

Report on Bachelor Thesis

Institute of Economic Studies, Faculty of Social Sciences, Charles University

Student:	Dan Sedláček
Advisor:	Matěj Bajgar, DPhil.
Title of the thesis:	What influences the impact of high-speed railway construction?

OVERALL ASSESSMENT (provided in English, Czech, or Slovak):

Please provide a short summary of the thesis, your assessment of each of the four key categories, and an overall evaluation and suggested questions for the discussion. The minimum length of the report is 300 words.

Short summary

The thesis studies the impact of high-speed railways (HSR) constructed in Japan between 1983 and 2016 on the municipalities located on the newly constructed lines. It uses 4 decades of municipality-level panel data from Statistics Japan and applies novel econometric techniques from the recent „diff-in-diff revolution“ to estimate causal effects of the railways. It documents substantial effects of the railways on population and economic performance of the affected municipalities, with the effects growing with time passed since the year a given municipality was connected to the HSR network. It additionally finds stronger economics effects of the railways for large municipalities and for lower-income municipalities, which it does not find heterogeneous effects by focus of a municipality on industry or service sectors.

Contribution

The thesis makes two clear contributions to the the existing literature on the impact of high-speed railways and of transportation infrastructure more generally.

- 1) To the best of my knowledge, it is the first study on impacts of high-speed railways that takes into account the recent critiques of traditional approaches to estimating difference-in-differences designs with staggered adoption using two-way fixed effects and that instead applies novel estimation methods (Callaway and Sant'Anna, 2021) that aim to address these critiques. This is an important move forward as the gradual construction of high-speed railways in different municipalities in different years is a textbook example of a staggered setting. Given that the effects of the railways grow strongly over time, applying standard two-way fixed effects, liked many previous studies, would lead to highly misleading estimates in this context.
- 2) It explores heterogeneity in the effects of the HSR construction according to the size, income-level and sectoral structure of the affected municipalities, which was previously done in the context of China but not Japan, thus extending the knowledge of how the effects of HSR depend on the characteristics of the municipality connected to the line.

Methods

The thesis uses detailed municipality-level panel data covering several decades and estimates the effects of HSR in the staggered diff-in-diff design. It defines municipalities on the line or close to it as treated and municipalities in the same regions but further away from the newly constructed lines as the control group. To estimate the staggered design while avoiding the „forbidden comparisons“, it applies the estimation method by Callaway and Sant'Anna (2021). The methodology is state-of-the-art, correctly applied and accurately described.

Literature

The thesis shows a good command of the related literature, accurately sets the thesis within the context this literature and clearly describes the contribution of the thesis. Studies are discussed with clarity and appropriately cited.

Manuscript form

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The thesis is generally clear and well written, although some lightly inaccurate language can be spotted at times. The thesis is well structured and appropriately formatted in LaTeX.

Overall evaluation and suggested questions for the discussion during the defense

Dan is passionate about Japan and about railways, and it was him who suggested this topic connecting his interests, and took lead throughout the work on the thesis. He also independently identified, downloaded and processed data for the empirical analysis, and, with painstaking effort, manually identified a list of municipalities located on the newly constructed lines and those used as the control group. Overall, Dan has showed strong ability to work independently, while asking for feedback and guidance at appropriate moments.

The thesis makes a significant contribution to existing literature in terms of both methods and content, and appropriately applies a novel methodology to rich panel data. It is also welll executed in all of its aspects

For all these reasons, I consider this a strong bachelor's thesis. I recommend it for the defense and suggest grade A.

During the defense, the committee may want to ask the following questions:

1. What are the problems with applying traditional two-way-fixed-effect methods to estimating staggered diff-in-diff designs and how does the Callaway and Sant'Anna method solve them?
2. According to your analysis, which municipality characteristics determine most strongly the impact of high-speed railways and explanation or mechanisms could explain such heterogeneous effects in your opinion?
3. Do you think that your results from Japan apply also to the context of Europe and, in particular, the Czech Republic?

SUMMARY OF POINTS AWARDED (for details, see below):

CATEGORY	POINTS
<i>Contribution</i> (max. 30 points)	28
<i>Methods</i> (max. 30 points)	30
<i>Literature</i> (max. 20 points)	30
<i>Manuscript Form</i> (max. 20 points)	27
TOTAL POINTS (max. 100 points)	95
GRADE (A – B – C – D – E – F)	A

NAME OF THE REFEREE: Matěj Bajgar, DPhil.

DATE OF EVALUATION: 30th May 2024

Referee Signature

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EXPLANATION OF CATEGORIES AND SCALE:

CONTRIBUTION: *The author presents original ideas on the topic demonstrating critical thinking and ability to draw conclusions based on the knowledge of relevant theory and empirics. There is a distinct value added of the thesis.*

METHODS: *The tools used are relevant to the research question being investigated, and adequate to the author's level of studies. The thesis topic is comprehensively analyzed.*

LITERATURE REVIEW: *The thesis demonstrates author's full understanding and command of recent literature. The author quotes relevant literature in a proper way.*

MANUSCRIPT FORM: *The thesis is well structured. The student uses appropriate language and style, including academic format for graphs and tables. The text effectively refers to graphs and tables and disposes with a complete bibliography.*

Overall grading:

TOTAL	GRADE
91 – 100	A
81 - 90	B
71 - 80	C
61 – 70	D
51 – 60	E
0 – 50	F