

Regional impacts of rail liberalization in the Czech Republic

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Motivation

- Dedicated rail liberalization in the Czech Republic from 2011
- Open access on main lines Prague – Ostrava and Prague – Brno
- There has been a significant rise in ridership
- However it has not been identified what part of ridership growth can be attributed to open access and what part to other factors

Aim

- The aim of the paper is to separate the effect of the open access from other factors on the long distance rail lines in the Czech Republic between 2010 – 2019.
- The method of analysis is the comparison of competitive and non-competitive rail services to Prague

Literature review

Average change in fares and ridership 2011 - 2016

	Milan– Turin	Vienna– Salzburg	Prague– Ostrava	Stockholm– Gothenburg
<i>Fares</i>	–31%	–25%	–44%	–13%
<i>Ridership</i>	+74%	+25%	+92%	n.a.

Sources: Milan–Turin: Bergantino (2016);

Vienna–Salzburg: Pfeiler (2016) and Tomeš – Jandová (2018);

Prague–Ostrava: own elaboration;

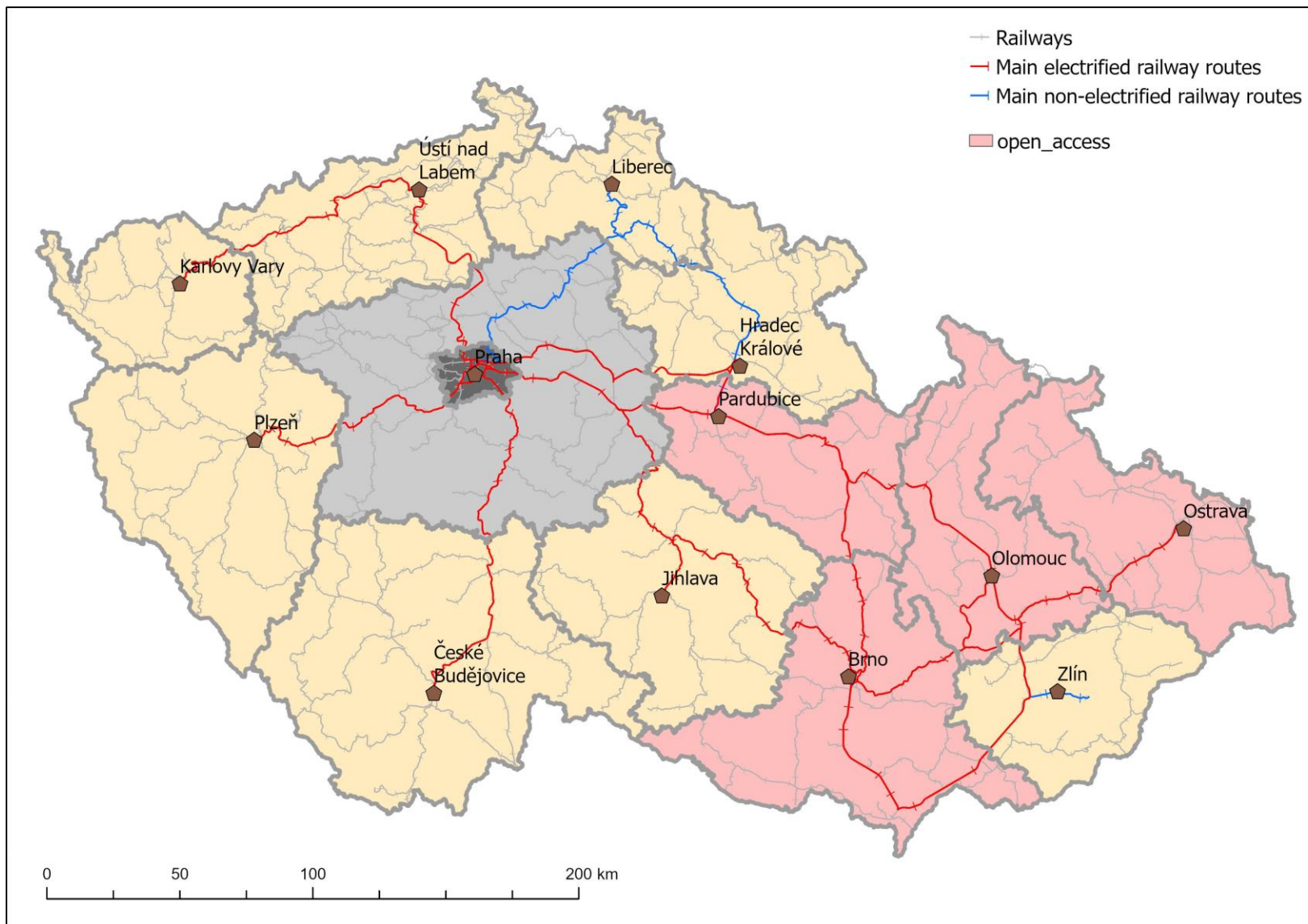
Stockholm–Gothenburg: Vigren (2016, 2017)

Literature review

- There are many national studies on open access entries. They analyse ridership changes as the result of competitive entries.
- However, not always there is an explicit control for a general growth of the market (GDP) that is also stimulating ridership
- And the open access is not only bringing competition but it is also increasing frequencies (Laroche – Lamatkhanova, 2020)
- Olarte Bacares et al. (2019): supply and demand evolution very similar between Rome – Milan and Paris – Marseille

Methodology

- we utilized data about Czech rail long-distance transport in 2010 – 2019
- data are divided into 12 long-distance connections
- four were part of the open-access routes
- eight were not influenced by the open-access competition.
- all lines are long-distance rail routes from regional centres to Prague
- the design enables to differentiate what part of the ridership increases was caused by competition and what part was caused by other factors.



Data

Ridership:

12 routes x 10 years = 120 observations

Data from Transport Yearbooks

Controls:

Frequency – change in frequency on the line

Travel times – changes in travel times

Data from historic timetables

Ridership

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Č. Budějovice	393	411	441	400	419	461	520	674	764	1 092
Plzeň	319	317	364	392	429	498	553	585	714	890
Karlovy Vary	80	79	98	89	99	112	122	131	149	182
Ústí n. L.	1 089	1 034	1 131	937	793	806	950	875	941	974
Liberec	67	74	74	70	67	67	71	81	83	84
H. Králové	272	297	332	349	374	376	386	463	548	589
Pardubice	724	811	894	901	905	984	1 030	1 127	1 248	1 378
Jihlava	198	211	227	213	210	210	217	245	277	310
Brno	237	305	370	406	458	543	655	833	1 132	1 181
Olomouc	423	509	644	733	843	978	1 088	1 179	1 198	1 243
Zlín	178	206	206	185	227	256	288	324	357	448
Ostrava	452	570	669	799	924	1 036	1 117	1 170	1 205	1 264
TOTAL	4 432	4 824	5 450	5 474	5 747	6 326	6 998	7 688	8 616	9 635

Ridership growth

OA ridership growth = **13.3 %** per year

Non – OA ridership growth = **8.4 %** per year

Controls: Fastest Travel Time

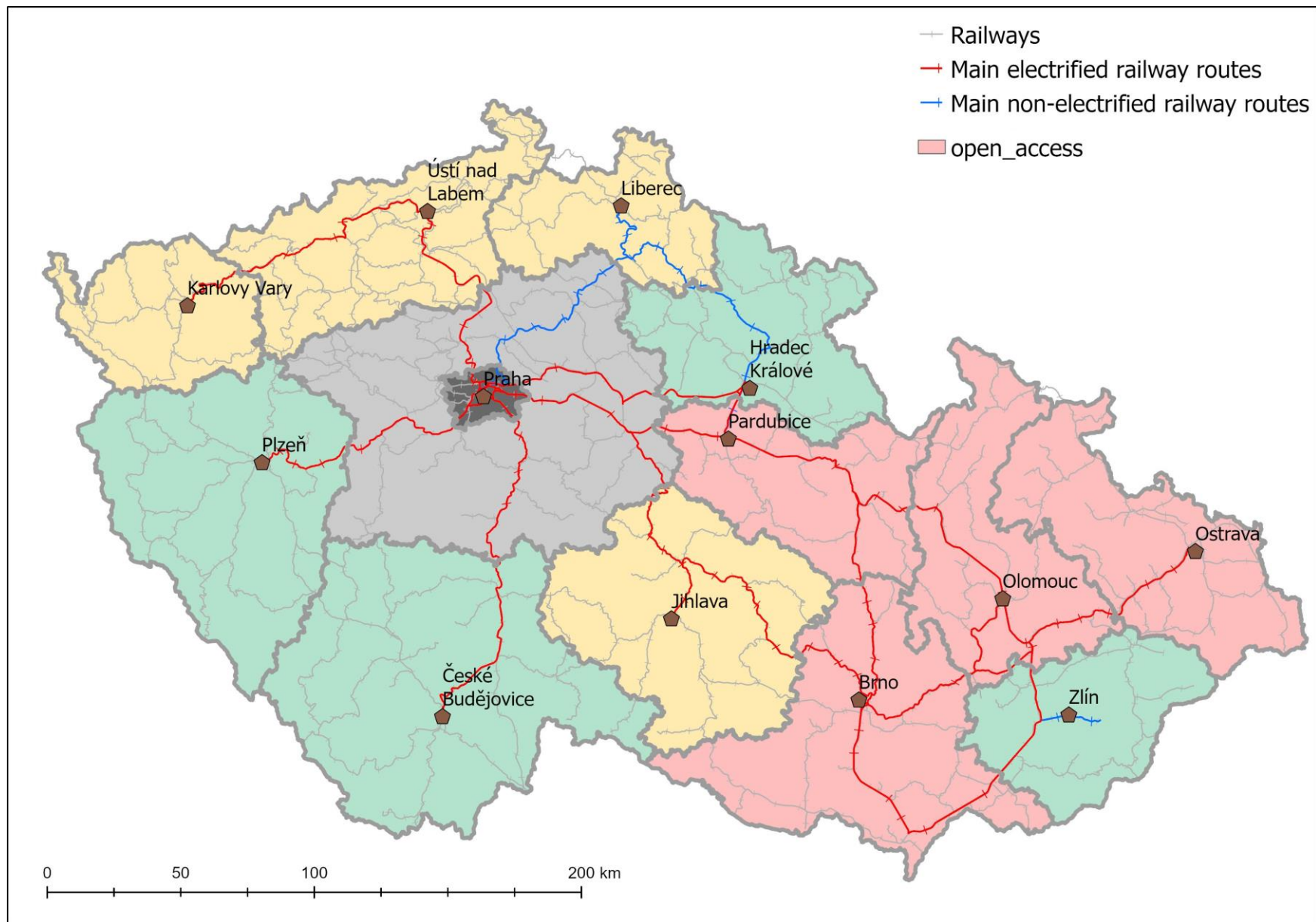
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Brno	2:46	2:23	2:37	2:40	2:40	2:33	2:30	2:37	2:25	2:26
Č. Budějovice	2:34	2:36	2:36	2:35	2:28	2:29	2:23	2:15	2:02	2:02
H. Králové	1:38	1:39	1:39	1:37	1:37	1:37	1:34	1:41	1:41	1:41
Jihlava	2:34	2:27	2:28	2:27	2:24	2:23	2:17	2:29	2:18	2:20
Karlovy Vary	4:48	4:48	4:22	4:15	3:40	3:48	3:46	4:50	3:47	3:31
Liberec	4:45	4:45	4:45	4:43	4:43	4:43	4:41	5:04	4:47	4:46
Olomouc	2:07	1:36	2:07	2:12	2:11	2:05	2:05	2:16	2:04	2:02
Ostrava	3:04	2:56	3:05	3:02	2:34	3:06	3:01	3:19	3:00	3:03
Pardubice	0:56	0:53	0:54	0:58	0:57	0:54	0:53	0:58	0:53	0:52
Plzeň	1:46	1:40	1:40	1:35	1:24	1:18	1:17	1:34	1:25	1:14
Ústí n. L.	1:09	1:11	1:11	1:11	1:11	1:10	1:14	1:14	1:08	1:09
Zlín	3:44	3:39	3:08	3:32	3:02	3:23	3:07	3:51	3:08	3:13

Controls: Frequency

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Brno	51	49	51	48	48	49	45	51	67	62
Č. Budějovice	30	28	30	28	28	30	29	39	39	37
Hradec Králové	33	27	27	28	27	31	28	27	27	27
Jihlava	16	16	16	16	18	21	17	18	19	18
Karlovy Vary	30	30	26	21	26	27	28	26	22	29
Liberec	15	15	15	14	14	14	14	14	14	13
Olomouc	46	65	61	52	85	99	102	86	88	86
Ostrava	39	50	52	54	65	64	60	70	68	61
Pardubice	115	126	131	142	134	152	157	163	172	181
Plzeň	36	36	36	35	39	38	40	39	60	59
Ústí nad Labem	51	52	51	51	51	49	34	42	48	48
Zlín	15	15	13	12	17	13	15	27	23	23

Ridership growth 2019/2010

Brno	4,98
Olomouc	2,94
Ostrava	2,80
Plzeň	2,79
Č. Budějovice	2,78
Zlín	2,52
Karlovy Vary	2,27
H. Králové	2,17
Pardubice	1,90
Jihlava	1,57
Liberec	1,25
Ústí n. L.	0,89



Results

OA ridership growth = **13.3 %** per year

Non – OA ridership growth = **8.4 %** per year

- good lines = **12.0 %** per year

- bad lines = **5.8 %** per year

Rail/road travel time

2018	TIME RAIL/ROAD (%)	SHARE PRAGUE (%)	TIME	FREQ	POPUL
Pardubice	70	36	0:57	191	507
Olomouc	72	33	2:18	121	638
Ostrava	88	42	3:18	84	1266
Zlín	115	20	3:40	23	594
Plzeň	122	55	1:36	62	550
Ústí n. L.	123	50	1:16	55	819
Brno	127	29	2:49	89	1124
H. Králové	129	27	1:42	32	549
Č. Budějovice	134	60	2:17	50	625
Jihlava	174	23	2:30	22	518
Karlovy V.	232	30	4:27	26	304
Liberec	384	9	4:52	15	427

What to do next ...

- To add economic controls - Regional GDP, Population, Employment rate, Unemployment rate
- To put it all together

Conclusions

- The introduction of open access competition has led to significant increases in ridership. However, after the initial growth, there seems to be a stabilization of ridership after a few years
- Connections without competition but with sufficient improvements in infrastructure, quality, and frequency can, under favourable circumstances, achieve almost the same rates of ridership growth as those with OA competition.

Policy implications

- The importance of competition lies in not only direct stimulation of the market, but also the pressure on the incumbent to improve the quality of services also in non-contested parts of the rail passenger market
- Recommendations for transport policy lie in the careful consideration of how and where to introduce competition and how to allocate funds for the modernization of infrastructure.

New Mobility - High-Speed Transport Systems and Transport-Related Human Behaviour

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