

WHAT IS THE REAL POWER OF INCUMBENTS? CASE STUDY ON THE CZECH REPUBLIC

ABSTRACT

After an introduction of competition due to liberalisation, there is an expectation of lower prices and better quality. However, these overall positive effects could be also driven by the incumbent's incentive to exclude competition within the liberalised markets. Such a situation occurred on the Prague-Ostrava line where liberalisation brought lower prices and an increase in quality. However, it also brought multiple accusations by both the Czech competition authority and the European Commission of the state-owned incumbent, České dráhy, that it had engaged in predatory pricing. This paper then assesses whether the price decreases within this line were driven by actual competition or by predatory behaviour of České dráhy by analysing the position of České dráhy. The aim of this paper therefore is to assess the real market power of the Czech state incumbent, České dráhy, on the Prague-Ostrava line. To achieve this aim, we used unique data we had gathered from our previous research (such as price development, market shares and customer behaviour). Our results then show that it is unlikely that České dráhy could have acted independently of its competitors and customers, which indicates that it could not have had a dominant position.

JEL: K21, R49, L44, L92

I. INTRODUCTION

The European railway industry went through liberalisation reforms aiming to eliminate national transport monopolies and open markets up to competition (Nash et al. 2014). Such an increase in competition in the industry usually benefits the consumers in terms of increase of choice, better quality, and lower prices (e.g.: Nash et al. 2013; Smith et al. 2018; Link, 2019). However, railway markets are often characterised by strategic interactions among competing firms (Bergantino 2018). State-owned rail incumbents may impede the liberalisation process by leveraging their strong market positions to exclude newcomers from entering or competing in it (Tomeš & Jandová, 2018; Montero, 2019). To exclude competition, the incumbent can engage for example in predatory pricing or other exclusionary practices. It can be therefore problematic to identify whether the decrease in prices within the liberalised market was caused by actual competition or by predatory pricing (Funk & Jaag, 2018).

A good example of such a situation is the Prague-Ostrava line which is one of the busiest and most lucrative lines in the Czech Republic. On this line, operation was completely liberalised in 2011, and since then, three rail undertakings have existed in free, open-access competition: the two newcomers RegioJet and Leo Express, and the state-owned incumbent - České dráhy ("CD"). Although the competition on the Prague-Ostrava line brought lower fares and an increase in quality, it also incited multiple accusations against CD that it had engaged in predatory pricing.

The Czech Office for the Protection of Competition initiated proceedings against CD for suspicion of abuse of its dominant position in the form of predatory pricing on the Prague-Ostrava line in 2012. Subsequently, Leo Express lodged a complaint with the European Commission. Following the complaint, the Commission carried out inspections at the premises of CD in April 2016 (European Commission, 2020). In November 2016, the European Commission opened a formal investigation whether CD had charged prices below its costs with the aim of excluding competition in the rail passenger transport market, in breach of EU antitrust rules (European Commission, 2016). In 2020, the Commission reached the preliminary view that between 2011 and 2019, CD had indeed engaged in predatory pricing on the Prague-Ostrava line (European Commission, 2020). However, the European Commission closed the investigation in 2022 because the evidence did not confirm Commission's concerns about predatory prices (European Commission, 2022).

The key question of these proceedings was whether the incumbent had sufficient market power and thus engaged in predatory pricing, or whether it was exposed to effective competition from the new entrants. Simply put, on the one hand, if the incumbent had sufficient market power, it could have engaged in predatory pricing. On the other hand, if the incumbent did not have sufficient market power, it is likely that it was compelled to decrease its market prices out of actual competition. To conclude whether the lower prices on the Prague-Ostrava line were driven by actual competition or predatory behaviour, this paper aims to assess the position of the state-owned incumbents using a case study of the Prague-Ostrava line.

To achieve the above-mentioned aim, this paper firstly provides a general approach towards relevant market definition within the passenger railway industry and subsequently defines relevant market for this case study (i.e., Prague – Ostrava line). Afterwards, we apply the general framework for assessment of dominance to assess whether CD was in a position of economic strength enabling it to prevent effective competition from being maintained in the relevant market, i.e., whether it enjoy a dominant position.

In the case study, the authors utilise unique information gathered from CD and Leo Express, annual reports of the rail undertakings, the Czech Ministry of Transport and Chaps (the company that maintains the national information system on regular public passenger transport timetables).

II. REGULATORY FRAMEWORK AND RELEVANT LITERATURE

The assessment of dominance requires the identification of all relevant competitive constraints that the investigated undertaking faces. Therefore, the first step for dominance assessment is to define the relevant market (Motta, 2009). The relevant market is then defined as a set of products or services (and their geographical locations), which impose an effective competitive constraint on the product or service of the firm under investigation (Motta, 2009). The relevant market is thus an intersection of a relevant product market which "*comprises all those products and/or services which are regarded as interchangeable or substitutable by the consumer, by reason of the products' characteristics, their prices and their intended use*", and a relevant geographic market which "*comprises the area in which the undertakings concerned are involved in the supply and demand of products or services, in which the conditions of competition are sufficiently homogeneous and which can be distinguished from neighbouring areas because the conditions of competition are appreciably different in those areas*" (European Commission, Commission Notice on the definition of relevant market for the purposes of Community competition law).

Defining the relevant product market usually begins with a qualitative identification of market segments that share similar characteristics, followed by further investigation of substitution patterns between these segments (Davis & Garcés, 2010). The segments considered substitutable with each other then constitute a relevant product market. To assess the extent of substitutability among segments, it is recommended to follow the rationale of so called SSNIP test, i.e., test of small but significant non-transitory increase in price (European Commission, Commission Notice on the definition of relevant market for the purposes of Community competition law). The rationale of SSNIP test is to identify the smallest set of products or services for which it is profitable to jointly increase prices by 5 - 10% (Motta, 2004). However, application of SSNIP test is usually quite data-demanding and poses additional issues when applied for investigation of dominance (O'Donoghue & Padilla, 2020).

Similar approach towards the relevant market definition within rail transport industry has been adopted for example by Kvizda et al. (2014), who recommend considering the following segments for further investigation of substitution patterns (Kvizda et al. 2014):

- high-speed rail services;
- inter-city rail services;
- night inter-city rail services that include sleeping compartments;
- regional and suburban transport.

A provider of rail passenger transport does not face competitive constraints only within the segments of rail passenger transport, but also by other modes of transport such as airplanes, buses, or cars.¹ Therefore, the definition of the relevant product market and subsequent assessment of dominance must also reflect an evaluation of competitive constraints imposed by intermodal competition (Blanco & Houtte, 2017).

In connection to the definition of the relevant geographical market, the current decision-making practice established that it should be defined based on "point of origin/point of destination" (O&D) or a city-pair approach.² Such definition of a relevant market reflects the demand-side substitutability since customers usually consider "*all possible alternatives of travelling from a city of origin to a city of destination which they do not consider substitutable to a different city-pair. On this basis, every combination of a point of origin and a point of destination is considered to be a separate market*" (Case No COMP/M.5335-LUFTHANSA/SN AIRHOLDING). The route or routes that connect the point of origin and point of destination then represent(s) the geographical dimension of the relevant market if there are perceived as substitutable.

The identification of all relevant competitive constraints, i.e., the definition of the relevant market is followed by the assessment of market power in a given market. The current literature concludes that a dominant firm is a such firm which can act to a certain extent independently of its customers and competitors (Niels et al. 2016). Market

¹ This has been emphasised for example by Li et al. (2019), who also included intermodal competition when assessing the market power of China's railway operator

² Case No COMP/M.5335-LUFTHANSA/SN AIRHOLDING, par. 12. However, this has been established in many other cases, see e.g., COMP/M.3280 – Air France/KLM, par. 9 et seq.; case COMP/M.3770 – Lufthansa/Swiss, par. 12 et seq. and case COMP/M.4439 – Ryanair/Aer Lingus. The O&D approach was also confirmed by the European courts. See also Case T-177/04 easyJet v Commission, par. 56, and Case T-358/94 Air France v Commission .

shares are usually the starting point of the assessment of dominance. It has been established that the following market share levels indicate the presence of dominance (O'Donoghue & Padilla 2020):

Table 1: The relationship between market share and dominance

Market share	
Above 70%	Raises a strong presumption of dominance
Between 50% and 70%	Raises a weaker presumption of dominance
Between 40% and 50 %	Requires a particular examination of the facts and does not raise presumption as to the presence or absence of dominance
Below 40 %	Are usually regarded as incapable of supporting a dominance finding.

Source: O'Donoghue & Padilla (2020, p. 191)

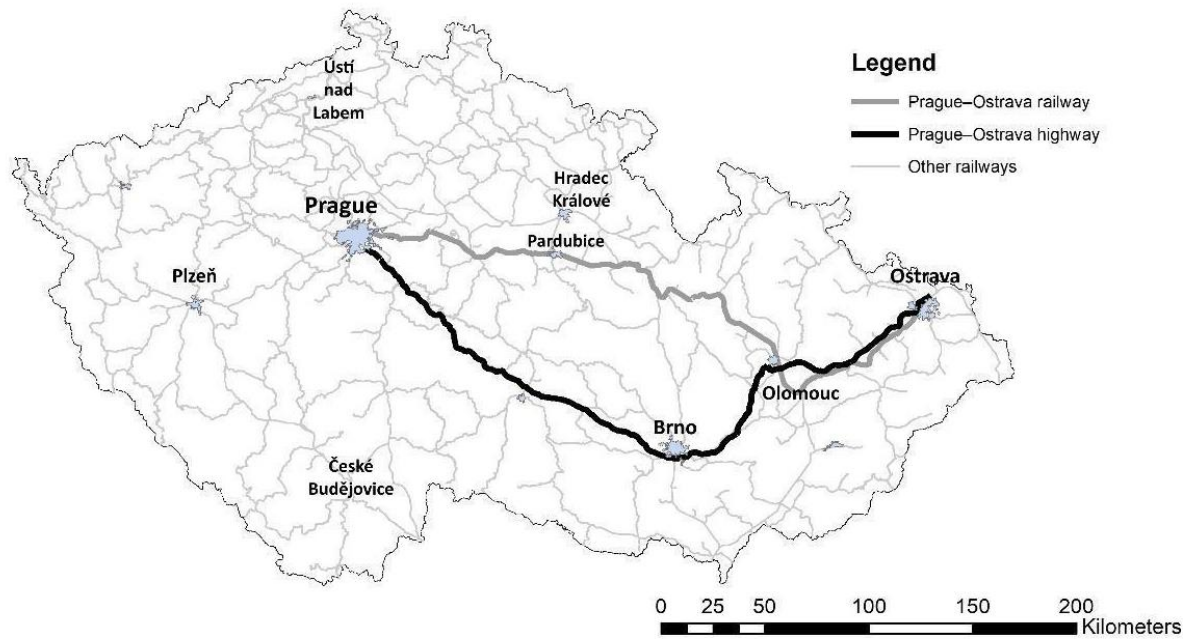
A high market share of an undertaking is sometimes not sufficient to conclude whether an undertaking is indeed in a dominant position (Motta, 2009). Therefore, it is recommended to investigate further aspects of the relevant market such as competitors' market share, customers' buying power or the ability to substantially increase prices (Motta, 2009). Therefore, the current literature recommends that the assessment of dominant position should be based not only on the market share of the investigated undertaking, but also on further analysis of other aspects of the relevant market. Such an approach towards assessment of market power has been established by e.g. Motta (2009), O'Donoghue & Padilla, (2020), and Blanco & Houtte (2017).

III. INDUSTRY BACKGROUND

There are two regimes of competition in the passenger railway market in the Czech Republic: competition in the market (open access) that is only on the main lines between Prague and Ostrava and between Prague (through Brno) and Bratislava (Slovakia) and Vienna (Austria), and competition for the market (competitive tendering). The rest of the network is directly awarded.

The Prague-Ostrava line is the most lucrative and busiest railway line in the Czech Republic as it connects the two largest agglomerations (Prague with approximately 1.75 million inhabitants and Ostrava (982,000 inhabitants in agglomeration) via Pardubice (88,000 inhabitants) and Olomouc (100,000 inhabitants). This line is also unique because the direct motorway is longer than the direct railway line (375 vs 356 km) as suggested in the Figure 1. Therefore, it also takes much longer to travel between Prague and Ostrava by car than by train (for more detail, see Table 2).

Figure 1: Map of the railway network and Prague-Ostrava highway in the Czech Republic



There also used be a relevant bus connection between Prague and Ostrava. However, this bus connection was terminated in 2011 for non-competitive duration of the journey (Rederer, 2018).

CD was the only rail undertaking operating on the Prague-Ostrava line until September 2011. It operated four classes of services: Intercity or Eurocity (IC/EC), where a rolling stock of non-standardised quality provided services. Supercity (SC) service had the fastest and most comfortable trains in the Czech Republic, and transport service was provided by new and standardised Pendolino trains targeted at high-income customers (Tomeš et al. 2016). Fast train (R) service was provided by low-quality rolling stock only to strengthen the connection during peak times (on Fridays and Sundays). Night trains (EN) provided night connections between Prague and Slovakia, Poland, Belarus, and Russia via Ostrava. The night trains thus usually focus on international travellers and therefore have different transport capacities, departure times, and a limited schedule.

RegioJet entered the line in September 2011 with second-hand rolling stock purchased from Austrian Railways (ÖBB). After refurbishment, the quality was comparable with the IC/EC services. A valuable advantage was relatively low operating costs. RJ also offered on-board services, one free coffee or tea, free Wi-Fi, and free seat reservation (Tomeš et al. 2016). After the entry of RegioJet onto the market, CD decreased its fares considerably.

Leo Express entered the line in January 2013 using five new Stadler suburban electric multiple units utilised for long-distance service. At present, there is a situation in which three railway undertakings compete on the same line (for further details about the competition on the Prague-Ostrava line, see Tomeš 2014, Tomeš et al. 2016 and Tomeš & Jandová 2018, Fitzová et al. 2021).

IV. RELEVANT MARKET DEFINITION

The definition of a relevant market begins with qualitative identification of possible market segments. However, in connection to rail passenger transport, it is also important to consider the role of intermodal competition. As described in Section III, between Prague and Ostrava, the customer could choose between traveling by train, car, bus and potentially even by plane. These modes of transport can be then described as follows (data were collected by Chaps timetables which allow to get frequencies and travel time, that was supplemented by price range described by Rederer 2018):

Table 2: Description of modes of transport

Mode	Travel time	Frequency (per day)	Price (EUR)
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Car	3:45 - 4:15		30
Bus	5:20 - 7:45	1 - 2	13
Train	3:00 - 3:45	25 - 35	4 - 24
Plane	0:50 - 1:00	0 - 2	160 - 200

Source: own processing based on Chaps timetables and Rederer (2018)

Table 2 shows different modes of transport between Prague and Ostrava. Travel time of cars is a bit longer because the highway between Prague and Ostrava is longer than the direct railway. And this travel time may be even longer due to seemingly constant reconstruction of highways which took place from 2013 to 2021 and road congestion in general.

The travel time of buses is much longer than the travel time of trains. Moreover, the low frequency of buses indicates that these services are not aimed at travellers between Prague and Ostrava.

The travel time of air transport is the shortest. On the other hand, using air transport is hampered by its high cost and airport location. These services were targeted towards passengers transferring at the Prague airport.

Therefore, we excluded from the analysis of the relevant market cars, buses, and planes as these modes of transport have either lower frequency or are generally at different price levels and have different travel times.³

Then, our investigation was focused only on passenger railway market. On the Prague-Ostrava line, the connection was provided by inter-city rail services and night inter-city rail services (Chini et al. 2021). Therefore, we have further investigated the substitution patterns between these two types of services in order to conclude whether these services belong to one relevant market. The application of the SSNIP test is too data demanding (as it requires additional information about fares, costs and margins). Hence, we analysed the substitution patterns based on a qualitative analysis which is quite common for abuse of dominant cases in the situation when there is limited access to data (O'Donoghue & Padilla, 2020).

We concluded that the night services targeted on different passenger groups. Moreover, the character of service, transport capacity and time of departure also distinguished night services from daily inter-city rail services. To sum up, the relevant product market is only inter-city rail services.

The geographical dimension of the relevant market should be defined based on the "point of origin/point of destination" (O&D) or city-pair approach (Case No COMP/M.5335-LUFTHANSA/SN AIRHOLDING). Therefore, we defined the geographical dimension of the relevant market as the Prague-Ostrava route, which is the broadest possible definition.

Accordingly, we have concluded that inter-city rail services should represent the relevant market on the Prague-Ostrava line. To exclude further segmentation in the market, we have closely examined the types of trains. RegioJet and Leo Express provided only one type of train, whereas the types of trains of České dráhy can be divided into three groups: SC Pendolino (SC), InterCity/EuroCity services (IC/EC), and fast trains (R). Firstly, we have compared the travel time between these trains (the travel times in the table are calculated as the average train journey time of each category):

Table 3: Comparison of travel time

	2010	2011	2012	2013	2014	2015
ČD SC	3:04	3:05	3:05	3:12	3:08	3:06
ČD IC/EC	4:01	3:55	3:44	3:48	3:46	3:34
ČD R	4:01	3:57	3:56	4:03	N/A	N/A
RegioJet	N/A	3:43	3:42	3:36	3:31	3:27

³ We are aware that different price levels do not necessary mean that two products are on a different market as argued in Motta (2004, p. 109). Therefore, we are using the different price levels only as one of the indicators.

Leo Express	N/A	N/A	N/A	3:16	3:31	3:23
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Source: own processing based on Chaps timetables

The travel time of all services is quite similar between the different trains, although ČD SC is a bit faster. Furthermore, we have also compared the key services provided by each train:

Table 4: Comparison of services provided by rail undertakings in 2013 (Annual reports of undertakings)

	ČD SC		ČD IC/EC		ČD R		RegioJet	Leo Express		
	1 st Class	2 nd Class	1 st Class	2 nd Class	1 st Class	2 nd Class	Standard	Economy	Business	Premium
ELECTRICAL SOCKETS	✓	✓	✓	✓	✗	✗	✓	✓	✓	✓
FREE WI-FI	✓	✓	✓ ^A	✓ ^B	✗	✗	✓	✓	✓	✓
TRANSPORT OF OVERSIZED LUGGAGE OR BICYCLES	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IN-SEAT RE-FRESHMENT SERVICE	✓	✓	✓	✓	✗	✗	✓	✓	✓	✓
SEAT RESERVATIONS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

A: GRADUALLY SINCE 2013

B: GRADUALLY SINCE 2014

Source: own processing based on Chaps timetables and Chini et al. (2021)

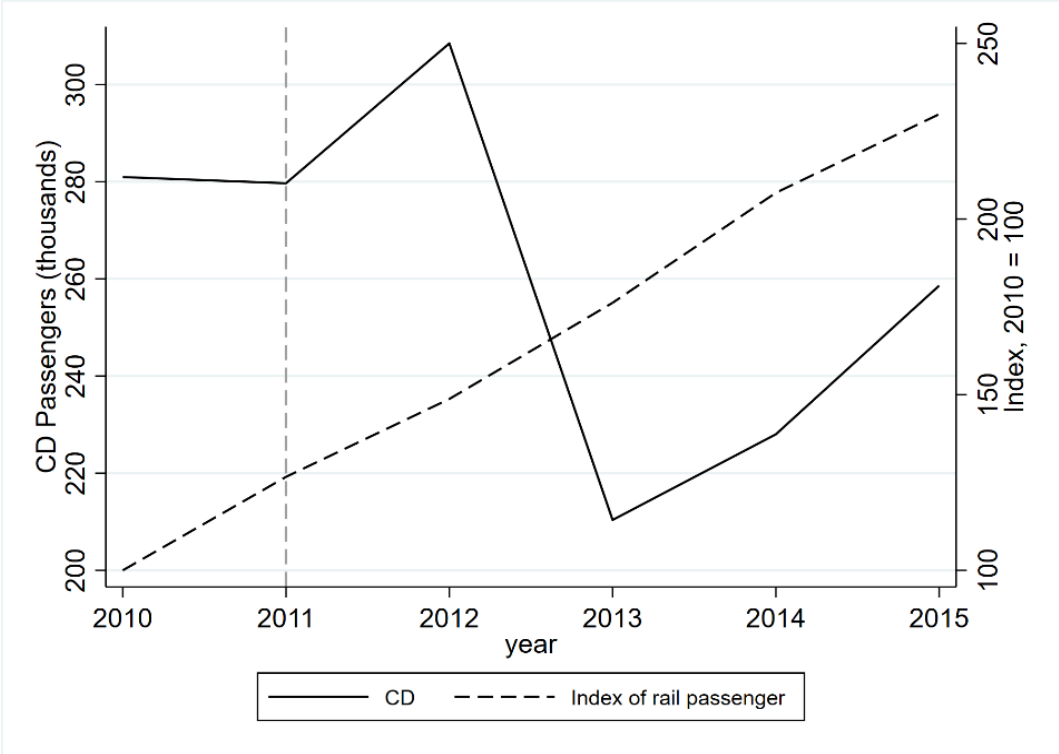
The key services provided are also similar between the different types of trains.⁴ Since the travel time and services are comparable between different types of trains, we conclude that different undertakings provided a homogeneous service. The relevant market is thus constituted by all inter-city rail services of all undertakings on the Prague-Ostrava line, and there is no further segmentation on this relevant market.

V. ASSESSMENT OF DOMINANCE

Until the entry of RegioJet on the Prague-Ostrava line, CD was a monopolist. However, after the entry of the former towards the end of 2011, CD lost a significant number of passengers, although the total number of rail passengers on this line has been constantly increasing as shown in the graph below. Since the entry of Leo Express in 2013, the number of CD passengers on the line has been increasing similarly as the increase of total customers traveling between Prague and the Moravian-Silesian Region, of which Ostrava is the seat. The graph represents the number of CD passengers traveling between Prague and Ostrava and an index of the total number of rail passengers between Prague and the Moravian-Silesian Region. The data was obtained from the Transport yearbook and from internal documents of CD. The index takes the value of 100 in 2010.

⁴ Although fast trains (R) provided fewer services than other trains, these types of trains transported only around 2% of passengers traveling between Prague and Ostrava and they were taken out of service in 2013. Their influence is therefore quite marginal.

Figure 2: Passenger of CD in comparison to total passengers



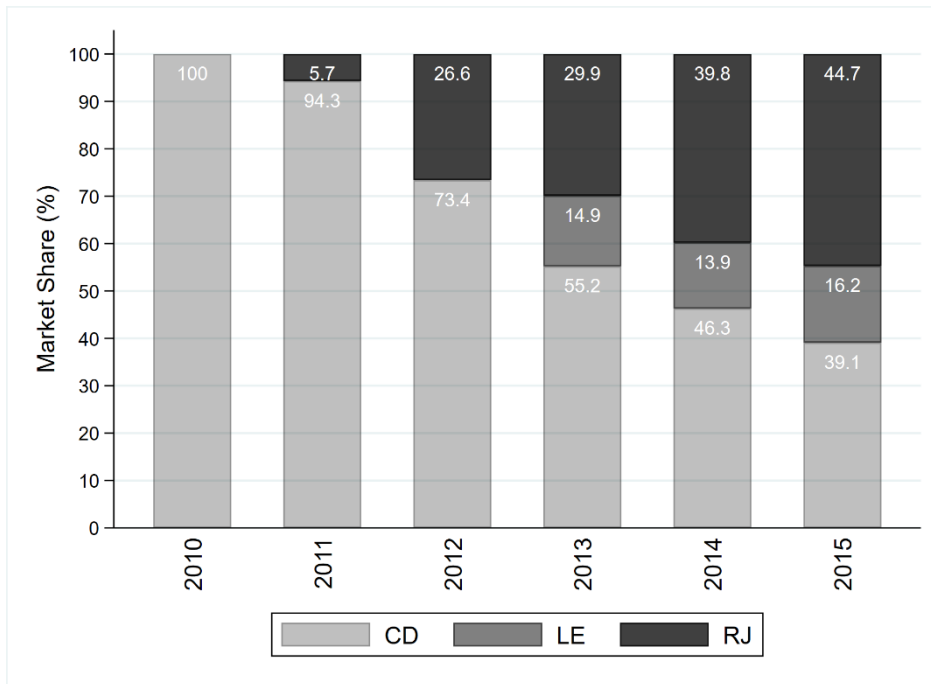
Source: Transport yearbook (2015) and CD internal documents.

Such a decrease in number of passengers for CD led to a decrease in its overall market share. As shown in the graph below, between 2010 and 2015, CD lost around 61% of its market share within four years after the entry of RegioJet. In 2015, CD's market share plunged below 40%, indicating that it could not have been in a dominant position.

Furthermore, in 2015, CD did not even have the highest market share on the Prague-Ostrava line. CD was in fact the second biggest player with market share around 39%. RegioJet, on the other hand, was the number one with market share over 40%. This market dynamics seems to be a strong indicator that CD were not in a dominant position at least in 2015 as it was no longer the biggest player on the Prague-Ostrava line, and its overall market share had dipped below 40%.

Additionally, the rapid decrease in CD market share within the five-year period could also indicate that it did not have a dominant position after the entry of its first competitor as it obviously could not act independently of its competitors and customers (O'Donoghue & Padilla, 2020). This stems from the fact that evaluation of the incumbent's position should be based on the evolution of market share within a certain period rather than on one point in time (O'Donoghue & Padilla, 2020). In line with this, it could be argued that to a certain extent, CD were not in a dominant position even after the entry of RegioJet as this undertaking posed such significant competitive constraint on CD that CD lost around 30% of its market share within a year after RegioJet's entry on the market. In other words, it could be argued that RegioJet posed such significant constraint on CD which countervailed its previous strong position on the Prague-Ostrava line. **Figure 3:** Market shares based on salesFigure 3 shows market shares based on sales of each railway undertaking.

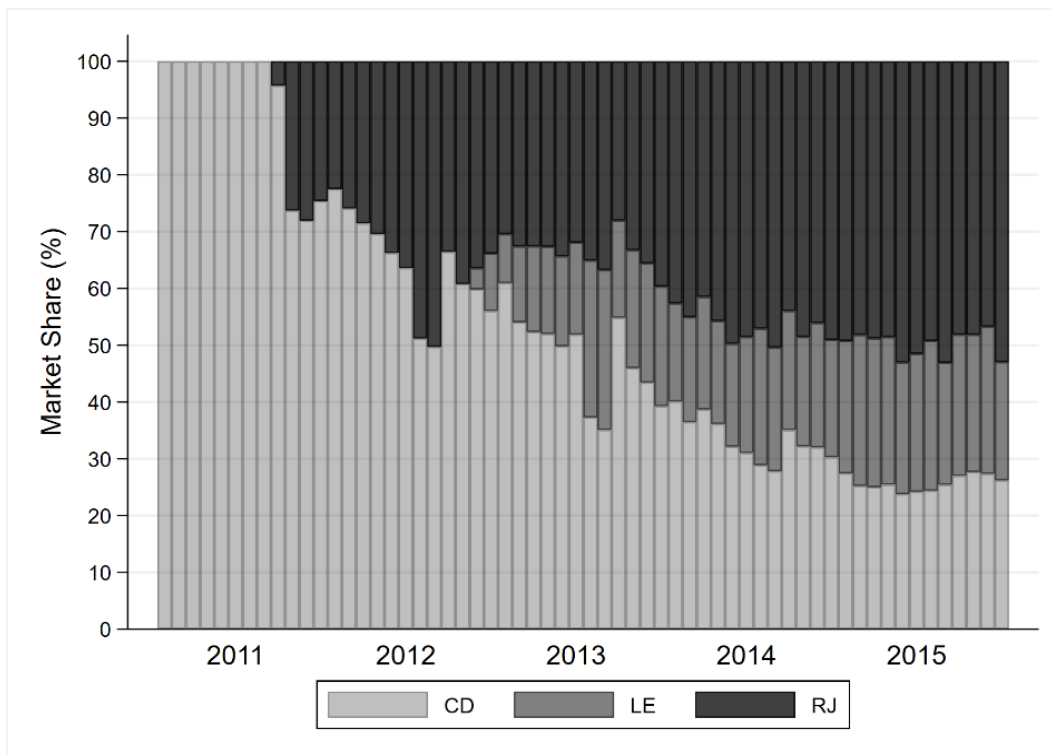
Figure 3: Market shares based on sales



Source: own processing based on CD and Leo Express internal documents and RegioJet Annual Reports (2012 - 2016)

Another possible measure of market power on the Prague-Ostrava line is the participation in government compensation. Government compensation represents government subsidies to the rail undertakings for transporting seniors and students on the Prague-Ostrava line (the law mandates discounts for students and seniors; these discounts are subsequently reimbursed to rail undertakings by the state; for more information see Tomeš et al. 2022). As shown, in the graph below, CD's participation in government compensation has been decreasing similarly to its market share, while the market shares of its competitors have been significantly increasing.

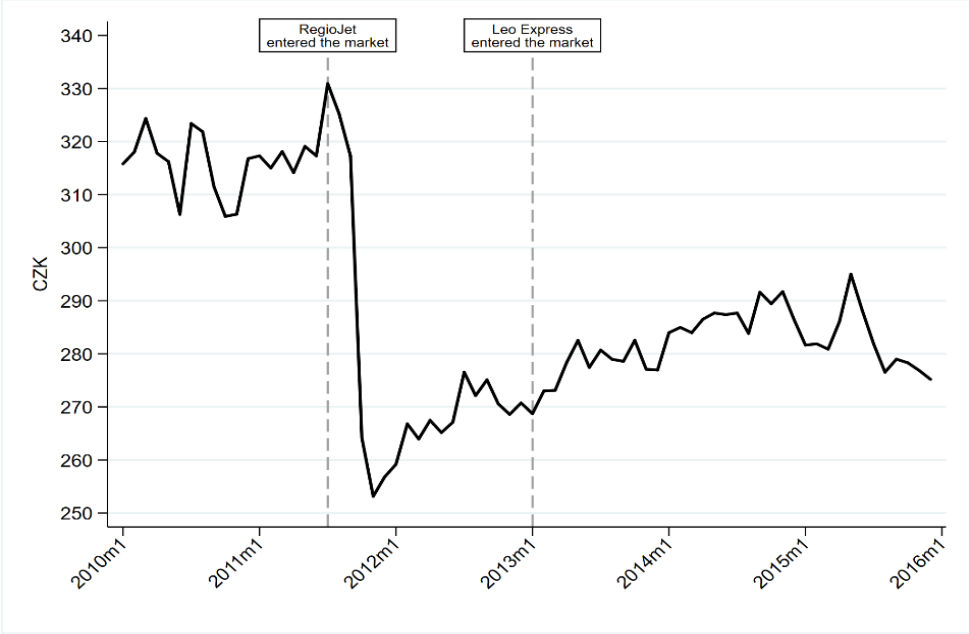
Figure 4: Market share in government compensation



Source: Ministry of Transport of the Czech Republic.

To further assess the market power of CD on the Prague-Ostrava line, we investigated its pricing behaviour during the investigated period. In this regard, the European Court of Justice noted that "the fact that an undertaking is compelled by the pressure of its competitors' price reductions to lower its own prices is in general incompatible with that independent conduct which is the hallmark of a dominant position" (Case No 85/76, 1979, par. 71). To evaluate the pricing behaviour of CD, we calculated its *effective price* as total revenues on the Prague-Ostrava line divided by the number of passengers. As suggested in the chart below, CD has significantly lowered its prices after RJ entered the Prague-Ostrava line and the prices have remained relatively stable thereafter. We consider this proof that CD in fact could not have behaved independently of its competitors as it had to lower its prices as a reaction to its competitors' price reduction.

Figure 5: Development of effective price of CD

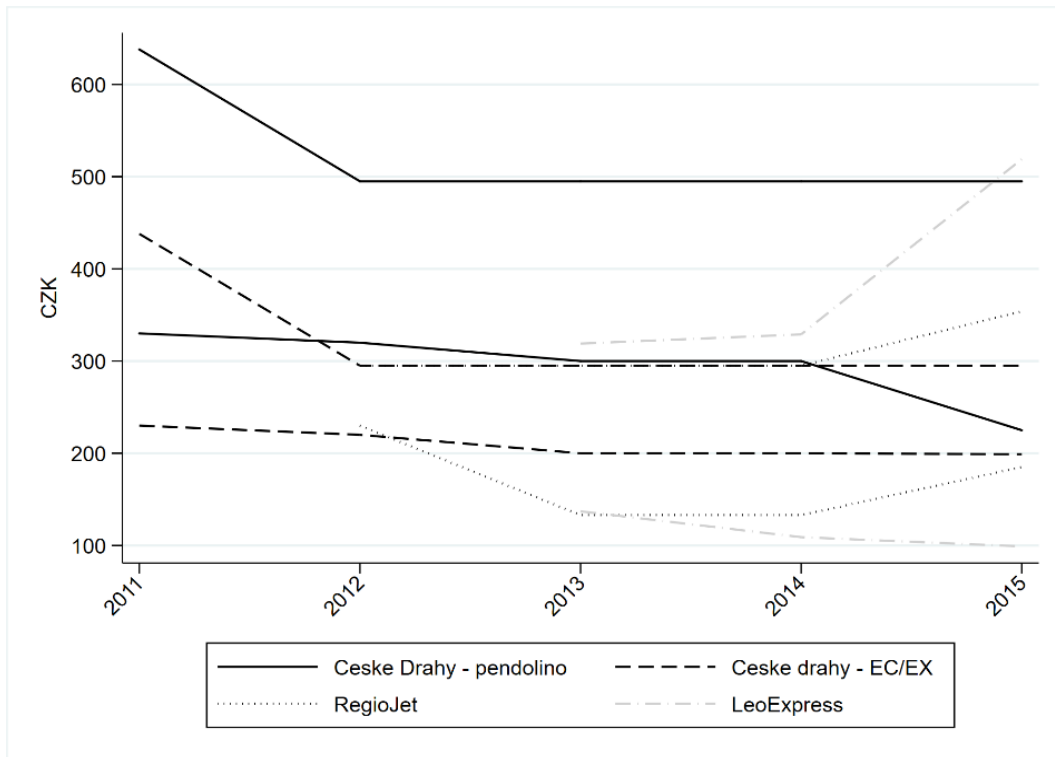


Source: own processing based on CD internal data.

Such significant decrease in CD's effective prices could have potentially been linked to its predatory behaviour. To find out, we decided to investigate the development of price ranges of CD and its competitors on the route. As shown in the graph below, the lowest prices of CD services were almost always above the lowest prices of its competitors. Furthermore, the lowest prices of CD were decreasing only slowly in comparison to its competitors. On the other hand, CD significantly decreased the highest prices. CD also decreased its prices only as a reaction to the entry of RegioJet. When Leo Express entered the market in 2013, the prices remained quite stable. This suggests that CD was decreasing its prices to countervail the power of the new entrant - RegioJet. This is especially important in connection to predatory pricing cases as it suggests that CD did not decrease its prices in order to hinder the competition on the market, but rather to *meet the competition* as suggested in AKZO, Hilti, Tetra Pak II, BPB Industries, British Sugar/Napier Brown, Irish Sugar, Digital.⁵ Figure 6 shows a development of price ranges on the Prague-Ostrava line.

⁵ *Meeting competition defence* suggests that a dominant undertaking can decrease its price above average avoidable/average variable cost when reacting to a decrease of competitors' prices (See O'Donoghue & Padilla 2020, p. 415)

Figure 6: Development of price ranges on the Prague-Ostrava line



Source: own processing based on Rederer (2018)

The development of CD's effective price and development of price ranges on the Prague-Ostrava line thus demonstrate that there was actual competition on this line.

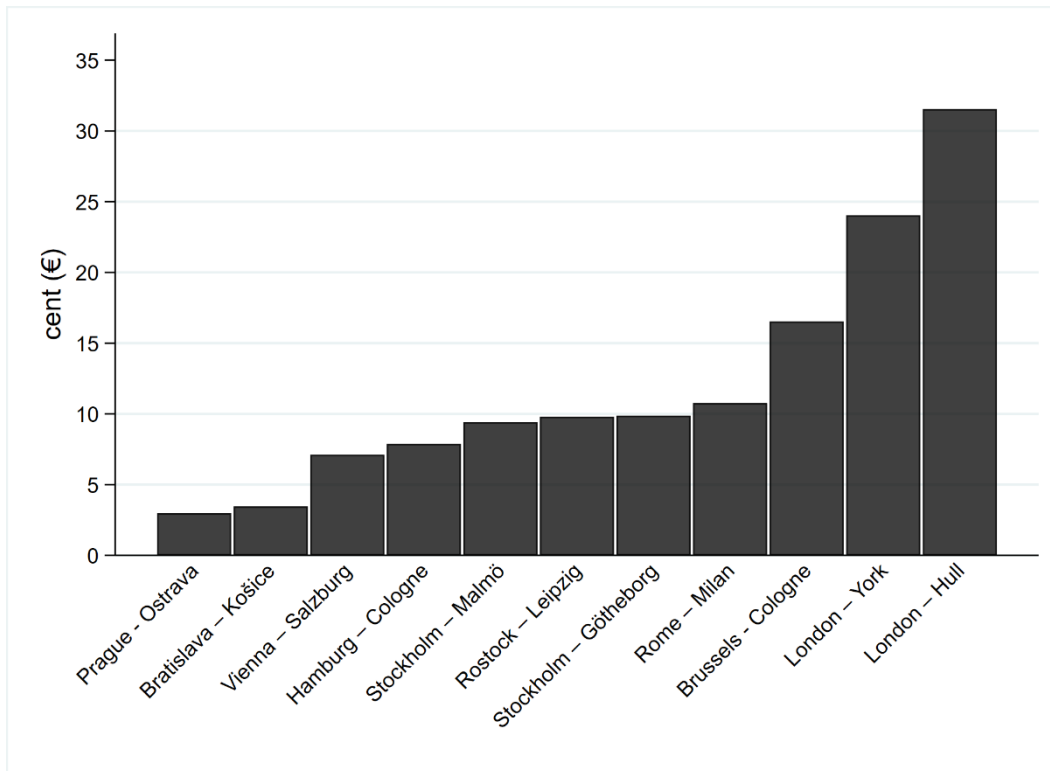
Furthermore, our analysis is also based on the passengers' behaviour on the Prague-Ostrava line. To analyse customer behaviour on the line, we used the results of customer surveys conducted by Rederer (2018) between 2012 and 2015. The results of this survey suggested that the passengers on the Prague-Ostrava line had a good awareness about the quality and prices of the services (59% - 77% of passengers knew the fares). Moreover, customers of CD on the Prague-Ostrava line were generally willing to switch to a different rail undertaking after a 5% price increase (40% of customers of CD would switch to other rail undertakings after a 5% price increase) (Rederer 2018). This is strong evidence that CD was restrained from acting independently of its customers as most of its customers were willing to leave had CD increased its prices by 5%.

The results of these surveys thus suggest that the customers of CD on the Prague-Ostrava line had a generally high degree of countervailing power as they were most likely to switch to a different provider. These results also imply a low switching cost between different providers.

One of the reasons why customers were generally willing to switch rail providers is also the fact that services provided on the Prague-Ostrava line were quite homogenous as suggested in Table 4. Each provider offered similar service such as electrical sockets, free Wi-Fi, transport of oversized luggage or bicycles, an in-seat refreshment service and seat reservations. The travel times of each provider were also quite similar. This is an indication that the services provided by each undertaking were quite homogenous, and the customers thus had no problems with switching from one provider to another.

The above-mentioned dynamics on the Prague-Ostrava line strongly suggests that there has been actual competition on the market after the entry of RegioJet and Leo Express. This is further supported by the fact that in 2013, following the intense competition of three providers, the average revenues per passenger kilometre on this line were quite low in comparison to other popular lines such as London-Hull, London-York or Rome-Milano as suggested in the Figure 7.

Figure 7: Average revenue on the line (per passenger kilometre)



Source: Rederer (2018), Reservation system of providers and Eurostat.

Although we did not have access to cost data to conduct more detailed analysis of predatory pricing, our results show that the decrease of prices on the Prague-Ostrava line was likely driven by competition in the market rather than by predatory conduct of CD. The development of market shares, prices, and passenger behaviour on the Prague-Ostrava line strongly suggests that CD could not in fact act independently of its consumers and competitors. All these factors thus indicate that CD were not in a position of economic strength that could be described as dominant.

VI. CONCLUSION

The competitive pressure in liberalised rail markets generally leads to a decrease in prices. However, such decrease could also be caused by an incumbent's intention to exclude competition in the form of predatory pricing. To assess whether the price decreases were caused by predatory conduct or by actual competition, it is necessary to investigate the incumbent's position on the relevant market. Within the passenger rail industry, relevant market is usually defined as inter-city rail services of all undertakings on the investigated city-pairs. This is due to the fact that other passenger rail segments such as night trains provide a completely different character of service and have different target groups, transport capacities, and times of departure. This approach towards the relevant market definition is in line with previous Commission decisions as it implements the "point of origin/point of destination" approach towards the definition of geographical dimension of the relevant market. It is important to address the issue of intermodal competition. Methodologically, the issue can be solved by qualitative analysis of prices, travel time, frequency, and character of services. Assessment of the incumbent's market power should be based on market share, development of prices and services provided. A consumer survey, if available, can also complement the assessment of market power.

The assessment of incumbent's market power then indicates whether the decrease in prices on given line was driven by predatory conduct. On one hand, if the incumbent did not have sufficient market power on the line, it is unlikely that the decrease in prices was caused by predatory conduct. On the other hand, if the incumbent had sufficient market power, it is possible that it could have engaged in predatory pricing.

In the case study on the Prague-Ostrava line where was a significant decrease in prices and an increase in quality after its liberalisation. To assess whether the price decreases were caused by predatory conduct or by actual competition, we investigated the CD's position on this line. We firstly defined the relevant market as all inter-city rail services of all undertakings operating on the Prague-Ostrava line. Furthermore, we excluded intermodal competition from the definition of the relevant market, because other modes of transportation cannot pose competitive constraints on rail transport between Prague and Ostrava as they are usually less frequent, have

different travel time and have different price ranges. We also excluded the night rail services since they provide a different character of service. Moreover, they also have a different target group (international travellers), transport capacity, departure times and a limited schedule.

After the definition of the relevant market, we proceed with the assessment of the CD's market power on this line. The development of market shares suggests that CD were constantly losing its market shares, and by around 2015, its share had shrunk below 40% on the Prague-Ostrava line. This represents a strong indication that it could not have been in a dominant position at least after 2015. Similarly, we also observed a significant decrease in CD's participation in government compensation.

Secondly, we analysed the development of prices on the Prague-Ostrava line. The development of CD's effective price suggest that it significantly decreased its price after the entry of RegioJet. However, after the entry of Leo Express, we observed a rather consistent price. Since the significant decrease of prices after the entry of RegioJet could be potentially connected to its predatory behaviour, we decided to investigate the development of price ranges of CD and its competitors on the Prague-Ostrava line. The price ranges on this route show that the lowest prices of CD services were almost always above the lowest prices of its competitors. Furthermore, CD's lowest prices were decreasing only slowly in comparison to those of its competitors. The development of CD's effective price and development of price ranges thus suggest that CD was decreasing its prices to countervail the power of its competitors, thus providing evidence that there was actual competition on the Prague-Ostrava line.

Thirdly, the services provided on the Prague-Ostrava line were quite homogenous: each provider offered similar service such as electrical sockets, free Wi-Fi, transport of oversized luggage and bicycles, an in-seat refreshment service and seat reservations. Moreover, the travel times of each provider were also quite similar. This homogeneity of services on the Prague-Ostrava line suggest that the customers could indeed switch providers without losing any quality of service.

Finally, we applied the results from consumer surveys that analysed consumer behaviour on the Prague-Ostrava line. The results suggest that the consumers had generally good awareness of price and that the CD consumers were most likely to switch providers after a price increase. This is in line with the fact that CD were rapidly losing its customer base to its competitors. Hence, we see strong indication that CD could not in fact have acted independently of its competitors and customers.

To summarise, our results imply that CD did not have a sufficient economic strength to be considered a dominant undertaking on the Prague-Ostrava line. The market share of CD was rapidly diminishing which suggests that it could not have act independently of its competitors. Furthermore, customers of CD were most likely to switch when they observed a change in price which generally indicates a high level of dependence on its customers. Simultaneously, CD was decreasing its prices in reaction to an entry of RJ. Although this decrease in prices could have been potentially driven by exclusionary intentions of CD, these intentions would be problematic only if CD were in a dominant position. Since other factors indicate that CD were not in fact in a dominant position, it can be concluded that even the decreases in prices were likely driven by actual competition rather than predatory intentions of CD. However, to further verify this claim, we would have to have access to its cost data to analyse whether its prices were actually below its costs which could be a task for the further research.

REFERENCES

- Abramović, B. (2018). The Analysis of the Organisation of Railway Passenger Transport on the Liberalised Market. 5th International Conference on Road and Rail Infrastructure 2018.
- Alexandersson, G., Rigas, K. (2013). Rail liberalisation in Sweden. policy development in a European context. *Research in Transportation Business & Management* 6, 88–98.
- Bergantino, A., Capozza, C., and Capurso, M. (2018). Pricing strategies: who leads and who follows in the air and rail passenger markets in Italy, *Applied Economics*, 50:46, 4937-4953, <https://doi.org/10.1080/00036846.2018.1459039>
- Blanco, L.O., Houtte, B.van, (2017). *EU regulation and competition law in the transport sector*. Oxford University Press, Oxford.
- Cantos, P., Manuel Pastor, J., Serrano, L. (2012). Evaluating European railway deregulation using different approaches. *Transport Policy* 24, 67–72.
- Case No 85/76 - Hoffmann-La Roche & Co. AG v Commission of the European Communities, 1976.
- Case No COMP/M.3280 – Air France/KLM, 2004.
- Case No COMP/M.3770 – Lufthansa/Swiss, 2005.
- Case No COMP/M.4439 – Ryanair/Aer Lingus, 2007.
- Case No COMP/M.5335-LUFTHANSA/SN AIRHOLDING, 2009.
- Case No T-177/04 EasyJet v Commission, 2006.
- Case NoT-358/94 Air France v Commission, 1996.
- Chini, J., Špetík, O., Solnička, J. and Kvizda, M. (2021). Assessment of market power on the route Prague–Ostrava. In Bujňák, J. and Guagliano, M.. *Transportation Research Procedia*. online: Elsevier B.V., 2021, 252-259. ISSN 2352-1457. doi:10.1016/j.trpro.2021.06.029.
- Lalive, R. and A. Schmutzler (2008). Exploring the effects of competition for railway markets. *International Journal of Industrial Organization*, 26, 443–458.
- Davis, P., Garcés, E.liana, (2010). *Quantitative techniques for competition and Antitrust Analysis*. Princeton University Press, Princeton, New Jersey.
- European Commission (2016). Antitrust: Commission investigates practices of Czech railway incumbent České dráhy in passenger transport. [WWW Document]. URL https://ec.europa.eu/commission/presscorner/detail/en/IP_16_3656 (accessed 12.10.21).
- European Commission (2020). Antitrust: The Commission sends Statement of Objections to České dráhy for alleged predatory pricing [WWW Document]. URL https://ec.europa.eu/commission/presscorner/detail/en/ip_20_2017 (accessed 12.10.21).
- European Commission (2022). Closure of Proceedings AT.40156 Czech Rail. [WWW Document]. URL https://ec.europa.eu/competition/antitrust/cases1/202241/AT_40156_8533660_1843_3.pdf (accessed 18.10.22).
- European Commission. Commission Notice on the definition of relevant market for the purposes of Community competition law. 97/C 372/03.
- European Commission. Communication from the Commission — Guidance on the Commission's enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings. 2009/C 45/02.
- Fitzová, H., Kališ, R., Pařil, V., Kasa, M. (2021). Competition in long distance transport: Impacts on prices, frequencies, and demand in the Czech Republic. *Research in Transportation Business & Management*, 41, <https://doi.org/10.1016/j.rtbm.2021.100655>.
- Funk, M. & C. Jaag, C. (2018). The more economic approach to predatory pricing. *Journal of Competition Law & Economics*, 2018, vol. 14(2), doi: <https://doi.org/10.1093/joclec/nhy008>.
- Kvizda, M., Tomeš, Z., Seidenglanz, D., Nigrin, T., Mlsna, P., (2014). *Metodika vymezení relevantního trhu v odvětví železniční dopravy* [WWW Document]. is.muni.cz. URL Available from https://is.muni.cz/publication/1163353/Metodika_UOHS_2013_definitivni.pdf (accessed 12.29.21).

- Li, H., Yu, K., Wang, K., Zhang, A., (2019). Market power and its determinants in the Chinese Railway Industry. *Transportation Research Part A: Policy and Practice* 120, 261–276, <https://doi.org/10.1016/j.tra.2019.01.003> .
- Lianos, I., Korah, V., Siciliani, P. (2019). *Competition law: Analysis, Cases & Materials*. Oxford University press, Oxford.
- Link, H. (2016): A Two-stage Efficiency Analysis of Rail Passenger Franchising in Germany. *Journal of Transport Economics and Policy*, 50 (1), 76–92.
- Link, H. (2019). The impact of including service quality into efficiency analysis: The case of franchising regional rail passenger services in Germany, *Transportation Research Part A: Policy and Practice*, Volume 119, Pages 284-300, ISSN 0965-8564, <https://doi.org/10.1016/j.tra.2018.11.019>.
- Montero, J. (2019). Asymmetric Regulation for competition in European railways? *Competition and Regulation in Network Industries* 20, 184–201, <https://doi.org/10.1177/1783591719861722> .
- Motta, M. (2009). *Competition policy: Theory and practice*. Cambridge University Press, Cambridge.
- Nash, C. (2016): *Liberalisation of passenger rail services*. Project Report.
- Nash, C., A. S. J. Smith, A., D. van de Velde, D., F. Mizutani, F. and S. Uranishi, S. (2014). Structural reforms in the railways: Incentive misalignment and cost implications. *Research in Transportation Economics*, 48, 16–23, <https://doi.org/10.1016/j.retrec.2014.09.027> .
- Nash, C., J.-E. Nilsson, J.-E. and H. Link, H. (2013). Comparing Three Models for Introduction of Competition into Railways. *Journal of Transport Economics and Policy*, 47 (2), <https://www.jstor.org/stable/24396268> .
- Niels, G., Jenkins, H., Kavanagh, J. (2016). *Economics for Competition Lawyers* Economics for competition lawyers. Oxford University Press, Oxford, United Kingdom.
- O'Donoghue, R., Padilla, A.J. (2020). *The law and economics of article 102 TFEU*. Hart, Oxford.
- Rederer, V. (2018). *Vymezování relevantního trhu a aplikace SSNIP testu v odvětví železniční přepravy*. PhD Thesis (supervisor Martin Kvizda), Masaryk University.
- RegioJet Annual Report (2012). [WWW Document]. Available from: Vyrocní zpráva_2012. URL https://www.regiojet.cz/opencms/export/sites/regiojet.cz/dokumenty/pdf-sk/RJ_vyrocní-zpráva_2012.pdf (accessed 12.29.21).
- RegioJet Annual Report (2013). Available from: RegioJet Annual Report, 2013. [WWW Document]. Vyrocní zpráva_2013. URL <https://or.justice.cz/ias/content/download?id=2e2043ae5f0b4ee882128ca689208fb9> (accessed 12.29.21).
- RegioJet Annual Report (2014). Available from: RegioJet Annual Report, 2014. [WWW Document]. Vyrocní zpráva_2014. URL <https://or.justice.cz/ias/content/download?id=1915eb901e0a425098df2a7450d12244> (accessed 12.29.21).
- RegioJet Annual Report (2015). Available from: RegioJet Annual Report, 2015. [WWW Document]. Vyrocní zpráva_2015. URL <https://or.justice.cz/ias/content/download?id=f27e15682419444fa217a5aba582b5a2> (accessed 12.29.21).
- RegioJet Annual Report (2016). Available from: RegioJet Annual Report, 2016. [WWW Document]. Vyrocní zpráva_2016. URL <https://or.justice.cz/ias/content/download?id=b348789a1ce543d58411ae555dd1a3c3> (accessed 12.29.21).
- Smith, A., Benedetto, V., Nash, C. (2018). The impact of economic regulation on the efficiency of European railway systems. *Journal of Transport Economic Policy* 52, 113–136, <https://www.jstor.org/stable/90019706>.
- Tomeš Z., Kvizda M., Nigrin T. and D. Seidenglanz, D. (2014). Competition in the railway passenger market in the Czech Republic, *Research in Transportation Economics* 48, <https://doi.org/10.1016/j.retrec.2014.09.052>.
- Tomeš, Z. and & M. Jandová (2018). Open access passenger rail services in Central Europe. *Research in Transportation Economics*, 2018, ISSN 0739-8859. doi:10.1016/j.retrec.2018.10.002.
- Tomeš, Z., Fitzová, H., Pařil, V., Rederer, V., Kordová, Z. and Kasa, M. (2022). Fare Discounts and Free Fares in Long-distance Public Transport in Central Europe. *Case Studies on Transport Policy*. Amsterdam: Elsevier, 2022, 10 (1), 507-517. ISSN 2213-624X. doi:10.1016/j.cstp.2022.01.011.
- Tomeš, Z., M. Kvizda, M. , Jandová, M., and Rederer, V. (2016) Open access passenger rail competition in the Czech Republic. *Transport Policy*, 47, 203-211. ISSN 0967-070X. doi:10.1016/j.tranpol.2016.02.003.

Transport yearbook 2015 (2015). [WWW Document]. URL
https://www.sydos.cz/cs/roценка_pdf/Rocenska_dopravy_2015.pdf (accessed 12.29.21).