

COMPARATIVE ANALYSIS OF RAILWAY MARKET LIBERALIZATION AND INTEROPERABILITY AS A PROGRESS TOWARDS A SINGLE EUROPEAN RAILWAY AREA

Abstract. Railway transport is a key pillar of the European Union's strategy to achieve climate neutrality by 2050, in line with the goals of the European Green Deal. This study provides a comparative analysis of the railway market liberalization process in selected Central European countries (the Czech Republic, Poland and Slovakia) in the context of developing the SERA. Methodologically, the study is based on a qualitative analysis of EU regulations, particularly the four Railway Packages, and a comparison of market indicators in freight and passenger transport. The results show that while the freight transport sector shows a high degree of openness, the passenger transport market in the reviewed countries is still characterized by the dominance of national carriers with persisting barriers for new entrants. The discussion focuses on the technical aspects of interoperability, particularly the implementation of the ERTMS. In conclusion, the study emphasizes that further liberalization and investment in modern technologies are essential for increasing the competitiveness of railways relative to other modes of transport.

Keywords: Railway Transport, Railway Market Liberalization, Single European Railway Area, Railway Packages, interoperability, sustainability

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Introduction

Rail transport has a key role in the transformation of the European transport system towards sustainability. Transport is necessary for the European economy and society, but the current model is not sustainable in the long term, as it is more than 96% dependent on fossil fuels for energy, particularly oil and petroleum products. This problem is worsened by the fact that transportation is one of the main sources of greenhouse gas emissions. The European Union has therefore set an ambitious goal of reducing emissions by at least 60% by 2050 compared to 1990's levels (European Commission, 2011).

The EU's strategic plan is for rail transport to gain a significantly larger share of both passenger and freight transport over medium and long distances by 2050. To implement this ambitious plan, it is necessary to create a Single European Railway Area (hereinafter SERA). This step requires the removal of technical, administrative and legal barriers, that have so far obstructed free access to national markets. Modern railway infrastructure must unite the eastern and western parts of Europe to fully reflect the needs of the entire continent and its more than 500 million inhabitants. Key to achieving these changes are technologies that enable the intelligent, safe and efficient use of the railway network (European Commission, 2011). This development is not only a step towards more environmentally friendly transportation but also towards the liberalization of the railway market.

The objective of this research is to provide comparative analysis of railway market liberalization and its impact on modernization of infrastructure and competitiveness in transport sector in selected

countries of Central Europe (Czech Republic, Poland and Slovakia) in the context of establishing the SERA.

1. Literature Review

A key prerequisite for rail to become a competitive mode of transport alternative capable of absorbing a significant portion of passenger and freight traffic from the roads is the harmonization of conditions for accessing the railways in the Member States. The EU is trying to achieve this by establishing the SERA. Since 2001, the EU has been adopting a series of legislative packages aimed at gradually opening up railway markets to competition, ensuring the interoperability of national railway systems across the entire EU (UNIFE, n.d.) and the establishment of proper framework conditions for the development of the SERA (Directorate-General for Mobility and Transport, n.d.⁴).

The First Railway Package, adopted in 2001, laid the groundwork for liberalization by separating infrastructure management from transport operations (Delsignore, 2018). The aim was to enable railway undertakings to access the trans-European network on a non-discriminatory basis. The need to improve train path allocation, establish a tariff structure reflecting actual costs, reduce delays at borders and introduce quality criteria was highlighted. The European Commission therefore set out a list of measures needed to be adopted in order to establish the freeways. The First Railway Package also included three legislative acts:

- Directive 2001/12/EC of 26 February 2001 amending Council Directive 91/440/EEC on the development of the Community's railways,

- Directive 2001/13/EC of 26 February 2001 amending Council Directive 95/18/CE on the licensing of railway undertakings,
- Directive 2001/14/EC of 26 February 2001 on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification (Directorate-General for Mobility and Transport, n.d.^a).

The Second Railway Package, adopted in 2004, revitalized railway transport by accelerating the development of an integrated railway area. The measures in this package were aimed at improving safety and interoperability and opening up the railway freight market. Since 2007, the freight transport must be fully open to competition. This Package also led to the establishment of the European Union Agency for Railways (hereinafter ERA), introduced common procedures for accident investigation and also established National Safety Authorities in each Member State. The Second Railway Package also included for legislative acts:

- Directive 2004/49/EC of 29 April 2004 on safety on the Community's railways and amending Council Directive 95/18/CE on the licensing of railway undertakings and Directive 2001/14/CE on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification,
- Directive 2004/50/EC of 29 April 2004 amending Council Directive 96/48/EC on the interoperability of the trans-European high-speed rail system and Directive 2001/16/EC of the European Parliament and of the Council on the interoperability of the trans-European conventional rail system,
- Directive 2004/51/EC of 29 April 2004 amending Council Directive 91/440/EEC on the development of the Community's railways,
- Regulation (EC) No 881/2004 of the European Parliament and of the Council of 29 April 2004 establishing a European Railway Agency (Directorate-General for Mobility and Transport, n.d.^e).

As a part of the Third Railway Package of 2007, measures were adopted to liberalize cross-border passenger railway transport and to regulate passenger rights, including minimum quality standards, such as non-discrimination of disabled travellers or persons with reduced mobility, and liability in the case of accidents. It also introduced certification of train drivers with a unified European driver's licence. By 2010, Member States were required to implement the right to free access to cross-border passenger railway transport services- The Third Railway Package also included five legislative acts:

- Directive 2007/58/EC of the European Parliament and of the Council of 23 October 2007 amending Council Directive 91/440/EEC on the development of the Community's railways and Directive

2001/14/EC on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure,

- Directive 2007/59/EC of the European Parliament and of the Council of 23 October 2007 on the certification of train drivers operating locomotives and trains on the railway system in the Community,
- Regulation (EC) No 1370/2007 of 23 October 2007 on public passenger transport services by rail and by road and repealing Council Regulations (EEC) Nos 1191/69 and 1107/70,
- Regulation (EC) No 1371/2007 of 23 October 2007 on rail passengers' rights and obligations,
- Regulation (EC) No 1372/2007 of 23 October 2007 amending Council Regulation (EC) No 577/98 on the organisation of a labour force sample survey in the Community (Directorate-General for Mobility and Transport, n.d.^f).

In 2012, there was adopted the Directive 2012/34/EU of the European Parliament and of the Council of 21 November 2012 establishing a single European railway area (SERA) (Directorate-General for Mobility and Transport, n.d.^g).

The most recent railway package was the Fourth Railway Package of 2016, which was intended to complete the development of the SERA. The main objectives of this package were to revitalize the railway sector and to increase its competitiveness compared to other modes of transport. The Package consists of two legislative pillars, technical and market. Within the technical pillar, three legislative acts were adopted:

- Regulation (EU) 2016/796 on the European Union Agency for Railways and repealing Regulation (EC) n° 881/2004,
- Directive (EU) 2016/797 on the interoperability of the rail system within the European Union (Recast of Directive 2008/57/EC),
- Directive (EU) 2016/798 on railway safety (Recast of Directive 2004/49/EC) (Directorate-General for Mobility and Transport, n.d.^b).

The aim of the technical pillar is to significantly reduce costs and administrative burdens for railway undertakings operating in more than one Member State by establishing a One-Stop-Shop under the supervision of ERA (Directorate-General for Mobility and Transport, n.d.^b).

Within the market pillar, three legislative acts were adopted later that year:

- Regulation (EU) 2016/2338 amending Regulation (EU) 1370/2007, which deals with the award of public service contracts for domestic passenger transport services by rail ('PSO Regulation')
- Directive 2016/2370/EU amending Directive 2012/34/EU, which deals with the opening of the market of domestic passenger transport services

by rail and the governance of the railway infrastructure ('Governance Directive')

- Regulation (EU) 2016/2337 repealing Regulation (EEC) 1192/69 on the normalisation of the accounts of railway undertakings (Directorate-General for Mobility and Transport, n.d.^b).

This pillar completes the process of gradually opening up the railway market by introducing mandatory competition in passenger transport markets. This is intended to encourage railway undertakings to better respond to customer needs and to improve the quality and cost-effectiveness of their services. Competitive tendering for public contracts should also lead to savings in public funds (Directorate-General for Mobility and Transport, n.d.^b).

2. Methodology

The study is designed as a comparative analysis of the current state of railway market liberalization in selected Central European countries, supported by qualitative assessment of EU legislative frameworks, with particular emphasis on the Four Railway Packages, as well as strategic documents aimed at establishing the Single European Railway Area. The study highlights the identification of obstacles, opportunities and emerging trends that shape the process of liberalization and integration of rail transport in the context of SERA.

3. Results

The liberalization of railway transport is a gradual process that has been ongoing for many years, involving the implementation of EU legislative norms, to which many European countries have responded in different ways. As a part of our research, we further focused on how the liberalization of railways market is progressing and what it seems like in three Central Europe countries – Czech Republic, Poland and Slovakia.

3.1. Czech Republic

The process of railway transport liberalization in the Czech Republic can be characterized as a restructuring from a state monopoly to a system of separate infrastructure management a transport operations management in 2003. It's not a holding company structure, but the creation of two separate companies – Správa železnic, s.o. as an infrastructure manager and České dráhy, a.s. as the railway undertaking (Správa železnic, 2025).

The key entity in the Czech railway system is therefore Správa železnic, s.o., which as the manager of most railway lines in the Czech Republic acts as the owner and operator of the 9 349 kilometres of railways and allocates track capacity (Správa železnic, 2025). Safety supervision and market regulation are performed by the National Safety Authority Drážní úřad, which issues licences and safety certificates in accordance

with the requirements of the Fourth Railway Package and in cooperation with ERA (Drážní úřad, 2025).

In the freight railway transport sector, the market is highly open to competition and the national carrier's market share is significantly low. In 2024, it was slightly over 50 % of market share for ČD Cargo, a.s. carrier (Správa železnic, 2025). The other leading freight carriers that year were METRANS Rail s.r.o. and LOKORAIL, a.s. (Správa železnic, 2025).

Two types of competition are emerging in passenger transport. Firstly, it's the unregulated Open Access model, primarily on the commercially most attractive Prague-Ostrava route, where three carriers – the national carrier and two private carriers – compete without any state funding. The entry of competitors has led to increased service frequency, lower prices for passengers and significant improvement in services. Secondly, it's the regulated competition, which covers most market segments in regional and long-distance transport. These are funded by public service obligations. The number of routes obtained by private carriers through competitive bidding is gradually increasing (Tomeš et Jandová, 2016). In 2014, private carriers held 6.6 % of transport performance in passenger-kilometers (Vokoun et al., 2026). By 2024, České dráhy, a.s. as a national carrier held slightly over 80 % of the market share (Správa železnic, 2025), there it's visible that their share has been decreasing over the recent years.

Comparative analyses show that private carriers often achieve higher scale efficiency than national carriers. While České dráhy, a.s. recorded average scale efficiency around 50 %, private carriers such as RegioJet, a.s. achieved optimal utilization of their resources (Vokoun et al., 2026).

Liberalization of the railway market also leads to faster infrastructure modernization and improving safety. A strategic priority is the implementation of the European Rail Traffic Management System (hereinafter ERTMS), which is initially intended to cover key corridors and ensure smooth cross-border operations (Správa železnic, 2025).

Despite this progress, the liberalization in the Czech Republic, particularly in the segment of passenger transport, is facing specific barriers. A significant restriction was the Memorandum from 2009, which closed the competition on the regional transport market for 10 to 15 years (Tomeš et Jandová, 2016). Other challenges include institutional fragmentation and time-consuming tender processes (Vokoun et al., 2026). However, thanks to competitive pressures, the Czech railway market is gradually transforming into more efficient and costumer-oriented system leading to the SERA.

3.2. Poland

The process of liberalizing the railway market in Poland was launched by a major reform initiated by the Legal Act of 8 September 2000 on the Commercialisation and Restructuring of the State Enterprise "Polskie Koleje Państwowe" (Polskie Koleje

Państwowe S.A., n.d.). This transformation was necessary for Poland as a candidate country to align its regulations with EU standards and became a member in 2004 (Mężyk, 2018).

To separate infrastructure management from transport operations, the PKP Group was established in 2001, consisting of parent company PKP SA and 24 smaller enterprises, separating also freight transport and passenger transport. Furthermore, passenger transport is separated between several companies dividing long-distance and regional passenger services (Mężyk, 2018). Since 2022, the PKP Group has been operating as a holding company that incorporates all key companies (Polskie Koleje Państwowe S.A., n.d.).

The freight transport sector in Poland is considered one of the most competitive in the EU (Mężyk, 2018). While there were only 20 active freight railway undertakings in 2003, by 2024 the infrastructure manager PKP PLK was serving 113 freight carriers and 6 carriers operating in both passenger and freight transport (PKP Polskie Linie Kolejowe S.A., 2025). The market share of the dominant PKP CARGO S.A. has gradually decreased as a result of competition. In 2016, it held around 50 % of the market. Its most significant competitors included for example DB Cargo Polska S.A. nebo LOTOS KOLEJ Sp. z o.o. (Mężyk, 2018).

Competition in passenger transport is weaker than in freight transport. PKP Intercity sp. z o.o. maintain a dominant position in long-distance transport, while twelve railway undertakings operate in the regions, most of which are owned by regional governments (Mężyk, 2018). In 2024, a total of 19 carriers and 6 carriers operating in both passenger and freight transport operated on Polish railways (PKP Polskie Linie Kolejowe S.A., 2025).

PKP Polskie Linie Kolejowe S.A. serves as the infrastructure manager and in 2024, managed approximately 18 915 km of railway lines. The infrastructure is equally available to all carriers in accordance with the Railway Transport Act and the Decree of the Minister responsible for infrastructure of 7 April 2017 on the provision of railway infrastructure. In 2024, nearly 2.9 million train journeys were realized on the network. Poland is implementing extensive investment programs aimed at increasing the safety and competitiveness of the railways. Furthermore, the length of tracks allowing speeds of 120 km/h and higher is being systematically increased (PKP Polskie Linie Kolejowe S.A., 2025).

PKP Group's activities are fully aligned with European sustainable development strategies, which aim to develop the SERA (Polskie Koleje Państwowe S.A., n.d.). Poland actively participates in international cooperation within international organizations and utilizes European funds for the digitalization and modernization of infrastructure (PKP Polskie Linie Kolejowe S.A., 2025). The further development of railways in Poland depends on the continued increase in train speeds, the development of intermodal transport and integration

into the European economic system (Mężyk, 2018; Polskie Koleje Państwowe S.A., n.d.).

3.3. Slovakia

The process of railway liberalization in Slovakia, much like in neighbouring countries, is defined by market transformation in accordance with EU regulation. The Slovak model, similar to the Czech one, is based on the separation of infrastructure management and transport operations into independent companies. In 2002, Železnice Slovenskej republiky were established as the infrastructure manager and Železničná Spoločnosť Slovensko, a. s. as a railway undertaking (Brumercikova and Sperka, 2020).

Železnice Slovenskej republiky are responsible for railway lines operations, traffic control and network maintenance. In 2024, it managed 3 629 kilometres of railway tracks (Železnice Slovenskej republiky, 2025). The role of National Safety Authority is fulfilled by Dopravný úrad, which issues certificates and supervises compliance with interoperability standards (Dopravný úrad, 2025).

Freight railway transport segment in Slovakia can be overall considered liberalized. The national carrier ZSSK Cargo, a. s. holds slightly over 50 % of the market share, but other carriers, such as METRANS Rail Slovakia, s. r. o. or LOKORAIL, a. s., also hold significant market positions. In 2024, a total of 40 freight carriers and 3 carriers providing both freight and passenger transport used Slovak railways (Železnice Slovenskej republiky, 2025).

In the passenger transport railway sector, liberalization has not progressed as far. When it comes to services in public interest, the national carrier Železničná spoločnosť Slovensko, a. s. holds a dominant position. Only on one route, the public tender was won by the private carrier Leo Express Slovensko s. r. o. In commercial services however, there are several of private carriers. A total on 9 passenger transport carriers operate on the Slovak railways (Železnice Slovenskej republiky, 2025). In its strategy, national carrier Železničná spoločnosť Slovensko, a. s. states that it is actively responding to the challenges associated with liberalization and increased competition by modernizing its rolling stock and improving its services (Železničná spoločnosť Slovensko, a. s., 2025).

Slovak railways face several strategic challenges. A major problems are the high proportion of technically outdated infrastructure and a significant accumulation of postponed maintenance, which limit the speed and reliability of railway transport. Modernization and ERTMS implementation are heavily dependent on EU funds. However, opportunities for railway transport include the growing mobility if the population and the demand for eco-friendly and integrated transport (Železnice Slovenskej republiky, 2025).

Overall, Slovakia is also gradually moving towards railway market liberalization and the development of the SERA. However, there is still a need to invest in modern technologies a gradually remove barriers

for new carriers which will lead to more efficient and competitive transport system.

4. Discussion

One of the key persistent problems is the gap between formal railway market liberalization and actual technical and economic integration. Although the legislative framework established by the four Railway Packages has prepared the conditions for competition, barriers remain in reality in the form of limited infrastructure capacity and technical incompatibility (Directorate-General for Mobility and Transport, 2021).

For all the three countries reviewed, the implementation of the ERTMS is a critical milestone for the development of the SERA. Without a unified signalling system, cross-border transport remains slow and costly due to the need to change locomotives or train crew members (Hojnik, 2016). Both the Czech Republic and Poland have made significant progress in this area. The Czech Republic is already implementing exclusive ERTMS operation on major corridors (Správa železnic, 2025), making it a key player in European interoperability.

Comparative studies confirm that private carriers show greater scale effectivity than national carriers, which suffer from bureaucracy and decreasing returns to scale (Vokoun et al., 2026).

The liberalization of commercial passenger railway transport in the Czech Republic has led to improved services and fleet modernization. However, unequal access to services of public interest remains a persistent problem across all countries with these being often directly contracted to national carriers.

In the area of freight railway transport, it can be said that all three countries can serve as examples of a relatively successfully liberalized market, where private carriers hold nearly half of total transport volume.

Strategic infrastructure modernization projects are essential for increasing market share of railway transport. In line with the European Green Deal and White Paper, the goal is to convert most transport over 300 kilometres from road to rail by 2050, which requires a modern, high-speed and energy-efficient network (European Commission, 2011).

Conclusion

The transformation of the railway sector in Central Europe shows that while market liberalization is a necessary condition for increasing the competitiveness of railway transport, it is not sufficient on its own. The liberalization process in the Czech Republic, Poland and Slovakia has brought increased dynamism, particularly in freight transport and on commercial passenger lines, where competition has put pressure on quality and innovation.

The full establishment of the SERA depends on the completing of major modernization projects ensuring truly non-discriminatory access to infrastructure

and station services, as well as competitive bidding for the services in public interest.

Railway transport remains the cleanest mode of transport with the lowest emissions (Hojnik, 2016). The future success of the railway sector in the reviewed countries depends on the ability to utilize EU funds to modernize outdated infrastructure and create a user-friendly system that will be the preferred choice for both passengers and freight shippers.

It is clear that even though the revolution in European railways is still ongoing, the results achieved in modernization and competitiveness in the Czech Republic, Poland and Slovakia form a solid basis for meeting climate goals by 2050.

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References

- Brumercikova, E. and Sperka, A. 2020 Problems of Access to Services at Railway Stations in Freight Transport in the Slovak Republic. *Sustainability*, 12(19), 8018. Available at: <https://doi.org/10.3390/su12198018>
- Delsignore M. 2018 The Fourth Railway Package: the Governance Structure and the Unsolved Problem of Vertical Integration. *Rivista della Regolazione dei Mercati*, 2, 214-225. Available at: https://images.rivistadellaregolazioneideimercati.it/f/articoli/154_articolo_Rb5fu_due.pdf
- Directorate-General for Mobility and Transport. 2021 New Action Plan: boosting long-distance and cross-border passenger rail. Brussels. Available at: https://transport.ec.europa.eu/news-events/news/action-plan-boost-passenger-rail-2021-12-14_en
- Directorate-General for Mobility and Transport. n.d. First railway package of 2001. Brussels. Available at: https://transport.ec.europa.eu/transport-modes/rail/railway-packages/first-railway-package-2001_en
- Directorate-General for Mobility and Transport. n.d. Fourth railway package of 2016. Brussels. Available at: https://transport.ec.europa.eu/transport-modes/rail/railway-packages/fourth-railway-package-2016_en
- Directorate-General for Mobility and Transport. n.d. Recast of the first railway package. Brussels. Available at: https://transport.ec.europa.eu/transport-modes/rail/railway-packages/recast-first-railway-package-directive-201234eu_en
- Directorate-General for Mobility and Transport. Railway Packages. Brussels. Available at: https://transport.ec.europa.eu/transport-modes/rail/railway-packages_en

- Directorate-General for Mobility and Transport. n.d. Second railway package of 2004. Brussels. Available at: https://transport.ec.europa.eu/transport-modes/rail/railway-packages/second-railway-package-2004_en
- Directorate-General for Mobility and Transport. n.d. Third railway package of 2007. Brussels. Available at: https://transport.ec.europa.eu/transport-modes/rail/railway-packages/third-railway-package-2007_en
- Dopravný úrad. 2025 Výročná správa Dopravného úradu za rok 2024. Bratislava. Available at: <https://nsat.sk/dopravny-urad-menu-udaje-a-dokumenty/vyroczne-spravy/>
- Drážní úřad. 2025 Výroční zpráva o bezpečnosti 2024. Prague. Available at: <https://du.gov.cz/wp-content/uploads/2025/09/Vyrocní-zpráva-o-bezpečnosti-2024.pdf>
- European Commission. 2011 WHITE PAPER Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system. Brussels. Available at: <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0144:FIN:EN:PDF>
- Hojnik J. 2016 Legal Challenges of the Railway Liberalisation in the EU. In: Bodiřoga-Vukobrat, N., Rodin, S., Sander, G. (eds) *New Europe - Old Values?*. Europeanization and Globalization, vol 1. Springer, Cham. https://doi.org/10.1007/978-3-319-02213-0_11
- Mężyk, A. 2018 Railway Structure and Performance in Poland. In: Suchanek, M. (eds) *New Research Trends in Transport Sustainability and Innovation*. TranSopot 2017. Springer Proceedings in Business and Economics. Springer, Cham. Available at: https://doi.org/10.1007/978-3-319-74461-2_10
- PKP Polskie Linie Kolejowe S.A. 2025 Annual report 2024. Warsaw. Available at: https://en.plk-sa.pl/files/public/raport_roczny/Raport_Roczny_2024_EN.pdf
- Polskie Koleje Państwowe S.A. n.d. About PKP S.A. Available at: <https://www.pkp.pl/en/pkpsaen/menu-aboutpkpsa>
- Správa železnic. 2025 Výroční zpráva 2024. Prague. Available at: <https://www.spravazeleznic.cz/onas/publikace/vyrocní-zpravy>
- Tomeš, Z. and Jandová, M. 2016 Approaches to Czech Passenger Railway Market Liberalisation. *Acta Oeconomica Pragensia*, 24(1), 68-81. Available at: <https://doi.org/10.18267/j.aop.499>
- UNIFE. n.d. Fourth Railway Package. [cit. 2026-04-27]. Available at: <https://www.unife.org/activities/fourth-railway-package/>
- Vokoun M., Stellner F., Nigrin T. and Neugbauer. 2026 Railway liberalization and efficiency: Incumbents vs. Entrants in Austria and Czechia. *Case Studies on Transport Policy*, 23, 101710. Available at: <https://doi.org/10.1016/j.cstp.2026.101710>
- Železnice Slovenskej republiky. 2025 Výročná správa 2024. Bratislava. Available at: <https://www.zsr.sk/onas/vyroczne-spravy/>
- Železničná spoločnosť Slovensko, a. s. 2025 Výročná správa Železničnej spoločnosti Slovensko, a. s. za rok 2024. Bratislava. Available at: <https://www.zssk.sk/wp-content/uploads/2025/08/VYROCNA-SPRAVA-2024.pdf>