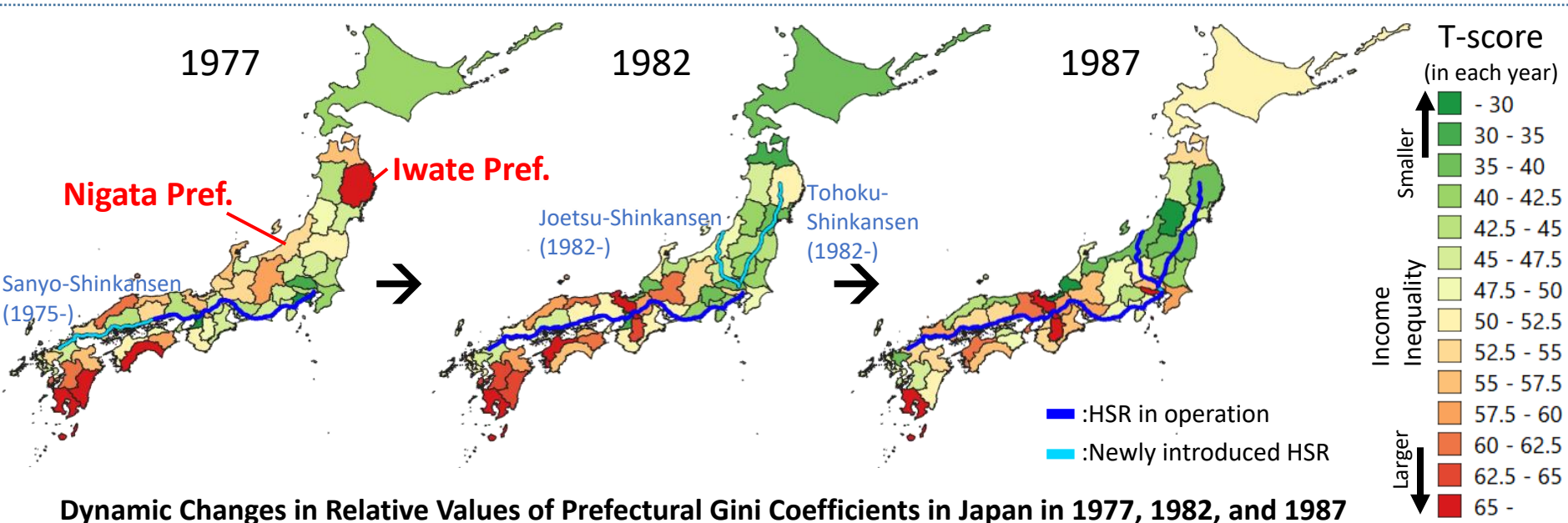


Impacts of High-speed Rail Introduction on Regional Income Disparity: An Empirical Analysis of Japanese Shinkansen

高速鉄道の開業が地域内の所得格差に与える影響：
日本の新幹線に関する実証分析

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1 Background

High-Speed Rail (HSR)

- Travel time saving and larger transportation capacity → Vitalizes regional economy

HSR reduces inter-regional disparity

- Promote regional economic convergence (Chen & Haynes, 2017)
- Enhance productive efficiency in provincial area (Otsuka, 2019)

However,

Impact on intra-regional disparity is unknown

Does HSR benefit only high-income group due to its expensive fare?

Inequality may cause social risks:

- Increase in crime rate (Cheong & Wu, 2015; Answer et al., 2020)
- Deterioration of people's health (Pickett & Wilkinson, 2015)
- Poor economic growth (Berg et al., 2012; Ostry et al., 2014)

Research Question

How does the introduction of HSR impact on intra-regional income disparity?

2 Goals

This study aims to:

- Analyze empirically the impacts of HSR introduction on intra-regional income disparity;
- Identify critical factors behind the impacts; and
- Draw policy implications.

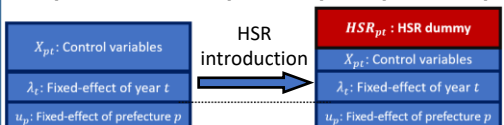
Data: Prefectural-level data by income group and by industry in Japan covering period from 1959-2017.

3 Methods

Econometric Analysis

Two-way fixed-effect regressions

$$Gini_{pt} = \beta_0 + \beta_1 HSR_{pt} + \sum \zeta X_{pt} + u_p + \lambda_t + \varepsilon_{pt}$$



Expert Interviews

Online-interviews with local experts

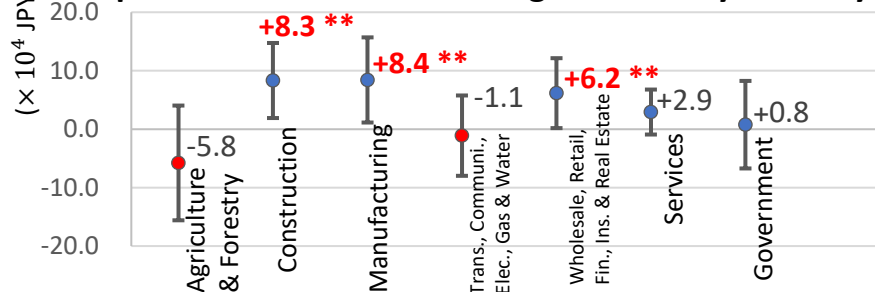


4 Results

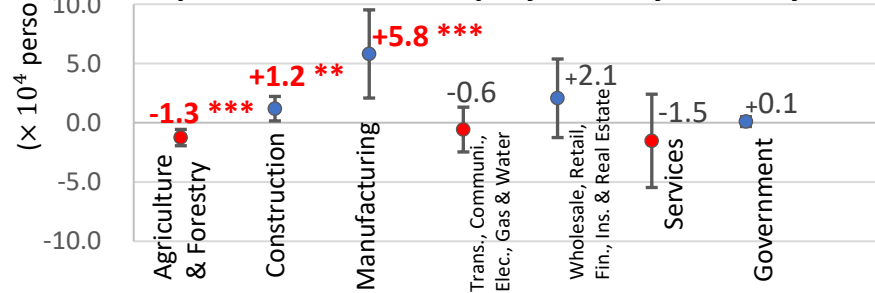
Empirical analysis results show that HSR introduction

- reduced Gini coefficient by 1.7% on average
- increased real average income by 35,000 JPY on average

Impacts of HSR on Real Average Income by Industry



Impacts of HSR on Employment by Industry



Note: *** and ** indicate significance at 1% and 5% respectively

Potential mechanism of HSR's impacts on income disparity is:

- Employment growth in Construction and Manufacturing industries with positive impact of HSR on worker income
- Employment decline in Agriculture & Forestry with lowest average worker income

5 Conclusion

HSR reduced intra-regional income disparity in Japan

This suggests policy implications:

- Promotion of employment mobility across industries; and
- Support to industries without direct benefit from HSR

for reducing income disparity.

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