The Fiscal Multiplier in Japan

"Decomposing Local Fiscal Multipliers: Evidence from Japan"
by Taisuke Kameda, Ryoichi Nanba and Takayuki Tsuruga
"The expert survey on the size of Japan's fiscal multiplier"
by Masahiro Hori

Justin Wolfers

University of Michigan

and Brookings, CEPR, CESifo, IZA, NBER & PIIE

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Research Question

❑ What is the size of the fiscal multiplier in Japan?

Paper #1: Kameda, Nanba and Tsuruga

Table 3: Benchmark estimations

	OLS		2SLS		LIML
	(1)	(2)	(3)	(4)	(5)
Regional fiscal multiplier (β_R)	1.142***	–	1.550***	–	1.647***
	(0.195)	–	(0.268)	–	(0.294)

Multiplier ≈ 1.6

Paper #2: Hori

People's view about the fiscal multiplier

	Number of obs.	Mean	Median	Mode	Std. Dev.
All observations (GP + PE)	3,138	0.86	1.00	1.00	0.88
General public (GP)	2,671	0.81	1.00	1.20	0.93
Professional economists (PE)	467	1.12	1.10	1.00	0.48

Multiplier ≈ 1.1

Competing Interpretations

Kameda, Nanba and Tsuruga

❑ Multiplier is 1.6

❑ Cross-section studies are particularly valuable
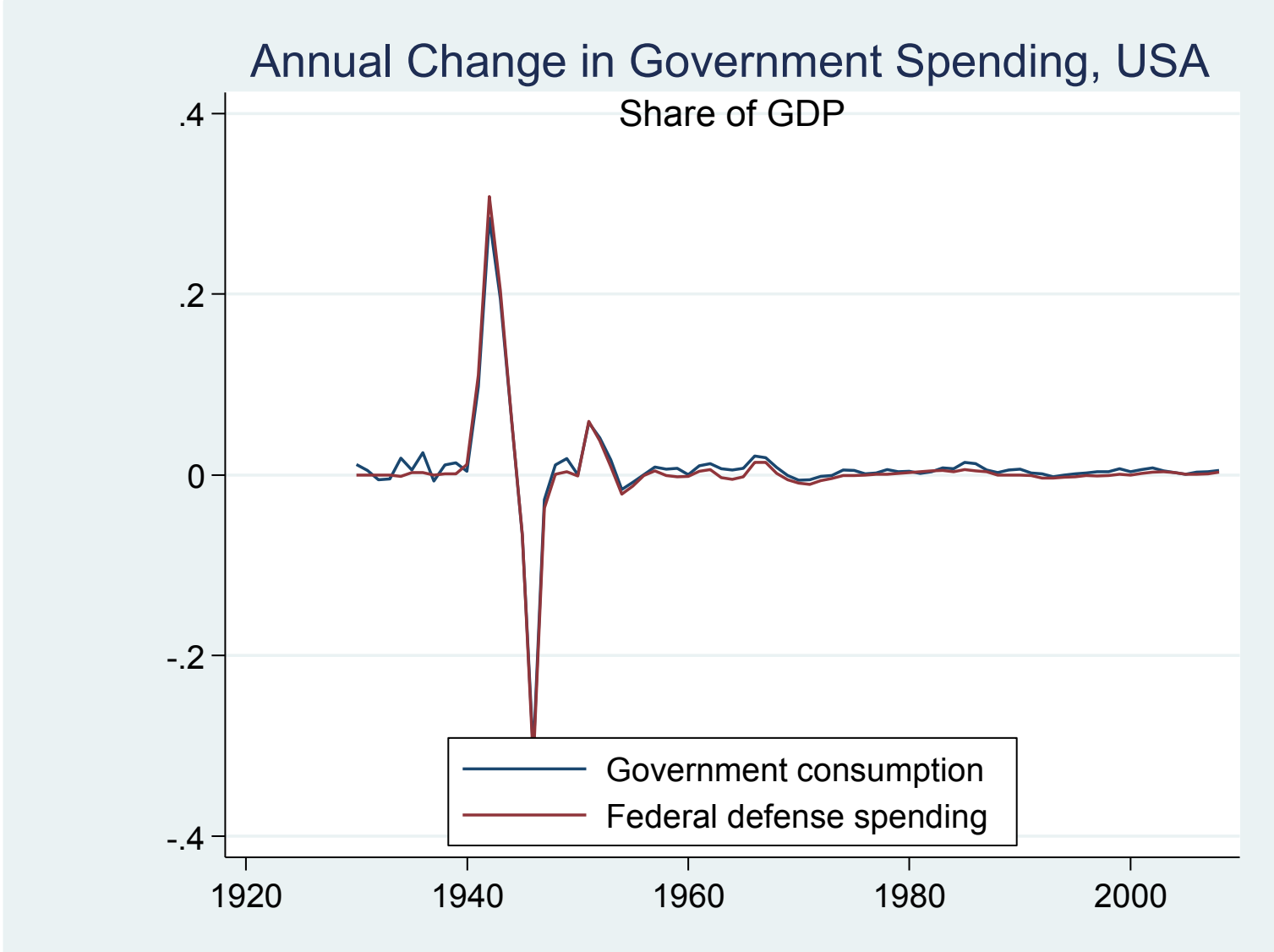
❑ Japanese economists understate the fiscal multiplier

Hori

❑ Multiplier is 1.1

❑ Time series studies are particularly valuable

❑ Regional multipliers (as in KNT) overstate the national multiplier

My argument

1. Problems with time series studies
    -   Endogeneity: Correlation between G and Y confounds
        -   Multiplier effects: $\Delta G \to \Delta Y$
        -   Fiscal policy response function: $\Delta Y \to \Delta G$
    -   Existing instruments not credible
        -   VAR ordering
        -   War shocks
        -   Narrative
    -   Limited time series variation
        -   Cross-section yields greater variation

2. Cross-sectional (and panel) studies are more credible

3. An emerging consensus

Time Series Multiplier Studies

Annual Change in Government Spending, USA

Share of GDP

Legend:
- Government consumption
- Federal defense spending

Cross-Sectional Multiplier Estimates

❏ Estimating equation:

Prefectural economic growth   =   Prefectural ΔG +   Regional ΔG

$$\frac{y_{r,p,t} - y_{r,p,t-2}}{y_{r,p,t-2}} = \gamma_P \frac{g_{r,p,t} - g_{r,p,t-2}}{y_{r,p,t-2}} + \gamma_S \frac{G_{r,t} - G_{r,t-2}}{Y_{r,t-2}}$$
$$+ \eta_{r,p} + \delta_t + \varepsilon_{r,p,t}$$

Prefectural and time fixed effects

❏ Identification reflects:

▸ Variation in fiscal policy across space within a specific period

▸ Focus on categories of spending unrelated to economic conditions

❏ *Regional multiplier* $= \gamma_P + \gamma_S$

Intuition of Cross-Section Estimates

❑ Variation across regions in fiscal shocks yields variation in output growth:

Slope =
$$\frac{\Delta Y}{\Delta G} =$$
Regional multiplier

Output growth

Government spending growth
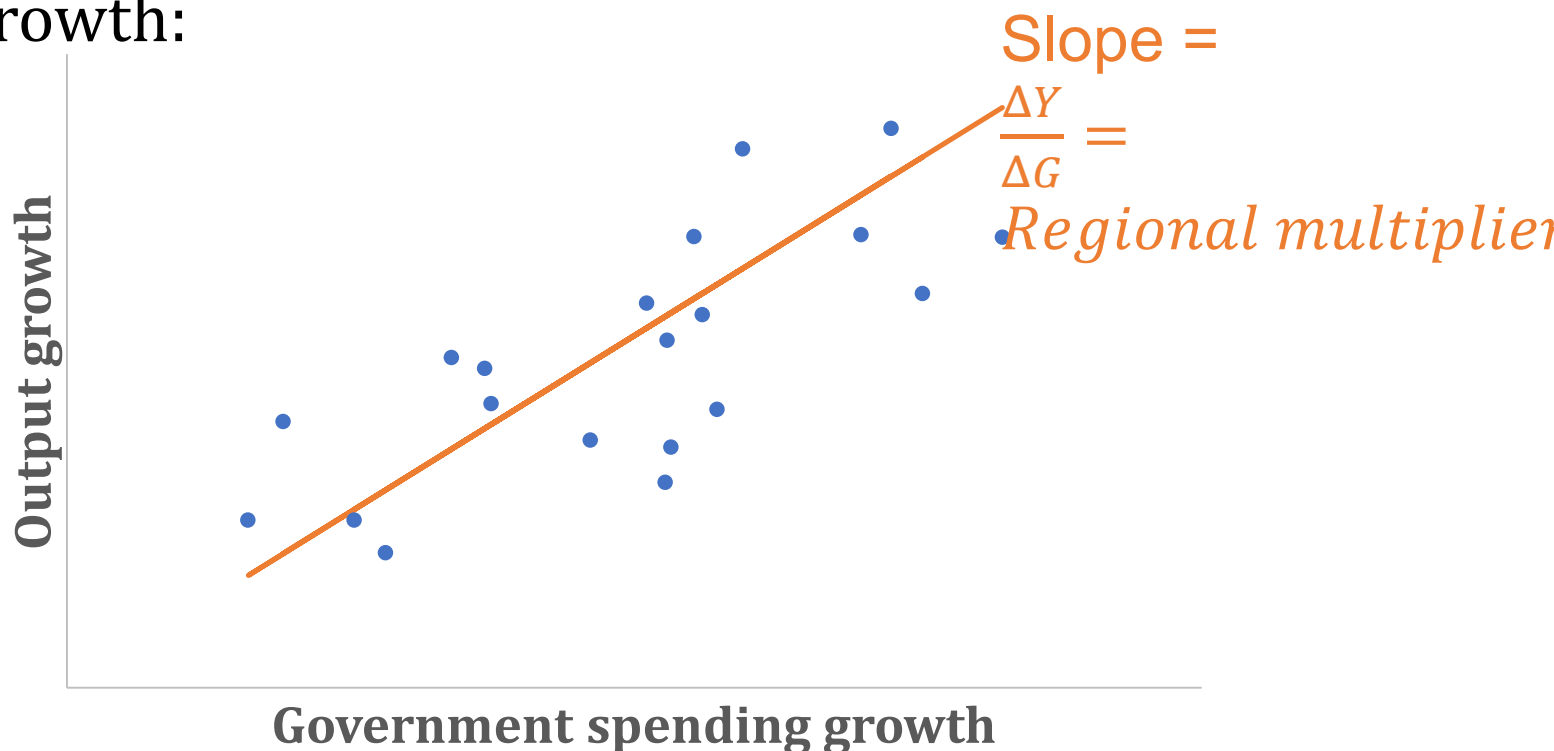
❑ Argument: Regional multiplier yields a rough lower bound for the closed economy zero lower bound deficit-financed aggregate multiplier." – Chodorow-Reich, 2017

Mapping from Regional to National Multipliers

Local multipliers differ from national multipliers, because:

1. No financing burden
   - Local spending doesn't affect present value of local tax burdens

2. Regional economy is more open than national economy
   - *Leakages* from local agents to output produced in other regions
   - *Terms of trade effects* cause spending to switch to other regions
   - *Migration*

3. No monetary policy reactions
   - Regional estimates difference out *all* national factors
   - Including offsetting monetary policy changes

Difference #1: Consequences of Deficit Finance

❑ Local fiscal shock paid by federal govt is equivalent to:

▸ Deficit-financed spending shock

▸ PLUS: Future stream of transfers from federal government

$$Annuity\ value = r \times \underbrace{\Delta G \times \frac{1}{r+\rho}}_{NPV\ of\ fiscal\ shock}\quad per\ year$$

❑ Regional multiplier
= Deficit-financed multiplier + Transfer multiplier

Ricardian equivalence

▸Temporary fiscal shock (ρ small)
→ small annual transfers

▸Regional economy is very open
→ local effects are small

▸Transfer multiplier ≈ 0.07

Hand-to-mouth consumers

▸Repayments in *future periods* don't affect current spending

▸Repayments by *other areas* don't affect current spending

▸Transfer multiplier = 0

"outside financing raises multipliers by less than 0.1"

Mapping from Regional to National Multipliers

Local multipliers differ from national multipliers, because:

1. ## No financing burden
   - Local spending doesn't affect present value of local tax burdens
   - **Regional multiplier ≈ Deficit-financed multiplier**
     - "outside financing raises multipliers by less than 0.1"

2. ## Local economy is more open than national economy

3. ## No monetary policy reactions
   - Regional estimates difference out *all* national factors
   - "Passive monetary policy" multiplier

Difference #2: Local Economy Openness

A. Leakages into imports from other regions

▸ $\uparrow G_{home} \Rightarrow \uparrow Y_{home} \Rightarrow \uparrow$ *Imports from other regions* $\Rightarrow \uparrow Y_{other\ regions}$

B. Adverse regional terms of trade shifts

▸ $\uparrow G_{home} \Rightarrow \uparrow \frac{P_{home}}{P_{elsewhere}} \Rightarrow$ *Spending switches from home to other regions*

$\Rightarrow \downarrow Y_{home}, \uparrow Y_{other\ regions}$

National multiplier > Regional multiplier

C. Regional migration

▸ $\uparrow G_{home} \Rightarrow \uparrow Y_{home} \Rightarrow \underbrace{\uparrow migration\ from\ other\ regions \Rightarrow \uparrow Y_{home}}_{National\ multiplier < Regional\ multiplier}$

▸ Empirically these effects are small

  ▪ Fixed cost of migration is large, relative to temporary fiscal shock

  ▪ U.S. evidence: Cross-state population changes unrelated to ARRA stimulus

  ▪ Japanese evidence: This paper robust to controls for changing population

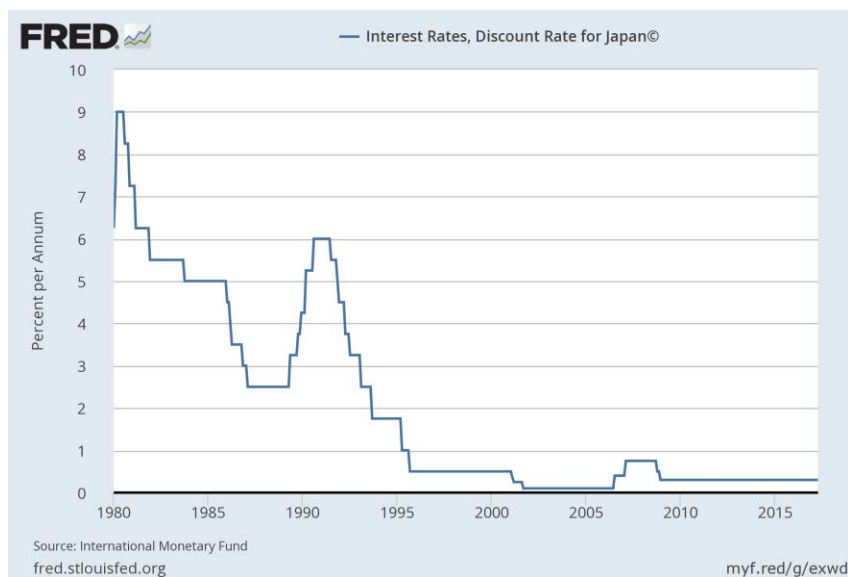**Regional multiplier > National multiplier but effects are tiny**

Mapping from Regional to National Multipliers

Local multipliers differ from national multipliers, because:

1. No financing burden
   ‣ Local spending doesn't affect present value of local tax burdens
   ‣ "outside financing raises multipliers by less than 0.1"
   ‣ **Regional multiplier ≈ Deficit-financed multiplier**

2. Local economy is more open than national economy
   ‣ **Regional multiplier > National multiplier**

3. No monetary policy reactions
   ‣ Regional estimates difference out *all* national factors

Difference #3: No Monetary Policy Effects

❑ Regional multipliers difference out all common national effects

▸ Including monetary policy reactions

❑ Implies: Identifies "passive monetary policy multiplier"

▸ Relevant to the zero lower bound

Mapping from Regional to National Multipliers

Local multipliers differ from national multipliers, because:

1. ## No financing burden
    ▸ Local spending doesn't affect present value of local tax burdens
    ▸ "outside financing raises multipliers by less than 0.1"
    ▸ **Regional multiplier ≈ Deficit-financed multiplier**

2. ## Local economy is more open than national economy
    ▸ **Regional multiplier > National multiplier**

3. ## No monetary policy reactions
    ▸ Regional estimates difference out *all* national factors
    ▸ **Estimating "Passive monetary policy" multiplier**

Econometric Spillovers

❑ Two region example:

▸ Treatment: Home region gets fiscal stimulus

▸ Control: Other regions serve as control group

$$Cross - section\ multiplier = \frac{\Delta Y_{treated} - \Delta Y_{control}}{\Delta G_{treated} - \Delta G_{control}}$$

❑ Assumes: Treatment doesn't affect control groups

▸ Treated region is infinitesimally small

❑ Reality: $\uparrow \Delta G_{treated} \Rightarrow \uparrow \Delta Y_{control}$ (cross-region spillover effects)

❑ Implies: Actual multiplier is higher than measured in regional regressions

Regional Multiplier Estimates

"The typical empirical cross-sectional

multiplier study provides a *rough*

Small effects of outside financing relative to deficit finance

lower bound for a particular policy-relevant

Greater leakages from local economies than closed economies

type of national multiplier, the closed

economy, *passive monetary policy*,

Regional comparisons hold monetary policy constant

deficit-financed multiplier"

▸ Chodorow-Reich, 2017

Reconciling two views

❑ Ramey (associated with the time series view)

▸ the multiplier for a deficit-financed increase in government purchases at the zero lower bound "is probably between 0.8 and 1.5. Reasonable people can argue, however, that the data do not reject 0.5 or 2.0."

❑ Chodorow-Reich: Surveying cross-sectional studies

▸ "aggregating over all studies… for which I could calculate an output multiplier, the mean output multiplier is 2.1 and the median is 1.9."

▸ "I find the retreat regarding the literature's informativeness for other interventions to be premature."

❑ Which is more plausible?

▸ Cleaner identification in cross-sectional studies

▸ Passive-monetary policy multiplier is probably somewhat larger