

SESSION C:

PRODUCTION TECHNOLOGIES, CAE AND MANAGEMENT

Balancing between public service obligations and market efficiency: Modern challenges in passenger rail transport

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ABSTRACT

Public service contracts (PSCs) in passenger rail are a cornerstone of sustainable mobility policy, ensuring the provision of socially necessary but commercially unviable services. However, evolving regulatory frameworks, rising operating costs, decarbonisation targets and rising service quality expectations are putting pressure on traditional contracting models. This report examines the contemporary challenges faced by PSCs in passenger rail, with a focus on the tension between public service obligations and market-driven efficiency. The study focuses on the consequences of market liberalisation and the introduction of competitive tendering under the EU's Fourth Railway Package. Key risks are identified, including information asymmetry between contracting authorities and operators. Through policy analysis, the report proposes a bargaining model that balances flexibility, accountability, and long-term investment incentives. The findings contribute to the ongoing debate on how to structure effective and sustainable public service contracts (PSCs) that can adapt to changing economic, technological and environmental conditions, while maintaining accessibility and affordability for passengers. Practical recommendations are proposed for policymakers, transport authorities and rail operators seeking to optimize public services in a rapidly changing mobility landscape.

KEYWORDS

Rail transport, Public service obligation, Sustainable mobility, Liberalization

1. INTRODUCTION

Passenger rail transport is a strategic sector that combines economic, social and environmental functions. In many countries, railway operators perform services that are not economically profitable but are essential for society. These services are defined as Public Service Obligations (PSO) and are financed through public compensation. At the same time, the processes of liberalization and opening of the railway markets in the European Union place an increasing emphasis on efficiency, competitiveness and quality of services. This creates a need to find a balance between public objectives and market principles.

The purpose of this study is to analyze the main challenges to achieving such a balance and to propose possible directions for the development of the sector.

2. THEORETICAL ASPECTS OF PUBLIC SERVICE OBLIGATIONS

The concept of public service is based on the need for certain transport services to be provided regardless of their economic profitability. The main objectives include:

- ensuring transport accessibility;
- social inclusion of the population;
- regional development;
- reducing the environmental footprint of the transport system.

Rail transport has the characteristics of a public good due to the significant external benefits it generates – reducing congestion, greenhouse gas emissions and road accidents.

Public service obligations in rail passenger transport of general interest include:

- Ensuring the necessary frequency of service.

The competent authorities must guarantee public services also in low-density areas, urban transport services outside peak hours in the late hours of the day and at weekends, regardless of demand levels.

- Assuming tariff obligations.

Public service obligations may include a regulated non-commercial tariff structure, or a limitation of tariff increases below those recommended by public service operators or at a lower rate than cost increases.

- Ensuring safety and reliability of services.
- Higher quality services and meeting the constantly changing requirements of customers.

In economic theory, public service obligations often lead to conflict between social efficiency and financial sustainability [3, 4, 5]. Operators are forced to maintain lines with low demand, which increases costs and creates a dependence on government funding.

3. EUROPEAN REGULATORY FRAMEWORK AND LIBERALIZATION OF THE RAILWAY MARKET

Over the past two decades, the European Union has pursued a consistent policy of liberalizing the railway sector. Through a series of railway packages, the aim is to create a Single European Railway Area based on competition and non-discriminatory access to infrastructure [1, 2].

Of particular importance is Regulation (EC) No 1370/2007, which regulates the award of public service obligations in passenger transport [1]. The Regulation allows for the granting of compensation for the performance of public service obligations, while at the same time setting requirements for transparency and efficiency.

The introduction of competitive procedures in the award of public contracts aims to stimulate:

- reduction of operating costs;
- improving the quality of services;
- increasing innovation;
- better use of public funds.

However, the practical application of these principles faces a number of challenges related to the specificities of the railway sector.

4. KEY CHALLENGES IN BALANCING PUBLIC SERVICE AND MARKET EFFICIENCY

Financial sustainability of public services

One of the most serious problems is the need for significant public subsidies. In many countries, ticket revenues cover only a fraction of operating costs.

Rising energy prices, inflationary pressures and the need for investments in rolling stock are increasing the financial burden on state budgets. This raises the question of the effective use of public resources and the optimization of transport services.

Competition and social responsibility

Liberalization stimulates competition, but private operators are usually interested in profitable routes with high demand. This can lead to so-called "cream skimming", where unprofitable lines remain entirely the burden of the public operator.

Therefore, regulators must develop mechanisms to ensure equality between participants and at the same time provide transport services to less populated regions.

Quality of service and passenger satisfaction

Market efficiency should not be viewed solely through the prism of financial indicators. Important criteria are:

- punctuality of trains;
- service reliability;
- accessibility for people with reduced mobility;
- information service;
- comfort and safety.

Modern public service contracts increasingly include quality indicators and mechanisms for financial incentives or sanctions for operators.

Digitalization and technological transformation

The development of digital technologies creates new opportunities for improving efficiency. Traffic management systems, electronic ticketing, big data analytics and artificial intelligence can optimize operational processes and reduce costs.

At the same time, implementing such solutions requires significant investments and institutional capacity.

Environmental requirements and sustainability

Rail transport is among the most environmentally friendly modes of transport. The European Green Deal and decarbonisation policies are strengthening its role as a tool for sustainable development.

However, there is a need for significant investments in electrification, infrastructure modernization and rolling stock renewal. These investments often cannot be realized through market mechanisms alone and require public support.

5. GOOD EUROPEAN PRACTICES

The experience of a number of European countries shows that successfully combining societal and market objectives is possible (Table 1).

Table 1: Foreign experience [6, 7, 8, 9, 10, 11]

Countries:	Czech Republic	Republic of Croatia	Kingdom of Belgium	Hungary	Slovak Republic
Organization:					
Public service obligations for long-distance and interregional transport are negotiated with	the Ministry of Transport (28.8% share of the PSO); 14 regions conclude their own PSO contracts (71.2% share of the PSO);	the Ministry of Transport	the Ministry of Transport	the Ministry of Transport; regions conclude their own PSO contracts;	the Ministry of Transport
Railway Passenger Transport Operators:					
- state-owned operator:	1	1	1 - domestic traffic only	1	1
- majority state-owned company:	-	-	-	1 - The state owns 65.6% of the company's capital, 28.3% is owned by the Republic of Austria, and the remaining 6.1% is privately owned.	-
- private operators:	7 - - with four of them having full obligations, while the other three have obligations only for a fare reduction. Private operators serve between 5% and 10% of the total passenger flow in the market.	-	3 - international transport only	-	3 - only one has a Public Service Contract and it serves 3.5% of the total passenger flow on the market.
Quality criteria:					
- reliability of operating rolling stock;	✓	✓	✓	✓	✓
- punctuality of trains - schedule compliance, train connections;	95%	95%	100%	100%	100%
- cleanliness of the rolling stock;	✓	✓	✓	✓	✓
- functioning of heating, air conditioning, opening of windows and doors, etc.;	✓	✓	✓	✓	✓
- additional amenities - free Wi-Fi access, bicycle storage, etc.	✓	✓	✓	✓	✓

Germany implements a model of regional procurement through competitive procedures, which leads to improved quality and reduced costs.

Sweden was among the first countries to liberalize its railway market, combining competition with clearly defined public obligations.

Austria demonstrates an effective model for integrating public services with national goals for sustainable transport and climate neutrality.

What successful models have in common is the presence of clear contractual relationships, stable financing, and effective control over implementation.

6. GUIDELINES FOR IMPROVING THE BALANCE BETWEEN PUBLIC SERVICE AND EFFICIENCY

To achieve a sustainable balance, it is necessary:

1. Increasing transparency in determining compensation for public services.
2. Implementation of performance and quality indicators in contracts with operators.
3. Promoting competition where it is economically justified.
4. Investments in digitalization and intelligent transport systems.
5. Better integration between rail and other modes of public transport.
6. Development of sustainable financial models for long-term support of the sector.

CONCLUSION

The balance between public service obligations and market efficiency is one of the key challenges facing modern passenger rail transport. On the one hand, society expects affordable, high-quality and environmentally sustainable transport services. On the other hand, limited public resources and liberalisation processes require operators to increase their efficiency and competitiveness.

Successful management of this balance requires a combination of an adequate regulatory framework, transparent financing mechanisms, innovation and consumer orientation. In the context of increasing demands for sustainable mobility, rail transport will continue to play a strategic role, which necessitates a constant pursuit of an optimal balance between public interest and economic efficiency.

For private railway operators to participate in the passenger market and assume public service obligations, it is appropriate to divide the railway network with railway services into segments, based on the expected revenues from public services for 5 years, guaranteeing a minimum revenue of X million euros per year for each segment. In this way, participants will be equal and will be able to participate in the tender for as many segments as they want. Then a competitive advantage will be the extent to which operators manage to minimize their costs. Another advantage may be evidence of opportunities for coordinating timetables with road or urban transport.

When assuming Public Service Obligations, it is necessary to ensure equal access for each applicant to the rolling stock and conditions for its operation and maintenance. Also, applicants must necessarily demonstrate the ability to effectively manage the life cycle of the rolling stock (operational capabilities, ongoing maintenance, repair, modernization).

The rolling stock and depots of state railway operators (freight and passenger) need to be converted into separate units (one or more) and the possibility of private investment assessed.

The analysis of practices in EU Member States (Czechia, Germany, Poland, Hungary, and Slovakia) shows the following legally defined levels of reasonable profit: 7.5% in Czechia, 6% in Germany and Poland, 4% in Hungary, and a range from 2% to 7.5% in Slovakia. In the case of public rail transport in Bulgaria, the principle of reasonable profit without a fixed percentage is applied according to the European regulatory framework, while for bus transport a profit ceiling of 5% is set by law. To achieve equality between road and rail transport, a reasonable profit level set as the maximum permissible value of 5% could be discussed.

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