Stronger Together?
Government Size and Recovery From War

Shinnosuke Kikuchi ⓡ Jie Zhou

H2325 Research Proposal
Very Very Preliminary Idea
Apr 16, 2021

Overview

- **Large local government is better?**
  - # 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

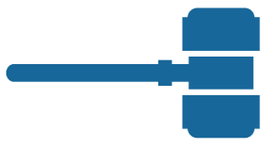
- **Causal effects of impact of mergers**
  - Blom-Hansen et al (2016 APSR), Blesse and Baskaran (2016 RSUE), Breuille et al (2018 JUrbanE), Cobban (2019 UrbanAR), Luca and Modrego (2020 JRS), Tricaud (2021 WP)
  - New here:
    - Pair-wise RD design
    - Also examines long-run, non-fiscal outcomes

- **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

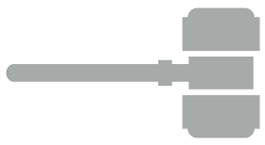


Conclusion

Today's plan

Institutional Setting

Data and Empirical Framework



Conclusion

Historical Background

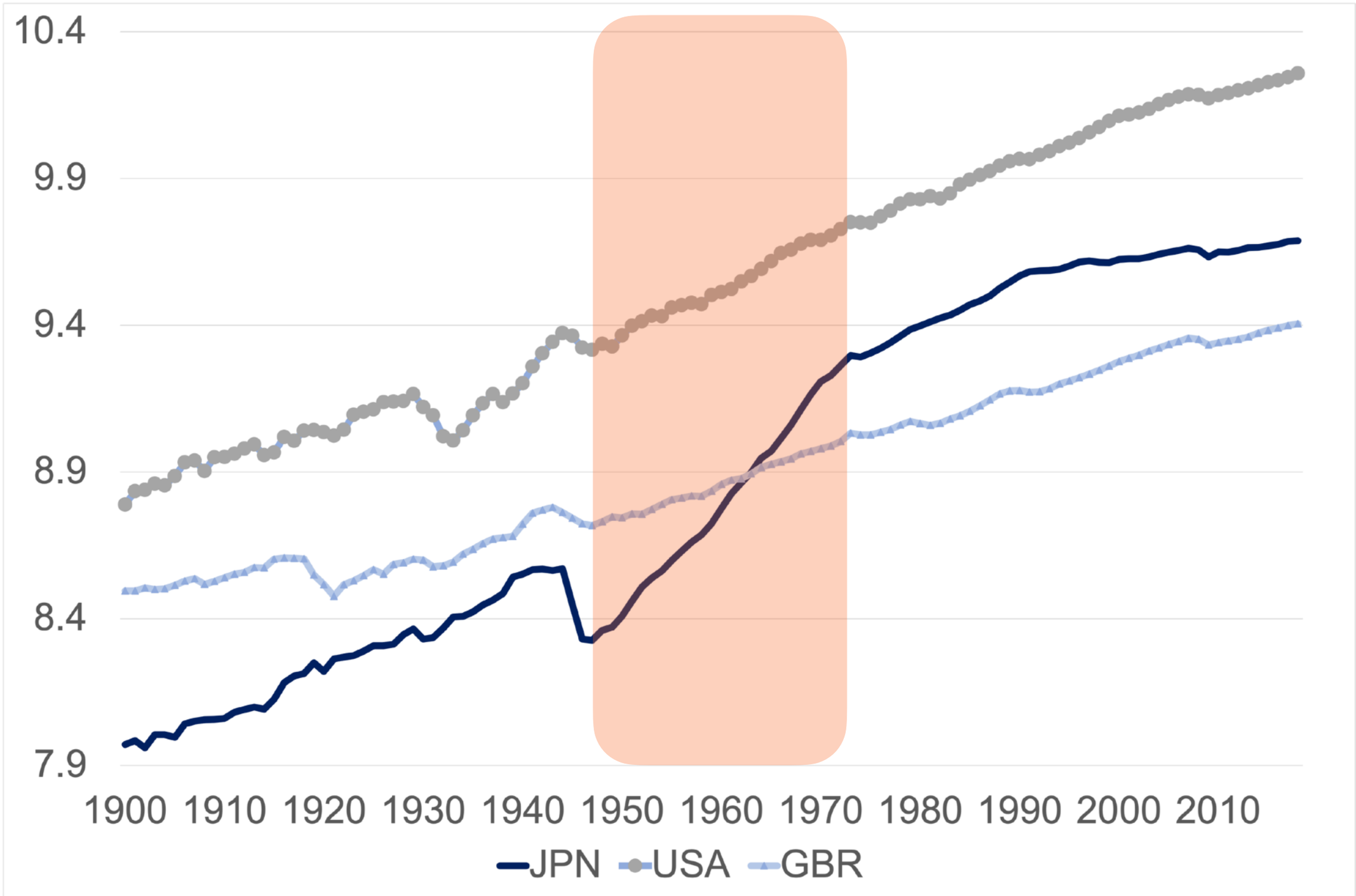
- Recovery and miracles
  - 1945: WWII ends
  - 1954-1972: Recovery to Japanese economic miracle
    - Roles of local government in industrialization?

figure

- 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

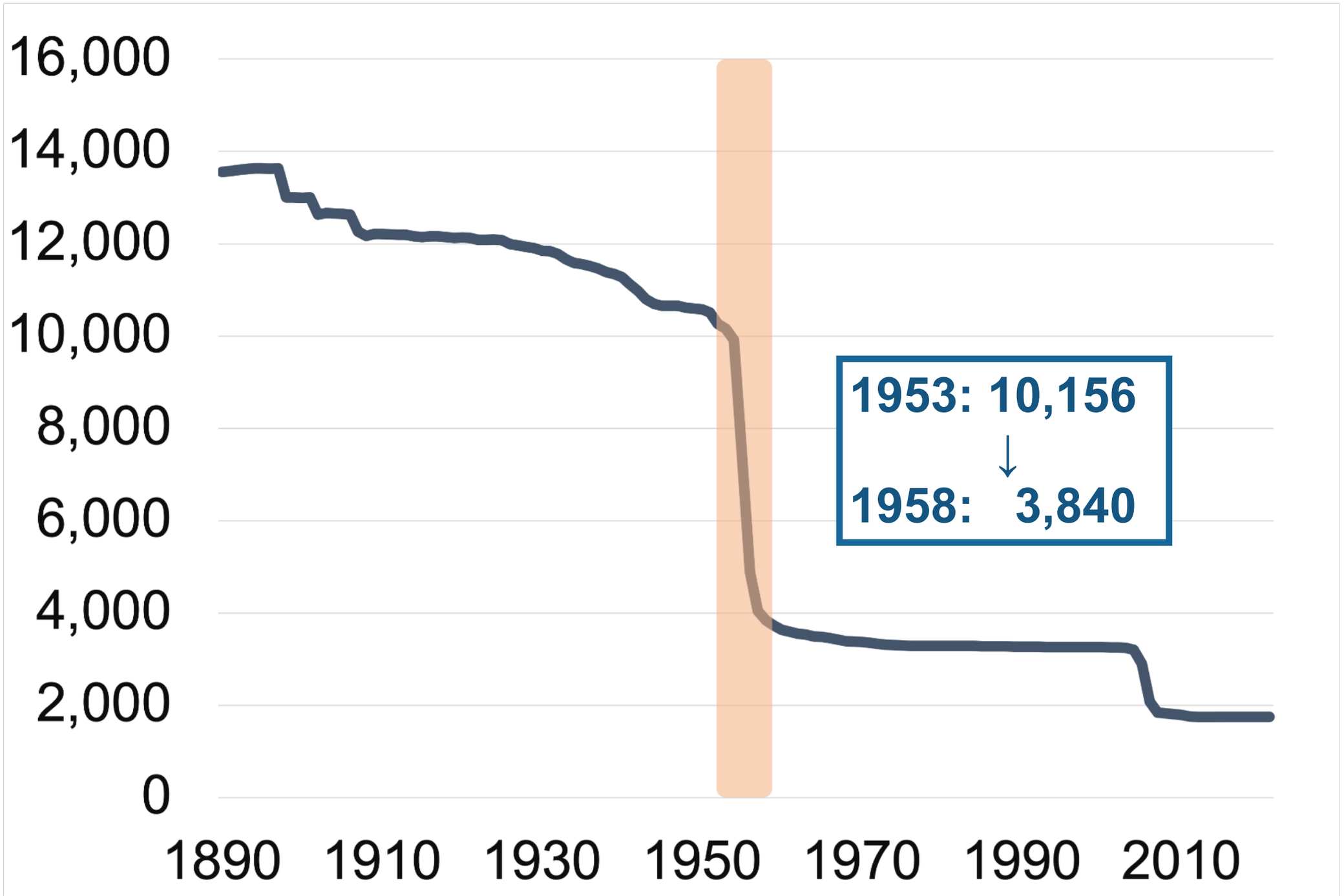
Log Real GDP of Japan, US, and UK: 1900-2018



Source: Maddison Project Database

The great Showa mergers

Number of municipalities (市区町村) in Japan

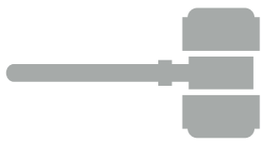


Source: https://uub.jp/upd/transition.html

Today's plan

Institutional Setting

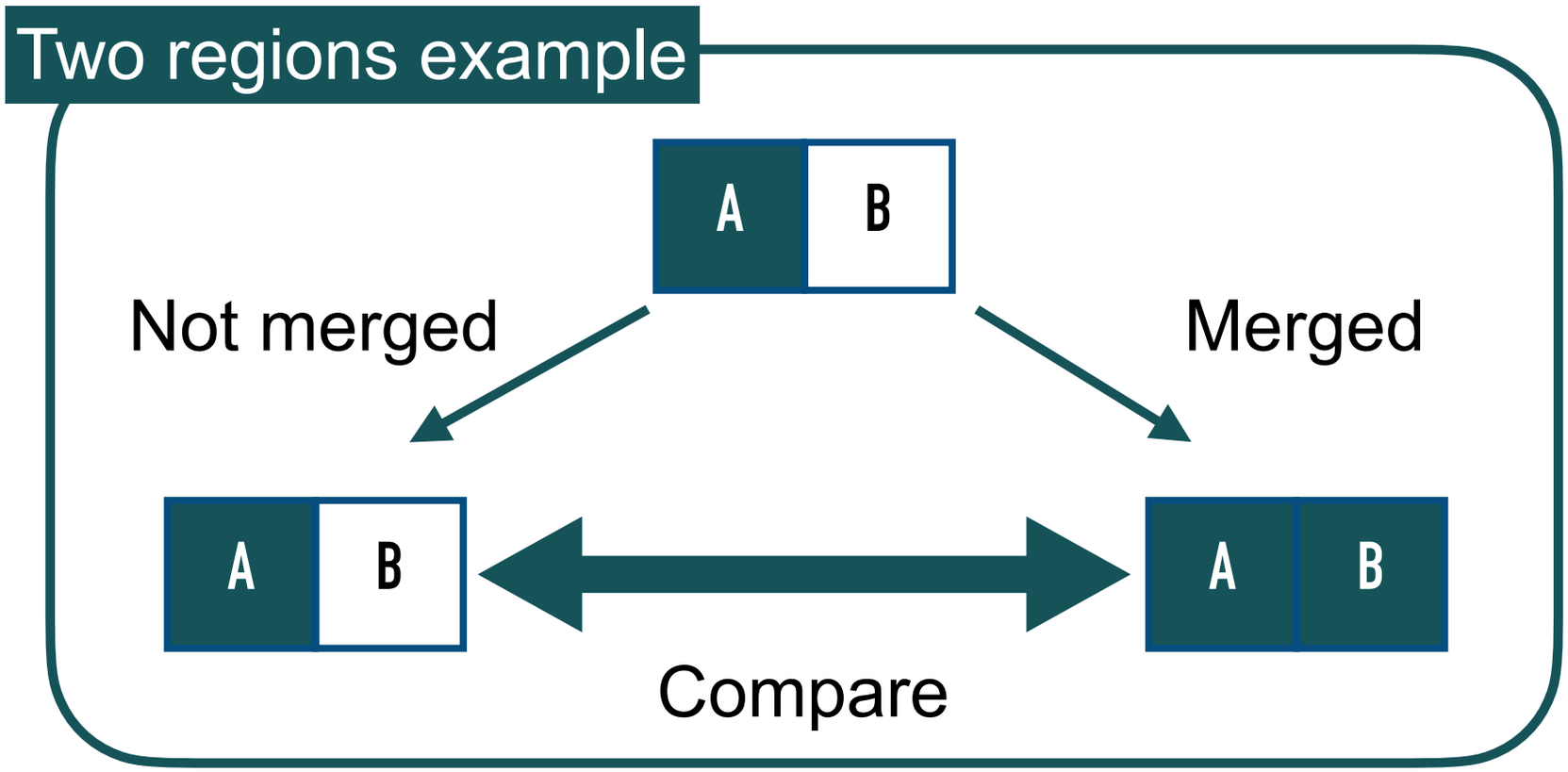
Data and Empirical Framework



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

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

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

More than 2 regions

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

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

- $Y_{i,j}$: 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*)

Today's plan

Institutional Setting

Data and Empirical Framework

Conclusion

Conclusion

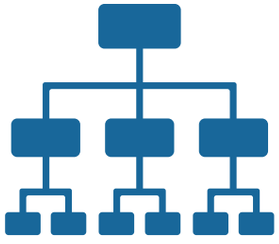
- **This paper: Estimate effects of local government size on spatial growth (recovery from the war)**
  - Unique data: newly digitized archival data
  - Unique setting:
    - mass mergers in 1950's Japan
    - **fuzzy pair-wise RD**
  - Unique outcome: Long-run outcome, recovery

- Extension
  - More than 2 region case

Comments/Feedback Appreciated!

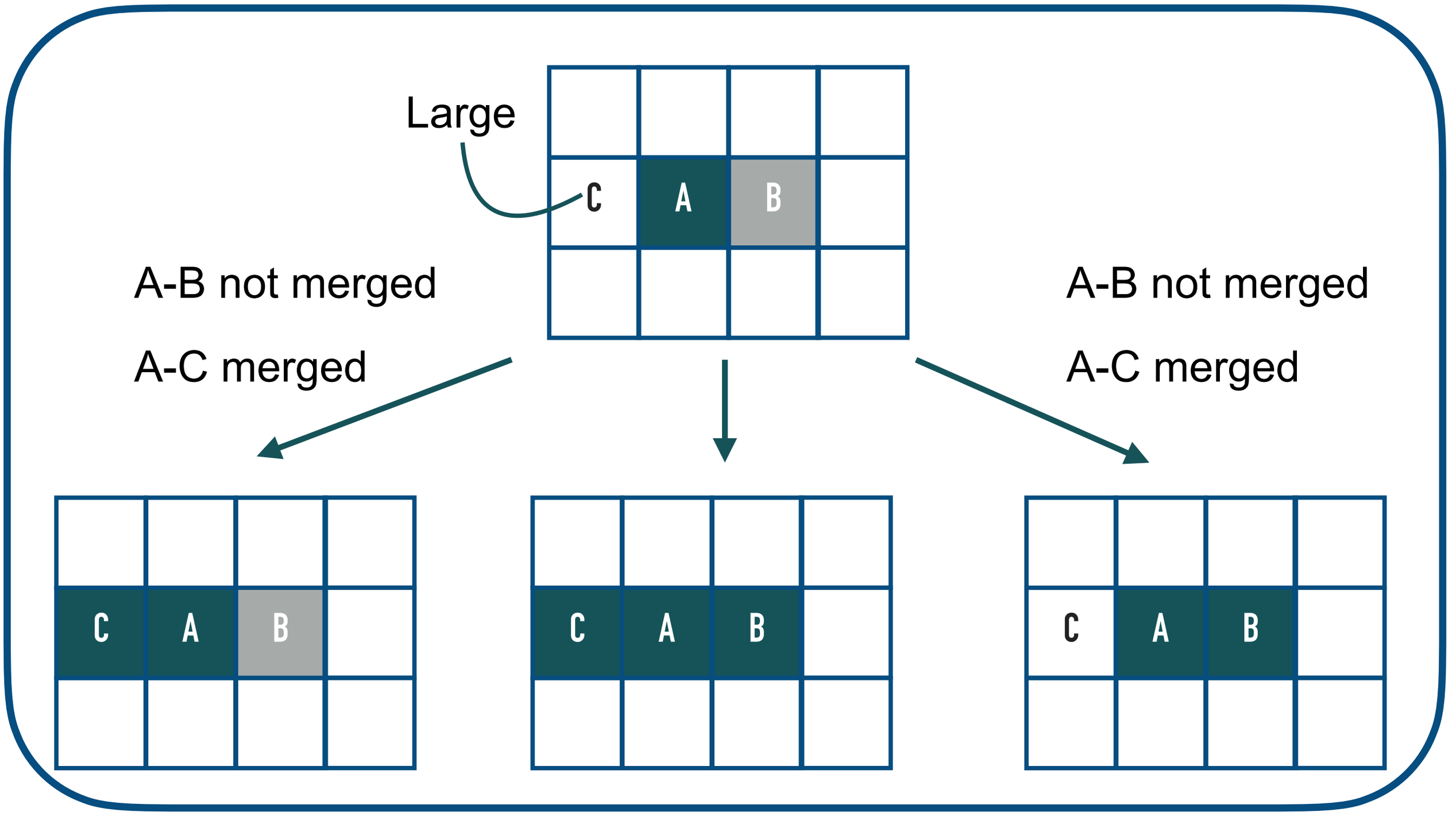
skikuchi@mit.edu, jiezhou@mit.edu

Appendix



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

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

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

back