

Stronger Together?

Government Size and Recovery From War

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H2325 Research Proposal

Very Very Preliminary Idea (do not circulate)

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Overview

- **Better to have larger local government size?**
 - # of mergers increase in developed countries (Europe, Japan)
 - Tradeoffs: Alesina and Spolaore (1997 QJE)
 - Large is better: efficiency gain
 - Small is better: cost associated with heterogeneity, loss of autonomy
- **Empirical challenges:**
 - Data: previous municipalities disappear from data
 - Endogeneity: municipalities choose whether to merge
- **This paper: Estimate effects of local government size on spatial growth**
 - Unique data: newly digitized archival data
 - Unique setting: mass mergers in 1950's Japan **with fuzzy pair-wise RD**
 - Unique outcome: Long-run outcome, recovery from war

Existing research and contributions

- **Optimal size of jurisdictions**

- Tiebout (1956 JPE), Alesina and Spolaore (1997 QJE, 2003 Book)
- New here: Effects on long-run, non-fiscal outcomes

- **Causal effects of impact of mergers**

- Blom-Hansen et al (2016 APSR), Blesse and Baskaran (2016 RSUE), Breuille et al (2018 JUrbanE), Cobban (2019 UrbanAR), Luca and Modrego (2020 JRS), Tricaud (2021 WP)
- New here:
 - Pair-wise RD design
 - Also examines long-run, non-fiscal outcomes

- **Determinants of regional growth/recovery**

- Davis and Weinstein (2002 AER), Kline and Moretti (2013 QJE), Peters (2021 ECTA),...
- New here:
 - Government size

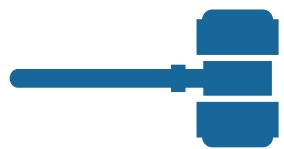
Today's plan



Institutional Setting



Data and Empirical Framework



Conclusion

Today's plan



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Data and Empirical Framework



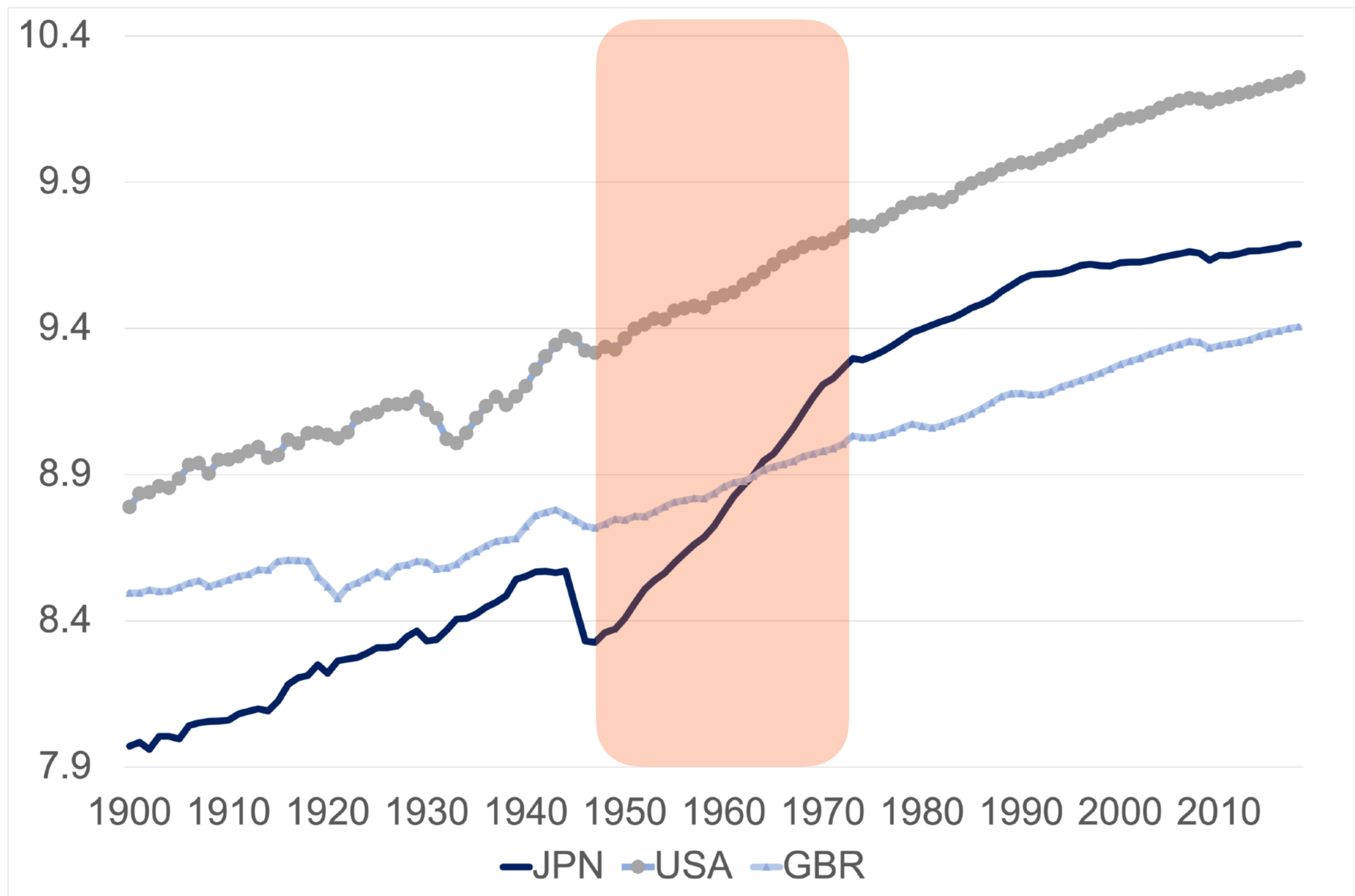
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Historical Background

- ▶ Recovery and miracles
 - ▶ 1945: WWII ends
 - ▶ 1954-1972: Recovery to Japanese economic miracle figure
 - ▶ Roles of local government in industrialization?
- ▶ Mass changes in local government systems in parallel
 - ▶ 1947: Local Autonomy Act
 - ▶ **1953: The great Showa mergers** figure
 - ▶ Over 10,000 municipalities in 1953
 - ▶ Aimed to decrease # to 1/3 for efficiency gains
 - ▶ **Target ones with population below 8,000 ($\approx 80\%$)**

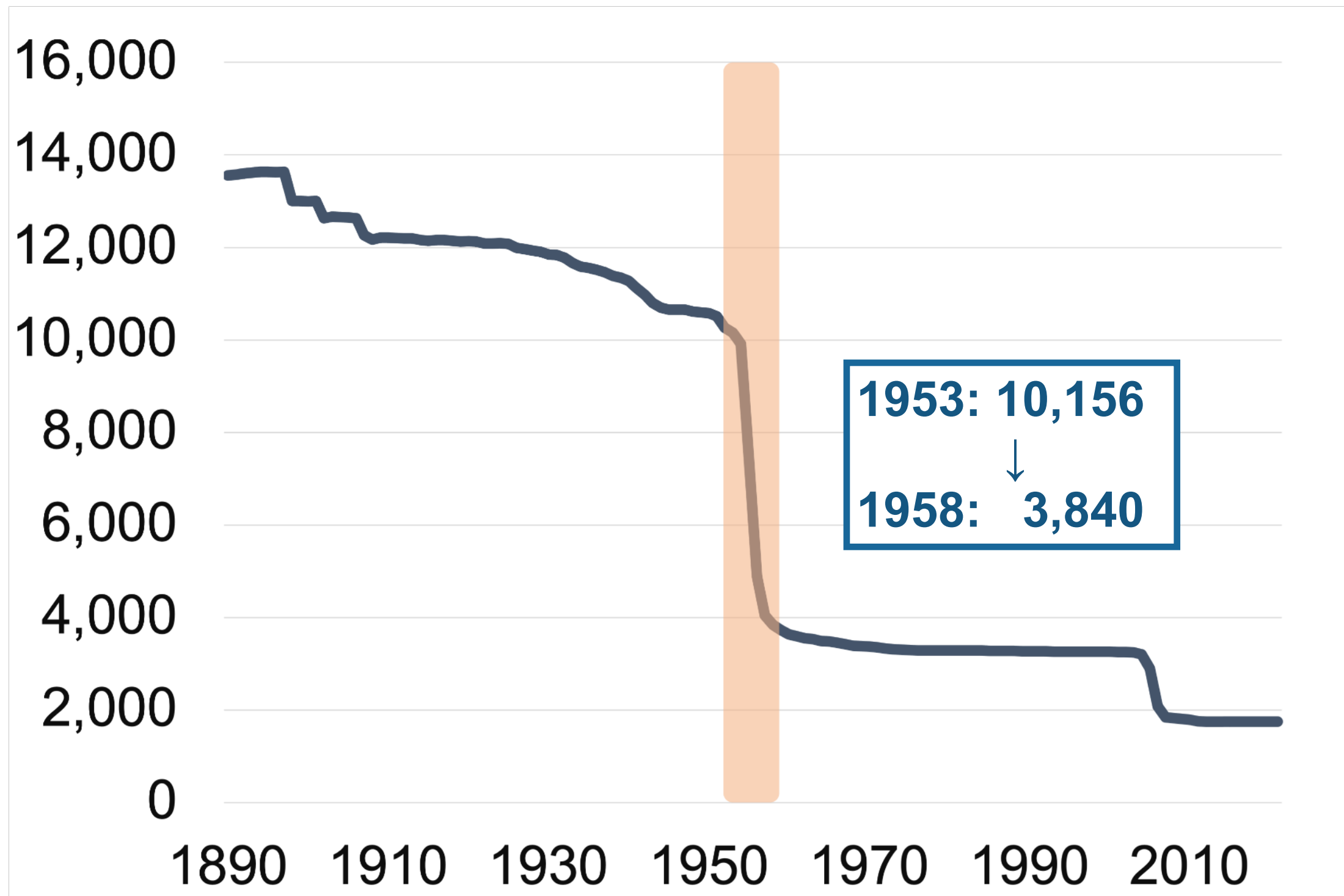
Japanese economic miracle

Log Real GDP of Japan, US, and UK: 1900-2018



The great Showa mergers

Number of municipalities (市区町村) in Japan



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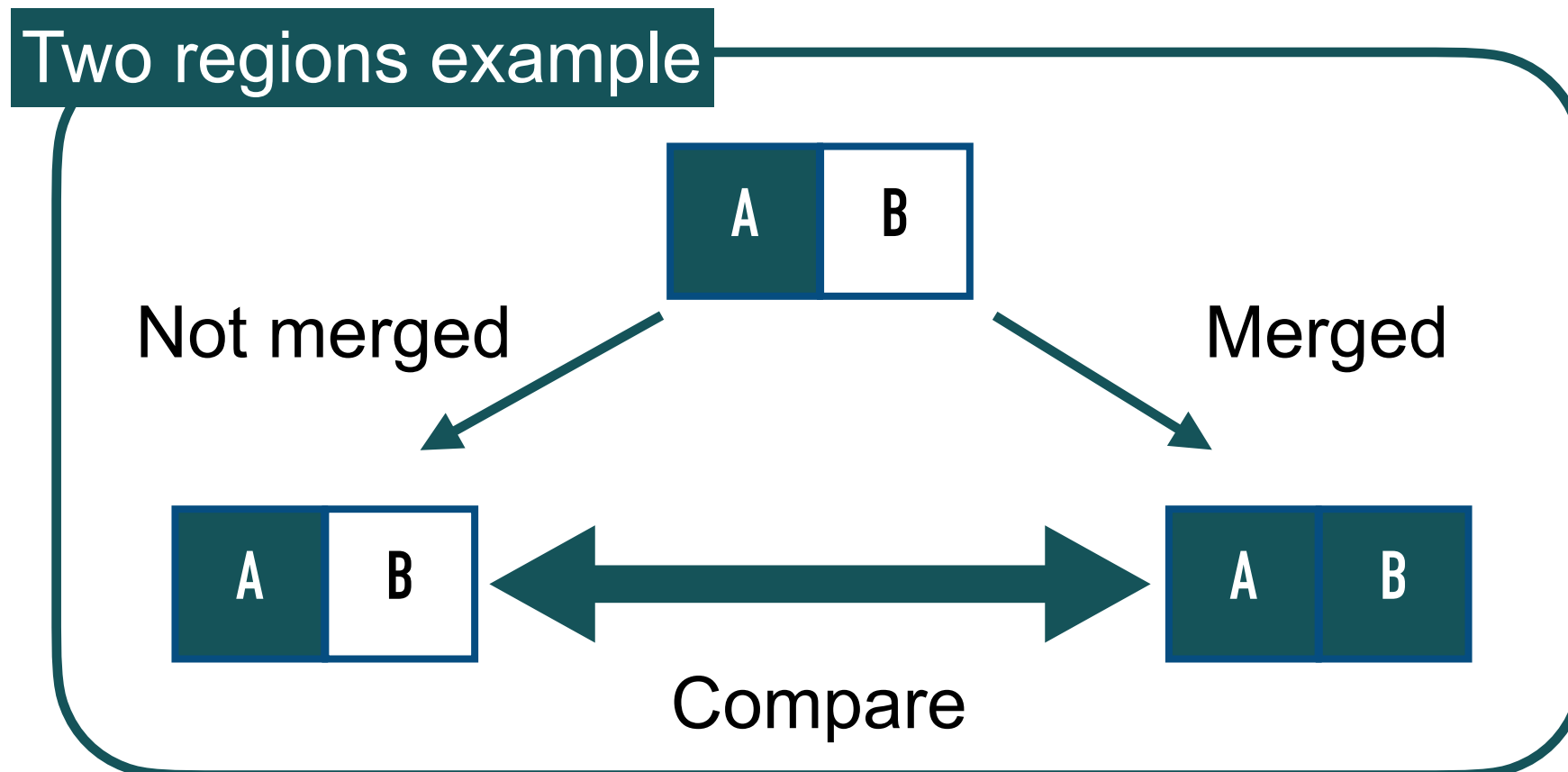
Data and Empirical Framework



Conclusion

Empirical Framework: Overview

- ▶ **Goal:** Estimate the effect of municipality size on outcome
 - ▶ Mass mergers (1953-60) as shocks to municipality size
 - ▶ **Unit:** pairs of two adjacent municipalities in 1950
- ▶ Step 1. Merge or not
- ▶ Step 2. Compare merged and non-merged pairs



Empirical Framework 1st stage: Pair-wise Fuzzy RD

- **Concern:** Merger is an endogenous decision

→ Pair-wise Fuzzy RD

- **Threshold of population < 8,000**
- Higher propensity to merge with adjacent municipality

$$\begin{aligned} Merge_{i,j} = & \beta_1 \left(\mathbf{1}\{Pop_{i,1950} < 8,000 \wedge Pop_{j,1950} > 8,000\} \right) \\ & + \beta_2 \left(\mathbf{1}\{Pop_{i,1950} > 8,000 \wedge Pop_{j,1950} < 8,000\} \right) \\ & + \beta_3 \left(\mathbf{1}\{Pop_{i,1950} < 8,000 \wedge Pop_{j,1950} < 8,000\} \right) \\ & + \gamma f(Pop_{i,1950}, Pop_{i,1960}) + const. + \epsilon_{i,j} \end{aligned}$$

- $Merge_{i,j}$: Take 1 if i and j are merged
- $f(\cdot)$: some polynomial

Empirical Framework 2nd Stage: Effect of Pairs' Total Outcomes

- ▶ Effect of merged status (instrumented) on outcome
 - ▶ Firm creation in 1970
 - ▶ Average income growth in 1950-70

- ▶ Standard specification for the effect on outcome

$$Y_{i,j} = \lambda \cdot \widehat{Merge}_{i,j} + \delta_1 g(Pop_i) + \delta_2 g(Pop_j) + const. + \varepsilon_{i,j}$$

- ▶ $Y_{i,j}$: Total outcomes of i and j
 - ▶ If i and j merge, the unit is at the new municipality
 - ▶ If not merged, the sum of two municipalities
- ▶ $\widehat{Merge}_{i,j}$: Fitted value from the 1st stage
- ▶ $g(\cdot)$: Some polynomial
- ▶ $Pop_{i,j}$: baseline population in 1950

Data: Unique data via digitization of archival data

Pre-merger municipalities level

- **Merger status:** Digitize from *govt. archival data*
- **Population**
 - Digitize from *census*: 1940, 1950
 - Digitize from *yearbook in each prefecture*: 1960 -
 - Open govt. data at 500m-mesh level in 2010 (*Stat. Bureau*)
- **Firm creation** from firm-level, geo-coded data (*Teikoku*)
 - Restricted-access data in 1938, 1943, 1957, 1970 for 7/47 pref.
 - Restricted-access data from 1993 for all pref.

Post-merger municipalities level

- **Government revenue/expenditure** by large items
 - Digitize from 1960-1969
 - Restricted-access data from 1970
- **Average income, total manuf. shipping, total retail sales, # of estab.**
 - Open govt. data from 1975 (*Cabinet Office*)

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Data and Empirical Framework



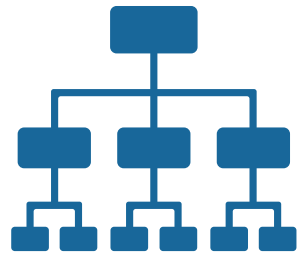
Conclusion

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- **This paper: Estimate effects of local government size on spatial growth (recovery from the war)**
 - Unique data: newly digitized archival data
 - Unique setting:
 - mass mergers in 1950's Japan
 - **fuzzy pair-wise RD**
 - Unique outcome: Long-run outcome, recovery
- Extension
 - More than 2 region case

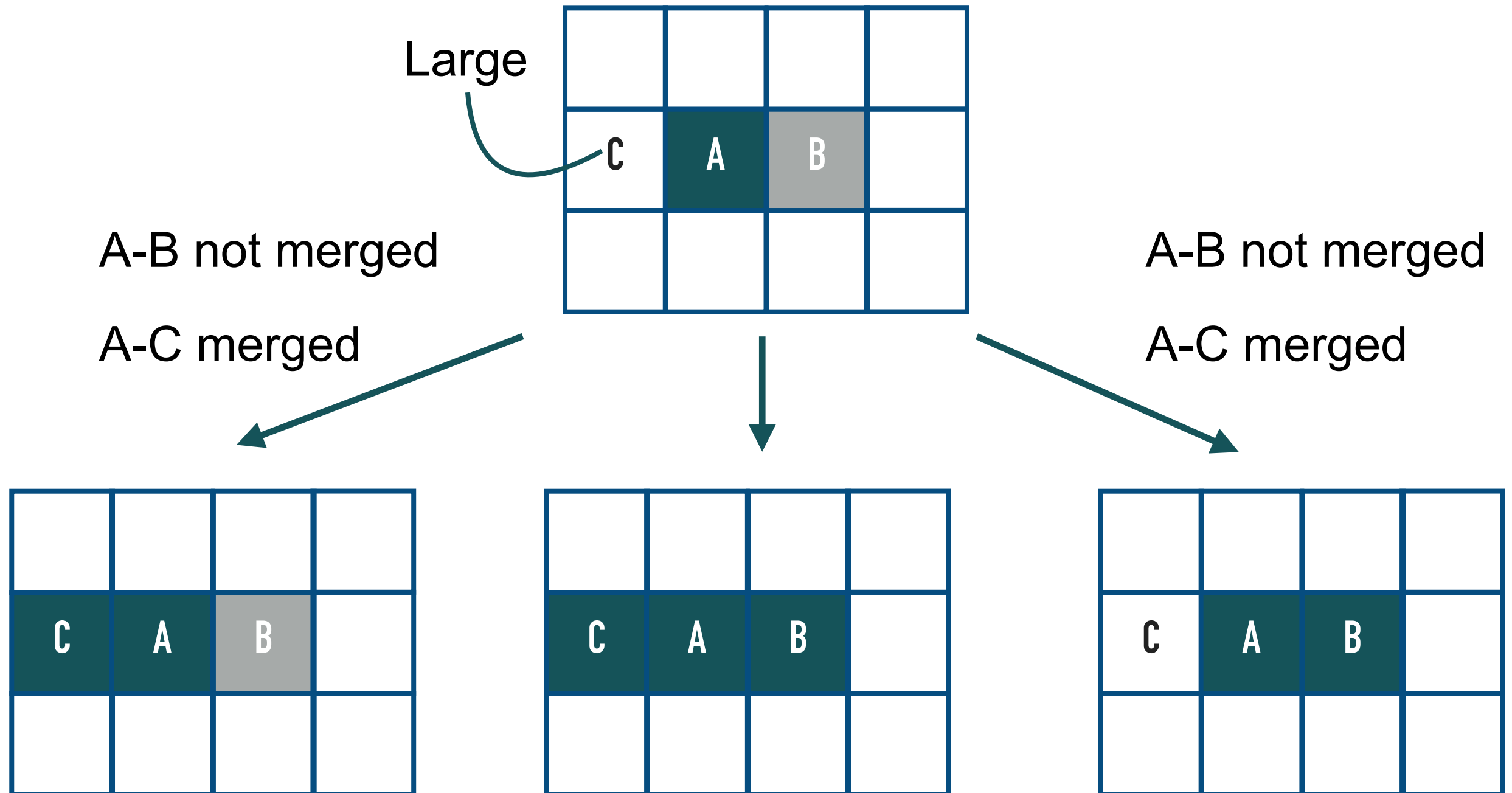
Comments/Feedback Appreciated!

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Appendix

Empirical Framework: More than 2 regions (figure)



- ▶ To precisely estimate propensity of merger of A-B pair, we need to think about neighborhoods

Empirical Framework: Pair-wise Fuzzy RD

$$\begin{aligned} Merge_{i,j} = & \beta_1 \left(\mathbf{1}\{Pop_{i,1950} < 8,000 \wedge Pop_{j,1950} > 8,000\} \right) \\ & + \beta_2 \left(\mathbf{1}\{Pop_{i,1950} > 8,000 \wedge Pop_{j,1950} < 8,000\} \right) \\ & + \beta_3 \left(\mathbf{1}\{Pop_{i,1950} < 8,000 \wedge Pop_{j,1950} < 8,000\} \right) \\ & + \gamma_1 f_1(Pop_{i,1950}, Pop_{j,1960}) \\ & + \gamma_2 \sum_{k \in neighbor_{i,j}} f_k(Pop_{k,1960}) + const. + \epsilon_{i,j} \end{aligned}$$

- $Merge_{i,j}$: Take 1 if i and j are merged
- $f_1(\cdot)$, $f_k(\cdot)$: some polynomial