



Fifth Annual Market Monitoring Report

IRG-Rail (17) 1 - March 2017



IRG-Rail is the network of independent rail regulatory bodies from 29 European countries. The overall aim of IRG-Rail is to facilitate the creation of a single, competitive, efficient and sustainable internal railways market in Europe. IRG-Rail acts as a platform for cooperation, sharing of best practice on regulatory issues and promotion of a consistent application of the European regulatory framework.

This IRG-Rail paper is published on the responsibility of the IRG-Rail plenary. The opinions expressed and arguments employed herein do not necessarily reflect the official views of the governments of its Member States.

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Country abbreviations

	AT	Austria
	BE	Belgium
	BG	Bulgaria
	HR	Croatia
	DK	Denmark
	EE	Estonia
	FI	Finland
	FR	France
	DE	Germany
	GR	Greece
	HU	Hungary
	IT	Italy
	KS	Kosovo
	LV	Latvia
	LU	Luxembourg
	NL	Netherlands
	NO	Norway
	PL	Poland
	SK	Slovakia
	SI	Slovenia
	ES	Spain
	SE	Sweden
	CH	Switzerland
	UK	United Kingdom

1. Introduction

The Independent Regulators' Group-Rail (IRG-Rail) is a network of cooperation between national independent rail regulatory bodies. The group was established in June 2011 by 15 European countries and has since expanded to 29 countries. The overall aim of IRG-Rail is to support a common, competitive and sustainable internal rail market in Europe. IRG-Rail members aim at dealing consistently with regulatory challenges across Europe.

Monitoring of the railway markets is an essential task of national regulatory bodies. Pursuant to Article 56 (paragraph 2) of Directive 2012/34/EU, regulatory bodies have a formal duty to monitor the situation in the rail service markets. At the same time, Member States are obliged to report to the European Commission on the use of networks and the evolution of framework conditions in the rail sector. The Implementing Regulation (EU) 2015/1100 sets up a questionnaire to monitor market developments in the European rail transport sector in a consistent and comparable manner across all Member States.

The IRG-Rail Market Monitoring Working Group was set up as a platform for cooperation and sharing best practices on regulatory issues. One of the main tasks of the group is the compilation of an annual market monitoring report.

This report is the fifth market monitoring report of IRG-Rail and covers the calendar year 2015 unless stated otherwise.

1.1. General aim of market monitoring reports published by IRG-Rail

Rail market monitoring is a vital instrument for enhancing market transparency, setting directions for the activities of regulatory bodies and encouraging market participants to improve their activities.

The IRG-Rail report provides an annual overview of the economic conditions and market developments in the railway sector on the basis of the data collected by the national regulatory bodies, members of IRG-Rail. It also shows the development of the European railway market and its competitiveness compared with previous editions of the annual report. The report provides a comprehensive and detailed source of information for all interested parties.

1.2. Methodology

Since 2011 members of the IRG-Rail market monitoring group have been collecting data on their respective rail markets based on a common list of indicators. In addition to presenting the main findings of the annual data collection each year, IRG-Rail aims to focus on a particular issue. In the report for 2012 the working group extended its remit and integrated certain rail-related services in the market monitoring process. The report for 2013 focused on charges and for 2014 it concentrated on the analysis of trends in the market over all the years of data collection.

In the 2015 IRG-Rail report, particular emphasis has been placed on the rules governing entry into freight and passenger rail markets and the assessment of market opening levels.

For that purpose, IRG-Rail has analysed the market shares of incumbent operators and new entrants at the national and European levels, to provide an assessment of potential barriers to entry in the rail market, assuming that incumbents benefit from comparative advantages in comparison with new entrants.¹

Beyond legal barriers in some national rail markets there may be barriers linked for instance to the lack of standardisation of rail installations and equipment throughout Europe, difficulties requesting and obtaining capacity and access to service facilities.

The distinction of market shares between incumbents and non-incumbent railway undertakings is therefore an indication of the level of market opening.

By providing a European overview of railway undertakings' geographical area of operations we are able to show to what extent market players are moving in the European rail market. This approach illustrates the comparative dynamism of incumbent and non-incumbent railway undertakings in the European rail market, again as a method for assessing barriers to entry in rail markets.

A detailed list of railway undertakings providing services in the monitored countries is available on the IRG-Rail website.²

In 2013 the IRG-Rail market monitoring working group agreed a set of guidelines on market monitoring. These guidelines give definitions of common indicators to ensure comparability between national data, set principles on data quality and data quality checks at national level. They also define a standardised monitoring process, specifying the schedule for the IRG-Rail annual market monitoring report. In 2016 the guidelines were updated and implemented for the data collection covering the 2015 calendar year.³ In the new guidelines the common list of definitions was enhanced to ensure a higher accuracy of the data collection and new indicators were added to allow more detailed analysis. As a result of this extended scope of data collection, almost 200 indicators are now available to IRG-Rail to evaluate the European rail market. These indicators cover the following areas:

- Identity and type of railway undertakings
- Infrastructure characteristics and its use
- Track access charges and charges for passenger stations
- Data for the calculation of market shares
- Railway undertakings' revenue
- Legal rules for market entry

A glossary of the terminology used by IRG-Rail in this report is given in Annex 1. Among definitions used by IRG-Rail, it is useful to specifically underline the following:

- Incumbents are railway undertakings that were (or still are) part of a state-controlled railway monopoly, including all related companies.
- Companies related to an incumbent are railway undertakings for which the main shareholder is an incumbent. The main shareholder is defined as owning at least 50% of the company. When the main shareholder of the railway undertaking is itself owned at 100% by an incumbent, we refer to the mother undertaking above. Minority

¹ Incumbent's advantages about the demand, physical asset ownership, legal monopoly...

² Available at <http://www.irg-rail.eu/public-documents/2017/>

³ Available at <http://www.irg-rail.eu/public-documents/2016/>

shareholdings by incumbents in other railway undertakings are not considered in this report.

- Non-incumbent railway undertakings are those companies that are neither related to a domestic incumbent nor to a foreign incumbent.
- From a national perspective, “new entrants” include both foreign incumbent and non-incumbent railway undertakings.
- A railway undertaking is reported as being “public” when a public authority (e.g. State, regional authority) owns 50% or more of this company. Otherwise, the company is considered as being private.

The next period of data collection for the report period 2016 is scheduled for summer 2017.

Several countries participating in the data collection were not able to provide a full set of data to IRG-Rail, particularly for some of the new indicators added for the 2015 data collection. In order to present reliable and consistent information only those indicators for which sufficient and significant data are available are used in this report. Consequently some analyses are performed using data from a selection of the participating countries. Furthermore, the interpretation given to specific data for each country is indicative based on the overall situation at a national level, and may not always fully represent the complex and diverse nature of each respective market.

The data collected for this report originates from annual market surveys of the respective IRG-Rail members and other external sources, such as the state institutions for transport statistics. The regulatory body for each country collates their data and submits a single data set to IRG-Rail using a template developed by the Market Monitoring Working Group. Some members of IRG-Rail were not able to participate in the survey for the 2015 report; therefore this report covers 24 countries who did supply data. Amongst these there are three countries, Norway⁴, Switzerland and Kosovo that are not Members States of the European Union.

Throughout the whole report, market shares, averages and developments over time are shown. The market share of a country is represented as a percentage of the total volume. Averages are calculated by taking the absolute size of each reporting country into consideration.⁵ Therefore averages may be driven by one or two countries with large railway infrastructure and train kilometres. Developments in the rail market are based on the country’s values of the previous five years. The indexed initial value at 100% refers to the year 2010.

The report starts (Section 2) by describing the railway infrastructure of the monitored countries, considering the length of rail networks, the proportion of electrified routes, the length of high-speed lines, network management and track access charges paid by railway undertakings to use the network.

Section 3 presents the rules for market entry in the rail freight and passenger markets in 2015 both in terms of competition *in* and *for* the market.

Section 4 covers market characteristics. It first evaluates the size of the monitored market in terms of traffic both from offer-side (in train kilometres) and demand-side (in passenger and tonne kilometres) approaches. Second, it provides the market shares of incumbent and non-incumbent railway undertakings.

⁴ Norway is a member of the EEA Agreement.

⁵ e.g. taking the size of each country in train kilometres into account.

Section 5 focuses on railway undertakings operating in the European rail market⁶ for freight and for passenger services. The main objectives are to describe who the market players are and where they geographically operate in the European rail market. This section enables us to compare the dynamism of national incumbents in the European rail market with that of non-incumbent railway undertakings on the other hand.

Section 6 presents the indicators built by IRG-Rail to assess the relative levels of market opening in the monitored countries, both for freight and passenger services.

Finally regulatory bodies of IRG-Rail have also provided information on main regulatory decisions issued in 2015 in accordance with their national legislation on capacity allocation, charges, accounting separation/finance and network statement. In order to share information and best practice on these cases this report gives short abstracts of the regulatory decisions in Section 7. Additional background information on the cases can be found in Annex 4.

⁶ In 24 monitored countries.

1.3. Summary of main findings

This year's market monitoring report is, as in the prior year, based on the data submitted by 24 European countries. The main findings and the resulting developments compared to the previous years are briefly summarised below.

1.3.1. Network characteristics and management

Germany and France cover 33% of the total route length. About 92% of the monitored network in Europe is provided by the main infrastructure managers. Almost 55% of the routes are electrified. Among the monitored members of IRG-Rail, high-speed lines⁷ exist in six countries. Spain has the longest high-speed route length (which covers 17% of its total route length).

The European railway traffic pursued its positive growth trend in 2015. Both passenger train and freight train kilometres increased, however, the growth in the passenger traffic sector was higher. As a consequence, the total network usage intensity increased by 7.1% from 2010, with an average annual growth of 1.4%. Likewise, the increase of the network usage intensity for passenger services was higher (7.7% from 2010) than for freight (4.8%).

Compared to 2014 the average track access charges per passenger trains paid by railway undertakings increased marginally and amounted to 4.3 Euro per train kilometre. These track access charges increased by 10.5% from 2010, with an average annual growth of 2%. On the contrary, track access charges per freight train kilometres decreased by 8% from 2010 with 2.6 Euro in 2015, with a variety of national situations.

1.3.2. Rules for market entry

The description of rules for market entry enables us to observe whether legal barriers exist for the entry of railway undertakings not related to the domestic incumbent. For that purpose, the report provides a detailed picture of these rules in the 24 monitored countries, enabling us to better interpret the rail market characteristics and its evolution over time. To the best of IRG-Rail's knowledge, this report is the first one to provide these pieces of information.

The liberalisation of the domestic and the international rail freight markets is based on the 2004 "second railway package" (Directive 2004/51/EC). In all countries monitored in this report the rail freight markets were liberalised between 1993 and 2012. Apart from few exceptions due to the specificities in each national market, the liberalisation of the freight market was followed by the granting of at least one operating licence to a non-incumbent railway undertaking as a new entrant.

The 2007 "third rail package" (Directive 2007/58/EC) opened up international passenger rail markets to competition. In nearly all monitored countries the international passenger markets had been liberalised by 2010 in accordance with the Directive. In some countries, however, the liberalisation had already occurred alongside the liberalisation of the rail freight market.

⁷ The definition used for high-speed lines is from the European Commission (2015/1100/EC). It covers line specially built to allow traffic to travel at speeds generally equal to or greater than 250 km/h on its main segments; it may include connecting segments where speeds are reduced to take account of local conditions.

The liberalisation levels of the national passenger market for both long-distance and regional traffics show great differences among the monitored countries. While some had this market liberalised since the early nineties, in other countries, liberalisation had not occurred yet in 2015. And for several countries, even if the rail passenger sector is open *de jure* for competition (i.e. the market is legally liberalised), there is no *de facto* competition (i.e. no new entrants in the market).

Several countries participating in this report have introduced limitation rules for open access in the passenger market, such as the “principal purpose test” or the “economic equilibrium test”. The implementation of these rules differs among the monitored countries and also between national and international services.

In most of the monitored countries PSO (*Public Service Obligation*) contracts⁸ for long-distances services are awarded directly. For regional services the share of the direct awarding process is lower but still remains the most common process. PSO contracts are mostly under the responsibility of the respective states. However in some countries regional authorities are responsible for the award of PSO contracts for regional services. In general the regulatory bodies are not directly involved in the awarding process.

1.3.3. Market characteristics

In 2015 the European railway infrastructure was mainly used by passenger trains. The passenger traffic represents around 82% of the total traffic. Germany continued to have the biggest market, accounting for almost 26% of the European rail traffic (in passenger train kilometres).

Overall, railway traffic in train kilometres increased by 5% from 2010, with an average annual growth of 1%. The growth of passenger traffic was higher (5.6% from 2010) than for freight traffic (2.8%) in train kilometres. Over the period 2010-2015 the increase is about 7.5% in passenger kilometres and 4.9% in tonne kilometres. However, within the monitored countries national rail markets shown contrasting developments since 2010.

Within the passenger traffic the share of PSO services was significantly higher than the share of commercial trains, accounting for almost 83% of the total passenger train kilometres and almost 65% of passenger kilometres.

As underlined in part 1.2, the distinction of market shares between incumbents and non-incumbent railway undertakings is an initial illustration of the incumbent's advantage and the related barriers to entry it may generate for new entrants. Market shares of new entrants cannot, as a single indicator, explain the competitive intensity in a market. However, the absence of market share for new entrants may at least show the absence of competition in the market. Even if the calculation of market shares of new entrants is not sufficient to assess the competitive intensity in the market, it enables us to indicate the existence of a competitive pressure ('contestable markets'). Therefore, even if new entrants don't compete directly with the incumbent, their market entry in a related segment can be considered as a 'threat' for the incumbent.

⁸ Public service obligations have been defined in Regulation (EC) No 1370/2007 of the European Parliament and of the Council of 23 October 2007 on public passenger transport services by rail and by road: “*public service obligation*’ means a requirement defined or determined by a competent authority in order to ensure public passenger transport services in the general interest that an operator, if it were considering its own commercial interests, would not assume or would not assume to the same extent or under the same conditions without reward.”

At the European scale, “new entrants” are those railway undertakings that are not related to an incumbent (“pure new entrants”). From a national perspective, “new entrants” include both foreign incumbent and non-incumbent railway undertakings (“alternatives to the domestic incumbent”).

In the European freight market, “pure new entrants” had 39.8% of market share in train kilometres in 2015.⁹

At national levels, new entrants were mainly non-incumbent freight railway undertakings (25.3% of market shares in train kilometres in average in 2015).

However, a variety of national situations can be observed. Indeed, in all the monitored countries, the freight market has been liberalised, both for domestic and international services. However, new entrants have not entered all markets, requiring further analyses to identify potential barriers other than the legal ones in these cases.

In the European passenger market, new entrants (non-incumbent railway undertakings) had 31% of market share in train kilometres in 2015.¹⁰ New entrants mainly entered PSO markets, with 36.4% of market share¹¹ versus 4.8%¹² for commercial passenger services.

As for the national freight markets, non-incumbent railway undertakings had higher market shares (24.2% in passenger train kilometres in 2015) than foreign incumbents.

Moreover, a variety of national situations can also be observed. On the one hand, contrary to the freight markets, some legal barriers still prevented new entrants from operating passenger services in some countries. On the other hand, in countries where passenger services have been liberalised, some other barriers to market entry may explain the absence or the low market share of new entrants.

1.3.4. Market players

The total number of active railway undertakings increased in most countries participating in this report. Of the railway undertakings reported, 57% were operating only in the freight sector, 32% were operating only in the passenger markets, and a minor part (11%) was operating in both the freight and passenger markets.

Different market players are competing in the European rail market on both national and international levels.

In the freight sector, in most of the monitored countries, the number of non-incumbent railway undertakings operating exceeded that of the number of incumbents. In the passenger sector, however, the proportion of non-incumbents was lower, largely due to the fact that the freight market was liberalised earlier in most countries.

Moreover, in order to assess the attractiveness of rail markets, it is first interesting to analyse market share of new entrants in the light of the size of the market and the number of market players competing in this market.

⁹ The sample includes 22 monitored countries.

¹⁰ The sample includes 21 monitored countries.

¹¹ The sample includes 21 monitored countries.

¹² The sample includes 19 monitored countries.

On average around 0.88 million train kilometres were operated per new entrant on the monitored freight markets in 2015. The largest markets for new entrants are those in the United Kingdom and Latvia, with more than two million freight train kilometres operated per new entrant.

Similar to the freight market, the biggest passenger market per new entrant was in the United Kingdom. On average around 4.9 million passenger train kilometres were operated per new entrant on monitored markets.

Considering the PSO passenger market, the largest markets per new entrant operating PSO contracts are in the United Kingdom, Poland, Italy and Germany. It shows an average size of the PSO market of 6.59 million train kilometres per new entrant, with UK, Poland and Italy having more than 5 million train kilometres on average per new entrant. For commercial passenger activities, the largest markets per new entrant are in Hungary and Italy, with around 5 million and 3.9 million train kilometres per new entrant respectively. In Hungary the commercial traffic is operated by a single railway undertaking, while in Italy there are three new entrants operating commercial services.

Finally, by providing a European overview of railway undertakings operations in the rail market, the analysis enables us to show to what extent market players are moving in the European rail market. This global approach notably enables assessment of the comparative dynamism of incumbent and non-incumbent railway undertakings in the European rail market, as a first step to assess barriers to entry in rail markets.

In most of the monitored countries, domestic incumbents operating in the freight sector also entered further markets in other European countries to a significant extent. In contrast, the penetration of non-incumbent railway undertakings in rail freight markets abroad is rather limited.

Compared to the rail freight market, the domestic incumbents operating passenger services entered less foreign markets, with even fewer non-incumbents entering other European passenger markets.

1.3.5. Level of market opening

On the basis of the collected data, IRG-Rail has assessed the degree of market opening in the European rail freight and passenger sectors in 2015. The indicators built predominantly have taken into account the respective liberalisation of rail markets and the different market shares of incumbent and non-incumbent operators.

Pursuant to these indicators, the degree of market opening in the freight market was high within the monitored countries. In contrast, in the passenger market the level of market opening was lower for both PSO services and commercial services. This might be due to the fact that in several countries the market had either not been liberalised, or been liberalised later than the freight market. Beyond potential legal barriers to entry in passenger markets, other technical/economic barriers could explain the variety of levels of market opening among the monitored countries. However, further works are necessary to draw any conclusion about the nature of the effective barriers.

2. Network characteristics and management

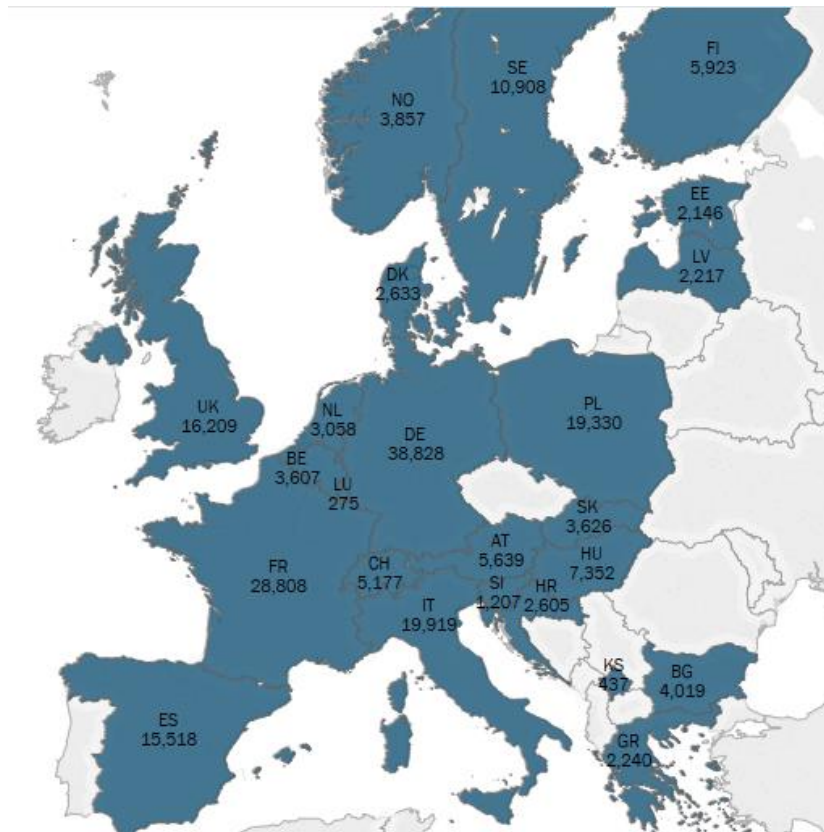
This section reports on the railway infrastructure of the monitored countries, considering the length of the rail network, the proportion of electrified routes, the length of high-speed lines and track access charges paid by railway undertakings to use the network.

2.1. Network characteristics

205 538
kilometres

Total length of rail network in the 24 countries monitored in this report.

Figure 1 – Total route length (kilometres) in 2015

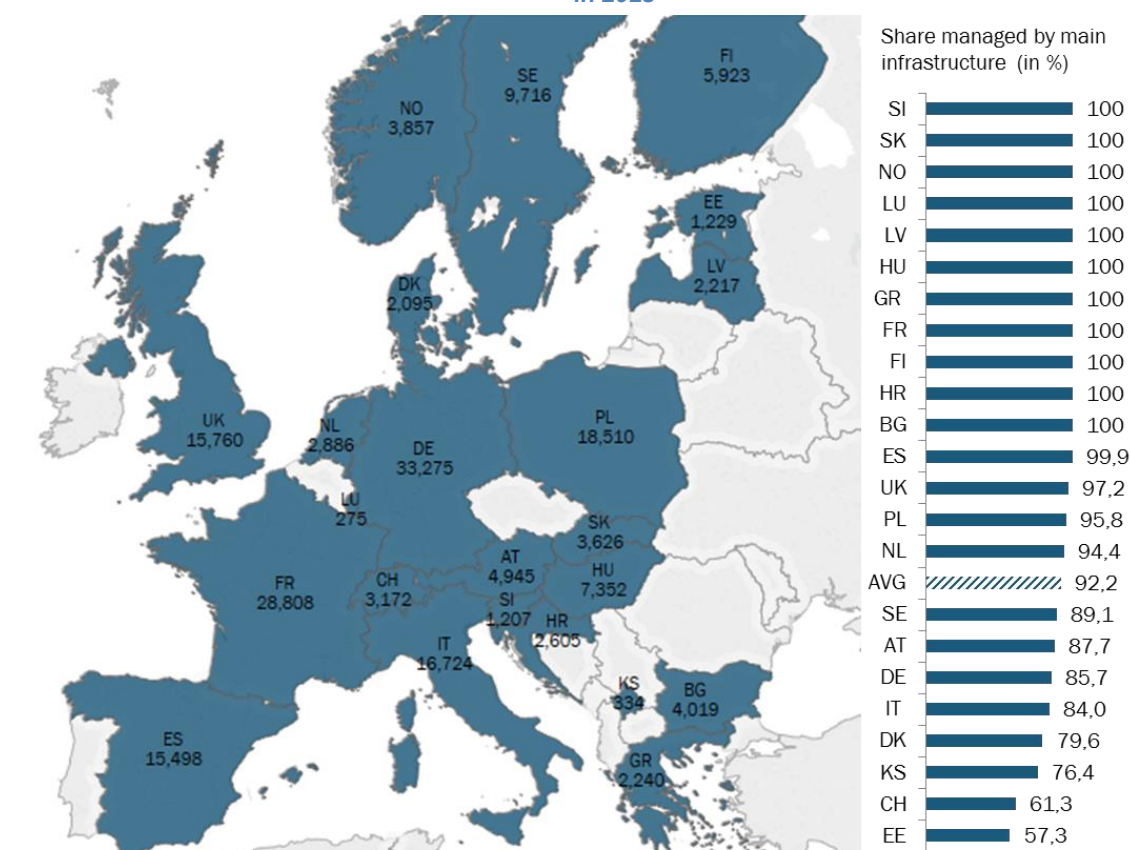


Germany and France cover 33% of the total route length. When adding Italy and Poland, 52% of the network is covered.

In comparison with the last report (with the same sample, i.e. without Switzerland), the total route length slightly decreased (about 350 km), mainly due to a decrease in the French network length.

An increase of 186 kilometres of route length has been observed in Spain, due to the inauguration of new high-speed lines (Valladolid-Palencia-Leon and Olmedo-Zamora).

Figure 2 – Route length managed by main infrastructure manager (km) and share in the total network (%) in 2015



Overall¹³, 7.8% (i.e. 16 031 km) of the European network is managed by ‘other infrastructure managers’, i.e. not the main (often the incumbent) infrastructure manager.¹⁴ In 11 countries the network is owned or managed by a single main infrastructure manager.¹⁵

¹³ Excluding the Belgium route length for which a disaggregation has not been supplied.

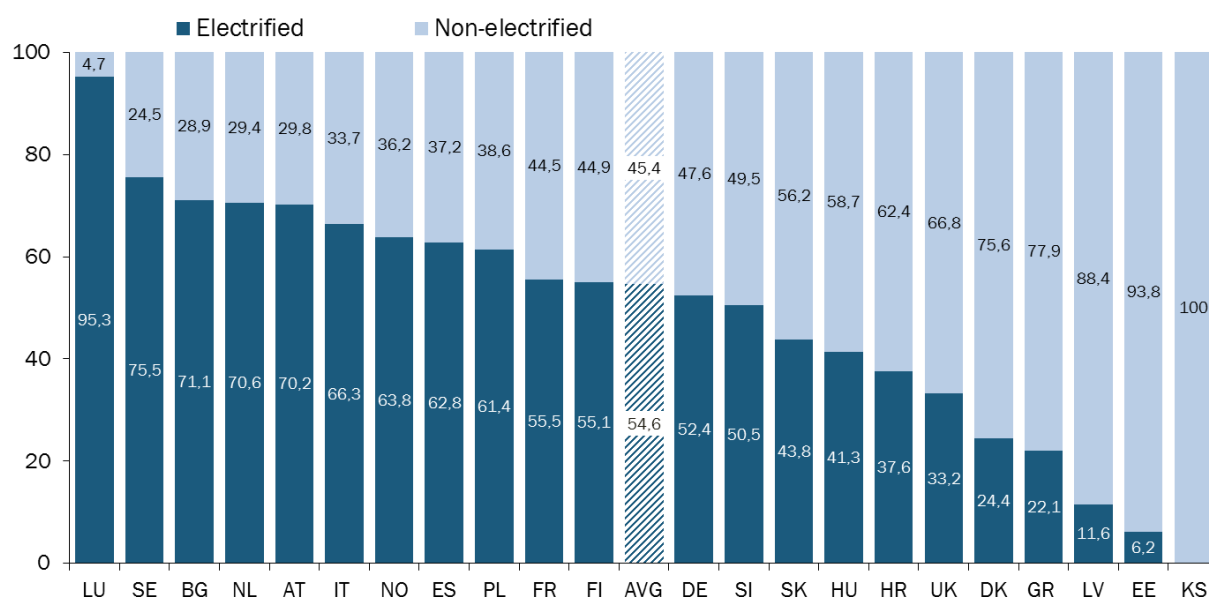
¹⁴ Note that figures in previous IRG-MM reports considered the route length of incumbent infrastructure managers whereas the current report deals with the route length of main infrastructure managers, which are not always incumbents. Therefore caution should be used when comparing these figures to previous reports.

¹⁵ Until the 1st of July 2015, there was a second infrastructure manager in the Netherlands, after which, the management of the entire infrastructure transferred to ProRail, the main infrastructure manager.

112 223
kilometres

Total electrified route length of rail network in 22 countries of our sample. This represents 54.6% of the 22 European networks.

Figure 3 – Share of electrified routes (%) in 2015



In comparison with 2014 and for a constant sample of countries¹⁶, electrified route increased by 1231 km in 2015. In Spain, 453 kilometres of routes were either electrified or newly constructed. Slovenia upgraded 106 kilometres of the Mediterranean European Rail Freight Corridor with facilities for supply of traction current. Extensions of electrified route have also been reported in Austria, France, Germany, Hungary and Poland.

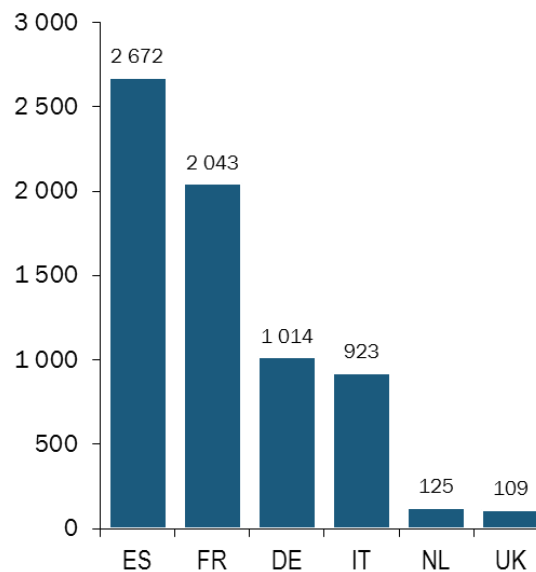
Figure 4 shows the length of high-speed infrastructure in 20 monitored countries.¹⁷ The definition used for high-speed lines is from the European Commission (2015/1100/EC). It covers line specially built to allow traffic to travel at speeds generally equal to or greater than 250 km/h on its main segments; it may include connecting segments where speeds are reduced to take account of local conditions.¹⁸

¹⁶ All monitored countries except Belgium and Switzerland, for which electrified route length has not been supplied (in Belgium the share of electrified route is known to be high, for example 85% of the route length was reported to be electrified in the 2014 report).

¹⁷ All monitored countries except Belgium, Denmark, Norway and Slovakia, for which high-speed route length has not been supplied.

¹⁸ Unfortunately, the EU-definition is not clearly determined. Therefore a single number of high-speed kilometres can not be evaluated: depending on the number of “connecting segments”, different results can be derived. This is, for example, the case in Germany.

Figure 4 – High-speed route length (kilometres) in 2015



Among the 20 countries for which the information is available, there are six countries with infrastructure enabling high-speed traffic, covering a total of 6 886 km of route.

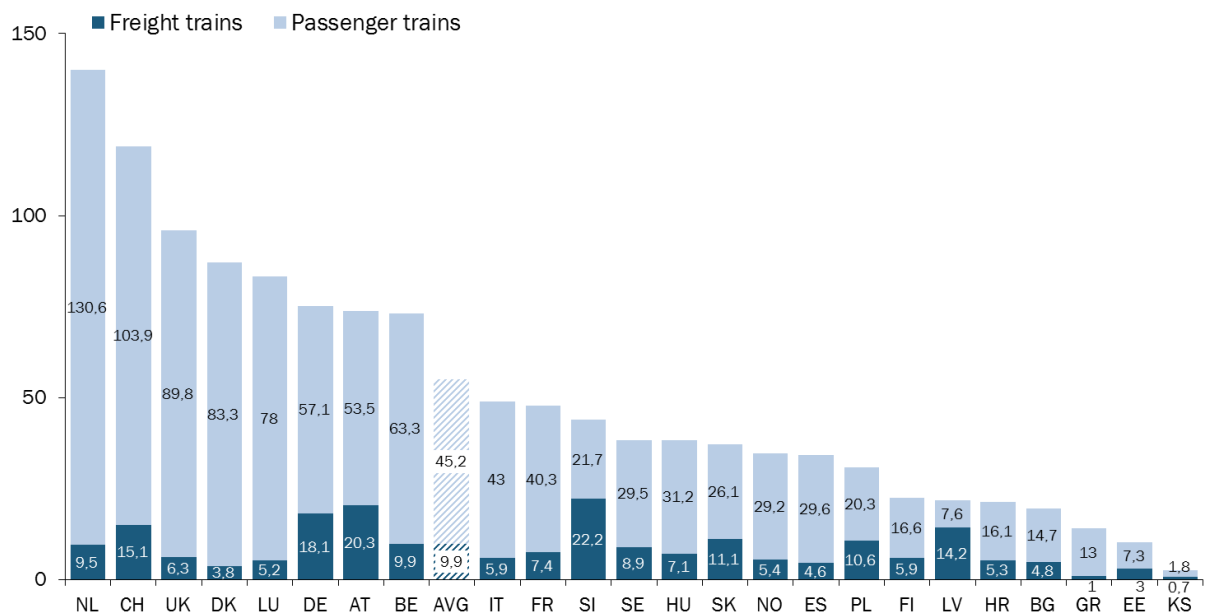
The share of high-speed infrastructure in the total route length is about 17% in Spain, 7% in France, 3% in Germany, 5% in Italy, 4% in Netherlands and 1% in United Kingdom.

There is no high-speed route length in the 14 countries not shown.

2.2. Usage intensity of network

The network usage intensity shown in Figure 5 is expressed by the number of trains per route kilometre per day. It is calculated by dividing the total train kilometres by the route length and the number of days.

Figure 5 – Network usage intensity (train kilometres per route kilometre per day) in 2015



Despite the fact the Netherlands is a transit country, with one of the most important ports in Northern Europe in Rotterdam, a relatively low proportion of the network usage comes from freight traffic. This could be explained first by the fact that the share of transit rail traffic is actually low and second because a majority of goods is transported by inland water and road transport in this country.

Latvia has the highest proportion of the network usage contributed to by freight services. This is likely due to freight traffic from Russia and Belarus to the Baltic ports of Latvia. The highest network intensity of freight trains is in Slovenia; a transit country located on the intersection between the Mediterranean and Baltic-Adriatic European rail freight corridors.

Figure 6 provides the evolution of total network intensity in 19 monitored countries.

Figure 6 – Evolution of network usage intensity by country (indexed - 2010=100)

Country	Real value (2010)	2010	2011	2012	2013	2014	2015	Compound annual growth rate
France	44,6	100,0	110,2	109,6	108,4	110,5	116,5	3,1%
Norway	32,7	100,0	102,5	102,4	109,2	109,6	115,3	2,9%
Latvia	21,8	100,0	112,7	123,3	120,1	111,6	115,0	2,8%
Sweden	37,6	100,0	104,3	103,9	109,3	111,6	111,2	2,1%
Italy	48,5	100,0	97,9	97,5	102,2	102,1	110,0	1,9%
United Kingdom	96,5	100,0	102,5	103,3	103,6	104,2	108,4	1,6%
Total	56,6	100,0	102,8	102,1	103,1	104,0	107,1	1,4%
Netherlands	144,5	100,0	100,9	103,2	103,9	104,3	106,2	1,2%
Slovakia	38,2	100,0	97,8	97,2	98,3	99,6	106,0	1,2%
Austria	80,2	100,0	109,5	103,9	103,1	103,6	105,4	1,1%
Germany	80,5	100,0	102,0	101,1	100,8	101,7	103,0	0,6%
Poland	32,7	100,0	101,5	100,0	100,7	99,4	102,9	0,6%
Denmark	92,9	100,0	102,8	101,2	103,1	102,4	101,7	0,3%
Hungary	41,2	100,0	100,9	96,7	97,1	99,1	101,4	0,3%
Slovenia	47,5	100,0	101,8	100,0	102,3	107,0	100,7	0,1%
Bulgaria	22,3	100,0	102,6	91,3	93,5	95,7	98,5	-0,3%
Finland	25,7	100,0	99,7	99,4	98,5	97,0	95,1	-1,0%
Croatia	27,0	100,0	96,0	98,2	89,4	86,4	86,6	-2,8%
Greece	19,8	100,0	73,8	72,2	78,4	81,7	76,9	-5,1%

Overall, the network usage intensity has increased by 7.1% from 2010 to 2015, with an average annual growth of 1.4%. This is mainly due to the increasing usage of network for passenger services.

The total network usage intensity has increased in all countries over the period 2010-2015 except in Croatia and Greece where the network usage has declined both for passenger and freight services, in Bulgaria where the usage intensity for passenger services has decreased and finally in Finland where the network usage intensity for freight has decreased.

Figure 7 – Evolution of network usage intensity for freight services¹⁹ by country (indexed - 2010=100)

Country	Real value (2010)	2010	2011	2012	2013	2014	2015	Compound annual growth rate
Latvia	13,4	100	119,5	135,2	131,0	119,0	125,0	4,6%
Slovenia	19,9	100	104,0	101,4	118,8	128,1	121,4	4,0%
Bulgaria	5,1	100	112,1	109,7	100,9	110,6	116,0	3,0%
Hungary	6,7	100	90,7	95,8	105,5	102,7	115,9	3,0%
Austria	23,8	100	130,8	108,5	106,0	108,7	110,7	2,1%
France	7,4	100	95,3	99,5	97,5	100,3	109,2	1,8%
United Kingdom	6,4	100	107,9	109,2	112,5	110,4	106,9	1,3%
Germany	19,6	100	106,4	100,7	101,4	102,6	105,7	1,1%
Poland	10,9	100	108,1	104,1	106,6	106,1	105,7	1,1%
Total	11,1	100	105,2	101,0	101,6	102,6	104,8	0,9%
Italy	6,4	100	101,7	101,2	101,3	102,7	101,0	0,2%
Slovakia	12,0	100	98,1	93,4	96,9	97,8	100,9	0,2%
Denmark	4,1	100	120,0	101,4	99,3	94,0	100,8	0,2%
Netherlands	11,4	100	90,1	87,4	87,4	84,8	97,9	-0,4%
Greece	1,1	100	88,7	78,4	72,8	107,7	97,5	-0,5%
Norway	6,6	100	98,7	90,2	97,0	95,5	89,7	-2,2%
Croatia	6,6	100	89,7	98,4	87,4	88,7	87,8	-2,6%
Sweden	11,4	100	101,7	93,8	91,5	89,6	85,5	-3,1%
Finland	8,0	100	96,7	92,5	89,7	87,4	79,3	-4,5%

Overall, the network usage intensity for freight transport has increased by 4.8% between 2010 and 2015, with an average annual growth of 0.9%. The highest increase over 2010-2015 was in Latvia (+25%).

A drop of network usage intensity for freight has been observed from 2010 in 7 countries. The largest decrease has been observed in Finland. Since 2012, Finland's incumbent railway undertaking (VR) has made improvements in the operating efficiency of rail logistics; with higher average train weights, closer customer cooperation, more efficient planning and advanced working methods and technology that have allowed VR to adjust its total train kilometres. This explains the sharp decrease (almost 21%) in train kilometres for freight traffic over the last five years, in relation to tonne kilometres, the drop was less significant (13%) over the period 2010-2015.

¹⁹ Includes both freight and other traffic; other traffic covers for instance operations for works, test driving or empty train operations. The scope of what is classified as other traffic is different between monitored countries. However this type of traffic represents a very small share of overall freight traffic.

Figure 8 – Evolution of network usage intensity for passenger services by country (indexed - 2010=100)

Country	Real value (2010)	2010	2011	2012	2013	2014	2015	Compound annual growth rate
Sweden	26,2	100	105,4	108,3	117,3	121,1	122,3	4,1%
Norway	26,2	100	103,4	105,5	112,2	113,1	121,8	4,0%
France	37,2	100	113,2	111,6	110,6	112,6	117,9	3,3%
Italy	42,1	100	97,3	97,0	102,3	102,0	111,4	2,2%
United Kingdom	90,1	100	102,1	102,9	103,0	103,8	108,5	1,6%
Slovakia	26,3	100	97,6	99,0	98,9	100,4	108,4	1,6%
Total	45,6	100	102,3	102,3	103,5	104,3	107,7	1,5%
Netherlands	133,1	100	101,8	103,8	105,3	106,0	106,9	1,3%
Austria	56,5	100	100,5	101,9	101,8	101,5	103,2	0,6%
Finland	17,7	100	101,1	102,5	102,6	101,4	102,3	0,5%
Denmark	88,8	100	102,0	101,2	103,2	102,8	102,2	0,4%
Germany	60,9	100	100,6	101,3	100,6	101,4	102,1	0,4%
Poland	21,8	100	98,2	98,0	97,7	96,0	101,5	0,3%
Latvia	8,3	100	101,6	104,1	102,6	99,6	98,8	-0,2%
Hungary	34,5	100	102,8	96,9	95,4	98,4	98,5	-0,3%
Bulgaria	17,2	100	99,8	85,9	91,3	91,3	93,4	-1,4%
Croatia	20,4	100	98,1	98,1	90,1	85,6	86,2	-2,9%
Slovenia	27,6	100	100,2	99,0	90,4	91,7	85,8	-3,0%
Greece	18,7	100	72,9	71,8	78,7	80,1	75,6	-5,4%

Overall, the network usage intensity for passenger transport has increased by 7.7% between 2010 and 2015, with an average annual growth rate of 1.5%.

The highest increases were in Sweden (+22.3%) and in Norway (+21.8%). In Norway a new PSO contract was signed with the incumbent railway undertaking for the period 2012-2017, resulting in higher train frequency.

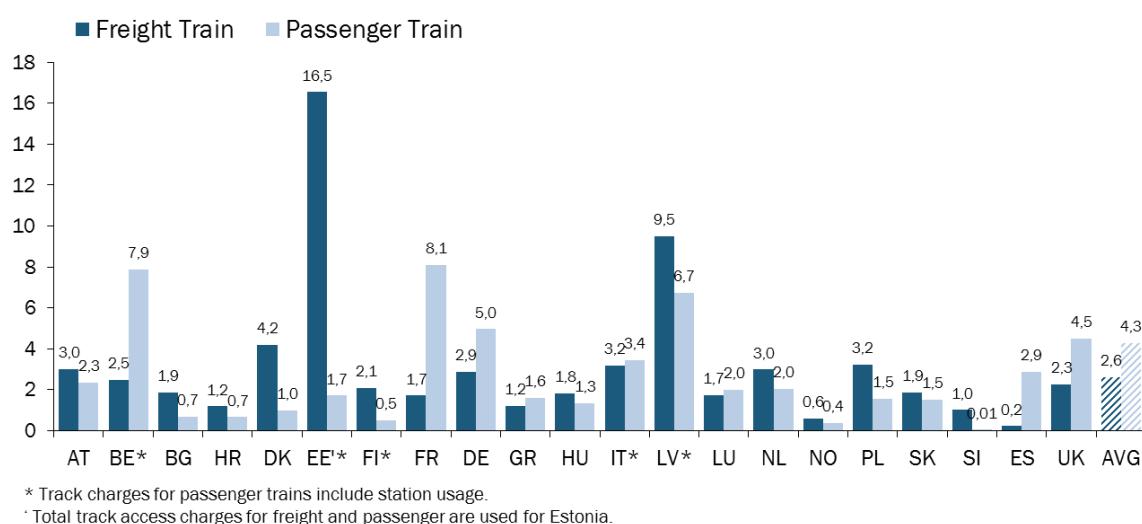
2.3. Track access charges paid by railway undertakings for the minimum access package

2.3.1. Track access charges in 2015²⁰

2.6 euros	Average track access charges paid by railway undertakings for the minimum access package for freight services in 21 European monitored countries in 2015.
4.3 euros	Average track access charges paid by railway undertakings for the minimum access package for passenger services in 21 European monitored countries in 2015.

Figure 9 presents the average track access charges (for the minimum access package) paid by railway undertakings per train kilometre. It has been calculated for each country by dividing the total track access charges paid by railway undertakings to the infrastructure manager with the total train kilometres for both, freight and passenger services.

Figure 9 – Average track access charges paid by railway undertakings for the minimum access package (€ per train kilometre) in 2015²¹



It is important to note that, for each country, charges for specific types of trains (such as heavy or light trains) and/or specific lines (high-speed versus conventional, main versus regional) could be very different from the average charge. In addition, there may be a deflating effect in the average for some countries where companies or services are excluded from the charges but are counted in the total train kilometres. Moreover, in some countries, figures include track charges for passenger trains include station usage. In conclusion, Figure 9 does not allow drawing any clear comparison of track access charges among the monitored markets.

²⁰ All monitored countries except Kosovo, Sweden and Switzerland.

²¹ In France, for instance, it does not include freight compensation paid by the State to the infrastructure manager or charges paid by public authorities for PSO services.

For freight services, the relatively high average track access charges paid in the Latvian and Estonian markets can be at least partly explained by wide track gauge where heavy freight trains operate. In Norway, the average track access charge is only of €0.60 per freight train kilometre. This is because track access charges are applied only for freight trains above 25 tonne axle weight.

In Slovenia, passenger trains which operate under the framework of PSO contracts are exempt from track access charges. This explains track access charges of less than €0.01 per passenger train kilometre. A similar situation occurs in Norway, where track access charges are applied only for trains running on the line between Oslo and Oslo Airport.

2.3.2. Evolution of track access charges from 2010

For freight services, data on track access charges and total freight train kilometres is available for each year between 2010 and 2015 for 14 of the countries covered in this report. Figure 10 shows the evolution of the average track access charges paid for freight services. This is calculated by dividing the total track charges paid by railway undertakings for freight services by freight train kilometres for each country in each year. Similarly, for passenger services, data is available for the whole time series for 14 countries; the evolution of the average track access charges for passenger services (track charges paid by passenger railway undertakings divided by passenger train kilometres) is presented in Figure 11.

Figure 10 – Evolution of track access charges for freight services (per train.km in national currency; indexed – 2010=100)

Country	Real value (2010)	2010	2011	2012	2013	2014	2015	Compound annual growth rate
United Kingdom	1,5	100	109,7	158,9	152,2	161,8	153,0	8,9%
Norway	0,4	100	101,2	131,9	120,0	159,2	142,5	7,3%
Croatia	1,0	100	157,2	143,3	183,8	147,6	119,9	3,7%
Germany	2,6	100	103,2	105,9	108,0	111,1	112,7	2,4%
Slovenia	0,9	100	97,8	111,3	102,7	100,5	110,9	2,1%
Belgium	2,3	100	108,1	110,2	110,1	110,3	106,4	1,2%
Latvia	9,1	100	104,7	108,4	94,5	105,4	103,9	0,8%
France	1,7	100	106,2	99,7	98,5	116,6	102,8	0,6%
Denmark	4,2	100	99,0	98,3	100,2	99,6	101,0	0,2%
Austria	3,2	100	89,5	94,0	95,1	94,8	94,0	-1,2%
Total	3,0	100	97,7	97,5	97,7	94,0	92,0	-1,7%
Finland	2,7	100	99,9	102,5	105,4	110,8	76,5	-5,2%
Poland	5,0	100	98,1	84,3	89,3	65,2	64,3	-8,5%
Bulgaria	3,7	100	92,7	88,3	65,4	45,4	50,4	-12,8%
Slovakia	9,0	100	38,7	36,5	37,0	20,5	20,7	-27,0%

Overall, for freight services in 14 countries, the average track access charges per train kilometre across the monitored countries has dropped by 8% over the period 2010-2015, with an average annual growth rate of -1.7%.

Figure 11 – Evolution of track access charges for passenger services (per train.km in national currency; indexed – 2010=100)

Country	Real value (2010)	2010	2011	2012	2013	2014	2015	Compound annual growth rate
Slovenia	0,0	100	86,3	87,4	106,4	94,4	273,8	22,3%
Croatia	0,4	100	140,4	169,1	181,0	148,8	160,8	10,0%
Norway	0,3	100	97,6	123,7	116,7	150,2	140,8	7,1%
Latvia	4,9	100	106,9	118,3	128,0	136,9	137,1	6,5%
Austria	1,9	100	104,8	105,2	116,5	121,3	124,4	4,5%
France	7,1	100	99,0	105,4	105,9	118,4	114,5	2,7%
Belgium	7,0	100	102,5	105,8	108,2	110,5	113,1	2,5%
Germany	4,4	100	101,1	104,0	106,3	110,3	112,6	2,4%
Total	4,3	100	106,4	107,0	106,5	109,5	110,5	2,0%
United Kingdom	4,6	100	120,1	109,1	100,9	93,0	97,6	-0,5%
Denmark	1,0	100	101,4	100,3	96,1	96,4	95,0	-1,0%
Finland	0,5	100	101,1	104,8	104,8	100,7	94,4	-1,1%
Poland	1,7	100	97,9	97,3	105,2	86,6	92,5	-1,5%
Slovakia	1,8	100	80,9	77,4	79,3	81,2	82,6	-3,8%
Bulgaria	0,9	100	96,4	97,1	90,3	74,8	73,2	-6,1%

The average track access charge per passenger train kilometre paid by railway undertakings has increased by 10.5% compared to 2010, with an average annual growth rate of 2%. The biggest increase of 173.8% is observed in Slovenia, where track access charges are only paid for trains operating non-PSO services. In 2015 this represents only about 120,000 € revenue for the infrastructure manager. In previous years, only about 50,000 € were collected from non-PSO services. This increase in revenue from non-PSO services comes from additional traffic for the transport of refugees.

3. Rules for market entry

The description of rules for market entry enables us to observe whether there exist legal barriers to entry of railway undertakings not related to the domestic incumbent. For that purpose, the report provides a detailed picture of these rules in the 24 monitored countries, enabling better interpretation of the rail market characteristics and its evolution over time. To the best of IRG-Rail's knowledge, this report is the first one to provide these pieces of information.

For that purpose this section presents the rules in place for entry in each market in 2015 both in terms of competition *in* and *for* the market. The description of rules for market entry in monitored countries first starts with the timeline of legal liberalisation in passenger and freight markets. The report then focuses on rules in the passenger market for both commercial and PSO services. All pieces of information are summarised in Annex 3.

3.1. Liberalisation of rail markets

Figure 12 and Figure 13 show the dates of legal liberalisation in the freight and passenger markets respectively. "Legal liberalisation" means the year when the market opened up to competition. These figures also indicate the year when an authorisation to operate rail services²² was first awarded to a railway undertaking not related to the domestic incumbent.²³ Note that the provision of a licence/certificate to a railway undertaking does not automatically imply an effective entry of this undertaking in the market. Analysis of the level of market opening can be found in Section 6.

3.1.1. Liberalisation of freight rail markets

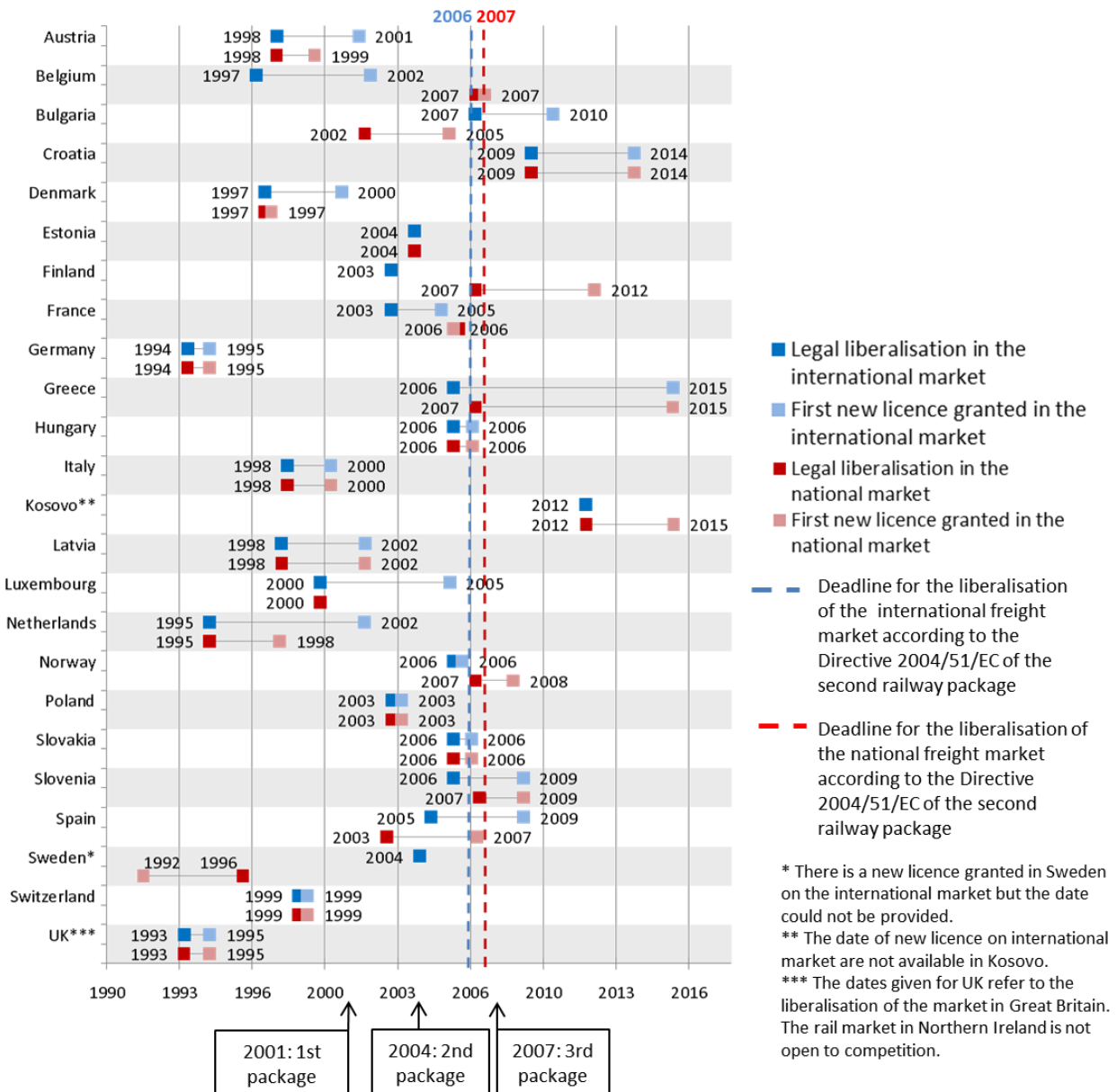
In the freight sector one can distinguish between the liberalisation of the national and international markets.

The main Directive (Directive 2004/51/EC) of the second railway package, adopted in 2004, aimed at liberalising the international freight market by the 1st of January 2006 and the domestic freight market by the 1st of January 2007. The year of liberalisation in the monitored countries for both types of services ranges from 1993 in the United Kingdom to 2012 in Kosovo.

²² Depending on countries, the authorisation is given through a licence or a safety certificate.

²³ See section 5 for definitions of categories of railway undertakings.

Figure 12 – Legal liberalisation of freight market and first new licence



In three countries²⁴, the liberalisation of the international freight market occurred after the 1st of January 2006. Bulgaria and Croatia entered the EU after 2006 and Kosovo does not belong to the EU. In 14 countries, the international market was already open to competition before the adoption of the second railway package in April 2004.²⁵

Concerning the liberalisation of the national freight market, all monitored countries opened their market at the latest by 2009 with the exception of Kosovo. The national freight market

²⁴ Bulgaria, Croatia and Kosovo.

²⁵ Austria, Belgium, Denmark, Estonia, Finland, France, Germany, Italy, Latvia, Luxembourg, the Netherlands, Poland, Switzerland, the United Kingdom.

was already open to competition in 14²⁶ of the monitored countries, before the adoption of the second railway package in April 2004.

In Finland the liberalisation of the international freight market has not been followed by the provision of a licence to a potential new entrant. Greece and the Netherlands²⁷ are among the countries where the time elapsing between the legal liberalisation of the market and the date of provision of a first new licence was relatively long. For two countries (Bulgaria and Sweden) the national freight market was liberalised before the international one.²⁸

There are some national specificities that can be highlighted in order to better understand timeline of liberalisation of the rail freight markets in the monitored countries:

- In Switzerland, only cross-border traffic is liberalised in the scope of international services. However, 'cabotage' is legally not yet allowed.
- In Sweden, the market for national rail freight services was opened in 1996. However, a few years before that, in 1992, LKAB²⁹ had been given permission to perform its own transport of ore on "Malmbanan" (in the northern part of Sweden). Hence why there was a first new licence before the market was officially liberalised.
- In Luxembourg, a safety certificate was awarded in 2005 to SNCF Fret (the French domestic incumbent) but there is currently no activity.
- In Austria 1999 corresponds to the date when the first open access licence was issued to an existing railway undertaking, integrated to the infrastructure manager, for national freight services. The first 'real' new entrant, i.e. not related to the incumbent, was licensed on the 21st March 2001 and started to operate trains on the 1st April that year.

²⁶ Austria, Bulgaria, Denmark, Estonia, Germany, Italy, Latvia, Luxembourg, the Netherlands, Poland, Spain, Sweden, Switzerland and the United Kingdom.

²⁷ For Greece, the time elapsing between the legal liberalisation of the market and the date of provision of a first new licence is 8 years for both national and international markets and 7 years for the Netherlands in the international markets.

²⁸ Bulgaria entered into a pre-accession period of transposition of the European legislation into the national legislation. The national markets for railway operations in Bulgaria were liberalised with the transposition of Directives 91/440 and 2001/12/EC. The liberalisation of the international market of freight railway services in Bulgaria was postponed until 01.01.2007 in accordance with Article 1 of Directive 2004/51/EC on the development of the Community's railways.

²⁹ LKAB Malmtrafik is a wholly owned subsidiary of the 100% state-owned mining company LKAB.

3.1.2. Liberalisation of passenger rail markets

Concerning the passenger market, the timeline of liberalisation in each monitored country can be separated for international, national long-distance and regional services.

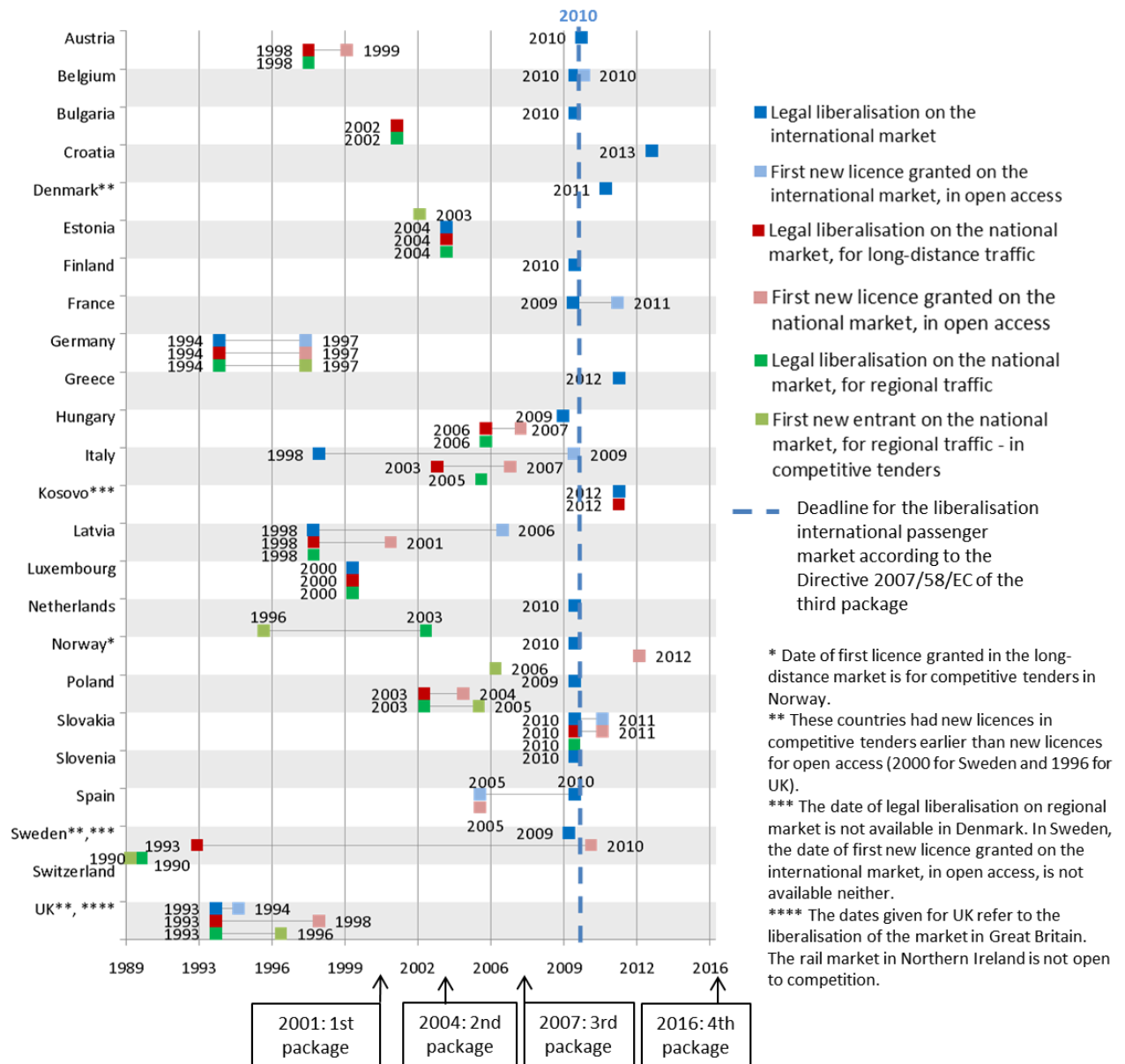
The main purpose of the third railway package, adopted in 2007, was the liberalisation of the international passenger market. This liberalisation, planned by Directive 2007/58/EC, started with the opening of international operations by 2010. International operations can include domestic operations when these operations are part of an international service (this is called “cabotage”).³⁰

The liberalisation may be implemented by opening up the passenger market to on-track competition (i.e. competition *in* the market through open-access) and/or by opening up the passenger PSO services to competition (i.e. competition *for* the market through competitive awarding of a PSO contract). For simplicity reasons, for countries where the market has been both open to competition *for* and *in* the market for long-distance services, Figure 13 shows the award date of the first new open-access licence. Additional information on competition *for* the market is detailed separately for long-distance services where appropriate.

There is a wide range of situations among monitored countries which can put into context the information in Figure 13.

³⁰ The domestic passenger market has been liberalised with the fourth railway package in 2016.

Figure 13 – Legal liberalisation of passenger market and first new licence³¹



In Switzerland, all passenger services (both long-distance and regional ones) are franchised. International services are operated by the domestic incumbent SBB in cooperation with the corresponding foreign incumbents.

In Poland, the railway legal act of 2003 enabled non-incumbent railway undertakings to enter the market. This act was adopted one year before Poland joined the EU as a step towards adopting EU law. For the international passenger market, the date provided refers to the

³¹ Only railway undertakings that entered in competitive tenders are indicated here. If a new entrant got a direct awarded contract on the PSO passenger market, the date of new licence would not appear here.

'cabotage' legislation enabling foreign railway undertakings to apply for international cabotage services. The first new entrant on passenger market was Koleje Mazowieckie (formed by authorities of the Mazovia region on the basis of incumbent, but with majority regional stake) which started operating in January 2005 (with a licence issued in December 2004). It started commercial long-distance service activity, additional to the main PSO activity, also in 2005. The first new entrant in PSO services awarded by competitive tenders was PCC Rail, which later became Arriva PCC, a joint venture of Polish PCC Rail and British Arriva plc. PCC Rail was awarded a licence in September of 2005 and the joint venture consortium won a tender and started operation in the Kuyavia-Pomerania region in 2007. In 2010 Arriva PCC was bought by Deutsche Bahn AG.

In Spain, the domestic market was liberalised before the international market, mainly due to technical reasons. The Spanish rail network is quite different from the rest of Europe, in particular in terms of track gauge but also signalling and electrification systems. For a new operator, it is easier to enter with domestic traffic and very complex to operate international services. Furthermore, the national passenger market is not liberalised but some railway undertakings have acquired a licence to be prepared for the event of liberalisation.

The Hungarian domestic passenger market was also liberalised prior to the international market. However, the liberalisation of the domestic passenger market was limited in the sense that only undertakings registered and licensed in Hungary were allowed to enter the market and provide passenger transport services³². It should be noted that since then only two new entrants have appeared in the market, both running heritage trains.

Austria became a member of the EU in 1995. When transposing Directive 91/440 in 1998, this country chose to open the passenger market at an early stage for domestic railway undertakings. Prior to that, integrated railway undertakings had access to the incumbent infrastructure at connecting stations under bilateral agreements, which had been the case from the very beginning of railways in the 19th century when such agreements were arranged to connect the various then private integrated railway undertakings. After nationalisation some undertakings remained independent and the agreements continued until 1998.

In the Netherlands, on the national passenger market, there is a division between the main railway network, for which the concession (PSO contract) is directly awarded to the domestic incumbent (NS - Nederlandse Spoorwegen) for a period of 10 years (now from 2015 to 2025) and the decentralized lines. For the decentralized lines regional authorities award the concessions by means of a competitive tender. Several other companies operate these lines in addition to NS. Therefore there is neither open-access competition *de jure* nor *de facto*. On the international passenger market, there is (besides NS) a small number of companies operating international passenger transport services (Thalys, ICE), but they all work together with NS and the contract is awarded to NS. Therefore all railway undertakings operate through PSO contracts. Railway undertakings are legally able to operate an international passenger transport service themselves under certain circumstances, but the services have to be notified to the regulatory body (ACM). So far this has not happened.

In Sweden, the delay between the liberalisation of the long-distance traffic and the first entrant in open-access on the national market may be explained by the fact that the market was liberalised "step by step". In 1993 the market was opened for other operators, but only in competitive tenders. Competition in open-access has been allowed later.

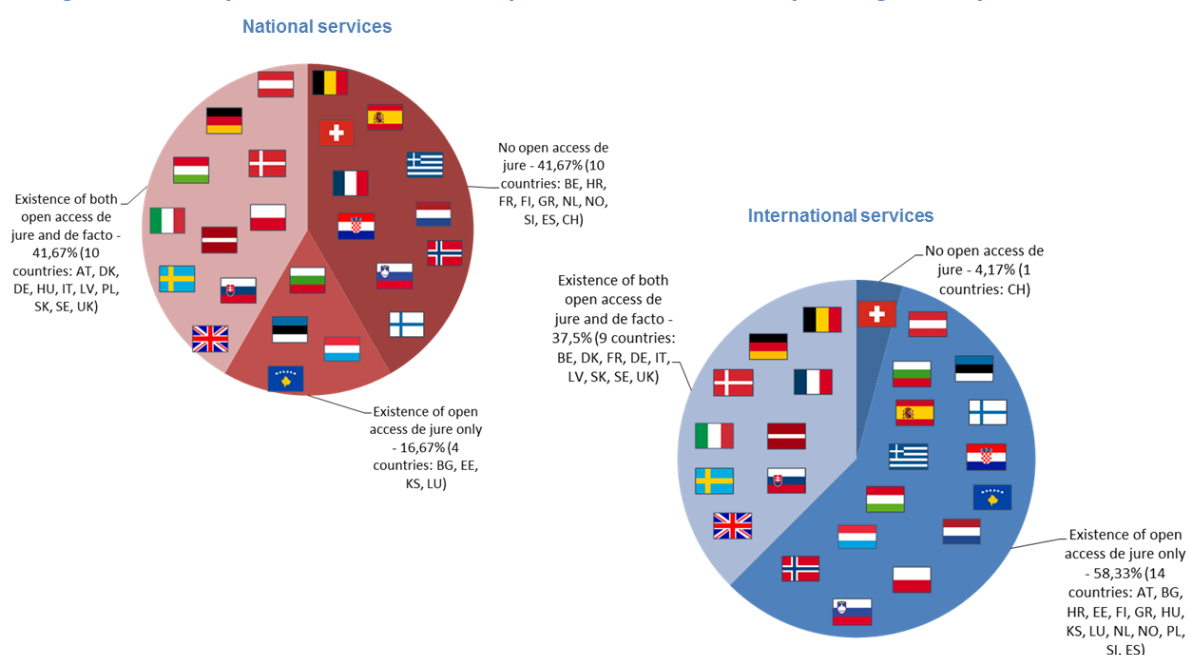
³² The licensing requirements were the same as those for freight undertakings in accordance with Directive 95/18/EC then in effect.

The following sections provide details about rules for market entry in open-access and for PSO services.

3.2. Rules for passenger services in open-access

For both domestic and international services, Figure 14 shows where liberalisation of the passenger market exists either *de jure* or/and *de facto*. Liberalisation *de jure* means that the law allows open-access operations in the passenger market. Liberalisation *de facto* means that new entrants that are not related to the domestic incumbent have come into the passenger market after having been provided with a licence/certificate. For countries with open-access *de facto*, the level of market opening is analysed in Section 6.

Figure 14 – Competition in the market - Open-access rules for rail passenger transportation in 2015



14 countries³³ allow open-access operations (i.e. *de jure*) in the national passenger market and 23 in the international market. Only Switzerland does not allow such operations in the international passenger market. However, as underlined before, Switzerland allows railway undertakings to operate international services under franchises. This is also the case for domestic services.

Liberalisation *de facto* occurs only in 10 countries in the domestic passenger market and in nine countries in the international market. In 7 countries³⁴ new entrants are allowed to enter both the domestic and the international passenger markets. In total, open-access is allowed at least for one market in 12 countries.

Note that in Germany, open-access is allowed only for railway undertakings having their head office based in Germany. For other railway undertakings (based in other European

³³ Note that commercial traffic in Hungary is mainly related to heritage trains and not to regular traffic.

³⁴ Denmark, Germany, Italy, Latvia, Slovakia, Sweden and the United Kingdom.

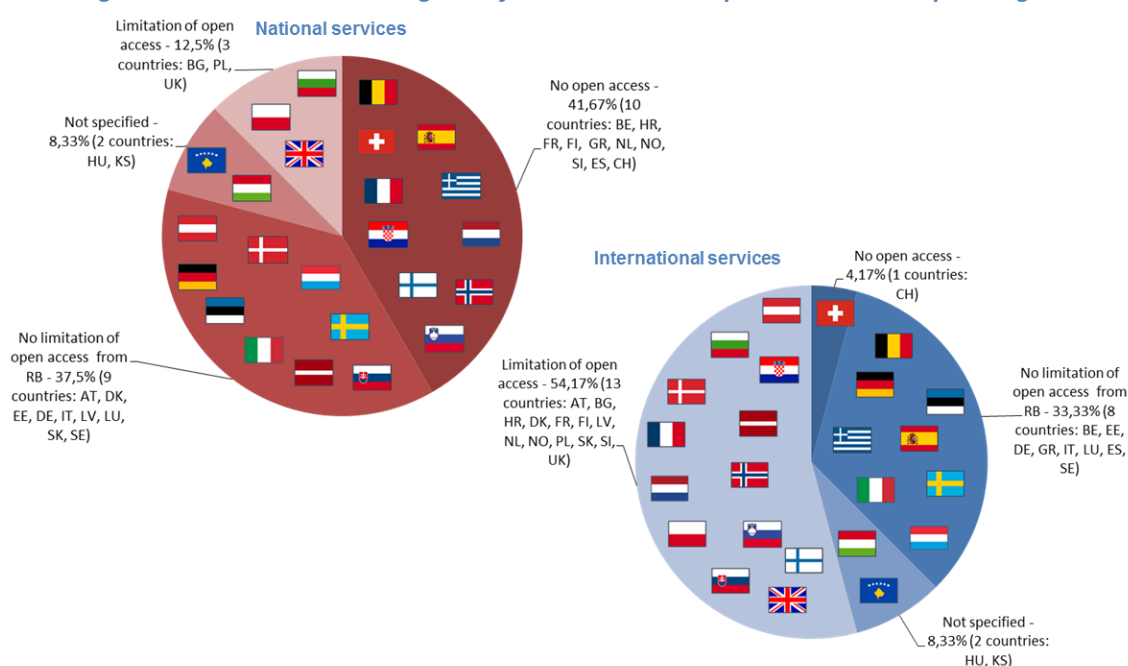
countries), open-access is allowed only for international services and only through an intergovernmental treaty or after passing the Principal Purpose Test (see below).

In Finland, the passenger market is legally open to competition (there is no legal provision prohibiting it) but due to exclusive and direct award of public service contracts to the domestic incumbent this railway market is not open to competition de facto.

Figure 15 provides information about the rules limiting open access in the passenger market that have been implemented in some countries. Directive 2007/58/EC, on the liberalisation of passenger services, and Directive 2012/34/EC (called Recast), establishing a single European railway area, state that Member States may limit the right of access to pick up and set down passengers in the course of an international passenger service. This access is subject to certain restrictions and meeting certain tests which are to be undertaken by regulatory bodies:

- the “principal purpose” test which is compulsory and has to be applied by all Member States. This test consists of demonstrating the international nature of the service being proposed.
- the “economic equilibrium” test which is optional and looks at whether the right of access on services between a place of departure and a destination which are covered by one or more public service contracts (PSO contracts) compromises the economic equilibrium of those existing services under a public service contract. This mechanism of limitation of international services in open-access may be given to regulatory bodies according to the national implementation of the European Directive.

Figure 15 – Possibilities for regulatory bodies to limit open-access in the passenger market



Among the monitored countries, 13 regulatory bodies have the possibility of carrying out the economic equilibrium test to potentially limit the operation of international services as shown in Figure 15.

For those 14 countries where operations of domestic passenger services in open-access are allowed (see Figure 14), some regulatory bodies also have the possibility of limiting the new services to ensure the economic equilibrium of PSO contracts. This is the case in 3 countries (Bulgaria, Poland and the United Kingdom) where the test is carried out for both domestic and international services.

For instance, in Poland, the analysis of the impact of the requested activity on the economic conditions provided on the same railway line according to the Public Service Contract (PSC) is performed in order to verify:

- the rise of the compensation paid by the public service competent authority. If such rise would exceed 10% compared to the level given in the stipulations of the PSC, the President of the Office of Rail Transport has the right to refuse to issue a decision allowing the rail carrier to perform the requested services as defined in the application;
- the potential disruption on the regularity of passenger rail transport, taking into account the transport intensity on the railway line in question, and the passengers' needs.

Depending on the results of such analysis the following decision may be issued:

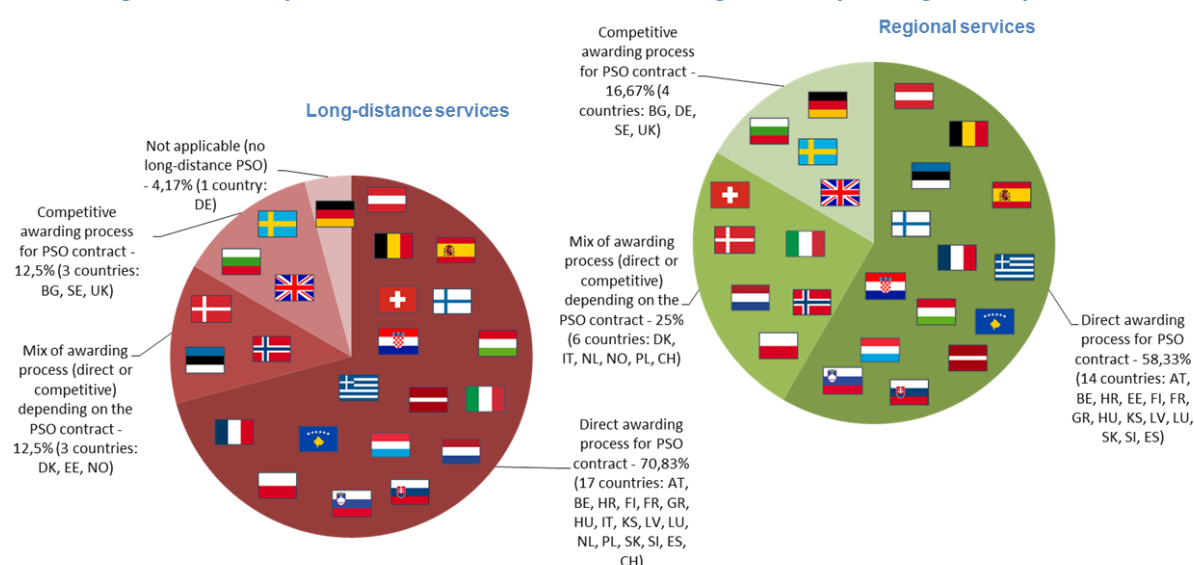
- if there are conditions for the market development in new areas, a positive decision will be issued; i.e. the open access service would be allowed;
- If the proposed service would compete exclusively in the same market segment as an existing PSC, and thus cause a rise in costs for the PSC, the negative decision will be issued; i.e. the open access service would not be allowed;
- If the result is inconclusive, the requested activities may be allowed but downscaled, the level of which could vary for each particular case.

3.3. Rules for PSO services

Both long-distance and regional passenger services may be operated under PSO contracts.³⁵ Depending on national legislation, competent public authorities may award PSO contracts to railway undertakings either directly or through competitive tenders. Figure 16 indicates where competitive tenders take place for long-distance and regional PSO services. A 'mix' awarding process means that public authorities can use either a direct or a competitive award.

Direct awards do not prevent some public authorities from choosing other railway undertakings than the domestic incumbent.³⁶ In addition competitive or mix awarding processes do not always mean that new entrants operate PSO services, since the domestic incumbent may win all competitive tenders. The level of PSO market opening is analysed in section 6 where market shares of new entrants are taken into account.

Figure 16 – Competition for the market – PSO awarding rules for passenger transportation



In three countries (Bulgaria, Sweden and the United Kingdom) competitive tenders are the mechanism for awarding long-distance PSO contracts. However, in Bulgaria, only the domestic incumbent has won these competitive tenders and therefore there is no new entrant operating PSO services. In Sweden, the first licences were granted to a new entrant in 2000 and in 1996 in the United Kingdom (see Figure 13).

In three other countries (Denmark, Estonia, Norway) public authorities may use either direct or competitive tenders to award long-distance PSO contracts. However, in Estonia only direct awards to the domestic incumbent have been used in practice.

In Germany, there is no PSO long-distance service. PSO contracts only exist for regional services.

For the 17 remaining countries of our sample long-distance PSO contracts are always awarded directly. Note that the Swiss national long-distance passenger services are operated only by the domestic incumbent. These services are considered as PSO services

³⁵ This is also the case for international in some countries such as Switzerland, Norway and Latvia.

³⁶ This is the case in Austria, Italy, Latvia, and Switzerland.

because the incumbent operates under a contract where minimum requirements are defined. However, contrary to most PSO services (including the Swiss regional ones), the railway undertaking does not receive any public compensation for the operation of these services.

For regional PSO services, competitive awarding is the only rule that applies in four countries (Bulgaria, Germany, Sweden and the United Kingdom). With the exception of Germany (which does not award long-distance PSO contracts), these countries use competitive awards for both long-distance and regional PSO services.³⁷

In six countries (Denmark, Italy, the Netherlands, Norway, Poland and Switzerland) a mix of awarding processes is in place for regional PSO services. In Switzerland, though it is legally possible to award regional PSO services by competitive tenders, this has never happened in practice. The share of regional PSO contracts (in number of contracts) that have been awarded after a competitive process is 5% in Italy³⁸, 6.6% in Denmark, 33% in Norway³⁹, 37.5% in Poland and 88% in the Netherlands.

For the 14 remaining countries of our sample, regional PSO contracts are directly awarded by public authorities. Therefore, in 13 countries⁴⁰, direct award is the only rule in place for PSO contracts (both for long-distance and regional ones).

Figure 17 specifies the identity of public authorities in charge of awarding PSO contracts.

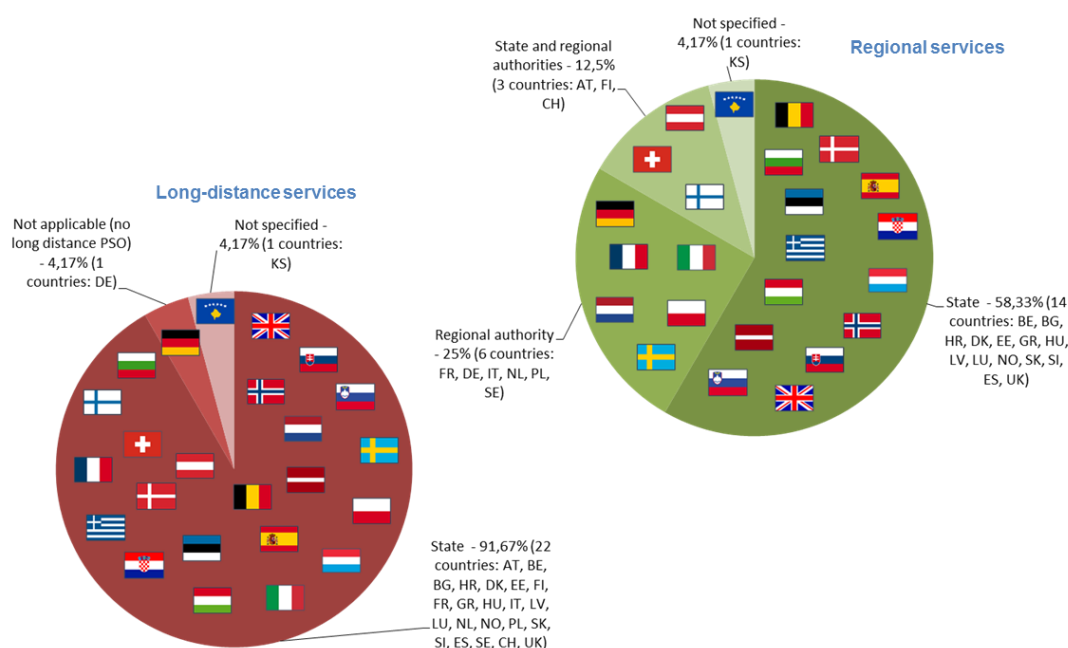
³⁷ However, as noticed before, PSO services are still operated only by the domestic incumbent in Bulgaria.

³⁸ This refers to a contract which was awarded to a joint venture between the domestic incumbent Trenitalia and a public transport company (Tper) in Emilia Romagna.

³⁹ In Norway, two contracts have been awarded through competitive tenders. The contract for the line Oslo – Gjøvik has been awarded to NSB Gjøvikbanen AS (subsidiary of the domestic incumbent NSB AS), following the result of a competitive tender in 2005/2006. The other contract awarded after competition is for the line Narvik – Swedish border and has been won by SJ AB (foreign incumbent). Both of these contracts are relatively small compared to the total amount of passenger traffic in Norway.

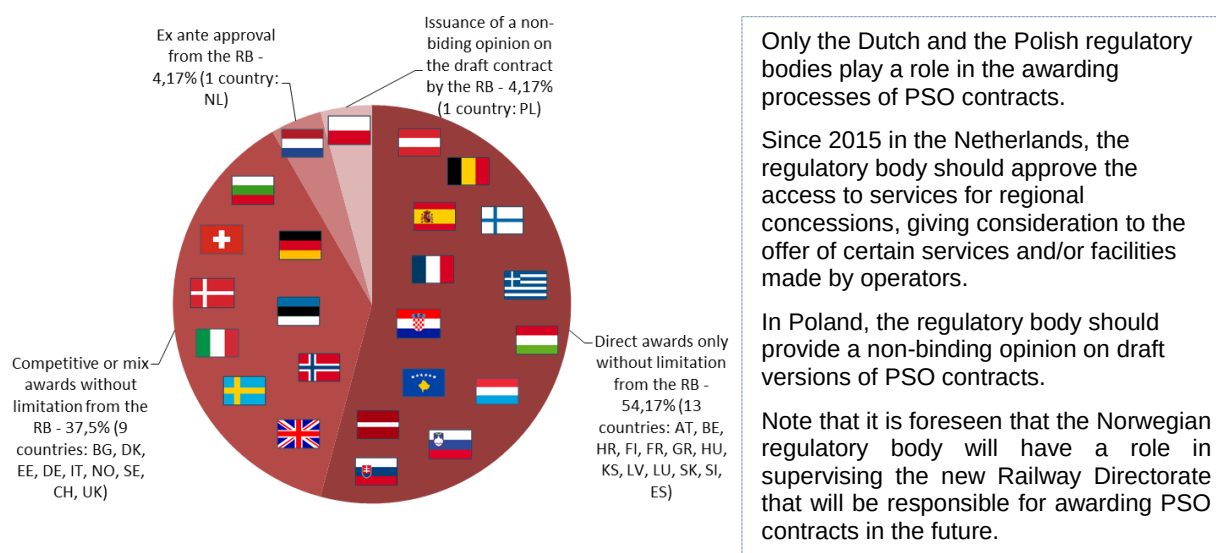
⁴⁰ Austria, Belgium, Croatia, Finland, France, Greece, Hungary, Kosovo, Latvia, Luxembourg, Slovakia, Slovenia and Spain.

Figure 17 – Identity of public contracting authorities for PSO services



In all the monitored countries that award long-distance PSO contracts, this is done under the responsibility of the State.⁴¹ For regional PSO services, regional authorities are in charge of these contracts in 6 countries, with the State being the contracting authority in 14 countries. Finally both the State and regional authorities are in charge of regional contracts in Austria, Finland and Switzerland.

Figure 18 – Role of regulatory bodies in the awarding process in the passenger sector



⁴¹ With the exception of Germany where there are no long-distance PSO contracts and Kosovo where this information is not available.

4. Market characteristics

This section evaluates the size of the monitored market in terms of traffic both from offer-side (in train kilometres) and demand-side approaches (in tonne and passenger kilometres). It also provides market shares of railway undertakings.

4.1. Market size

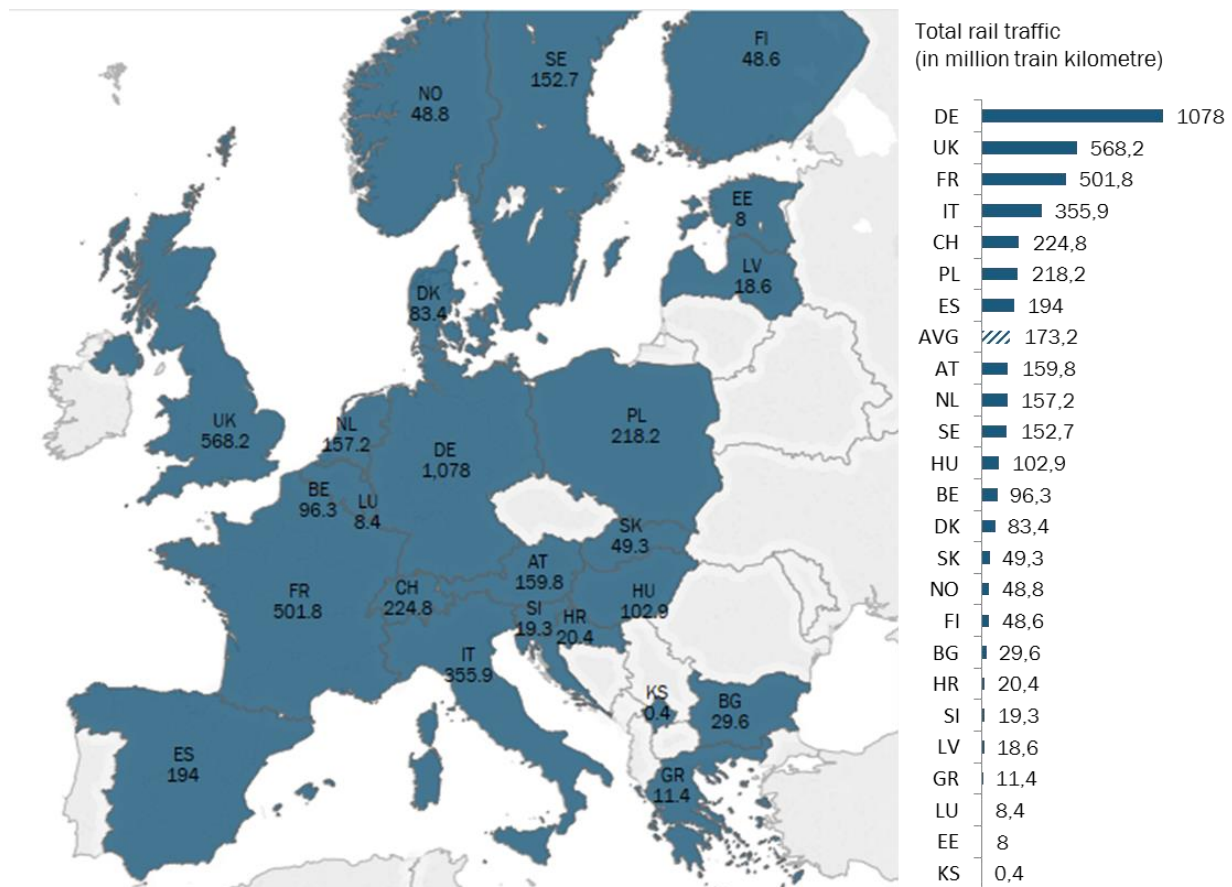
4.1.1. The offer side

From an offer-side approach, traffic indicators correspond to train kilometres “offered” by railway undertakings to passengers and freight customers in the rail market.

4.1.1.1. Total traffic

4.15 billion train kilometres	Traffic in train kilometres in the 24 European monitored countries in 2015. 18.4% was freight (and other non-passenger) traffic. 81.6% was passenger traffic.
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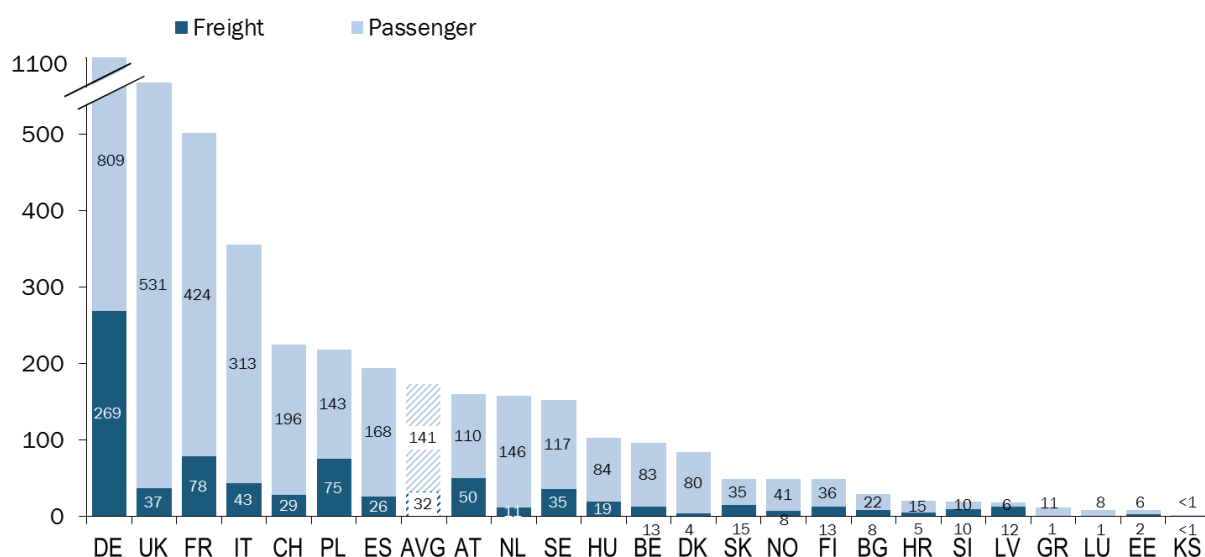
Figure 19 – Total rail freight and passenger traffic (million train kilometres) in 2015



Germany has the biggest market, with 25.9% of the total rail traffic (in million train kilometres), while Kosovo has the smallest (with less than 0.01% of the total). Together, Germany, France and the United Kingdom contribute to 51.7% of the total rail traffic. In addition to Kosovo, Bulgaria, Croatia, Estonia, Greece, Latvia, Luxembourg and Slovenia

each have a share of less than 1% of the total rail traffic. Italy, Switzerland and Poland have respectively 8.6%, 5.4% and 5.3% of the total rail traffic.

Figure 20 – Freight and passenger traffic (million train kilometres) in 2015⁴²



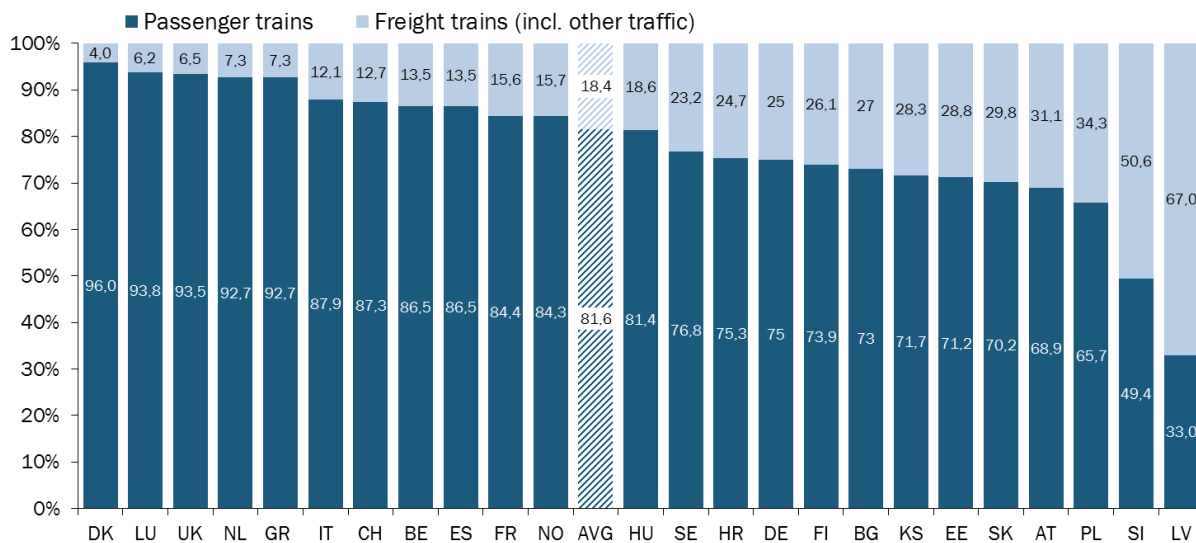
In terms of passenger train kilometres, Germany constitutes the biggest market, followed by the United Kingdom and France, with respectively 13.6% and 12% of the total rail traffic (in train kilometres). Italy ranks fourth. Switzerland is in fifth place although its population only totals 8.2 million. Switzerland, Spain, Netherlands, Poland, Sweden and Austria have passenger traffic totals ranging between 100 and 200 million train kilometres.

With respect to freight train kilometres the German market is by far the biggest, followed by Poland and France as the second and third biggest markets respectively.

Figure 21 shows the proportion of passenger and freight traffic by country, in terms of train kilometres.

⁴² The scope of the report is detailed in the guidelines, as underlined in Section 1.2. Heritage/historical passenger services are notably excluded from the scope. However, in some countries, a very small share of commercial passenger traffic may include this type of services. This is the case for instance for traffic in Hungary.

Figure 21 – Type of traffic (% of train kilometres)⁴³ in 2015



In most of the countries monitored the network is dedicated predominantly to passenger services which account for almost 82% of all train kilometres performed.

Traditionally Latvia has a bigger share of freight transport; 67% of all train kilometres in this country were performed by the freight sector in 2015. In Slovenia freight traffic has a share of just over 50%.

Since 2010, the share of freight train kilometres has fallen in the majority of the countries monitored: in Finland by 5.8% and in Sweden by 5.2%. However, in Slovenia this share has risen by 6.5% and in Hungary by 4.2% over the same time period.

⁴³ The figures for freight include both freight and other traffic; other traffic covers for instance operations for works, test driving or empty train operations. The scope of what is classified as other traffic is different between monitored countries. However this type of traffic represents a very small share of overall freight traffic.

Figure 22 – Evolution of total traffic in train kilometres (indexed - 2010=100)⁴⁴

Country	Real value (2010 - in Mio)	2010	2011	2012	2013	2014	2015	Compound annual growth rate
Latvia	16,1	100	112,7	120,7	117,6	111,9	115,5	2,9%
Norway	43,3	100	101,5	100,9	107,7	107,3	112,6	2,4%
France	453,7	100	110,5	110,4	108,4	106,9	110,6	2,0%
Italy	323,2	100	98,0	97,7	102,4	102,2	110,1	1,9%
Sweden	140,6	100	104,7	103,7	107,3	108,8	108,6	1,7%
United Kingdom	524,0	100	102,6	103,3	103,6	104,2	108,4	1,6%
Netherlands	146,0	100	101,6	103,1	105,3	105,7	107,7	1,5%
Switzerland	210,5	100	100,8	101,6	103,7	105,7	106,8	1,3%
Slovakia	46,4	100	97,8	97,2	98,4	99,7	106,1	1,2%
Total	3756,8	100	102,6	101,9	102,1	102,4	105,0	1,0%
Germany	1049,0	100	101,9	100,9	100,6	101,4	102,8	0,5%
Hungary	100,4	100	100,9	97,8	98,1	100,2	102,4	0,5%
Austria	157,8	100	104,8	100,6	99,2	99,7	101,2	0,2%
Denmark	83,0	100	102,2	100,5	101,9	101,2	100,5	0,1%
Poland	220,2	100	101,6	99,6	96,8	95,5	99,1	-0,2%
Slovenia	19,5	100	101,8	100,0	102,3	107,0	99,0	-0,2%
Bulgaria	30,6	100	102,0	90,7	92,0	94,0	96,7	-0,7%
Belgium	99,8	100	100,8	98,9	96,9	96,6	96,6	-0,7%
Finland	51,0	100	100,1	99,8	98,9	97,4	95,2	-1,0%
Croatia	24,6	100	96,0	98,2	89,4	82,6	82,9	-3,7%
Greece	17,0	100	73,9	72,2	69,5	71,7	67,5	-7,6%

The increase of 5% over 2010-2015 in total traffic is mainly due to passenger traffic, which has risen by 5.6% since 2010.

Since 2010 the biggest growth has been observed in Latvia (15.5%) due to the increase in freight traffic. In Greece total train kilometres have fallen since 2010 by over 30%, contributed to by falls in both passenger and freight traffic but predominantly by the passenger market.

⁴⁴ All monitored countries except Kosovo, Luxembourg, Estonia and Spain.

4.1.1.2. Freight traffic

740.5

**million
freight train
kilometres**

Traffic in freight train kilometres in the 24 European monitored countries in 2015.

18.4% of the total traffic.

Figure 23 – Evolution of freight in train kilometres (indexed - 2010=100)⁴⁵

Country	Real value (2010 - in Mio)	2010	2011	2012	2013	2014	2015	Compound annual growth rate
Latvia	9,9	100	119,5	132,4	128,3	119,4	125,6	4,7%
Slovenia	8,2	100	104,0	101,4	118,8	128,1	119,3	3,6%
Hungary	16,4	100	90,7	96,9	106,6	103,8	117,1	3,2%
Bulgaria	7,0	100	111,5	108,9	99,3	108,6	113,8	2,6%
United Kingdom	34,8	100	108,1	109,1	112,5	110,4	106,9	1,3%
Austria	46,7	100	125,2	105,1	102,0	104,6	106,3	1,2%
Germany	255,0	100	106,3	100,4	101,2	102,4	105,5	1,1%
Switzerland	27,1	100	100,4	97,0	102,2	105,2	105,2	1,0%
France	75,4	100	95,5	100,3	97,4	97,0	103,7	0,7%
Total	714,3	100	104,9	100,6	100,6	100,9	102,8	0,5%
Poland	73,5	100	108,2	103,7	102,5	101,9	101,8	0,3%
Italy	42,6	100	101,8	101,4	101,5	102,8	101,1	0,2%
Slovakia	14,5	100	98,1	93,4	96,9	97,9	101,0	0,2%
Denmark	3,7	100	119,2	100,7	98,1	92,9	99,5	-0,1%
Netherlands	11,5	100	90,7	87,3	88,6	85,9	99,3	-0,1%
Belgium	14,0	100	105,0	95,8	90,0	90,1	92,9	-1,5%
Norway	8,7	100	97,7	88,8	95,7	93,4	87,6	-2,6%
Greece	1,0	100	88,8	78,5	64,6	94,4	85,6	-3,1%
Croatia	6,0	100	89,7	98,4	87,4	84,9	84,0	-3,4%
Sweden	42,4	100	102,2	93,6	89,9	87,4	83,5	-3,5%
Finland	16,0	100	97,1	92,8	90,0	87,7	79,4	-4,5%

The total freight train kilometres increased by 2.8% over 2010-2015 with an average annual growth of 0.5%. The biggest increase was in Latvia (25.6%). In Hungary, following a fall between 2010 and 2011, the growth in 2015 contributed to the overall increase of 17%.

⁴⁵ All monitored countries except Kosovo, Luxembourg, Estonia and Spain.

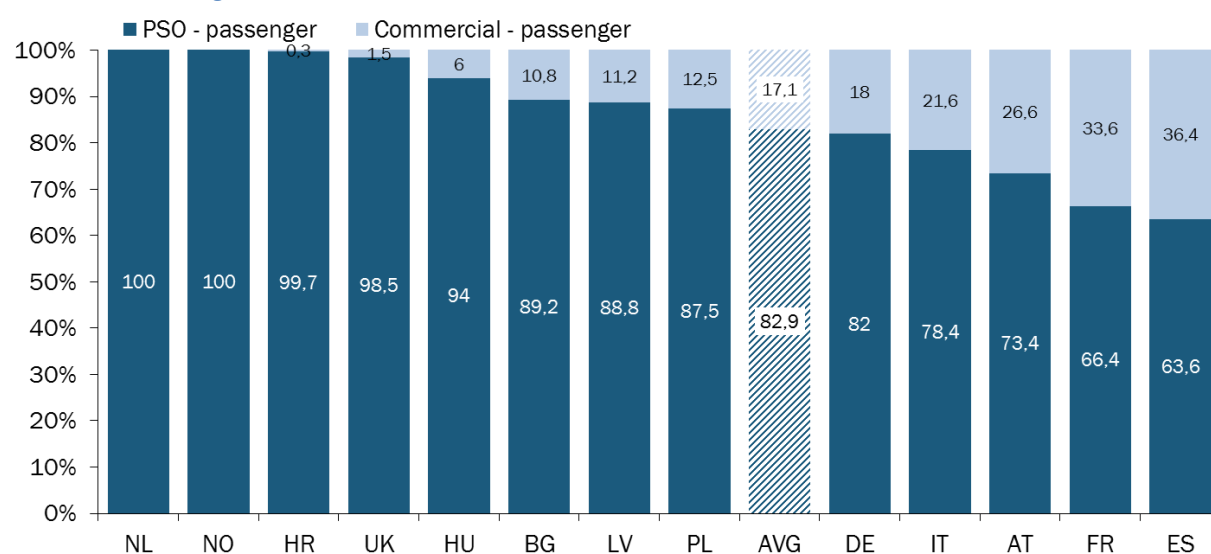
4.1.1.3. Passenger traffic

To enable a full overview of passenger traffic, this part takes into account only monitored countries for which passenger train kilometres can be split into PSO and commercial services.

2 812 million passenger train kilometres	Traffic in passenger train kilometres in 13 European monitored countries in 2015. ⁴⁶
481 million commercial train kilometres	Traffic in commercial train kilometres in 13 European monitored countries in 2015. 17.1% of the total passenger traffic in these countries.
2 331 million PSO train kilometres	Traffic in PSO train kilometres in 13 European monitored countries in 2015. 82.9% of the total passenger traffic in these countries.

Figure 24 shows the share of the total passenger train kilometres operated by PSO and commercial services in 2015 in 13 monitored countries. Commercial traffic includes all passenger services that do not fall within the scope of services provided under public service obligations according to Directive 2015/1100/EC.

Figure 24 – Share of PSO and commercial traffic in train kilometres in 2015



⁴⁶ It includes Austria, Bulgaria, Croatia, France, Germany, Hungary, Italy, Latvia, the Netherlands, Norway, Poland, Spain and the United Kingdom and covers 82.8% of total passenger kilometres in the 24 monitored countries. Indeed, when adding the 11 other monitored countries, 3 396 passenger train kilometres have been performed in 2015.

On average among 13 monitored countries, PSO train kilometres contribute to almost 83% of total passenger transportation offer in 2015, whereas only 64.6% of passenger kilometres transported in 2015 among the same 13 countries were on PSO services (See Section 4.1.2). Conversely, 17% of passenger train kilometres are operated by commercial services, while these services account for 36.4% of passenger kilometres.

In the Netherlands, there are some train providing commercial services⁴⁷, mostly making use of private infrastructure rather than the mainline railway infrastructure. In Hungary, commercial services are mostly operated for heritage services.

The national Norwegian legislation does not allow for open access domestic passenger services. All four passenger railway undertakings have concluded PSO contracts with the Norwegian state, either through direct award or through tendering. However, there are differences between the levels of compensation received by the different passenger railway undertakings. For instance, the PSO contract between the Airport Express Train and the State is a concession contract with no compensation from the State. The concession does however give the Airport Express Train exclusive rights⁴⁸ that fall within the scope of Regulation (EC) No 1370/2007, meaning that the service is not commercial as defined under Regulation (EU) 2015/1100.

Figure 25 – Evolution of passenger traffic in passenger train kilometres (indexed - 2010=100)

Country	Real value (2010)	2010	2011	2012	2013	2014	2015	Compound annual growth rate
Sweden	98,1	100	105,8	108,0	115,2	118,1	119,5	3,6%
Norway	34,6	100	102,4	103,9	110,7	110,7	118,9	3,5%
France	378,3	100	113,4	112,5	110,6	108,9	112,0	2,3%
Italy	280,6	100	97,4	97,2	102,5	102,1	111,5	2,2%
United Kingdom	489,2	100	102,2	102,8	103,0	103,8	108,5	1,7%
Slovakia	31,9	100	97,6	99,0	99,0	100,6	108,5	1,6%
Netherlands	134,5	100	102,5	103,6	106,8	107,4	108,4	1,6%
Switzerland	183,4	100	100,9	102,3	103,9	105,8	107,0	1,4%
Total	3042,5	100	102,0	102,1	102,5	102,7	105,6	1,1%
Finland	35,0	100	101,5	102,9	103,0	101,8	102,4	0,5%
Germany	794,0	100	100,5	101,0	100,4	101,1	101,9	0,4%
Denmark	79,3	100	101,4	100,5	102,0	101,6	100,9	0,2%
Hungary	84,0	100	102,8	97,9	96,4	99,5	99,6	-0,1%
Latvia	6,2	100	101,6	102,0	100,5	99,9	99,3	-0,1%
Austria	111,1	100	96,2	98,7	97,9	97,7	99,1	-0,2%
Poland	146,8	100	98,3	97,6	93,9	92,3	97,7	-0,5%
Belgium	85,8	100	100,1	99,4	98,0	97,6	97,1	-0,6%
Bulgaria	23,6	100	99,2	85,3	89,8	89,7	91,6	-1,7%
Slovenia	11,3	100	100,2	99,0	90,4	91,7	84,3	-3,4%
Croatia	18,6	100	98,1	98,1	90,1	81,9	82,5	-3,8%
Greece	16,0	100	73,0	71,8	69,8	70,3	66,4	-7,9%

⁴⁷ For example, two museum trains (old steam locomotive trains making use of a very small part of the main rail infrastructure and therefore in need of an access agreement with the infrastructure manager) and one other company (operating occasional winter sport trains to the Alps and/or restaurant train services).

⁴⁸ Priority on the line ahead of the other railway undertakings running services on the same lines as the Airport Express Train.

The total passenger train kilometres increased by 5.6% over 2010-2015, with an average annual growth rate of 1.1%.

In Sweden, passenger train kilometres increased by almost 20% from 2010. Most of the growth can be attributed to regional PSO services for which traffic has been extended. The two highest decreases in traffic in 2015 were in Slovenia and in Greece.

4.1.2. The demand side

From a demand-side approach, traffic corresponds to tonne kilometres and passenger kilometres transported by railway undertakings.

4.1.2.1. Freight traffic

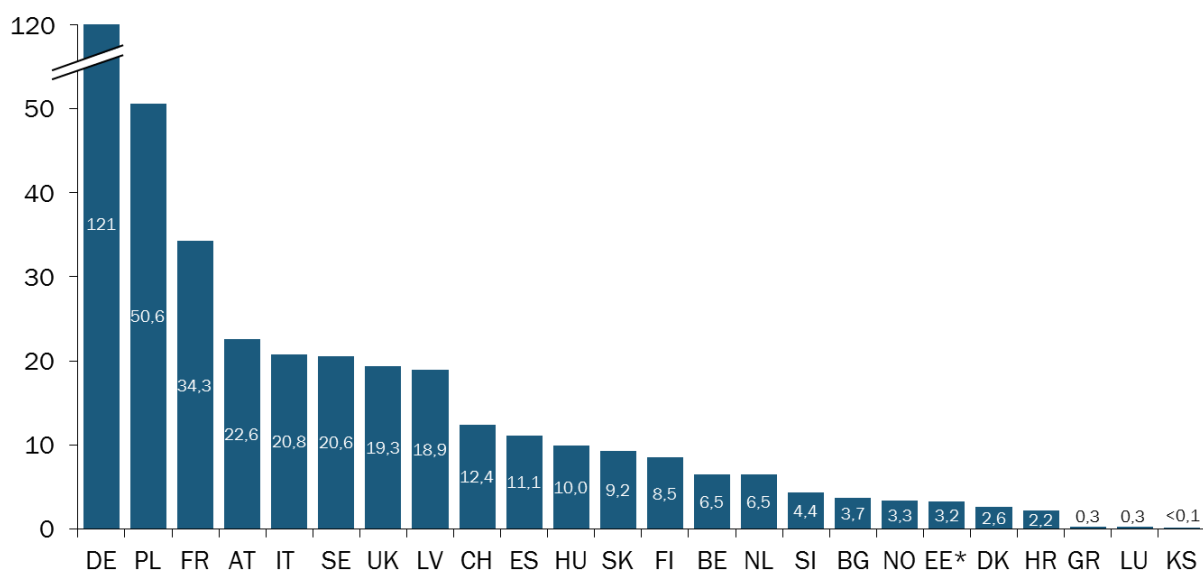
392

**billion tonne
kilometres**

Traffic in net tonne kilometres in the 24 European monitored countries in 2015.

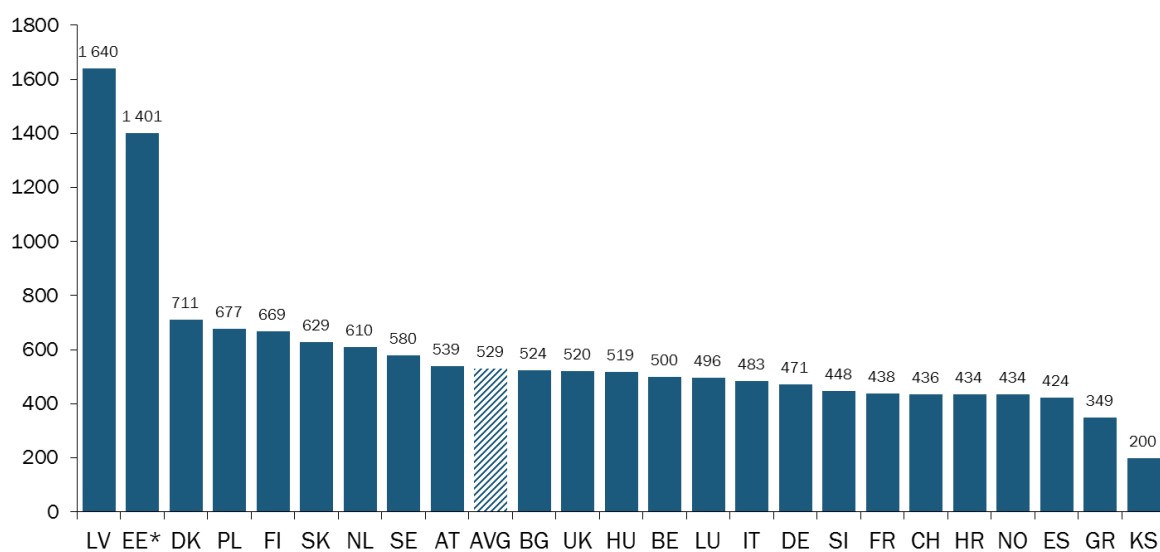
Figure 26 shows that German, Polish and French freight markets were the biggest in terms of tonne kilometres and Figure 27 shows the ratio between tonne kilometres and train kilometres in monitored countries in 2015.

Figure 26 – Freight traffic (billion net tonne kilometres) in 2015



*calculated from gross tkm (by using a conversion factor of 2)

Figure 27 – Net tonne kilometres per train kilometres in 2015



*calculated from gross tkm (by using a conversion factor of 2)

In Denmark, the charge per tonne was withdrawn in March 2014 by the Danish infrastructure manager and was replaced by a uniform charge per train km. This provided an incentive for better planning of the loading of freight wagons, and resulted in heavier loaded trains (more tonne kilometres) and less freight train kilometres.

In Germany, the share of single wagon traffic is decreasing for the benefit of block trains and combined transports which are heavier, leading to bigger increase of tonne kilometres than of freight train kilometres.

Figure 28 – Evolution of freight traffic in net tonne kilometres (indexed - 2010=100)⁴⁹

Country	Real value (2010 - in billions)	2010	2011	2012	2013	2014	2015	Compound annual growth rate
Denmark	2,2	100	116,7	101,7	109,3	109,5	116,2	3,0%
Bulgaria	3,2	100	112,9	101,8	102,6	109,2	115,3	2,9%
France	30,0	100	114,1	108,6	107,6	108,8	114,3	2,7%
Hungary	8,8	100	105,7	107,7	106,7	111,7	113,0	2,5%
Switzerland	11,1	100	104,1	99,9	106,7	111,2	112,3	2,3%
Germany	107,9	100	105,8	102,6	103,7	106,8	112,1	2,3%
Slovenia	3,9	100	105,5	98,7	109,7	109,2	112,1	2,3%
Italy	18,6	100	106,3	108,7	102,3	107,8	111,6	2,2%
Latvia	17,2	100	124,9	127,4	113,7	113,2	110,1	1,9%
Netherlands	5,9	100	107,6	103,7	102,6	104,1	109,2	1,8%
Total	360,0	100	107,2	101,9	101,7	103,6	104,9	1,0%
United Kingdom	18,6	100	112,9	115,6	120,6	119,2	104,1	0,8%
Slovakia	9,1	100	98,8	95,0	96,7	98,6	101,2	0,2%
Austria	22,4	100	98,7	95,9	94,3	100,1	100,6	0,1%
Poland	53,3	100	111,7	92,0	95,4	93,9	94,9	-1,0%
Sweden	23,5	100	97,4	93,9	88,5	90,4	87,7	-2,6%
Norway	3,8	100	102,9	97,0	96,9	94,9	87,6	-2,6%
Belgium	7,4	100	107,0	95,6	90,0	90,5	87,4	-2,7%
Finland	9,8	100	96,4	95,1	97,1	98,4	86,9	-2,8%
Croatia	2,7	100	92,3	85,4	76,4	77,6	79,9	-4,4%
Greece	0,6	100	57,2	45,9	38,5	55,7	47,7	-13,8%

Total freight net tonne kilometres increased by 4.9% over 2010-2015 (in the 20 countries aforementioned), with an average annual growth of 1%.

In Greece freight tonne kilometres have decreased by more than 50% as a result of the economic crisis.

In the United Kingdom, the reduction in freight moved is mainly the result to the policy of uptake of renewable energy sources and a plan to close all coal power stations by 2025. Additionally there was an increase in carbon tax in 2015. These factors combined led to a large fall in the amount of coal being moved on the network.

In Finland the reduction in tonne kilometres could be observed for both domestic and international traffic. It was mainly influenced by low GDP growth, sanctions on and from Russia and low prices of raw materials in the global markets that all were reflected in the demand for logistical services in Finland.

In Norway, the domestic incumbent CargoNet AS strengthened its position in the market in 2015. Therefore the decrease seen since 2014 was due to other competitor undertakings. This is a break from the trend observed in previous years. It should be noted that data for 2015 for Norway is incomplete as TX Logistik AB lost its safety certificate in October 2015 and did not report data for 2015.

⁴⁹ All monitored countries except Kosovo, Luxembourg, Estonia and Spain.

4.1.2.2. Passenger traffic

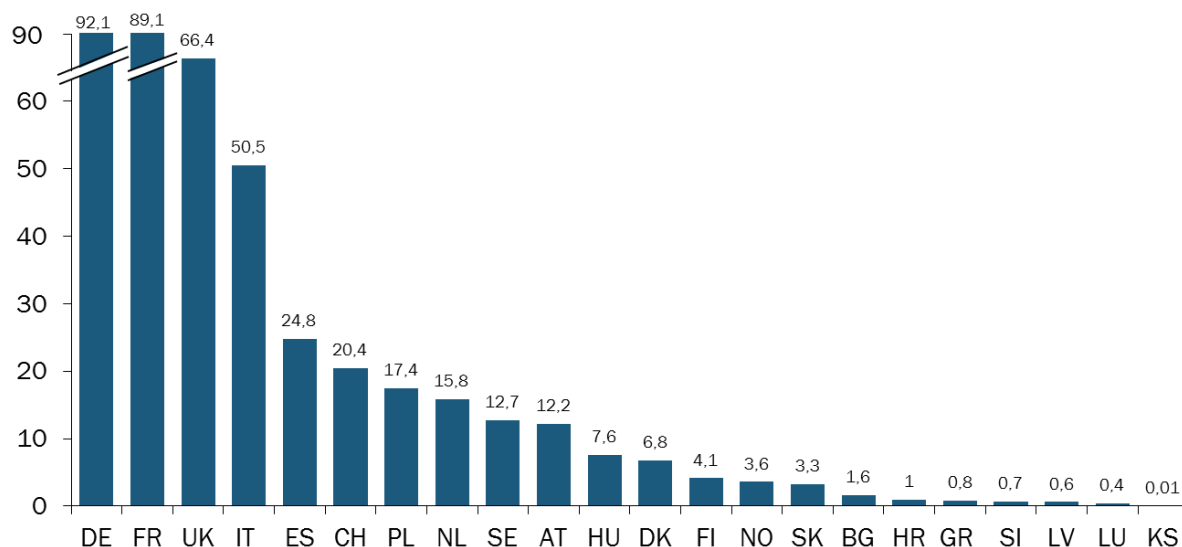
4.1.2.2.1. Total passenger traffic

432

**billion passenger
kilometres**

Traffic in passenger kilometres in 22 European monitored countries in 2015⁵⁰

Figure 29 – Passenger traffic (billion passenger kilometres) in 2015

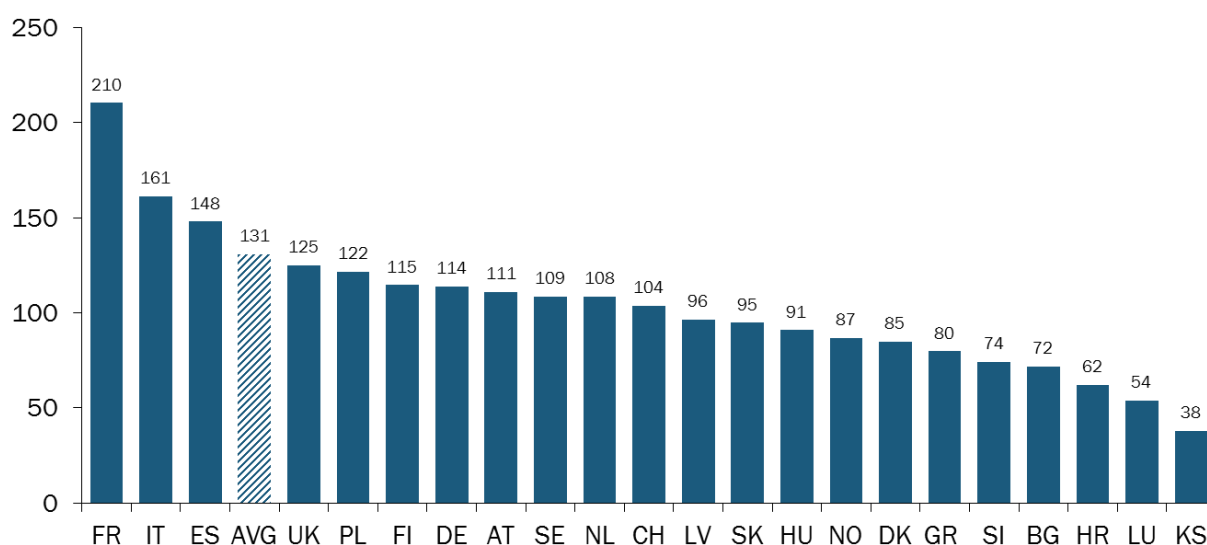


The five markets with the highest number of passenger kilometres in 2015 were Germany, France, the United Kingdom, Italy and Spain. These countries account for 75% of passenger kilometres.

Combining the passenger kilometre indicator with the data from the offer-side (passenger train kilometres, see section 4.1.1.3), there was an average of 131 passenger kilometres per train kilometre in 2015 (Figure 30).

⁵⁰ All monitored countries except Belgium and Estonia.

Figure 30 – Passenger kilometres per train kilometre in 2015



France, Italy, Spain and the United Kingdom also had the highest number of passenger kilometres per train kilometres in 2015. As shown in section 2.1, the share of high-speed infrastructure in the total route length is 17% in Spain, 7% in France and 5% in Italy. A relative high share of high-speed traffic in these countries may partly explain the large number of passenger kilometres per train kilometres. For the United Kingdom, this might be due to a large volume of city commuter traffic.

Figure 31 – Evolution of passenger traffic in passenger kilometres (indexed - 2010=100)⁵¹

Country	Real value (2010 - in billions)	2010	2011	2012	2013	2014	2015	Compound annual growth rate
Slovakia	2,3	100	105,3	107,3	108,5	112,4	143,1	7,4%
United Kingdom	55,8	100	104,7	108,9	111,0	115,9	118,9	3,5%
Sweden	11,2	100	102,0	105,7	106,3	108,7	114,2	2,7%
Austria	10,7	100	101,6	104,8	112,4	113,0	114,1	2,7%
Norway	3,2	100	96,3	101,7	105,0	109,6	113,2	2,5%
Germany	85,1	100	101,2	105,8	106,7	106,2	108,2	1,6%
Total	363,6	100	101,9	103,7	104,4	105,5	107,5	1,5%
Italy	47,2	100	99,3	99,1	103,3	105,7	107,1	1,4%
Switzerland	19,2	100	101,5	100,4	101,4	104,3	106,3	1,2%
Finland	4,0	100	98,1	101,9	102,4	97,9	103,9	0,8%
France	86,1	100	103,4	104,0	102,6	103,3	103,6	0,7%
Denmark	6,6	100	104,8	106,7	107,6	107,9	103,5	0,7%
Hungary	7,7	100	101,6	101,6	102,0	100,6	99,0	-0,2%
Poland	17,9	100	101,4	99,7	93,8	89,8	97,4	-0,5%
Slovenia	0,8	100	95,1	91,2	93,5	85,7	87,2	-2,7%
Latvia	0,7	100	98,9	96,8	97,3	86,7	78,9	-4,6%
Bulgaria	2,1	100	98,0	89,1	86,8	80,9	73,9	-5,9%
Greece	1,4	100	69,3	61,6	56,0	56,2	61,2	-9,4%
Croatia	1,7	100	85,3	63,3	54,4	53,2	54,6	-11,4%

Total passenger kilometres increased by 7.5% over 2010-2015 (in the 18 countries aforementioned), with an average annual growth of 1.5%

⁵¹ Kosovo, Luxembourg, Estonia, Spain, the Netherlands and Belgium are missing.

The largest increase from 2010 in passenger kilometres was in Slovakia (43.1%) where train kilometres increased by 8.5% over the same period. Such an increase is the result of new offers for passengers introduced in November 2014: free of charge transport services for chosen groups of citizens (students and the retired) and higher discounts for commuters to work.

In Poland the downward trend seen between 2011 and 2014 was reversed in 2015 and passenger kilometres in this year were only 2.6% lower than in 2010. This is due to long-distance journeys rebounding after the completion of modernisation works on some crucial routes and the introduction of 20 new Pendolino EMUs, offering competitive travel times and better punctuality between Warsaw and several large cities.

In Finland the methodology for counting passengers on short-haul services was changed in 2015 with the introduction of automatic door-readers, which are more accurate. This contributed to the increase in passenger kilometres reported for Finland in 2015, showing that passenger kilometres in previous years were underestimated.

In the United Kingdom, domestic services account for the majority (almost 97%) of passenger kilometres. Since 2010 all sectors of the domestic passenger market have seen an increase in passenger kilometres. Between 2010 and 2014 the market sector around London and South East experienced the largest growth. In 2015 the growth (in relative percentage increase) for other services outstripped the growth seen for services in London and the South East for the first time since 2011. However in absolute terms the London and South East services still saw the largest growth in the number of passenger kilometres. Passenger kilometres in Great Britain have more than doubled in the last 20 years, and have grown by 18.9% since 2010.

In Austria, both long-distance and regional services have contributed to 14.1% growth in passenger kilometres since 2010. For long-distance services a new line between Vienna and St. Pölten was opened at the end of 2012. This is part of the most important passenger line from Vienna to Salzburg through Linz cutting travel time between Vienna and St. Pölten from 45 to 30 minutes. In addition, in October 2014 a new central railway station opened in Vienna, providing better connections. For regional passenger trains, the city of Vienna has been extending the area of restricted car parking, forcing more commuters to use the railway instead of cars. In other large cities there is a similar trend and more regional train services have been introduced.

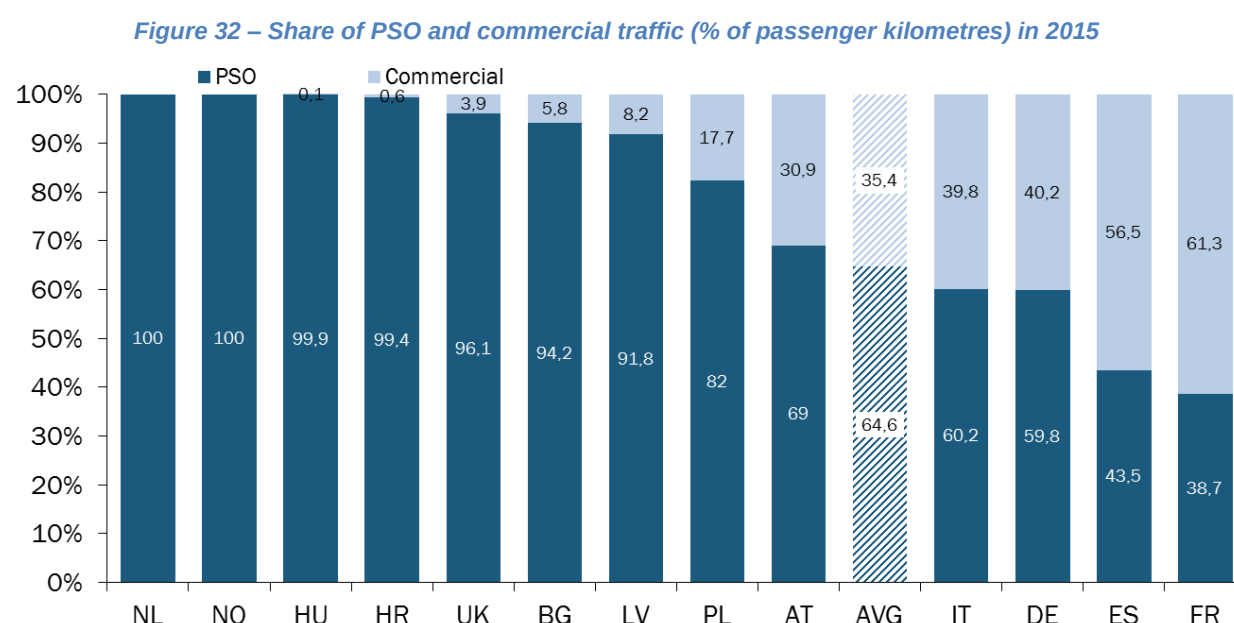
In Germany, both long-distance and regional activities recorded growths in the number of passenger kilometres between 2010 and 2015. In long-distance commercial services, low-load trains are becoming better utilised thanks to flexible price management. Trains in cities are often overloaded in peak times. As a result the Federal Government has increased the regional rail funding in 2016 from 7.3 billion to 8.2 billion Euros, which means that this amount will be made available each year to spend on regional passenger rail to improve both infrastructure and rolling stock. However, rail infrastructure capacity and the number of trains remain constrained and restrain the increase of supply.

In Norway, the reasons for the increase in passenger traffic in 2015 are mainly the same as for 2014 (a new PSO contract for the incumbent operator, new traffic plan and population increase). The domestic incumbent NSB AS reported that the number of trips undertaken by passengers with NSB trains was 65.6 million, a new record and an increase of 5.9% from the previous year. The increase is mainly attributed to the Oslo area.

4.1.2.2.2. PSO and commercial traffic

Regarding passengers by type of traffic⁵², Figure 32 shows the division of passenger kilometres into Public Service Obligations and commercial traffic among the 13 countries for which both information in train kilometres and passenger kilometres has been made available.

135.4 billion commercial passenger kilometres	Traffic in commercial passenger kilometres in 13 European monitored countries in 2015. 35.4% of the total passenger traffic in the included countries.
247.3 billion PSO passenger kilometres	Traffic in PSO passenger kilometres in 13 European monitored countries in 2015. 64.6% of the total passenger traffic in the included countries.



In France and Spain, high speed services for long distance traffic are widespread and may explain the relatively high share of passenger kilometres performed by commercial services.

In Germany only regional passenger services are operated under PSO contracts and therefore all long-distance services are commercial. In Austria, commercial services can be found on the Vienna-Salzburg line, where there is competition between ÖBB and a new entrant WESTbahn (with a 17% SNCF stake), which has been operating since the end of 2011. Other commercial services include international trains which are traditionally popular in Austria, but there is no competition in these markets.

In the United Kingdom, commercial services make up around 4% of the passenger market. These consist of a small number of non-franchised (non-PSO) domestic operators operating in Great Britain and also international services operated by Eurostar. Since 2011 passenger

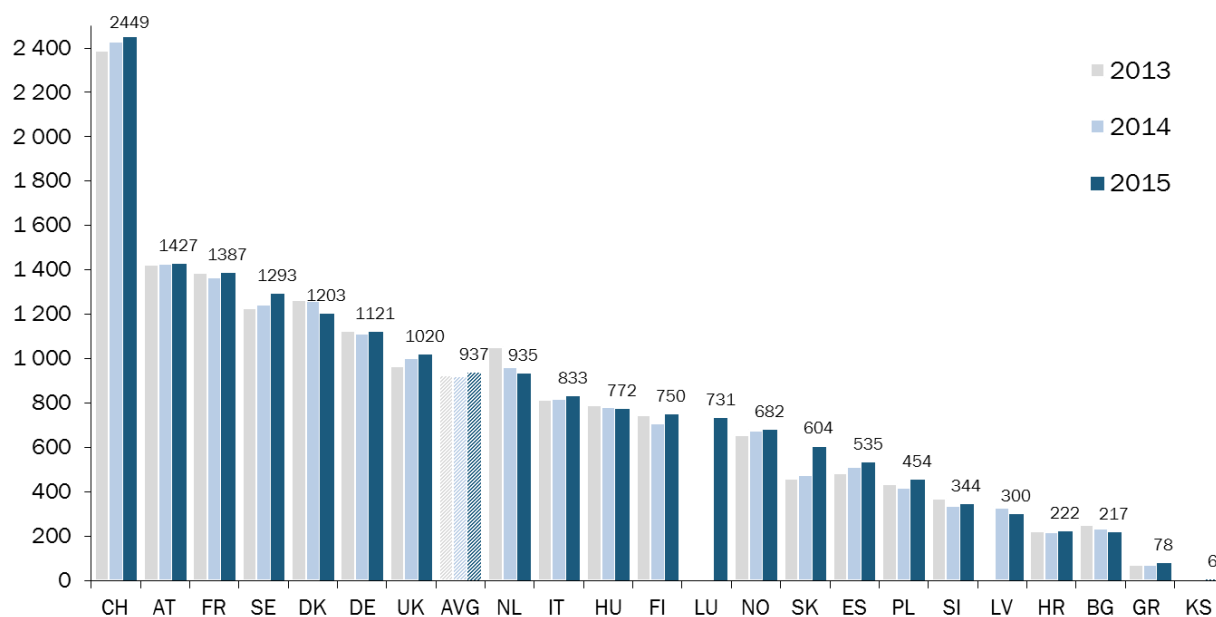
⁵² It includes Austria, Bulgaria, Croatia, France, Germany, Hungary, Italy, Latvia, the Netherlands, Norway, Poland, Spain and the United Kingdom.

kilometres for the non-franchised operators have seen a higher percentage growth than any of the other market sectors in Great Britain.

4.1.2.2.3. *Average distance travelled*

The average distance travelled per resident per year, which is calculated by dividing the total passenger kilometres by the number of residents is provided for 22 monitored countries in Figure 33.

Figure 33 – Average distance travelled per resident per year (kilometres)

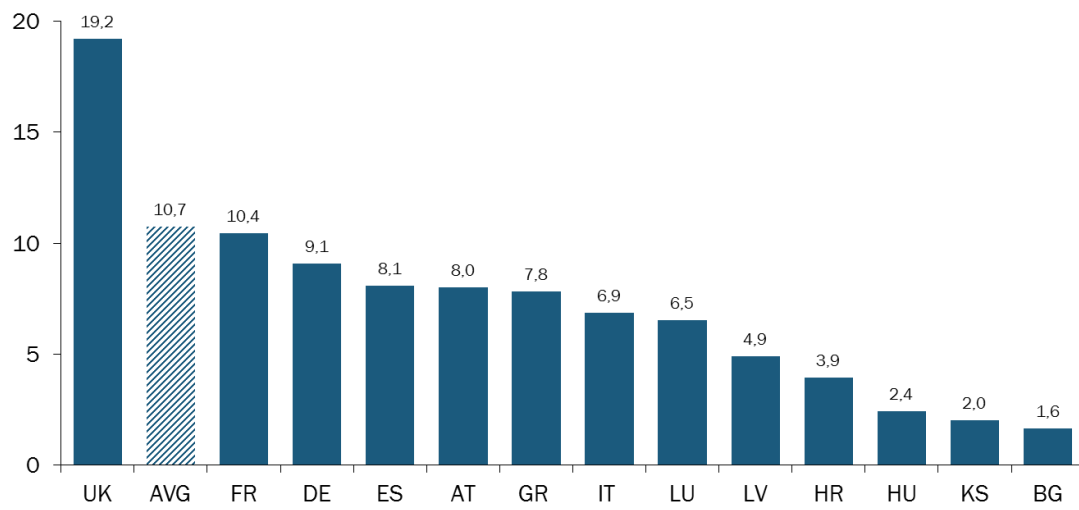


Switzerland, Austria, France, Denmark and Sweden show the highest average distance travelled per resident in 2015. Passenger kilometres in Switzerland rose by almost 2% and average distance travelled per resident also increased as there was only a slight growth in population. The geographical layout and distribution of population in Sweden makes for large labour-market regions and there is also a high propensity for workers to commute long distances in order to obtain better job positions, especially for higher-end jobs in the services sector. Therefore services that may be considered longer distance travel in other countries may in Swedish terms be considered regional.

4.1.2.2.4. *Fare per passenger kilometre*

Figure 34 shows the average travelling fare per passenger kilometre in the 13 covered countries. This is calculated by dividing the revenues of passenger railway undertakings by passenger kilometres in 2015. The average is calculated by dividing total revenues of railway undertakings by total passenger kilometres in the 13 countries.

Figure 34 – Rail travelling fare for passengers (in € cent per passenger kilometre) in 2015⁵³



⁵³ Note that in the United Kingdom, revenue from high-speed services is not included in Figure 34.

4.2. Market share of railway undertakings

This section provides the market shares of railway undertakings in volume (according to traffic) in 2015.

The distinction of market shares between incumbents and non-incumbent railway undertakings is an important indicator to observe the potential incumbent's advantage and the related barriers to entry it may generate for new entrants.

At the national levels, new entrants include both foreign incumbent and non-incumbent railway undertakings.

Even if the calculation of market shares of new entrants is not sufficient to assess the competitive intensity in the market, it gives an indication of the existence of a competitive pressure ('contestable markets'). Therefore and even where new entrants don't compete directly with the incumbent, their market entry in a segment constitutes a 'threat' for the incumbent.

4.2.1. Market share of freight railway undertakings

97.8%	Share of total freight traffic (in train kilometres) that was open to competition in the freight markets monitored in 2015. 724 millions of train kilometres were performed in 2015 in the 23 countries in which competition occurs in the freight market. ⁵⁴
39.8%	Market share of non-incumbent railway undertakings in freight train kilometres in 22 monitored countries in 2015. ^{55 56}
41.5%	Market share of non-incumbent railway undertakings in tonne kilometres in 18 monitored countries in 2015. ⁵⁷

Figure 35 presents the market share of domestic incumbent and new entrants (including foreign incumbents and non-incumbent railway undertakings), both in freight train kilometres⁵⁸ and net tonne kilometres.

⁵⁴ The categories of countries according to the level market opening in the freight market are detailed in Section 6. Estonia is excluded from the sample.

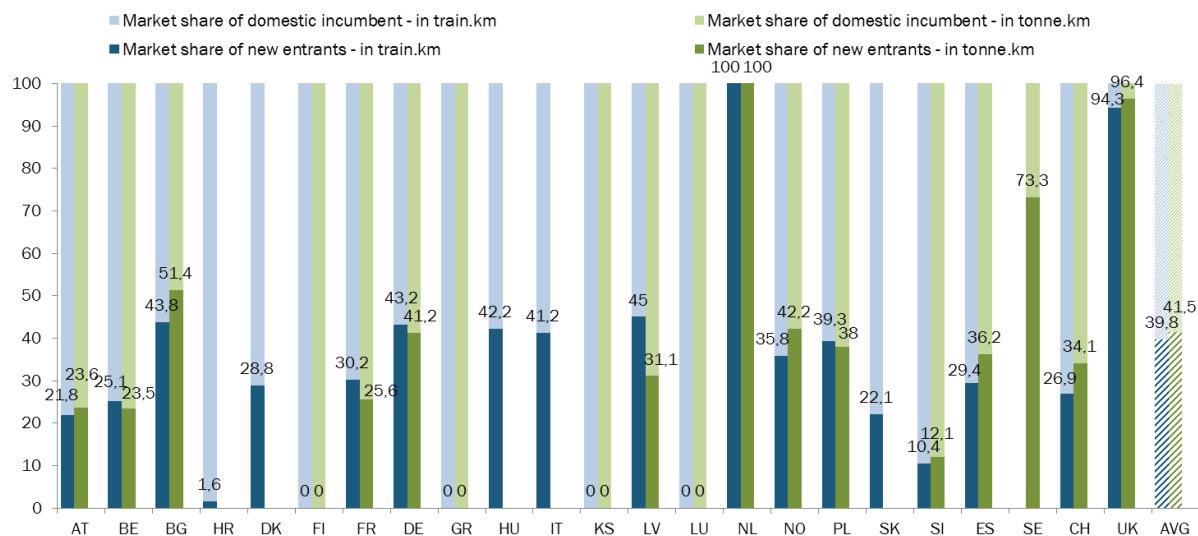
⁵⁵ Data for Sweden in train kilometre are missing for freight market.

⁵⁶ The market share of non-incumbent railways undertakings in the European freight market is calculated by dividing total freight train kilometres performed by non-incumbent railway undertakings by total freight train kilometres in monitored countries. In other words, this figure excludes domestic and foreign incumbents at the European level. The same methodology is used to calculate the market share of non-incumbent railway undertakings in tonne kilometres.

⁵⁷ Data in tonne kilometres for Croatia, Denmark, Estonia, Hungary, Italy and Slovakia are missing.

⁵⁸ All the data used to calculate those market shares were provided by the regulatory bodies for the year 2015, except data for Denmark (we used historical data from 2014). Estonia is not included into this section due to missing data.

Figure 35 – Market share of freight railway undertakings in 2015



At the European level, the market share of non-incumbent railway undertakings in freight train kilometres is 39.8%.⁵⁹ In all the monitored countries freight markets have been liberalised, both at the international and national levels. However new entrants have not entered all markets. This is the case in Finland for the international market and in Luxembourg in the domestic market.⁶⁰ It indicates that barriers to market entry other than legal ones may explain the lack of competition in the rail freight market.

The Netherlands and the United Kingdom have by far the most open freight markets, both in train and tonne kilometres, with market shares of new entrants of around 100% and 95% respectively. In the Netherlands, the former incumbent is still the largest company, but it was taken over by Deutsche Bahn, the German incumbent railway undertaking. The rail freight market in the United Kingdom was one of the earliest to be liberalised (in 1993), granting a licence to a first new entrant in 1995. The markets in Sweden (domestic market only) and Germany were also some of the earliest to be liberalised. Germany and Sweden both have relatively high market shares for new entrants (foreign incumbents and non-incumbent railway undertakings). The later countries to grant licences to new entrants, Croatia, Finland, Greece and Kosovo have a zero or very low market share for new entrants.⁶¹

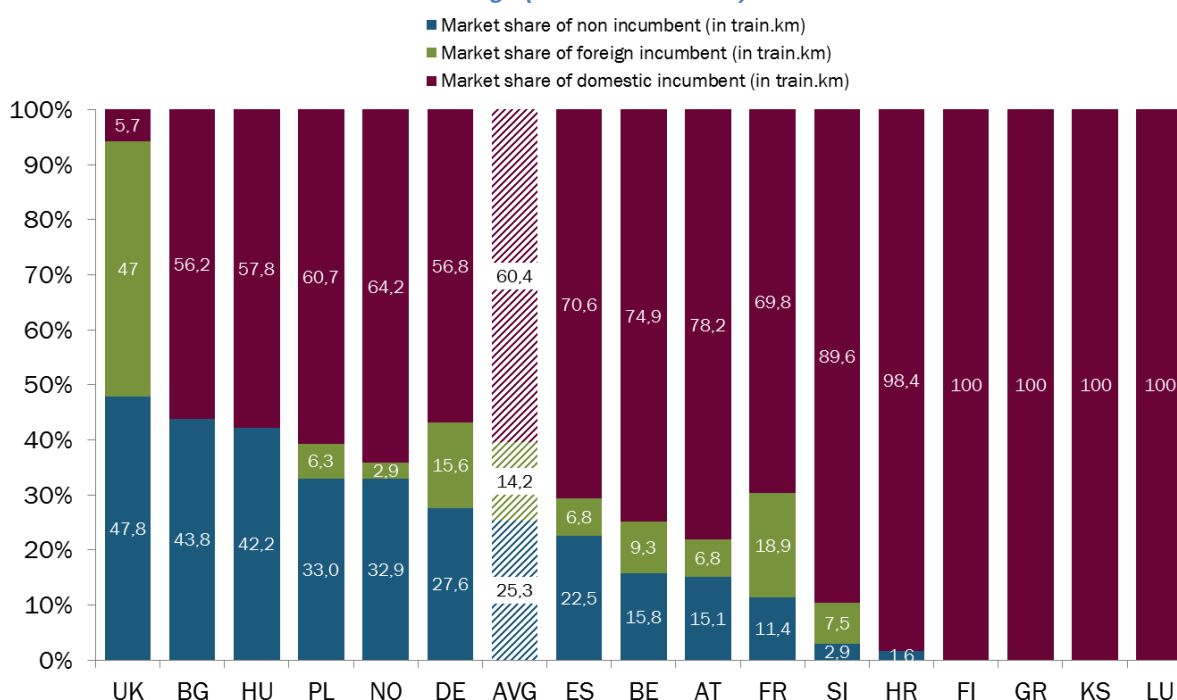
Among new entrants, it is interesting to distinguish foreign incumbents from non-incumbent railway undertakings to better analyse the type of competition in the freight market. Figure 36 shows the markets shares of domestic incumbent, foreign incumbent and non-incumbent freight railway undertakings in freight train kilometres in 16 monitored countries.

⁵⁹ This figure represents the total market share of non- incumbent railway undertakings in the European market (considering the countries for which the information is available).

⁶⁰ Date of first new entrant in the international freight market was not available for Kosovo.

⁶¹ Market shares are null for new entrants except in Croatia where they are of 1.6%.

Figure 36 – Market shares of domestic incumbent, foreign incumbent and non-incumbent freight railway undertakings (in train kilometres) in 2015



New entrants in rail freight markets are mainly non-incumbent railway undertakings (25.3% of market shares in 2015 and 14.2% for foreign incumbents in freight train kilometres).⁶²

The market in the United Kingdom has the highest market share for non-incumbent companies (47.8% of the total train kilometres). In Bulgaria, Croatia and Hungary, all freight train kilometres that are not operated by the domestic incumbent are performed by non-incumbent companies.

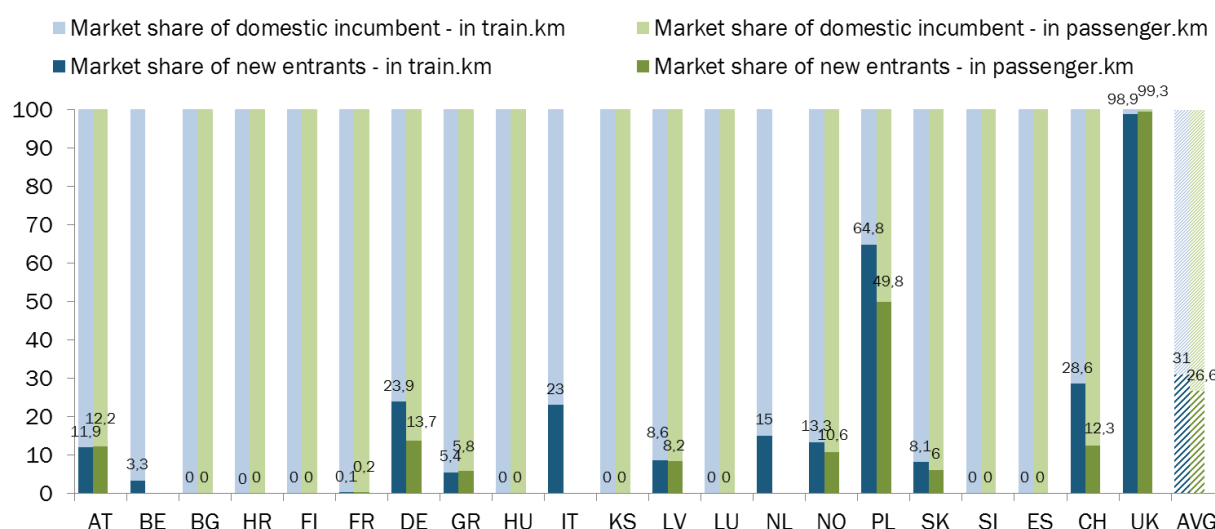
⁶² Note that the sum of market shares of non-incumbents and foreign incumbents in figure Figure 36 is not equal to the market share of new entrants shown in Figure 35 because it was not possible to split market shares between foreign incumbents and non-incumbents in some countries.

4.2.2. Market share of passenger railway undertakings

31%	Market share of non-incumbent railway undertakings in passenger train kilometres in 21 European monitored countries in 2015. ⁶³
26.6%	Market share of non-incumbent railway undertakings in passenger kilometres in 18 European monitored countries in 2015.

Figure 37 – Market share of passenger railway undertakings (in passenger train kilometres and passenger kilometres) in 2015. Figure 37 presents the market share of domestic incumbent and new entrants (including foreign incumbent and non-incumbent railway undertakings) in total passenger train kilometres and in total passenger kilometres.

Figure 37 – Market share of passenger railway undertakings (in passenger train kilometres and passenger kilometres) in 2015



At the European level, the market share of non-incumbent railway undertakings in passenger train kilometres is 31% and 26.6%⁶⁴ in passenger kilometres.

As for the freight market, market shares of new entrants in the passenger market are the highest in the market of the United Kingdom (almost 100%). This market was the first to be

⁶³ The market share of non-incumbent railways undertakings in the European passenger market is calculated by dividing total passenger train kilometres performed by non-incumbent railway undertakings by total passenger train kilometres in monitored countries. In other words, this figure excludes domestic and foreign incumbents at the European level. The same methodology is used to calculate the market share of non-incumbent railway undertakings in passenger kilometres.

⁶⁴ These figures represent the total market share of non-incumbent railway undertakings in the European market (considering the countries for which the information is available).

liberalised (in 1993), with the first licences granted between 1994 and 1998. The other country to be liberalised relatively early (Germany in 1994) also demonstrates a high market share for new entrants (almost 24% of train kilometres).

In Poland high market share of new entrants is due to the fact that regional services are on the one hand operated by new regional companies formed by regional authorities and on the other by Przewozy Regionalne, a company that stems from the incumbent but was municipalised by regional authorities in 2008 and ceased to have ownership relations with the incumbent. In 2015, 51% of its ownership was bought by the state and 49% remained in the hands of regional authorities, but still there were no ownership relations with the incumbent.

36.4%	Market share of non-incumbent railway undertakings in PSO passenger train kilometres in 21 European monitored countries in 2015. ⁶⁵ Considering only the liberalised PSO markets, the market share of non-incumbent railway undertakings would be 48% . ⁶⁶
4.8%	Market share of non- incumbent railway undertakings in commercial passenger train kilometres in 19 European monitored countries in 2015. ⁶⁷ Considering only the liberalised commercial markets the market share of non-incumbent railway undertakingsnew entrants would be 5.6% .

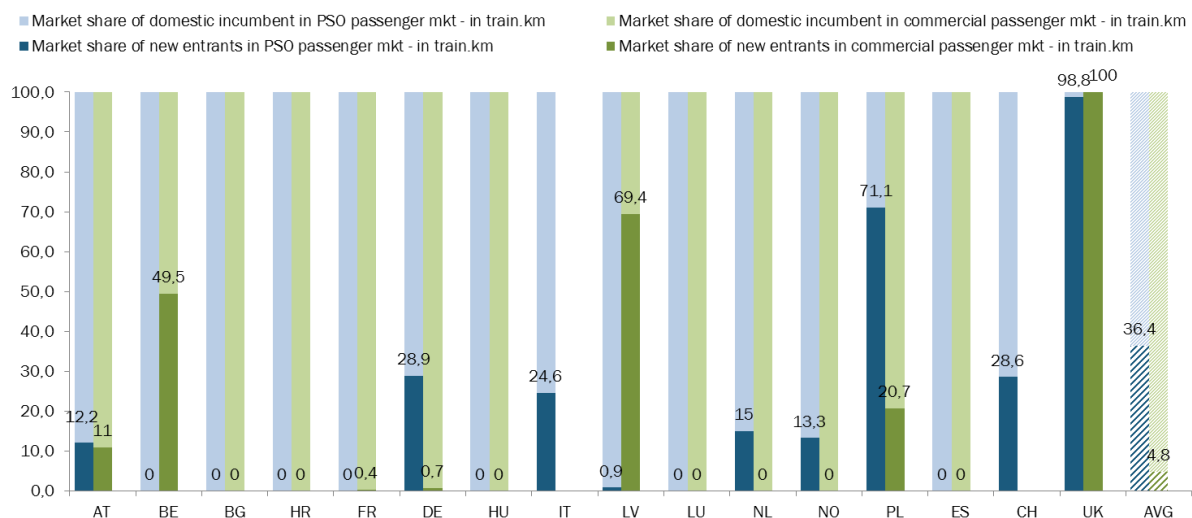
Figure 38 presents market shares of companies separately for PSO and commercial passenger activities in 2015.

⁶⁵ Data for Denmark, Estonia, and Sweden are missing.

⁶⁶ At the European level, 36.4% is calculated by dividing the total PSO train kilometres performed by non-incumbent railway undertakings (related neither to a domestic nor to a foreign incumbent) by the total PSO train kilometres. 48% is calculated by taking into account in the denominator of the ratio only countries where competition for the market is legally allowed (with mix or competitive awards). The same methodology is used for commercial services.

⁶⁷ Data for Denmark, Estonia, Italy, Slovakia and Sweden are missing.

Figure 38 - Market shares of commercial and PSO railway undertakings (in passenger train kilometres)



The overall data for the market share of new entrants (Figure 37) veils a high level of disparity between the market shares for PSO and commercial passenger activities.

Box 1 below provides details about national specificities that are needed to understand Figure 38.

Box 1 – National specificities: positive market shares of new entrants in PSO markets not legally open to competition

In four countries (Austria, Italy, Latvia and Switzerland), new entrants have a positive market share on the passenger market, whereas the market is not open to competition (neither *de jure* nor *de facto*), as shown in Section 3.1.2.

In Austria, there are several small railway undertakings which operate trains mostly on their own infrastructure but they also use small sections of the incumbent infrastructure. These railway undertakings were directly awarded PSO contracts for their services. Moreover, two PSO services have been directly awarded to foreign companies: the German incumbent operates PSO passenger services on an isolated part of the Austrian rail infrastructure which can only be reached via Germany and another foreign railway undertaking operates PSO trains from Germany to Austria.

In Italy, the PSO market is open to competition but the only one contract awarded by competitive tender has been won by the domestic incumbent. Therefore, the positive market share for new entrants in the PSO market comes from historical PSO contracts that have been directly awarded to local railway undertakings.⁶⁸

In Latvia's PSO market, a new railway undertaking entered the market in September 2001. The PSO contract has been directly awarded to this company for operating regional services, i.e. without competitive tender.

⁶⁸ One of these local railway undertakings is actually related to the domestic incumbent. However, it is not possible to isolate the market share of this company at this stage.

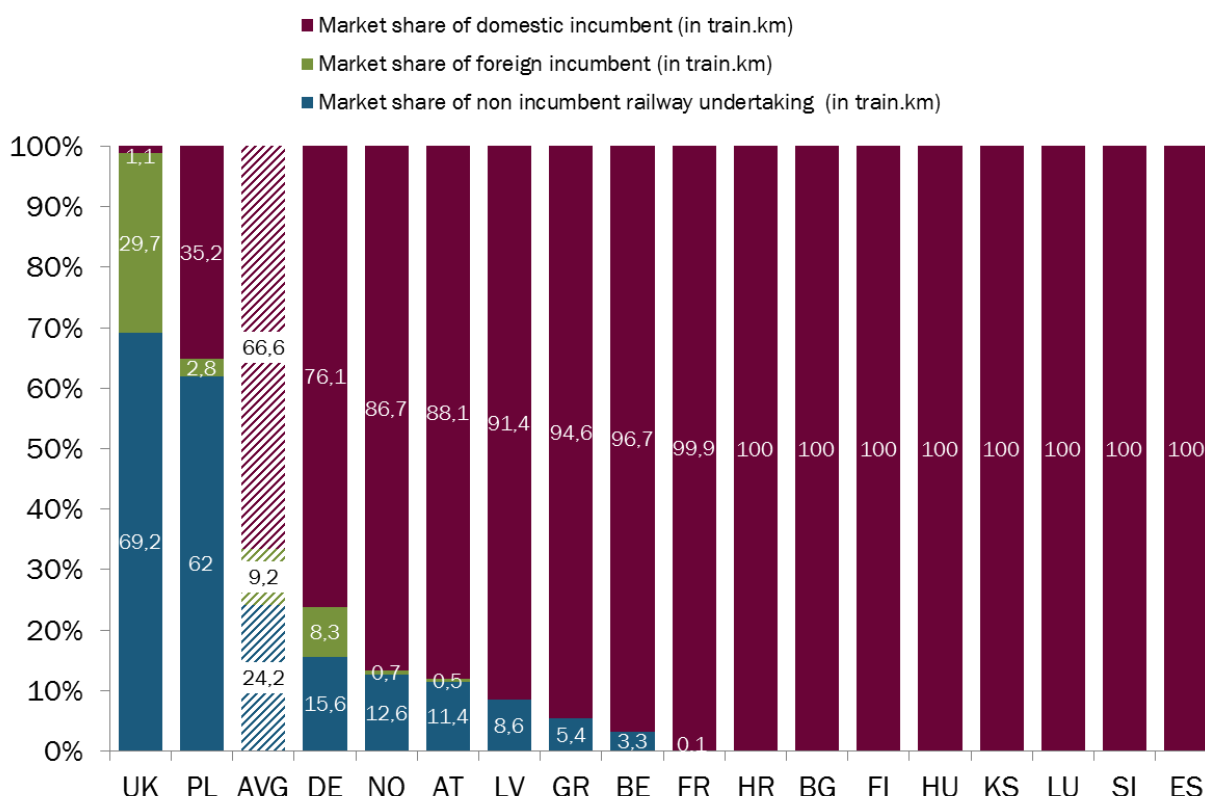
In Switzerland, although the possibility of tendering PSO contracts legally exists, only direct awards have been used. However, some PSO contracts have been directly awarded to new entrants, which explain their positive market share in the PSO passenger market.

Concerning commercial activities:

- In Switzerland, commercial passenger activities only exist in irregular timetable traffic (e.g. historical or event services), that are out of scope of this report.
- In the Netherlands and Norway, there is no commercial passenger activity.
- In Hungary, the domestic incumbent operates commercial services but with a market share very close to zero. The exact amount is however not available.

Among new entrants, it is interesting to distinguish foreign incumbents from non-incumbent railway undertakings to better analyse the type of competition in the passenger market. In that respect, Figure 39 shows the market shares of domestic incumbent, foreign incumbent and non-incumbent passenger railway undertakings in passenger train kilometres in 15 monitored countries.

Figure 39 – Market shares of domestic incumbent, foreign incumbent and non-incumbent passenger railway undertakings in 2015



As for the freight market, new entrants in passenger markets are mainly non-incumbent railway undertakings (with 24.2% of market share in average in 2015 and 8.3% for foreign incumbents).⁶⁹

In the United Kingdom and Poland, the two countries where market shares for new entrants are the highest, non-incumbent railway undertakings operated 69.2% and 62% of train kilometres respectively in 2015. Note that in Poland, those non-incumbent railway undertakings are mainly public regional companies. In the French market, open-access is allowed only for international services, explaining the positive although very low market share of foreign incumbents in France (0.1% of train kilometres). It is worth noting that Thello, a subsidiary of the Italian incumbent, does not compete directly with the French incumbent since it operates a specific international service between the two countries that is not served by the French incumbent. However, Thello is counted here as a new entrant. More generally, even if the calculation of market shares of new entrants is not sufficient to assess the competitive intensity in the market, it gives an indication of the existence of a competitive pressure ('contestable markets'). Therefore, even where new entrants don't compete directly with the incumbent, their market entry in a segment constitutes a 'threat' for the incumbent.

⁶⁹ Note that the sum of market shares of non-incumbents and foreign incumbents in figure Figure 39 is not equal to the market share of new entrants shown in Figure 37 because it was not possible to split market shares between foreign incumbents and non-incumbents in some countries.

5. Market players

This section focuses on railway undertakings operating in the European rail market for freight and/or for passenger services in the 24 monitored countries.

In order to assess the attractiveness of rail markets, it is first interesting to analyse the market share of new entrants in the light of the size of the market and the number of market players competing in this market. Among the market players, it is also of interest to differentiate incumbent from non-incumbent railway undertakings as explained in Section 4.2.

Finally, by providing a European overview of railway undertakings' geographical area of operations, the analysis shows to what extent market players are moving in the European rail market. This approach illustrates the comparative dynamism of incumbent and non-incumbent railway undertakings in the European rail market, as a first step to assess barriers to entry in rail markets.

The full dataset on information on railway undertakings built to provide this section can be downloaded on the IRG-Rail website.⁷⁰

5.1. Overview of market players

As underlined in Section 1.2, the following definitions are used:

- Incumbents are railway undertakings that were (or still are) part of a state-controlled railway monopoly, including all related companies.
- Companies related to an incumbent are railway undertakings for which the main shareholder is an incumbent. The main shareholder is defined as owning at least 50% of the company. When the main shareholder of the railway undertaking is itself owned at 100% by an incumbent, we refer to the mother undertaking above. Minority shareholdings by incumbents in other railway undertakings are not considered in this report.⁷¹
- Non-incumbent railway undertakings are those companies that are neither related to a domestic incumbent nor to a foreign incumbent.
- From a national perspective, "new entrants" include both foreign incumbent and non-incumbent railway undertakings.
- A railway undertaking is reported as being "public" when a public authority (e.g. State, regional authority) owns 50% or more of this company. Otherwise, the company is considered as being private.

⁷⁰ Available at <http://www.irg-rail.eu/public-documents/2017/>

⁷¹ i.e. railway undertakings for which an incumbent has a minority shareholding are counted as non-incumbent railway undertakings.

5.1.1. Number of railway undertakings

535

**railway
undertakings**

Total number of railway undertakings operating in 2015 in the 24 European countries of our sample.⁷²

Figure 40 shows the repartition of railway undertakings between passenger and/or freight services (in number and percentage of railway undertakings). The total number of railway undertakings includes all freight and passenger companies actually operating in the 24 monitored countries and having an 'active licence' in 2015 (i.e. railway undertakings having a licence but not running on the network are excluded).

Those railway undertakings operating only 'other traffic', i.e. neither freight nor passenger (e.g. maintenance works), are also excluded from the calculation. Finally, railway undertakings operating in a country only through a partnership with the incumbent are not taken into account.

Figure 40 – Number and percentage of railway undertakings per type of service in 2015

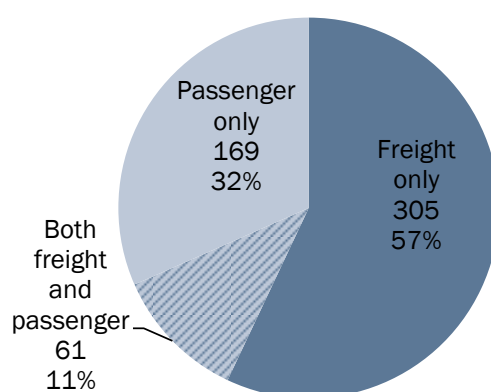
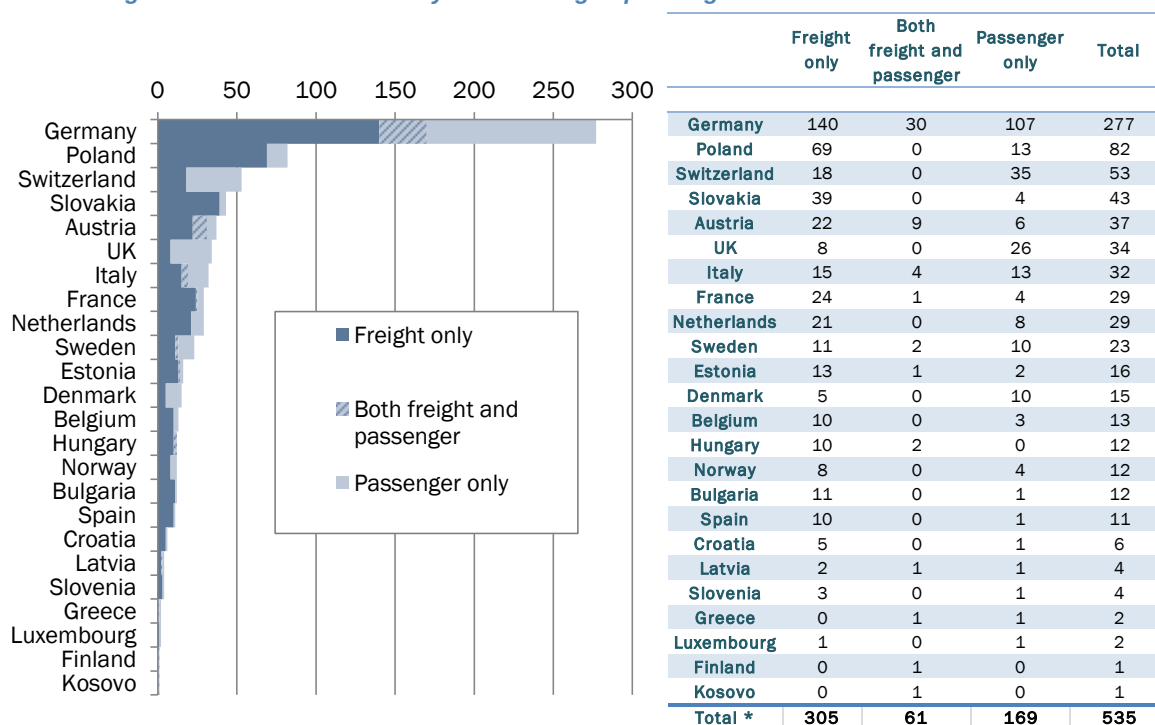


Figure 41 shows the number of railway undertakings in each monitored country that operate freight services only, passenger services only or both types of operations.

In this figure, a railway undertaking is shown in each of the different countries it operates in (e.g. a freight railway undertaking operating between Germany and Poland is counted once in the total for freight undertakings in Germany and once in the total for freight undertakings in Poland).

⁷² Subsidiaries are not double-counted in this total if they belong (50% or more) to a parent incumbent railway undertaking active in a monitored country i.e. when both an incumbent and its subsidiary operate in one country, only one single railway undertaking is counted.

Figure 41 – Number of railway undertakings operating in each monitored markets in 2015



* total number of “distinct” railway undertakings, i.e. with no double-counting or railway undertakings operating in more than one monitored country.

The total number of railway undertakings per country ranges from one in Finland and Kosovo to 277 in Germany. Slovakia, Bulgaria and Spain have the highest proportion of railway undertakings operating exclusively in the freight market (more than 90% of the total number of railway undertakings). In Hungary no railway undertaking is operating exclusively in the passenger market.

5.1.2. Type of railway undertakings

To determine who the market players are, it is interesting to distinguish between incumbent and non-incumbent railway undertakings at the European level. At the national level new entrants may be either non-incumbent railway undertakings or foreign incumbents. Both types of companies may enter a market and compete with the domestic incumbent.

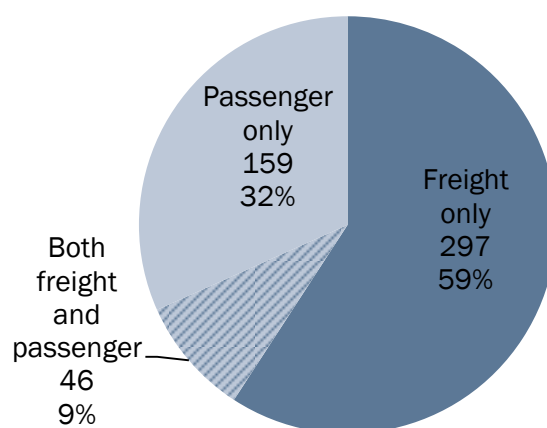
502

non-incumbent railway undertakings

Total number of railway undertakings operating in Europe that are not related to an incumbent, neither domestic nor foreign (94% of total number of railway undertakings).

Figure 42 shows the repartition of non-incumbent railway undertakings between passenger and/or freight services (in number and percentage of non-incumbent railway undertakings).

Figure 42 - Number and percentage of non-incumbent railway undertakings per type of service in 2015



Furthermore, one can distinguish between public and private railway undertakings, again to show which type of railway undertakings compete in the European rail market.

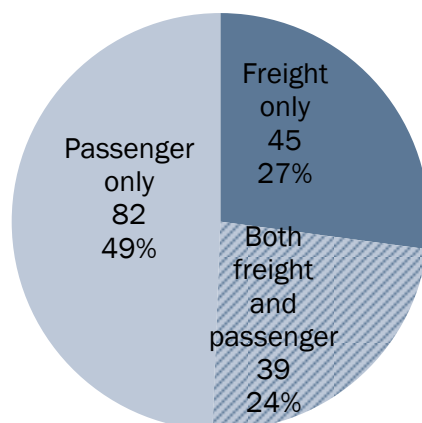
166

public railway undertakings

Total number of railway undertakings owned by a public authority (31% of total number of railway undertakings).

Figure 43 shows the repartition of public railway undertakings between passenger and/or freight services (in number and percentage of public railway undertakings).

Figure 43 - Number and percentage of public railway undertakings per type of service in 2015



5.2. Market players in the freight market

This section details the type of railway undertakings operating in the freight rail market and then focuses on the way the railway undertakings have moved across the European freight rail market (in terms of the countries in which they operate).

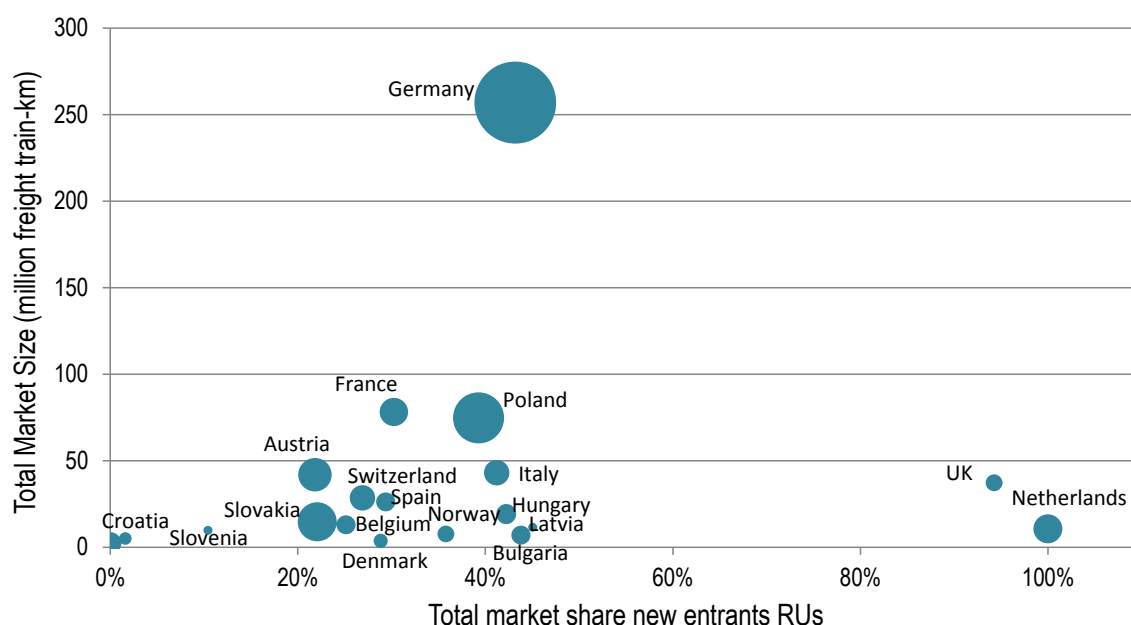
5.2.1. Market shares and railway undertakings in the freight market

Figure 44 presents the market share of new entrants (foreign incumbent and non-incumbent railway undertakings) in total freight train kilometres⁷³ in the light of the size of the market and the number of railway undertakings.

- The bubble size indicates the number of new entrants;
- the x-axis shows the market share gained by new entrants;
- the y-axis shows the the total size of the market.

For example, in Germany, 167 new entrants share 43% of the total train kilometres in the freight market.

Figure 44 – Freight market size and market share (in train kilometres) of new entrants in 2015

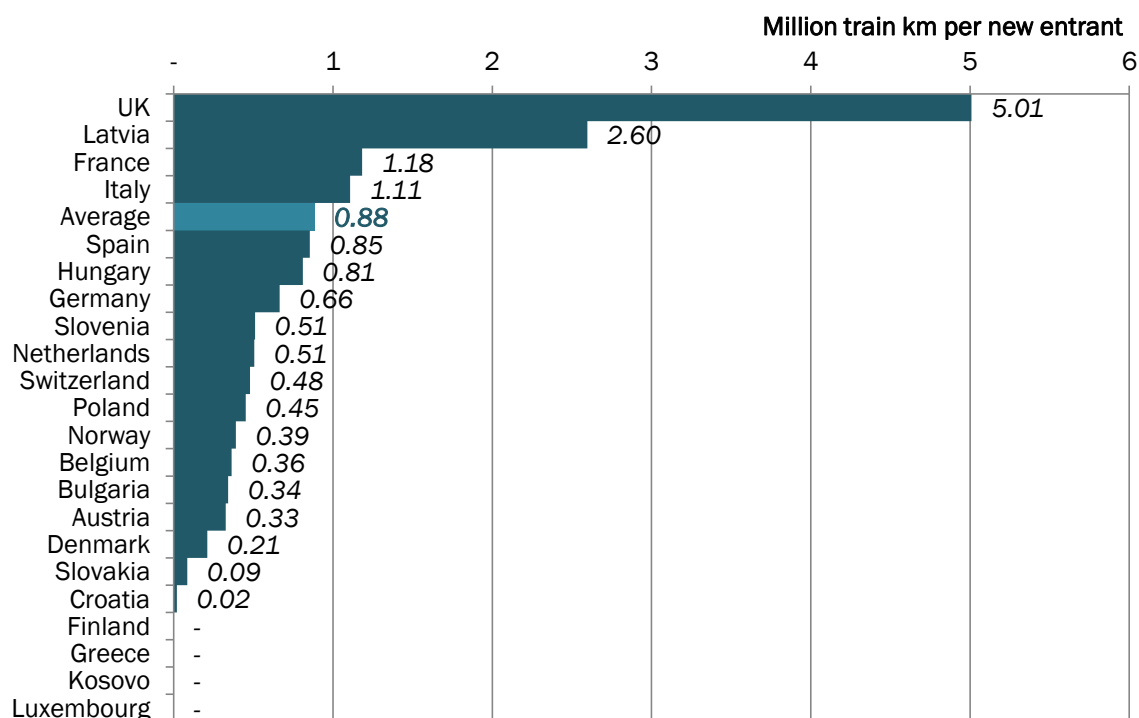


The market share of new entrants ranges between 20% and 50% of the total freight market for the majority of monitored markets. This market share is above 90% in the United Kingdom and *a fortiori* in the Netherlands where there is no domestic incumbent in the freight market. The market share is also very high in Latvia, Bulgaria and Hungary, but with a size of the market relatively small compared to Poland and Germany. The market share of new entrants represents also about 40% of the market in these two countries, where more than 60 different non-incumbent railway undertakings operate in the freight market.

⁷³ Data is missing or incomplete for Sweden and Estonia.

Figure 45 shows the ratio between the market size (in train kilometres) operated by new entrants (i.e. foreign incumbents and non-incumbents railway undertakings) and the number of new entrants. Therefore it represents the average market share for new entrants per country. The largest markets per new entrant are those in the United Kingdom and Latvia, with more than two million freight train kilometres operated per new entrant. New entrants in France, Italy, Spain and Hungary all have higher average train kilometres than Germany, which may be expected given the high number of undertakings operating on the German market. On average⁷⁴, about 0.88 million train kilometres are operated per new entrant on the monitored freight markets.

Figure 45 – Average size of freight market per new entrants per country (in train km per new entrant)



Annex 5 provides information on revenue of railway undertakings.

⁷⁴ Average calculated using train kilometres from only those countries where there is at least one new entrant on the market.

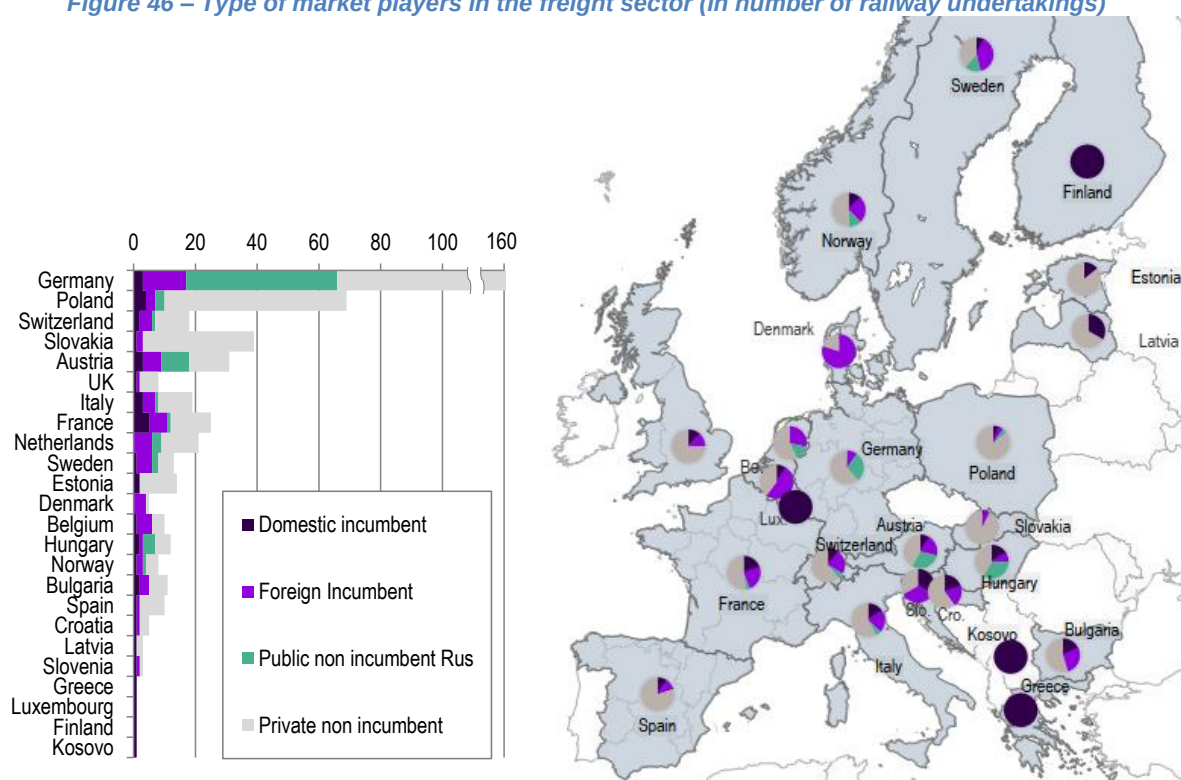
5.2.2. Type of railway undertakings operating in the freight sector

Among railway undertakings operating freight services (366 railway undertakings)⁷⁵ Figure 46 shows in each country the share (in number) of:

- domestic incumbent railway undertakings,
- foreign incumbent railway undertakings,
- public non-incumbent railway undertakings,
- private non-incumbent railway undertakings.

This section focuses on the number and type of railway undertakings, without taking market shares of railway undertakings into account. Those market shares have been provided in section 4.2.1.

Figure 46 – Type of market players in the freight sector (in number of railway undertakings)



Compared to the passenger market (Section 5.3) there is a higher proportion of non-incumbent railway undertakings in the freight market. In the Netherlands and Denmark there are no freight services operated by a domestic incumbent. In Germany the new entrants represent 98% (167 railway undertakings, including foreign incumbent and non-incumbent railway undertakings) of the market players and in Slovakia the share is 97% (38 new entrants). However, those 98% of new entrants in Germany provided only 41% of train

⁷⁵ i.e. the 305 railway undertakings operating in the freight market only and the 61 companies operating in both passenger and freight markets.

kilometres as shown in section 4.2.1. In other words and as noted above, the number of railway undertakings is not sufficient to assess the level of competition in the market. However, it enables us to indicate the existence of a competitive pressure ('contestable markets').

In Greece, Luxembourg, Finland and Kosovo, the freight market is fully operated by domestic incumbents.

The highest share of freight private railway undertakings is observed in Slovakia with 92% of private companies (36 companies), followed by Estonia with 86% of private companies (12 companies) and Poland with 86% (59 companies).

5.2.3. Geographical movements of freight railway undertakings in the European market

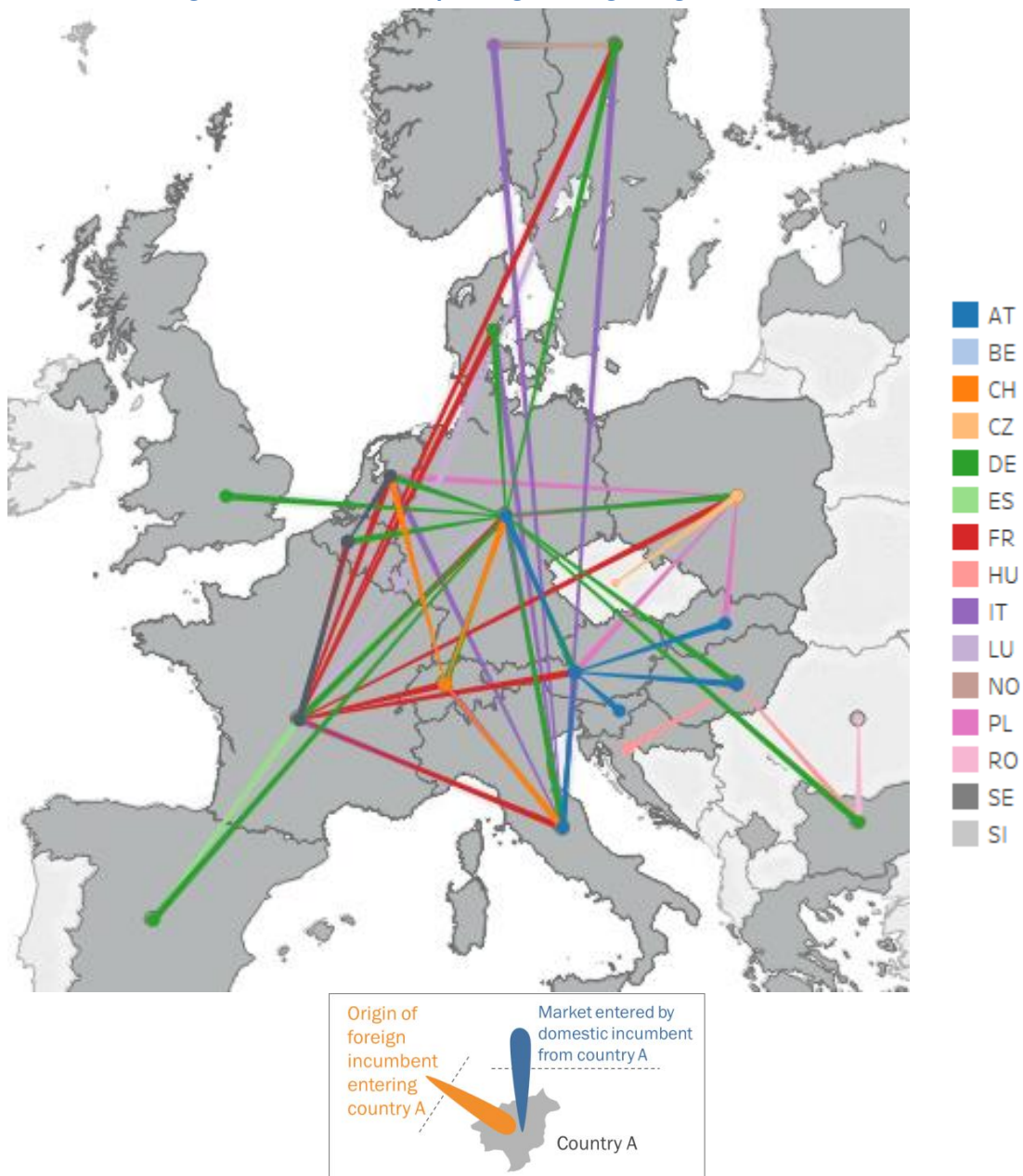
When considering the location of domestic incumbents operating abroad, Figure 47 shows that 15 incumbents entered another freight market than their "historic" one.⁷⁶ This does not include those operations performed abroad by railway undertakings through minority shareholding in other companies.

All foreign railway undertakings operating in the European monitored market are considered, regardless of their nationality (even if the foreign undertaking originates from a non-monitored country). For instance, a railway undertaking from Portugal (which is not a monitored country) operating in Spain (which is a monitored country) is taken into account. However, when a railway undertaking from one of the monitored countries operates in a non-monitored country, this movement is not considered. For instance, a Spanish railway undertaking operating in Portugal is not taken into account.

All types of services are taken into account without distinction; i.e. the following descriptions do not distinguish between domestic, international or transit freight services that are operated abroad by railway undertakings.

⁷⁶ This number of incumbents operating abroad includes the Czech and the Romanian incumbents which are out of our sample but which operate in some monitored markets: in Croatia and Bulgaria for the Romanian incumbent and in Poland for the Czech one.

Figure 47 – Incumbents operating in foreign freight markets in 2015



Incumbents have entered more markets in the freight sector than in the passenger sector (see Section 5.3.4). This is likely due to the fact that freight markets have been liberalised in a larger number of countries, as described in Section 3.

Countries may be sorted into three categories according to the level of entry of foreign incumbent competitors and the level of entry of the domestic incumbent in other European countries, as shown in Figure 48 to Figure 50.

Key for Figure 48 to Figure 50

Blue tracks represent domestic incumbents (or any related railway undertakings) operating abroad in the European rail market monitored. Orange tracks represent foreign incumbents (or any related railway undertakings) operating in the domestic freight market.

- the smallest part of tracks represents the origin of the undertaking;
- the largest part of tracks represents the market that has been entered by the undertaking.

Example for Spanish freight market players

The Spanish incumbent operates freight traffic in France

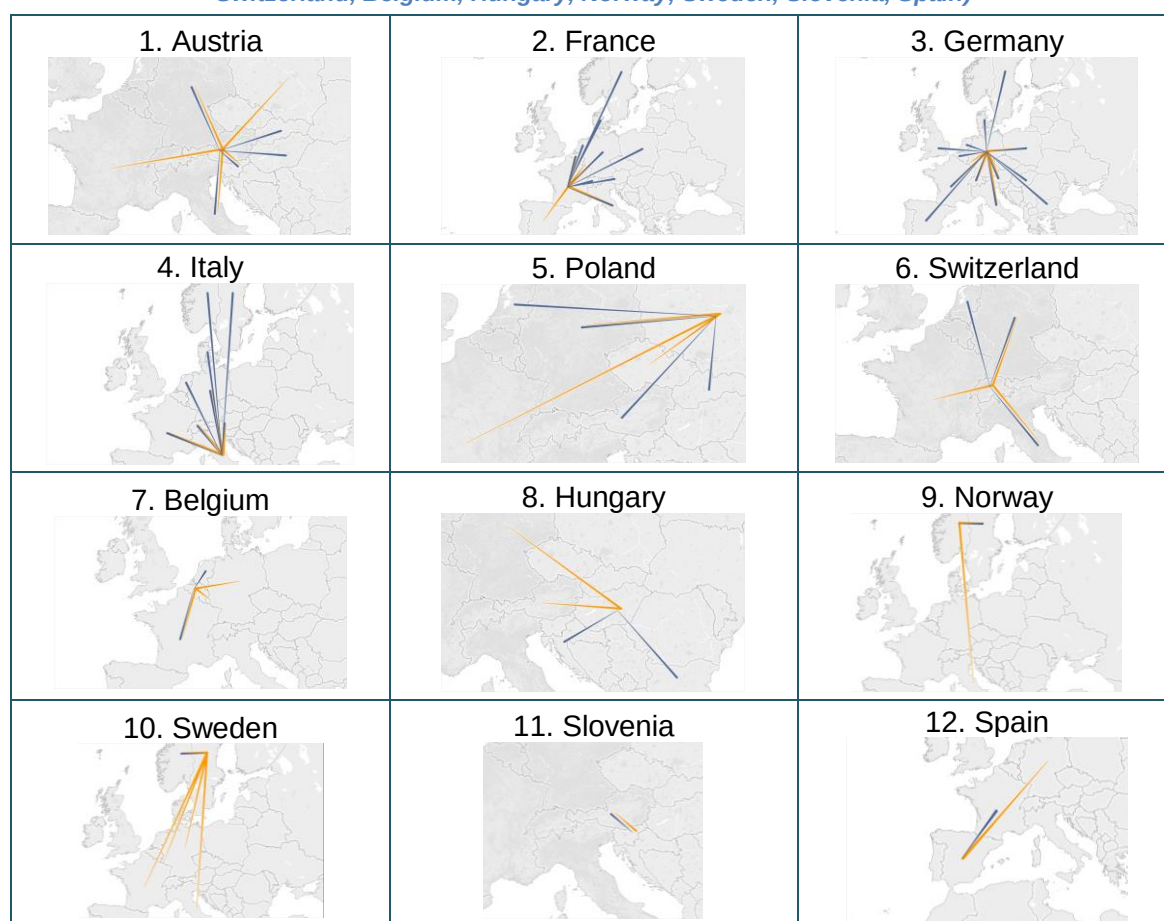


A railway undertaking belonging to the German incumbent operates freight traffic in Spain



Figure 48 details 12 monitored countries for which the domestic incumbent has entered at least one foreign freight market and also had the domestic market entered by at least one foreign incumbent.

Figure 48 – 12 countries where at least one foreign incumbent entered and for which the domestic incumbent entered at least one other European markets (Austria, France, Germany, Italy, Poland and Switzerland, Belgium, Hungary, Norway, Sweden, Slovenia, Spain)



1. Austria  <i>The Austrian incumbent RCA (Rail Cargo Austria AG), owned by ÖBB Holding (State-owned company), operates abroad directly or via subsidiaries in Slovakia, Slovenia, Hungary, Germany and Italy. The Austrian incumbent also directly or via subsidiaries operates freight traffic in Czech Republic and Romania (who are not covered in this report). Note that the Austrian incumbent owns the Hungarian incumbent, which itself owns 50% of Rail Cargo Carrier-Bulgaria EOOD which operates in Bulgaria (i.e. the Austrian incumbent also indirectly operates in Bulgaria).</i> <i>In turn, the Austrian market has been entered by the Polish incumbent, the German incumbent and its subsidiaries, the French incumbent via a Swiss subsidiary and the Italian incumbent.</i>	2. France  <i>The French incumbent in the freight market (SNCF Fret) entered 9 countries in Europe: Austria, Belgium, Switzerland, Germany, Denmark, Italy, Netherlands, Poland, and Sweden.</i> <i>The French market has been entered by 5 foreign incumbents from Germany, Spain, Luxembourg, Italy and Belgium.</i>	3. Germany  <i>The German incumbent (Deutsche Bahn AG) entered 13 foreign freight markets in Austria, Belgium, Bulgaria, Switzerland, Denmark, Spain, France, Hungary, Italy, Netherlands, Poland, Sweden and UK.</i> <i>The German market has been entered by the Austrian, Swiss, French, Italian, Luxembourgian and Polish incumbents.</i>
4. Italy  <i>The Italian incumbent is operating in Austria, Switzerland, Germany, Denmark, France, Netherlands, Norway and Sweden.</i> <i>4 foreign incumbents have also entered the Italian market from France, Austria, Germany and Switzerland.</i>	5. Poland  <i>The Polish incumbent entered the freight markets in Austria, Germany, Netherlands and Slovakia.</i> <i>The Polish market has been entered by the incumbents from Czech Republic, Germany and France.</i>	6. Switzerland  <i>The Swiss incumbent entered 3 markets abroad, in Germany, Italy and Netherlands.</i> <i>3 foreign incumbents also operate in Switzerland from France, Germany and Italy.</i>
7. Belgium  <i>The Belgian incumbent operates in France and the Netherlands.</i> <i>3 foreign incumbents also operate in Belgium, from Germany, France and Luxembourg.</i>	8. Hungary  <i>The Hungarian domestic incumbent operates in Croatia and Bulgaria.</i> <i>The German incumbent operates in Hungary. The Austrian incumbent is shown as operating in Hungary as the Hungarian incumbent is owned by the Austrian.</i>	9. Norway  <i>The Norwegian incumbent operates in Sweden.</i> <i>Similarly the Swedish incumbent operates in Norway, as does the Italian incumbent.</i>
10. Sweden  <i>The Swedish incumbent operates in Norway.</i> <i>The domestic market has been entered by 5 foreign incumbents, from Germany, France, Italy, Luxembourg and Norway.</i>	11. Slovenia  <i>Slovenia operates with its domestic incumbent (SZTP - SŽ Tovorni promet d.o.o.) abroad only in Austria.</i> <i>Conversely, the Austrian incumbent (RCA - Rail Cargo Austria) operates in Slovenia.</i>	12. Spain  <i>The Spanish incumbent operates only in one foreign market, France.</i> <i>The German incumbent is the only foreign incumbent operating in Spain.</i>

Nine of the 12 countries in this group (Germany, France, Poland, Italy, Austria, Switzerland, Sweden, Hungary and Spain) are in the top 10 monitored countries in terms of freight market size (in freight trains km); with the United Kingdom being the only country of those with the larger freight markets not included in this group. For most of the countries in this group the freight market has been open to competition for at least 10 years (up to 20 years in Germany), and with the most recent legal liberalisation of the domestic freight market occurring in 2007 in Slovenia, Norway and Belgium.

The entry of foreign incumbents into domestic markets seems, at least in part, to be driven by geographic location. For example the German incumbent railway undertaking operates in almost all nearby countries. The geographic location of Belgium relative to the Netherlands and that of Norway relative to Sweden also may explain the existence of reciprocal operations in the freight markets between these countries.

Figure 49 shows six countries where at least one foreign incumbent entered the domestic market, but where the domestic incumbent is either not operating abroad or no longer exists.

Figure 49 – 6 countries where at least one foreign incumbent entered but where the domestic incumbent is either not operating abroad (Bulgaria, Croatia, United Kingdom and Slovakia) or no longer exists (Denmark, the Netherlands)



13. Bulgaria  <i>3 foreign railway undertakings belonging to foreign incumbents operate in Bulgaria, from Romania, Germany and Hungary.</i>	14. Croatia  <i>The domestic freight market has been entered by only one foreign incumbent from Hungary (RCH - Rail Cargo Hungária), which is actually owned by the Austrian incumbent.</i>	15. Denmark  <i>The freight market in Denmark has been entered by a railway undertaking (Captrain) related to the French incumbent, the incumbents from Germany (DB Schenker) and Italy (TX Logistik).</i>
16. The Netherlands  <i>6 foreign incumbents operate in the Dutch market, from Belgium, Switzerland, Germany, France, Italy and Poland.</i>	17. United Kingdom  <i>DB Schenker (German incumbent) is the only foreign incumbent operating in the British freight market.</i>	18. Slovakia  <i>Incumbents from Poland (PKP CARGO S.A.) and the Slovak subsidiary of the Austrian incumbent also operate in the Slovak freight market.</i>

This group of countries highlights the important activity abroad of the German and Austrian incumbents (DB Schenker and Rail Cargo) which operate directly or via subsidiaries in the freight market of several foreign countries, either for domestic or international traffic. As shown in Figure 50, this is also the case for the Luxembourg incumbent railway undertaking, which operates abroad in five monitored countries. However, in contrast with the countries cited above, the Luxembourg market is not challenged by any foreign incumbent. This is despite the freight market in Luxembourg having been liberalised in 2000 (for both domestic and international services), several years before some other major markets. This lack of competition can be largely explained by the relative small size of the freight market in Luxembourg, as among the monitored countries, Luxembourg has the second smallest freight market in 2015.

Figure 50 – 1 country without any foreign incumbent having entered the market but the domestic incumbent entered at least one another European country (Luxembourg)



19. Luxembourg

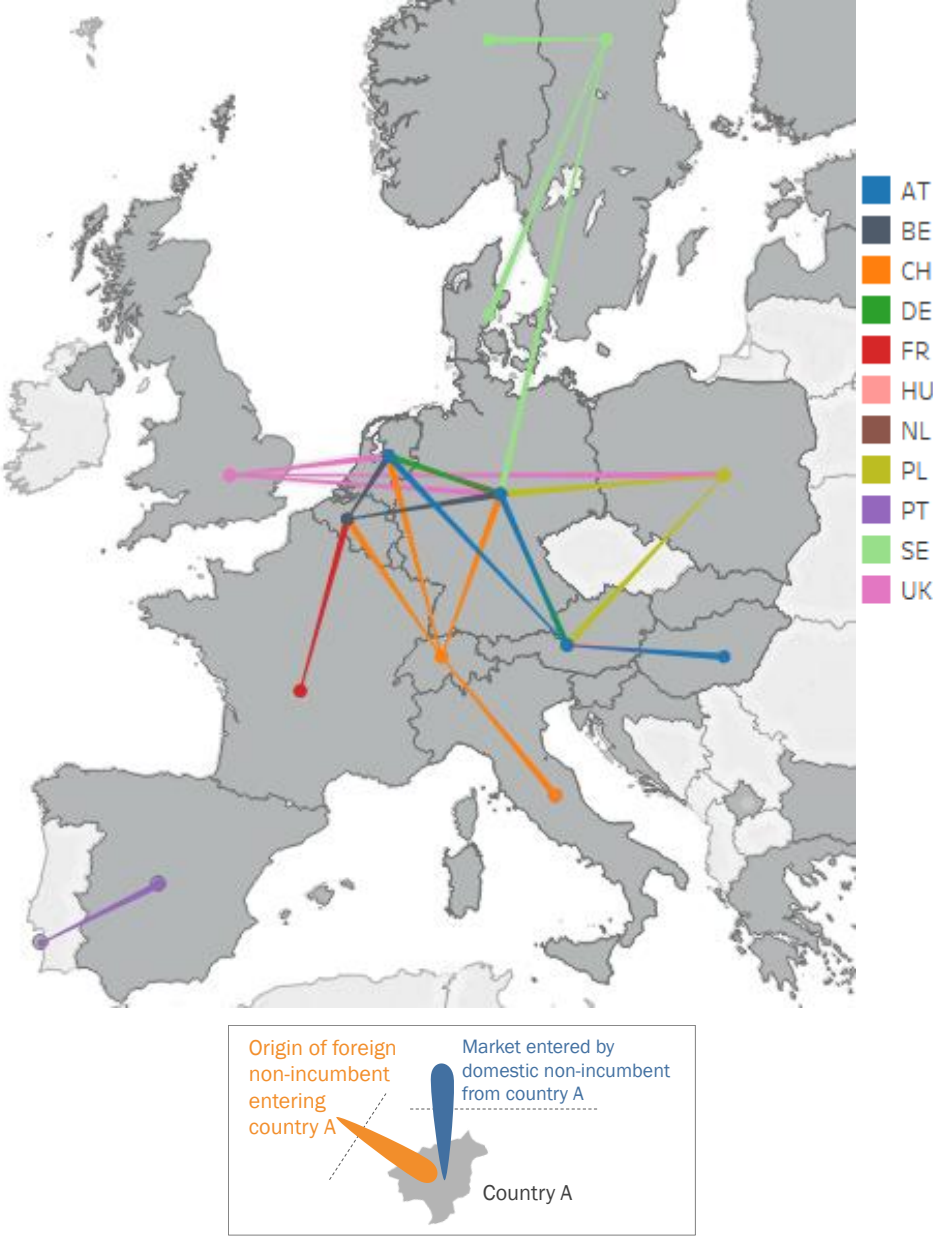


Luxembourg is the only monitored European country where the domestic incumbent (CFL Cargo) operate abroad (in France, Belgium, Denmark, Germany and Sweden) without being challenged by a foreign incumbent on the domestic market.

Finally, in 2015 there was no foreign rail freight operation in 5 countries, i.e. the domestic incumbent did not enter another monitored European country and no foreign incumbent entered the domestic market (Latvia, Greece, Finland, Kosovo and Estonia).

Figure 51 shows the geographical location of non-incumbent railway undertakings operating freight services abroad (i.e. not in their domestic market).

Figure 51 – Non-incumbent railway undertakings operating in foreign freight markets



Country of origin ⁷⁷	Non-incumbent market players in movement	Country of destination
	Crossrail (Swiss railway undertaking) is operating in Belgium, the Netherlands, Germany and Italy	   
	Several Austrian RUs operate as well in the Netherlands, Germany and Hungary	  
	Freighliner Group Ltd (British group) operate in the Netherlands, Poland and Germany	  
	Some Swedish railway undertakings (among which Hector Rail AB) operate in Denmark and Norway	 
	Railway undertakings from Germany operate in the Netherlands and Austria	 
	Railway undertakings from Poland operate in Germany and Austria	 
	Railway undertakings from Belgium operate in the Netherlands and Germany	 
	Railway undertakings from France operate in Belgium	
	Railway undertakings from Hungary operate in Austria	
	Railway undertakings from the Netherlands operate in Germany	
	Railway undertakings from Portugal operate in Spain	

⁷⁷ Country that delivered the licence to the railway undertaking.

5.3. Market players in the passenger market

This section details the type of railway undertakings operating in the passenger rail market and then focuses on the way the railway undertakings have moved across the European passenger rail market.

This section focuses on the number and type of railway undertakings, without taking market shares of railway undertakings into account. Those market shares have been provided in Section 4.2.2.

5.3.1. Market shares and railway undertakings in the passenger sector

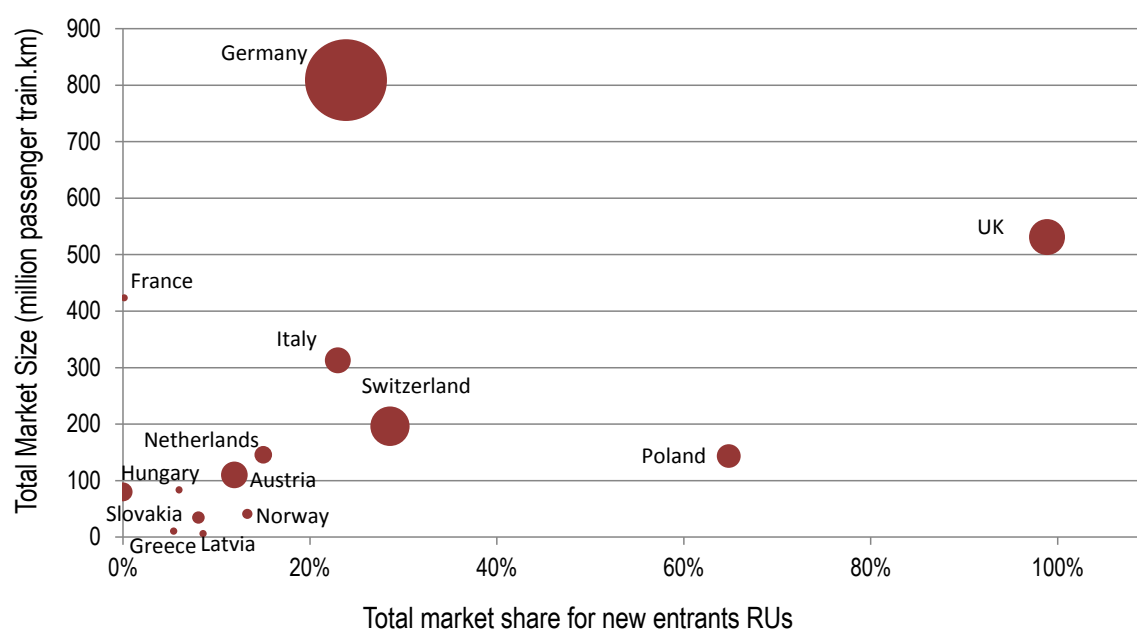
Figure 52 shows the market share of new entrants in the passenger sector (foreign incumbents and non-incumbent railway undertakings) in passenger train kilometres.⁷⁸

- The bubble size indicate the number of new entrants;
- the x-axis shows the market share gained by new entrants;
- the y-axis shows total size of the market (train kilometres).

For example, in Germany, 130 non-incumbent railway undertakings share 24% of the total train kilometres in the passenger market.

Annex 5 provides information on revenue of railway undertakings.

Figure 52 – Passenger market size and market share (in train kilometres) of new entrants in 2015



The market share operated by new entrants (either foreign incumbent or non-incumbent railway undertakings) is under 30% of the total passenger market in most countries.

⁷⁸ Data is missing or incomplete for Belgium, Estonia and Sweden.

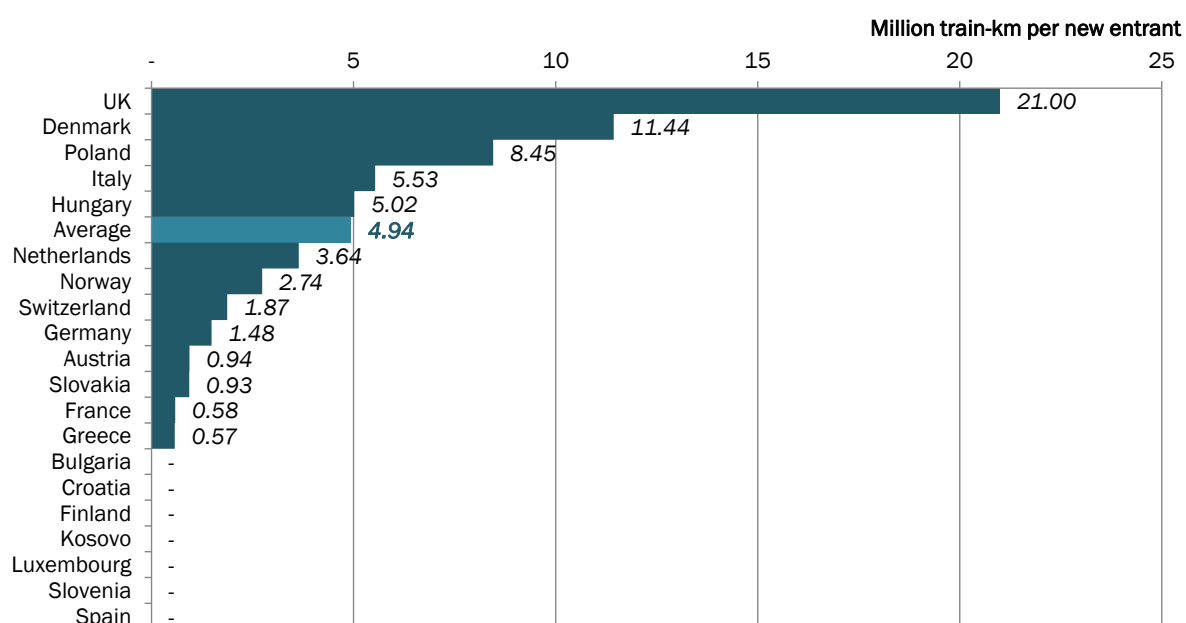
New entrants in the United Kingdom and Poland have higher market shares, divided between 25 and 11 different passenger railway undertakings respectively. Within the UK market, operators include 5 subsidiaries of the German incumbent, 4 subsidiaries of the Dutch incumbent and one company owned by the French incumbent.

Also, in Switzerland 30 new entrants share a relatively high percentage of the market (29%).

In Italy and Germany new entrants operate about 24% and 23% of the train kilometres in the passenger market respectively. In Germany, subsidiaries of the incumbents from France, Italy, Switzerland, Luxembourg and the Netherlands operate around 8% of the total passenger market in terms of train kilometres.

Figure 53 shows the ratio between the market size (in train kilometres) operated by new entrants (i.e. foreign incumbents and non-incumbents railway undertakings) and the number of new entrants on the passenger market. Similar to the freight market, the biggest passenger market per new entrant is in the United Kingdom. On average⁷⁹ around 4.9 million passenger train kilometres are operated per new entrant on monitored markets. In Norway, the Netherlands, Switzerland and Slovakia the market size for new entrants is much lower, partly due to these countries having a smaller overall market size. In Germany and Austria the relatively lower market share for new entrants is likely due to the higher number of operators running services in these markets.

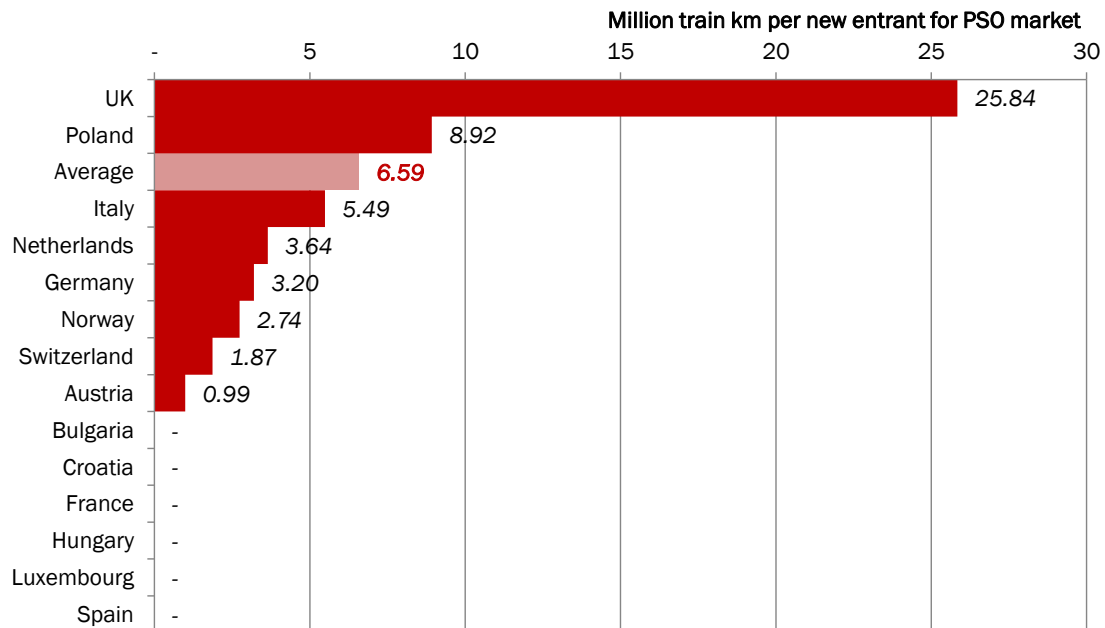
Figure 53 – Average size of passenger market per new entrants per country (in train.km per new entrant)



Considering the PSO passenger market, Figure 54 shows that the largest markets per new entrant operating PSO contracts are in the United Kingdom, Poland, Italy and Germany. It shows an average size of the PSO market of 6.59 million train kilometres per new entrant, with UK, Poland and Italy ranking ahead of 5 million train kilometres on average per new entrant.

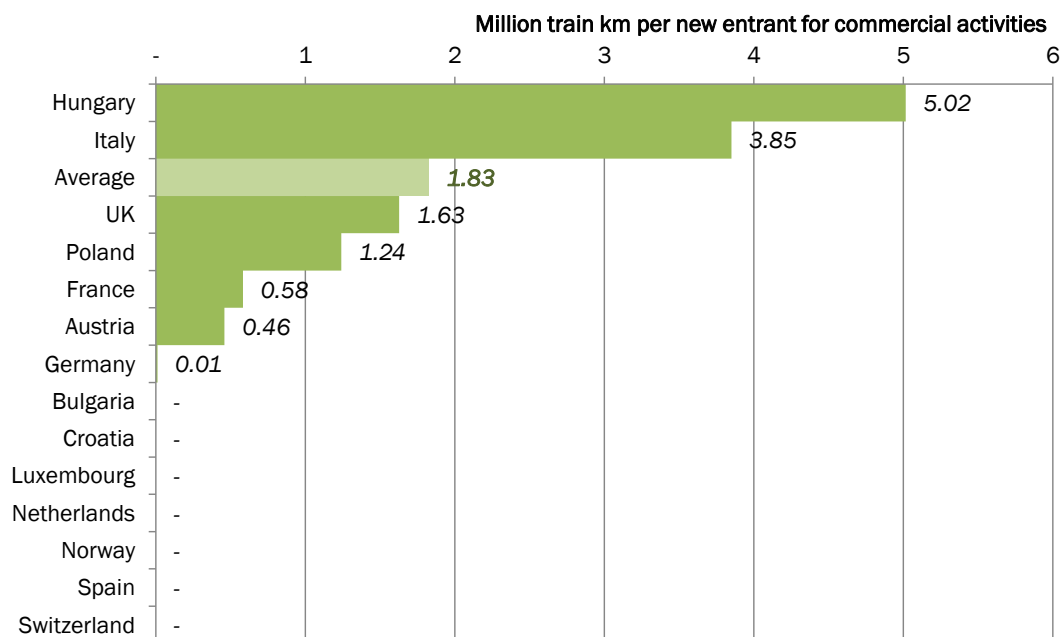
⁷⁹ Average statistics computed for countries with strictly positive train km operated by new entrants.

Figure 54 – Average size of PSO market per new entrant per country (in train kilometres per new entrant)



For commercial activities (Figure 55) the largest markets per new entrant are in Hungary and Italy, with around 5 million and 3.9 million train kilometres per new entrant respectively. In Hungary the commercial traffic is operated by a single railway undertaking, while in Italy there are three new entrants operating commercial services. In Poland and the United Kingdom more than 1 million train kilometres are operated on average by each new entrant. The average is much lower in the remaining countries, with only 11,000 train kilometres per new entrant operating the commercial market in Germany.

Figure 55 – Average size of commercial passenger market per new entrant per country (in train.km per new entrant)

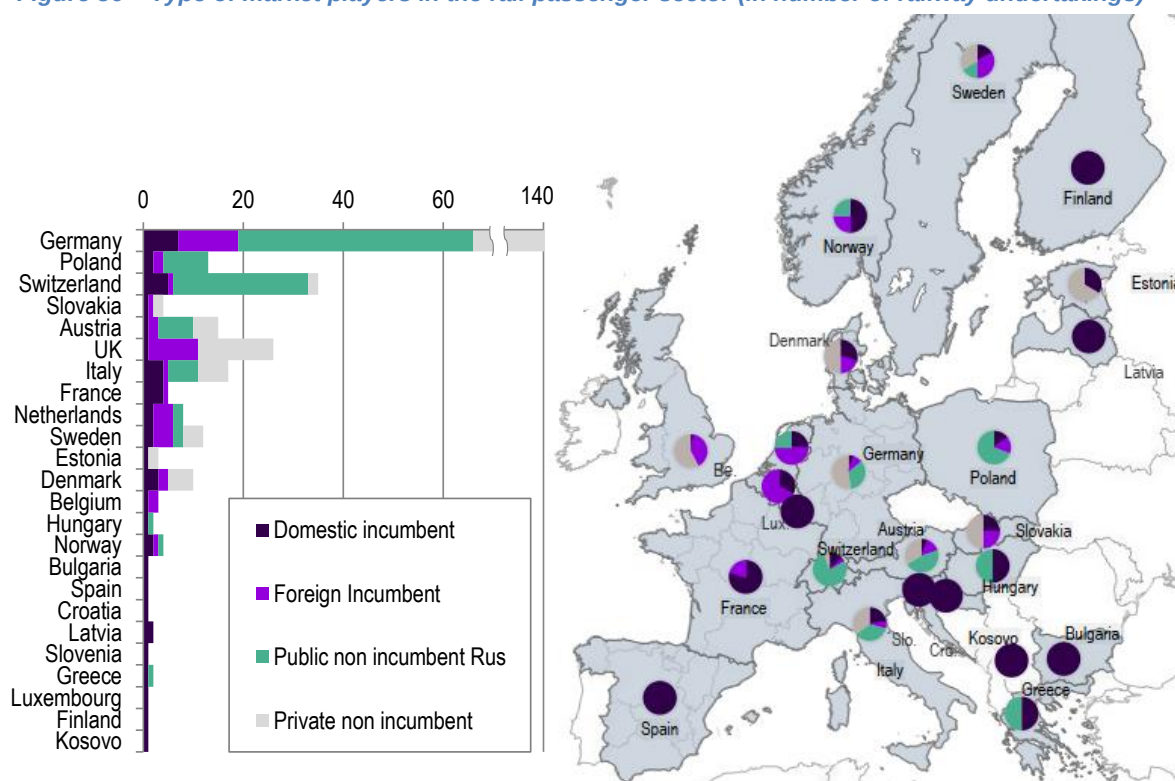


5.3.2. Type of railway undertakings operating in the passenger sector

There were 230 railway undertakings⁸⁰ operating passenger services in the monitored countries in 2015. Figure 56 shows the share (in number of undertakings) of domestic incumbent, foreign incumbent and non-incumbent (public or private) railway undertakings in each country.

Similarly to the analysis for freight undertakings, each passenger railway undertaking is counted once for each of the countries it operates in, and therefore the total number of railway undertakings is not the sum of the railway undertakings per country.

Figure 56 – Type of market players in the rail passenger sector (in number of railway undertakings)



Countries with the highest share of new entrants (in number of foreign incumbent and non-incumbent railway undertakings) are the United Kingdom (96%), Germany (95%) and Austria (93%). The share of non-incumbent railway undertakings, i.e. companies that are related neither to the domestic incumbent nor to a foreign one, is 58% in the United Kingdom (with 10 companies related to a foreign incumbent), 86% in Germany (with 12 companies related to a foreign incumbent) and 80% in Austria (with 2 companies related to a foreign incumbent). In Switzerland, 30 railway undertakings (83% of the total number of railway undertakings operating in this market) are not related to the domestic incumbent. Among them, one company is a foreign incumbent. However, as described in Section 3, the Swiss passenger market is not in open-access. All these companies operate PSO services that are directly awarded either by regional authorities or by the State.

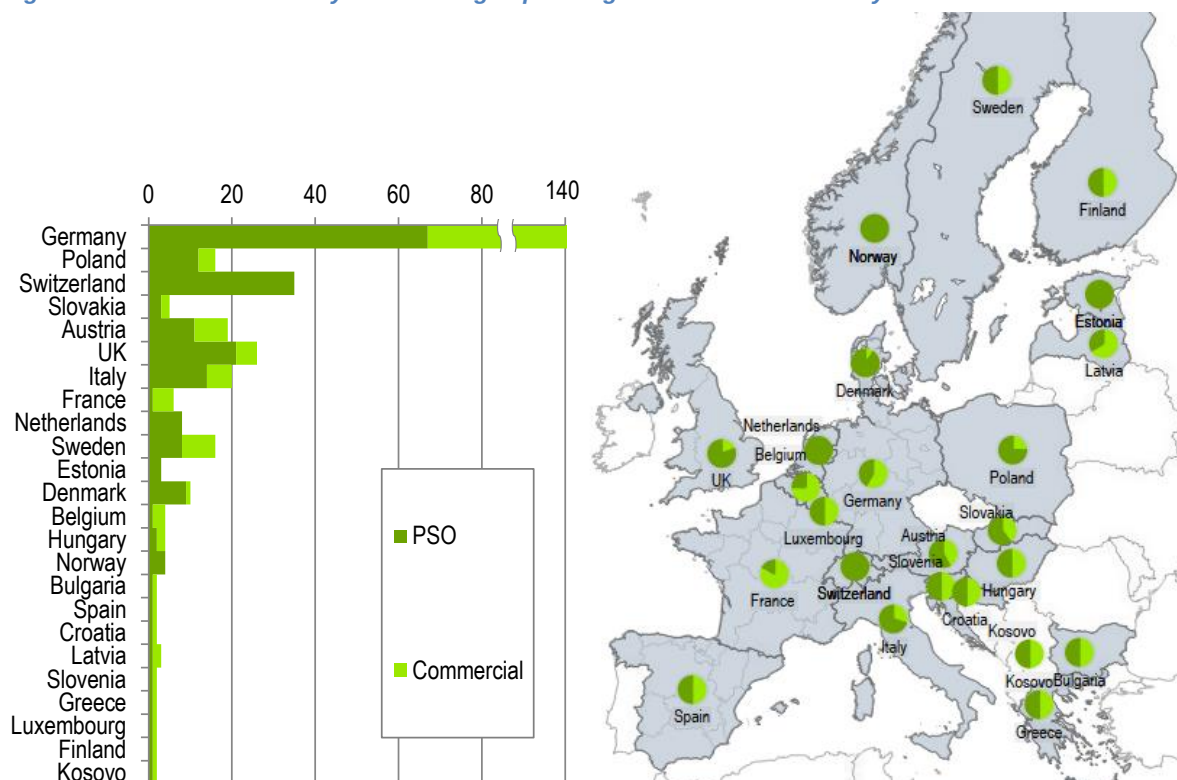
⁸⁰ 169 railway undertakings operating in the passenger market only and 61 railway undertakings operating in both passenger and freight markets.

Countries with only domestic incumbents operating in the passenger market are Bulgaria, Croatia, Slovenia, Greece, Luxembourg, Finland and Kosovo. In Bulgaria, Luxembourg and Kosovo this is despite the passenger markets being open to competition both for national and international traffic and in Croatia, Slovenia, Greece and Finland the markets being open to competition for international services only. In France, Belgium and Spain, the international market is open to competition and only foreign incumbents have entered the market.

5.3.3. Type of passenger services operated by railway undertakings

Figure 57 shows the share of railway undertakings operating PSO or commercial (i.e. non-PSO) services per country. The number of railway undertakings operating each type of service does not give information about the share of PSO or commercial traffic in the total passenger traffic. This information is provided in Section 4.

Figure 57 – Number of railway undertakings operating for commercial activity or under PSO contracts



Three of the monitored countries do not have any commercial activities for the passenger market:

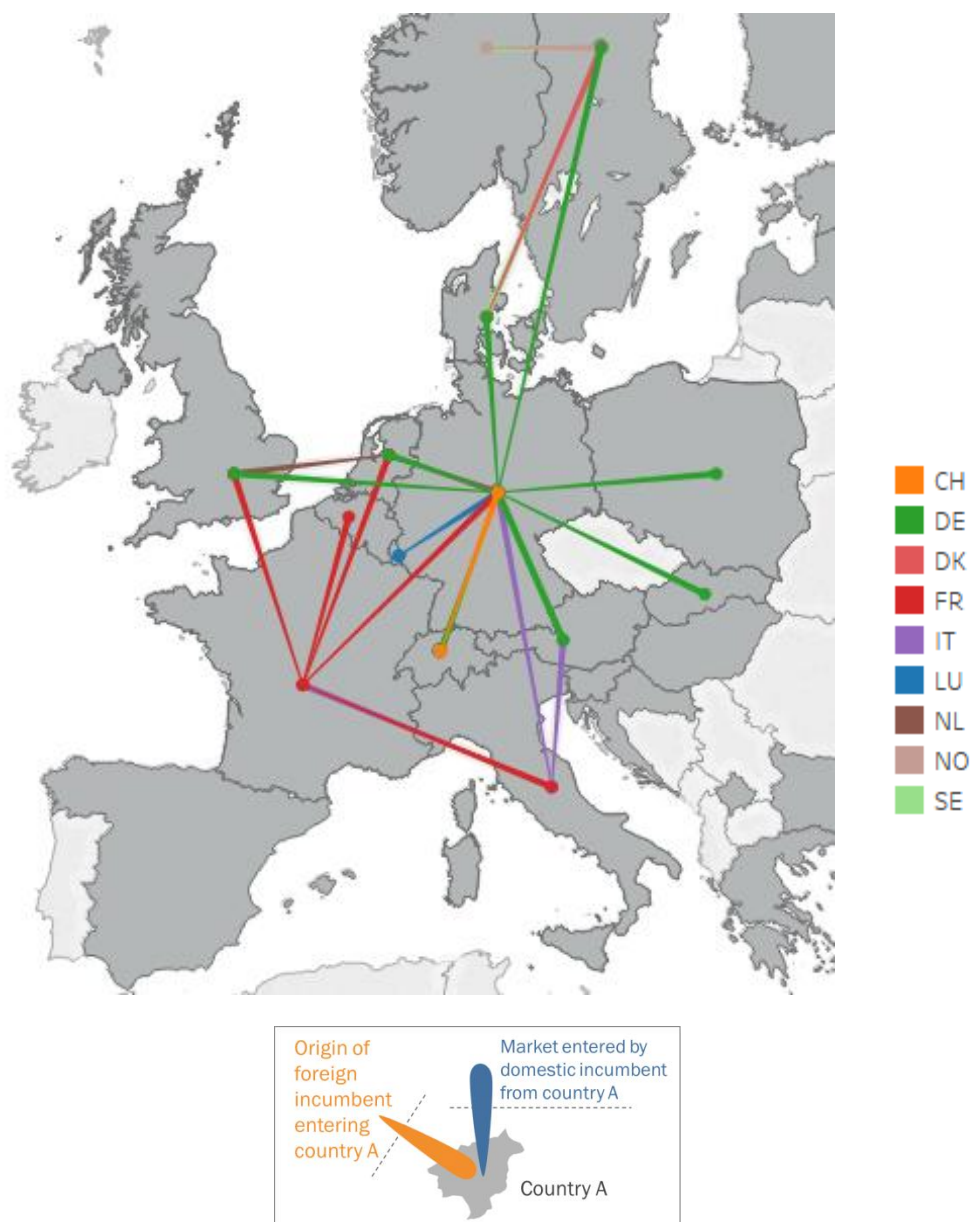
- In Estonia the domestic incumbent and other two domestic railway undertakings operate under PSO contracts on the passenger market,
- In Norway four undertakings (domestic railway undertakings and one foreign railway undertaking) also operate under PSO contracts,
- In Switzerland all 35 undertakings active on the passenger market operate under PSO contracts. This is also the case for the 8 railway undertakings operating on the passenger market in the Netherlands.

Countries with the highest share of railway undertakings operating commercial services (in number of undertakings) are France (83%), Belgium (75%), Latvia (67%, i.e. 2 of 3 services) and Germany (58%). In Germany, commercial traffic operated by non-incumbent railway undertakings is mainly charter traffic that represents less than 1% of passenger traffic.

5.3.4. Geographical movements of passenger railway undertakings in the European market

Considering the location of domestic incumbents operating abroad, Figure 58 shows that nine incumbents operate in the passenger market of at least one other European monitored country. Partnerships between incumbents for international services are not taken into account.

Figure 58 – Incumbents operating in foreign passenger markets (PSO and/or commercial services) in 2015



The German, French, Italian and Swedish domestic incumbents operate in several foreign markets and at least one other incumbent entered their passenger market.

Germany  <i>The German incumbent (Deutsche Bahn AG) and its subsidiaries⁸¹ operate in 8 European monitored countries (United Kingdom, Netherlands, Denmark, Sweden, Poland, Austria, Slovakia and Switzerland).</i> <i>Conversely, the Italian, French, Swiss incumbents and a subsidiary of the Luxembourg incumbent operate in Germany.</i>	France  <i>The French incumbent (SNCF Mobilités) and its subsidiaries⁸² operate abroad in 5 European countries (United Kingdom, Belgium, the Netherlands, Germany and Italy).</i> <i>Conversely, the Italian incumbent operates in France with its subsidiary Thello.</i>
Italy  <i>The Italian incumbent, Trenitalia and its subsidiary Thello, operate abroad in 3 European countries (France, Austria, and Germany).</i> <i>Conversely, the French incumbent operates in Italy.</i>	Sweden  <i>The Swedish incumbent (SJAB) operates in Denmark and Norway.</i> <i>Conversely, the Danish, Norwegian and German incumbents operate in Sweden.</i>

The Danish, Norwegian, Dutch and Swiss domestic incumbents operate in only one foreign market and at last one other incumbent entered their passenger market.

Denmark  <i>The Danish incumbent (DSB Sverige AB) operates in Sweden.</i> <i>Conversely, the Swedish and the German incumbents operate in Denmark.</i>	Norway  <i>The Norwegian incumbent (NSB AS / Svenska Tågkompaniet AB) operates in Sweden.</i> <i>The Swedish incumbent (SJAB) reversely operates in Norway.</i>
The Netherlands  <i>The Dutch incumbent (Nederlandse Spoorwegen) and its subsidiaries⁸³ operate in the British market.</i> <i>Conversely, the German and the French incumbent operate in the Netherlands.</i>	Switzerland  <i>The Swiss incumbent (SBB GmbH) operates in Germany.</i> <i>Conversely, the German incumbent operates in Switzerland.</i>

⁸¹ DB Regio AG, Arriva, Usedomer Bäderbahn GmbH, Chiltern, CrossCountry, London Overground, Grand Central.

⁸² Eurostar, THI Factory (Thalys), SVI and Syntus B.V.

⁸³ Serco-Abellio Rail (Merseyrail, Northern Rail), Greater Anglia, ScotRail, Abellio.

In Austria, the United Kingdom, Poland, Slovakia and Belgium, at least one European incumbent operates in the domestic passenger market whereas there is either no domestic incumbent or the domestic incumbent does not operate abroad in a monitored country.

Austria



The Italian and German incumbents operate in the Austrian market.

The Austrian incumbent (ÖBB PV) does not operate in any other monitored country.

Poland



The German incumbent operates in Poland.

The domestic incumbent PKP does not operate in any other monitored country.

Belgium



The French incumbent operates in Belgium.

The Belgian incumbent NMBS does not operate in any other monitored country.

The United Kingdom



The French, German and Dutch incumbents operate in the United Kingdom.

The incumbent from UK (Translink NI Railways) does not operate in any other monitored country.

Slovakia



The German incumbent operates in Slovakia.

The domestic incumbent ZSSK does not operate in any other monitored country.

Finally, the incumbent from Luxembourg operates in Germany whereas no foreign incumbent entered this market.

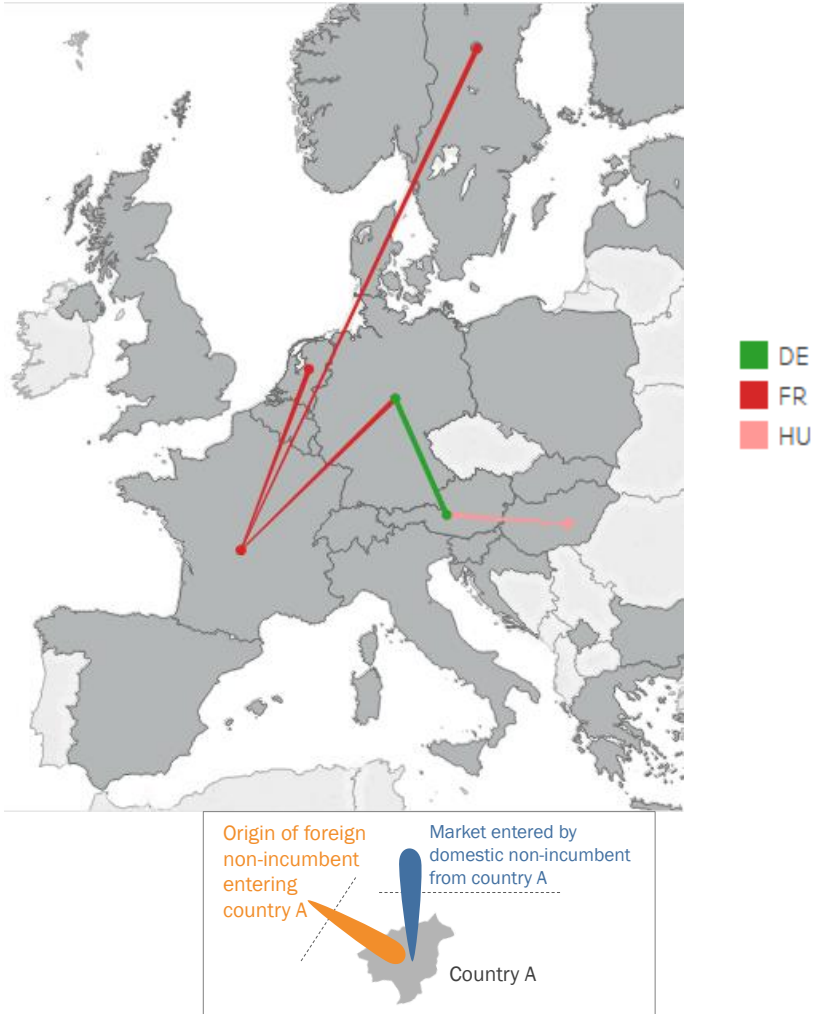
Luxembourg



A subsidiary of the Luxembourg incumbent (neg Niebüll GmbH, subsidiary of CFL) operates in Germany.

Figure 59 shows the geographical location of non-incumbent railway undertakings operating passenger services abroad.

Figure 59 – Non-Incumbent railway undertakings operating in foreign passenger markets

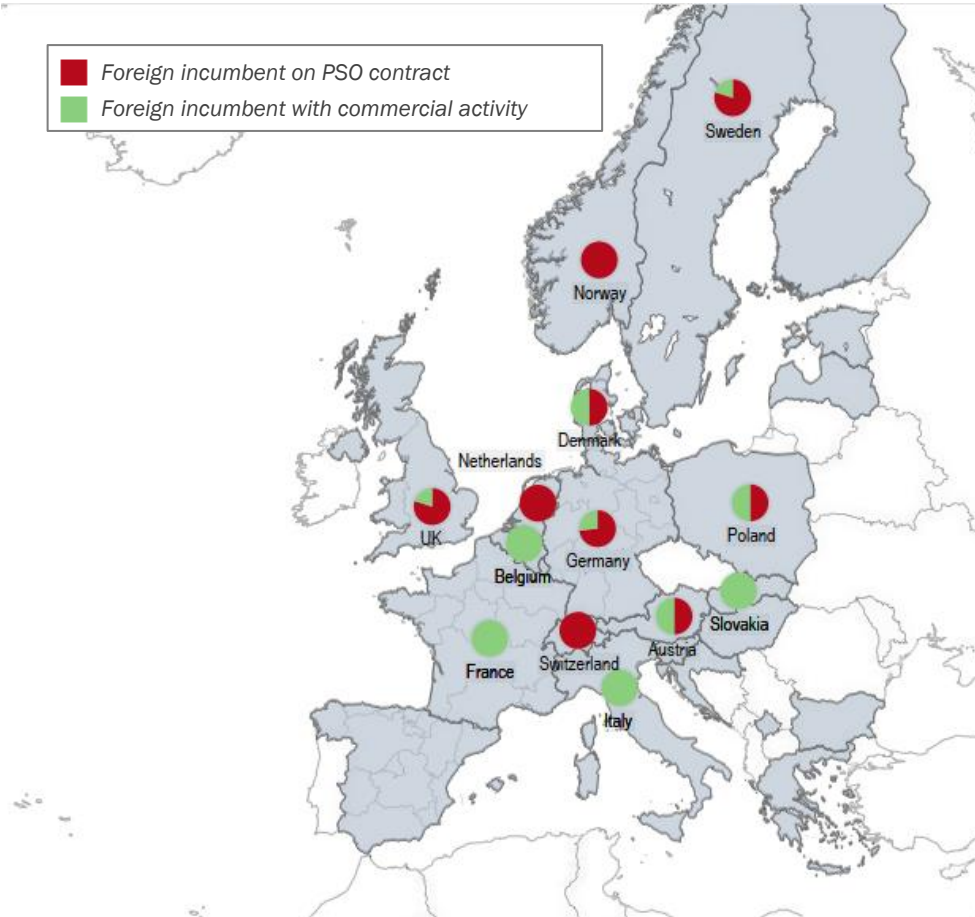


Country of origin ⁸⁴	Non-incumbent market players in movement	Country of destination
	The French company Transdev and its subsidiaries operate abroad in the Netherlands, Germany and Sweden through PSO contracts	  
	The German company Bayerische Oberlandbahn GmbH operates in Austria (through a PSO contract)	
	GYSEV (Raab-Oedenburg-Ebenfurter Eisenbahn AG) from Hungary, which is licensed in Austria but belongs to the Hungarian public authority, also operates in Austria through a PSO contract	

⁸⁴ Country that delivered the licence to the railway undertaking.

Figure 60 shows the share (in number of undertakings) of PSO or commercial (i.e. non-PSO) services operated by foreign incumbent railway undertakings in each country. In other words, Figure 60 shows how (for which services) each domestic incumbent is challenged by foreign incumbent(s) on its market, and thus for which type of services historic railway undertakings actually compete.

Figure 60 - Number of foreign incumbents operating commercial services and PSO contracts on foreign markets



Country of destination	Type of service operated by foreign incumbents
	On the Norwegian and Swiss passenger markets, foreign incumbents operate exclusively under PSO contracts
	In Denmark, Poland, Austria, Germany, the United Kingdom and Sweden, one or several foreign incumbents entered the market for commercial activities and others under PSO contracts. The incumbents entering the passenger markets with commercial activities are SJ (Swedish incumbent) in Denmark, Usedomer Bäderbahn GmbH (subsidiary of DB AG) in Poland, Trenitalia S.p.A. in Austria, SNCF Voyages and Thalys International in Germany, Grand Central (subsidiary of DB AG) and Eurostar in the UK and Svenska Tågkompaniet AB (owned by Norske Statsbaner AS (NSB)) in Sweden
	In France, Italy, Belgium and Slovakia, foreign incumbents entered the market exclusively for commercial activities
In Germany, commercial traffic operated by foreign incumbents is actually very low. Therefore, even if Figure 60 shows that about 27% of foreign incumbents operating	

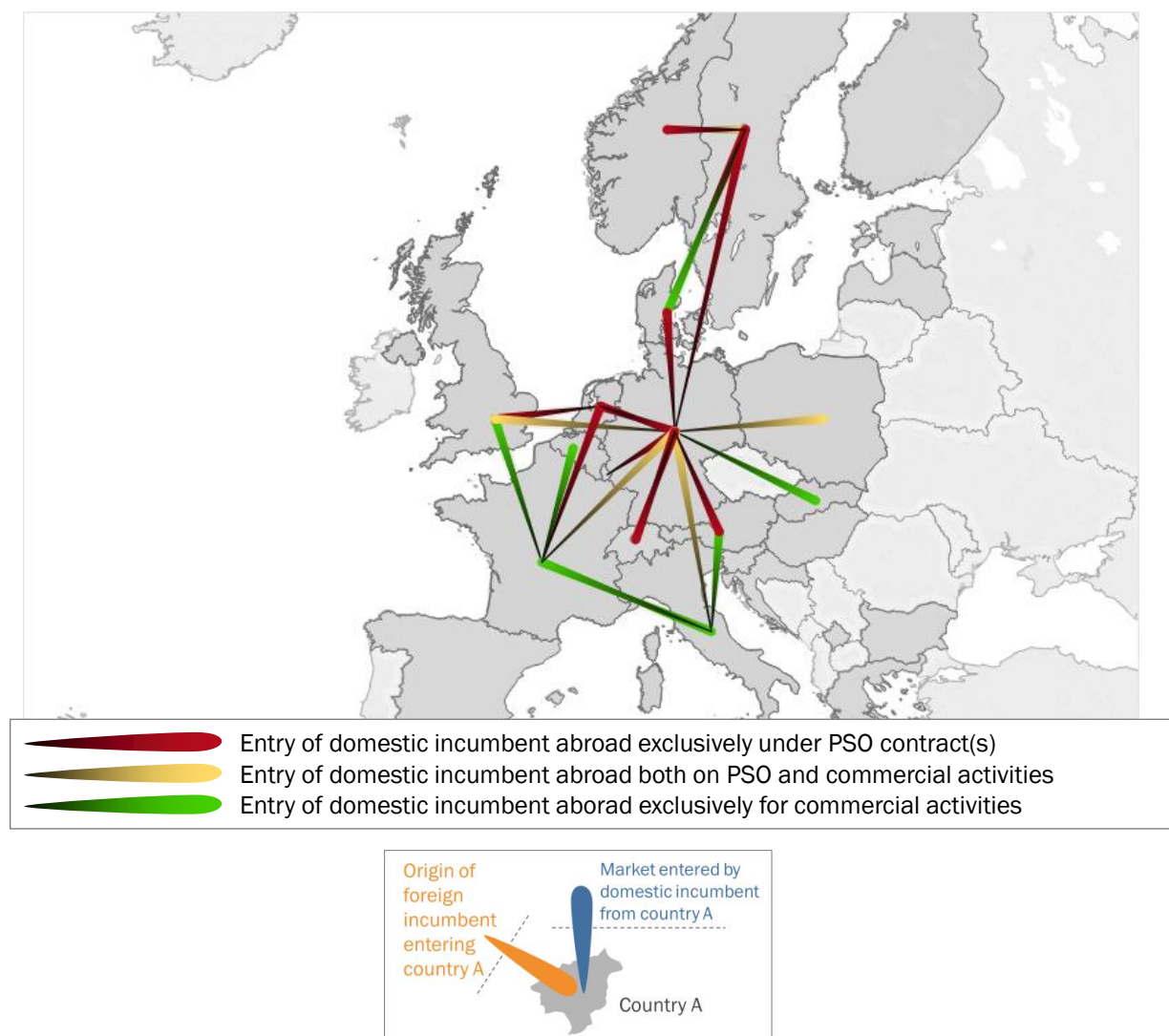
passenger services in Germany are positioned on commercial activities,, it does not represent at all the actual market shares of foreign incumbents on these services.

Conversely, it is also of interest to see how each domestic incumbent challenges other operators in foreign markets. In that respect, Figure 61 shows which type of services are challenged abroad by each domestic incumbent.

For example, Figure 60 shows that foreign incumbents operate in France only for commercial activities, while Figure 61 indicates that this involves 1 foreign incumbent (Thello, subsidiary of the Italian incumbent).

Furthermore, Figure 60 shows that foreign incumbents operate both commercial activities and PSO services in the Austrian market (50% of services operated by foreign incumbents are operated for commercial activities), while Figure 61 indicates that these foreign incumbents are located in Germany and Italy. The German incumbent (or subsidiary) operates in the Austrian passenger market under PSO contract exclusively (red track), while the Italian incumbent (or subsidiary) operate commercial activities exclusively (green track) in Austria.

Figure 61 – Entry of foreign passenger markets by domestic incumbents under PSO contracts or for commercial activities



The three domestic incumbents operating the highest number of services abroad are from France, Germany and Italy.

Country of origin⁸⁵

Type of service operated by domestic incumbents abroad



The French incumbent operates mostly commercial services except in the Netherlands (with Keolis Deutschland GmbH & Co. KG and Syntus B.V.) and in Germany (with NEB Betriebsgesellschaft mbH)



The German incumbent operates in 7 countries abroad under PSO contracts but also operates for commercial activities, directly or via subsidiaries of Deutsche Bahn, in Slovakia (Arriva Service), Poland (Usedomer Bäderbahn GmbH) and UK (Grand Central)



The Italian incumbent operates commercial activities in France (Thello) and Austria but entered the German market via 5 subsidiaries exclusively under PSO contracts

⁸⁵ Country that delivered the licence to the railway undertaking.

6. Level of market opening

This section aims at assessing the degree of market opening in the European rail sector in 2015. On the basis of market shares shown in Section 4.2, each country is positioned on a market opening scale. It is worth noting that this section does not assess the effective degree of competition in the market but rather the level of market opening by taking into account market shares of new entrants. Indeed, on the one hand, new entrants may not directly compete with the domestic incumbent by providing for instance services not operated by the incumbent; on the other hand, with the indicators used in this report, a market with 100% of market share for a single new entrant will be qualified as been 'highly open'.

As far as IRG-Rail knows, existing reports or literature do not include market opening scales in the railway sector. Therefore, new indicators are proposed in this report based on the expertise of regulatory bodies. Moreover, indicators differ according to the markets: IRG-Rail has created a market opening scale for the freight market, a scale for the PSO market and another one for the commercial passenger market. The objective is to take into account the difference in terms of maturity of liberalisation of each market in European countries. The market opening scales are based on the determination of thresholds for market share of new entrants. According to these thresholds, the market share of new entrants is considered as being relatively low, medium or high. It is worth noting that it does not mean that the penetration level of new entrants is low, medium or high in absolute terms. This corresponds to a **relative level of market opening within markets monitored in this report**.

6.1. Freight market opening scale

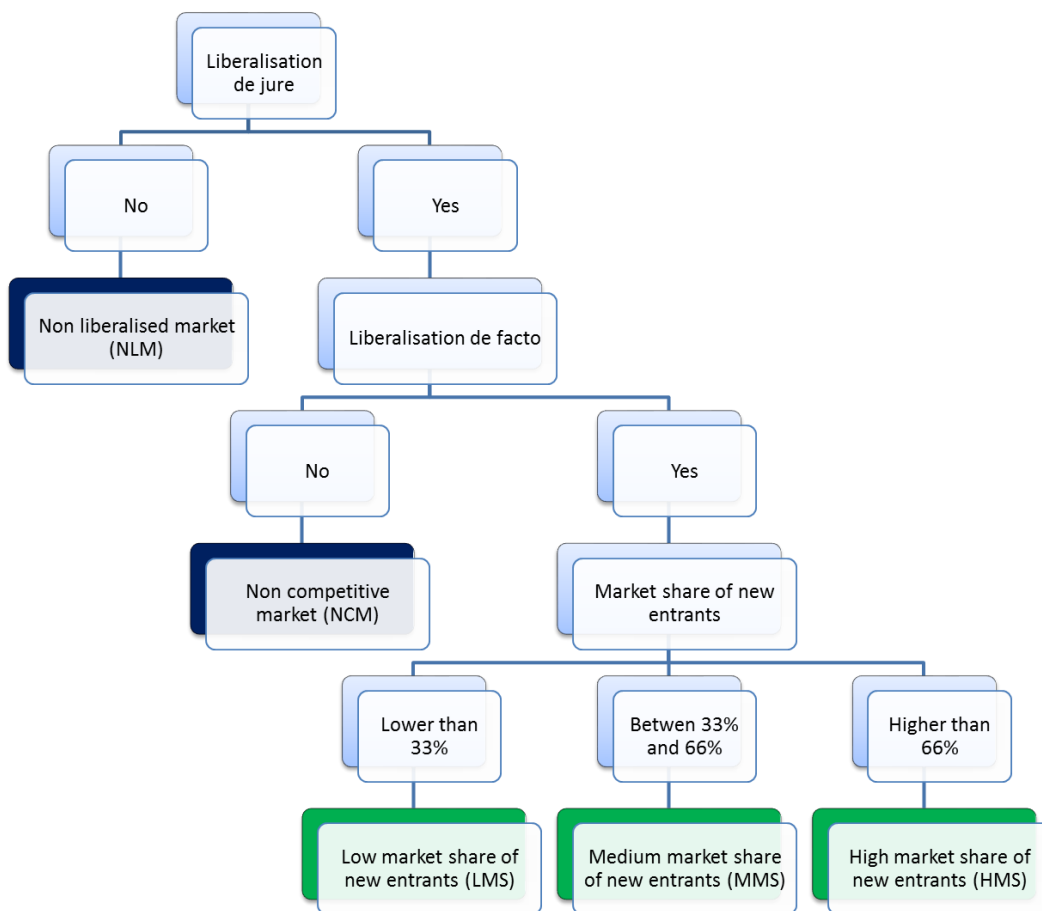
In the freight sector, countries are positioned into five categories according to the following criteria:

- Countries where the legal liberalisation had not happened by 2015 (no liberalisation *de jure*) are put into the category “Non liberalised markets” (**NLM**);
- Countries where there is no new entrant (no liberalisation *de facto*) in the freight market despite the legal liberalisation are put into the category “Non-competitive markets” (**NCM**). The distinction between these two first categories enables differentiation of the closed markets from the non-competitive but contestable markets;
- Among countries where new entrant(s) entered the market:
 - Countries where new entrants (foreign incumbent and non-incumbent railway undertakings) hold in 2015 a market share (in train kilometres) of less than 33%⁸⁶ are categorised in “Low market share of new entrants” (**LMS**);
 - Countries where the market share of new entrants in 2015 was between 33% and 66% are categorised in “Medium market share of new entrants” (**MMS**);
 - Countries where this market share was higher than 66% are in category “High market share of new entrants” (**HMS**).

Figure 62 summarises the indicator used to build the freight market opening scale.

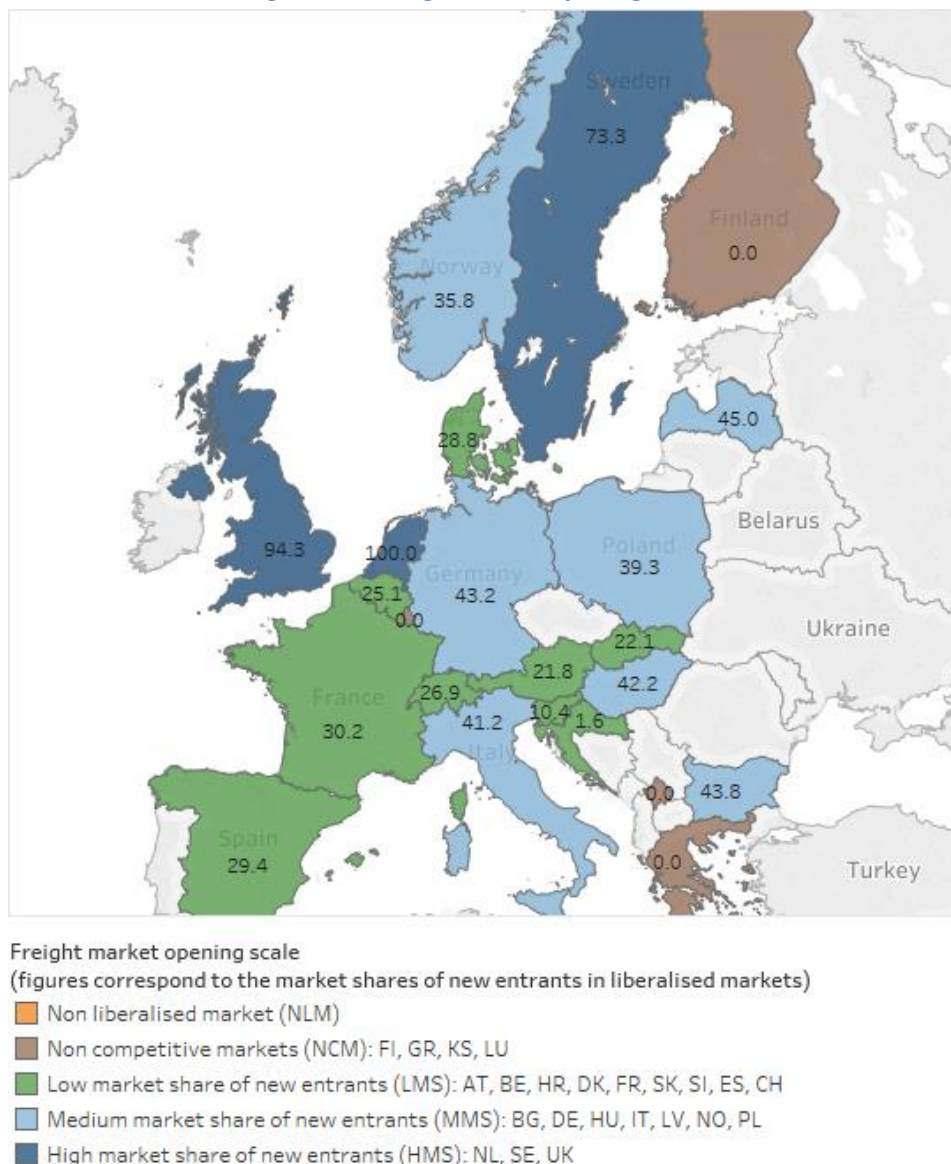
⁸⁶ By definition, new entrants hold more than 0% of market share since they actually entered the market.

Figure 62 – Indicator used to assess the freight market opening level in 2015



Based on the indicator outlined above, Figure 63 shows the category given to each monitored market, and also displays the market share of new entrants in 2015.

Figure 63 – Freight market opening scale⁸⁷



All 23 monitored freight markets are legally open to competition. There are no new entrants in Finland, Greece, Kosovo and Luxembourg where consequently freight markets are categorised as being “Non-competitive”. In the category “Low market share”, new entrants have market shares (in train kilometres) between 1.6% in Croatia and 30.2% in France, which indicates that there is still a high level of disparity between countries in the LMS category. After Croatia the second lowest market share for new entrants in this category is in Slovenia (10.4%).

In the category “Medium market share”, new entrants have market shares between 35.8% in Norway and 43.8% in Bulgaria. For the three markets categorised in “High market share”,

⁸⁷ Estonia is not included into the scale because of missing data.

the Netherlands, the United Kingdom and Sweden⁸⁸, the market shares of new entrants are respectively 100%, 94.3% and 73.2%.

6.2. Passenger market opening scales

Two market opening scales are built for the passenger sector in order to take into account competition *in* and *for* the market.

Because the freight market is generally more open to competition and has been liberalised earlier in comparison with the passenger market, the thresholds used to categorise countries differ. Indeed, in the freight market, “High market shares of new entrants” have been defined as being higher than 66%, whereas this threshold has been set to 33% in the passenger market.

6.2.1. Open-access market entry scale

For evaluating the level of entry in open access, countries are assigned into the following five categories, the indicator built is summarised in Figure 64.

- Countries where the legal liberalisation had not happened neither for domestic nor for international services by 2015 (no liberalisation *de jure*) are categorised as “Non liberalised markets” (**NLM**);
- Countries where there is no new entrant in open-access (no liberalisation *de facto*) despite legal liberalisation are put into the category “Non-competitive markets” (**NCM**). The distinction between these two first categories enables differentiation of the closed markets from the non-competitive but contestable markets;
- Countries where there is liberalisation *de facto*, either for domestic services or/and for international services, are categorised according to the relative size of the open market. For instance, a country where only the international market is open to competition and where international traffic is relatively low in comparison with total traffic is distinguished from countries where the entire market is open to competition.⁸⁹
In that respect, countries are distinguished between:
 - Relatively small open market (coefficient between 0 and 0.5);
 - Relatively large open market (coefficient between 0.5 and 1).
- Countries with small open market and positive market shares for new entrants are categorised in “Low market share of new entrants” (**LMS**);
- Countries with a large open market and a market share for new entrants lower than 33% are categorised in “Medium market share of new entrants” (**MMS**);
- Finally, countries with a large open market and a market share of new entrants higher than 33% are assigned as “High market share of new entrants” (**HMS**).

⁸⁸ Note that for Sweden the market share in train kilometres was not available. Therefore caution should be made since tonne kilometres have been used as a proxy for assessing the share of new entrants.

⁸⁹ Each country is assigned a value of 1 if one part of the market is open to competition and 2 if the full market is liberalised. These scores are then weighted by relative traffics (in train kilometres) for domestic and international services, providing a “coefficient of liberalisation”. This coefficient has been created because IRG-Rail misses information on market share breakdown of domestic/international services for railway undertakings.

Box 2 below illustrates the way countries are categorised in the open-access scale with the example of Austria.

Box 2 – Open-access scale: example of Austria

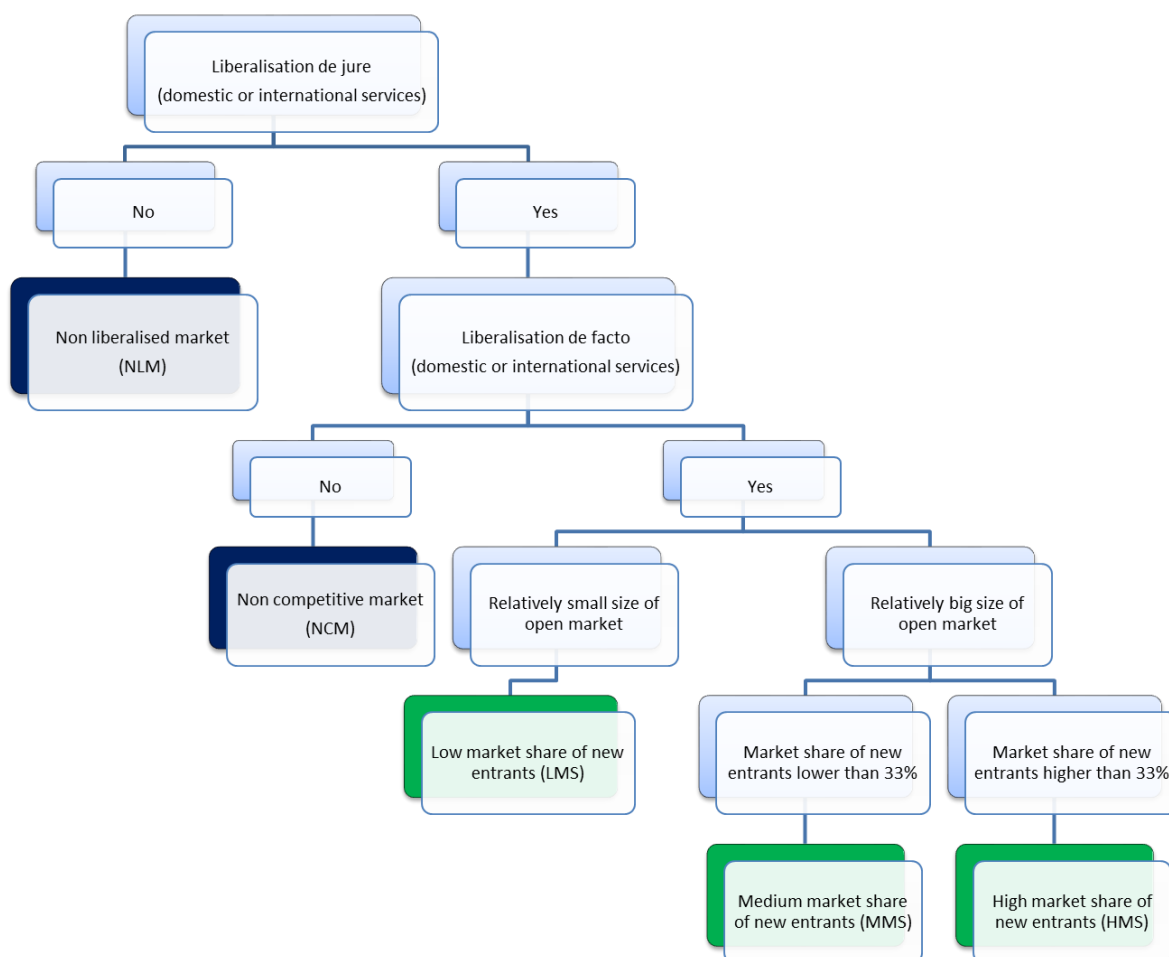
Open-access in Austria is allowed for both domestic and international passenger services (first branch “Yes”).

There is liberalisation *de facto* for domestic services only (second branch “Yes”) and domestic services represent 83% of passenger train kilometres in Austria (the remaining 17% are operated for international services that are not open to competition).

Therefore, the coefficient of liberalisation is equal to $(1 \times 83\% + 0 \times 17\%) = 0.83$ and is higher than 0.5 (third branch “Relative big size of open market”).

The market share of new entrants in Austria is 11%. Therefore the market in Austria is categorised in “Medium market share of new entrants”.

Figure 64 – Indicator used to assess the level of entry in open access in the passenger market in 2015



6.2.2. PSO market opening scale

For evaluating the level of PSO market opening, countries are first differentiated between those that allow competitive awards of PSO contracts (for regional and/or long-distance services) and those where only direct awards are allowed.

On this basis countries are classified into four categories, as summarised in Figure 65:

- Countries where only direct awards are allowed are categorised as “Non liberalised markets” (**NLM**);
- Countries where PSO contracts can be awarded through competitive tenders (for regional and/or long-distance services) but where the market share of new entrants is equal to zero are categorised as “Non-competitive markets” (**NCM**);
- Countries where PSO contracts can be awarded through competitive tenders and where the market share of new entrants is lower than 33% are categorised in “Low market share of new entrants” (**LMS**);
- Finally where the market shares of new entrants are higher than 33%, countries are categorised in “High market share of new entrants” (**HMS**).

Figure 65 – Indicator used to assess the PSO market opening level in 2015

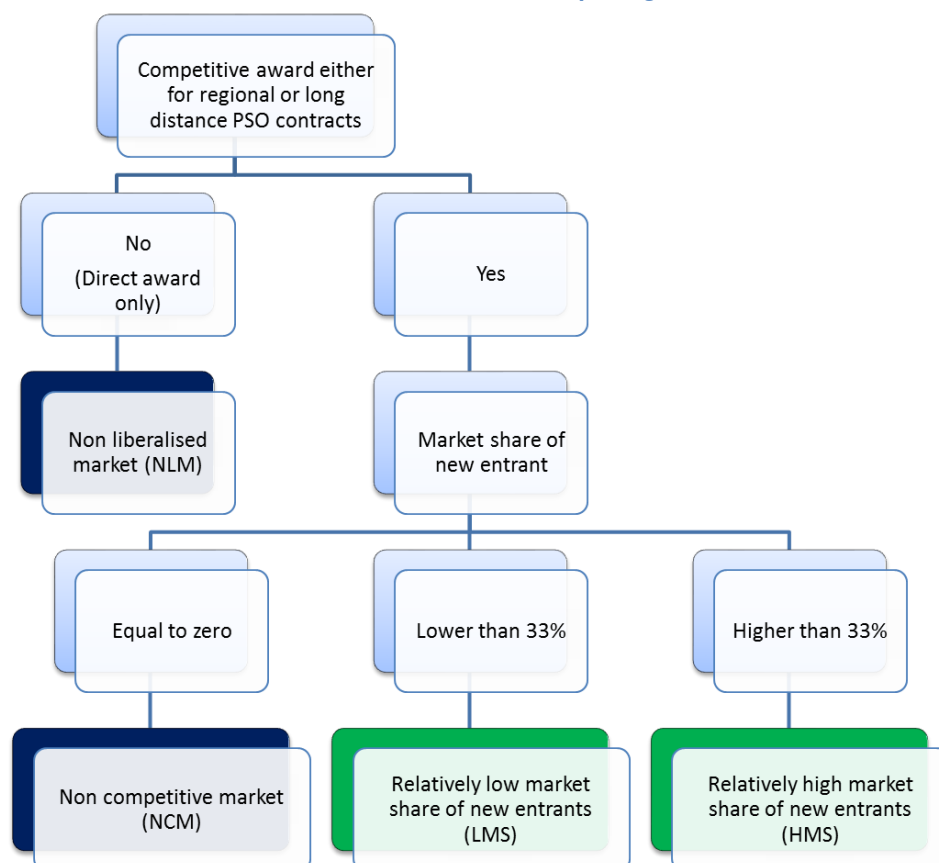
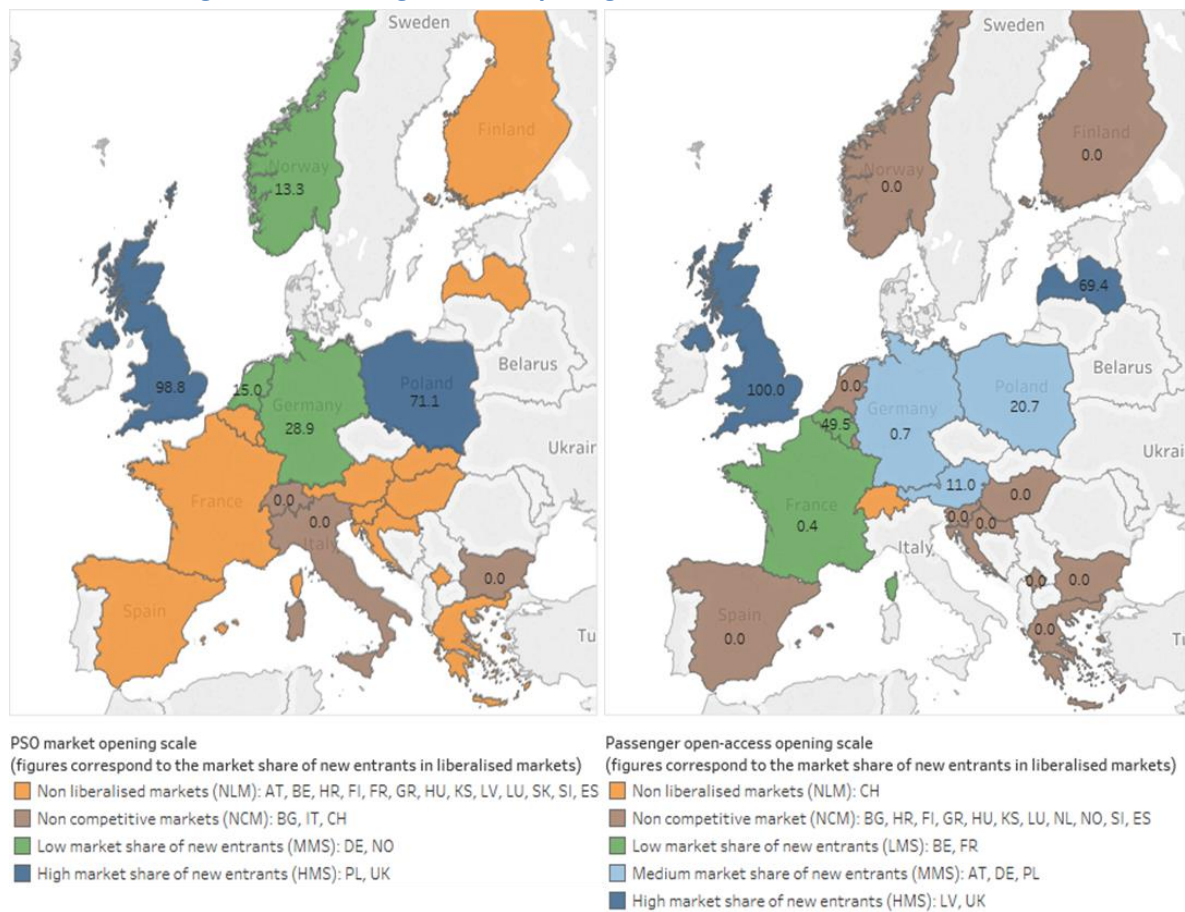


Figure 66 shows how the countries are positioned on the PSO⁹⁰ and the open access opening scales.⁹¹

Figure 66 – Passenger market opening scale - PSO and commercial services



For PSO services the market share of new entrants (in train kilometres) in the category “Low market share of new entrants” ranges from 13.3% in Norway to 28.9% in Germany. In the two countries with “High market share of new entrants”, Poland and the United Kingdom, these market shares are 71.2% and 98.8% respectively. In Poland new entrants are mainly public regional companies and more than 50% of contracts are directly awarded, which should be considered when classifying Poland as a fully competitive market.

For commercial services the market shares have to be considered alongside the size of the market that is open to competition when interpreting the categories of countries. For the category “Low market share”, the market share of new entrants is 49.5% for Belgium and 0.4% in France. For the category “Medium market share”, the market share is 0.7% in Germany, 11% in Austria and 20.7% in Poland. Therefore, even with a market share of 0.7%, as regards the size of the open market (both for domestic and international services), the

⁹⁰ Denmark, Estonia and Sweden are excluded from the PSO competition scale since the data on the market shares of new entrants were not available.

⁹¹ Denmark, Estonia, Italy, Slovakia and Sweden are excluded from the open access competition scale since the data on the market shares of new entrants were not available.

market in Germany is defined as being more open than in Belgium, where only international services are in open-access.

Table 1 below summarises the position of countries into the three market opening scales.

Table 1 - Level of market opening – Overview

Country	Freight market	PSO market	Commercial market (non-PSO)
Austria	Low market share	Non liberalised	Medium market share
Belgium	Low market share	Non liberalised	Low market share
Bulgaria	Medium market share	Non competitive	Non competitive
Croatia	Low market share	Non liberalised	Non competitive
Denmark	Low market share	n/a	n/a
Estonia	n/a	n/a	n/a
Finland	Non competitive	Non liberalised	Non competitive
France	Low market share	Non liberalised	Low market share
Germany	Medium market share	Low market share	Medium market share
Greece	Non competitive	Non liberalised	Non competitive
Hungary	Medium market share	Non liberalised	Non competitive
Italy	Medium market share	Non competitive	n/a
Kosovo	Non competitive	Non liberalised	Non competitive
Latvia	Medium market share	Non liberalised	High market share
Luxembourg	Non competitive	Non liberalised	Non competitive
Netherlands	High market share	Low market share	Non competitive
Norway	Medium market share	Low market share	Non competitive
Poland	Medium market share	High market share	Medium market share
Slovakia	Low market share	Non liberalised	n/a
Slovenia	Low market share	Non liberalised	Non competitive
Spain	Low market share	Non liberalised	Non competitive
Sweden	High market share	n/a	n/a
Switzerland	Low market share	Non competitive	Non liberalised
United Kingdom	High market share	High market share	High market share

7. Abstract of regulatory decisions

This chapter summarizes some decisions made by the regulatory bodies in 2015. More detailed descriptions of the decisions are given in Annex 4. Regulatory bodies have adopted decisions on the following topics during the year 2015. Topics are classified by order of importance, i.e. the number of regulatory bodies having investigated or adopted a decision related to the topic.

Capacity allocation	BE, BG, CH, DE, HR, HU, NL, UK, PL
Charges	AT, CH, DE, DK, ES, FR, IT, PL
Accounting separation / Finance	DK, FR, UK
Rights and obligations of passengers	AT, UK, BG, DK
Network statement	KS
Service facilities	DE, IT, FR
Performance regime	BE, UK
Safety, licensing and other issues	BG, SE, PL

Note that the scope of functions covered by regulatory bodies participating in IRG-Rail differs among member states, which impacts the topics addressed in regulatory decisions.

✓ Allocation of capacities

- ➔ Decisions related to route planning, capacity allocation and track access agreements, that either raised suspicions of discrimination between railway undertakings or that invited the infrastructure manager to implement better practices, for example access for maintenance works.



Example in Switzerland

In the train path allocation case concerning PostMail trains, RACO determined that the infrastructure manager (Trasse Schweiz AG) had not performed the train path allocation process for mail transport in conformity with the law. In order to ensure non-discriminatory train path allocation in future, RACO therefore issued instructions to Trasse Schweiz.



Example in Germany

The Bundesnetzagentur objected to the intended amendments of the network statement 2017 of DB Netz AG with regard to the deletion of provisions on trial operation. DB Netz AG planned to publish these provisions in future only on its website. The Bundesnetzagentur considers that the data belongs to the compulsory content of the network statement which is essential to ensure an equal treatment of railway undertakings. Trial runs are necessary for testing new rolling stock that has not been approved under realistic conditions. They are important to stimulate competition and thus to facilitate the market entry for new undertakings. For the same reason the Bundesnetzagentur objected to the network statement for services facilities of DB Netz AG in a parallel proceeding.



Example in Croatia

HŽ Cargo appealed against HŽ Infra twice: at first on Track Access Contract for the timetable 2014/2015 and The Facilities Use Agreement, the services in service facilities and additional services for timetable 2014/2015; secondly on discrimination in cross-border traffic. The first appeal was partially adopted and the infrastructure manager was ordered to delete the provision in the 2015 network statement stating that there were no reservation charges. In the second case HAKOM rejected HŽ Cargo's d.o.o. appeal and decided that Croatian infrastructure manager had not acted in a discriminatory manner.



Example in Poland

On 22 September 2015 the President of UTK issued decision at the request of the infrastructure manager PKP PLK, in which he approved the termination of the contract for access to railway infrastructure for freight transport service in the 2014/2015 train timetable. The contract was concluded between the infrastructure manager and one of small railway freight undertaking.

The President of UTK issued decisions replacing the agreements concerning the access to the infrastructure. According to the Polish law the President of UTK initiates the administrative proceedings if there is a threat that railway undertaking and the infrastructure manager will not conclude the necessary agreement before the timetable enters into force.



Example in Hungary

The regulatory body conducted a procedure on track access agreements: according to national legislation upon the request of the infrastructure managers, the regulatory body may approve the contracting parties' deviating from the Network Statement in the agreement. The regulatory body executed a procedure in which it investigated if the main infrastructure manager fulfilled the independence requirements prescribed by the relevant law. The regulatory body found out that the requirements were met.



Example in the United Kingdom

In January 2015 ORR received an appeal from DB Schenker Rail (UK) Limited following the rejection by Freightliner Limited of its application to access Freightliner's Maritime terminal at the port of Southampton for up to four regular pairs of train services per day with the associated services. Freightliner refused DBS's request for access on the basis that there was insufficient capacity at Maritime Terminal. The issue in the appeal was therefore whether sufficient capacity existed or could exist at Maritime Terminal to accommodate the request. On 30 October ORR dismissed the appeal and determined that Freightliner Limited's refusal to grant DB Schenker Rail (UK) Limited access and services at Maritime Terminal on the terms sought was justified.



Example in France

In December 2015, the Paris Court of Appeal confirmed an ARAFER's dispute settlement concerning an appeal on train paths allocation issues from four railway undertakings (Europorte, ECR, T3M, VFLI) against the infrastructure manager (SNCF Réseau).

In this case, ARAFER decided to implement financial penalties for late cancellations and modifications of allocated train paths by the infrastructure manager on the one hand, and for train paths overbooking by the railway undertakings on the other hand. Thus, both the infrastructure manager and the railway undertakings are committed with mutual incentives to optimise allocation and management of network capacities as of the 2015 timetable. On the basis of this incentive mechanism, the later the train paths modifications and cancellations

are, the higher the penalties are.

The Court confirmed the application of ARAFER's decision to the whole sector, not only for the claimers.

✓ **Charges**

- ➔ Decisions related to the level and method of calculation of charges for accessing the railway network.



Example in Austria

SCK conducted a procedure to examine the recompense for promotional campaign and services in passenger railway stations, which a railway infrastructure manager had provided for in its Network Statement (SNNB). SCK declared the handling fee to be ineffective because in the procedure the railway infrastructure manager could not demonstrate conclusively how it had determined the amount.



Example in Germany

A component of the charging scheme of Hamburg Port Authority AöR (HPA) was rescinded by the Bundesnetzagentur. Several undertakings had claimed about this component before. Pursuant to this scheme the movement of rolling stock between different loading facilities within the port could be under certain conditions invoiced repeatedly. The provider of the port lodged an appeal. Further investigations in this case were conducted by the Bundesnetzagentur. The proceeding is still pending.



Example in Spain

A new Railway Act, transposing the RECAST Directive, was published on 30th of September 2015 in the Official Journal. In line with the Directive, a new access charges structure was adopted as well as the new regime for the service facilities regulation. In addition, competences of national regulatory body (CNMC) were enhanced although, as pointed out in the report presented to the Ministry, they did not comply with the Directive requirements.



Example in France

In February and May 2015, ARAFER issued two binding opinions on infrastructure charging for 2016. In these opinions, ARAFER asked the infrastructure manager (SNCF Réseau) to deeply redesign by 2017 its charging system notably by a review of its cost model and by an implementation of mark-ups based on efficient, transparent and non-discriminatory principles.



Example in Italy

Following the transposition of Directive 2012/34/EU into the Italian legislative framework by Legislative Decree No 112/2015 of 15 July 2015, the Transport Regulation Authority (ART) issued Decision No 96/2015 on 13th November 2015 setting the criteria to be applied by the infrastructure manager for the determination of the access charges for the use of the national rail infrastructure. The regulatory measures concerned, inter alia, the level of use and lease payments of station premises, freight terminals and technical facilities.



Example in Poland

The President of UTK issued decisions on approval of the unit rates of charges on the timetable 2014/2015 and on the timetable 2015/2016.

✓ Accounting separation / finance

- ➔ Decisions related to the control and regulation of financial accounting separation of activities within the incumbent and/or the infrastructure manager.



Example in Denmark

The regulatory body started an investigation concerning DSB's (the state owned railway undertaking) compliance with requirements on separation of accounts, etc. The investigation has shown compliance concerning the year 2015. Furthermore the board has adopted principles about how to handle these investigations in the future.



Example in France

Under the French law, accounting rules that are used by the railway undertakings to establish their separated accounts have to be approved by ARAFER. In 2014, SNCF Mobilités (former SNCF, the incumbent) submitted ARAFER its rules regarding its freight activity (Fret SNCF). In 2015, in its 22nd April decision, ARAFER rejected this document and asked SNCF Mobilités to produce before the end of 2015 new rules integrating all the accounting separations required by the law (freight, passenger activities – including activities partially financed by public funds and service facility management). ARAFER position was mainly due to the lack of separation of the service facilities in the accounts of Fret SNCF. Besides, the split of the cost of debt between the activities was not properly reflecting the financial expenses of an independent company. On top of that, with its deteriorated financial situation, the autonomy of Fret SNCF was questionable.



Example in the United Kingdom

In October 2015, ORR published its assessment of Network Rail's efficiency and financial performance for 2014-2015, the first year of control period 5 (CP5) which runs from April 2014 to March 2019.

✓ Rights and obligations of passengers

- ➔ Decisions related to difficulties in issuing of tickets, lack of information and quality services, poor hygiene conditions and overcrowded trains.



Example in the United Kingdom

ORR issued a new guidance on complaints handling procedures (CHPs) for the rail industry. The guidance is aimed at ensuring that train and station operators use the insight from passenger complaints to tackle root causes of dissatisfaction and continuously improve the passenger experience.



Example in Bulgaria

A scheduled inspection of the incumbent “BDZ – Passenger Services” EOOD was carried out by RAEA. The inspection found a violation of the requirements of Art. 9, paragraph 5 of Regulation (EC) № 1371/2007 related to the lack of information about the possibility and procedure for purchasing tickets. As a result of the inspection, a decision was issued for eliminating the problems.



Example in Denmark

Two complaints were filed concerning railway undertaking’s compliance with the regulation on rail passenger rights concerning compensations etc. in case of delays and cancellations and concerning information to the passengers about their rights. The investigation discovered several inconsistencies.



Example in Austria

In an ex officio investigation it was found out that a railway undertaking had published rules for delay compensation for season ticket holders which were not in line with the legislation. The railway undertaking was ordered to publish information on delays concerning season ticket holders and to change the rules so that they are in line with legislation.

✓ Network statement

➔ Decisions related to the assessment and regulation of the network statement.



Example in Kosovo

RRA has analyzed the draft of the Network Statement 2017, which has to do with the charging system, the overall level of payments for the use of services provides by the Infrastructure Manager. Based on formal competence to the draft of the Network Statement 2017, RRA recommends that the charging system shall be in compliance with developments in rail sector in Kosovo.

✓ Service facilities

➔ Decisions related to the regulation or dispute settlement regarding access to railway service facilities.



Example in Germany

The Federal Administrative Court approved a decision of the Bundesnetzagentur on the access right of loaders in rail terminals. Deutsche Umschlaggesellschaft Schiene-Straße mbH (DUSS) intended to exclude loaders, which contracted railway undertakings to carry goods, from their own right to conclude agreements for the handling of goods in rail terminals. Following the decision of Federal Administrative Court also loaders are authorized to conclude these contracts.



Example in Italy

ART issued Resolution 96/2015. These regulatory measures are aimed at establishing principles and criteria concerning the economic supply conditions, including regulatory accounting obligations for charges and payments for services relating to the national rail infrastructure, not included in minimum access package charges, if subject to regulation, pursuant to the provisions of Legislative Decree No 112/2015. ART adopted regulatory measures aiming at:

- a) ensuring effective, equal and non-discriminatory access to service facilities to railway undertakings;
- b) introducing for those services which, for technical or economic reasons, are supplied by a single provider or are otherwise under scarcely competitive conditions, mechanisms that encourage cost efficiency by the operators of service facilities;
- c) establishing a transparent framework of reference that ensures operators of service facilities and railway undertakings a better visibility of the economic terms of the supply.



Example in France

In February and July 2015, ARAFER issued four dispute settlements regarding railway stations charging. ARAFER received appeals from two public transport authorities against SNCF Gares & Connexions (the railway station manager and owner of buildings) and SNCF Réseau (the infrastructure manager and owner of platforms). The issues in the appeals were mainly about accounting transparency and Weighted Average Cost of Capital (WACC) levels. ARAFER determined that the methodology for WACC calculation was not adapted to the activity, considering (1) the moderate sensitivity of this activity to economic variations, (2) the public ownership of the two managers (belonging to the SNCF group) and (3) the annual review of the charging system for railway stations. ARAFER's decisions set the 2016 pre-tax WACC to [4.5%-5.4%] for SNCF Réseau instead of 6.2%, and to [5.5%-6.9%] for Gares & Connexions instead of 9.2%.

These decisions have been recently confirmed by the French Council of State.

✓ Performance regime

- ➔ Decisions related to performance regime of the infrastructure managers (e.g., performance-based fee components).



Example in Belgium

A railway undertaking complained about the number of minutes allocated under the bonus-malus system. Each delay is registered and accounted to the one responsible for the delay. When a railway undertaking disagrees with the allocated number of minutes, a neutral body, called 'the arbiter' looks into it and attributes the contested minutes. If there is still a disagreement between the parties after the intervention of the arbiter, the case is brought to the regulatory body who decides on the attribution of the minutes. It was the first time that a case was brought to the regulatory body.



Example in the United Kingdom

ORR launched a formal investigation to understand the reasons for Network Rail's enhancements going wrong and its failure to deliver its performance targets. The investigation found that Network Rail did not do everything reasonably practicable to deliver the reliability and punctuality needed to support the train services and also failed to adequately plan and deliver its enhancements program. In response to ORR's investigation findings, Network Rail agreed to develop an enhancement improvement plan to deliver the

extensive enhancements portfolio by 2019 and to adopt better planning and quality assurance processes before new timetables were implemented.

✓ **Safety, licensing and other matters**

- ➔ Decisions related to evolutions of network management in the framework of a railway accident or related to license attributions.



Example in Bulgaria

A complaint filed by SE NRIC was dealt with. It was related to the external prophylactic disinfection performed by the infrastructure manager for trains and vehicles entering into the country from Republic of Turkey due to a complex episodic situation and a refusal by "BDZ - Cargo" EOOD to pay charges for disinfection. As a result, it has been organized and held a meeting as a "round table" with participation of representatives of Bulgarian Food Safety Authority, the infrastructure manager and "BDZ - Cargo" EOOD with the commitment of RAEA as a mediator, for the settlement of the disputes arisen.



Example in Sweden

In September 2015, the Swedish Transport Agency decided to revoke the permission for TX Logistik to perform railway services. This based on lacking routines in their safety procedures.



Example in Poland

In 2015 the President of UTK issued 10 new licenses, 6 of them being first licenses based on the new format of documents, according to Commission Implementing Regulation (EU) 2015/171 of 4 February 2015 on certain aspects of the procedure of licensing railway undertakings.

Annexes

Annexes are available on the IRG-Rail website.⁹²

⁹² Available at <http://www.irg-rail.eu/public-documents/2017/>