taken place. Therefore, the results of the CE study are somehow dependent on the degree to which liberalisation has been pursued. For example, if market opening was limited in any given sector between 1993 and 2001, it is likely that it had only limited influence on prices. Therefore, the CE study will find only a small difference between actual price levels and estimated prices without liberalisation. Chapter 4 of this report presents a graph showing the evolution of market opening in the seven network industries considered in the CE study. This confirms quite clearly that the largest price reductions are associated with the sectors for which market opening

¹⁸ Although economically significant (i.e. the estimate is different from zero), it is found to be statistically insignificant (i.e. it cannot be excluded with enough statistical certainty that the true value is zero).

has been the largest. It also suggests that for most sectors there are additional potential price cuts that could be achieved by further market opening.¹⁹

2.2.4. Are there differences across classes of users?

The finding that market opening has led to price reductions immediately raises the question of the distribution of these gains across types of users. Some stakeholders express the fear, for example, that liberalisation has brought benefits to large users at the expense of low-income households. Others argue that liberalisation will be beneficial to urban users while rural users may suffer from higher prices or from lower quality of services. Acknowledging the need for a more in-depth analysis, this report tries to explore a number of preliminary results, both in this section through the analysis of the evolution of prices for different types of consumption and in chapter 3.3 with the analysis of affordability indices.

Telecommunications

We have seen that prices in telecommunications may somehow have been driven by tariff rebalancing practices in some countries (see Figure 2). This indicates that, although consumers usually have large price benefits from market opening, some categories of users (e.g. those mainly calling locally or having low usage) may in theory face higher prices in some countries.²⁰

Electricity

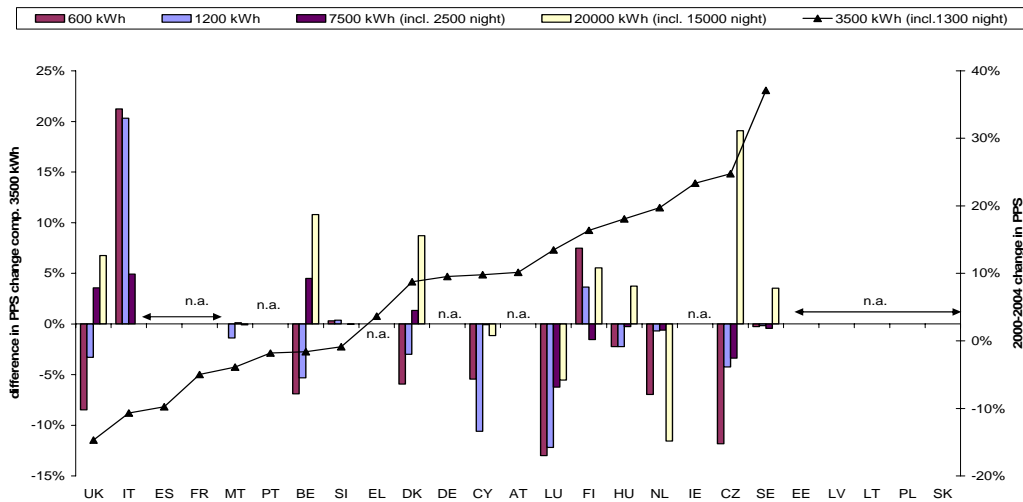
The following graph looks at the change in price differentials for various categories of users. The benchmark is a yearly consumption of 3 500 kWh, for which the line represents the 2000-2004 variation in PPS for each Member State and the value read on the right-hand side scale. The columns represent four other categories of users. Two categories represent smaller users (600 and 1 200 kWh) and two others represent larger users (7 500 and 20 000 kWh). The left-hand scale indicates the differential in change in PPS between those alternative categories and the benchmark consumption. For example, for the UK, the change in PPS for benchmark consumption was a decrease of 14.7%. Smaller users of 600 and 1 200 kWh have seen the price of a kWh decrease even more (an additional 8.5 and 3.3% respectively), whilst larger users have seen the price of electricity decrease relatively less dramatically (for example, users of 20 000 kWh had a differential of 6.8%, which corresponds to a decrease of about 7.9%). For those countries for which data are available, the investigation shows that, amongst household consumers, the changes in prices were the most favourable for smaller consumers.²¹

¹⁹ This is also the finding of the ECB 2005 study. See Martin, Roma, and Vansteenkiste (2005), *Op. Cit.*

²⁰ This statement should be qualified for three reasons. First, a firm answer can only be given if one analyses a basket of consumption of calls and its affordability. Second, the change in relative prices may well imply a change in the consumption basket. For example, some users may well have been in a situation where they made very few international calls due to the high price. If the cost of international calls decreases, their consumption may well increase so that the consumer is better off at the end of the day. Third, despite the fact that tariff rebalancing may have resulted in higher prices for fixed line rental and low reductions in local calls, there has been an improvement in the choice of packages (consumers making local calls mainly have the possibility of opting for special packages and paying less). Fourth, even in the absence of market opening, operators could have rebalanced prices which were below cost.

²¹ Two exceptions are Italy and Finland. Percentage changes in PPS for Slovenia were almost the same for all categories.

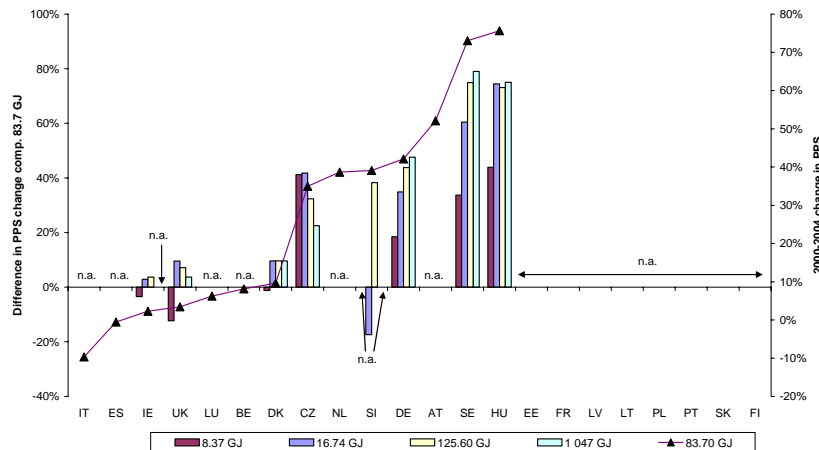
Figure 6 : Comparative changes in electricity prices for various types of household users



Source: Eurostat and own calculations. PPS taxes included.

The situation is roughly comparable in gas for the few countries for which the information is available.²² Proper techniques and affordability indices are obviously needed to analyse this issue. Next year's horizontal evaluation should be able to report on the results of a study currently starting, which will shed light on these issues. Nevertheless, the information currently available suggests that tariff rebalancing in telecommunications may possibly lead to some users benefiting from tariffs below cost before liberalisation and thus paying more after liberalisation for the same basket consumption. In energy, the available information suggests that price cuts have been larger for small users.

Figure 7 : Comparative changes in Purchasing Power Standards for various types of household gas users



Source: Eurostat

2.3. Economic performance based on employment and productivity

In this section, we consider the evolution of employment and productivity in network industries supplying services of general economic interest. A priori the expected effect of market opening on employment is ambiguous. This is because there are expected positive effects of market opening on employment as well as expected negative effects and it is not clear which effect would dominate. A positive effect on employment is expected because market opening is expected to reduce mark-ups,

²² One exception is the Czech Republic.

and hence prices, which should lead to an increase in demand and supply implying greater levels of output, which require more employment. However, the negative effect on employment could be a result of competitive pressures to reduce costs, which may call for a more efficient use of labour and thus require fewer workers to produce the same amount of output. For similar reasons, competition is expected to have a positive effect on productivity.

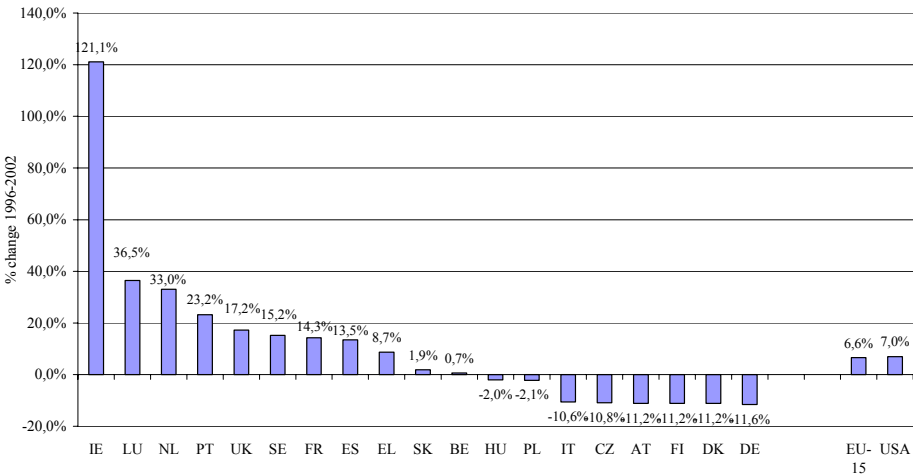
2.3.1. Economic performance based on employment

In 2002, 8.7 million people were employed in EU15 network industries.²³ This is a decrease of about 50 000 compared to 2001 but it is close to the level of employment in 1980. Employment fell by 16.8% in electricity, gas and water between 1996 and 2002. In transport, employment increased by 5% in inland transport, and 19% in air transport but fell by 9% in water transport. In telecommunications, employment increased by 24% between 1995 and 2001. However, for the period of 2001-2003, it fell by 6%.

There were differences in the evolution of employment in different Member States across sectors. **In telecommunications**, Poland, Luxembourg and Austria saw the highest increases in employment of 13.3%, 9.6% and 6.4% respectively. Estonia, Lithuania, and Latvia saw the greatest decreases in employment in this sector of between 5% and 6%.²⁴

Luxembourg and France experienced moderate increases in employment **in electricity, gas and water** of 6.7% and 0.8% respectively. All the other Member States experienced falls in employment in these sectors. The biggest falls were in Portugal (47.8%), the UK (30%), and Germany (21.5%).²⁵

Figure 8 : Evolution of employment in telecommunication services



Source: Groningen Growth and Development Centre, 60-Industry Database, February 2005, <http://www.ggdc.net>

²³ Because of a revision in the data for inland transport, the figures are slightly different from those published in the previous report. The figure refers to direct employment.

²⁴ Source: Statistics in focus: Telecommunications in Europe, Eurostat, August 2005.

²⁵ Source: Groningen Growth and Development Centre, 60-Industry Database, October 2004, <http://www.ggdc.net>.

Figure 9 : Evolution of employment in electricity, gas and water

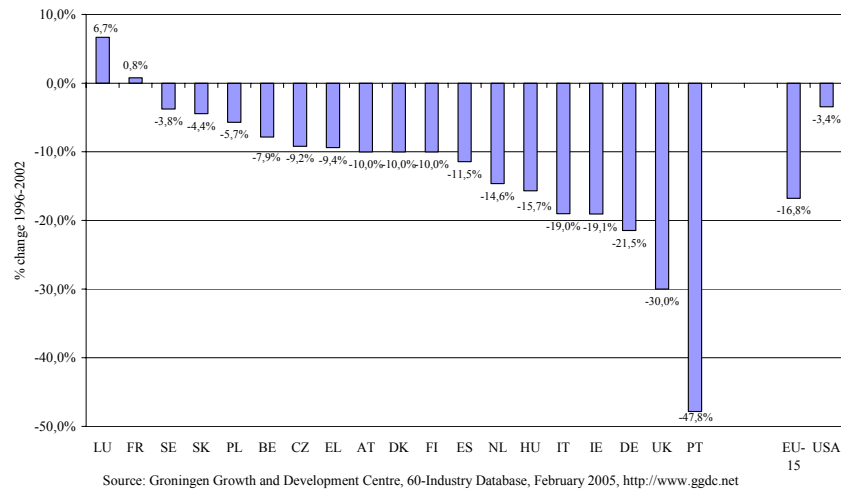
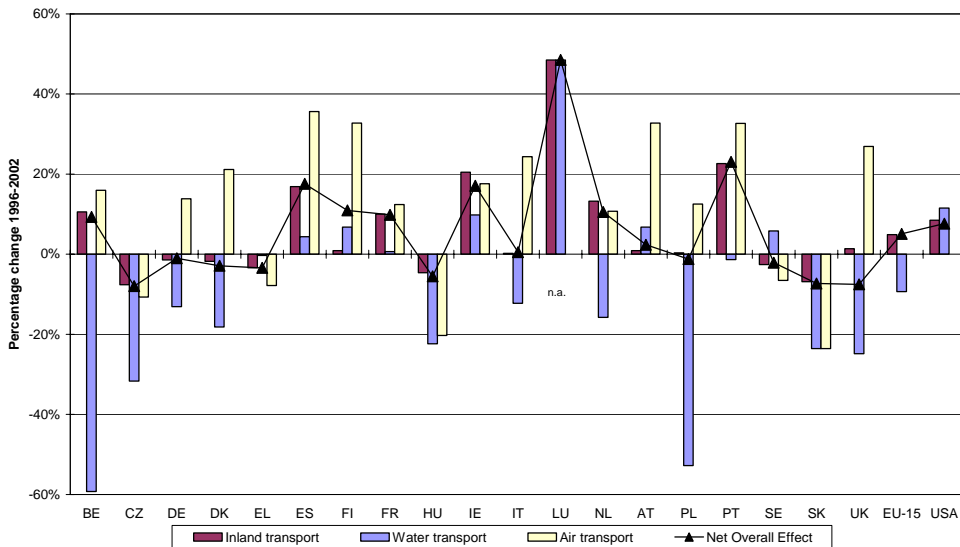


Figure 10 : Evolution of employment in transport



In transport, employment rose particularly in Denmark, Spain, Finland, Ireland, Luxembourg, and Austria. It nevertheless decreased principally in the Czech and Slovak republics, as well as in Hungary.

2.3.2. Economic performance based on productivity

In terms of productivity, the trend identified in last year's report is confirmed. Productivity per hour increased in all network industries throughout the 1980s and 1990s and the average growth of productivity outpaced the average performance of the economy as a whole. In addition, several sectors such as air transport, telecommunications and inland transport showed both increases in employment and in productivity, indicating that there is not necessarily a trade-off in the long term.

The CE study makes a detailed analysis of the impact of market opening on productivity, which is measured in a different way for each sector (e.g. capacity utilisation for electricity, load factor for air transport are taken into account, etc.).

In telecommunications, the study reveals a strong influence of market opening on productivity, with a 93% increase for mobile telecommunications and a 24% increase for telecommunications overall.

Unbundling, freedom of choice and third party access are, together with private ownership, strong determinants of higher productivity.

For postal services, the relationship between market opening and productivity is convincing: the results suggest that productivity increased by 28% between 1990 and 2001.

In electricity, due to the lack of more reliable data, productivity is proxied by capacity utilisation. Separation of the transport system operations, market-based congestion management, and quantity of rain appear to be significant control variables. The model also indicates that productivity effects appear progressively as the long-term effect is three times larger than the short-term effect. When measured as thermal efficiency, productivity improved on average by around 2% from 1990-2001, with almost all of the increase explained by the increased share of gas in production. The thermal efficiency of gas is estimated to be roughly 35% higher than for coal and about 50% higher than for oil.

In gas, however, the analysis could not reveal any significant relationships between market opening and productivity. The main problem is to identify a good proxy for productivity.

In air transport, productivity has been proxied by the load factor²⁶, which can be interpreted as a proxy for capital productivity. Full liberalisation would increase the load factor by 13%. For rail transport, the results of regulatory changes are mixed: in rail freight, market opening has led to a 47% increase in productivity, whereas in passenger rail transport productivity has declined by nearly 7%. Here again, productivity improvements take time to materialise; the long-term increases in rail freight productivity are more than double the short-run effects.

2.4. Resource productivity and eco-efficiency

The increase in resource productivity and eco-efficiency leads to the decoupling of economic growth and environmental degradation, which is needed to achieve sustainable growth. The following will focus on evidence for such decoupling in the energy and transport areas. The importance of network industries for the environmental dimension of the Sustainable Development and Lisbon Strategies can be highlighted through the fact that 39%²⁷ of greenhouse gas emissions are directly or indirectly linked to these sectors.

Between 1990 and 2002, resource productivity of public conventional thermal electricity production, in terms of energy efficiency, increased by 9% from 35.1 to 38.1% in EU25. The gap between EU15 and EU10 decreased from 8.1 to 6.9%.

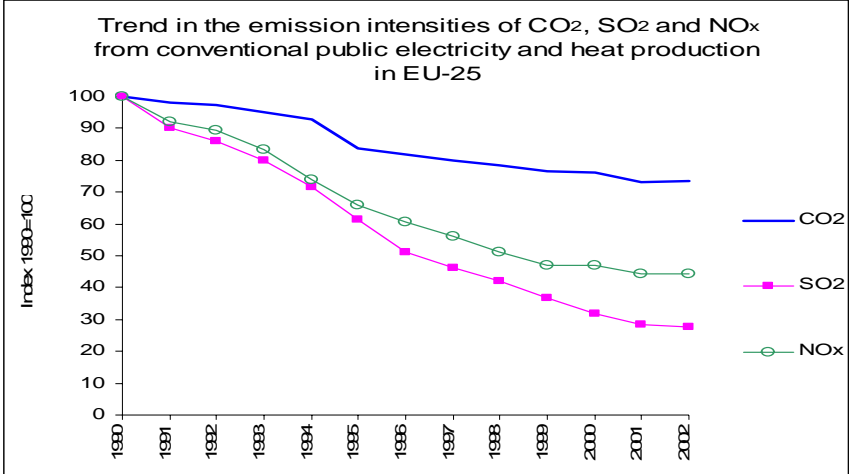
Analysis of eco-efficiency in terms of emissions per kWh electricity, passenger-kilometre and tonne-kilometre shows substantial improvements. Between 1990 and 2002, the sulphur dioxide (SO₂) and oxides of nitrogen (NO_x) emission intensity of public conventional power production decreased substantially by about 72 % and 55%, respectively, compared to a 26.7% decrease in the CO₂ emissions intensity (Figure 11). Liberalisation stimulated a switch from coal towards natural gas, which has a lower carbon and sulphur content. Combined-cycle gas plants were competitive due to

²⁶ That is the average number of seats occupied by passengers.

²⁷ Officially reported data on greenhouse gas (GHG) emissions do not allow GHG emissions from network industries to be determined directly. The above rough estimate is thus the sum of the GHG emissions of fuel combustion activities from public electricity and heat production (IPCC code 1A1a), railways (IPCC code 1A3c), fugitive emissions from natural gas (IPCC code 1B2b) and an estimate of GHG from gas industries. The latter is calculated by subtracting emissions of gaseous fuels arising from public electricity and heat production from all gaseous emissions from fuel combustion. This means that emissions arising from the burning of natural gas in other sectors are included in this calculation. GHG from network industries can thus be estimated at about 1621 Mt CO₂ equivalent in the EU15 in 2002. Greenhouse gas emissions in 2002 have been calculated in tCO₂ equivalent using the following Global Warming Potential (GWP): 1tCH₄ = 21tCO₂eq and 1tN₂O = 310tCO₂eq.

their high efficiency, low capital cost and low gas prices in the early 1990s. However, with increasing gas prices since 1999, improvements in emissions intensity have slowed down as coal has become increasingly competitive again, suggesting that the effect of liberalisation on the environment depends on the relative price of fuels. The substantial reductions in the NO_x and SO₂ emissions intensity were not only a result of liberalisation. Environmental legislation and available reduction techniques contributed significantly, thus showing the need for synergies between environmental and sectoral policies to improve the performance of these sectors.

Figure 11 : Emissions intensities of public conventional electricity and heat



Note: The emissions intensity of conventional public thermal power production is calculated as the ratio of CO₂, SO₂ and NO_x emissions from public power production to the output of electricity and heat from public conventional thermal power production. Output from public thermal power stations covers gross electricity generation and the heat produced by public thermal power stations and used. CO₂ emission data are missing for Malta and Cyprus and NO_x and SO₂ emission data are missing for Malta and Luxembourg
Source: European Environment Agency, unpublished. Data from Eurostat and the EEA European topic centre on Air and Climate Change.

For the transport sector, a fuel switch has not been an option yet. Almost all transport depends on fossil oil-derived fuels, with only minor segments using alternatives (e.g. biofuels for road transport, no-CO₂ electricity for trams, trolley-buses, trains). Better engine technologies and after-treatment systems have, however led to improvements in resource productivity and eco-efficiency, especially in road transport and aviation. A similar picture exists for the power sector: resource productivity increased moderately, supported by increased competition, while eco-efficiency made more substantial progress, assisted by environmental legislation. For the aviation sector, CO₂ emissions fell by an estimated 23% per passenger-km (see note on uncertainty of estimate) between 1990 and 2000. One additional factor behind the fall (also for NO_x) is presumed to be competition which forces gradual increases in fuel efficiencies and load factor. For rail, there is a small improvement of CO₂ intensity (changes in load factors) and a slight downwards trend in NO_x emissions (increasing electrification of the rail system).

Eco-efficiency in terms of air emissions increased nearly in parallel. However, in absolute terms, SO₂ emissions are still twice as high in the EU10 as in the EU15. The NO_x and CO₂ emission intensity was 30% and 27.5% above the EU15-levels in the EU10 in 2002.

A similar detailed analysis is not possible for the transport system, but as the modal shift away from rail is extraordinarily strong (but starting from a high level) it is believed that resource productivity for the whole system is not increasing.

2.5. Investment in network industries providing services of general economic interest

There is considerable interest in the question of whether liberalised network industries supplying services of general economic interest can deliver sufficient investment to ensure an adequate provision of services. This section considers efforts at EU level to encourage investment, indicators of the need for investment in the Member States, incentives to invest in a liberalised environment and the instruments available to Member States to ensure optimum investment.

2.5.1. Indicators of the need for investment in infrastructure

One source of information on the quality and quantity of infrastructure is the International Institute for Management Development (IMD).²⁸ The survey gives an idea of the adequacy of transport and energy infrastructure in the countries covered. The IMD also provides comparable data on railroads, roads and investment in telecommunications. This information provides a good starting point for comparing infrastructure in network industries supplying services of general economic interest in the EU. However, to go any further would need more data in this area that could be compared across countries.

The baseline needs to be taken into account when considering investment in infrastructure. For example some of the new Member States may need to invest more to attain the levels of infrastructure prevalent in some of the old Member States. Also, investment in any one year should depend among other things on previous levels of investment. Considering the amount of investment in any one year will not give the complete picture. Levels of investment should be considered alongside the quality of existing infrastructure and the need for investment. The survey data give a useful indication of the adequacy of infrastructure and its maintenance and development.

Table 2 contains information on the 22 Member States for which information is available and, for benchmarking purposes, information on infrastructure in the USA, Japan and Australia is also included. It should be noted that that levels of investment are an imperfect proxy for provision of infrastructure and should be considered alongside the quality of existing infrastructure and whether or not there is a need for investment.

Notable patterns emerge from the surveys. The Nordic countries tend to score highly on the provision of transport and energy infrastructure. This is interesting to note because the Nordic countries have achieved a high degree of market opening in electricity and gas. An interesting case is the UK, which has a high degree of market opening but which has scored poorly in some of the surveys. The poor scores on maintenance and development of infrastructure and efficiency of distribution infrastructure are likely to be driven by perceptions of poor performance of the UK's railway networks.

France, Germany and Austria have also scored highly on most aspects of infrastructure provision. Broadly speaking, the new Member States tend to lag behind the old Member States. However, countries like Italy, Spain, Greece, Portugal and Ireland are among the worst performers.

2.5.2. Examples of failures with liberalisation to deliver adequate investment - main issues

Over the years, there have been instances of problems in some network industries, which have been attributed to liberalisation by some critics. We discuss some of these examples below and note from the facts that, rather than the problems being caused by liberalisation per se, they have been caused by defects in the regulatory framework and the need for some market operators to adapt to working in a liberalised environment.

²⁸ The IMD has carried out surveys on the provision of infrastructure in 69 countries around the world. The survey covers 21 of the 25 member states. It does not cover Cyprus, Latvia, Lithuania and Malta.

Table 2 : Provision of infrastructure (2003)

Indicator	Maintenance & development of infrastructure ²⁹		Efficiency of distribution infrastructure (roads, trains, planes, etc.)		Water transport ³⁰ (harbours, canals, etc.)		Air transport ³¹		Energy infrastructure ³²		Railroads (Length(km)/surface (1000km ²), 2002)		Roads (Length(km)/surface (1000km ²), 2002)		Investment in telecoms (% of GDP)*	
	Country	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Value	Rank	Value	Rank	Score
Austria	7.34	4	8.36	4	7.4	8	7.84	4	8.79	5	67	9	20	8	0.443	17
Belgium	6.27	8	7.94	7	8.03	6	6.59	12	8.36	7	115	2	57	2	0.254	21
Czech Rep	5.16	12	7.35	10	5.27	18	7.44	7	8.42	6	122	1	7	13	0.934	7
Denmark	7.85	3	8.77	1	8.98	2	8.22	3	8.86	4	64	11	23	5	0.557	15
Estonia	5.26	11	6.7	12	7.89	7	6.59	12	6.41	13	21	20	2	17	1.994	1
Finland	7.95	1	8.63	2	9	1	8.58	1	8.89	2	17	22	2	17	0.523	16
France	7.95	1	8.24	5	7.14	9	7.69	6	8.88	3	57	13	19	11	1.009	4
Germany	7.03	5	8.48	3	8.82	4	8.34	2	9.05	1	100	4	34	4	0.372	18
Greece	4.17	15	6.06	15	6.48	11	6.11	15	6.06	16	18	21	:	:	0.859	10
Hungary	3.94	16	5.94	16	4.56	19	5.41	16	6.24	14	83	5	6	14	1.164	3
Ireland	3.19	20	4.74	20	5.89	15	5.4	17	6.11	15	27	18	:	:	0.646	14
Italy	3.76	17	4.67	21	3.76	21	4.8	20	4.86	21	53	14	21	7	0.333	19
Luxembourg	6.84	6	8.21	6	7.14	10	7.26	8	8.26	8	106	3	44	3	0.279	20
Poland	5.67	10	7.61	9	8.95	3	7.77	5	7.77	9	67	9	1	19	0.954	5
Portugal	3.13	21	5.29	19	3.82	20	5.09	19	6.05	18	30	17	20	8	0.879	8
Slovakia	4.84	13	6.42	13	6.06	13	6.39	14	5.9	19	75	6	6	14	0.945	6
Slovenia	3.56	18	6.1	14	5.62	16	3.8	21	7.42	10	61	12	23	5	0.868	9
Spain	4.35	14	5.52	18	5.62	17	5.19	18	5.75	20	33	16	20	8	0.857	11
Sweden	6	9	6.74	11	6.29	12	6.73	10	6.06	16	25	19	3	16	1.314	2
Netherlands	6.28	7	7.93	8	8.29	5	7.1	8	6.83	12	68	8	61	1	0.726	13
UK	3.23	19	5.59	17	5.95	14	6.68	11	7.1	11	70	7	15	12	0.74	12
EU average	5.42		6.92		6.71		6.62		7.24		51				0.7929	
US	6.81		8.34		8.22		7.64		7.37						0.799	
Japan	6.13		7.3		6.54		6.46		7.04						0.599	
Australia	7.38		7.82		7.93		7.56		7.79						0.879	

Source: International Institute for Management Development, Eurostat "Energy, transport and environment indicators 1990-2002". *It should be noted that that levels of investment are an imperfect proxy for provision of infrastructure and should be considered alongside the quality of existing infrastructure and whether or not there is a need for investment.

²⁹ Score of 10 = Is adequately planned and financed

³⁰ Score of 10 = Water transportation fully meets business requirements

³¹ Score of 10 = Quality of air transportation encourages business development in your economy

³² Score of 10 = Energy infrastructure is adequate and efficient in your economy

The first example is of 6 blackouts within 6 weeks that made headline news in 6 countries around the world in 2003: the USA, Canada, the UK, Italy, Sweden and Denmark. The USA/Canada blackout affected up to 50 million people and restoring electricity supplies took up to a few days. The blackouts affected 5 million people in Sweden and Denmark, and 57 million in Italy, and took 4 hours to restore. There were two separate incidents in the UK affecting 410 000 and 220 000 people respectively, which took a few minutes to restore. All the blackouts were caused by problems on the transmission systems, although in the USA there is some evidence that the situation was exacerbated by market manipulation.

Insufficient generation capacity was not an issue and extra investment in the transmission systems alone would not have prevented such blackouts from occurring. Liberalisation has changed the environment in which the transmission operators carry out their functions, for example by having more cross-border exchanges of electricity, and there is a need for transmission operators to adapt their operational procedures to the changed environment. One lesson drawn from the blackout incidents in 2003 is that coordination between different transmission system operators in different countries should be enhanced.

Another example is the current problems experienced with the UK rail network, which are generally considered to be a result of historic underinvestment in these networks. Before privatisation, the rail networks were already characterised by underinvestment and the challenge the UK faces is to make up the shortfall in investment and minimise costs as these are ultimately paid for by customers and taxpayers. However, problems with the pricing of access to the networks in a liberalised environment have also exacerbated the underinvestment problem. When the current access-pricing regime was adopted it was assumed that the demand for rail travel was stable or even declining. However, this has not been the case. The demand for rail travel in the UK has increased, putting more strain on the existing infrastructure, and the prices paid by train operators for access to the networks may be insufficient to meet the costs of investing in and maintaining the networks and to provide incentives for efficient use of the networks. This again highlights the importance of the access regime for ensuring the appropriate investment signals.

To conclude, closer examination of each of the examples of problems that have occurred in a liberalised environment reveals that there were often problems with the regulatory framework. In the case of the electricity blackout incidents in 2003, a lesson that has been learned is that there is a need for transmission operators to adapt their operational procedures to the liberalised environment, for example, by better coordination between different transmission system operators. This work has already been carried out in some cases and in July 2005 the main continental European transmission system operators (UCTE) agreed on a phase one of a legally binding new Operating Handbook.

2.5.3. Current needs for investment in infrastructure – strategy at Community level

The Commission, notably through its trans-European network policy, has been playing an active role in encouraging investment in infrastructure to complete the internal market and hence promote intra-Community competition, particularly by trying to improve cross-border interconnections. The Commission's policy in the area of trans-European networks includes improving access to transport, energy and telecommunications networks in more remote areas and is also intended to assist in linking the new Member States with the infrastructure of the EU15, thus maintaining a high level of quality, security and safety.

In addition, the Community Cohesion policy will allocate €38 billion in 2000-2006 to co-finance transport investment and this will be further developed in 2007-2013. Co-financing focuses on the least well-off regions and countries where needs are greatest. Community funds are rather short and therefore the Strategic Community Guidelines³³ establish a number of guiding principles indicating the Community priorities:

³³ COM(2005) 0299 Cohesion Policy in Support of Growth and Jobs: Community Strategic Guidelines, 2007-2013.

- priority should be given to the 30 TEN projects of European interest, located in Member States and regions eligible under the Convergence objective; special attention should be given to cross-border projects and projects that have a designated EU coordinator;
- Ensure availability of ICT infrastructure where the market has difficulty to provide it at an affordable cost and an adequate level, especially in the new Member States as well as in remote and rural areas;
- complementary investment in secondary connections in the context of an integrated regional transport and communications strategy covering urban and rural areas;
- support for rail infrastructure;
- promotion of environmentally sustainable transport networks;
- improving the connectivity of landlocked territories to the Trans-European networks;
- developing the “motorways of the sea”.

Regarding energy, which is a relevant issue for the future, and the aim of a low carbon economy, the Cohesion policy will support projects to improve energy efficiency, the dissemination of low energy intensity development models, and the development of renewable and alternative technologies which can give the EU a leading edge and thus strengthen its competitive position and develop networks where there is market failure. The present level of investment is around €2 billion.

Electricity and gas

There is physical congestion in some parts of the European gas network, and in these cases new investment is required to alleviate the problem. These bottlenecks are mainly in the western and southern parts of the EU, such as between northern and southern France and between France and Spain. However, as demand is growing rapidly it is expected that further congestion points might also develop. There are also a number of regions of the EU where the use of natural gas is only a recent development. Such networks will need to be extended in order to accommodate new demand.

In electricity, interconnection lines are often congested and some Member States are relatively isolated, with very limited interconnection capacities with neighbouring countries. There is a group of countries which have a degree of interconnection capacity of 20% or more of total installed production electricity capacity. An interconnection capacity of 20% is generally considered to be sufficient for a truly integrated network. These countries are Denmark, Sweden, Austria, Belgium, Finland and the Netherlands. France and Germany have an interconnection level of around 10%. UK, Spain, Ireland, Greece, Portugal and Italy have a low level of interconnection capacity, in the range of 3-7% of total installed capacity. Italy, Portugal, Spain and the UK make intensive use of their import capacities, indicating congestion and a need for investment in additional capacity. Even the Netherlands has interconnection congestion despite having capacity of 20%.

The Commission has pursued a policy of encouraging investment in electricity and gas transport infrastructure. In December 2001, the Commission published a Communication on European Energy Infrastructure, which was welcomed by the Barcelona European Council in March 2002, and set Member States the target of having a level of electricity interconnection equivalent to at least 10% of their installed production capacity by 2005. The European Union also finances electricity and gas transmission infrastructure projects of European interest. A yearly budget of about €25 million is spent mainly on feasibility studies.

Several EU Member States are currently looking at whether specific measures should be implemented, either to promote more rapid general investments, to encourage a faster demand response to emerging imbalances or to guarantee a sufficient reserve capacity in electricity production to cover peaks in demand. One option provided by the new Electricity Directive is to use tendering to acquire new capacity to ensure security of supply, to enhance environmental protection and to promote infant technologies.

The directives do indeed foresee this possibility but it has potentially perverse effects on investments incentives in generation capacity. Nobody will invest against market prices in capacity if you risk competing with a unit with lower costs from a tendering procedure. In fact, the old directives also foresaw this option (see article 4-6, where it was standard procedure) and it was tuned down in the new liberalisation directive (see art 7 where it has become an exception) for precisely this reason. The emerging consensus is that transmission investments need to have a high degree of coordination in order to deliver a rational network and reduce uncertainty.

To meet the environmental targets in the European Union, additional infrastructure is required in some cases to accommodate renewable energy sources and low emission technologies, for example, investment in wind generation. The directive on the promotion of electricity from renewable energy sources in the internal market³⁴ states that it is too early to decide on a Community-wide framework regarding support schemes given the limited experience with national schemes. However, the directive proposed that the Commission should monitor developments and present a report on experience gained with the application of national schemes.

Transport

The Commission undertook a major reform of the 1996 guidelines for the development of the trans-European network, which identified a number of priority projects. On 21 April 2004, the Council and Parliament adopted new guidelines, which set out an amended strategy for the development of the trans-European network. The new strategy declared 30 projects to be of European interest, involving investments amounting to €225 billion by 2020.

This strategy should tackle the persistence and scale of certain bottlenecks on major intra-Community routes, and the growing imbalance between different modes of transport that has led to particularly severe congestion in the air and on the roads. For example, the railways' share of transport of goods fell from 20% in 1970 to 8% in 2003 (EU15) at a time when the volume of goods transported in Europe was growing spectacularly. A promising change in trend can, however, be noticed since 2003, with strong growth in 2004 (+4% EU25). This contrasts with the USA, where rail transport of goods represents 40% of total freight transport.³⁵ One of the reasons for the imbalance in the transport system in Europe is that the different modes of transport do not always bear the costs that they generate. The Commission has presented three packages of measures that are expected to lead to an integrated railway area by 2020.

2.5.4. Incentives to invest in a liberalised framework

A monopolist has an incentive to restrict output to keep prices high. Therefore, one would expect liberalisation measures to increase competition and lead to an expanded production which in turn requires more investment. In practice, liberalisation measures have not always led to a fully competitive environment, and some regulatory structures are still in place.

A challenge faced by regulators is to provide the right framework for price signals to foster investment. National regulatory authorities have a crucial role to play to ensure that the regulatory and competitive framework provides the appropriate incentives for investment in regulated monopolies and that they take account of short-term and long-term investment requirements. The national regulatory authorities have a number of instruments available to them to do this, such as revenue controls, which can take the form of lump-sum revenue allowances (also known as price caps), or rate of return regulation (i.e. cost pass-through).

³⁴ Directive 2001/77/EC

³⁵ Rail freight transport is not competitive with road haulage over short distances. The much higher proportion of freight carried by rail in the USA is therefore attributable partly to the fact that goods are transported over a much longer average distance in the US than in Europe.

2.5.5. Are current regulatory and market instruments sufficient for optimal investment?

In accordance with the principle of subsidiarity it is left to the Member States to determine the form of regulation to ensure investment in monopoly networks. However, EU directives lay down specific principles that the forms of regulation should fulfil. For example, the proposed Directive on electricity infrastructure and security of supply will require Member States to implement appropriate measures to provide adequate economic incentives for the maintenance and construction of the necessary network infrastructure, including interconnection capacity.

The main instrument used by Member States to determine the levels of investment by regulated undertakings is price controls. However, national regulatory authorities can also introduce markets for access to regulated networks and the main advantage of these markets over regulated prices is that markets can signal the need for investment. For example, in the UK, auctions are held for access rights to use the gas transmission networks.

At present, there has been limited development of market-based instruments for charging for access that would provide signals for the need for investment. More progress could be made to develop such instruments in the Member States. This should improve the signals to spur investment and ensure that there is adequate investment in infrastructure in liberalised network industries. On 12 November 2004, the Council published a common position with a view to the adoption of a regulation on conditions for access to the natural gas transmission networks. The regulation which was recently adopted and will enter into force in July 2006, allows for tariffs for access to networks to be determined through market-based instruments such as auctions provided that such arrangements and the revenues arising from them are approved by the regulatory authority.

3. How do the ten new Member States (EU10) compare with the EU15?

3.1. Market structure

Because network industries in most new Member States have started their market opening process relatively recently, market structure in these industries appears more concentrated than in the EU15. The average number of major players in the telecommunications industry in these countries was 1.3 in 2004, compared to 4.7 for the EU15. In energy, whilst the average number of active licensed suppliers in the EU15 was about 137 and 141 for electricity and gas respectively, the corresponding figures for the new Member States were much lower at 91 and 40 (see Figure 12).³⁶ Those figures should, however, be qualified because country and market size bias the ranking in favour of large countries and most new Member States are relatively small. Indeed, large Member States such as Germany or Italy have, as expected, a large number of players, which pushes up the EU15 non-weighted average, although some large old Member States such as France are low in the ranking. On the other hand, the figure for the new Member States is also inflated by the remarkably high presence of active suppliers in the Czech Republic and in Poland. As expected, in terms of market concentration, new Member States have larger market shares of top suppliers.

³⁶ It is very common for large enterprises to have several licences. The number of active licensed energy suppliers therefore underestimates the real degree of concentration. In addition, market power in electricity, for instance, is at generation level. Supply licences do not indicate whether a company owns generation assets. Germany is a clear example. There are as many licences as there are many cities that have their own gas and electricity supply company, usually without generation. This explains why there are hundreds (>600) of licenses. In gas the situation is very similar - market power is in import level whereas many licensees are only involved in retail supply.

Figure 12 : Number of active licensed energy suppliers 2004

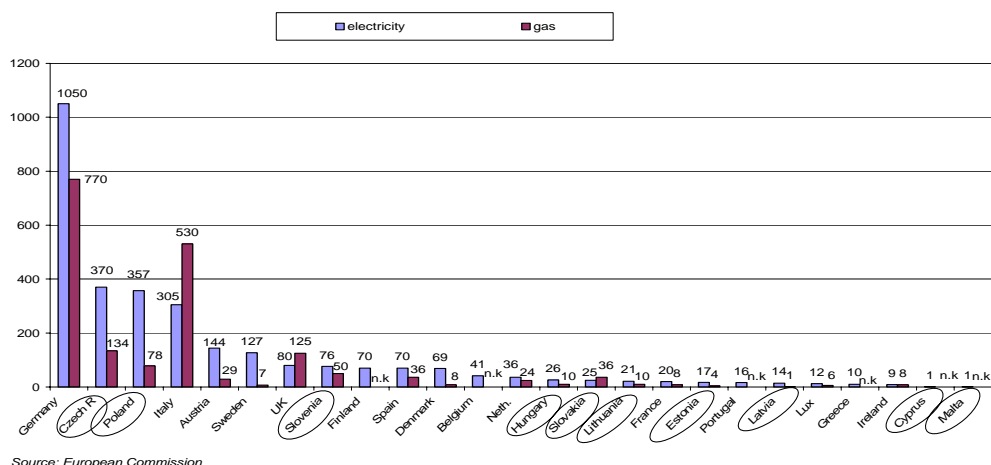


Table 3 : Average Market share top supplier

Average market share top supplier	Local calls	National calls	Calls to US	Electricity	Gas
EU15	77%	69%	59%	72% (top-3)	54%
EU10	98%	97%	91%	78% (top-3)	82%

Source: Telecommunication prices based on EC Structural Indicators data, energy prices based on the Annual Report on the Implementation of the Gas and Electricity Internal Market COM(2004)863, and own calculations

3.2. Price performance

Correcting for general price levels, prices in the EU15 and the new Member States (EU10) show large differences only in transport where prices are on average about 30-35% cheaper in the new Member States. For telecommunications and energy, the difference in prices - expressed in purchasing power standards or in price level indices - is very small between old and new Member States.³⁷

Table 4 : Price comparison between the EU15 and EU10

Price comparison	Communications PLI 2003 (EU25=100)	Transport PLI 2003 (EU25=100)	Electricity Household 2004 (PPS eurocents)	Gas Household 2004 (PPS eurocents)
EU15	96.8	105.1	13.3	11.95‡
EU10	95.9	70.7	14.3†	12.16††

Source: New Chronos and own calculations. All taxes included. Electricity consumption of 3500 KWh/year and gas consumption of 83.7 GJ/year. †without SK. ‡without FI, EL (2003 for FR). †† without CY, MT.

NB: Price comparison is based on incumbents' standard prices, effective choice is wider in EU15.

3.3. Affordability

Price affordability indicators give an idea of the budgetary effort that households have to make to pay for some of the services of general economic interest. The aim of this year's analysis is to compare the affordability of services of general economic interest in the EU15 and in the ten new Member States. Due to data constraints, the analysis will be limited to affordability levels for low income households in the two energy sectors.

³⁷ Of course, it should be recalled that these figures should be taken as indicative only given the limits in terms of comparison that PLIs or PPS impose. In addition, because of its larger economic weight, the EU15 will have a strong tendency to display figures that are close to the EU25 average. This important caveat should be borne in mind.

Box 2 : Calculation of affordability indices

Affordability is estimated using an index which gives the percentage of annual income a consumer has to pay to enjoy a year's fixed provision of a certain service (electricity and gas provision are analysed in this year's report). Note that because of a different methodology used and regular revision of income and prices data by Eurostat, the figures in this year's rapport might differ significantly from previous ones.

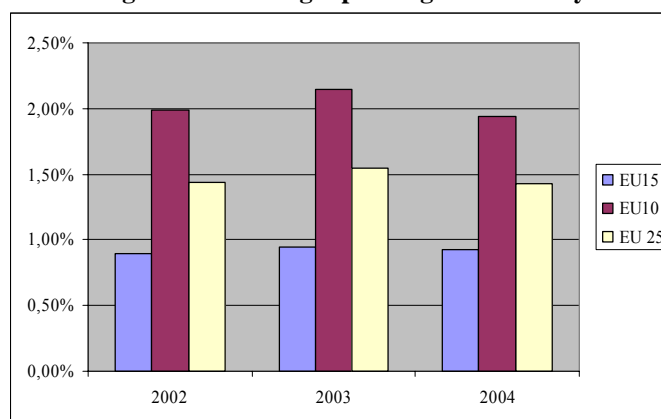
For income data, the risk-of-poverty thresholds for one-person households were used (different from last year when the mean total net income per capita for low and average income customers was used). The risk-of-poverty rate is defined as the share of persons with an equivalised disposable income below the risk-of-poverty threshold, which is set at 60% of the national median equivalised disposable income (after social transfers). Therefore, the indices correspond to the 'low income consumer'. As for household size, the Eurostat data from 1999 on the average household size for each Member States are used. Further details are provided in the respective sub-sections.³⁸

Note that a decline in the index represents an improvement in affordability. As the availability of reliable data is very poor, the index is a rough estimation of a trend rather than a reflection of reality.

3.3.1 Electricity

On average, low income EU consumers had to spend about 1.44% of their income on electricity.³⁹ There is however a big discrepancy between the old EU15 and the new Member States. In the old EU15 Member States, the affordability index oscillated around 0.90% between 2002-2004; it was twice as high in the new Member States, at around 2% (up to 2.15% in 2003) (Figure 13).

Figure 13 : Average spending on electricity



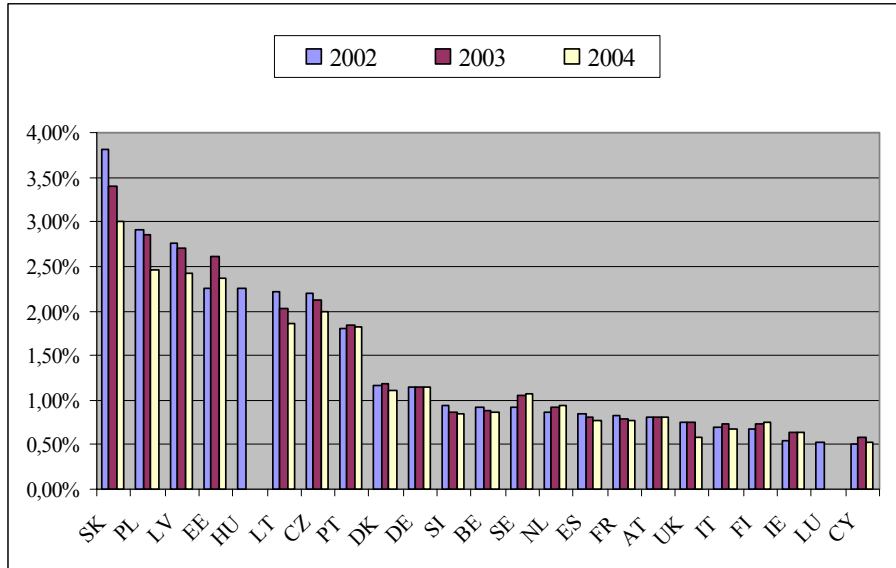
Source: European Commission with Eurostat data

Figure 14 clearly shows that electricity is generally less affordable in the new Member States. Seven of them are EU countries where a higher share of household income is needed to buy electricity, with Slovakia (3.82%) at the top of that list. The exceptions are Slovenia - where electricity is relatively more affordable than in Portugal, Denmark and Germany - and Cyprus - where citizens enjoy the most affordable electricity service among the EU25.

³⁸ It should be noted that expenditure data (price survey average for a specified annual consumption quantity) and income data (sample survey) are established independently, which may place limitations on the conclusions drawn.

³⁹ This is calculated as the percentage of per capita income necessary to pay for annual consumption of 1 200 kWh.

Figure 14 : Percentage of income spent on electricity by low income consumers



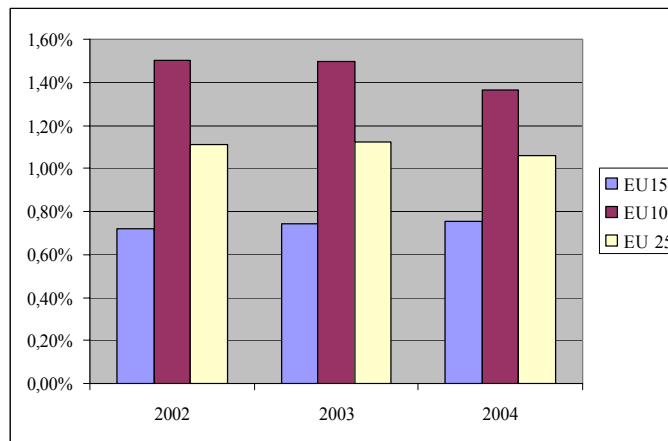
Source: European Commission with Eurostat data. No data available for Greece; for Hungary, Malta and Luxemburg income data are available only for 2002; incomplete data sets for electricity consumption for Latvia, Lithuania and Slovakia.

When analysing the 2002-2004 trend, it can be seen that, on average, the indices for old Member States change very little (either upwards or downwards), while for the new Member States there is a clear trend of increased affordability (the affordability improved most dramatically in Slovakia – over 20%).

3.3.2 Gas

The average affordability index for low income EU consumers was 1.11%,⁴⁰ but there are significant differences between new and old EU Member States. For the EU15, affordability deteriorated slightly over time – the index increased from 0.72% in 2002 to 0.75% in 2004, while the new Member States had an index of 1.5%, which improved by 0.14% in 2004.

Figure 15 : Average spending on gas



Source: European Commission with Eurostat data

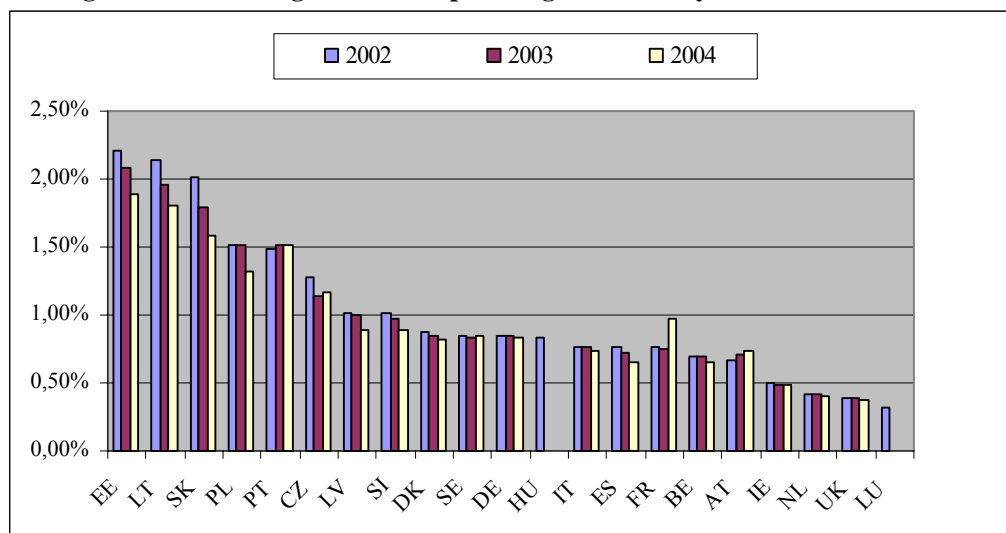
The analysis of affordability of gas services by Member States shows similar trends to electricity (see Figure 16). The majority of new Member States have poorer indices. Estonia has the worst affordability index for gas, closely followed by Lithuania and Slovakia. However, these three

⁴⁰ This is calculated as the percentage of per capita income necessary to pay for annual consumption of 8.37 GJ.

countries show a dramatic improvement in affordability over time— between 15% and 20% from 2002 to 2004.

One of the old Member States, Portugal, has an affordability index similar those in Poland and the Czech Republic. Latvia and Slovenia show levels comparable to those in Denmark, Sweden and Germany. Hungarian citizens enjoy the most affordable gas provision among new Member States.

Figure 16 : Percentage of income spent on gas services by low income consumers



Source: European Commission with Eurostat data. No data available for Cyprus, Greece, Finland and Malta; for Hungary and Luxemburg income data are available only for 2002; incomplete data sets for gas consumption for Estonia, Latvia, Luxemburg, Lithuania, Netherlands and Slovakia.

3.3.4. The importance of competition for the future affordability of electricity and gas

This analysis of prices and affordability suggests important policy conclusions for this evaluation. Although relative prices for services of general economic interest are similar in new and old Member States, these services are relatively less affordable in new Member States. The relatively low per capita income in most new Member States and their special nature as basic services for households give the utmost importance to the affordability of these services.

Economic integration normally entails price convergence and this suggests that the overall price level will tend to increase in new Member States that have relatively low prices. However, the welfare impact of integration will hinge in part on those countries' ability to keep inflationary pressures under control, especially in these sectors providing services which are essential for citizens. Increased competition in these markets will help to counteract inflationary tendencies and thus have a beneficial effect on living standards. Competition and regulatory authorities should therefore keep a close watch on developments in this area of the performance of services of general economic interest.

3.4. Quality of services of general economic interest

The difficulties in finding comparable quality performance indicators for EU15 become more severe in the EU25 context. Having analysed data availability and comparability of those indicators presented in last year's report, only a few indicators met minimum quality requirements and are presented here. The situation is expected to improve in the future with the publication of data for the telecommunications sector.⁴¹ However, key indicators on accessibility and other qualitative aspects of

⁴¹ The quality of service in the telecom sector is regulated by the Universal Service Directive 2002/22/EC. The information needed to compare the performance in this sector between old and new Member States will be available in 2006 when the studies on the impact of the regulatory framework in the EU25 are completed.

performance are not available today. The few indicators available are presented below, but no conclusions can be drawn from this scanty evidence.

3.4.1 Postal services

One of the aims of the Postal Directive 97/67/EC is to improve the quality of Community postal services: Article 16 of the Directive requires Member States to “ensure that quality-of-service standards are set and published in relation to universal service in order to guarantee a postal service of good quality”.

Since the introduction of this Directive, the quality of universal services has been improving and has recently stabilised at a high level, although there are differences between Member States.

With regard to the delivery requirements, there are no clear patterns for either the old or new Member States. The Postal Directive requires the provision of at least one clearance and one delivery each working day, not less than five days a week. The minimum of five day per week service is met in all countries. However, Universal Service Providers (USPs) from 4 new Member States (Estonia, Lithuania, Malta, Slovenia), and 2 of the old ones (Spain and Italy) voluntarily provide six-day delivery not required by law.

As indicated below in Table 5, transit time targets for domestic priority mail have been set in all countries with the exception of Malta and Spain. In addition to a group of best performers from EU15, some new Member States like the Czech Republic, Estonia, Slovakia and Slovenia have set very ambitious targets: to deliver domestic mail within one day and all succeed in achieving it.

Table 5 : Transit time targets and performance for domestic priority mail (D+1)

	Transit time targets for domestic priority mail (D+1)	Transit time performance for domestic priority mail (D+1, 2003)
> 90%	AT (2004), BE, CZ, DK, EE, FI, IE, LU, NL, PT, SI, SK, UK	CZ, DE, DK, EE, FI, LU, NL, PT, SE, SI, SK, UK
80-89.9%	DE, FR, EL, HU, IT, LT, LV, PL, SE	AT, BE, IT, LT, LV, MT
< 80%	CY	CY, ES, FR, EL, HU, IE
No D+1 target defined	ES, MT	
Notes:	AT: Transit time targets entered into force beginning 2004	GB: 2003 figures for stamped and metered 1st class mail (April to December 2003) PL: no figures provided CZ, EE, ES, NL: 2002 data EL, IE: NRA data

Source: Study for the European Commission, Directorate-General for Internal Market and Services on main developments in the European postal sector, Wik July 2004

When looking at the development of performance over time (see Table 6), it appears that transit time performance has increased in the majority of Member States. Among the USPs achieving results of 90% or better, performance has been rather stable since 2000. Only the Portuguese, the Czech and the British universal service providers have experienced slight decreases in performance.

USPs achieving 80 to 90% on-time delivery in 2000 have experienced a slight increase in performance without exceeding the 90% target.

Among universal service providers with a low level of performance in 2000, the transit time in Hungary and France has decreased whereas the transit time in Greece and Cyprus has considerably improved, albeit from a very low starting level.

Table 6 : Development of transit time performance between 2000 and 2003

Level of performance	90% and better										80% - 90%			Lower than 80%			
	PT	CZ	GB	FI	DK	SE	DE	LU	SK	NL	IE	BE	IT	HU	FR	EL	CY
Quality index (2003)	95	98.9	99.2	100	100.1	100.3	100.4	100.7	101.4	101.7	99.3	103.8	105.7	82.3	90.8	157.8	175.1

NB:

The performance achieved in 2000 is normalised to 100. The quality index presents the change in D+1 transit timer performance between 2000 and 2003. Values above 100 stand for an improvement, below 100 for a deterioration in transit time performance compared with the 2000 performance.

Sufficient time series information exists for 19 member states. Information is missing for AT, EE, ES, LV, PL and SI.

For EL and IE the performance figures provided by the USPs have been included. It is assumed that the development is the same as in the measurement results of the NRAs (missing time series information) even if the level differs.

The Quality index refers to the performance achieved in 2003. 2002 figures have been included for CZ and NL.

MT, LT figures are confidential (provided by USP).

Source: Study for the European Commission, Directorate-General for Internal Market and Services on main developments in the European postal sector, Wik July 2004

Independent performance monitoring has not yet been introduced in certain new Member States (Estonia, Lithuania, Latvia and Malta) and Finland. The same situation exists for the publication of performance results: they are not available in 4 of the new Member States, Cyprus, Hungary, Latvia and Malta, or in Finland from the old EU15. This situation can be explained by the fact that national authorities have been granted a good deal of discretion under the postal Directives for domestic issues.

With regard to the cross-border mail, the Directive sets concrete target transit times for first class cross-border postal items. However, it is not possible to compare the old and new Member States' performance as the transit time of cross-border services is not yet measured in the 10 new Member States by the UNEX monitoring system applied in the EU15.

3.4.2 Transport

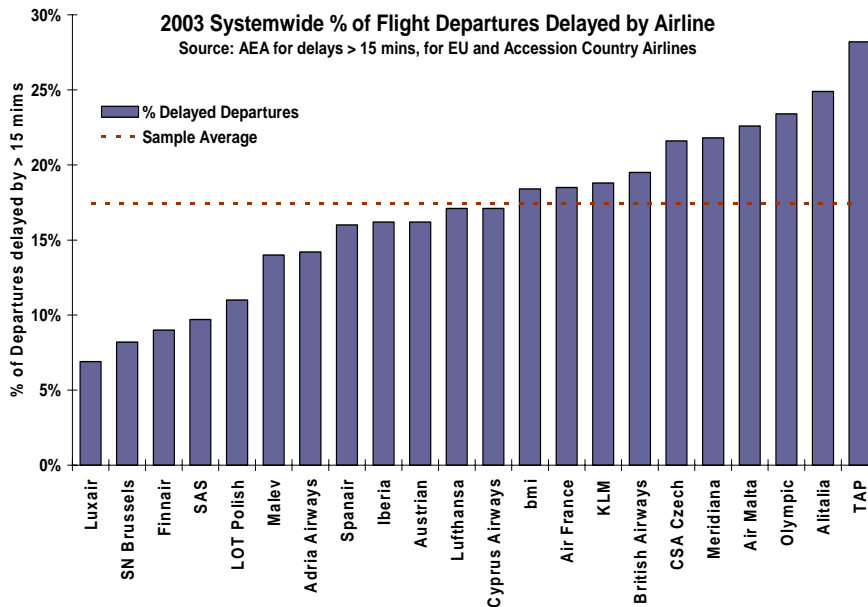
Air transport is the only transport sector to provide data on quality of service. The Association of European Airlines (AEA) takes into account in its analysis only its members. Therefore, information is limited to six carriers from the new Member States and the other airlines from the EU15.⁴²

Analysis of **airline punctuality performance** (Figure 17) shows that Luxair was the most punctual of the airlines, with only 7% of flights delayed more than 15 minutes. SN Brussels, Finnair, and SAS had less than 10% of all flights delayed. The best performer from the new Member States was the Polish Airlines, with 12% of flights delayed, followed by the Hungarian and Slovenian airlines. The worst performers were the Portuguese TAP with 28% of departures delayed by 15 minutes or more, Alitalia and Olympic Airlines. Among the new Member States, Czech and Maltese airlines also had worse results than the European average of 17.5% of flights delayed by 15 minutes and more.⁴³

⁴² The new Member States airlines included in the analysis are: Czech Airlines, Cyprus Airways, Malev Hungarian Airlines, Air Mata, LOT Polish Airlines, Slovenian Adria Airways. The airlines from the EU15 are: KLM, Air France, Lufthansa, Alitalia, Luxair, Austrian Airlines, BMI, Olympic Airlines, British Airways, SAS, Cargolux, SN Brussels, Spanair, TAP Portugal, Finnair, Iberia and Virgin Atlantic.

⁴³ When looking at these results, it should be noted that, an airline's punctuality performance usually depends on the level of congestion in the airports it serves.

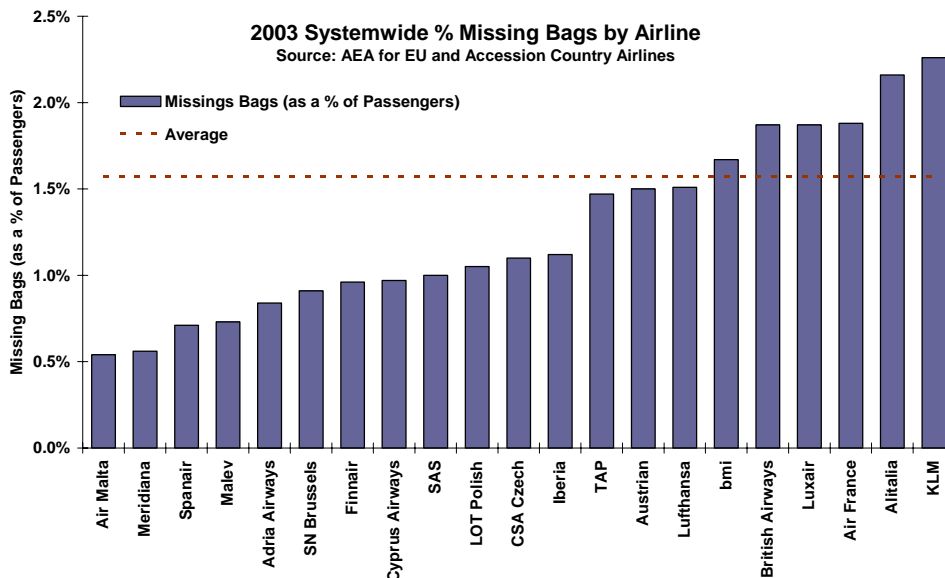
Figure 17 : Airline punctuality performance



Source: Analysis of the European air transport industry 2003; study launched by the European Commission's Directorate-General for TRANSPORT and ENERGY

Missing baggage items are considered by the AEA as being baggage which does not arrive at the final destination on the same flight as the passenger, and consequently they are usually sent on a later flight and should reach the passenger within 24 hours or so. For AEA members as a whole, 1.6% of bags were recorded as missing (relative to number of passengers).

Figure 18 : Missing baggage performance



Source: Analysis of the European air transport industry 2003; study launched by the European Commission's Directorate-General for TRANSPORT and ENERGY

The airlines of the new Member States perform much better in comparison to other European airlines (see Figure 18). Air Malta had the lowest proportion of missing bags - only 0.5% in 2003 and is placed at the top of the ranking. Other carriers from new Member States performed well below the European average – the Czech Airlines result of 1.1% being the worst among them. The big carriers like Air

France, British Airways and KLM were above the average, with KLM having the worst performance of 2.3% missing bags.

It is worth remembering, however, that the proportion of transit traffic contributes to this rate i.e. bags from transit passengers that did not succeed in switching aircraft at the connection point. As transit traffic is much higher in big airports like Paris and London when compared to airports in the new Member States, this might partially explain the above results.

3.4.3. Energy

The new data on interruptions of electricity supply should be available in late 2005 when the Council of European Energy Regulators (CEER) publishes the 3rd Benchmarking Report on Quality of Electricity Supply. It will include the 10 new Member States and an update on the other countries.⁴⁴ Therefore, it will be possible to compare the performances of these countries.

Data on electricity produced from renewable resources provide the only indicator available of the qualitative dimension of electricity market performance. Directive 2001/77/EC sets concrete targets for 2010 for the share of renewable energy in total electricity consumption.

The EU25 target for 2010 is for a 21% share of renewable energy. However, the level is much lower for the new Member States – 11%, as against 22% for EU15. As Table 7 shows, no Member State has reached its individual target, although some countries (both new and old Member States) have been getting closer and constantly improving their performance.

Latvia, Slovenia and Slovakia set themselves high targets (49.3, 33.6 and 31% respectively)⁴⁵ and showed very high actual levels of renewable energy shares in 2002. Among the EU15, actual and targeted shares are very high in Austria and Sweden. Denmark, Portugal and Finland show good performance, although shares have been decreasing over the years for the latter two countries.

The overall situation in 2002 remained stable for the new Member States in comparison with 2001 and deteriorated for the old EU15 as their share of renewable energy dropped to 13.5% from 15.2%.

Table 7 : Share of renewable energy in total electricity consumption: actual and 2010 target (in %)

	Share 1995	Share 2001	Share 2002	Target 2010*		Share 1995	Share 2001	Share 2002	Target 2010*
AT	70.6	67.3	66	78.1	LV	47.1	46	39.3	49.3
SE	48.2	54.1	46.9	60	SI	29.5	30.4	25.9	33.6
PT	27.5	34.2	20.8	39	SK	17.9	17.4	18.6	31
FI	27.6	25.7	23.7	31.5	CZ	3.9	4	4.6	8
ES	14.3	21.2	13.8	29.4	PL	1.6	2	2	7.5
DK	5.8	17.4	19.9	29	LT	3.3	3	3.2	7
IT	14.9	16.8	14.3	25	CY	0	0	0	6
FR	17.7	16.4	13.4	21	EE	0	0.2	0.5	5.1
EL	8.4	5.1	6	20.1	MT	0	0	0	5
IE	4.1	4.2	5.4	13.2	HU	0.7	0.8	0.7	3.6
DE	4.7	6.2	8.1 p	12.5	EU15	13.7	15.2	13.5 p	22
UK	2	2.5	2.9	10	EU10	5.4	5.6	5.6	11
NL	2.1	4	3.6	9	EU25	12.7	14.2	12.7 p	21
BE	1.2	1.6	2.3	6					
LU	2.2	1.5	2.8	5.7					

p – provisional value - Source: Eurostat

In conclusion, it can be said that no distinguishable patterns exist for either new or old Member States, as some countries from both groups perform well, some very badly. Efforts will need to be made to reach the targets established for 2010 in the EU25.

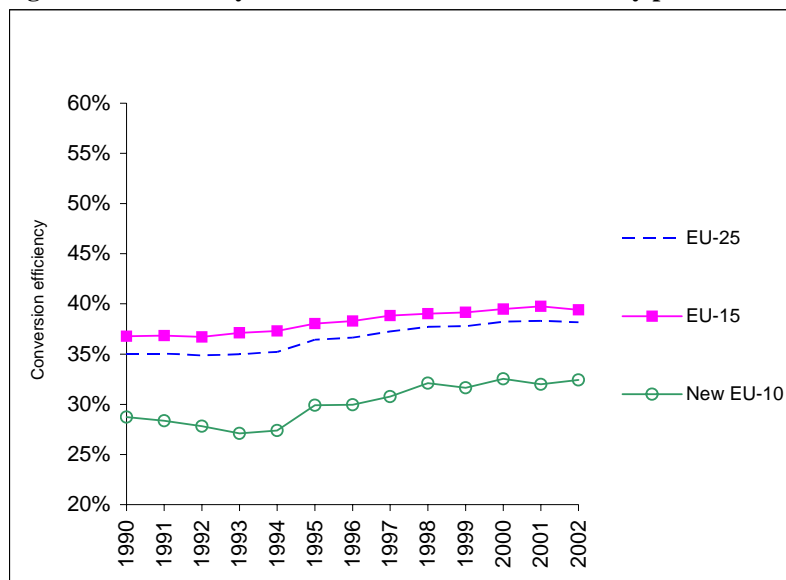
⁴⁴ CEER Work Plan 2005-2007 and Work Programme 2005, approved 1 March 2005

⁴⁵ The targets for all new Member States were set in each country by the Accession Treaty

3.5 Environmental performance

Between 1990 and 2002 resource productivity (in terms of energy efficiency) of public conventional thermal electricity production increased from 35.1 to 38.1 % in EU25. The gap between EU15 and EU10 decreased from 8.1 to 6.9 percentage points (Figure 19).

Figure 19 : Efficiency of conventional thermal electricity production



Source: European Environment Agency, unpublished; data from Eurostat.

The **eco-efficiency** in terms of air emissions **increased nearly in parallel** in EU10 and EU15. However, in absolute terms, the SO₂ emissions are still twice as high in the EU10 as in the EU15. The NO_x and CO₂ emissions intensity was 30% and 27.5% above the EU15-levels in the EU10 in 2002.

4. Impact of market opening in network industries

In this report, an attempt has been made to evaluate the cumulated impacts of market opening in services of general economic interest over the period 1990-2003. Previous reports analysing the network industries providing services of general economic interest have reported on the evolution of the performance of these industries by looking at the evolution of prices, productivity, quality and other relevant performance variables. In principle, these changes in performance are supposed to be linked to changes in the regulatory environment. But some have argued that these changes might be the result of changes in other variables, such as technology, price of capital, etc. In this report, econometric techniques have been used to identify and quantify the origin of those effects and impacts, and to test if the causality of regulatory changes can be established.

For that purpose, three studies were launched in 2003 and the results of the first two studies are reported here.⁴⁶ First, we present the main findings of the study which assesses the impact of opening services of general economic interest to competition on the performance of these services.⁴⁷ The second report evaluates the economy-wide effects of the regulatory changes together with the aggregated macroeconomic and a number of environmental effects.

⁴⁶ The Commission has also asked the consultant to study the impact of regulatory changes on user industries and on the economy as a whole as well as the distribution of benefits in performance among stakeholders. These results will be presented in the next report.

⁴⁷ Copenhagen Economics, Final Report "Market opening in Network Industries", September 2005.

4.1. Measuring market opening

In order to measure market opening, a methodology has been developed to translate qualitative information about the regulatory environment into quantitative indices of market opening to competition in a meaningful, transparent and - as far as possible - unambiguous way. This information is captured by an indicator measuring the extent of market opening in a network sector, called the Market Opening Index (MOI).

The Market Opening Indices have been developed and computed for seven network sectors for all EU15 Member States for 1990-2003. The indices are based on a detailed reading of national and EU legislation, and a summary of a vast number of national and international academic and policy studies.

Box 3 : Market Opening Index

The Market Opening Index is an aggregate indicator which for a given year and sector and on a scale between zero and unity summarises the extent of market opening relative to a state of full market opening. The index is constructed so that full market opening, unity value, is unlikely to be achieved by any Member State.

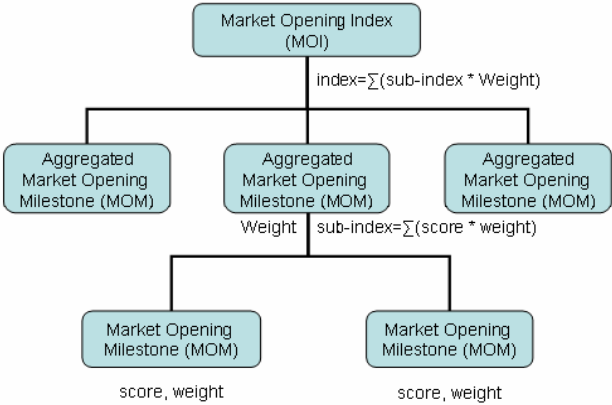
The Market Opening Index is based on Market Opening Milestones. There are between five and twelve Market Opening Milestones for each Market Opening Index. Member States achieve market opening over time by implementing an increasing number of Market Opening Milestones. A Market Opening Milestone is a concrete and specific policy initiative under realistic control of politicians. When one of these policy initiatives is fully implemented by a Member State, it can be said that the Member State has passed a Market Opening Milestone and the value of the Market Opening Index increases in the year of implementation and all subsequent years by the score of MOM.

Each Market Opening Milestone is given a score. A Market Opening Milestone has a score of zero if the milestone has yet to be implemented by a Member State or a positive score between zero and unity if it has already been implemented. The score is based on expert estimates of the importance of the milestone for market opening. In addition, a Market Opening Milestone is given a weight indicating the estimated relative importance within a sub-category of related milestones.

It is then possible to calculate an aggregated Market Opening Milestone for any given sub-category of Market Opening Milestones by adding up the weighted scores of milestones within that sub-category (see Figure 20). Each aggregated Market Opening Milestone inherits a score from the lower level and is given a weight. The weights reflect the estimated relative importance of the sub-category relative to other sub-categories. It is possible to calculate the Market Opening Index by adding up the weighted scores of the aggregated Market Opening Milestones.

In this way, the Market Opening Index describes for each Member State the time path of market opening in a given network sector. The value of the Market Opening Index in a given year is calculated as the weighted sum of the scores for all Market Opening Milestones. In each sector full market opening is defined as the implementation of a complete set of sector-specific Market Opening Milestones. When all these milestones are implemented, no further policy initiatives can – in principle – lead to more market opening.

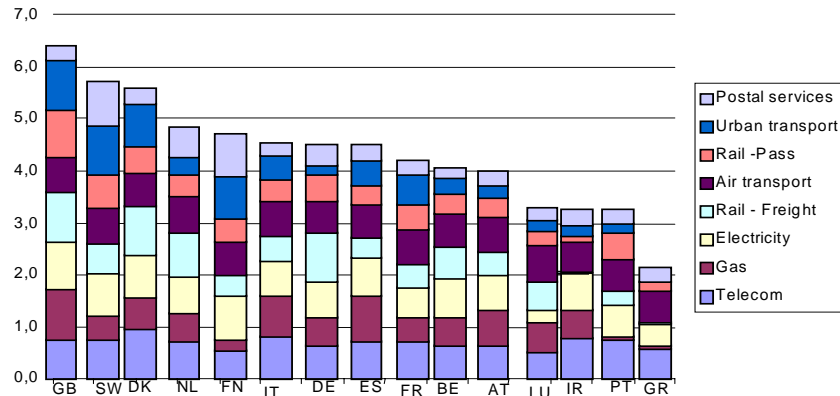
Figure 20 : The hierarchy of the Market Opening Index



4.2. Market opening in network industries

In general, markets grew significantly more open in most sectors and Member States in the period from 1990 to 2003. However, the degree of market opening varies considerably between Member States and sectors. Market opening is substantial in most sectors in the United Kingdom, Denmark and Sweden, but much less pronounced in countries like Greece, Portugal, Luxemburg and Ireland (Figure 21).

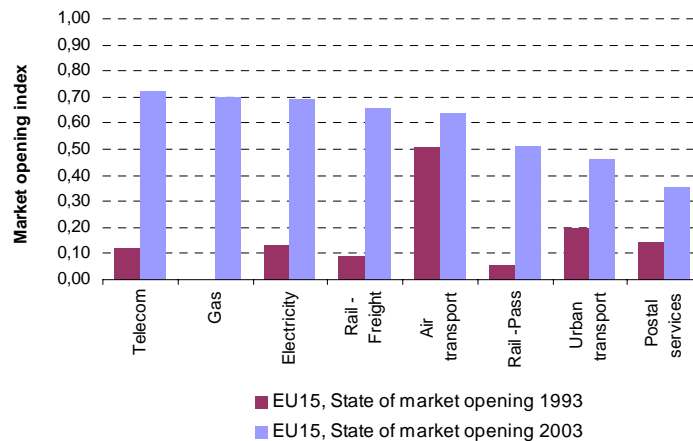
Figure 21 : Total market opening in network sectors in EU15 Member States, 2003



NB: An index value of zero signifies a complete absence of market opening (a government monopoly) and a value of seven signifies that all the defined Market Opening Milestones have been achieved in all seven sectors. Source: Copenhagen Economics, Market Opening Milestones database, Final Report "Market opening in Network Industries", September 2005

The degree of market opening also differs significantly between sectors, not only in 2003 but throughout the period 1990-2003 (see Figure 22). Some sectors already had relatively open markets in 1993, but then further market opening slowed down (e.g. urban transport and postal services). Other sectors had limited market opening in 1993, but then market opening moved fast forward and these sectors today have the most open markets. This is the case of telecommunications, gas, electricity and rail freight. Air transport stands out as the only sector where almost all the current degree of market opening had been achieved before 1993. The time path of market opening in air transport is almost identical for all Member States.

Figure 22 : EU15 market opening in seven network sectors, 1993 and 2003



NB: The index is equal to zero if there is a state monopoly and one if all the identified Market Opening Milestones have been achieved. Therefore, the higher the value of the index, the more open the market is. The

EU-wide Market Opening Index is a weighted average, constructed by using the indices of the individual countries weighted by consumption shares of the output in each sector. For example, Italy generates 10% of the total electricity in EU15 and therefore the Italian Market Opening Index for electricity has a 10% weight in the overall EU15 index for electricity. Similar types of weights are used in the other sectors.

Source: Copenhagen Economics, Market Opening Milestones database, Final Report “Market opening in Network Industries”, September 2005

The next step of the analysis was to link changes in market opening as represented by Market Opening Milestones and Indices with changes in performance (price and productivity), using econometric means to test for causality, taking into account the impact of other factors which might also have an influence on performance (price of oil in energy and transport, technology, etc.).

4.3. Market opening vs. performance – the main findings

The analysis confirms that market opening is statistically and economically significant to explain the evolution of sector performance. In addition, in most industries the estimated parameters have the expected signs, i.e. implying that market opening leads to lower prices and higher productivity, everything else being equal (see Table 8). This is in particular the case for large network industries with good data where market opening has been most advanced, such as telecommunications, electricity, rail freight transport and air (passenger) transport. For some other smaller network industries where market opening is lagging behind and where data quality is poor, like urban (passenger) transport, rail passenger transport and postal services, the results were contradictory or insignificant in some cases.

The analysis shows (see Table 9) that market opening led to a productivity improvement in mobile telecommunications of around 93% and to a 20% reduction in prices between 1990 and 2001. For the telecommunications sector as a whole, the estimated impact was a reduction in prices of 22% and a productivity increase of 24%.

The biggest price impact can be observed in the rail freight transport – a 25% decrease while at the same time productivity is estimated to be 47% higher.

For urban transport, rail passenger transport and postal services, some of the estimated impacts are rather counter-intuitive. Either prices have risen or productivity has fallen or both. The reason for these impacts may be poor data availability, which would produce unreliable econometric estimates. However, it is possible that the results reflect reality and that regulatory change has not led to lower prices and higher productivity. This seems possible given the high market shares of the incumbents, close to 100% for most countries in urban transport, rail passenger transport and postal services.

Table 8 : Impact of market opening on price and productivity: main explanatory variable

Sector	Price			Productivity		
	Main Explanatory Variable	Negative expected sign?	Significant?	Main Explanatory Variable	Positive expected sign	Significance
Electricity	Unbundling transmission	Yes	Yes	Unbundling transmission	Yes	Yes
				Market-based, non-discriminatory Congestion management	Yes	Yes
Urban	Separation of planning and operations	Yes	Yes	All	No	Yes
Rail (pass)	PSO compensation	Yes	Yes	PSO agreement	Yes	Yes
				PSO compensation	No	Yes
Rail (freight)	Price controls	Yes	Yes	Price controls	Yes	Yes
				Legal opening	Yes	Yes
Telecom (mobile)	All	Yes	Yes	Ownership	Yes	Yes
Telecom (fixed)	TPA, unbundling	Yes	Yes	All	Yes	Yes
Air	All	Yes	No	All	Yes	Yes
Gas	Ownership	Yes	Yes	n.a.	n.a.	n.a.
	Access prices	Yes	Yes			
	Price regulation	No	Yes			
Postal services	Extent of openness to competition	Yes	Yes	Unbundling, TPA, free entry	Yes	Yes
	Unbundling, TPA, free entry	No	Yes			

NB: Light grey indicates that the estimated parameter has the expected sign and is significant. White indicates that the estimated parameter has the expected sign but is insignificant or data were not available. Dark grey indicates that the estimated parameter has the wrong sign and is significant. It was not possible to produce a final model for gas productivity due to a lack of suitable productivity variables. Productivity measures used were: capacity utilisation for electricity passenger kilometres per vehicle for urban transport, passenger kilometres per employee for rail transport, revenue per employee for telecommunications, load factor for air transport and letters per employee for postal sector.

Source: Copenhagen Economics, Market Opening Milestones database

Table 9 : Quantification of the impact of market opening on performance, as a % of 1990 level

EU15	Productivity impact			Price impact		
	1990-2001 (short run)	1990-Long run (long run)		1990-2001 (short run)	1990-Long run (long run)	
Sector	Percent					
		Min	Max		Min	Max
Air	13.2	15	17	-2.3	-2	-2
Electricity	2.3	7	8	-7.6	-28	-60
Gas	-	-		-1.0	-4	-5
Postal services	28.1	36	37	4.2	7	8
Rail, freight	46.7	83	261	-24.9	-26	-26
Rail, pass.	-6.6	-9	-12	-21.9	-26	-27
Telecom, total	23.8	57	75	-22.2	-34	-35
Telecom, mobile	93.2	153	383	-20.5	-39	-43
Urban transport	1,0	2	6	2.2	4	6

NB: The table presents the estimated impacts of market opening in all seven network industries. The column 1990-2001 reflects market opening from 1990-2000 since the econometric models include market opening with a one period lag, whereby market opening in 2000 affects prices and productivity in 2001. The column 1990-long run reflects the “infinite” long-run effects of market opening up to 2003 which is the latest observation. The impacts are weighted averages for the EU15 Member States. Source: Copenhagen Economics.

4.4. Market opening vs. performance – the examples

The study shows that countries with more market opening tend to perform better than the rest. This is illustrated by looking at the performance of countries grouped in three categories as explained in Box 4. Two examples are presented below.

Box 4 : Grouping of Member States on the basis of time and level of market opening

The grouping is done according to two measures:

- the first measure is the value of the Market Opening Index (MOI) in a country in 2003 relative to the EU15 average in 2003. Thus, a value above average indicates that the country had reached a higher level of market opening in 2003 than the average EU15 value. On the other hand, if a country receives a value below average it is less open than the average EU15 countries;
- the second measure is the number of years a country has had an MOI higher than the EU15 average – comparing each year individually, meaning that the value of the MOI of each Member State in, for example, 1990 is compared to the EU15 average in 1990, then for the year 1991 and so forth. Hence, a high value indicates that the country, during 1990-2003, often had a level of market opening higher than the average level of the EU15 Member States; indicating that market opening in these countries has had a longer time to work than in most other EU15 countries. That might be an important aspect for the impact on performance if market opening affects performance gradually and not at the exact moment market opening occurs.

According to these two measures, the countries are grouped in three groups: A, B and C:

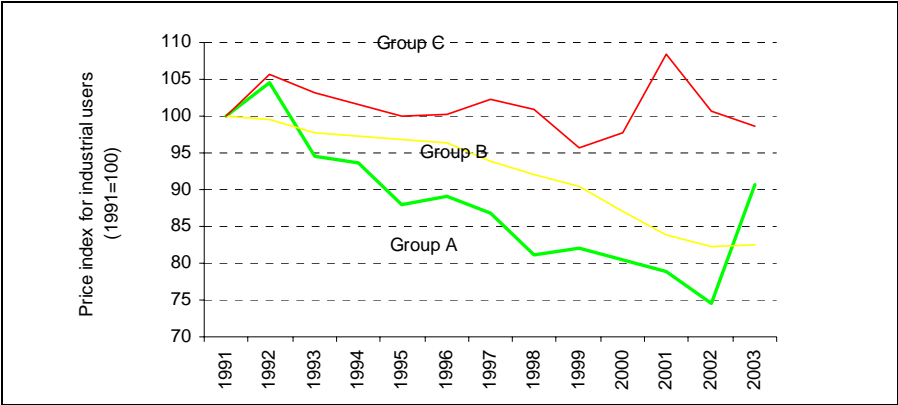
- high levels of market opening compared to EU15 average and with many years above EU15 average (= committed reformers).
- MOIs close to the EU15 average and with a medium number of years above EU15 average (= moderate reformers).
- MOIs lower than the EU15 average and therefore also with a small number of years above the EU15 average (= reluctant reformers).

Splitting countries into these three groups is based on the natural grouping to emerge from a graphical illustration for each sector rather than on “hard” objective criteria, and for each sector the grouping is done separately.

In the electricity sector, industrial prices have been declining in many Member States, but there seems to be evidence that Group A have experienced sharper declines and that Group C have experienced

more limited reductions (see Figure 23). The dramatic hike for Group A between 2002 and 2003 was caused by an extreme lack of water in the Nordic hydro-based power system. Group A are UK, SE, FI; Group B are DK, ES, DE, NL, IT, AT, BE; and Group C are IE, PT, FR, EL, LU.

Figure 23 : Industrial prices for electricity for three groupings of Member States, EU15, 1991-2003

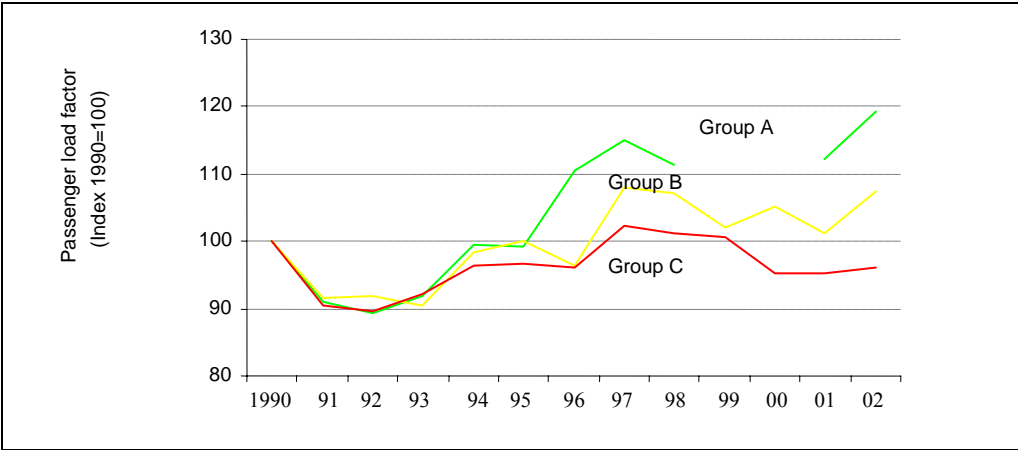


NB: Industrial PPP-prices excluding taxes, annual consumption > 2.000 MWh; maximum demand: 500 kW; annual load: 4 000 hours.

Source: Eurostat and Copenhagen Economics, Final Report “Market opening in Network Industries”, September 2005

The performance of the passenger load factor has been used to analyse the evolution of productivity in the air transport sector, i.e. the average percentage of seats sold per passenger flight. The higher the passenger load factor, the better the utilisation of the capacity available and the higher the capital productivity. A first analysis shows (Figure 24) that the flag carriers of Group A countries (NL, AT) tend to increase their efficiency, i.e. achieve higher passenger loads than those of Group B (UK, BE, DK) or Group C (all other Member States). Group A airlines seem to increase their passenger loads by 10-20% during the period, while the passenger load is more or less constant for Group C.

Figure 24 : Productivity performance in air transport for three groupings of Member States, EU15, 1990-2001



NB: The load factor, which may be interpreted also as a proxy for capital productivity, is measured as the passenger load factor, that is, the average number of seats occupied by passengers. There are several missing observations of flag carriers, in particular for Group A in 1999 and 2000.

Source: Copenhagen Economics, Market Opening Milestones database

4.5. Economy-wide and spill-over effects of market opening

This part presents the economy-wide impacts of market opening in network industries on economic performance of the whole EU, for example aggregate welfare, value added, and employment. It also shows specific spill-over effects of market opening in selected industries with highly intensive use of

the particular network industries, for example changes in employment and value added in industrial sectors relying heavily on electricity consumption. The Copenhagen Economics Trade Model has been used for econometric calculation of these effects (see Box 5).

Box 5 : The Copenhagen Economics Trade Model

The Copenhagen Economics Trade Model (CETM) is a global, static, multi-regional general equilibrium model. The model has been specifically designed for the analysis of network industries, price reforms, market integration and regulatory barriers to services trade and foreign direct investment (FDI).

The model draws on the GTAP database - version 6 (Global Trade, Assistance, and Production) which provides internally consistent data on production, consumption and international trade by country and sector for the global economy in 2001. The database combines both inter-sectoral linkages within regions and bilateral trade data characterizing economic linkages between regions. The current version of the CETM model has been adapted specifically to the analysis of the provision of network services in the EU. This model includes seven network industries, 14 individual Member States in the EU (Belgium and Luxembourg have been aggregated to a single region) and the sectors where reforms have a significant economy-wide impact (including goods-producing sectors). The detailed sectoral disaggregation in the model allows for a detailed analysis of the spill-over effects from individual network industries to sectors elsewhere in the EU economy. Compared to more traditional analyses, the model contains a relatively large number of sectors. This is required for the detailed analysis of spill-over effects across sectors, but does imply that the sector results must be carefully interpreted (especially given the poor quality of services statistics).

The model represents the direct impacts of market opening using two types of economic shocks; price shocks and productivity shocks. Price shocks are implemented by adjusting the price wedge between producer prices and producer costs, while productivity shocks are implemented by exogenously adjusting the use of real resources. A positive productivity shock means that more output can be produced with the same amount of inputs (or the same output can be produced with smaller amounts of inputs). Depending on the characteristics of each network industry, productivity shocks are implemented for labour and capital according to the econometric estimates.

The estimated sectoral price and productivity shocks determine the size and composition of the impacts of market opening in the network industries. Since the econometrics allows for calculations of the accumulated price and productivity effects of market opening for individual years, it is possible to create a direct correspondence between market opening, the defined policy scenarios and the shocks introduced in the model.

The analysis demonstrates that market opening in the network industries has contributed significantly to the economic performance of the EU economy. The simulations show that the accumulated price and productivity effects accruing from market opening until 2001 result in a 1.9% increase in welfare in the EU15. This corresponds to a yearly gain of € 98 billion in monetary terms. Furthermore, the effect on the labour market corresponds to a net addition of approximately 500 000 new jobs across the EU15 (0.3% of employment), both inside and outside the network industries.

The economy-wide effects for the EU15 as a whole are presented in Table 10. When interpreting the results, it is important to note that the analysis is essentially an ex-post assessment as market opening has already taken place.⁴⁸

⁴⁸ The effects are therefore calculated as changes compared to what the EU economy would look like without market opening. For example, when the effects of market opening are fully realised, there will be 500 000 more jobs in the EU economy than if market opening had not taken place. But since market opening has already taken place, many of these new jobs already exist in the EU economy.

Table 10 : Economy-wide effects of market opening for the EU15

	Effects accruing from market opening 1990-2001 (short-run effects)	
	% change	Absolute effect
Welfare	1.9	€ 98 bn
Value added	2.0	€ 150 bn
Employment	0.3	500 000 jobs

NB: The table shows the economy-wide effects that emerge when the economy has adjusted fully to the effects of market opening. Welfare is measured as comprehensive consumption.

Source: CETM model - Copenhagen Economics.

The gains from market opening are bigger in the telecommunications and electricity sectors, as these two sectors account for almost two thirds of all output from the seven network industries, and also market opening has been faster and more penetrating in these two sectors, and finally the impact of market opening on prices and productivity in the two sectors themselves is larger and more certain than in other sectors. Also, in certain other sectors, most notably postal services and gas, it is difficult to identify a positive link between market opening and economic performance. However, the overall impact is limited because these sectors are rather small.

All EU15 Member States seem to gain from market opening in network industries but the distribution of the welfare effects reveals large differences between them. Some Member States, such as Denmark and Finland, have gained notable increases in welfare of up to 4% while other Member States such as Greece have hardly gained anything. Member States that initiated market opening early and have opened markets more than others are the ones to have gained the most.

The economy-wide gains are explained by both the direct effects of market opening in the network industries (as described by the econometric estimates) and the spill-over effects on other sectors of the economy. The spill-over effects across non-network industries are evenly distributed for the EU as a whole. However, they tend to be slightly stronger for the service sectors as a result of their more intensive use of network services (Table 11).

Table 11 : Spill-over effects on selected non-network industries

	Business services	Distributive trade	Other services	Metal and electro-technical industries	Petroleum and chemical industries
Market size	2 %	2 %	1 %	1 %	2 %
Value added	2 %	2 %	1 %	0 %	1 %
Employment	1 %	0 %	0 %	-1 %	0 %

NB: The table shows average EU15 changes in market size, value added and employment in select non-network industries as a result of market opening. Market size is measured as the total value of output.

Source: CETM model – Copenhagen Economics.

5. Consumers' views

Two separate surveys to examine the satisfaction of consumers have been conducted. The first opinion poll was conducted in November 2004 to survey consumers' satisfaction on services of general economic interest in all EU25 Member States.⁴⁹ It was composed of a short set of general questions to allow for comparison of the results with the surveys conducted in the past. The second survey was conducted at the beginning of 2005 in 10 new Member States. Its main objective was to find out about the specific problems related to the services of general economic interest which are

⁴⁹ Please note that for the EU25 the surveyed services included: electricity and gas supply, water supply, fixed and mobile telephone services, postal services, urban transport and inter-city rail services. For the ten new Member States the survey included air transport but not water supply.

different than in the EU15, and citizens' expectations related to EU accession and to the effects resulting from increased competition in those sectors.

5.1. Overall satisfaction in EU25

The trend recorded in previous surveys since 2000 is confirmed: **postal services get the best appraisal from consumers while transport services, especially inter-city rail, have a relatively high level of dissatisfaction.** Among other services, the satisfaction levels are clearly differentiated: satisfaction is higher for gas and electricity than for fixed and mobile telephone services (Table 12).

Table 12 : Global consumer satisfaction rate

	EU25		EU15		EU10	
	Satisfied	Not satisfied	Satisfied	Not satisfied	Satisfied	Not satisfied
postal services	77%	16%	78%	16%	77%	17%
electricity supply services	74%	21%	74%	20%	76%	19%
gas supply services	74%	19%	75%	18%	76%	18%
mobile telephone services	73%	22%	72%	23%	72%	23%
fixed telephone services	73%	22%	74%	21%	75%	21%
transport services within towns/cities	70%	24%	70%	24%	70%	24%
rail services between towns/cities	66%	28%	66%	28%	65%	29%

NB: Sample includes only consumers having access to a given service

Source: Special Eurobarometer, December 2004

The global consumer satisfaction rate was calculated using a mix of the various criteria scores from the other answers on affordability, value for money, quality, information, terms of contract and finally customer service. Due to different methodology, the data differ from the figures presented in section 5.2 where a simple direct question about satisfaction/dissatisfaction was asked.⁵⁰

National results show that Italy leads dissatisfaction in six sectors out of eight. France leads dissatisfaction for mobile telephone services and Greece for electricity supply. As regards consumer satisfaction, Cyprus leads for mobile and fixed telephone, United Kingdom for electricity, Slovenia for gas supply and postal services, Belgium for water supply and urban transport and Lithuania for inter-city rail services.

A large majority of EU citizens have **access** to services of general economic interest. Easy access varies from 90% for electricity to 64% for inter-city rail services. However, problems with access to fixed telephone services were more widely reported by consumers in the new Member States (e.g. Lithuania, Latvia), and also in Spain.⁵¹

Price is a criterion of high importance for consumers. **A majority of EU consumers think that services of general economic interest are affordable**, from 63% for inter-city rail services to 81% for postal services. However, there is still a substantial percentage of consumers who believe that these services are not affordable or that their prices are excessive. Around 30% of citizens think so or each service, except for postal services where dissatisfaction is the lowest - 17%.

A majority of EU consumers also think that the services of general economic interest they use are **value for money** (from 54% for inter-city rail services to 71% for postal services). Here again, though, dissatisfaction reaches quite high rates for some services (e.g. 42% for mobile phone services

⁵⁰ For more information on methodology of these indices and both surveys please visit the following website: http://europa.eu.int/comm/consumers/cons_int/serv_gen/cons_satisf/index_en.htm.

⁵¹ Problems related to accessibility can sometimes be specific only for certain geographical areas. The exact nature of these problems, however, cannot be addressed through this type of consumer surveys.

and inter-city rail, 38% and 36% for electricity and gas respectively) and in some countries (e.g. 60% for mobile phones in France).

Another analysis was made on the correlation between value for money and affordability. For example, among those who answered that mobile phone prices are justified, 91% think they are justified and affordable whereas 9% think they are justified but not affordable. Among those who answered that these prices are not justified, 40% admit that they are affordable – and 60% think they are both not justified and not affordable. In other words, for these latter 40%, mobile phone prices are excessive but acceptable as regards their weight on the consumer's budget. For the 60% on the contrary, prices are both too high in essence and relatively to the budget. This is 25% of all consumers for which the situation is unacceptable. **The rate of “double dissatisfaction” (prices not justified and not affordable) is the highest for gas supply and inter-city rail services (69% of consumers saying prices are not justified).**

EU consumers are by and large satisfied with the quality of services of general economic interest (satisfaction going from 74% for inter-city rail services to 94% for electricity) and the **information** they receive, although less from inter-city rail and urban transport services. Satisfaction with information provided by service providers range from 72% (inter-city rail services and urban transport) to 82% (fixed telephone). For both the quality and information aspect, dissatisfaction is the highest for inter-city rail services (24% and 21% respectively).

Terms and conditions of contract are generally seen to be fair by around 70% of EU consumers. Such averages can “hide” significant differences, however. For example, the proportion of French consumers not satisfied with their mobile phone contracts comes to 44% (39% in Italy and 36% in Spain) and 49% in Italy for fixed telephone contracts (10% more than the satisfaction rate in Italy).

The **safety** of these services⁵² was also investigated. Majorities between 75 and 89% agree that electricity, water, urban transport and gas services are safe.

Customer service does not create major dissatisfaction except for rail and urban transport services. Dissatisfaction for those two services reaches 23% and 18% respectively. Dissatisfaction figures have risen for all services in the EU15 since 2002. The trend is similar in the new Member States, except for water and postal services where figures are stable compared to the 2003 survey, but dissatisfaction is somewhat lower than in the EU15.

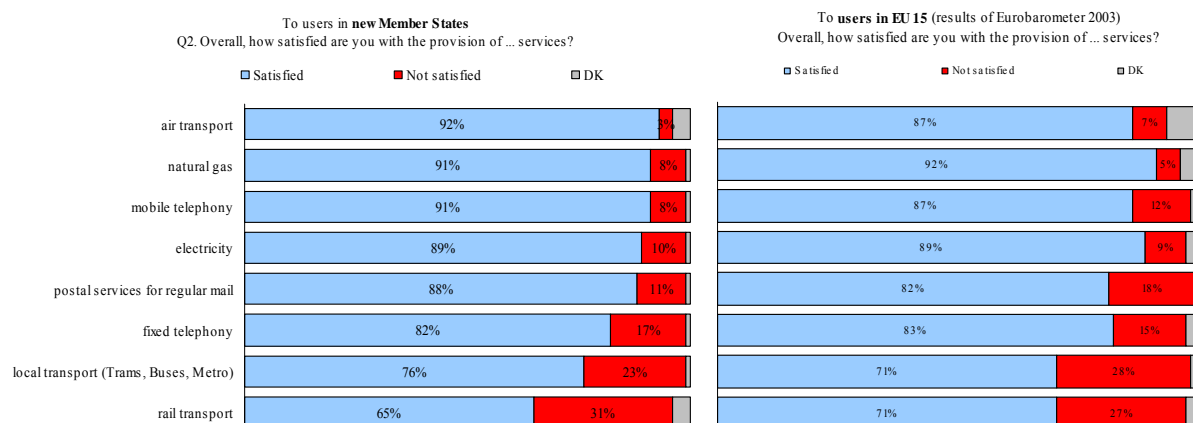
Relatively few consumers lodge **complaints**. 8% of consumers did so within the twelve months prior to the survey for mobile and fixed telephone services. **They were 5% for postal services and inter-city rail. However, in some countries, the practice is more widespread. 18% of Finnish consumers complained about mobile phone services, 13% of Swedish consumers about fixed telephone and 10% of Dutch consumers about inter-city rail services.** Complaint handling was deemed to have been managed satisfactorily by a majority for issues relating to electricity, mobile phone, gas and fixed telephone. Complaint handling provided by postal services, rail services and urban transport created dissatisfaction for a majority of consumers who lodged complaints.

5.2. Consumer satisfaction in new Member States

The charts below presents the **overall satisfaction levels** with the provision of the services in the new Member States (results from beginning of 2005) compared to the satisfaction levels of EU15 (results from 2003).

⁵² Except for fixed telephone and postal services.

Figure 25 : Consumers satisfaction with the provision of SGEI



Source: Special Eurobarometer, 2005; and flash Eurobarometer, 2003

When comparing consumer satisfaction between old and new Member States, for the majority of services satisfaction levels in the new Member States seem to be generally similar to those in the old EU15, despite the better overall performance of these services in EU15 countries.

When users in new Member States were asked to choose from a list which **aspect of the service is the least satisfying** for them (the list being price, quality, and how well it meets the needs), **price** is the aspect that is cited most **in the case of electricity** (79% of users dissatisfied with this aspect), **fixed telephony** (75%), **natural gas** (72%), **mobile telephony** (63%) and **air transport** (57%).

As far as **local and rail transport** are concerned, it seems that user **dissatisfaction is based on more than one aspect and not mainly on price**. For rail transport, respondents were mainly critical about the price of regional train services, almost half of users saying they were unsatisfied with the price of fast trains. Although price is an important element of discontent, **the overall quality of both services is also criticised** by 34% and 27% respectively of respondents.

Effects of EU membership

Consumers were asked what they expected the main effects of the recent EU membership to be on the sectors of general economic interest in terms of price and quality. **49% of respondents think that price increases will be the main effect, followed by 27% of respondents who see quality improvement as the main effect. 11% believe that the prices will go down, and only 1% of consumers think that quality will worsen.**

These results are not surprising given the fact that even before joining the EU **citizens from the new Member States had expressed their concern at a possible increase in regional disparities, possibly inflationary effects on their national economy, etc., as a result of convergence in the EU. In this case, however, convergence is also associated with a very positive vision regarding quality improvement in these services.**

This positive vision is confirmed further when analysing the relation between EU accession and the overall positive and negative impact of Services of General Economic Interest. It appears that, on average, **a majority of respondents believe their countries' membership of the European Union will have a positive impact on all services of general economic interest. This belief is more defined where telephony, either mobile or fixed, and air, rail transport and postal services are concerned: 6 out of 10 citizens were convinced of the beneficial impact of European Union membership. It is somewhat less affirmed where electricity, natural gas and local transport are concerned.**

Impact of increased competition on prices and quality

When the respondents were asked how the increased competition in services of general economic interest would influence price and quality, a large majority of respondents thought that it would push prices downwards and definitely or at least probably improve quality in all sectors. The most optimistic are the Poles while the most pessimistic are the Hungarians and the Latvians. There are, however, huge discrepancies among the countries for each of the sectors.

With regard to the **positive consequences on quality in a more competitive context for services of general economic interest**, people seem to be more certain for services such as telephony and electricity. When it comes to postal, transport and gas services we observe an equal split between those who say that competition would definitely improve the service and those who think that competition would probably improve the service, although when looking at both scores together, **between 70% and 82% of respondents think that competition is a way to improve the quality of services.**

6. Statistical annexes

Table 13 : Market Opening Basic Data in Energy (September 2005)

	Electricity					Gas				
	Market opening	Size of open market in TWh	Eligibility threshold	Unbundling		Market opening	Size of open market in bcm	Eligibility threshold	Unbundling	
				TSO	DSOs				TSO	DSOs
Austria	100%	55	-	leg.	acc.	100%	7	-	leg.	leg.
Belgium	c. 90%	60	⁵³	own.	leg.	c. 90%	11		leg.	leg.
Denmark	100%	33	-	own.	leg.	100%	5	-	own.	leg.
Finland	100%	80	-	own.	leg.					
France	70%	275	Non HH	leg.	man.	70%	28	Non HH	leg.	acc.
Germany	100%	500	-	leg.	acc.	100%	82	-	leg ⁵⁴ .	acc.
Greece	62%	29	Non HH ⁵⁵	leg.	acc.					
Ireland	100%	22		leg.	man.	86%	3	non HH	man.	man.
Italy	79%	225	Non HH	own.	man.	100%	62	-	own.	leg.
Luxembou	84%	3	non HH	leg.	man.	80%	1	non HH	man.	man.
Netherlan	100%	100	-	own.	leg.	100%	38	-	own.	leg.
Portugal	100%	42	-	leg.	acc.					
Spain	100%	210	-	own.	leg.	100%	20	-	leg.	leg.
Sweden	100%	135	-	own.	leg.	95%	1	Non HH	own.	acc.
UK	100% ⁵⁶	335	-	own.	leg.	100%	95	-	own.	own.
Estonia	12%	1	40 GWh	leg.	leg.	95%	1	Non HH	acc.	acc.
Latvia	76%	4	Non HH	leg.	acc.	0%	0	-	acc.	acc.
Lithuania	74%	6	non HH	own.	leg.	90%	3	non HH	acc.	acc.
Poland	80%	120	non HH	leg.	acc.	72%	5	non HH	acc.	acc.
Czech R	74%	44	non HH	own.	acc.	25%	3	-	none.	none.
Slovakia	79%	24	Non HH	leg.	man.	72%	4	non HH	man.	man.
Hungary	67%	22	Non HH	own.	acc.	66%	8	Non HH	leg.	acc.

⁵³ Full market opening in the Flanders region. Non households (non HH) in other regions.

⁵⁴ Not all TSOs yet. But the big five are legally unbundled.

⁵⁵ All customers in non-connected islands are non-eligible.

⁵⁶ In Northern Ireland the electricity market is open to non HH only.

Slovenia	77%	10	Non HH	own.	acc.	91%	1	Non HH	man.	acc.
Cyprus	35%	1	350 MWh	man.	none.					
Malta	0%	0	n.a.	derog						

Source: European Commission, DG TREN, "2005 report on the internal gas and electricity market", COM (2005) 568 final

For each of the sectors, the first column indicates the theoretical percentage of demand opened to competition. The second column indicates the size of the market that is opened to competition. The third column indicates the eligibility threshold (i.e. the level of consumption above which the user benefits from the choice of supplier. In some cases, the level is non-households). The fourth column indicates the type of unbundling for both transport system operators (TSOs) and distribution system operators (DSOs). Unbundling can be simply accounting unbundling (different accounts within the same company for the producer and the system operator), management unbundling (although within the same legal entity, the management is different for both companies), legal unbundling (both companies are separate legal entities) or ownership unbundling (the producer does not own the system operator). The directives require at least legal unbundling.

Table 14 : Market Opening Basic Data in Rail transport

Market Segments	Opening up to competition (done or foreseen)	EU Legislation	State of play
Inter-national freight transport	15 March 2003 on the Trans-European Rail Freight Network. Full market opening initially foreseen for 15 March 2008, but brought forward to 1 January 2006 after the adoption of the Second Railway Package	« First Railway package » among which directives 2001/12, 2001/13 and 2001/14 (JO L 075 , 15/03/2001)	Transposition deadline was 15 March 2003. By the end of 2004, 4 Member States had been condemned by the Court of Justice for not having notified the Commission of national implementing measures (DE, EL, LU and UK). The other Member States have notified the Commission and their measures are now being examined by the Commission.
Domestic freight transport	1 January 2007.	« Second Railway package » in particular Directive 2004/51 (OJ L 164 of 30 April 2004)	Member States have to implement Directive 2004/51 by 31 December 2005 at the latest to allow full opening of the market for international freight transport by rail. Domestic transport will be opened by 1 January 2007 at the latest, except for France, which has to open its domestic market by 31 March 2006 as a condition for the approval of the State aid awarded to SNCF-Fret. Adoption of the package also made for the creation of the European Railway Agency, which will have a crucial role in the harmonisation of technical standards for the railways.
Passenger transport	Market opening for international passenger services proposed for 2010. Cabotage only allowed on international services.	« Third railway package » Adopted by the Commission on 3 March 2004. Contains 4 proposals (Regulation on Passenger rights; Regulation on Freight Quality; Directive for train drivers' licences and Directive for opening of international passenger transport by rail)	Proposals have not been published yet. The Committee of the Regions and the European Economic and Social Committee have adopted their opinions. Currently being discussed within the Council and EP.

Member States	Legal Opening	Effective opening
DE	Access to the network is theoretically	Generally, conditions for access to network are good. There are

	possible for any operator established in Germany and for all types of services (freight and passengers).	many independent operators and competition is effective on all segments bar long-distance passenger transport, where competition is still marginal. The incumbent's market share is still at 90%. However, the process of allocating capacities remains problematic as its independence is not guaranteed.
AT	Access to the network is theoretically possible for any operator licensed in Austria and for all types of services (freight and passengers).	Many barriers limit competition (e.g. allocation of licences, market dominance of ÖBB as infrastructure operator allocating routes). Some small regional companies have been active for a long time on passenger and freight segments.
BE	Only international freight transport is opened to licensed operators.	On the segment opened to competition, rules remain unclear because of a lack of established institutional and legal framework. The SNCB has a dominant position. One independent competitor is active on the market.
DK	- Freight is opened to competition for any operator holding a licence in Denmark. - With regard to passenger transport, up to 15% of services (with the exclusion of urban services) may be tendered.	- Transport of goods is still dominated by the incumbent (owned by DB AG) but is effectively contestable.
ES	Only international freight transport is theoretically opened to competition for licensed operators.	Numerous informal barriers to entry exist resulting from the lack of an institutional framework. There is no active independent operator. Rail gauge differences are an obstacle to operating freight services between the Iberian peninsula and the rest of Western-Europe.
FI	For the time being, only international freight transport is liberalised.	Besides rail gauge (Russian sizes), barriers to entry in terms of information and the low attractiveness of the market considerably reduce effective competition. VR is currently the only operator.
FR	Only international freight transport is theoretically opened to licensed operators.	Lack of institutional framework. No other operator than SNCF, though 2 new operators have requested authorisation to start services
EL	As soon as the law transposing the railways package enters into force, international freight on the TERFN will be opened to licensed operators.	Greece only notified its implementing measures in March 2005. The only operator is the incumbent. No new operators have been notified and/or applied for authorisation to operate services.
IE	The provisions of the first railways package have no impact on the Irish railways system but domestic freight may be soon opened to competition	Besides the connection Belfast-Dublin, there is no other effective or potential form of competition.
IT	Access to the network is theoretically possible for any operator licensed in Italy and for all types of services (freight and passengers). However, these provisions are subject to reciprocity for some services.	Numerous companies received a licence in 2002-2003 and still have to obtain a safety certificate. Some railways companies are successfully active in freight in Northern Italy on regional and international segments
LU	Only international combined transport of goods is theoretically opened to competition.	Competition is practically non-existent.
NL	International freight transport and regional passenger transport are opened to competition.	Procedures to access the network are functioning correctly and some independent operators are active on freight and on some regional passenger segments.
PT	International freight and international passenger segments are opened to competition. Tenders may be used for domestic transport.	Effective competition remains limited. Because of the situation in Spain and France, interest in operating in Portugal is still limited.
SE	- Freight transport is opened for domestic services, as well as for international services on international corridors. - Local authorities issue tenders for	The liberalisation process is well-established. Competition among operators is relatively intense, especially in the segment of passenger transport. The incumbent SJ enjoys a monopoly on profitable passenger lines and there is competition elsewhere.

	local passenger transport as well as for long-distance (“Rikstrafiken”) passenger transport.	
UK	Railways transport is liberalised for all types of services. Passenger transport is organised via franchising.	Competition among the 25 passenger transport operators for obtaining franchises is intense. The regulatory authority is considering decreasing the number of franchises. Freight is dominated by one operator but competitors are increasingly emerging.

Source: European Commission. Situation as of December 2004.

Table 15 : Transposition and evolution of Member States postal laws (as of September 2005)

Member State	Date of current law or amendment	Transpose 1997/67	Transpose 2002/39	Conformity with Directive
AT	2003	Yes	Yes	Yes
BE	2002	Yes	Yes	Yes
CY	2002	Yes	Yes	*
CZ	2000	Yes	Yes	*
DE	2002	Yes	Yes	Yes
DK	2002	Yes	Yes	Yes
EE	2001	Yes	No	*
ES	2002	Yes	Yes	*
FI	2001	Yes	Yes	Yes
FR	1999	Yes	No	Yes
EL	2003	Yes	Yes	Yes
HU	2003	Yes	Yes	*
IE	2002	Yes	Yes	Yes
IT	2003	Yes	Yes	Yes
LT	2004	Yes	Yes	*
LU	2002	Yes	Yes	Yes
LV	2004	Yes	Yes	*
MT	2004	Yes	Yes	*
NL	2000	Yes	Yes	Yes
PL	2004	Yes	Yes	*
SE	1993	Yes	Yes	Yes
SI	2004	Yes	Yes	*
SK	2003	Yes	Yes	*
UK	2002	Yes	Yes	Yes

Source: Wik 2004 and European Commission SEC(2005)388

* Conformity issues identified by the Commission are being discussed with Member States.

Table 16 : State of transposition and infringements proceedings in telecommunications

STATE OF TRANSPOSITION AND INFRINGEMENT PROCEEDINGS

At the end of October 2004, twenty Member States had completed the adoption of primary legislation to transpose the five Directives establishing the new regulatory framework¹. Those that had not were Belgium, the Czech Republic, Estonia, Greece and Luxembourg. However, substantive secondary legislation is still to be adopted in a number of Member States. In addition, twenty Member States have supplied complete information with regard to the Competition Directive.

	Framework 2002/21/EC	Access 2002/19/EC	Authori- sation 2002/20/EC	Universal Service 2002/22/EC	ePrivacy 2002/58/EC	Competi- tion 2002/77/EC
Belgium	☹	☹	☹	☹	☹	☹
Czech Rep.	☹	☹	☹	✓	✗	☹
Denmark	✓	✓	✓	✓	✓	✓
Germany	✓	✓	✓	✓	✓	✓
Estonia	✗	✗	✗	✗	✗	✗
Greece	✗	✗	✗	✗	✗	✗
Spain	✓	✓	✓	✓	✓	✓
France	☹	☹	☹	☹	✓	✓
Ireland	✓	✓	✓	✓	✓	✓
Italy	✓	✓	✓	✓	✓	✓
Cyprus	✓	✓	✓	✓	✓	✓
Latvia	✓	✓	✓	✓	✓	✓
Lithuania	✓	✓	✓	✓	✓	✓
Luxembourg	✗	✗	✗	✗	✗	✗
Hungary	✓	✓	✓	✓	✓	✓
Malta	✓	✓	✓	✓	✓	✓
Netherlands	✓	✓	✓	✓	✓	✓
Austria	✓	✓	✓	✓	✓	✓
Poland	✓	✓	✓	✓	✓	✓
Portugal	✓	✓	✓	✓	✓	✓
Slovenia	✓	✓	✓	✓	✓	✓
Slovakia	✓	✓	✓	✓	✓	✓
Finland	✓	✓	✓	✓	✓	✓
Sweden	✓	✓	✓	✓	✓	✓
United Kingdom	✓	✓	✓	✓	✓	✓

✓ = full transposition notified/complete information supplied ☹ = partial transposition notified/partial information supplied ✗ = no transposition notified/no substantial information supplied

Source: 'Report on the Implementation of the Telecommunications Regulatory Package'. It indicates the state of transposition according to the notifications received from the Member States as of the end of November 2004. The next update of the report will be available at the end of 2005.

Table 17 : Market structure in telecommunications

Member States	Number of major competing players in fixed telecommunications 2004	Market share of the incumbent in local calls Dec. 2003	Market share of the incumbent in national calls Dec. 2003	Market share of the incumbent in international calls Dec. 2003
Belgium	4	81.1%		60.8%
Czech Rep.	1	n.a.	n.a.	n.a.
Denmark	6	n.a.	n.a.	n.a.
Germany	9	90.0%	62.0%	57.0%
Estonia	3	n.a.	n.a.	n.a.

Greece	1	90.7%	84.2%	75.8%
Spain	5	80.3%	75.7%	64.8%
France	5	80.7%	69.4%	68.8%
Ireland	2	95.0%	70.0%	70.4%
Italy	4	69.8%	71.6%	61.1%
Cyprus	1	100%	100%	99.6%
Latvia	1	98.1%	99.6%	81.4%
Lithuania	1	96%	94%	86%
Luxembourg	1	85%	85%	76%
Hungary	5 local monopolies	99.9%	98.7%	93.1%
Malta	1	100%	100%	100%
The Netherlands	2	≈ 76%	≈ 61%	≈ 46%
Austria	6	51.0%	73.0%	50.0%
Poland	2	90.8%	83.2%	84.8%
Portugal	2	n.a.	83%	73%
Slovenia	1	100%	100%	86.7%
Slovak Rep.	1	100%	100%	100%
Finland	3	95.0%	35.0%	26.0%
Sweden	11	56%	56%	40%
United Kingdom	9	56.7%	60.9%	57.5%

Source: European Commission, DG INFSO and Eurostat.

NB: Market shares are in most cases based on retail revenues. Data are not comparable across countries.

Data for local calls include calls to the internet. Data are missing for Denmark (not available), Czech Rep. (confidential), Estonia (confidential). Belgium, Malta, Slovenia and Sweden make no distinction between local and national calls, Internet calls in Ireland are split across the three categories. Figures for Lithuania, Luxembourg and Portugal are in minutes of traffic. Figures for Lithuania and Portugal include non-fixed telephony. Hungary's figures do not include voice over IP. Figures for the Netherlands are indicative. The figure for local calls in Finland is the combined market share of the three main players. Figures for Sweden include internet traffic in local and national calls. Data for Austria are from September 2003.

Table 18 : Presence of largest energy companies in selected individual Member States

Electricity				
Company	Leader	Major player	Turnover/ employees (consolidated - 2003)	Owned by / Participation >25% (a.o.) in
RWE	Germany	Austria, UK, Czech Rep., Slovakia, Hungary	EUR Bi. 47 / 139,000	Public/ Thyssengas, Thames Water, Transgas, Matrai, Tigaz, etc.
EDF	France	Austria, Belgium, Germany, UK, Poland, Slovakia, Hungary	EUR Bi 49 / 167,000	French State / Finelec, Hispaelec, EnBW, Semobis, Elektrownia Rybnik, etc.
EON	-	Austria, Denmark, Finland, Germany, Netherlands, Sweden, UK, Czech Rep. Slovakia, Hungary	EUR Bi 48 / 65,000	Public/ DKCE, Powergen, Ruhrgas, Veba, Viag Telecom, D-Gas, Degussa, Latvijas Gaze, East Midlands Electricity, etc.
ELECTRABEL	Belgium, Netherlands	France, Italy, Poland	EUR Bi 11 / 17,000	SUEZ / Sibelgas, Epon, Spark Energy, Unide energia, Novelectra, Elia, Energie du Rhône, Aceaelectrabel, Udine energia, etc.
ENDESA	Spain.	France, Portugal, Italy	EUR Bi 17 / 27,000	Public / SNET, Ergon energia, etc.
VF	Sweden	Denmark, Finland, Germany	n.a.	Swedish Ministry Finance/ Retriva, Securum, etc.
VERBUND	Austria	Italy	EUR Bi 468 / 1,500	Austrian state / Donaukraft, Grenzkraftwerke, etc.

ENEL	Italy, Slovakia	Spain	EUR Bi 32 / 83,000	Italian Ministry Finance / Deval, APE, etc.
FORTUM	Finland	Sweden	EUR Bi 11.5 / 13,000	State of Finland / Neste, Oy, Älvkraft, IVO energy, Fingrid, etc.
ESSENT	-	Belgium, Netherlands	EUR Bi 7.3 / 12,500	Provinces and communes in the Netherlands / Essent Germany, Essent Belgium, etc.
NUON	-	Belgium, Netherlands	EUR Bi 5.4 / 10,500	State of Netherlands / Nuon Belgium, Nuon Germany, etc.
CENTRICA	-	Belgium, UK	GBP Bi 17.9 / 42,500	Public / British gas services, electricity direct, etc.
Gas				
Company	Leader	Major player	Turnover/ employees (consolidated – 2003)	Owned by / Participation in
EON	Germany, Sweden, Slovakia	UK, Czech Rep., Hungary	EUR Bi 48 / 65,000	Public/ DKCE, Powergen, Ruhrgas, Veba Telecom, Viag Telecom, D-Gas, Degussa, Latvijas Gaze, East Midlands Electricity, etc.
GDF	France, Slovakia	Austria, UK, Hungary	EUR Bi 17.1 / 38,000	State of France / CFMH, COGAC, Erdol erdgas, cofathec, etc.
RWE	Czech Rep	Austria, Germany, Ireland, UK, Hungary	EUR Bi. 47 / 139,000 (2003)	Public/ Thyssengas, Thames Water, Transgas, Matrai, Tigaz,
CENTRICA	UK	Belgium	GBP Bi 17.9 / 42,500	Public / British gas services, electricity direct, etc.
ENI	Italy	Hungary	EUR Bi 71.4 / 81,000	Italian Ministry Finance / AGIP, etc.
SHELL	Netherlands	Germany, UK	EUR Bi 167 / 119,000	Public / Repsol, Sinol, etc.

Source: adapted from DG TREN estimates, Annual Report on the Implementation of the Gas and Electricity Internal Market COM(2004)863 and annual reports of companies.

Table 19 : Market structure in electricity

Electricity	Number of active licensed suppliers	Number of suppliers independent of DSO	Number with market share > 5%	Approx (to nearest 10%) Top 3 suppliers (1) share (all consumers) end - 2004	Market share of foreign owned suppliers	Main obstacle to competition ⁵⁷
Austria		4	5	60%	2%	U/R
Belgium		20	2	90%	>50%	MS/I
Denmark		3	n.k.	n.k.	n.k.	None
Finland		5	5	40%	25%	None
France		5	1	90%	9%	MS/I
Germany		13	4	50%	c. 20%	U/B
Greece		10	1	100%	0%	MS/I
Ireland		7	3	100%	12%	MS/I
Italy		119	6	40%	n.k	MS/I
Lux		4	4	90%	0%	U/B
Neth.		18	3	70%	n.k.	MS/I

⁵⁷ Only main obstacle is mentioned. Other obstacles may nevertheless exist. In addition to this, the island states of Malta and Cyprus have limited scope for the development of competition for electricity. U/R = Unbundling/regulation ; MS/I = Market structure or lack of integration; PP = long terms PPAs or regulated end-users prices.

Portugal		4	2	100%	6%	PP
Spain		11	5	80%	8%	MS/I
Sweden		n.k.	3	50%	40%	None
UK		3	6	60%	50%	None
Norway		5	4	40%	2%	None
Estonia		0	1	100%	3%	PP
Latvia		0	1	100%	0%	MS/I
Lithuania		5	3	100%	0%	MS/I
Poland		20	6	50%	0%	PP
Czech R		0	3	90%	n.k.	MS/I
Slovakia		1	1	90%	28%	MS/I
Hungary		0	7	50%	0%	PP
Slovenia		6	6	70%	20%	MS/I
Cyprus		0	1	100%(1)	0%	n.a.
Malta		0	1	100%(1)	0%	n.a.

(1) includes both eligible and non-eligible markets

Source: European Commission, DG TREN, "2005 report on the internal gas and electricity market" COM (2005) 568 final

Table 20 : Market structure in gas

Gas	Number of active licensed suppliers	Number of suppliers independent of DSO	Number with market share > 5%	Approx (to nearest 5%) Top 3 suppliers (1) share (all consumers) end - 2004	Market share of foreign owned suppliers
Austria		6	4	n.k.	8%
Belgium		12	5	95%	n.k.
Denmark		2	3	95%	3%
Finland		n.k.	n.k.	n.k.	n.k.
France		8	3	n.k.	n.k.
Germany		9	1	n.k.	n.k.
Greece		n.k.	n.k.	n.k.	n.k.
Ireland		8	3	95%	1%
Italy		110	5	60%	0%
Lux.		1	4	95%	n.k.
Neth.		5	3	80%	n.k.
Portugal		n.k.	n.k.	n.k.	n.k.
Spain		4	5	80%	n.k.
Sweden		n.k.	n.k.	n.k.	n.k.
UK		8	6	60%	41%
Estonia		1	1	100	n.k.
Latvia		0	1	100	0%
Lithuania		0	2	100	0%
Poland		0	7	n.k.	n.k.
Czech R.		0	7	55%	n.k.
Slovakia		0	1	100%	n.k.
Hungary		0	7	80%	n.k.
Slovenia		0	6	n.k.	0%
Cyprus		n.k.	n.k.	n.k.	n.k.
Malta		n.k.	n.k.	n.k.	n.k.

(1) includes both eligible and non-eligible markets

Source: European Commission, DG TREN, "2005 report on the internal gas and electricity market" COM (2005) 568 final