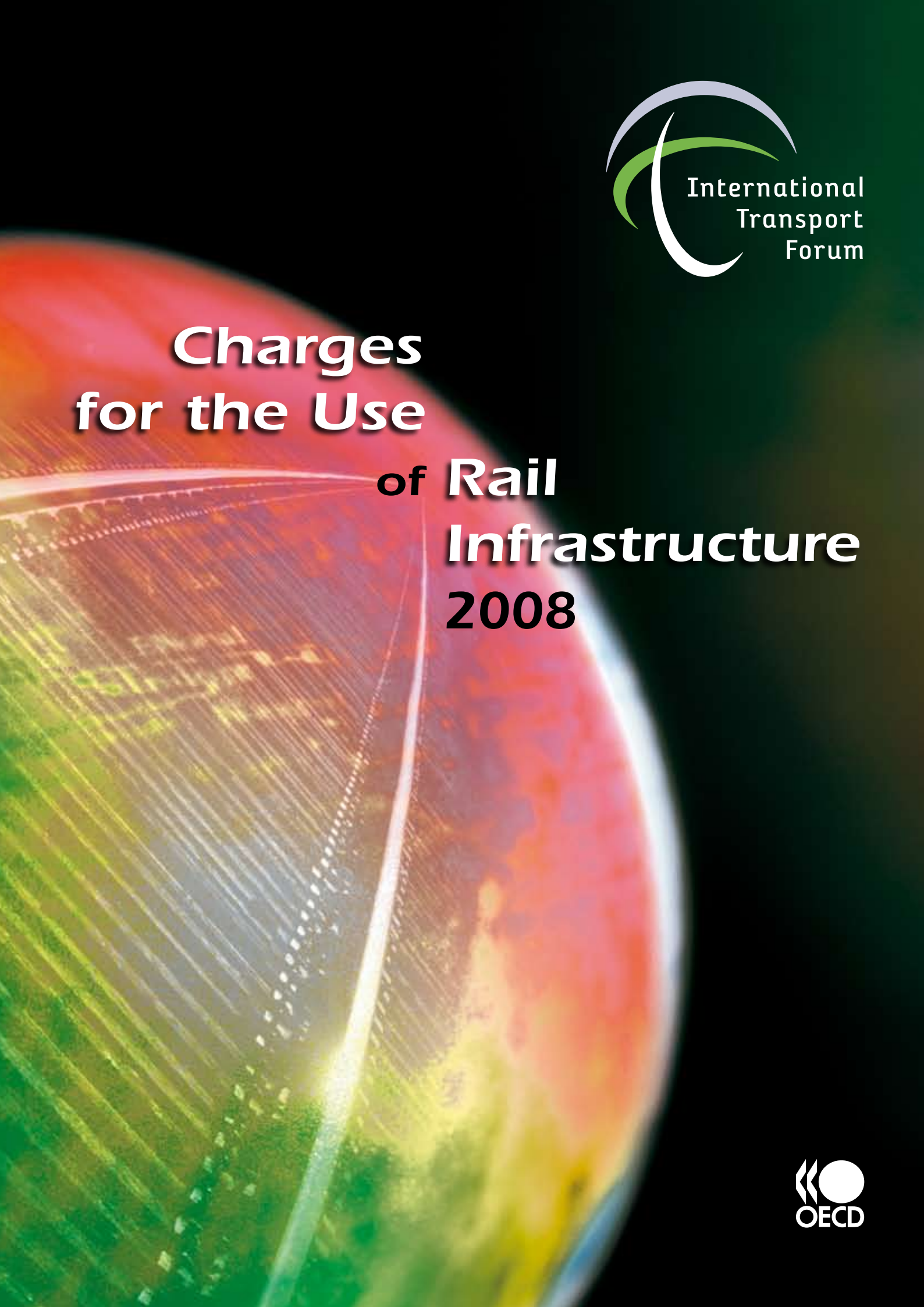
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The International Transport Forum was created under a Declaration issued by the Council of Ministers of the ECMT (European Conference of Ministers of Transport) at its Ministerial Session in May 2006 under the legal authority of the Protocol of the ECMT, signed in Brussels on 17 October 1953, and legal instruments of the OECD. The Forum's Secretariat is located in Paris.

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The OECD and the International Transport Forum established a Joint Transport Research Centre in 2004. The Centre conducts co-operative research programmes addressing all modes of transport to support policy making in Member countries and contribute to the Ministerial sessions of the International Transport Forum.

The present report updates the information on rail infrastructure charges published in *Railway Reform and Charges for the Use of Infrastructure*, OECD-ECMT 2005.

Further information about the International Transport Forum is available on Internet at the following address:
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RAILWAY ACCESS CHARGES IN THE EU:
CURRENT STATUS AND DEVELOPMENTS SINCE 2004

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RAILWAY ACCESS CHARGES IN THE EU: CURRENT STATUS AND DEVELOPMENTS SINCE 2004

Introduction

In 1991, with the issuance of Directive 1991/440, the European Commission began a long process of reforming the Community's railways. In broad summary, the directive ordered the Community's railways to: separate the accounts for rail infrastructure from those of the operator(s) on the infrastructure; operate the infrastructure as a separate "business"; allow open access to the infrastructure (initially only for certain international operators, but eventually for essentially all operators); institute "non-discriminatory" access charges for operators on the infrastructure; base access charges on marginal cost (or, alternatively, on marginal cost plus a non-discriminatory markup); and, ensure that funding from operator access charges plus public support would suffice to pay for maintaining the network and make the infrastructure manager (IM) financially stable in the long run.

The Commission's Directive has proven to be difficult to implement, partly because of the inherent operational and economic complexity of rail infrastructure separation (much more difficult on railways than on highways or airways), partly as a result of adamant opposition of the national railways to the degree of organizational change and reduction or fragmentation of "turf" required, and partly because of political opposition from the individual governments to loss of national control over a significant sector of their economy. The process has evolved through a number of stages ("packages") which have progressively refined and strengthened the original objective of reducing the importance of the national "fortress" boundaries and bringing competition into the rail sector.

Countries have responded differently to the Commission's Directives. A number of studies of the liberalization process[1] have concluded that, in the main, the rail sector has perceptibly changed in the direction set by the Commission, but that much remains to be done before there is anything like a seamless rail system for all operators. While the direction of change is undeniable, it has also become apparent that implementation of the spirit and letter of the Directive has varied widely across the Community, in part because of differing national approaches (and politics) and in part as a result of the addition since 1991 of a number of countries that have distinctly different railway conditions from the rail population before 1991. In particular, the later additions are far more freight oriented and have longer lengths of haul than the pre-1991 members, making any barriers to international rail freight even more important than they were in 1991.

[1] See, e.g., IBM 2002, IBM 2004, and IBM 2007.

In November of 2007, the Commission completed an assessment of the degree of implementation of Directive 91/440 and the First Railway Package (2001/12, 2001/13 and 20001/14) and issued a series of Letters of Formal Notice (LOFN) to national governments identifying the issues in the current status of implementation and requesting a formal response on the issues identified.[2] As a next step, if the responses are not satisfactory, the Commission may issue an opinion requiring railways to comply in detail. Table One summarizes the issues addressed in the LOFNs and forms a broad backdrop for the discussion of access charges.

In summary, only one country (The Netherlands) was found to have completely implemented Directive 91/440 and the First package, with the UK cited for only one, minor issue (the lack of a deadline for regulator decisions). Although the LOFNs are not legally definitive, most of the other 23 countries were cited for having: 1) an inadequate performance regime to encourage efficiency by the infrastructure provider (16 citations); 2) an unduly weak regulator (16 citations); 3) insufficient independence of the infrastructure provider from system operators (15 citations); or, 4) the regulator having insufficient independence from the infrastructure manager or the system operators (12 citations). Most countries had three to eight citations and some had nine (Spain and Slovenia). Overall, a number of studies have concluded that the degree of implementation has been sufficiently incomplete and driven by national rather than EU objectives that the Commission's basic objectives in the railway sector have not yet been achieved. The disparities and inconsistencies identified by the Commission in the access charge regimes (which are fully mirrored in the IBM Liberalization studies discussed later) should be seen as the inevitable result in microcosm of this broader problem of slow and incomplete compliance.

In 2005, the ECMT published a study assessing the status of EU railway access charging as of the 2003/2004 period that identified a number of the same issues.[3] This study will assess the state of play as of 2007/2008 to assess the degree and direction of change in the access regimes and to identify recommendations for further changes in approach.

The Available Documentation of Access Charge Regimes in the EU

The Commission, in the Directive 2001/14/EC,[4] required each of the infrastructure managers (IMs) to publish an annual Network Statement (NS), containing basic information about the network. Though the Commission did specify in broad terms what was to be in the NS, the Commission did not dictate a standard format. Subsequently, Rail Net Europe, an association of 33 of the European rail networks[5], has promulgated a common format which has been accepted by all EU railways (Norway and Switzerland

[2] European Commission, IP/08/1031, Brussels, May 26, 2008

[3] See ECMT 2005

[4] 2001/14/EC, Article 3 (requirement for Network Statement), and Annex II (general statement of contents).

[5] See http://www.railneteurope.com/cont/index.aspx

also use the common format).[6] Section 6 of the common format (see pages 19 and 20) describes the access charge information to be provided, defining the charging principles along with the charging system and the tariffs to be collected.

Table Two summarizes the status of six aspects of the Network Statements of 28 European rail systems (Switzerland, Norway and Croatia are added to the EU 25): has the NS actually been issued; is it available on the web; what editions are readily available (some countries have more historical data than is shown in the Table); is the web version complete; what languages are available for the NS; and, what is the website for the NS promulgator. Table 2 shows that all but one country (Ireland) have now issued an NS, and all but two (Ireland and Bulgaria) are available on the web. The NSs available generally cover 2007, with a few dating to 2006, and a few covering 2008 and 2009. Unfortunately, the web versions of ten of the NSs are incomplete in the access charge section of the NS. For reasons that are not stated, a number of countries discuss their charging regime and system in qualitative terms, but do not include the actual tariffs or the actual coefficients used in the tariff formulae (Austria, Bulgaria, Denmark, Germany[7], Hungary, Italy, Poland, Romania, Switzerland and the UK). In addition, the charging systems in Italy and the UK are sufficiently different that it is not possible to calculate an access charge in general terms. Equally important, nine of the systems publish their NS (or, at least, the tariff sections) in the national language only, significantly reducing the accessibility of the information to all other EU members.

Although, as Table Two shows, the system of NSs is still incomplete and not fully accessible to all EU members, significant progress has been made in the past few years. With only a limited amount of attention to completion of the tariff information and uniform translation into one or more of the more common language groups (English or French) in addition to the national language, there would be available, on the web, a complete description of all the EU (and most connected) rail networks and their access charge regimes. In principle, a potential user could interrogate these websites and NSs to determine the charges involved in usage of one network, or a set of networks, from origin to destination.

In addition, the Rail Net Europe website provides a list of the One Stop Shops (OSS) for each of its member networks. Each network's OSS is intended to provide a contact point for providing information and answering questions from potential system users. In the course of this study, a number of the OSSs were contacted for access charge information or questions: for the most part, the OSS representatives responded quickly and helpfully.

The prior study of access charges[8], recommended, *inter alia*, that EU Transport Ministers should consider putting more emphasis on publishing more railway system

[6] See http://www.railneteurope.com/media/2006-03-03%20CS%20and%20IG%20for%20Network%20Statement.pdf

[7] In the case of Germany, the actual tariffs are kept separate from the NS for reasons of flexibility in case prices need to change more frequently than the broader provisions of the NS.

[8] ECMT 2005, pg 84.

data in a consistent format. A related study of the railway data needed for oversight of the EU railway Directives reached much the same conclusion.[9] At least with regard to the NSs, progress has been made: with slightly more attention, the NS data will be useful for all.

The Current Status of EU Railway Infrastructure Access Charges

There are a number of sources of information about the EU railway infrastructure access charges, including: a direct survey of the NSs developed in this study; the interactive European Infrastructure Charging Information System (EICIS) provided on the Rail Net Europe website; an interactive model for access charges on the Italian network (Pedaggio 2004)[10]; an interactive model of access charges on the German network (DB Netz)[11]; the access charge calculations provided in "Rail Liberalization Index 2007"[12]; data collected for this study in a survey conducted by the Community of European Railways (CER); and, the results cited in the prior ECMT study (ECMT 2005). Each of these sources is discussed in detail below.

Survey of the Network Statements

As discussed above, all of the NSs contain, in Section 6, a discussion of the access regime for the network. In some cases, the NS section 6 is complete, containing all of the information needed to calculate access charges for the system. In other cases, significant information, such as the actual tariff sheet or the coefficients in the formulae, was not included as a part of the NS. In these cases, it was necessary to contact the IM or the OSS for the network to complete the description of the charging system. While IMs have cogently argued that it is useful to be able to change the charges more flexibly than the entire NS, it would also be helpful to provide a direct web link between the NS and the charge sheets: charges may always be updated as frequently as needed, but the website containing the charges could remain the same.

Using the NSs and the added information from direct contacts, it is possible to display the entire access charging system for the EU railways, as shown in Table Three. [N.B: the spreadsheet for Table Three is too large for ready publication. Instead, it may be found on the ITF website (www.internationaltransportforum.org) or the TGA website (www.tgaassoc.com)]. Table Three shows, for each country: whether it is in the EICIS system; the conversion factors used for currency; the line category, if the access charges differ by line category; reservation charges (usually charges per train path-kilometer reserved) for each type of service (local passenger, intercity passengers, high speed passengers, and freight); the train running charges (per gross tonne-km, per train-km and per train) by the three types of passenger services and freight; electric traction access and use charges by type of service (excluding electric energy charges that are usually billed directly by consumption); and, a series of calculated access charges per

[9] ECMT 2007 a

[10] See http://pedaggio2004.rfi.it/

[11] http://www.db.de/site/bahn/en/business/infrastructure__energy/track__infrastructure/train__paths/price__information/price__information.html

[12] See IBM 2007

train-km based on type of service and including reservation charges (if any), usage charges and station stop charges (if available).

For consistency with other studies, the calculated access charges for local or suburban passenger trains are based on a 270 gross tonne train. The intercity passenger train calculations are based on a 590 gross tonne train (600 gross tonnes for high speed passenger trains), and the freight calculations are based on a 960 gross tonne train. In addition, the freight calculations include charges for hypothetical 2000 gross tonne train and 3000 gross tonne trains (though the larger trains may not actually be possible on some of the networks in question).

Table Four provides a simplified and qualitative description of the access regimes. Table Four shows, for each country; whether the country has a reservation charge (Two-Part regimes); whether the access charges are different for different types of service (suburban, intercity and high speed passengers, and freight); whether the charges vary by time of day; and, what the train running charges are based on (gross tonne-km, train-km, train trip, station stops, electric traction access charge, etc).

The picture from Table Four of the access regimes is extremely rich. Of the 25 railway networks listed:

- 12 do not distinguish by category of line. The 13 remaining networks have from 3 to 12 line categories, based on speed, region, suburban versus intercity, etc.
- Four networks (Bulgaria, France, Spain and the UK) have two-part regimes. That is, there is either an advance reservation charge (per train path-km), or a fixed charge (UK only), in addition to a train running charge. The remaining 21 networks have single part ("simple") regimes, though, as discussed below, they may employ up to three variables in making the access charge calculation.
- Only three networks (Austria, Denmark and The Netherlands) make no distinction by type of service – that is, the charges are the same for passenger services (and within passenger services) as for freight. In addition, the Storabaelt Bridge and the Øresund Bridge charge per passage, and make no distinction between passenger and freight services.
- Only five systems (Belgium, France, Italy, Spain and the UK) have time-of-day based charging systems. It is worthwhile noting that three of these (France, Spain and the UK) have two-part systems as well, suggesting that peak-hour line congestion is a major consideration of the pricing system.
- Only two systems (Finland and Norway) base their charges solely on gross tonne-km. Nine systems base their charges solely on train-km (some of these have charges per station stop for passenger trains as well). Eleven systems base their charges both on gross tonne-km and train-km. Two other systems (Hungary and Slovakia) add a charge per train trip to their gross tonne-km or train-km charges. The Storabaelt and Øresund bridges charge only per train passage.
- Many systems charge passenger trains per station stop (France has time-of-day sensitive station reservation charges as well), and some of these distinguish between levels of station. Table Three may be incomplete in this respect, so it is likely that more IMs charge for station stops than shown in the table.
- Where it can be determined, most systems use train-km to charge for the use of the electric traction system, but at least two systems charge per gross tonne-km.

- Austria and the UK have charges that are adjusted for particular rolling stock that is either quieter or more track-friendly. Some systems effectively have a surcharge for diesel traction for pollution or greenhouse gas suppression purposes. Three systems (Spain, Switzerland and UK) have access regimes that base part of their charges on commodities handled or on the revenue generated by the train. Some give a discount to combined freight traffic. The Italian system is based on factors (use of nodes and occupancy time) that are unique and difficult to compare.

Quantitative comparisons are difficult because of the wide variation in charging variables. Table Five is a somewhat simplified version of Table Three showing only the access charges converted into a common basis of Euros/train-km (including reservation charges where applicable, along with station charges and electric traction system access charges where available).[13] In order to provide one charge for each line type, the "normal" time-of-day charge has been used (both peak and off peak have been excluded).[14] As a further simplification, the various line categories have been reduced to one "average."[15] The Table also shows, for systems with reservation charges, that the percentage of the total charge that the reservation charges account for can be significant, ranging from 20 to over 90 percent of the charge. The two-part nature of these systems probably has a significant effect on usage and on access by users other than the primary user.

Next, the Table calculates the ratio of the charges for a typical 960 gross tonne freight train to the charges for a typical 590 tonne intercity passenger train. The purpose of this calculation is to develop a very broad impression for the degree to which the access regime may be going beyond marginal cost charges to add mark-ups in order to generate a contribution to fixed costs. If we assume that, for systems with the same axle loads and without major congestion, the ratio of a marginal cost-based charge for freight as compared with intercity passenger services would be in the range of the gross tonne ratio 960/590, or 1.63, then systems with a ratio below this level are tending to generate their contribution more from intercity passenger trains than from freight trains whereas systems with higher ratios may be generating more contribution from freight traffic than from passenger traffic. Finally, the Table displays the ratio of access charges for a 590 gross tonne intercity passenger train to the charges for a 270 gross tonne suburban passenger train. As with the prior ratio, one would expect a purely marginal cost-based charge ratio to be in the range of the weight ratio: 590/270=2.19. To the extent that the ratio falls below this level, the contribution load is falling on suburban services rather

[13] Based on the data in Table Three, station charges and electric traction system access charges are not large enough to distort the comparisons whether they are included or not. It seems unlikely that inclusion of electric energy charges would affect the relative rankings either.

[14] As Table 3 shows, this is can be a significant simplification in some cases, such as RFF, where the peak hour reservation and station reservation charges can be up to three times the normal charges (and off peak can be considerably less than normal charges) and where the running charges are typically less than half the total charges.

[15] The average value used is shown in blue, and is based on a rough judgment as to the various line categories and relative usage. These can be changed if readers suggest better alternatives.

than intercity services": when the ratio rises above this level, then intercity passenger trains are potentially generating more of the contribution.

This discussion of the likely location of generation of a contribution to fixed costs has no necessary implication of what the "right" location or level might be, nor does it imply that such contributions (if they are non-discriminatory) are illegal under the Commission's directives. Generation of a contribution above marginal costs is explicitly permitted under the Commission rules. Moreover, the ratios might well properly depart from the exact levels described because freight trains tend to have somewhat higher axle loads than passenger trains, and may have less track "friendly" bogies, leading to a higher ratio: on the other hand, passenger trains tend to travel at higher speeds and impose higher geometry requirements, which could justify a higher passenger ratio. The net result is that the ratios furnish an interesting indicator of where IMs may potentially be generating contributions to fixed costs without at all necessarily suggesting improper of illegal policies.

Figures One (Local Passenger Trains), Two (Intercity Passenger Trains), Three (High Speed Passenger Trains), Four (960 Gross Tonne Freight Trains), Five (2000 Gross Tonne Freight Trains), Six (Ratio of Charges for 960 Tonne Freight Train to 590 Tonne Intercity Passenger Train) and Seven (Ratio of Charges for 590 Tonne Intercity Passenger Train to Charges for 270 tonne Suburban Train) display the same information graphically.

The first five Figures serve to emphasize the extremely wide range of charges within the European rail systems, showing a range of 10 to one (or more) between the lowest charges and the highest. As will be discussed below, it is not easy to see why charges should diverge this much. It is clear that some systems charge (in accord with EU policy) only marginal cost access charges (or less), with the difference being made up by Government support, whereas other systems attempt to recover up to their full financial cost through access charges. It is also likely that infrastructure costs differ somewhat among rail systems as a result of traffic levels, speeds, axle loads,[16] length of trains, labor productivity, etc. Assuming that, as a rough rule of thumb, marginal costs make up about 20 percent of full financial costs (FC) and that the least efficient and most costly infrastructure manager experiences costs twice as high as the most efficient, then one would see a range of 10 only if the most efficient IM were charging marginal cost while the least efficient is charging FC: other combinations should produce a narrower range.

Figure 6 highlights and confirms an issue that arose in the earlier report: the fact that the railways in Eastern Europe appear to be looking to freight to carry a higher portion of fixed cost contribution than passenger services (thus shifting a public burden to commercial users). All but one of the nine networks that are at or above the weight ratio for freight to intercity passenger trains come from the Eastern group. The one exception (Finland) has a high ratio because, though its freight charges are relatively low, it has an

[16] Most EU railways permit a 22.5 tonne axle load. UK, Latvia, Estonia and parts of Sweden permit 25 tonne axle loads, while most systems also have secondary lines that are limited to less than 22.5 tonnes. For reference, much of the North American rail network is rated for 32.4 tonnes axle load.

exceptionally low passenger access charge (see [Figure Two]). Thus, it is reasonable to conclude that most of the Eastern IMs are continuing the former practice of assigning a higher share of the fixed cost burden to freight than passenger trains.

[Figure Seven] has no similar regional pattern. Only five systems are at or above the point at which they may be assigning a higher share of fixed costs to intercity passenger services in order to support suburban and regional trains, and these are scattered across the EU. Most of the rest might actually be favoring intercity passenger services in comparison to suburban access charges.

The ratios shown in [Figures Six and Seven] are almost certainly imprecise, with some variation expected: the conclusions suggested should be taken with a grain of salt. At the same time, the conclusion about charging freight operators in order to constrain passenger access charges seems robust: the reason why this might be so seems to be a desire to shift some of the burden of passenger support from government budget to freight shippers. [Figure Seven] suggests also that the IMs may have an incentive to shift the burden of passenger access charges from intercity to suburban services because the emerging practice of contracting for the operation of suburban and regional services offers a highly stable, and market insensitive, regime for the allocation of reimbursable costs. For a number of reasons, governments may be less price sensitive dealing with social services than for commercially driven services, and the IMs may well be aware of this.

The discussion of where the burden of fixed costs should be assigned if the IM has a revenue target above collection of purely marginal costs has been highly contentious in this and earlier studies. Each IM individually points out, correctly, that it is entitled to charge "non-discriminatory" markups and that each IM has unique characteristics that might well justify distinct access charges for that IM. Moreover, each national government clearly has the right to impose its own revenue targets for its IM[17], and individual national policies and priorities might well lead to putting more of the markup on freight in one case and on passenger service in another.

This may, however, not take into account the fact that intercity rail services, especially freight, operate in a highly competitive market in which the competitors may not face "access charges" that are similarly weighted. Other things being equal, a decision by one IM (or its owning government) to generate a high contribution from rail freight access charges will necessarily not only shift freight traffic from rail to truck in that country's domestic market, but also in every other EU country that interchanges rail freight traffic with that country, or that generates rail traffic that traverses that country. The same conclusion would follow for intercity rail passenger services in competition with air or bus, but would not necessarily follow for suburban and urban rail services because the effect of suburban rail access charges should readily be managed through direct public support, or through a 2-part tariff for suburban access charges.

[17] This assumes that the national government is willing to make up the difference that an IM faces between full financial costs and revenues collected from system Railway Undertakings (RUs).

This dilemma poses the question, for the EU as a whole, of whether the need for efficient and competitive rail freight is more or less significant than intercity rail passenger service. Rational and legal markup approaches in an individual country may not be optimal for the EU as a whole.

The EICIS Access Charge Model

As discussed above, Rail Net Europe has developed an interactive, web-based tool for estimating access charges. At present, there are five countries that are not represented at all in the EICIS system: Bulgaria, Estonia, Latvia, Lithuania and Romania. There are another four (Croatia), France, Portugal and the UK) that apparently plan to participate in the use of the model, but for which the model is still inoperative due to lack of system data.

The actual logic of the EICIS model is not available from the web, but it is presumably based on the details of the access charge regimes taken from the NSs. Upon request, users are given a password to the system.

The EICIS model was intended to be simple. The model requires specification of the origination and destination (city and station name) along with a number of different technical characteristics of the train to be operated. Table Six shows the data that were used for the purposes of this study. Table Six shows the five train types – Suburban Passenger, Intercity Passenger, 960 gross tonne freight, 2000 gross tonne freight and 3000 gross tonne freight trains, along with the data for each train type. The results of the EICIS analysis are shown in Table Seven.

In practice, the EICIS model can be a challenge for those not intimately familiar with each individual system. In particular, it is difficult to find the correct station names for the routes being analyzed (passenger and freight stations in the same city will often have different names), and suburban lines and stations can be difficult to identify without detailed local knowledge of the railway network. In addition, the EICIS model does not fully incorporate some complexities such as time-of-day pricing. As a result the EICIS prices should be viewed as one of a number of estimates available. A potential operator should not rely on EICIS estimates without having expert assistance from the networks it plans to use and should check the results with the IMs involved. Given its potential value, RNE should be encouraged to continue to improve the EICIS model.

The Italian "Pedaggio 2004" Model

The Italian Federal Railway Network (RFI) also has made available on the web an interactive model ("Pedaggio 2004") for calculating access charges on the RFI network. This model requires similar inputs to the EICIS model, and it was possible to use it to calculate example access charges. These are also displayed in Table Seven.

As with the EICIS model, these estimates should be used with care. The Italian access charge system, based on charges for the use of nodes as well as lines, and for occupancy time, is unlike any of the other European systems. In addition, a non-expert user of the model will find it especially difficult to identify particular routes appropriate for

the various types of access services to be evaluated. As a result, “Pedaggio 2004” is a “black box” for most users, and the estimates generated should used with care.

The DB Netz Model

As with the Italian network, the German network operator (DB Netz) makes available on the web an interactive model from which potential users can develop an estimate of access charges for various services. Use of the model requires specification of the same types of origin/destination and technical information as in the EICIS and Pedaggio models.

The DB model is difficult to compare with the NS-based DB Netz access charges on Table Three because there is no readily available map of the DB Netz network showing lines by category. As a result, it is quite difficult to identify routes for the model that are consistent with the line categories defined in the NS access charges. The model calculations are often a mixture of categories that fall somewhere in between the strict categories in the access charge regime. The calculated charges from the DB Netz model are also shown in Table Seven.

Other Sources of Access Charge Data

As part of the Rail Liberalization Index reports developed by IBM Global Business Services (IBM 2007), the authors collected estimates for typical access charges for the study sample (27 railways). According to the study, estimates were obtained for: a 270 gross tonne diesel suburban train (400 passengers) traveling on a typical route in the largest city in the country; a 590 gross tonne electric intercity passenger train (750 passengers) traveling between the two largest cities in the country; and a 960 gross tonne diesel freight train traveling between the two largest freight markets in the country.[18]

The Community of European Railways (CER) was actively involved in the development of basic information for this study and in making contacts for the author to obtain information. As a part of this study, the CER circulated a questionnaire to its members. The questionnaire covered the train-km operated by type on the national network along with a statement of the access charge revenue collected by service type. It also covered a listing of the number of operators on the system along with a narrative description of the changes that have occurred in the system since 2004 (see Table Thirteen for the data collected from the questionnaire). The questions about train-km and access charge revenue by service permitted a calculation of the actual average revenue per train-km by service type. In the CER data there were only two service types -- passenger versus freight – because no differentiation among suburban, intercity and high speed passenger trains was possible since few IMs actually collect or report access revenue by category of passenger train. Even so, the CER averages can be used as a rough check on the various theoretical calculations.

[18] For comparability with these IBM study estimates, the calculations using the access charge systems and the models were based on the same technical details (train weights and capacities).

Finally, the prior study (ECMT 2005) developed an estimate of the access charges for each of the railways for which data were available. These calculations were based on a number of factors: the access charge regime at that time as provided by railways; calculations provided for the study by railways; and, estimates where required by shortage of information when no data were provided by railways or government sources.

Comparison of Results from All Sources

Table Eight displays the full results (with gaps where data are missing) from the five different sources for all 25 networks, along with data taken from UIC sources giving average train characteristics (gross tonne-/passenger train-km and gross tonnes/freight train-km) in 2006 (the latest year available). It deserves emphasis that Table Eight significantly simplifies the results in a number of countries (e.g. France) that have complex line categories and time-of-day regimes. Though Table Three displays the details of these regimes, it was necessary in Table Eight to reduce them to a single, average number. Averages should always be used with care, never more so than in the comparison of access charges. Even with this in mind, there are some significant anomalies in Table Eight:

- The average passenger train weight in Estonia is shown from UIC statistics as 41 tonnes. If this is accurate, then the typical passenger train in Estonia would be a single motor car, which departs significantly from typical EU practice. More broadly, the Table shows that the average of all EU passenger trains (suburban **and** intercity) is only about 270 tonnes, which is the same as the average weight used for suburban trains in the Network Statement and IBM calculations. In those cases in Table Eight where an average is taken for both suburban and intercity trains, suburban practice is probably heavily influencing the average. Put another way, the calculations based on a 590 tonne intercity passenger train are significantly different from an "average" passenger train taking both suburban and intercity trains into account.
- Similarly, Estonia (3088 tonnes), Latvia (2932 tonnes) and Lithuania (2630 tonnes) depart significantly from the rest of the EU average for freight trains (1039 tonnes). This means that the 960 tonne basis for calculation for most of the EU networks is probably roughly correct, whereas the comparable access charge for freight trains in the Baltics would be closer to the 3000 tonne calculation.
- The actual average freight access charge for Lithuania according to the CER reports (Euros 36.28/train-km) appears to be an error in the data received by CER, even for the large freight trains (2630 tonnes) that Lithuania operates.
- The EICIS model for Poland predicts freight access charges that appear high by comparison with the other sources. This is probably because the EICIS model for Poland relates only to the main (most costly) lines. The EICIS model does not yet permit passenger train calculations for Poland.
- The EICIS model predicts freight access charges for Switzerland that are twice to three times higher than the other sources. These are almost certainly in error and a check on the underlying EICIS model data for price and distance would be desirable.
- The IBM Liberalization Index report has an estimate for the access charges in the UK of 7 to 9 Euros/train-km that is significantly higher than the other sources, including data furnished for this report by the Office of the Rail Regulator. This

may result from differences in treatment of the fixed charges in the UK access system.

Aside from this limited number of disparities, which are probably the result of erroneous input data or incompletely programmed models, the other calculations generally fall within a range that can be attributed to differences in assumptions as to line category, time-of-day, actual routing (that might traverse several line categories or times), actual weight of train, etc. Based on these results, **it is clear that there is no single "access charge" that can be used to compare countries' access regimes in a dispositive sense**: there will always be a range that should be applied to any stated number.

Figures Eight, Nine and Ten display the results of the access charges from the Network Statement Calculations, the EICIS calculations and the IBM reports for suburban/regional passenger trains, intercity passenger trains and freight trains.[19] These Figures support the suggestion above that, while there is general correspondence from the results of the three calculations[20], there can be significant variation for each country depending on assumptions. With this said, it seems safe to make the generalization that the Scandinavian countries (Denmark, Sweden, Norway and Finland) along with Croatia tend to be found at the lower end of the scale in charges for all services, probably due to heavier reliance on purely marginal cost (or even below marginal cost, as Norway has no passenger access charges) recovery. The upper end of the suburban scale is populated by Germany, France, Slovakia, Hungary and Latvia, partly because of their policies concerning full cost recovery and partly because of intense traffic in the case of Germany and France. The upper end of the intercity passenger scale is populated by Germany, Belgium, Latvia and Lithuania, probably because of higher cost recovery objectives, high costs and high track standards, and also in the Baltics where the cost recovery objective is high. The upper end of the freight scale is populated by the Baltics, Bulgaria and Slovakia, partly because of larger freight trains that (where the access charge function is driven by tonne-km) would naturally yield higher charges/train-km, and partly because of high cost recovery objectives. Interestingly, Latvia only has a train-km charge, but the charge is twice as high for freight as for passenger services.

A Discussion of Variables

As mentioned above, the access charge regimes employ a number of variables in generating the charges that users pay. The 25 systems have taken a variety of approaches. The most important charging variables are gross tonne-km (2 systems use solely gross tonne-km), train-km (9 systems use solely train-km), a combination of gross tonne-km and train-km (11 systems) and train passage (2 systems and the Storabælt and Øresund bridges). Twelve systems do not distinguish charges by line categories whereas 13 systems do have from 3 to 12 categories with different charges. Of the 13 systems that distinguish by line category, some vary only the train-km charges while keeping their gross tonne-km charges the same, while others vary both the gross tonne-km and train-km charges. Three systems make no distinction in their charges between

[19] Note that these are ranked in order to the Network Statement calculations.

[20] The CER average and the Prior Study results are only shown for freight (Figure 10) because these two studies did not separate between suburban and intercity passengers.

passenger services and freight. Four systems adjust their charges by time-of-day. Two systems adjust their charges by type of rolling stock, and three systems use some form of commodity-based or revenue-based adjustments.

The gross tonne-km measure is clearly one reasonable variable for charging for marginal wear and tear on the infrastructure (that is, wear and tear that is related to traffic). It is also reasonable to adjust the gross tonne-km variable for line category (or line speed) and it is plausible to adjust it for types of rolling stock.[21] At the same time, gross tonne-km would not be a useful variable for calculating the marginal costs of congestion (line capacity), so gross tonne-km alone would not be a good basis for calculating marginal costs except where there is no issue of system capacity. In general terms, gross tonne-km charges give the operator an incentive to run lighter trains or trains with a high ratio of net weight to gross weight, with no particular incentive as to train length. Since only two systems attempt to use gross tonne-km alone (and one, Norway, has a zero charge for passenger trains), the limitations of this approach are presumably recognized. It is also difficult to see how the access charges for the electric traction system would accurately be related to gross tonne-km (rather than train-km).

By contrast, train-km might be usefully correlated with congestion costs, but would not be a good variable for infrastructure wear unless all trains in a particular service category have the same weight – which they generally are not. Thus, train-km alone, though it has the virtue of simplicity, simply cannot be an accurate indicator of marginal wear and tear unless all trains are the same size (for example, on a system that is restricted to one type of train – high speed trains or a suburban system – train-km and gross tonne-km are linearly related). In general, train-km charges cause the operator to run fewer but longer trains consistent with market needs. There are more systems (9) that use only train-km for charging than those using gross tonnes only.

Charges per train passage (Storebælt and Øresund Bridges, for example) are an extreme case of the train-km charge. They give the operator the largest incentive to reduce frequency and increase train length, regardless of total weight.

Optimally, there could be a combination of gross-tonne and train-km charges that should provide a better balance of incentives to run trains that are operated at the right frequency and at the weight that minimizes access charges while maximizing the demand/operating cost tradeoffs. A combination could, in principle, do a more accurate job of reflecting the marginal costs of both wear and tear and congestion than a single-factor approach. In fact, more systems (11) use this approach, presumably in order to capture the potential advantages of the two-variable approach.

Figures Eleven, Twelve and Thirteen provide a visual picture for the various regimes in their tradeoffs between gross tonne-km and train-km charging. In these Figures (one for suburban and regional passenger trains, one for intercity passenger trains and one for freight), all of the potential access charges for all countries (2 part regimes are excluded) in all line categories are shown. In these Figures, a point on the vertical axis would

[21] Assuming that the data exist to estimate track wear as related to individual types of rolling stock.

represent a purely train-km based regime, a point on the horizontal axis would represent a purely gross tonne-km regime, and the points between the axes show regimes with a mixture of both.

One observation is, as stated above, that there is a considerable range in charges essentially for the same thing. For example, freight charges (see Figure Thirteen) range from zero to nearly 7 Euros/train-km in the single factor train-km regimes. Purely gross tonne-km regimes charge from zero to .0025 Euros/gross tonne-km on the single factor gross tonne-km regimes. Clearly, accurately measured marginal costs, if applied solely to either factor, should not yield this range of variation, so "mark-ups" are a major factor. The degree to which mark-ups might be a factor is suggested in Figure Fourteen, which shows the results of an earlier study of the difference in the revenue targets of various IMs.

Another observation is that there are clear outliers in these Figures. For suburban/regional trains, Germany, Latvia, Switzerland and Lithuania appear to have some high charges. For intercity passenger trains, Germany, Belgium, Poland and Lithuania have high points; and, in freight, Slovakia, Poland, Estonia, the Czech Republic and Lithuania are somewhat out of the range. Interestingly, Lithuania appears to be an outlier in all three cases, and Poland appears in two.[22]

With these variations acknowledged, though, the three Figures also suggest that there is a range within which most observations fit, as outlined roughly in the Figures. This does not, of course, prove that any of the regimes are efficient or that they actually represent accurately calculated marginal costs – only that they are reasonably similar to others.

It is also interesting to look briefly at the two-part regimes, as shown in Table Nine. In theory, two-part regimes function best where the system is congested and users should be forced to pay for the scarce capacity they demand. Of the four two-part regimes, France, Spain and the UK buttress their reservation or fixed charges with a time-of-day regime which certainly has the effect of forcing users to make efficient use of capacity in times of congestion.[23] These three also base their operating charges on train-km (except the UK system, which also has a gross tonne-km charge for freight only), which reinforces the efficient use of capacity.[24] Bulgaria also adds a gross tonne-km charge for all users.

But, as Table Ten shows, these are not the densest systems in Europe. At least 10 systems have average traffic densities (train-km/line-km) that are greater than those of the two-part regimes. Of course, some of those systems might have enough capacity (more tracks per line, better signaling, etc) to handle the density efficiently. In addition, it is possible that there are only parts of the lines of the two-part regime networks that are

[22] It should be noted, again, that the Polish charges may be unfairly weighted by the high quality lines where charges are high.

[23] Interestingly, only one of the simple regimes (Belgium) appears to have time-of-day sensitive charges

[24] The UK system inherently assumes that wear and tear from freight is worse than from passenger trains.

intensely used and thus justify capacity sensitive charging. Even on these bases, however, it is not clear why Bulgaria might need a two-part system.

Another issue raised by the diversity of EU access charge regimes is the possibility that the disparity in regimes might make it difficult to operate across borders. This is clearly the case with interchanges with the two-part regimes[25], where smaller companies might find the advance reservation requirements difficult to manage. In addition, the time-of-day regimes might impose constraints on long-haul, international train schedules that add to costs and degrade service.

Equally clearly, trains transiting between similar, simple regimes (e.g. two gross tonne-km only regimes or two train-km only regimes) will face fewer difficulties, especially when the charges are roughly similar. The question is to what extent transiting dissimilar **simple** regimes (i.e. from a gross tonne-km to a train-km regime, or between systems with widely different mixtures among the two factors) could cause difficulties.

The earlier study (ECMT 2005) observed that this is typically not an issue for suburban or regional trains that normally stay within an urban, or limited rural, region and do not cross IM boundaries. Moreover, the operating losses of these systems tend to be supported by government funding, so even two-part suburban regimes generally do not cause interchange problems because there is little or no competition **in** the market (only **for** the market).

The potential problem thus lies in those intercity passenger trains, and freight trains that cross system boundaries **and** for which competition **in** the market is an objective.[26] In general, as discussed, a gross tonne-km regime puts emphasis only on total train weight, which puts no pressure on train length, but does encourage an operator to generate the greatest passenger or cargo loading for each tonne of train equipment. If so, then one would expect the gross tonne-km/passenger-km (GTKM/PKM) and gross tonne-km/net tonne-km (GTKM/NTKM) columns in Table Ten to be lower for regimes that charge only for gross tonne-km or that put more emphasis on the gross tonne-km charge. Conversely, these ratios might be somewhat higher for train-km regimes. Given the fact that rolling stock fleets have not had enough time to respond to the access charging regimes, neither of these hypotheses is likely to be true currently, but could emerge over time.

By comparison, train-km charging encourages longer, less frequent trains, *ceteris paribus,* and does not necessarily encourage maximizing payload per gross tonne, especially for passenger trains. If true, then the two columns in Table Ten showing gross tonne-km/per train-km should eventually become higher (longer trains) in pure train-km

[25] Interchange between two of the two-part regimes might be especially difficult. UK, France and Spain do interconnect, but Spain is a different gauge, so freight train interaction with France is inherently limited. The UK has a simple regime for freight (not passenger) so freight interchange with France is somewhat easier than it might otherwise be: it might be even easier if France offered a simple regime for freight.

[26] Generally, competition in the market has not been an objective for high speed trains, so disparate charging regimes may not be a problem.

regimes or regimes where more emphasis is placed on train-km. It will be an interesting future question to see if this happens.

At least in theory, then, both the equipment fleet and train makeup would be somewhat different under gross tonne-km charging versus train-km charging. Whether this will actually make a significant difference is less clear, and will depend, *inter alia* on: the strength of competitive forces (autos, air and trucks); the magnitude of the access charges (structure matters less if the charges are very low); and, the magnitude of the differences among the access regimes of the IM's on the train route. Other factors, such as the ease and speed of obtaining a train path may also be critical.

What is clear, though, is that the EU rail systems face strong competition in the intercity passenger and freight markets. Even marginal hindrances, including discontinuities in access regimes, will act against the Commission's avowed goals of shifting traffic from air and highways to rail.

The IBM Rail Liberalization Index Studies

The three IBM Rail Liberalization Index studies (IBM 2002, IBM 2004, and IBM 2007) also furnish a useful indication of the direction of change in the EU rail regimes. The objective of these studies was to quantify the liberalization process – by which the authors meant the process of restructuring in the EU railways as a result of the railway Packages.

The analysis is based on three broad indicators of change: LEX, ACCESS and COM. LEX denotes the sufficiency of the legal regime that supports or permits implementation of the railway packages. ACCESS represents the actual "openness" of the system in practice. COM measures the existing level and trends in the emergence of competition in the system in question. Each of these indices was in turn based on sub-indices and "sub-sub" measures. The measures were then weighted and combined to yield the overall "Liberalization Index." Table Eleven shows each of these measures and their weightings in the 2007 version of the Liberalization Index.

These studies represent an attempt to quantify, at least in a relative sense, the development of the liberalization process in the European railways. To a significant degree the authors have succeeded in developing an invaluable compendium of information about individual railways as well as their relative development.

At the same time, judgment has to be used in interpreting the results of the studies for a number of reasons: 1) in many cases, inherently qualitative measures have been converted into quantitative measures based on arbitrary decisions by the authors; 2) the results are dependent on the weightings assigned to each factor and the weightings are themselves based on qualitative judgments; and, 3) the weightings used to calculate the overall index changed over time, as Table Eleven shows, making time-series comparisons open to question. For all of these reasons, the individual numbers in the indices in Table Twelve (which displays the three sub-indices and the overall index in the three reports) must be viewed with some caution.

With these limitations acknowledged, Table Twelve does support the basic conclusion that the restructuring required by the railway packages is moving forward. The Liberalization Index now includes four levels: “Advanced” (>800 points on the overall index); “On Schedule” (from 600 to 800 points); “Delayed” (300 to 600 points); and, the somewhat euphemistic “Pending Departure” (<300 points). In the 2002 report, of the 17 countries included, none were “Advanced,” six were “On Schedule,” 7 were “Delayed,” and 4 were “Pending Departure”. The average index for all countries included in the 2002 report was 488 points. By the 2007 report, of the 27 countries included, 4 had reached the “Advanced” level, 19 were “On schedule,” only 4 were classed as “Delayed,” and there were none left “Pending Departure”. The average index in the 2007 report was 686, a significant increase.

Interestingly, the average score for 2007 was essentially the same for the original 17 countries as it was for the expanded group of 27 countries, indicating that the later additions had caught up in the reform process. Looking separately at the freight index and the passenger index for 2007 (this separation was not made in the earlier studies), two additional conclusions emerge: countries have done significantly better in freight reform than in passenger reform (because freight restructuring has been required whereas changes in passenger structure have thus far been optional); and, the broader group of 27 countries has essentially the same score as the original 17 would have had.

Looking at the ACCESS index by itself, the most pertinent for this study, the results are similar to those for the overall index. The ACCESS index improved from 516 in the 2002 study to 672 in the 2007 study, and the 27 country group had the same score as that of the original 17 countries.

Overall, these studies support the conclusion that reform is proceeding and, at least at the level of analysis supported by the Liberalization Index, has not been impeded by the expansion of the total number of countries included.

Changes and Emerging Trends

Table Thirteen contains the responses to a request for information from a number of EU railways that was conducted by the Community of European Railways (CER). In addition to the operating and system data shown, the railways were asked to comment briefly on the changes to their access regimes since the description in the prior study (ECMT 2005).

One of the objectives in collecting these data was to develop a check of actual practice against the stated access charge regime. This is shown in Table Thirteen where the IM respondents were asked to state the actual access charge revenue received from passenger operators and freight operators. This was then divided by the actual train-kilometers of passenger and freight services to give an average revenue/train-km to be compared with the theoretical calculations.

The responses show two types of changes, both essentially minor. In some cases (e.g. Belgium and France), the charging variables were modified slightly in order to make the systems more accurately reflect costs (or a need to raise revenue). In other cases, the

charges were adjusted upward to reflect changes in prices. In one case (Bulgaria), charges were actually **decreased** in order to promote rail traffic. There were no cases of a switch from simple to two-part charges or vice versa. Overall, most IMs reported little change in their access regimes and even the changes reported were minor.

One potentially important development is in the number of operators, as can be seen in Table Fourteen. The exact definition and count of the number of "operators" is not always clear, especially because there is some ambiguity between the numbers of **licensed** operators as opposed to the numbers of enterprises actually **operating** trains, and may be partly as much subject to estimation as actual count. Even so, Table Fourteen clearly shows that the total number of operators is increasing, thus leading at least potentially to a growth in competition, both in and for the market.[27]

This potentially positive picture is, unfortunately, contradicted by other measures. For example, Table Fourteen also shows the rail modal share in the passenger and freight transport sectors in 1995 and in 2004/2005. Of the 25 countries in the IBM sample, only 10 managed to increase the railway share in passenger transport and only 7 managed to increase the rail share in freight transport. Table Fifteen gives a measure to the effect between 1998 and 2006 of the opening of the EU railway boundaries: of the 18 countries for which the comparable data are available, only 7 showed an increase in the share of the railway's traffic that is international (as opposed to "domestic"). In total, for all of the countries in the sample, the share of international traffic actually **fell** slightly, from 48.6 to 48 percent.

It is likely that none of these statistics is fully accurate, and that one should not put great weight on any single number. With this in mind, though, it would be very difficult to argue that the Commission's efforts to increase rail traffic through promotion of competition or increased international access have thus far actually been successful in terms of an enhanced role for the railways. Possibly the Commission has slowed a decline that would otherwise have been more serious; equally likely the issues of rail's competitive position are deeper than any of the measures so far can cure.

Issues for the Future

Data

The issuance by most networks of Network Statements in a common format is a considerable step in the right direction. If the remaining networks contribute their statements, and if the IMs ensure that their Network Statements contain all of the information (including easy links to the actual tariffs) and publish them in at least one of the major common languages (English or French) as well as the local language, the public information about access charges will be excellent and potential international operators will be able to assess train operating costs more easily.

At the same time, progress toward publication of actual Income Statements and Balance Sheets for the IM's activities lags far behind. Until these are published in

[27] ECMT 2007b

accord with International Financial Accounting Standards[28] and in an accessible language, it is not yet possible to determine whether the IM is financially stable and the degree to which infrastructure costs, marginal or marked-up, are being recovered from users as opposed to public support. As this information is absolutely essential to the overall framework of separated infrastructure, the Commission should continue to press for full preparation and disclosure.

The emergence of RNE and the creation of the OSSs are additional, highly positive steps. If they are properly staffed and have appropriate access and authority, the OSSs can also significantly improve open access to the EU networks, again with particular emphasis on freight.

Structure of Access Charges

So long as the simple access charge regimes maintain variable charges that are reasonably close to marginal costs and not greatly inconsistent with each other, it seems likely that the flow of international services (especially freight) will not be greatly hindered by inconsistent or even conflicting access charge regimes (though it may be hindered by a lot of other, more important, factors such as political or bureaucratic limitations in dealing with market forces). Continuing emphasis on simplification and harmonization of the regimes would support the Commission's objectives of increasing rail freight's share of the market. Continuing support for competition **for** the market for suburban services (essentially no matter what the access regime) may have a positive effect in this market segment: a similar argument can be made for high speed rail.

The two-part regimes pose a clear limitation to the flow of rail freight traffic by competing operators across IM boundaries. This appears to be remediable if these systems could at least devise a simple access regime for freight traffic, as has been done for example in the UK, no matter what access regimes are retained for passenger trains. Perhaps more important, all IMs should collaborate to see if the **same simple regimes** could be implemented for freight on the major freight corridors EU-wide (TERFN or TEN-T): this innovation could make international freight flows much easier for competing operators to plan and manage. Given that the Commission has put great emphasis on competition in the rail freight market, and that the access regimes faced by freight operators can either enhance or limit competition, adoption of simple regimes should be a matter of careful evaluation.

It is important to emphasize also that countries with simple charging regimes and revenue objectives above marginal cost are probably limiting the development of suburban services as much or more than freight, even if the suburban operator receives support determined by competition **for** the market. The reason is that the simple regime

[28] Given that RailNet Europe has successfully devised a common format for the Network Statements, it would be highly valuable if they could move on to formulating a common format for the publication of Income Statements, Balance Sheets and statistical reports for the IMs and, equally important, for all operating companies. As with the NS, these documents should be published in their entirety in a common language with clear linkages on the websites of all IMs and operators. See ECMT 2007a for a detailed discussion of this recommendation.

operator necessarily pays access charges (either per train-km or per gross tonne-km) that are higher than economically optimal and that will discourage adding service that offers total benefits above its social marginal costs. One can argue that, while simple regimes are probably good for rail freight business where competition **in** the market is desired, they may actually be bad for suburban services where competition **for** the market is the emerging practice.

This discussion suggests three direct recommendations for EU decision makers:

- **No matter what the access charge regime prescribes for other types of trains, all freight operators should face a simple access charging regime.** If an IM wants to do so, it would be possible to have a simple regime for freight combined with a two-part regime for passenger services, as the UK experience shows.[29] It could be especially important, for example, that RFF consider offering a simple regime for freight trains because of the potential for interchange of freight traffic between France and the UK and, of course, because all UK traffic to the rest of the continent must transit France. As connections between Bulgaria and the other EU countries develop, interchange of rail freight with Bulgaria would also be promoted by adopting a simple regime for freight. Because Spain has a separate gauge that significantly increases the cost of interchanging freight (it probably has less impact on passenger trains), changing the Spanish regime to allow for simple freight charges is probably less significant.
- **The major parts of the EU freight rail network (TERFN or TEN-T) should have as close to a uniform access charge regime for freight as can be made consistent with the revenue objectives of the various IMs.[30]** This recommendation has enhanced significance in the light of the Commission's proposed new regulation "concerning a European rail network for competitive freight."[31] There can be no question that freight flows in the EU are being impeded to some degree by inconsistent or conflicting freight access charge regimes, though the degree of "friction" varies from border to border and the importance of access charge disparities may be outweighed by other border effects. For example, the average length of haul (average lead) for rail freight in the U.S. is about 1450 km and, even so, trucking is intensely competitive for most non-bulk traffic, even at the longest distances. By comparison, the average rail freight lead in the EU is about 270 km and only one country (Spain) has an average lead of more than 400 km. In general, rail's competitive position is heavily influenced by the length of the shipment, with trucking predominant at the

[29] This is not to suggest that the UK approach is directly applicable to other countries as local conditions clearly are important in each case. It does demonstrate, however, the point that simple regimes for freight can co-exist with two-part regimes for passenger services.

[30] This recommendation has been highly contentious because different IMs are using different degrees of markups in total, and on freight, as compared with passenger services – see Figure Fourteen. The weight of the argument rests on a consistent **structure** (simple versus two-part). This said, if country A marks up rail freight access charges more heavily than other countries, then demand for rail freight will not only be reduced in country A below the level if it only charged marginal cost, but also in all other countries exchanging rail freight traffic with country A. This would be especially significant if the optimum markup differs among countries and/or if country A has a high proportion of transit traffic.

[31] See COM(2008) 852

shorter hauls and rail beginning to compete more effectively as distances get longer. Many of the rail freight movements in the EU at a distance potentially competitive with trucking will have to cross at least one border and, as the full effect of the addition of the later members is felt, two or more border crossings will be involved. Achieving rail's full potential will not be possible if the old railway boundary barriers continue in force while trucking enjoys free flow (and a "simple" access charge regime), and anything that can be done to make long-haul shipments by rail easier will also improve rail's competitive position.

- **It may be worthwhile for all IMs to consider a two-part regime for suburban operations, with marginal cost usage charges, especially where competition for the market (franchising) is contemplated.** This could give the best combination of revenue stability and sufficiency for the IM while offering the operator the right incentives to offer the optimum level of service.

Most IMs require an application period of 4 to 8 months (see Section 4.2 or 4.3 in the Network Statements) before a slot in the timetable can be granted. This is no real problem for passenger systems since the passenger timetable must be published and maintained for a year or, at least, semi-annually. By comparison, though, the freight market is dynamic (and trucks do not expect more than a few hours or at most a few days notice for shipment). Except for the largest and most regular shippers who can schedule shipments months in advance, the inability to obtain freight slots flexibly can be a competitive problem. Most IMs actually have an *ad hoc* slot award procedure, ranging from one day to 5 days or so; but, this is discretionary and is not guaranteed, nor is it clear how often these slots are granted in practice. In addition, an operator applying for a slot across several railways is hostage to the slowest IM: trucks face no similar limitation. This is a disadvantage of EU-wide rail traffic that can never be fully removed, but it could be reduced. **As with the access charges, it would be helpful if the IMs could set up a common application system, or even an EU-wide OSS, for slots on the priority freight network.** Since at least corridor-specific OSSs are explicitly provided in the recent Commission proposal for freight networks, it will presumably receive appropriate attention from IMs.

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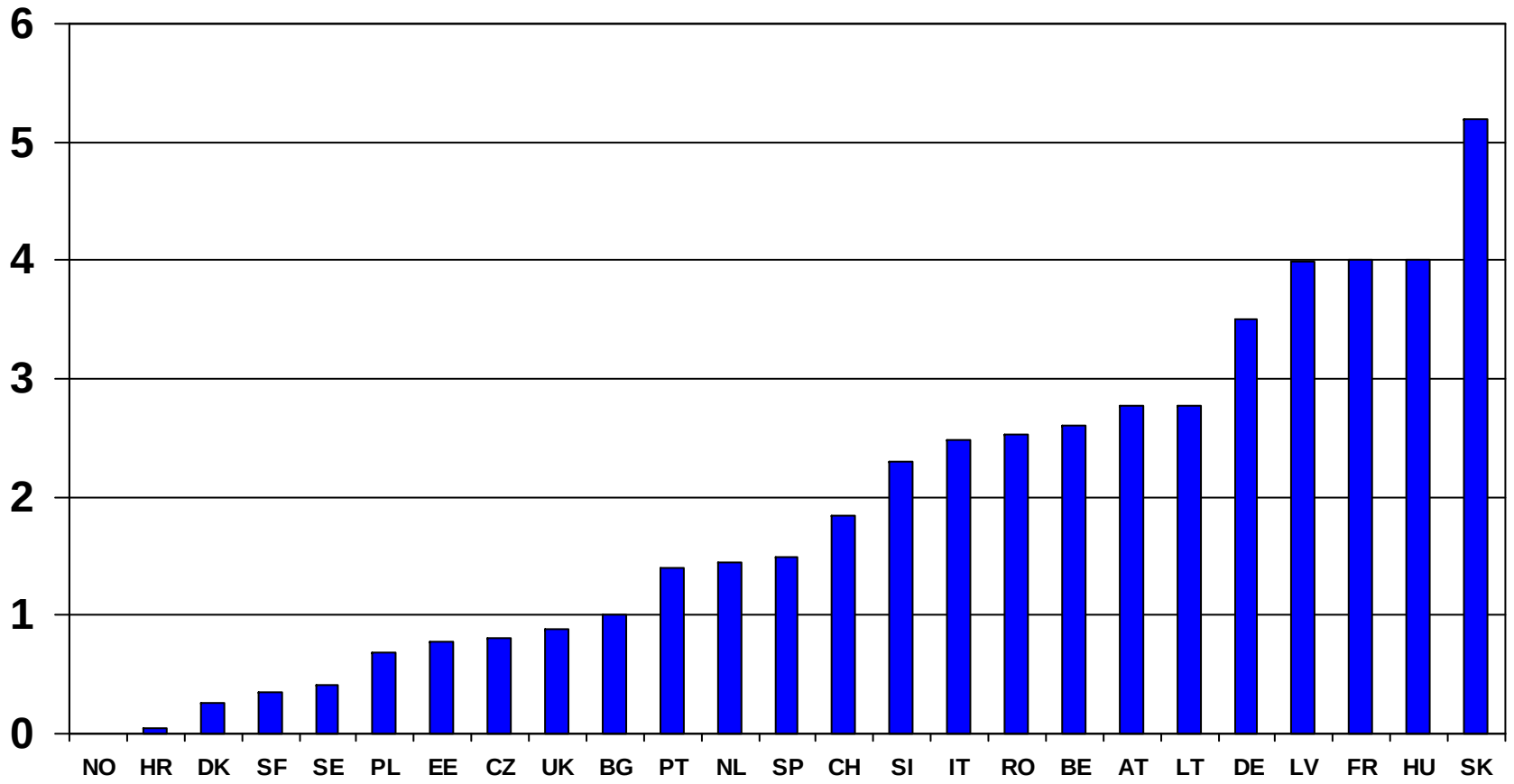
Figure One

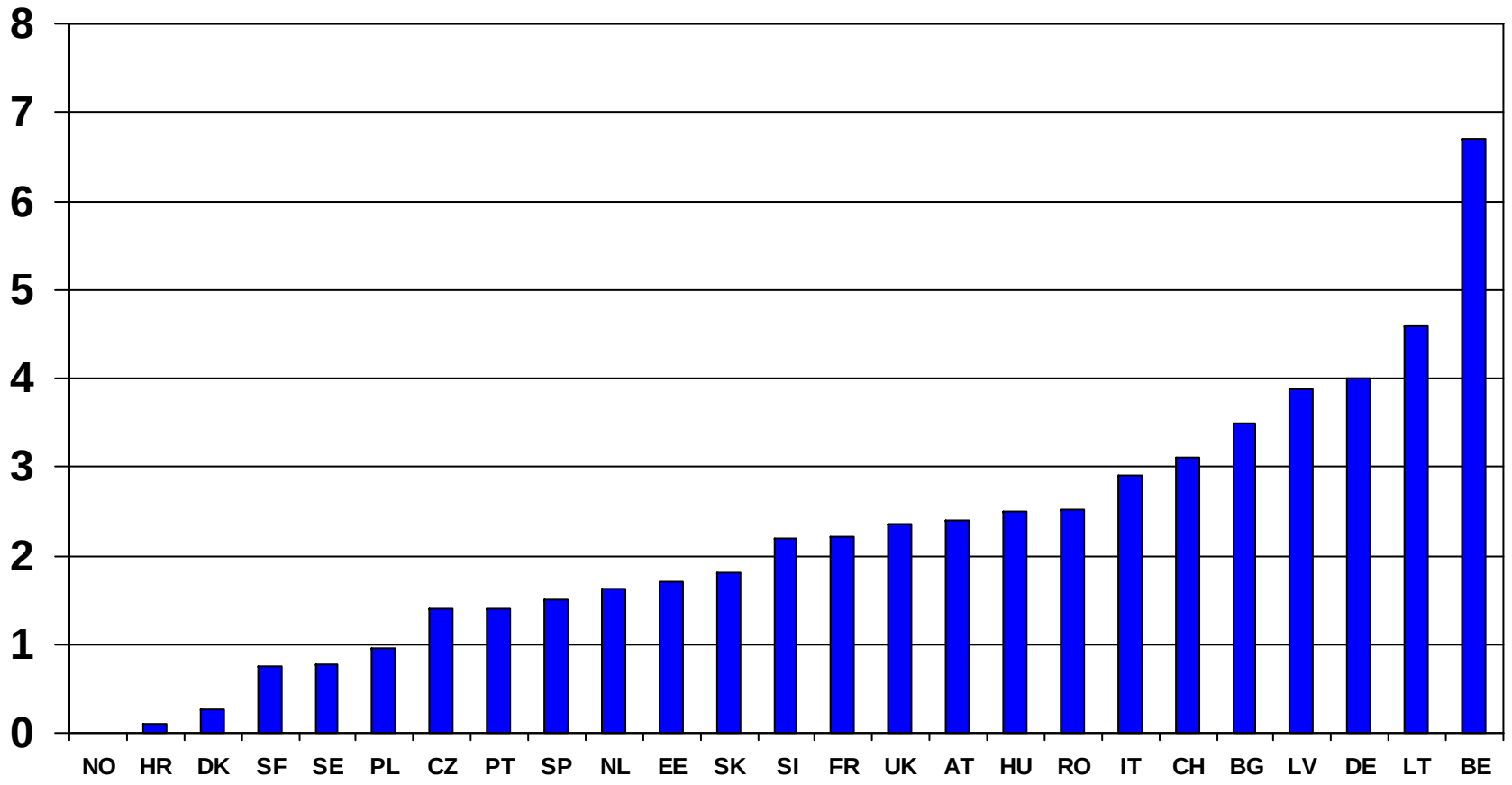
Access Charges For Typical Local and Suburban Trains (Euros/Train-Km)



Source: Table Five Revised

Figure Two

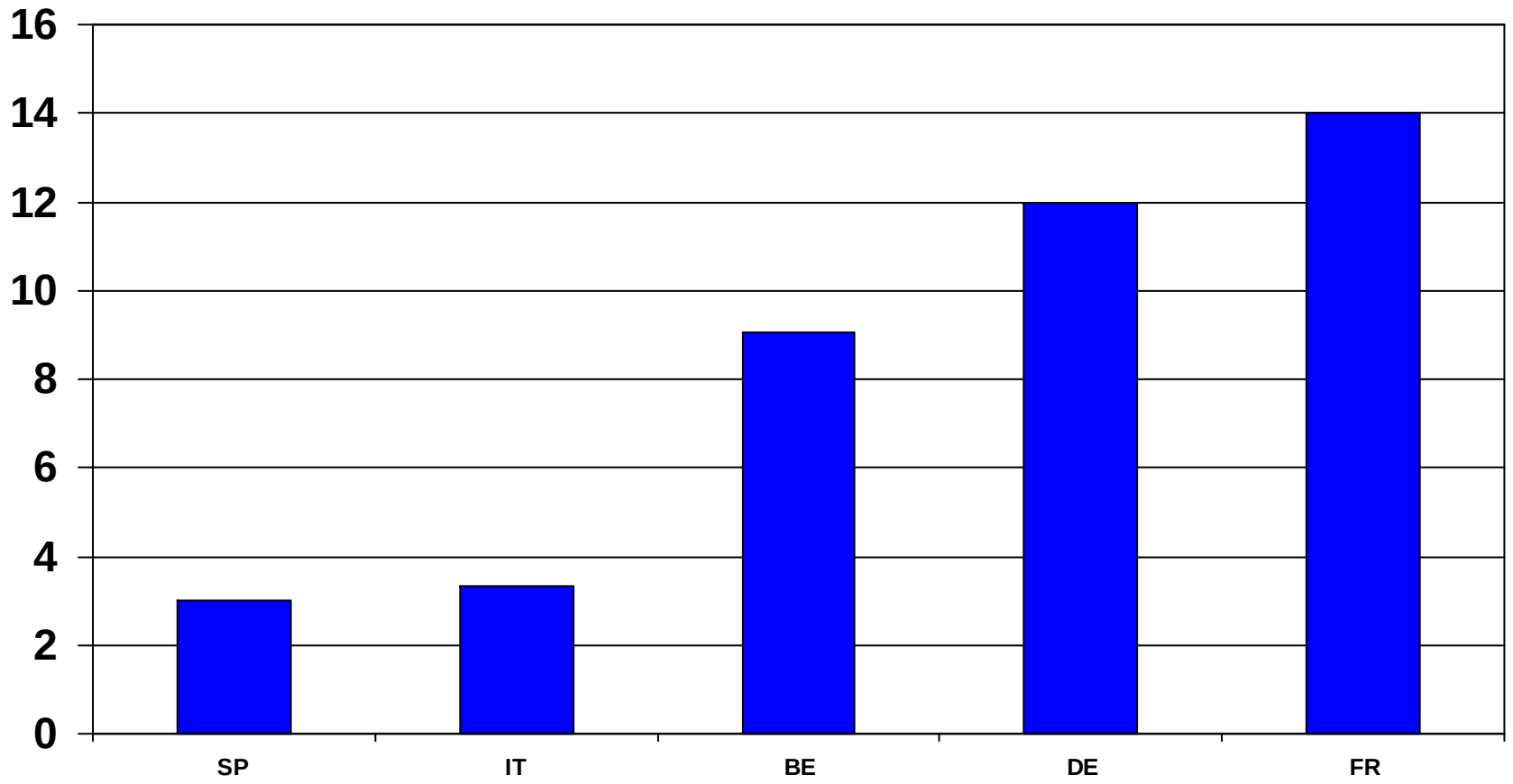
Access Charges For Typical Intercity Passenger Trains
(Euros/Train-Km)



Source: Table Five Revised

Figure Three

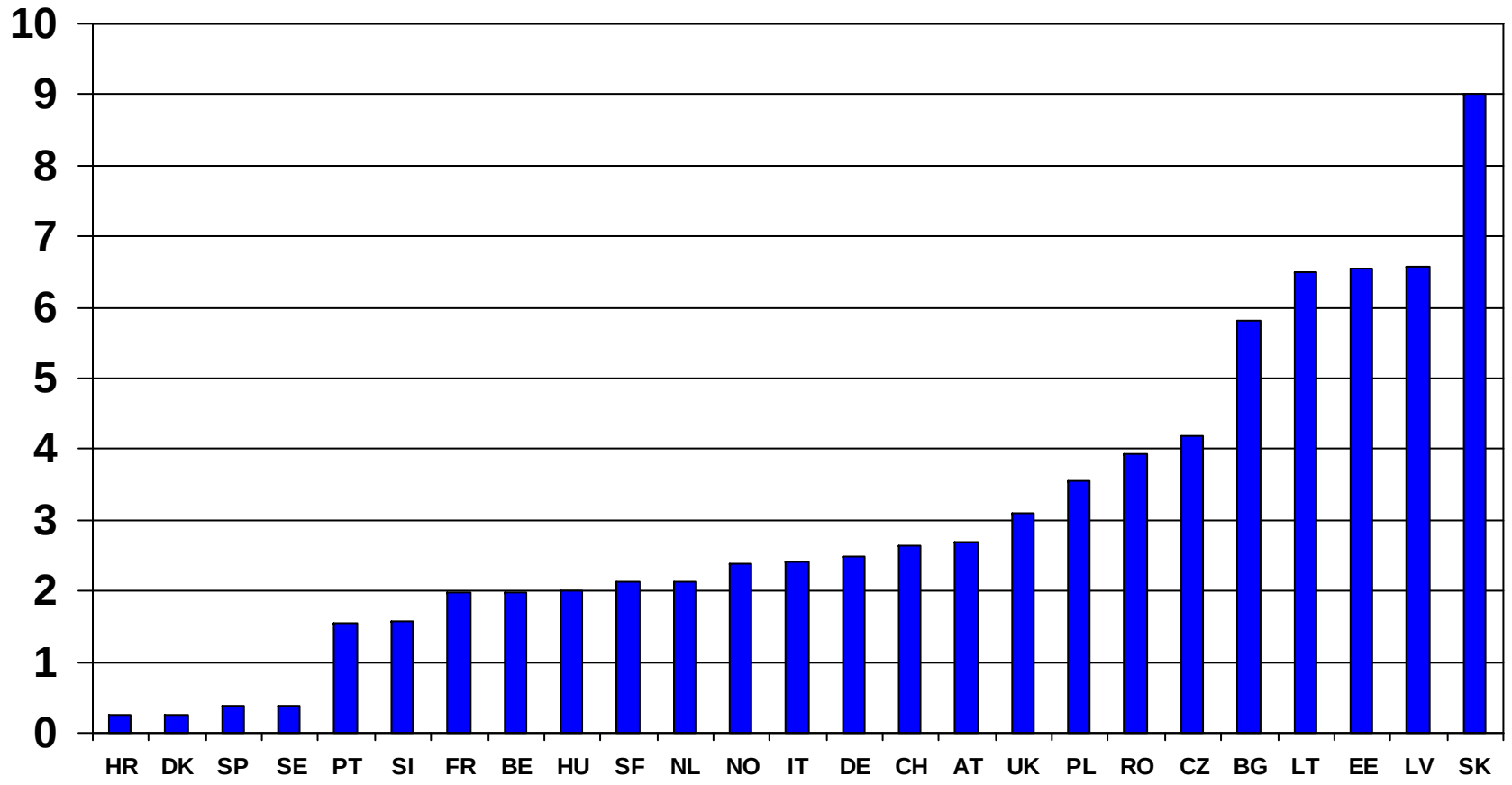
Access Charges For Typical High Speed Intercity Passenger Trains
(Euros/Train-Km)



Source: Table Five Revised

Figure Four

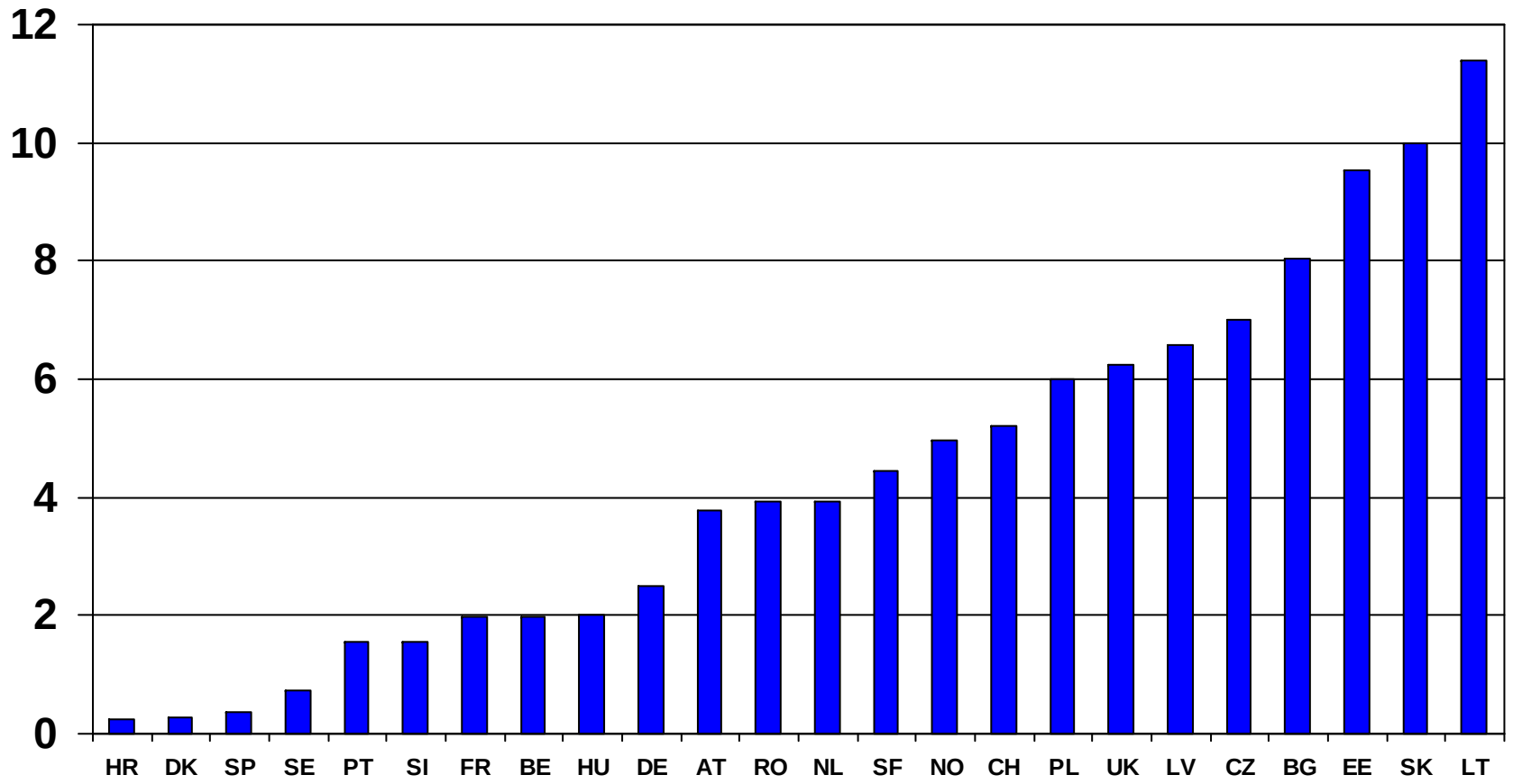
Access Charges For Typical 960 Gross Ton Freight Train (Euros/Train-Km)



Source: Table Five Revised

Figure Five

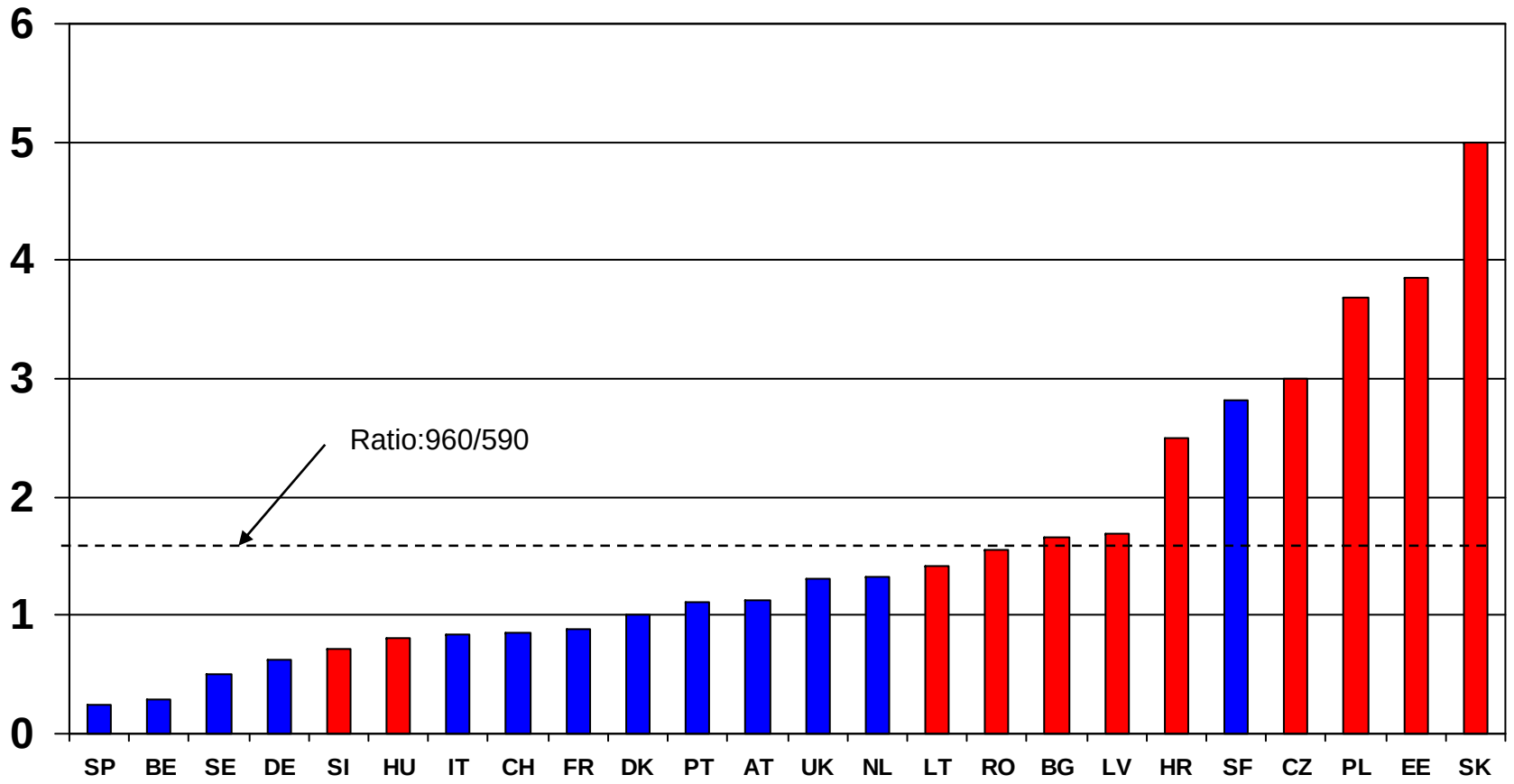
Access Charges For Typical 2000 Gross Ton Freight Train
(Euros/Train-Km)



Source: Table Five Revised

Figure Six

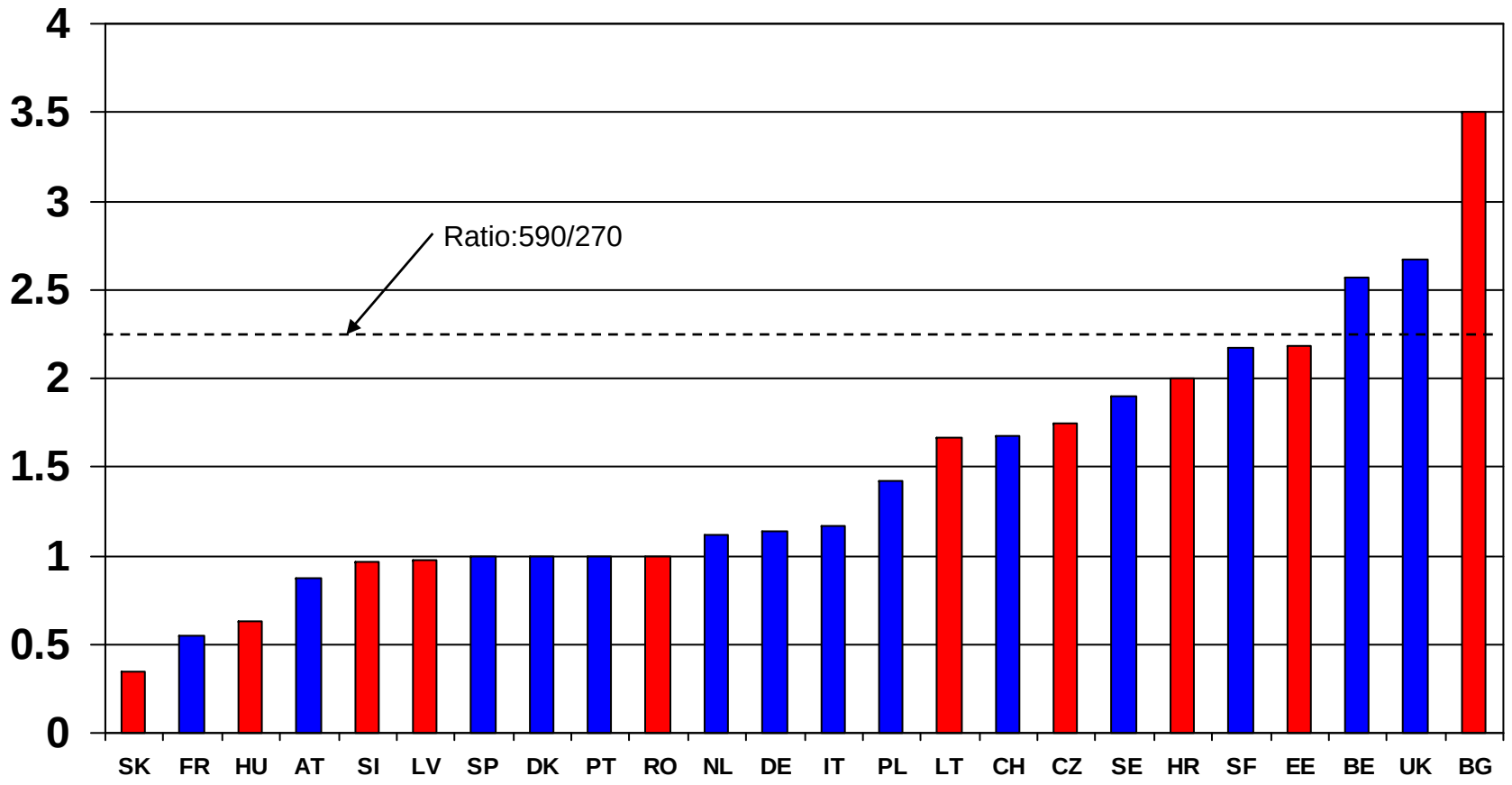
Ratio of the Access Charge For Typical 960 Gross Ton Freight Train to Charge for 590 Gross Ton Intercity Passenger Train



Source: Table Five Revised

Figure Seven

Ratio of the Access Charge For Typical 590 Gross Ton Intercity Passenger Train to Typical 270 Gross Ton Suburban Train

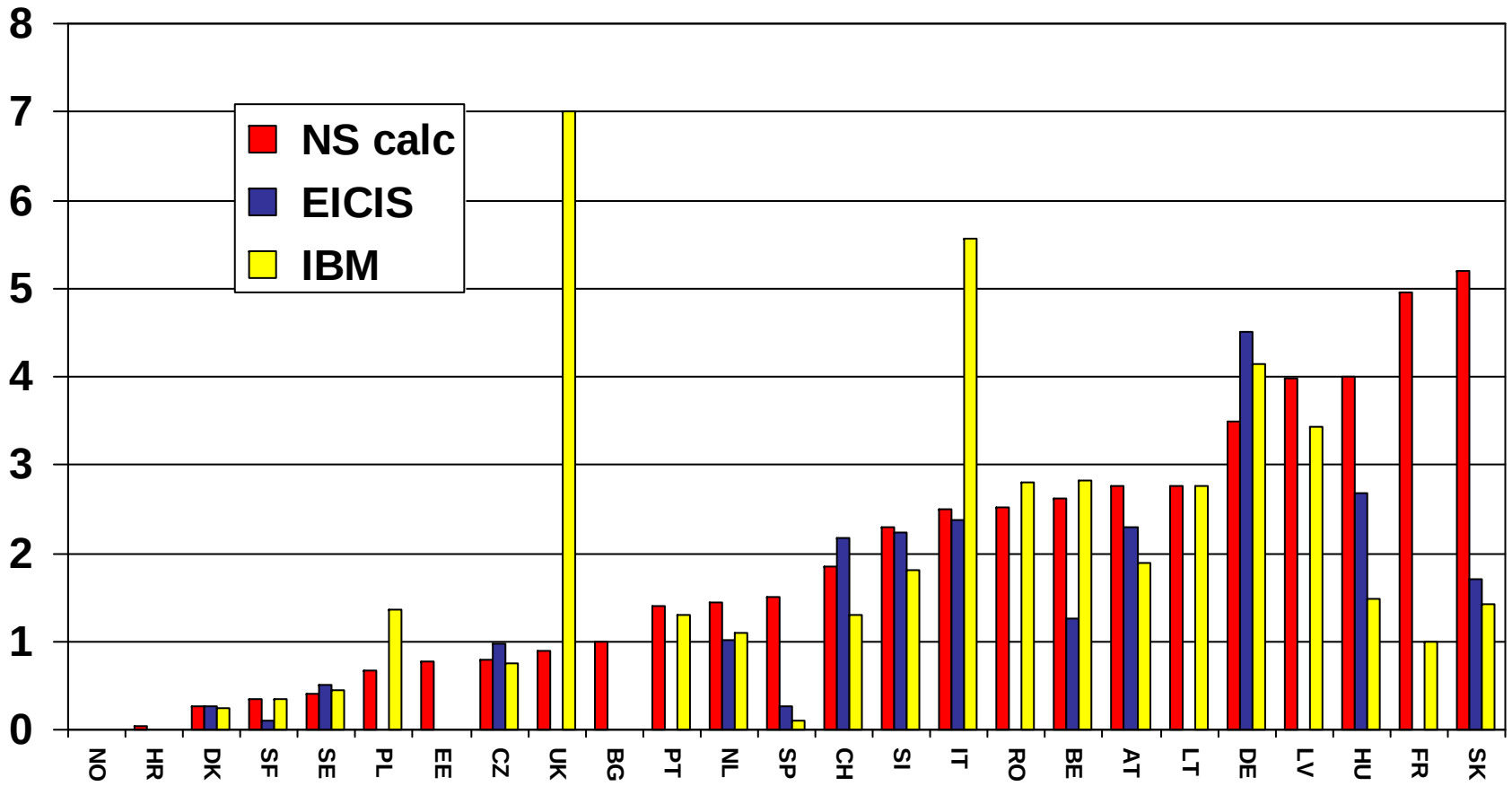


Source: Table Five Revised

Figure Eight

Suburban and Regional Access Charges

Euros/train-km

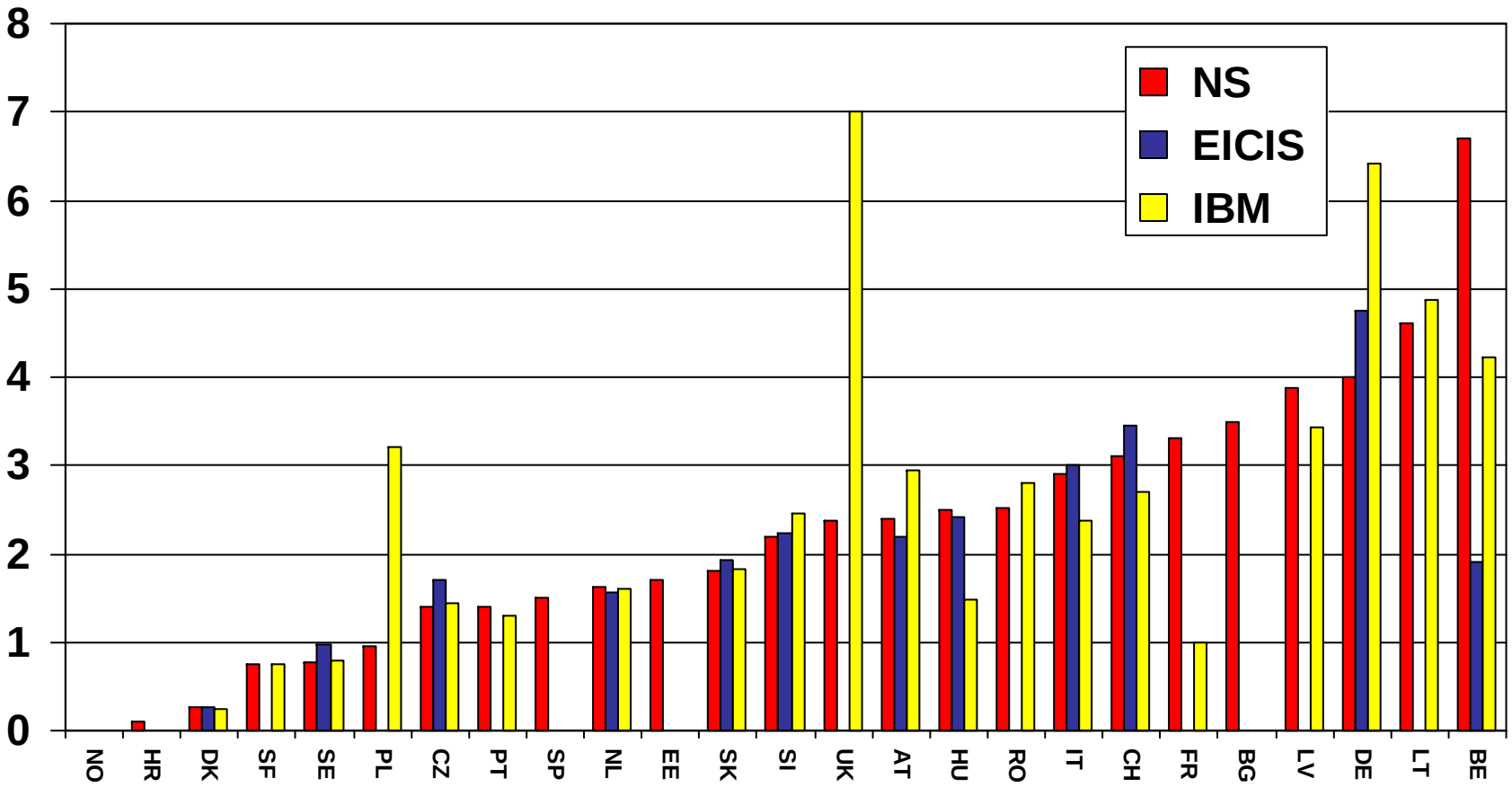


Source: Table Eight Revised: EE IBM number removed

Figure Nine

Intercity Passenger Access Charges

Euros/train-km

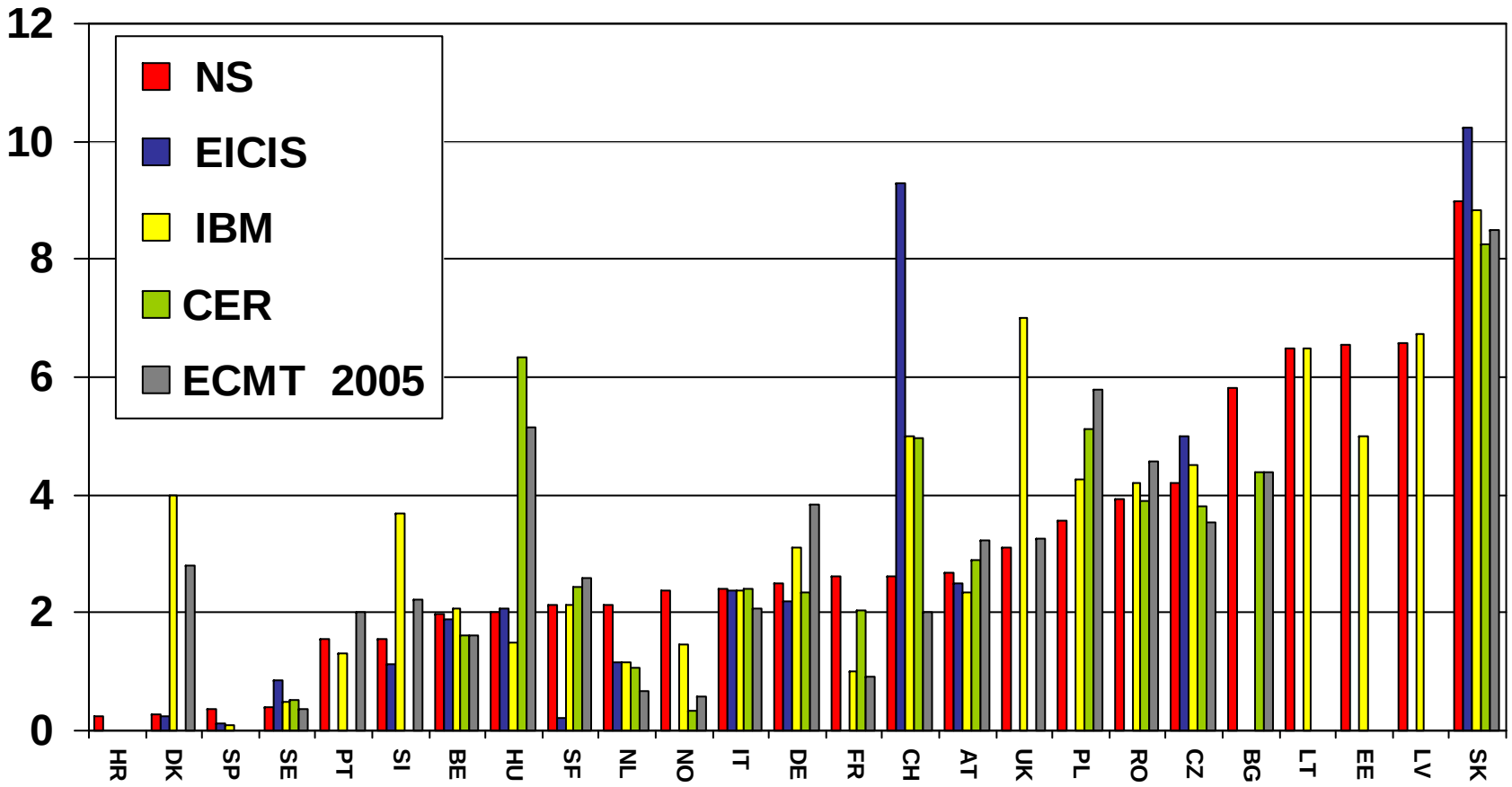


Source: Table Eight Revised

Figure Ten

Freight Access Charges

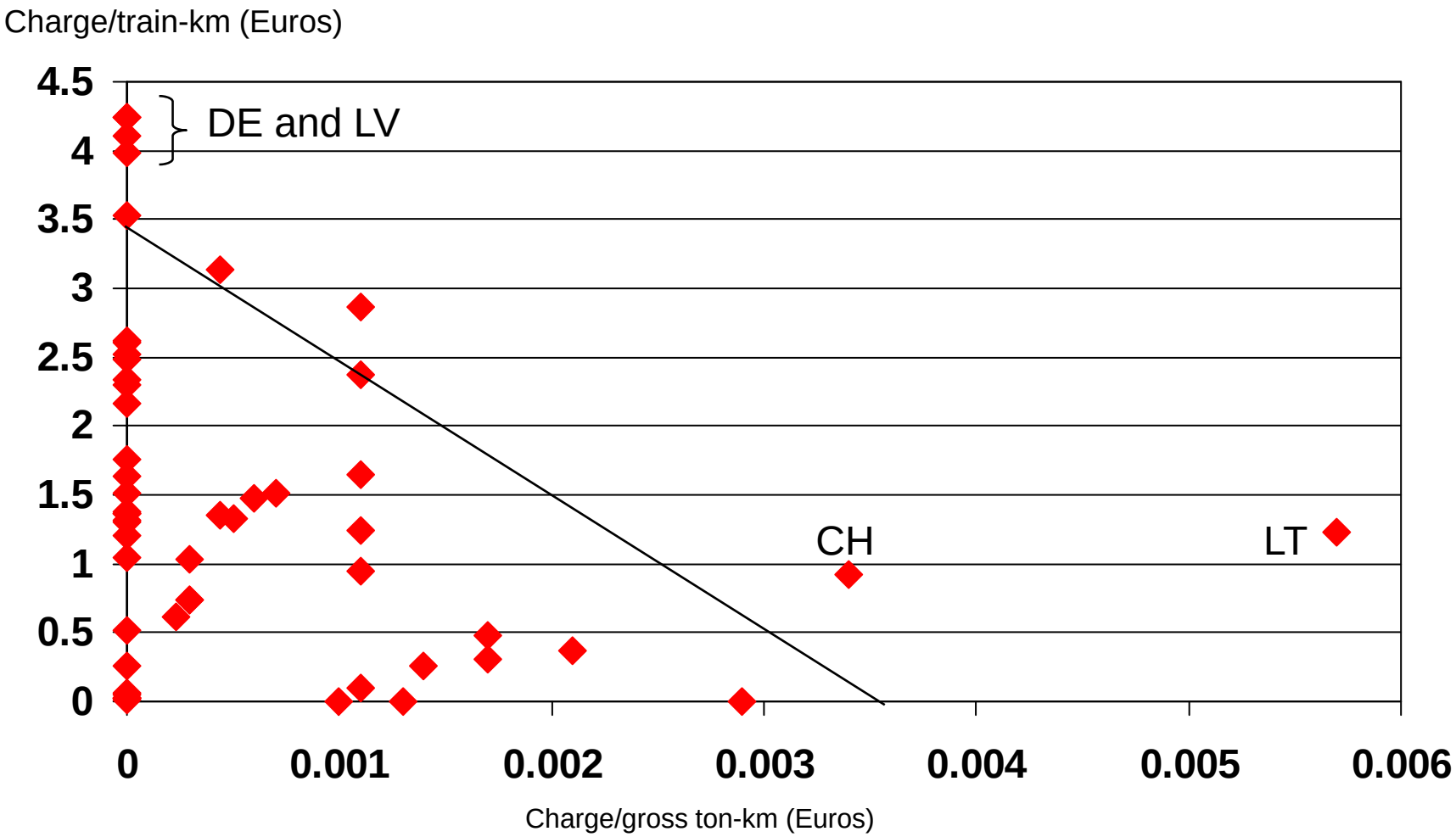
Euros/train-km, 960 Gross Tonne Train



Source: Table Eight Revised. Note: Poland (EICIS) and Lithuania (CER) outlying points removed

Figure Eleven

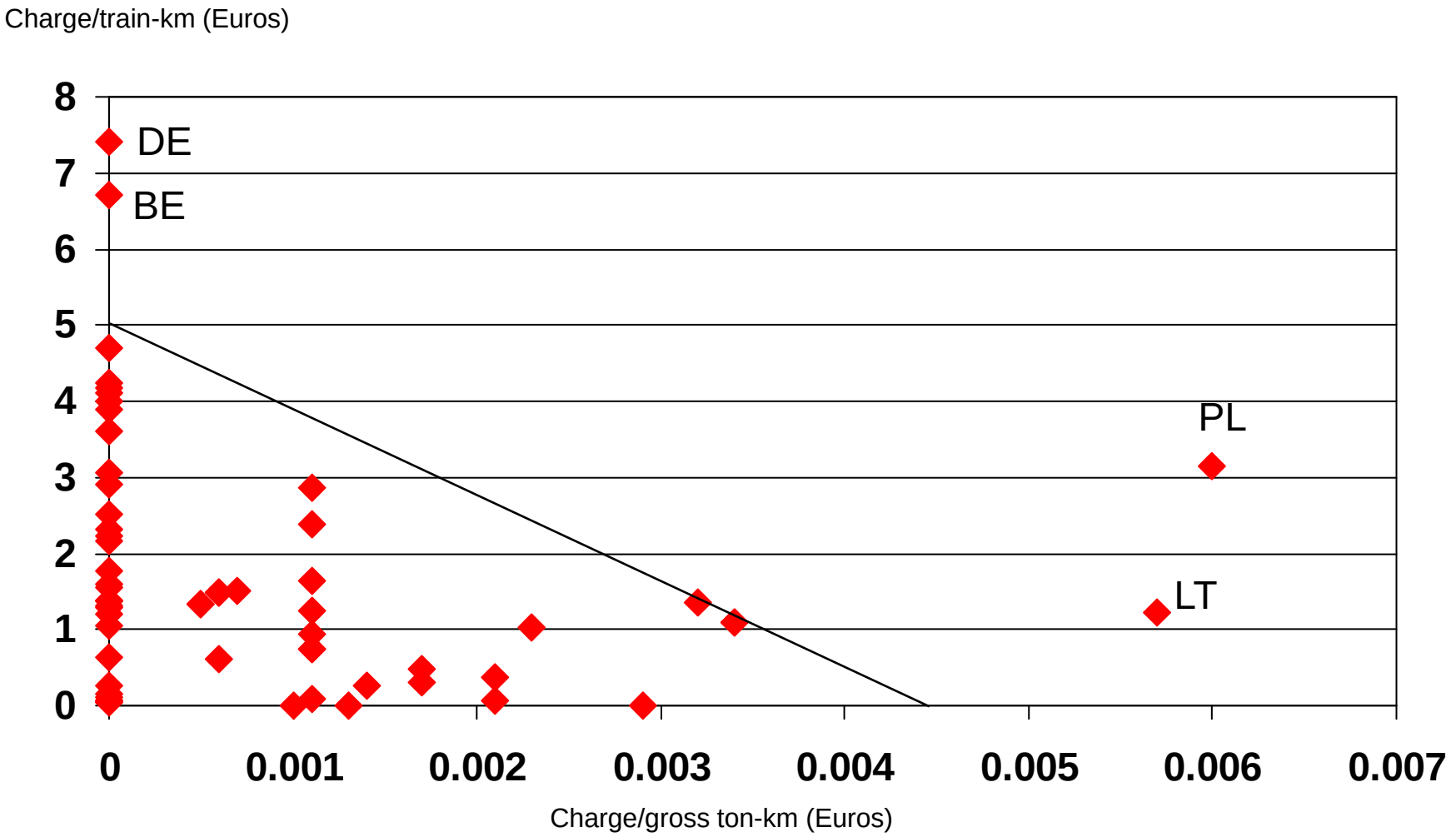
Suburban Access Charge Regimes



Source: Table Three Revised. Note: 2 part charging regimes excluded

Figure Twelve

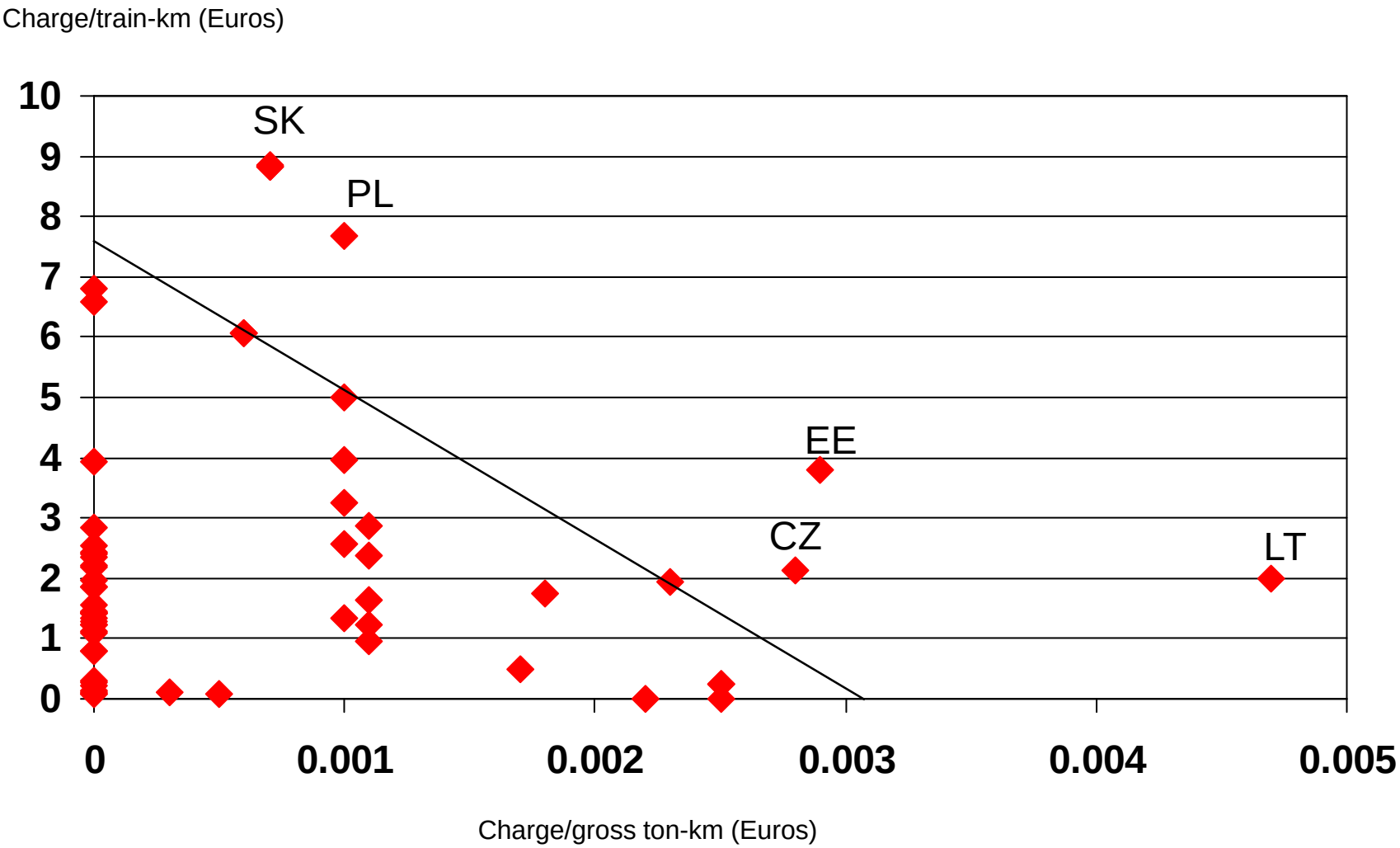
Intercity Passenger Access Charge Regimes



Source: Table Three Revised. Note: 2 part charging regimes excluded

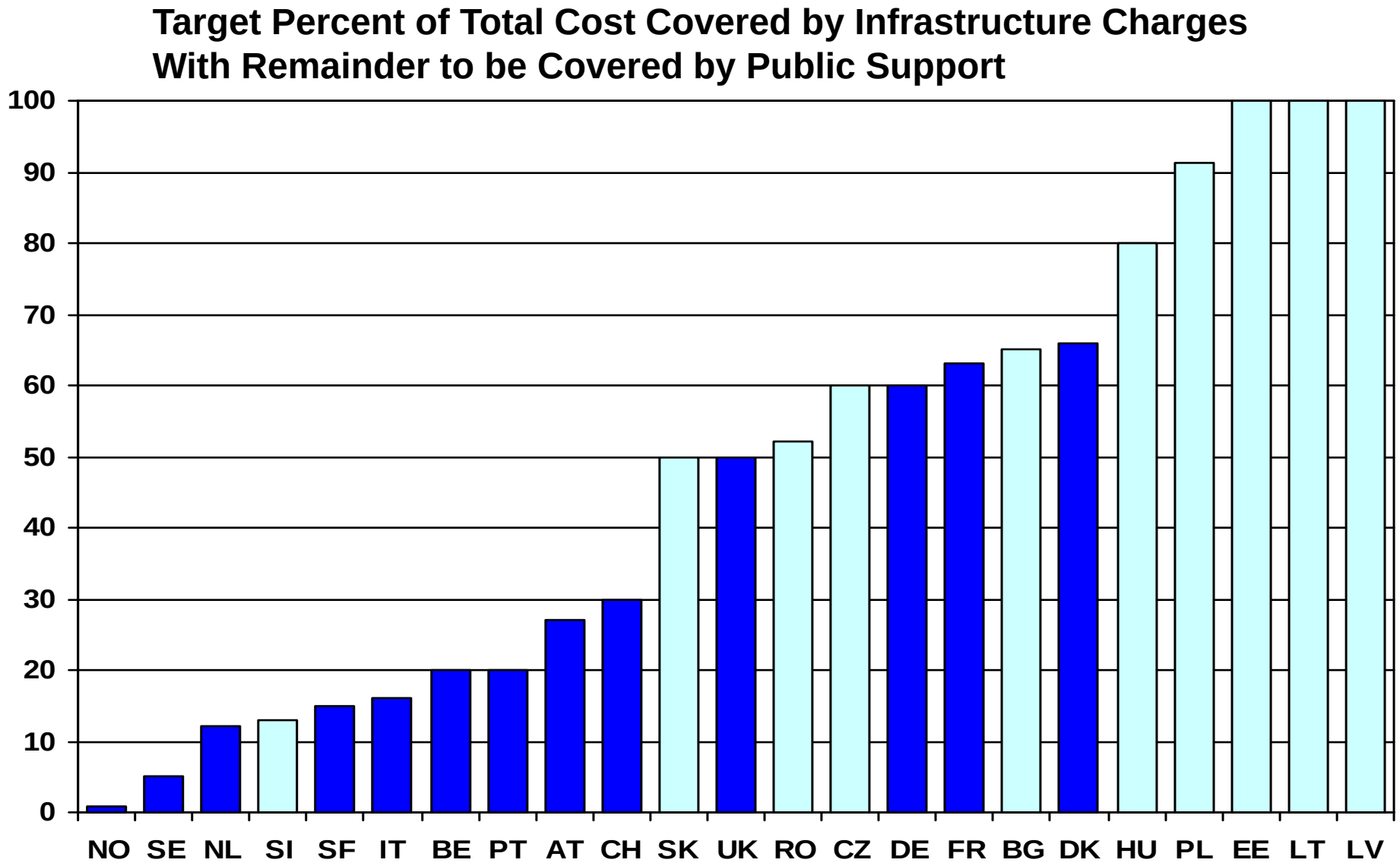
Figure Thirteen

Freight access charge regimes



Source: Table Three Revised. Note: 2 part charging regimes excluded

Figure Fourteen



Source: ECMT 2005, Figure A Light colouring indicates CEE

Table One

COMMISSION LETTERS OF FORMAL NOTICE FOR INSUFFICIENT IMPLEMENTATION OF FIRST RAILWAY PACKAGE (91/440 and 2001/14)

TYPE OF ISSUE	AT	BE	BG	CZ	DK	EE	SF	FR	DE	GR	HU	IR	IT	LV	LT	LU	NL	PL	PT	RO	SI	SK	SP	SE	UK	Number of notices
INFRASTRUCTURE MANAGER (IM) ISSUES																										
Inadequate performance scheme to encourage RUs and IM to minimize disruption and improve performance on the network	X	X	X	X	X		X	X		X	X	X			X	X			X		X		X	X		16
IM not sufficiently independent from RUs or railway holding	X	X		X		X		X	X	X	X		X	X		X		X	X		X	X				15
Insufficient incentives for IM to reduce costs and level of access charges			X	X				X	X	X	X	X			X			X			X	X				11
Infra charges not related to marginal costs					X			X		X	X	X						X			X	X				8
IM does not determine charges for use of infrastructure				X				X					X							X			X			5
Insufficient provisions for cooperation of IMs for setting national and international train paths					X									X							X		X			4
Insufficient legal provisions to ensure that IM shows a balance of revenues and costs											X							X	X							3
Insufficient procedure for determination of provisional international train paths							X																			1
Insufficient access of foreign operators to national infrastructure																							X			1
REGULATOR																										
Regulatory Body has insufficient powers to control competition or demand information	X		X	X	X	X	X	X		X	X		X	X	X	X					X	X	X			16
Insufficient independence of the regulatory body from RU or IM		X	X		X			X		X			X	X	X	X				X	X		X			12
Insufficient accessibility of the regulatory body		X								X				X	X	X			X	X	X		X			10
National regulator cannot participate in international regulatory cooperation					X	X								X									X			4
Decisions by regulator not subject to judicial review																					X					1
Regulatory body not required to decide and take action within two months																									X	1
RAILWAY UNDERTAKING (RU) OR SYSTEM STRUCTURE																										
Insufficient management independence of the incumbent RU				X		X																	X			3
No publication of separate Income Statements and P&L statements for RUs versus IM																								X		1
Number of Issues (17 total)	3	4	4	6	6	4	3	7	2	7	6	3	4	6	5	5	0	4	4	3	9	4	9	2	1	

Table Two

STATUS OF NETWORK STATEMENTS

Country	Has it been issued?	Available on the Web?	Dates	Is web version complete?	Languages Available	Website
Austria	Y	Y	2007, 2008, 2009	No	Network Statement in German and English. Product Catalog in German only. Rate sheet is not on the web and is available on request in German only.	http://www.railnetaustria.at/en/Welcome_to_Network_Access_/NetworkStatement/index.jsp
Belgium	Y	Y	2008	Y	Flemish, French, English, German	https://www.railaccess.be/portal/page/portal/pgr_rail_e_internet/pag_netw_ref/pag_drr2008
Bulgaria	Y	No	2008	NA	Bulgarian only	http://rail-infra.bg/cms/opencms/menu/bg/company/referencedoc/railinfra/index.html
Croatia	Y	Y	2009	Y	Croatian only	http://www.hznet.hr/iSite3/Default.aspx?sec=198
Czech Rep.	Y	Y	2007/8 and 2008/9	Y	Czech and English	http://www.szdc.cz/english/prohl0809_en.php
Denmark	Y	Y	2006 (still valid)	No	N.S. in Danish and English, but rate sheet only available on request and only in Danish	http://uk.bane.dk/visArtikel_eng.asp?artikelID=1503
Estonia	Y	Y	2006, 2007	Y	2006 version of N.S. in Estonian and English, 2007 version only in Estonian	http://www.evr.ee/?id=2124
Finland	Y	Y	2008, 2009	Y	Finnish, Swedish and English	http://www.rhk.fi/in_english/rail_network/finnish_network_statement/
France	Y	Y	2009	Y	French and English	http://www.rff.fr/pages/docref/autre/accueil.asp?lg=en
Germany	Y	Y (access charge calculator available)	2008	No	Pricing system description in German and English, but rate sheet is separate and only available in German	http://www.db.de/site/bahn/en/business/infrastructure__energy/track__infrastructure/network__access/network__statement__neu/network__statement__2008.html
Greece	Y	Y	2007	Y	N.S. in Greek and English	http://www.ose.gr/ose/content/Folder.aspx?d=40&rd=16506950&f=1672&rf=1465142536&m=-1&rm=-1&l=1
Hungary (MAV and GYSEV)	Y	Y	2006	No	N.S. in Hungarian and English, but rate sheet is separate and only available in Hungarian	http://www.vpe.hu/husz.htm
Ireland	No	NA	NA	NA	NA	
Italy (RFI)	Y	Y (access charge calculator available)	2007/2008	No	N.S. in Italian and English. System too complex to use by outsider.	http://www.rfi.it/index2.asp?idmenu=8&idsezione=255&idcontenuto=84
Latvia	Y	Y	2007	Y	N.S. in Latvian, Russian and English	http://www.ldz.lv/?object_id=3104
Lithuania	Y	Y	2008/9 and 2009/10	Y	N.S. in Lithuanian, Russian and English	http://www.litrail.lt/wps/portal/!ut/p/c1/04_SB8K8xLLM9MSSzPy8xBz9CP0os3h3C2N_VzcPlwMDH3NHAyNTU69gPyd_QycPA_1wkA6zeAMcwNEAIo_DBGMnY_zyIYb6fh75uan6BdnZQRaOiooAOAEVlQ!!/dl2/d1/L2dJQSEvUUt3QS9ZQnB3LzZfRzgzT0VGSDIwTzhJNjAyTDVWU0E0SDIwNzY!/
Luxemburg	Y	Y	2007, 2008	Y	French only	http://www.railinfra.lu/visualiser.html
Netherlands	Y	Y	2008, 2009	Y	Dutch, German and English	http://www.prorail.nl/ProRail/English/Network+Statement.htm
Norway	Y	Y	2008, 2009	Y	Norwegian and English	http://www.jernbaneverket.no/english/Market/
Poland	Y	Y	2006/07, 2007/08, 2008/09	No	N.S. in Polish and English, but rate sheet is separate, in Polish only, and available separately (http://www.plk-sa.pl/fileadmin/pdf/reg0708 zm5/cennik 2007-08.pdf) on the web.	http://www.plk-sa.pl/en/offer.html
Portugal	Y	Y	2007	Y	Portugese and English	http://www.refer.pt/Documentos/Network%20Statement%20REFER%202007.pdf
Romania	Y	Y	2006	No	Romanian and English	http://www.cfr.ro/CFR_new/Rom/network_statement.htm
Slovenia	Y	Y	2008, 2009	Y	Slovenian and English	http://www.slo-zeleznice.si/en/infrastructure/network_statement/network_statement_of_the_republic_of_slovenia_2009/
Slovakia	Y	Y	2008	Y	Slovakian and English	http://www.zsr.sk/generate_page.php?page_id=1271
Spain	Y	Y	2008	Y (in Spanish)	Spanish and English (English version is incomplete)	http://www.adif.es/
Sweden	Y	Y	2008	Y	Swedish and English	http://banportalen.banverket.se/Banportalen/upload/3619/Network%20Statement%202008.pdf
Switzerland (SBB)	Y	Y	2008, 2009	No	German, French, English, Italian	http://mct.sbb.ch/mct/en/infra-dienstleistungen/infra-netze/infra-schiene/infra-oss.htm
UK	Y	Y	2009	No	English, price list complex and separate	http://www.networkrail.co.uk/aspx/3645.aspx

Primary source: http://www.railneteurope.com/cont/rnetools_network.aspx
Italics not available on RailNet Europe website. Obtained directly from organization website

Std Format http://www.railneteurope.com/media/2006-03-03%20CS%20and%20IG%20for%20Network%20Statement.pdf

Table Three
Please see ITF website or TGA website

Table Four
Characteristics of Access Charge Regimes

			Train Running Charges							
Country	**Line categories**	**Reservation Charges**	**Distinction by type of service**	**Distinction by Time of Day**	**Gross ton-Km**	**Train-Km**	**Per Train**	**Per Station Stop**	**Charge for use of ET System**	REMARKS
AT	Five: Brenner, Branch Lines, Other International Lines, Other Main Lines and Westbahn	No	No	No	X	X		X		Minor adjustments in Austria by type of locomotive.
BE	Single	No	Yes	Yes		X		X		
BG	Two	Per Train Path-Km	Yes	No	X	X			Per Train-Km	
HR	Six	No	Yes	No		X				Combined freight has charge about 2/3 that of express freight
CZ	Three: European, Other National and Regional	No	Yes	No	X	X			Per Gross ton-Km	
DK	Single	No	No	No		X				
DK	Storabaelt bridge	No	No	No			X			
DK/SE	Oresund bridge	No	No	No			X			
EE	Single	No	Yes	No	X	Freight Only				
SF	Single	No	Yes	No	X				Charges are higher for diesel than for electric	
FR	Eight (4 conventional, 4 HSR)	Per Train Path-Km and per reserved station stop	Yes	Yes		X		X	Per train-km	
DE	12 (7 intercity, 2 Feeder, 3 Urban)	No	Yes	No		X				
HU	Three	No	Yes	No		X	X	X	Per train-km	
IT	Line specific	No	Yes	Yes		Yes		X		Italian charges are unique: per node and per minute of use
LV	Single	No	Yes	No		X			Per train-km (suburban)	
LT	Single	No	Yes	No	X	X				
NL	Single	No	No	No	X	X		X		
NO	Single	No	Yes	No	Freight Only					Charge shown is for freight trains >22.5 tonnes/axle. If less than 22.5 tons/axle, charge is zero.
PL	Six Speed Categories	No	Yes	No	X	X			Per train-km	Gross weight factor for freight is 1.1 for 1200 to 1500 and 1.2 for >1500
PT	Nine	No	Yes	No		X			Per train-km	
RO	Single	No	Yes	No		X				
SI	Two	No	Yes	No		X (freight varies by train weight)				Freight trains <1500 tonnes travel at an 0.5 factor
SK	Three	No	Yes	No	X	X	X			
SP	Four	Per train path-km	Yes	Yes		X			Per gross ton-km	Spain has a surcharge for economic value "trafico."
SE	Single	No	Yes	No	X	X			Surcharge for diesel	Freight traffic that crosses the Öresund Link, is charged a fee of Euros 249 per crossing.
CH (SBB)	Single	No	Yes	No	X	X			Per train-km	Switzerland charges less for freight intermodal traffic (.00248). Passenger access charges include a revenue sharing component that is not transparent and is difficult to calculate.
UK	Single	Fixed per franchise	Yes	Yes	Freight Only	X				

Source: See table Three

Table Five

EU RAILWAY INFRASTRUCTURE ACCESS CHARGES (EUROS) IN 2007-2009 BASED ON WEBSITE INFORMATION

Calculated Access Charges based on Network Statement (Euros/Train-Km)
(see below for typical train makeup and trip conditions)

		Passenger												Freight							Percent of Access Charge from Reservation Fees				Ratio: 960 ton freight to 590 ton std intercity passenger train	Ratio: 590 ton std intercity passenger train to 270 ton suburban train
		Regional, Local, Suburban				Intercity				High Speed					960 tons		2000 tons		3000 tons							
Country	Line category (if distinguished)	Res.	Usage	Stn Stops	Total	Res.	Usage	Stn Stops	Total	Res.	Usage	Stn Stops	Total	Res.	Usage	Total	Usage	Total	Usage	Total	Regional, Local, Suburban	Intercity	High Speed	Freight (960)		
Austria	Brenner	-	3.152	0.244	3.395	-	3.488	0.101	3.589					-	3.876	3.876	4.968	4.968	6.018	6.018					1.08	1.06
	Branch Lines	-	1.229	0.352	1.581	-	1.565	0.056	1.621					-	1.953	1.953	3.045	3.045	4.095	4.095					1.20	1.03
	Other International Lines	-	1.933	0.110	2.043	-	2.269	0.101	2.370					-	2.657	2.657	3.749	3.749	4.799	4.799					1.12	1.16
	Other main lines	-	1.523	0.164	1.687	-	1.859	0.118	1.976					-	2.247	2.247	3.339	3.339	4.389	4.389					1.14	1.17
	Westbahn	-	2.658	0.110	2.768	-	2.994	0.101	3.095					-	3.382	3.382	4.474	4.474	5.524	5.524					1.09	1.12
	Average Used				2.768				2.400							2.683	-	3.775	-	4.825					1.12	0.87
Belgium*	All	-	2.607	-	2.607	-	4.514	-	#REF!	-	19.149	-	#REF!	-	1.651	#REF!	-	#REF!	-	#REF!					#REF!	#REF!
	Average Used				2.607				#REF!				#REF!			#REF!		#REF!		#REF!					#REF!	#REF!
Bulgaria	Category I	0.194	0.841	-	1.035	1.484	2.415	-	3.899					2.464	3.360	5.823	5.566	8.030	7.688	10.151	18.7	38.1		42.3	1.49	3.77
	Category II	0.097	0.429	-	0.525	0.388	2.415	-	2.803					2.464	3.360	5.823	5.566	8.030	7.688	10.151	18.4	13.8		42.3	2.08	5.33
	Average Used	0.110			1.000	1.200			3.500					2.464		5.823		8.030		10.151	11.0	34.3		42.3	1.66	3.50
Croatia	Class 1	-	0.064	-	0.0645	-	0.150	-	0.150						0.3019	0.3019	0.3019	0.3019	0.3019	0.3019					2.01	2.33
	Class 2	-	0.047	-	0.0475	-	0.111	-	0.111						0.2224	0.2224	0.2224	0.2224	0.2224	0.2224					2.01	2.33
	Class 3	-	0.017	-	0.0170	-	0.040	-	0.040						0.0794	0.0794	0.0794	0.0794	0.0794	0.0794					2.01	2.33
	Class 4	-	0.024	-	0.0237	-	0.055	-	0.055						0.1112	0.1112	0.1112	0.1112	0.1112	0.1112					2.01	2.33
	Class 5	-	0.020	-	0.0204	-	0.047	-	0.047						0.0953	0.0953	0.0953	0.0953	0.0953	0.0953					2.01	2.33
	Class 6	-	0.031	-	0.0305	-	0.071	-	0.071						0.1430	0.1430	0.1430	0.1430	0.1430	0.1430					2.01	2.33
	Average Used				0.050				0.100							0.250		0.250		0.250					2.50	2.00
Czech Rep.	European rail system	-	0.938	-	0.938	-	1.614	-	1.614						4.830	4.830	7.759	7.759	10.576	10.576					2.99	1.72
	Other national	-	0.759	-	0.759	-	1.296	-	1.296						4.186	4.186	6.627	6.627	8.975	8.975					3.23	1.71
	Regional	-	0.643	-	0.643	-	1.099	-	1.099						3.429	3.429	5.261	5.261	7.021	7.021					3.12	1.71
	Average Used				0.800				1.400							4.200		7.000		9.000					3.00	1.75
Denmark	National Network	-	0.263	-	0.263	-	0.263	-	0.263						0.263	0.263	0.263	0.263	0.263	0.263					1.00	1.00
	Average Used				0.263				0.263							0.263		0.263		0.263					1.00	1.00
Estonia 2008 EVR	All	-	0.777	-	0.777	-	1.697	-	1.697						6.547	6.547	9.538	9.538	12.414	12.414					3.86	2.19
	Average Used				0.777				1.697							6.547		9.538		12.414					3.86	2.18
Finland	All	-	0.350	-	0.350	-	0.761	-	0.761						2.138	2.138	4.454	4.454	6.681	6.681					2.81	2.17
	Average Used				0.350				0.761							2.138		4.454		6.681					2.81	2.17
France*	A (hi traffic peri-urb)	5.135	0.853	0.907	6.895	5.135	1.443	0.317	6.578					5.135	0.474	5.609	0.474	5.609	0.474	5.609	87.6	82.9		91.5	0.85	0.95
	B (med traffic peri-urb)	1.479	0.853	0.561	2.893	1.479	1.443	0.196	2.922					1.479	0.474	1.953	0.474	1.953	0.474	1.953	70.5	57.3		75.7	0.67	1.01
	C/C* (hi traffic intercity)	0.765	0.853	0.561	2.179	0.765	1.443	0.196	2.208					0.765	0.474	1.239	0.474	1.239	0.474	1.239	60.9	43.5		61.7	0.56	1.01
	D/D* (med traffic intercity)	0.052	0.838	0.561	1.451	0.052	1.428	0.196	1.480					0.052	0.459	0.511	0.459	0.511	0.459	0.511	42.2	16.8		10.2	0.35	1.02
	E (all other)	0.005	0.838	0.561	1.404	0.005	1.428	0.196	1.433					0.005	0.459	0.464	0.459	0.464	0.459	0.464	40.3	14.1		1.1	0.32	1.02
	N1 (hi traffic hi speed)									12.415	2.479	0.113	14.894										84.1			
	N2 (med traffic hi speed)									5.554	2.479	0.070	8.033										70.0			
	N3 (lo traffic hi speed)									2.842	2.479	0.070	5.321										54.7			
	N4 (East Eur hi speed)									2.540	2.479	0.070	5.019										52.0			
	Average Used	3.540	0.853	0.561	4.954	1.670	1.440	0.200	3.310	11.400	2.500	0.100	14.000	2.200	0.470	2.670	0.470	2.670	0.470	2.670	71.5	50.5	81.4	82.4	0.81	0.67
Germany	F+ (long dist)	-	-	-	-	-	-	-	-	-	17.474	-	17.474													
	F1 (long dist)	-	-	-	-	-	7.416	-	7.416	-	8.899	-	8.899	-	6.798	6.798	6.798	6.798	6.798	6.798					0.92	
	F2 (long dist)	-	-	-	-	-	4.703	-	4.703					-	2.850	2.850	2.850	2.850	2.850	2.850					0.61	
	F3 (long dist)	-	-	-	-	-	4.175	-	4.175					-	2.530	2.530	2.530	2.530	2.530	2.530					0.61	
	F4 (long dist)	-	-	-	-	-	3.993	-	3.993					-	2.420	2.420	2.420	2.420	2.420	2.420					0.61	
	F5 (long dist)	-	-	-	-	-	3.069	-	3.069					-	1.860	1.860	1.860	1.860	1.860	1.860					0.61	
	F6 (long dist)	-	-	-	-	-	3.597	-	3.597					-	2.180	2.180	2.180	2.180	2.180	2.180					0.61	
	Z1 (feeder)	-	4.102	-	4.102	-	4.102	-	4.102					-	1.243	1.243	1.243	1.243	1.243	1.243					0.30	1.00
	Z2 (feeder)	-	4.247	-	4.247	-	4.247	-	4.247					-	1.287	1.287	1.287	1.287	1.287	1.287					0.30	1.00
	S1 (urban rapid)	-	2.624	-	2.624																					-
	S2 (urban rapid)	-	3.531	-	3.531																					-
	S3 (urban rapid)	-	4.241	-	4.241																					-
	Average Used				3.500				4.000				12.000			2.500		2.500		2.500					0.63	1.14
Hungary	Category I	-	2.700	3.304	6.005	-	2.429	0.600	3.029					-	2.338	2.338	2.338	2.338	2.338	2.338					0.77	0.50
	Category II	-	1.517	1.411	2.928	-	1.601	0.250	1.851					-	1.430	1.430	1.430	1.430	1.430	1.430					0.77	0.63
	Category III	-	0.518	0.172	0.690	-	0.625	0.100	0.725					-	0.793	0.793	0.793	0.793	0.793	0.793					1.09	1.05
	Average Used				4.000				2.500							2.000		2.000		2.000					0.80	0.63
Italy*	Line specific	-	2.489	-	2.489	-	2.902	-	2.902	-	3.320	-	3.320	-	2.408	2.408									0.83	1.17
	Average Used				2.489				2.902				3.320			2.408									0.83	1.17
Latvia	All	-	3.984	-	3.984	-	3.884	-	3.884					-	6.574	6.574	6.574	6.574	6.574	6.574					1.69	0.98
	Average Used				3.984				3.884							6.574		6.574		6.574					1.69	0.97
Lithuania	All		2.770	-	2.770	-	4.598	-	4.598					-	6.503	6.503	11.382	11.382	16.074	16.074					1.41	1.66
	Average Used				2.770				4.598							6.503		11.382		16.074					1.41	1.66
Netherlands	All	-	0.949	0.498	1.447	-	1.502	0.114	1.616					-	2.142	2.142	3.939	3.939	5.667	5.667					1.33	1.12
	Average Used				1.447				1.616							2.142		3.939		5.667					1.33	1.12
Norway	All	-	-	-	-	-	-	-	-					-	2.381	2.381	4.960	4.960	7.439	7.439						
	Average Used				-				-							2.381		4.960		7.439						
Poland (2007)	0 to 40	-	0.679	-	0.679	-	0.961	-	0.961					-	3.549	3.549	4.616	4.616	5.642	5.642					3.69	1.42
	40 to 60																5.293	5.293	6.319	6.319						
	60 to 80																6.011	6.011	7.037	7.037						
	80 to 100																7.060	7.060	8.086	8.086						
	100 to 120																9.733	9.733	10.759	10.759						

	>120																-	-	-	-								
	Average Used				0.679				0.961							3.549		6.000		7.000							3.69	1.42
Portugal	GH1 (suburban)	-	1.370	-	1.370	-	1.370	-	1.370					-	1.440	1.440	1.440	1.440	1.440	1.440							1.05	1.00
	GH2 (suburban)	-	1.200	-	1.200	-	1.200	-	1.200					-	1.220	1.220	1.220	1.220	1.220	1.220							1.02	1.00
	GH3 (suburban)	-	2.160	-	2.160	-	2.160	-	2.160					-	2.220	2.220	2.220	2.220	2.220	2.220							1.03	1.00
	GH4	-	1.300	-	1.300	-	1.300	-	1.300					-	1.330	1.330	1.330	1.330	1.330	1.330							1.02	1.00
	GH5 (suburban)	-	1.370	-	1.370	-	1.370	-	1.370					-	1.430	1.430	1.430	1.430	1.430	1.430							1.04	1.00
	GH6 (electrified)	-	1.380	-	1.380	-	1.380	-	1.380					-	1.420	1.420	1.420	1.420	1.420	1.420							1.03	1.00
	GH7 (electrified, mostly freight)	-	1.040	-	1.040	-	1.040	-	1.040					-	1.100	1.100	1.100	1.100	1.100	1.100							1.06	1.00
	GH8 (non elect., low density)	-	1.760	-	1.760	-	1.760	-	1.760					-	1.870	1.870	1.870	1.870	1.870	1.870							1.06	1.00
	Non-electrified, RES block)	-	1.310	-	1.310	-	1.310	-	1.310					-	1.560	1.560	1.560	1.560	1.560	1.560							1.19	1.00
	Average Used				1.400				1.400							1.560		1.560		1.560							1.11	1.00
Romania	All	-	2.524	-	2.524	-	2.524	-	2.524					-	3.926	3.926	3.926	3.926	3.926	3.926							1.56	1.00
	Average Used				2.524				2.524							3.926		3.926		3.926							1.56	1.00
Slovenia	Main lines (1.0 weight)	-	2.340	-	2.340	-	2.230	-	2.230					-	2.230	2.230	2.230	2.230	2.230	2.230							1.00	0.95
	Regional lines (0.7 weight)	-	1.638	-	1.638	-	1.561	-	1.561					-	1.561	1.561	1.561	1.561	1.561	1.561							1.00	0.95
	Average Used				2.300				2.200							1.561		1.561		1.561							0.71	0.96
Slovakia	Category 1	-	5.259	-	5.259	-	1.948	-	1.948					-	9.554	9.554	10.310	10.310	11.038	11.038							4.91	0.37
	Category 2	-	5.212	-	5.212	-	1.876	-	1.876					-	9.478	9.478	10.181	10.181	10.856	10.856							5.05	0.36
	Category 3	-	5.035	-	5.035	-	1.674	-	1.674					-	6.626	6.626	7.220	7.220	7.792	7.792							3.96	0.33
	Average Used				5.200				1.800							9.000		10.000		11.000							5.00	0.35
Spain*	A1 Madrid/Barcelona, Cordoba/Malaga, Madrid-Valladolid	1.100	0.790	-	1.890	1.100	0.790	-	1.890	2.390	0.910	-	3.300	-	-	-	-	-	-	-	58.2	58.2	72.4			0.00	1.00
	A2 Madrid/Sevilla, Tramo LaSagra/Toledo, Zaragosa/Huesca	1.050	0.720	-	1.770	1.050	0.720	-	1.770	2.190	0.830	-	3.020	-	-	-	-	-	-	-	59.3	59.3	72.5			0.00	1.00
	B1 Corredor Mediterraneo	0.210	0.060	-	0.270	0.210	0.060	-	0.270					0.320	0.060	0.380	0.060	0.380	0.060	0.380	77.8	77.8		84.2			1.41	1.00
	C1 Rest of system	0.210	0.060	-	0.270	0.210	0.060	-	0.270					0.320	0.060	0.380	0.060	0.380	0.060	0.380	77.8	77.8		84.2			1.41	1.00
	Average Used	0.800			1.500	0.800			1.500	2.190			3.020	0.320		0.380		0.380		0.380	53.3	53.3	72.5	84.2			0.25	1.00
Sweden	All	-	0.406	-	0.406	-	0.773	-	0.773					-	0.390	0.390	0.720	0.720	1.030	1.030							0.50	1.90
	Average Used				0.406				0.773							0.390		0.720		1.030							0.50	1.90
Switzerland (SBB)	All	-	1.838	-	1.838	-	3.097	-	3.097					-	2.629	2.629	5.208	5.208	7.688	7.688							0.85	1.68
	Average Used				1.838				3.097							2.629		5.208		7.688							0.85	1.68
UK*	All	0.114	0.773	-	0.887	0.114	2.251	-	2.365					-	3.109	3.109	6.229	6.229	9.229	9.229							1.31	2.67
	Average Used				0.887				2.365							3.109		6.229		9.229							1.31	2.67

	Typical Train Composition					
	Regional/ Local	Intercity	High Speed	Freight		
Gross tons	270	590	600	960	2000	3000
Avg trip lgth	50	200	400	300	300	300
Main stops	1	2	2			
Minor stops	4	5	3			

Source: Table Three

*** Countries shown in Red have time of day access charges. Number shown are for "Normal" time. Off-peak charges can be half or less of "Normal" and Peak charges can be twice or three times "Normal." See Table Three.**

Table Six

Data Entry for EICIS Model

	Train Type				
	Suburban	**Intercity**	**960**	**2000**	**3000**
Train Type	Suburban	Fast	Conventional		
Traction Type	Diesel or Electric	D or E	D or E	D or E	D or E
Number of Locomotives	1	1	1	2	2
Number of Cars/Wagons	4	10	10	21	32
Length of all locomotives	25	25	25	50	50
Length of all cars/wagons	100	250	180	378	576
Number of Seats	400	750			
Weight of all locomotives	80	80	90	180	180
Weight of all wagons	190	510	870	1820	2820
Total Load weight			960	2000	3000
Max Axle Load	22	22	22	22	22
Type of Path	**Short dist, regular interval**	**Express**	**Standard**		

Table Seven

EICIS Calculated Charges

		Standard Suburban Train*									Standard Intercity Passenger Train**						
					Access Charge (€) (no station charges		Station Charge (€)	Total Charge (€)		Auth calc Stn Chg				Access Charge (€) (no station charges		Station Charge (€)	Total Ch
Country	Line category (if distinguished)	Origin	Destination	Km Line	Diesel	Electric	(end stations only)	Diesel	Electric		Origin	Destination	Km Line	Diesel	Electric	(end stations only)	Diesel
Austria	Brenner										Kufstein	Fritzens-Wattens	56.73	56.73	167.46	1.35	58.08
	Branch Lines										Klagenfurt	Bleiburg	43.73	47.4			47.4
	Other International Lines	Vienna	Vienna Neustadt	47.4	81.67	81.67		81.67	81.67	*13.32*	Vienna	Klagenfurt	323.36	522.35	522.35		522.35
	Other main lines	Vienna	Kloster Neuberg	11.6	15.29	15.29		15.29	15.29	*7.48*	Vienna	Gmund	161.39	213.52	213.52		213.52
	Westbahn	Vienna HbF	St Poelten	60.6	145.13	145.13	3.5	148.63	148.63	*8.71*	Vienna	Salzburg	312.08	763.35	763.35	3.5	766.85
Belgium	All	Brussels (n)	Antwerpen (B)	40.9	51.32	51.32		51.32	51.32		Bruges	Liege	189.49	360.12	360.12		360.12
Czech Rep.	European rail system	Prague	Kralupy	28.7	28.10	26.88		28.10	26.88		Praha Liben	Czesky Velenice	190.54	325.38	307.57		325.38
	Other national	Prague	Vsetaty	124.1	121.72	116.41		121.72	116.41		Pilsen	Most	238.92	408.00	385.67		408.00
Denmark	National Network	Aalborg	Arhus	139.9	35.80	35.80		35.80	35.80		Aalborg	Arhus	139.9	35.80	35.80		35.80
Finland	All	Helsinki	Hyvinkaa	58.6	6.05	6.05		6.05	6.05		Helsinki	Turku	193.02	19.9	19.9		19.90
Germany	F2 (long dist)										Aachen sud Gren	Passau Grenze	698.05	4959.39	4959.39		########
Hungary	Category I	Budapest Kelenfold	Vacs	41.0	110.01	131.24		110.01	131.24		Budapest Kelenfo	Debrecen	221.4	535.41	650.05		535.41
Italy	EICIS	Rome Central	Albano Laziale	28.4	67.63	67.63		67.63	67.63		Venice Mestre	Milano Centrale	287.43	648.08	648.08		648.08
	Pedaggio 2004: 08:00	Rome Central	Albano Laziale	28.4	191.21	200.64		191.21	200.64		Venice St. Lucia	Milano Centrale	266.26	611.39	698.55		611.39
	Pedaggio 2004: noon	Rome Central	Albano Laziale	28.4	173.89	183.32		173.89	183.32		Venice St. Lucia	Milano Centrale	266.26	677.43	765.83		677.43
	Pedaggio 2004: midnight	Rome Central	Albano Laziale	28.4	162.34	177.77		162.34	177.77		Venice St. Lucia	Milano Centrale	266.26	572.33	660.73		572.33
	Pedaggio 2004: 08:00	Milano Lambrate	Treviglio	29.3	144.06	153.8		144.06	153.80		Roma Termini	Milano Centrale	576.45	########	########		########
	Pedaggio 2004: noon	Milano Lambrate	Treviglio	29.3	141.27	151.01		141.27	151.01		Roma Termini	Milano Centrale	576.45	########	########		########
	Pedaggio 2004: midnight	Milano Lambrate	Treviglio	29.3	135.84	145.58		135.84	145.58		Roma Termini	Milano Centrale	576.45	########	########		########
	Pedaggio 2004: 08:00										Roma Termini	Napoli Centrale	221.77	########	########		########
	Pedaggio 2004: noon										Roma Termini	Napoli Centrale	221.77	########	########		########
	Pedaggio 2004: midnight										Roma Termini	Napoli Centrale	221.77	########	########		########
Netherlands	All	Amsterdam C	Rotterdam C	69.5	70.95	70.95		70.95	70.95		Amsterdam C	Rosendaal Grenz	135.2	212.77	212.77		212.77
Poland Only frt avail	100 to 120																
Slovenia	Main lines (1.0 weight)	Ljubljana	Postojna	66.9	149.2	149.2		149.20	149.20		Koper	Ljubljana	149.16	662.62	332.62		662.62
Slovakia	Category 1	Bratislava Hlavana	Trnava	46.1	78.20	78.20		78.20	78.20		Bratislava Hlvana	Zilina	202.44	388.71	388.71		388.71
Spain	A1 Madrid/Barcelona, Cordoba/Malaga, Madrid-Valladolid	Madrid	Guadalajara	64.3	16.72	16.72		16.72	16.72		Madrid	Barcelona	612.6	3925.56	3925.56		########
	A2 Madrid/Sevilla, Tramo LaSagra/Toledo, Zaragosa/Huesca										Madrid	Seville (HSR)	480.6		4333.94		-
	B1 Corredor Mediterraneo										Valencia	Barcelona	1025.2	4024.36	4024.36		########
Sweden	All	Stockholm c	Uppsala	65.5	33.22	33.22		33.22	33.22		Stockholm c	Malmo c	676.55	653.50	653.50		653.50
Switzerland (SBB)	All	Geneva	Lausanne	60.3	130.76	130.76		130.76	130.76		Zurich	Chiasso	410.18	########	########		########

* Standard suburban train: 270 Gross tons, 400 passengers. This would be one locomotive and 4 coaches, or one 4-coach MU set. Dimensions: locomotive (25 meters, coaches 25 meters/50 tons)
** Standard intercity train: 590 gross tons, 750 passengers. This would be one locomotive and 10 coaches
*** Standard freight trains:
960 gross tons: 1 locomotive (80 tons) and 10 wagons (90 tons). Wagons are 16 meters long
2000 gross tons: 2 locomotives (160 tons) and 20 wagons
3000 gross tons: 2 locomotives (160 tons) and 31 wagons

Pedaggio Link http://pedaggio2004.rfi.it/

	Auth calc				Freight Train***						Summary of EICIS Charges (€ per train-Km)									
arge (€)	Stn Chg				Access Charge (€)						Passenger				Freight					
					Standard		2000 Gross Ton		3000 Gross Ton		Suburban		Intercity		Standard		2000 Ton		3000 Ton	
Electric		Origin	Destination	Km Line	Diesel	Electric	Diesel	Electric	Diesel	Electric	Diesel	Elec	Diesel	Elec	Diesel	Electric	Diesel	Electric	Diesel	Electric
168.81	1.64	Kufstein	Steinach	109.23	323.6	323.6	333.92	333.92	333.92	333.92			1.000	2.952	2.963	2.963	3.057	3.057	3.057	3.057
0	6.6	Klagenfurt	Bleiburg	43.73	47.86	47.86	51.99	51.99	51.99	51.99			1.084	-	1.094	1.094	1.189	1.189	1.189	1.189
522.35	13.32	Vienna (W)	Klagenfurt	332.95	581.15	581.15	612.62	612.62	612.62	612.62	1.723	1.723	1.615	1.615	1.745	1.745	1.840	1.840	1.840	1.840
213.52	7.42	Vienna	Gmund	160.34	213.81	213.81	228.97	228.97	228.97	228.97	1.324	1.324	1.323	1.323	1.333	1.333	1.428	1.428	1.428	1.428
766.85	13.32	Vienna	Salzburg Vbf	309.56	759.11	759.11	788.36	788.36	788.36	788.36	2.396	2.396	2.446	2.446	2.452	2.452	2.547	2.547	2.547	2.547
360.12		Vise	Zeebrugge	205.1	389.25	420.21	598.84	646.48	598.84	646.48	1.254	1.254	1.900	1.900	1.898	2.049	2.920	3.152	2.920	3.152
307.57		Usti nad Labem	Breclav hranice	450.15	2,251.89	########	########	########	5,046.11	########	0.981	0.938	1.708	1.614	5.003	4.802	8.182	7.759	11.210	10.576
385.67		Pilsen	Most	238.92	1,195.23	########	########	########	2,678.30	########	0.981	0.938	1.708	1.614	5.003	4.802	8.182	7.484	11.210	10.576
35.80		Aalborg	Padborg	358.1	85.62	85.62	85.62	85.62	85.62	85.62	0.256	0.256	0.256	0.256	0.239	0.239	0.239	0.239	0.239	0.239
19.90		Turku	Vainikkala	417.91	83.76		167.52		167.52		0.103	0.103	0.103	0.103	0.200	-	0.401	-	0.401	-
########		Aachen sud Grenze	Passau Grenze	698.05	2755.21	2755.21	2755.21	2755.21	3397.44	3397.44			7.105	7.105	3.947	3.947	3.947	3.947	4.867	4.867
650.05		Hegyeshalom	Tiszaujvaros	360.9	746.09	########	746.09	########	746.09	########	2.683	3.201	2.418	2.936	2.067	2.944	2.067	2.944	2.067	2.944
648.08		Bologna Interporto	Naples Traccia	325.01	773.52	773.52	773.52	773.52	773.52	773.52	2.380	2.380	2.255	2.255	2.380	2.380	2.380	2.380	2.380	2.380
698.55											6.730	7.062	2.296	2.624						
765.83											6.121	6.453	2.544	2.876						
660.73											5.714	6.257	2.150	2.482						
########											4.910	5.242	2.848	3.180						
########											4.815	5.147	2.787	3.119						
########											4.630	4.961	2.063	2.395						
########													13.130	13.462						
########													13.108	13.440						
########													13.022	13.354						
212.77		Europort	Venlo Grenz	180.5	207.57	207.57	207.57	207.57	207.57	207.57	1.021	1.021	1.574	1.574	1.150	1.150	1.150	1.150	1.150	1.150
		Warsaw	Katowice	385.64	6,609.35	########	########	########	6,609.35	########					17.139	17.139	17.139	17.139	17.139	17.139
332.62		Maribor	Koper	304.28	339.27	339.27	678.54	678.54	678.54	678.54	2.230	2.230	4.442	2.230	1.115	1.115	2.230	2.230	2.230	2.230
388.71		Bratislava	Zilina	206.42	2,112.80	########	########	########	2,727.44	########	1.696	1.696	1.920	1.920	10.235	10.235	11.761	11.761	13.213	13.213
########		Madrid	Barcelona	691.7	76.09	76.09	76.09	76.09	76.09	76.09	0.260	0.260	6.408	6.408	0.110	0.110	0.110	0.110	0.110	0.110
########													-	9.018						
########		Valencia	Barcelona	1107.5	121.82	121.82	121.82	121.82	121.82	121.82	#DIV/0!	#DIV/0!	3.925	3.925	0.110	0.110	0.110	0.110	0.110	0.110
653.50		Goteburg	Haparanda	1613.9	1,385.37	########	########	########	3,955.12	########	0.507	0.507	0.966	0.966	0.858	0.858	1.674	1.674	2.451	2.451
########		Schaffhausen	Chiaso	458.22	4,252.47	########	########	########	13,103.99	########	2.170	2.170	3.459	3.459	9.280	9.280	19.917	19.917	28.598	28.598

Table Eight
Comparison of All Sources

Country	Source	Passenger			Freight			Average Train Weight (Gross Tons	
		Reg, Loc. Sub'n	Intercity	High Speed	960 tons	2000 tons	3000 tons	Passenger	Freight
Austria	Calc.from Network Statement	2.768	2.400		2.683	3.775	4.825	293	944
	EICIS/Pedaggio/DB Models	2.300	2.200		2.500	2.500	2.500		
	IBM Liberalization Index	1.890	2.940		2.330				
	CER Average		1.940		2.900				
	ECMT 2005		1.960		3.220				
Belgium#	Calc.from Network Statement	2.607	6.701	9.039	1.973	1.973	1.973	328	1,349
	EICIS/Pedaggio/DB Models	1.254	1.900		1.898	2.920	2.920		
	IBM Liberalization Index	2.820	4.230		2.080				
	CER Average		6.380		1.620				
	ECMT 2005		1.950		1.610				
Bulgaria	Calc.from Network Statement	1.000	3.500		5.823	8.030	10.151	296	1,108
	EICIS/Pedaggio/DB Models								
	IBM Liberalization Index								
	CER Average		0.930		4.400				
	ECMT 2005		1.400		4.400				
Croatia	Calc.from Network Statement	0.050	0.100		0.250	0.250	0.250	149	780
	EICIS/Pedaggio/DB Models								
	IBM Liberalization Index								
	CER Average								
	ECMT 2005								
Czech Rep.	Calc.from Network Statement	0.800	1.400		4.200	7.000	9.000	159	1,006
	EICIS/Pedaggio/DB Models	0.981	1.708		5.003	8.182	11.210		
	IBM Liberalization Index	0.750	1.440		4.500				
	CER Average		0.510		3.810				
	ECMT 2005		1.100		3.530				
Denmark	Calc.from Network Statement	0.263	0.263		0.263	0.263	0.263	281	1,308
	EICIS/Pedaggio/DB Models	0.256	0.256		0.239	0.239	0.239		
	IBM Liberalization Index	.25 to 2.9	.25 to 2.9		4.00*				
	CER Average								
	ECMT 2005		1.87*		2.8*				
Estonia 2008 EVR	Calc.from Network Statement	0.777	1.697		6.547	9.538	12.414	41	3,088
	EICIS/Pedaggio/DB Models								
	IBM Liberalization Index	12.000			5.000				
	CER Average								
	ECMT 2005								
Finland	Calc.from Network Statement	0.350	0.761		2.138	4.454	6.681	295	1,232
	EICIS/Pedaggio/DB Models	0.103	0.013		0.200	0.401	0.401		
	IBM Liberalization Index	0.350	0.760		2.140				
	CER Average		0.510		2.450				
	ECMT 2005		0.460		2.580				
France#	Calc.from Network Statement*****	4.950	3.310	14.000	2.630	2.630	2.630	368	760
	EICIS/Pedaggio/DB Models								
	IBM Liberalization Index	1 to 1.5	1 to 1.5		1 to 1.5				
	CER Average		6.140		2.040				
	ECMT 2005		4.200		0.900				
Germany	Calc.from Network Statement	3.500	4.000	12.000	2.500	2.500	2.500	341	1,322
	EICIS/Pedaggio/DB Models	4.500	4.75 to 7.105**		2.2 to 3.947**	2.2 to 4.867**	3.15 to 4.867**		
	IBM Liberalization Index	4.140	6.410		3.100				
	CER Average		4.140		2.350				
	ECMT 2005		5.050		3.830				
Hungary	Calc.from Network Statement	4.000	2.500		2.000	2.000	2.000	186	1,018
	EICIS/Pedaggio/DB Models	2.683	2.418		2.067	2.067			
	IBM Liberalization Index	1.48 to 1.75	1.48 to 1.75		1.48 to 1.75				
	CER Average		3.770		6.340				
	ECMT 2005		2.550		5.160				
Italy#	Calc.from Network Statement	2.489	2.902	3.320	2.408			277	597
	EICIS/Pedaggio/DB Models	6 to 2.38***	3 to 2.255***	13.400	2.380				
	IBM Liberalization Index	5.570	2.380		2.380				
	CER Average		2.560		2.410				
	ECMT 2005		2.410		2.080				
Latvia	Calc.from Network Statement	3.984	3.884		6.574	6.574	6.574	274	2,932
	EICIS/Pedaggio/DB Models								
	IBM Liberalization Index	3.43 to 4.07	3.43 to 4.07		6.720				
	CER Average								

	ECMT 2005								
Lithuania	Calc.from Network Statement	2.770	4.598		6.503	11.382	16.074	301	2,630
	EICIS/Pedaggio/DB Models								
	IBM Liberalization Index	2.770	4.870		6.500				
	CER Average		3.880		36.280				
	ECMT 2005								
Netherlands	Calc.from Network Statement	1.447	1.616		2.142	3.939	5.667	281	1,308
	EICIS/Pedaggio/DB Models	1.021	1.574		1.150	1.150	1.150		
	IBM Liberalization Index	1.100	1.600		1.150				
	CER response Average		1.530		1.080				
	ECMT 2005		1.100		0.680				
Norway	Calc.from Network Statement	-	-		2.381	4.960	7.439	213	917
	EICIS/Pedaggio/DB Models								
	IBM Liberalization Index	-	-		1.470				
	CER response Average		0.124		0.319				
	ECMT 2005		-		0.580				
Poland (2007)	Calc.from Network Statement	0.679	0.961		3.549	6.000	7.000	256	1,468
	EICIS/Pedaggio/DB Models				17.139	17.139	17.139		
	IBM Liberalization Index	1.360	3.200		4.250				
	CER response Average		1.670		5.120				
	ECMT 2005		2.210		5.800				
Portugal	Calc.from Network Statement	1.400	1.400		1.560	1.560	1.560	249	669
	EICIS/Pedaggio/DB Models								
	IBM Liberalization Index	1.30 to 1.45	1.30 to 1.45		1.30 to 1.45				
	CER response Average								
	ECMT 2005		1.600		2.000				
Romania	Calc.from Network Statement	2.524	2.524		3.926	3.926	3.926	268	1,141
	EICIS/Pedaggio/DB Models								
	IBM Liberalization Index	2.800	2.800		4.200				
	CER response Average		2.500		3.890				
	ECMT 2005		1.200		4.560				
Slovenia	Calc.from Network Statement	2.300	2.200		1.561	1.561	1.561	156	865
	EICIS/Pedaggio/DB Models	2.230	2.230		1.115	2.230	2.230		
	IBM Liberalization Index	1.800	2.450		3.700				
	CER response Average								
	ECMT 2005		1.800		2.230				
Slovakia	Calc.from Network Statement	5.200	1.800		9.000	10.000	11.000	260	1,243
	EICIS/Pedaggio/DB Models	1.696	1.920		10.235	11.761	13.213		
	IBM Liberalization Index	1.420	1.830		8.840				
	CER response Average		1.640		8.240				
	ECMT 2005		2.100		8.500				
Spain#	Calc.from Network Statement	1.500	1.500	3.020	0.380	0.380	0.380	249	776
	EICIS/Pedaggio/DB Models	0.260		6.408	0.110	0.110	0.110		
	IBM Liberalization Index	<.1		9.450	<.1				
	CER response Average								
	ECMT 2005								
Sweden	Calc.from Network Statement	0.406	0.773		0.390	0.720	1.030	211	1,005
	EICIS/Pedaggio/DB Models	0.507	0.966		0.858	1.674	2.451		
	IBM Liberalization Index	0.450	0.800		0.500				
	CER response Average		0.410		0.510				
	ECMT 2005		0.483		0.371				
Switzerland (SBB)	Calc.from Network Statement****	1.838	3.097		2.629	5.208	7.688	335	858
	EICIS/Pedaggio/DB Models	2.176	3.459		9.280	19.917	28.598		
	IBM Liberalization Index	1.300	2.700		5.000				
	CER response Average		2.550		4.960				
	ECMT 2005		1.200		2.000				
UK#	Calc.from Network Statement	0.887	2.365		3.109	6.229	9.229	105	781
	EICIS/Pedaggio/DB Models								
	IBM Liberalization Index	7 to 9	7 to 9		7 to 9				
	CER response Average								
	ECMT 2005		3.660		3.270				
							Average EU	270	1,090

* includes an allowance for the charges for the Oresund and Storabaelt bridges
** first number is the DB model, second number is the EICIS model
*** first number is Pedaggio 2004, second is EICIS. Note also that freight trains of 2000 tons or greater are not allowed.
**** first number provided by SBB, second number calculated from NS. Freight numbers would be lower if adjusted to the low rates offered to Kombiverkehr
***** estimate for high speed lines provided by SNCF

 # Charges shown are for "Normal" times. Off-Peak would be much less and On-Peak would be much more than shown. See Table Three.

Indicates implausible number, as discussed in the report text

Table Nine

Charging Variables in Two-Part Access Charge Regimes

		Operating Charges		
	Reservation Charge	**Time of Day**	**Gross ton-km**	**Train-km**
BG	train-path		X	X
FR	train-path and station stop reserved	X		X
Spain	train-path	X		X
UK	Fixed	X	X (freight only)	X

Source: Table Three

Table Ten

EU Railway Data 2006

Country	Railways	Passenger-Km (000,000)	Ton-Km (000,000)	Gross Ton-Km Passenger (000,000)	Gross Ton-Km Freight (000,000)	Gross Ton-Km Total (000,000)	Train-Km Passenger (000)	Train-Km Freight (000)	Train-Km Total (000)	Line Km	Track Km	Pax GTKM per Pax Trn Km	Freight GTKM per Frt Trn Km	GTKM per PKM	GTKM per Net TON-KM	Ratio: Frt Train weight to Pax train weight	Train-Km per Line-Km
Austria	ÖBB, RTS,SLB,WLB	8,646	19,594	26,479	46,138	72,617	90,407	48,899	139,306	5,386	9,481	293	944	3.1	2.35	3.2	25.9
Belgium	SNCB/NMBS	9,607	9,835	25,664	20,210	45,874	78,306	14,979	93,285	3,560	6,067	328	1,349	2.7	2.05	4.1	26.2
Bulgaria	BDZ, BRC, Bulm	2,422	5,398	7,417	11,808	19,225	25,075	10,653	35,728	4,021	7,069	296	1,108	3.1	2.19	3.7	8.9
Croatia	HZ	1,362	3,603	2,887	6,472	9,359	19,319	8,294	27,613	2,722	4,098	149	780	2.1	1.80	5.2	10.1
Czech Rep.	CD	6,887	16,364	18,426	33,312	51,738	115,725	33,115	148,840	9,473	16,026	159	1,006	2.7	2.04	6.3	15.7
Denmark	DSB, Railion	5,652	*2,255*	*17,473*	*4,735*	22,208	62,180	3,620	65,800	2,133	3,286	281	1,308	3.1	*2.10*	4.7	30.8
Estonia	EVR	260	10,152	123	18,586	18,709	2,995	6,019	9,014	131	1,583	41	3,088	0.5	1.83	75.2	68.8
Finland	VR	3,606	11,060	9,589	22,604	32,193	32,537	18,343	50,880	5,905	8,830	295	1,232	2.7	2.04	4.2	8.6
France	SNCF, Veolia	79,474	42,124	148,583	102,316	250,898	403,565	134,545	538,110	29,289	52,646	368	760	1.9	2.43	2.1	18.4
Germany	DB AG	74,738	88,407	239,910	269,044	508,954	702,710	203,472	906,182	34,122	64,219	341	1,322	3.2	3.04	3.9	26.6
Hungary	MAV, MAV Cargo	6,742	9,279	14,223	18,246	32,469	76,564	17,931	94,495	7,420	7,402	186	1,018	2.1	1.97	5.5	12.7
Italy	FS,RTC,Serfer	46,439	23,917	77,226	41,917	119,143	278,765	70,243	349,008	16,295	23,193	277	597	1.7	1.75	2.2	21.4
Latvia	LDZ	992	15,273	2,010	27,681	29,691	7,328	9,440	16,768	2,236	3,403	274	2,932	2.0	1.81	10.7	7.5
Lithuania	LG	430	12,896	1,413	23,992	25,405	4,697	9,121	13,818	1,749	3,492	301	2,630	3.3	1.86	8.7	7.9
Luxemburg	CFL	298	455	1,151	1,150	2,301	5,919	804	6,723	275	619	194	1,430	3.9	2.53	7.4	24.4
Netherlands	NS	14,678	*6,476*	33,400	13,600	47,000	118,900	10,400	129,300	2,776	6,517	281	1,308	2.3	*2.10*	4.7	46.6
Norway	NSB	2,492	*3,615*	7,143	7,591	14,734	33,492	8,275	41,767	4,087	4,338	213	917	2.9	*2.10*	4.3	10.2
Poland	PKP	16,971	42,651	32,079	100,228	132,307	125,207	68,252	193,459	18,887	36,710	256	1,468	1.9	2.35	5.7	10.2
Portugal	CP	3,514	2,763	*7,745*	4,842	12,587	31,105	7,237	38,342	2,647	2,972	249	669	2.2	1.75	2.7	14.5
Romania	All Operators*	8,049	14,720	18,441	32,722	51,163	68,711	28,670	97,381	10,724	20,305	268	1,141	2.3	2.22	4.3	9.1
Slovenia	SZ	793	3,705	1,678	6,939	8,617	10,769	8,024	18,793	1,228	2,193	156	865	2.1	1.87	5.5	15.3
Slovakia	ZSSK, ZSSK Cargo	2,194	9,703	8,321	22,326	30,646	31,977	17,959	49,936	3,477	6,717	260	1,243	3.8	2.30	4.8	14.4
Spain	RENFE	20,260	11,011	34,942	27,825	62,767	140,381	35,843	176,224	11,722	14,600	249	776	1.7	2.53	3.1	15.0
Sweden	All railways**	9,642	22,271	17,717	45,639	63,356	85,996	45,456	131,451	11,020	15,318	206	1,004	1.8	2.05	4.9	11.9
Switzerland	SBB	14,267	8,439	40,870	27,190	68,060	121,864	31,676	153,540	3,059	7,362	335	858	2.9	3.22	2.6	50.2
U.K.	ATOC, FOC	45,600	22,180	46,100	23,370	69,470	439,180	29,922	469,102	19,558	31,105	105	781	1.0	1.05	7.4	24.0
	TOTALS/Ratios	386,015	418,146	841,009	960,482	1,801,491	3,113,674	881,192	3,994,865	213,902	359,551	270	1,090	2.2	2.30	4.0	18.7
Source: UIC Sch/Col		51/13	61/12	13/5	13/6		41/5	41/6		11/12	11/13						

* includes CFR Calatori,Marfa, CTFB,CTV,GFR,Servtrans,Unifertrans

** data for all railways provided by Banverket

Italic Indicates an estimate

	837,463	890,223		3,098,654	856,612	270	1,039

Table Eleven

The Makeup of the IBM Liberalization Indices in 2007

LEX (20% of overall index)			
(25% in 2004, 30% in 2004, 20% in 2007)			
Organizational Structure:		**25**	
	IM independent of the State		*5*
	Degree of vertical separation		*80*
	Freight/passenger separation		*15*
Regulation of Market Access		**45**	
	Market access for foreign RUs		*40*
	Market access for domestic RUs		*40*
	Access to service facilities		*20*
Regulatory Authority Powers		**30**	
	General aspects		*30*
	Scope of regulation		*30*
	Powers of regulatory authority		*40*
ACCESS (80% of overall index)			
(50% in 2002, 70% in 2004, 80% in 2007)			
Information barriers		**5**	
	Time to obtain information		*40*
	Quality of information provided		*30*
	Quantity of information provided		*30*
Administrative barriers		**20**	
	Licence		*35*
	Safety certificate		*25*
	Rolling stock homologation		*40*
Operational Barriers		**50**	
	Track access conditions		*25*
	Infrastructure charging system		*50*
	Other service facilities		*25*
Share of domestic market accessible		**25**	
	Freight		*50*
	Passenger services under PSO		*25*
	Commercial passenger services		*25*
COM (not included in overall index)			
(25% in 2002, not included in 2004 and 2007)			
Modal split changes		**20**	
	Share for freight in 2005		*37.5*
	Share for passenger in 2004		*37.5*
	Change for freight (95-2005)		*12.5*
	Change for passenger (95-2004)		*12.5*
Number of external RUs 2006/07		**20**	
	Certified RUs/Km system lgth		*40*
	Certified RUs/Km system lgth		*50*
	Ratio: Active/Certified RUs		*10*
Market share external Rus 2006/2007		**60**	
	Mkt share ext RUs as % of transport		*75*
	Inc. mkt. share of external Rus (04-07)		*25*

Source: IBM 2007, pages 49,51,53

Table Twelve

IBM Rail Liberalization Studies: Results Over Time

(See below for definitions of colors used)

	Overall Liberalization			2007 Overall		LEX			ACCESS			COM		
Country	2002*	2004	2007	Freight	Pass.	2002*	2004	2007	2002*	2004	2007	2002*	2004	2007
UK	805	781	827	848	798	960	940	969	740	715	791	780	580	793
DE	760	728	826	844	809	840	750	905	840	720	807	520	505	555
SE	760	729	825	908	742	800	680	857	760	760	817	720	510	633
NL	720	695	809	887	732	760	670	865	820	710	795	460	455	509
AT	430	579	788	852	727	680	530	819	410	600	781	240	232	349
DK	720	693	788	811	757	860	790	821	770	650	780	480	390	498
CH	650	677	757	848	662	600	605	670	770	710	778	440	495	459
PL		549	739	786	692		600	783		530	728		175	490
CZ		549	738	798	679		530	839		560	713		215	279
RO			722	797	650			822			697			440
PT	380	668	707	797	619	700	820	829	290	605	676	220	190	200
SK		458	700	756	643		535	853		430	662		260	381
NO	390	589	698	836	574	580	570	777	410	595	679	140	135	274
EE		257	691	727	667		380	728		205	680		245	704
LT		222	684	744	624		260	820		210	650		165	184
IT	560	688	676	734	617	660	740	819	680	670	640	240	225	293
SI		326	665	743	585		550	622		230	675		120	153
BG			652	761	557			722			635			241
LV		516	650	733	576		580	683		485	642		225	313
BE	395	461	649	780	518	380	425	740	500	475	626	180	180	201
HU		366	637	740	533		485	731		320	613		125	275
FI	410	542	636	732	540	620	640	732	440	505	612	160	140	145
ES	195	148	630	785	486	300	250	711	180	105	610	140	110	151
LU	280	467	581	688	474	520	530	551	220	440	588	152	120	115
FR	340	305	574	727	431	340	360	595	430	280	568	152	130	178
GR	210	162	559	690	429	260	305	619	240	100	544	100	100	133
IE	295	149	333	458	206	520	180	332	280	130	338	100	100	115
# of countries	17	25	27	27	27	17	25	27	17	25	27	17	25	27
Avg of all	488	492	687	771	605	611	548	749	516	470	671	307	245	336
Avg original 17	488	533	686	778	595	611	576	742	516	516	672	307	270	329
Sources:														
2007 report pg.		32	57	71	78			59			64			68
2004 report pg							27			29			3	
2002 report pg	5					7			9			11		

	Overall Liberalization (2007 Basis)				
2002 orig	2002 recalc	2004 orig	2004 recalc	2007
805	784	781	760	827
760	840	728	726	826
760	768	729	744	825
720	808	695	702	809
430	464	579	586	788
720	788	693	678	788
650	736	677	689	757
		549	544	739
		549	554	738
				722
380	372	668	648	707
		458	451	700
390	444	589	590	698
		257	240	691
		222	220	684
560	676	688	684	676
		326	294	665
				652
		516	504	650
395	476	461	465	649
		366	353	637
410	476	542	532	636
195	204	148	134	630
280	280	467	458	581
340	412	305	296	574
210	244	162	141	559
295	328	149	140	333
17	17	25	25	27
488	535	492	485	687
488	535	533	528	686

2002 Estimates		
LEX	ACCESS	COM
240	370	195
210	420	130
200	380	180
190	410	115
170	205	60
215	385	120
150	385	110
0	0	0
0	0	0
0	0	0
175	145	55
0	0	0
145	205	35
0	0	0
0	0	0
165	340	60
0	0	0
0	0	0
0	0	0
95	250	45
0	0	0
155	220	40
75	90	35
130	110	38
85	215	38
65	120	25
130	140	25

*Note: 2002 Indices were visually estimated from graphs. Numbers shown were then calculated by multiplying the original numbers by 4, 2 and 4 respectively.

Definitions		
	>800	Advanced
	600 to 800	On Schedule
	300 to 600	Delayed
	<300	Pending Departure
	No data	

Table Thirteen
Responses to the CER Study Request: All data are for 2007

	1 Austria ÖBB	2 Belgium Infrabel	3 Bulgaria	4 Croatia	5 Czech	6 Denmark	7 Estonia	8 Finland VR
Total train-km (thousands):	142,598	112,120	36,033	26,136	164,853			52,576
- train-km for freight (thousands)	50,012	27,028	10,226	8,556	46,466	3,054		17,976
- train-km for passenger (thousands)	92,586	85,092	25,807	17,580	118,387	60,434		34,600
Number of operators that exist on your network:					56			1
- number of freight operators	21	6	3	1	25	2 (3)		1
- number of passenger operators	8	1	1	1	13	10		1
Total revenue (€ million) received by IM from:			69		237			61.8
- freight operations (€ million)	145	43.67	45.00	1.10	177.00	na		44.1
- passenger operations (€ million)	180	542.99	24.00	1.07	60.00	na		17.7
Average actual access revenues/train-km:								
Freight	2.90	1.62	4.40	0.13	3.81			2.45
Passenger	1.94	6.38	0.93	0.06	0.51			0.51
Please describe in the box on the right, in a few words, how the charging regime for freight and passenger access charges in your country changed between 2004 and 2007	annual price adjustment at +2,5%; changing of the station price modell; adoption of a discount for locomotives in the case of retrofitting with ETCS; adoption of basic prices in freight transport, which refer to the type of transport	- Before 2006, the track access charges were made up of only 2 components (use of lines and use of installations). The charge for installations was calculated independently of the time really consumed by the RU in the installation. Moreover, for some installations the charge was not calculated. From the restructuring of track access charges in 2005 on, the charges are made up of 4 components (use of lines, use of stations, use of marshalling yards and administrative costs). - Before the start of the timetable 2006, Infrabel invoiced track access charges by multiplying an average track access charge calculated on the planned trains by the total number of train-km delivered by the RU. Together with the restructuring of the formula end 2005, Infrabel developed an IT-application to calculate the track access charges train by train and day per day.	In the decree of the Council of Ministers 344/15.12.2006 the new tariff for Infrastructure Access Charges is into force from 01.01.07, with which the tariffs are decreased by 30 percent for passenger services and by 10 percent for the freight services.	After the restructuring process of HŽ Croatian Railways that was implemented in 2006, HŽ Infrastructure Ltd. as IM introduced the first charging regime in 2007.	Since July 2005 there have been introduced differentiation of charges according to railroad categories (nation-wide railroad forming a part of the European Rail System for goods transport; other nation-wide railroads; regional rail system) and new discounts granted by IM (trains for diagnostic purposes -- 100%; trains for multimodal transport -- 40%; passenger trains for public transport -- IM set the price for every passenger train at the level of regional lines).	No changes		In September 2006 (passenger traffic) and October 2006 (freight traffic) an investment payment for using new railway line between Kerava and Lahti was introduced. Investment payment is ca 4 millions € yearly. Otherwise the charging regime has remainded unchanged.

indicates data received directly from IM or railway
indicates data received from CER request
indicates data requested but not yet received

9 France	10 Germany	11 Hungary MAV Zsr	11 Hungary VPE	12 Italy	13 Latvia	14 Lithuania LG	15 Netherlands NS
530,424	1,037,893	109,292	MÁV and GySEV IM can give such data	339,354	18,445	14,992	143,000 (incl. of test rides, etc.)
129,064	276,549	18,836		63,962	11,020	10,048	13,000
401,360	761,344	84,527		275,392	7,425	4,814	129,000
10 (9 operating)	338 (some operators are both passenger and freight)	9	16	13	3	1	35 (incl. of construction companies owning rolling stock)
1	318	2	3	3	3	1	15
	78						10
2,726	3,800	450.6	MÁV and GySEV IM can give such data			383.3	211
264	649	119.5		154.0	to be estimated	364.5	14
2,463	3151	318.7		704.5	to be estimated	18.7	197
2.04	2.35	6.34		2.41		36.28	1.08
6.14	4.14	3.77		2.56		3.88	1.53
Comparing 2004 to 2007, two significant changes of the charging regime have been made in 2006 : - the running charge of national and international passenger trains is higher than for regional passenger trains; - the access charge is based on train-kilometre and not anymore on the number of kilometres accessed by a railway undertaking.	The principal charging structure of the modular Train-Path Pricing System (TPS) has seen no significant changes since 2001. In 2007, DB Netz AG reduced the number of supplements in order to make the system more transparent and effective.	There was no significant change in the charging system in the period between 2004 and 2007. The original pricing system that was introduced in 2004 (EU accession) underwent some minor changes starting from 2006, but the main service items and their charges remained the same. The next re-engineering of the pricing system is planned for 2009/2010 as the new, grossweight based unit prices are scheduled for that time.	The charging regime for freight and passenger access charges did not change between 2004 and 2007 in Hungary.	As concerns the mentioned period, the infratructure access charge has been updated by the DM 24 Marzo 2005 (rate of inflation updating) and by the DM 18 Agosto 2006 that is a revision of the infrastructure line sections and correlated fees. N.B. Consider that the same access charging algorithm is used for freight and passenger traffic. Several parameters (such as train load, speed, concerned time frame, use of junction,...) influence the charges.	After the restructuring that was implemented in July 2007 Latvian Railway is organized as a holding company, where passenger and freight operators are daughter companies, but the mother company keeps the function of the infrastructure manager.	revised and itemised charge structure, considering the actual transportation volume	There have been no structural changes to the charging regime.

16 Norway	17 Poland PLK	18 Portugal	19 Romania	20 Slovenia	21 Slovakia ZSR	22 Spain RENFE-OPERADORA	23 Sweden	24 Switzerland SBB SBB	24 Switzerland BLS BLS	25 UK
	228,285		95,694		49,894	177,659	131,451	154,729	13,248	
24800 tonnes 3414 tonne-km (est 7818)	90,798		28,271		17,936	33,954	45,456	31,069	2,192	
5900 pass km	137,488		67,423		31,958	143,705	85,996	123,659	11,056	
13	46 (it includes 3 operators which are both pasanger and freight)		2 stated owned RU + 27 private capital RU			10	24	30	23	
9	37		1 stated owned + 23 private capital		21		16	8	7	5
5	12		1 stated owned + 4 private capital		2		11	22	16	25
12.73	694.00		278.50		200.10	ADIF Data	56.67	468.87	35.9	
2.72	465.00		109.94		147.77		22.67	153.99	12.3	
10.01	229.00		168.56		52.33		34.00	314.88	23.6	
	5.12		3.89		8.24		0.50	4.96	5.61	
	1.67		2.50		1.64		0.40	2.55	2.13	
In 2006, the limit for free charge changed from 22.2 tons to 25 tons for freight transports	Until year 2005 charges were assigned for each sections of lines, for particular type of train (passenger trains: qualified , inter-regional, regional; freight trains: TX TP TE, TL TN, TM TG, TK, service trains, light run locomotives), based on the historical costs and the operational work for given type of train on the given sections of lines. Since 2006 charges were assigned for group of the line sections, basing on foreseen costs and foreseen operational work. In 2006 the price was depended on the quality/standard of the line section, which was expressed by maximum technical speed on the section, taking into consideration number of permanent speed restrictions, scheduled technical speed for qualified passenger trains and total mass brutto for othe types of trains - (passenger non-qualified trains, railbuss, combined block-trains, freight trains, light run locomotives, service trains).		For freight traffic the infrastructure access charge increased from 3.6 EUR/train km to 3.89 EUR/train km, and for passenger from 2.4 EUR/train km to 2.5 EUR/train km		There are no changes since 2004.	ADIF Data		Passenger traffic: increase of contribution margin for long distance traffic Freight traffic: decrease of contribution margin for single wagon load traffic	- No changes in the charging regime between 2004 and 2007 - Only some changes within some components (price) - Implementation of a new componer (railway tunnel at least 30 km in length)	

Table Fourteen

OPERATORS ON THE NATIONAL INFRASTRUCTURE

		ECMT 2005		IBM Study (2007)*		CER Study (2008)		Rail Share of Modal Split (%)*			
								Passenger		Freight	
Country	Railways	Freight	Passenger	Freight	Passenger	Freight	Passenger	1995	2004/2005	1995	2004/2005
Austria	ÖBB, RTS,SLB,WLB	12	3	11	1	21	8	10.0	7.8	27.2	28.8
Belgium	SNCB/NMBS	2	1	4	1	6	1	5.8	6.3	12.2	12.9
Bulgaria	BDZ, BRC, Bulm	2	1	3	1	3	1				25.2
Croatia	HZ					1	1	12.9	14.1	40.0	44.0
Czech Rep.	CD	55	5	20	1	25	13	9.0	6.7	40.1	24.5
Denmark	DSB, Railion	3	7	3	3	2	10	8.0	9.0	7.3	6.6
Estonia	EVR	2	3	5	3			4.8	1.5	71.7	64.6
Finland	VR	1	1	1	1	1	1	5.2	4.7	28.1	23.3
France	SNCF, Veolia	1	1	3	1	9	1	7.5	8.6	18.8	14.8
Germany	DB AG	157	150	281	54	318	78	7.9	9.4	16.2	17.4
Hungary	MAV, MAV Cargo	3	2	5	1	9	2	11.5	13.2	33.0	23.4
Italy	FS,RTC,Serfer	10	4	11	7	13	3	5.8	5.3	10.5	9.3
Latvia	LDZ	3	4	5	1	3	3	17.1	5.6	58.0	18.6
Lithuania	LG	1	1	1	1	1	1	7.2	1.3	50.0	38.0
Luxemburg	CFL							5.5	4.0	7.9	4.2
Netherlands	NS	5	2	10	5	15	10	10.2	8.1	2.8	3.6
Norway	NSB	5	4	3	2	9	5	4.8	4.5	15.2	12.0
Poland	PKP	28	4	30	11	37	12	15.0	8.0	51.0	27.0
Portugal	CP	1	2	1	3	*1*	*2*	8.3	4.5	6.8	5.3
Romania	All Operators*	22	9	24	4	24	5			41.0	21.0
Slovenia	SZ	1	1	1	1	*1*	*1*	3.9	4.5	48.4	22.5
Slovakia	ZSSK, ZSSK Cargo	*21*	*2*	34	1	21	2	12.4	6.4	38.0	25.0
Spain	RENFE	*3*	*1*	3	1	*3*	*1*	5.3	4.6	9.3	4.6
Sweden	All Operators*	6	6	15	8	16	11	6.5	7.6	38.0	36.0
Switzerland	SBB	5	26	7	19	8	22	12.9	14.1	40.0	44.0
U.K.	ATOC, FOC	6	25	10	34	5	25	4.3	5.4	7.1	11.0
Total		355	265	491	165	552	219				
Total of both			620		656		771				
									10 of 25		7 of 25

* The IBM study reported "external" operators, and excluded the existing state operator.
Thus, for comparability, one operator has been added to all the IBM numbers

** Source: IBM Rail Liberalization Index 2007. Note that the recent year data are occasionally 2005 and even 2006

Red numbers in *Italics* have been estimated to make totals possible

Table Fifteen

Revenue Earning Freight Traffic on the National Territory (million ton-km)

		2006					1998						
	Company		International Traffic					International Traffic				2006	1998
		Domestic Traffic	Export	Import	Transit	Total traffic	Domestic Traffic	Export	Import	Transit	Total traffic	Percent Domestic	
AT	ÖBB	4,227	4,096	5,607	3,957	17,887	3,042	3,283	4,500	3,527	14,352	23.6	21.2
BE	SNCB/NMBS	2,376	3,403	2,354	439	8,572	1,578	2,791	1,752	1,479	7,600	27.7	20.8
BG	BDZ	3,989	397	343	496	5,225	5,306	468	198	180	6,152	76.3	86.2
CZ	CD	6,091	4,531	2,290	1,819	14,731	7,773	6,113	2,725	1,675	18,286	41.3	42.5
DE	DB AG	39,952	20,744	19,061	9,934	89,690	36,455	15,474	14,299	7,384	73,612	44.5	49.5
SP	RENFE	9,124	1,042	824	21	11,011	9,012	1,175	973	54	11,214	82.9	80.4
FI	VR	7,375	316	2,037	1,332	11,060	6,313	333	2,661	578	9,885	66.7	63.9
FR	SNCF	24,266	6,251	5,952	4,455	40,924	26,062	9,380	7,697	9,523	52,662	59.3	49.5
HU	MAV Cargo	1,448	2,027	2,847	2,957	9,279	1,863	1,627	2,316	1,111	6,917	15.6	26.9
IT	FS	12,665	2,416	5,770	17	20,868	10,130	3,948	8,140	237	22,455	60.7	45.1
LT	LG	3,157	1,089	3,659	4,991	12,896	1,370	1,248	933	4,714	8,265	24.5	16.6
LV	LDZ	1,895	485	11,107	1,786	15,273	454	493	1,122	10,926	12,995	12.4	3.5
PL	PKP	26,399	6,424	7,227	2,601	42,651	30,515	18,506	8,751	3,151	60,923	61.9	50.1
PT	CP	2,127	158	144	-	2,430	1,638	92	318		2,048	87.6	80.0
RO	CFR Marfa	7,910	1,230	2,097	339	11,576	13,383	1,912	1,959	328	17,582	68.3	76.1
SE	GREEN CARGO	8,057	3,081	1,953	29	13,120	9,218	3,475	1,328	229	14,250	61.4	64.7
SI	SZ	650	1,067	854	802	3,373	168	175	526	1,764	2,633	19.3	6.4
HR	HZ	686	564	634	1,421	3,305	576	309	380	566	1,831	20.8	31.5
	Total of Sample	162,394	59,321	74,760	37,396	333,871	164,856	70,802	60,578	47,426	343,662	48.6	48.0

Source: UIC, International Railway Statistics, 1998 and 2006 Editions

indicates increase in percent of international traffic (decrease in percent of domestic)


International
Transport
Forum