Impacts of Government Spending Changes on Local Economies

By Santiago Pinto and Sonya Ravindranath Waddell

Economic Brief
July 2025, No. 25-28

Key Takeaways

- Local multipliers measure how an economic shock in a specific region (such as a change in federal government spending in that region) affects the local economy.
- Based on our survey of studies, a reasonable estimate range for local fiscal multipliers is:
  - An income multiplier of 1.3-2.0, or an additional $1 of government spending increasing local GDP by 1.3 to 2.0 times.
  - An employment multiplier of 10-30 jobs in the local economy for every additional $1 million in government spending (or $33,000 to $100,000 per job).

Local fiscal multipliers quantify how a change in government spending or taxation impacts economic output (such as GDP, income or employment) within a subnational region (such as a city, county or state). Multipliers measure both the direct and indirect effects on a local economy and can be useful for local policymakers in a variety of ways:

- Designing effective stimulus during downturns
- Understanding the local impact of policies, such as education or infrastructure investments
- Evaluating return on investment for state/local business incentives
- Evaluating spatial spillovers

Research on local multipliers can also provide valuable insights for estimating national-level multipliers, especially by exploiting variations in fiscal shocks across regions.

Approaches for Assessing Local Multipliers

The central difficulty in empirically assessing how government spending affects local output or employment is endogeneity: A growing area might be more likely to get public funds simply because it is growing, or a shrinking area might get funding because it is shrinking. Thus, simple correlations may not appropriately capture causal effects. Accordingly, the literature has converged on quasi-experimental designs that exploit exogenous spending heterogeneity across regions and over time. Some of the most common approaches include:

Natural Experiment Designs

Researchers treat plausibly random events — such as military base realignments, sudden resource discoveries or formula-driven transfers — as shocks and trace their differential impact on different areas.

Difference-in-Differences Panels

By comparing pre-shock and post-shock trajectories of treated and untreated regions within a fixed-effects framework, these studies difference out unobserved, time-invariant heterogeneity.

Instrumental Variables Strategies

Multiple instruments fall under the heading of instrumental variables strategies, including:

- Shift-share (or Bartik) instruments: National industrywide demand shifts — combined with a locality's initial industry mix — produce a predicted spending measure that is unrelated to current local shocks.
- Formula or political factors: Predetermined allocation rules (such as the Medicaid Federal Medical Assistance Percentage [FMAP] or highway formulas) or political factors (such as wartime appropriations or committee chair seniority that gives certain legislators more discretion and control over the allocation of federal resources) supply variation that is arguably exogenous to current local fundamentals.

Across these frameworks, the key identifying restriction is that the instrumented or quasi-random component of spending must be uncorrelated with unobserved determinants of local economic performance. When that condition is satisfied, the estimated coefficient on spending yields the local fiscal multiplier.

Estimates of Local Fiscal Multipliers

Several studies examine a range of fiscal impulses in the U.S. Based on these studies, reasonable estimates for local fiscal income multipliers are somewhere between 1.3 and 2.0. That is, an additional $1 of government spending increases local GDP by somewhere between $1.30 and $2.00. These studies also suggest that an additional $1 million in

government spending would generate 10-30 jobs in the local economy. Treating the shock taxonomy separately (as in the table below) clarifies how the financing method, economic slack and sectoral composition shape the magnitude of local responses and helps reconcile the wide dispersion of estimates.

Table 1. Range of estimates

Type of Shock	Representative Paper(s)	Income / Gross State Product Multiplier (Δ Income / Δ Spending)	Employment Effect (Jobs per $1M, and/or Cost / Job)
Defense build-ups (positive) War procurement, contract surges	Nakamura & Steinsson 2014 Auerbach-Gorodnichenko-Murphy 2020	1.5–1.9	11–18 jobs
Defense procurement (DoD contracts to CBSAs)	Dupor & Guerrero 2017	0.2–0.3	3 jobs (≈ $330k / job)
Formula transfers/grants (Census-driven reallocations)	Suárez Serrato & Wingender 2016	1.6–1.8	25–30 jobs (≈ $35k / job)
ARRA Medicaid FMAP bump (state fiscal relief, 2009-11)	Chodorow-Reich et al. 2012	1.4–1.7	18–22 jobs (≈ $45k–$55k / job)
ARRA highway grants (formula DOT funds)	Wilson 2012	0.8–1.2	8–12 jobs (≈ $90k–$125k / job)
Other ARRA formula components (all grants)	Conley & Dupor 2013	1.0	15–20 jobs (≈ $50k–$65k / job)
State pension windfalls	Shoag 2010, 2016	1.4–2.1	29–45 jobs (≈ $22k–$35k / job)
Balanced budget spending cuts/hikes	Clemens & Miran 2012 Bartik 2017	0.3–0.8 (spending cuts)	5–6 jobs per $1M spending and taxes ↑ (≈ $180k / net job)

Type of Shock	Representative Paper(s)	Income / Gross State Product Multiplier (Δ Income / Δ Spending)	Employment Effect (Jobs per $1M, and/or Cost / Job)
Base closures Permanent DoD drawdowns	Hooker & Knetter 1997/2001	0.3–0.6 (loss)	Little spillover: ≈ 0.3–0.6 private jobs lost per direct base job
State defense drawdowns	Dupor & Guerrero 2017	-0.3 to -0.2	Losses confined mostly to on-base jobs

Military Procurement Shocks

Some of the earliest local multiplier evidence exploits defense spending shocks. The post-Cold War procurement drawdown of the early 1990s, for example, created a quasi-experiment in which regions hit by large contract cuts suffered marked declines in economic activity.

Across defense spending shocks, local income multipliers are in the 1.0-1.6 range. However, the employment response is modest, accounting for roughly four jobs for every $1 million spent. These estimates include some spillovers to nearby areas, and once those are accounted for, the total regional effect tends to cluster a bit above 1.5. Thus, defense dollars reliably boost city-level or state-level GDP, yet they tend to be capital-intensive, generating fewer local jobs per dollar than most transfer programs.

Several studies illustrate this approach. Early work using defense spending data implied income multipliers around 1.2.[1] The canonical modern estimate uses state exposure to the Korean War, Vietnam War and Gulf War buildups and finds a multiplier of 1.5-1.9 and 11-18 jobs per $1 million spent.[2] Importantly, because these shocks are externally financed by the central government, the estimates reflect subnational multipliers absent local tax offsets. A 2020 paper confirms similar magnitudes for a more recent sample.[3] By contrast, a 2017 paper — which imposes state fixed effects and includes the Korean War demobilization — obtains a multiplier of 0.22-0.30 and about three jobs per $1 million spent and shows that local and aggregate responses tend to become similar in magnitude when spillovers and balanced-budget rules are considered.[4]

In a highly localized finding, military base closures show that employment losses are confined almost entirely to the base jobs themselves, with little additional spillover to the surrounding private economy.[5]

Federal Stimulus

The Great Recession of 2007-09 and the resulting American Recovery and Reinvestment Act (ARRA) provided a rich testing ground for local fiscal multipliers. ARRA's design — a large, temporary federal stimulus delivered via tax cuts, transfers and government projects — led to substantial cross-state variation in the amount of funding received per capita. Several studies exploit this variation to infer multipliers, with mixed findings that illustrate both the potential and shortcomings of fiscal stimulus.

When local governments receive funds through intergovernmental grants or formula-driven stimulus (such as ARRA, Medicaid FMAP and census-based transfers), the range of multipliers is 0.5-2.0 for output and 8-40 jobs per $1 million spent. The dispersion reflects program mix and labor-market conditions. Infrastructure and broad support grants are at the top of the range, while education funds are at the bottom. And effects are systematically larger when unemployment is high or labor mobility is constrained. One related finding is that roughly half of an initial county-level boost "leaks" to neighbors.

A comprehensive review in 2019 of 11 ARRA papers places the mean output multiplier at 1.5-2.0 and notes that, across ARRA studies, each $100,000 of stimulus spending is estimated to increase employment by anywhere from 0.8 to 3.8 jobs per year depending on the program and methodology (with the median cost-per-job at about $50,000).[6] For instance, Medicaid FMAP relief to states created 20 jobs per year per $1 million spent ($50,000 per job).[7] Highway funding studies find output multipliers of about 1.0 and 8-12 jobs per $1 million spent (or about $83,000 to $125,000 per job), lower than in defense spending because of import leakage and long project lags.[8]

Research that focused on the ARRA period also produced some divergent results. A 2013 paper concluded that ARRA's grants had little net effect on total employment and that increases in government jobs were roughly offset by declines in private employment.[9] The authors' interpretation was that the stimulus essentially shifted jobs from the private sector to the public sector, yielding an overall multiplier near zero.

The consensus from the Great Recession leans toward positive local multipliers, especially when spending is channeled through strained state budgets or directly to credit-constrained households. The dispersion of estimates, however, reveals that implementation details matter. For example, funds spent on direct stimulus like filling budget gaps to prevent layoffs tend to have a larger local impact than funds spent on longer-term projects.

Changes in Formula Grants

A 2016 working paper leverages a different natural experiment: The 2010 decennial census caused formula-driven shifts in U.S. federal funding across local areas.[10] Counties that unexpectedly lost federal transfers due to revised population counts suffered income declines, whereas counties with positive funding shocks saw significant gains. The paper's estimates imply a local income multiplier around 1.8, nearly $2 of local income generated

per $1 of external aid, and a sizable employment effect. In fact, the cost per job is roughly $30,000-$40,000 per year, indicating highly cost-effective job creation. This study underscores that the local GDP and employment response can be strong when federal funds inject demand into a locality without requiring offsetting local taxes.

Balanced-Budget Rules

Not all fiscal shocks are externally funded, and the nature of financing crucially influences the multiplier. Research on state government spending that is constrained by balanced-budget requirements often finds smaller multipliers. A 2012 paper studies recessions in U.S. states, exploiting the fact that states with stricter balanced-budget rules were forced to cut spending more sharply in downturns.[11] In this scenario, any fiscal expansion (or avoided cut) would likely require future state-level fiscal adjustments (such as higher taxes or debt repayment).

Consistent with this, the paper's authors cannot reject output multipliers below 0.8. In other words, a dollar of state spending cut (or increase) in a recession was estimated to reduce (or raise) gross state product by at most 80 cents, and possibly much less. This muted effect is likely because the spending changes were largely offset by contemporaneous or anticipated fiscal responses within the state. It highlights that financing matters: When spending isn't a windfall, the local stimulus is weaker.

A 2017 working paper, in turn, considers a balanced-budget employment multiplier which is calculated as follows.[12] While a $1 million increase in state spending adds about 17 jobs, an equivalent tax increase to balance the budget cuts approximately 11.5 jobs, so the net effect is about 5.5 jobs per $1 million (or $180,000 per net job).

Pension-return windfalls behave like pure externally financed transfers as they relax balanced-budget constraints without requiring offsetting tax hikes. A 2013 paper shows that the multipliers resulting from these unexpected pension fund windfalls are at the upper end of the U.S. estimates (1.4 for income and 45 jobs per $1 million spent), consistent with theory that windfall-financed spending should outperform balanced-budget shifts. Slack labor markets and limited in-migration amplify stimulus.[13]

Tax Progressivity and Targeted Transfers

Finally, tax shocks reveal striking distributional heterogeneity. A 2019 paper shows that a $1 million tax cut to personal income aimed at the bottom 90 percent of the income distribution raises employment by roughly 18 jobs, a response close to the strongest transfer-based or spending-based programs and consistent with an output multiplier of about 1.5.[14]

By contrast, the same revenue loss delivered to the top decile generates almost no additional jobs, underscoring how large marginal-propensity-to-consume differences determine the aggregate payoff of tax policy. The same logic explains the unusually high

employment returns to the 2009-10 expansions of both the Supplemental Nutrition Assistance Program and unemployment insurance, where funds flowed disproportionately to liquidity-constrained households and therefore translated rapidly into local spending and hiring.

Why Might National Multipliers Differ From Local Multipliers?

While local fiscal multipliers measure the relative gain in one locality, national multipliers capture the economywide effects once spillovers, monetary policy and financing constraints are internalized. National multipliers are crucial for quantifying macroeconomic effects, such as the overall impact of federal government fiscal policy on the entire national economy. Examples of these policies include federal stimulus packages or national tax reforms. Researchers often study local multipliers to gain insights that can inform our understanding of national-level effects, but they are distinct concepts addressing different scales of economic impact. Several factors contribute to the difference in magnitude between local and national multipliers.

Openness and Leakages

Local economies are generally more open than national economies in terms of trade flows with other regions. This higher degree of openness tends to reduce the size of local multipliers. At the local level, a significant portion of increased spending can "leak out" of the region through imports from other areas. For example, a local infrastructure project might use materials or equipment produced elsewhere. This reduces the multiplier effect within the local economy. At the national level, this leakage is smaller, as fewer imports come from outside the country.

Factor Mobility

Labor and capital are more mobile across subnational regions than across national borders. A local fiscal expansion might attract workers or investment from other areas, potentially crowding out some local factors or dampening wage increases within the specific locality, thus affecting the multiplier.

Price Adjustments and Monetary Policy

At the national level, a large fiscal expansion can lead to broader price adjustments and influence national monetary policy responses, which can affect the overall multiplier. These effects are less pronounced at the local level.

Taxation and Financing

National fiscal policy often involves federal taxes and borrowing, which have different implications for wealth effects and future expectations compared to local financing mechanisms.

Range of Estimates

Macroeconometric studies of the U.S. consistently place the government-purchases multiplier over the short run below 1 in normal monetary circumstances. A 2002 paper finds that the peak response of real GDP reaches about 80-90 cents for each federal $1 (defense and nondefense) spent.[15]

More recent state-dependent estimates from a 2022 paper confirms a similar central tendency — roughly 0.6 when the shock is expansionary and the economy is near capacity — while showing that the multiplier rises above 1.0 for contractionary cuts and for all shocks that occur in deep slack or at the zero lower bound.[16]

Complementing the time-series evidence, a 2023 paper calibrates a heterogeneous-agent New-Keynesian model to county-level consumption data.[17] It obtains an aggregate consumption multiplier of approximately 0.4 under a standard Taylor-rule regime and almost double that value at the zero lower bound (when monetary policy does not counteract the stimulus). Taken together, the national U.S. evidence points to multipliers of 0.6-1.0 in ordinary times and 1.5-2.0 when interest rate policy is accommodative or pinned at the lower bound.

National vs. Subnational Multipliers

The work summarized earlier at the subnational level, however, yields systematically larger numbers. The disparity between national and local estimates is readily explained mainly by three factors:

- Regional economies are open. That is, a sizable share of any spending impulse leaks into purchases from other states, boosting the treated region's measured GDP but leaving aggregate output unchanged until every region receives the same shock.
- Local shocks are too small to trigger a monetary tightening, whereas nationwide stimulus often prompts the monetary authority to offset part of the demand increase.
- Many high local multipliers come from periods or places with substantial slack and from programs that channel funds toward liquidity-constrained households — both of which amplify fiscal effects — whereas aggregate estimations average over expansions and rely on broader financing assumptions.

Table 2. National vs. Subnational Multipliers

Regime	$1 of federal spending…
National Normal regime	raises U.S. GDP by $0.6–$1.0.

Regime	$1 of federal spending…
National Accommodative monetary policy	raises U.S. GDP by $1.5–$2.0 (aligned with spillovers observed in subnational studies)
Subnational	raises state's GDP up by $1.3–$2.0, generates roughly one job for every $50k.

Conclusion

This article indicates that government spending can generate substantial effects on local income and employment, with magnitudes varying by program design, economic conditions and financing. The estimates presented in the article are drawn from the academic literature, which uses empirical strategies designed to identify the causal effects of policy changes. These estimates can help local and federal policymakers assess the likely consequences of proposed changes that would affect the presence of the federal government at the local level.

Santiago Pinto is a senior economist and policy advisor and Sonya Ravindranath Waddell is a vice president and economist, both in the Research Department at the Federal Reserve Bank of Richmond.

---

1 *See, for example, the 1997 paper "The Effects of Military Spending on Economic Activity: Evidence From State Procurement Spending" and the 2001 paper "Measuring the Economic Effects of Military Base Closures," both by Mark Hooker and Michael Knetter.*

2 *See the 2014 paper "Fiscal Stimulus in a Monetary Union: Evidence From U.S. Regions" by Emi Nakamura and Jón Steinsson.*

3 *See the 2020 paper "Effects of Fiscal Policy on Credit Markets" by Alan Auerbach, Yuriy Gorodnichenko and Daniel Murphy.*

4 *See the 2017 paper "Local and Aggregate Fiscal Policy Multipliers" by Bill Dupor and Rodrigo Guerrero.*

5 *These findings result from surveying work such as the previously cited papers by Hooker and Knetter as well as subsequent studies that examine the local economic consequences of military base realignment and closure decisions.*

6 *See the 2019 paper "Geographic Cross-Sectional Fiscal Spending Multipliers: What Have We Learned?" by Gabriel Chodorow-Reich.*

7 *See the 2012 paper "Does State Fiscal Relief During Recessions Increase Employment? Evidence From the American Recovery and Reinvestment Act" by Gabriel Chodorow-Reich, Laura*

Feiveson, Zachary Liscow and William Gui Woolston.

8 *See the 2012 paper "Fiscal Spending Jobs Multipliers: Evidence From the 2009 American Recovery and Reinvestment Act" by Daniel Wilson.*

9 *See the 2013 paper "The American Recovery and Reinvestment Act: Solely a Government Jobs Program?" by Timothy Conley and Bill Dupor.*

10 *See the 2016 working paper "Estimating Local Fiscal Multipliers" by Juan Carlos Suárez Serrato and Philippe Wingender.*

11 *See the 2012 paper "Fiscal Policy Multipliers on Subnational Government Spending" by Jeffrey Clemens and Stephen Miran.*

12 *See the 2017 working paper "New Evidence on State Fiscal Multipliers: Implications for State Policies" by Timothy Bartik.*

13 *See the 2013 paper "Using State Pension Shocks to Estimate Fiscal Multipliers Since the Great Recession" by Daniel Shoag.*

14 *See the 2019 paper "Tax Cuts for Whom? Heterogeneous Effects of Income Tax Changes on Growth and Employment" by Owen Zidar.*

15 *See the 2002 paper "An Empirical Characterization of the Dynamic Effects of Changes in Government Spending and Taxes on Output" by Olivier Blanchard and Roberto Perotti.*

16 *See the 2022 paper "Understanding the Size of the Government Spending Multiplier: It's in the Sign" by Regis Barnichon, Davide Debortoli and Christian Matthes.*

17 *See the 2023 paper "Regional Consumption Responses and the Aggregate Fiscal Multiplier" by Bill Dupor, Marios Karabarbounis, Marianna Kudlyak and Saif Mehkari.*

18 *See Moretti's 2010 paper "Local Multipliers."*

19 *See the 2010 paper "Identifying Agglomeration Spillovers: Evidence From Winners and Losers of Large Plant Openings" by Michael Greenstone, Richard Hornbeck and Enrico Moretti.*

20 *See the 2013 paper "The China Syndrome: Local Labor Market Effects of Import Competition in the United States" by David Autor, David Dorn and Gordon Hanson.*

To cite this Economic Brief, please use the following format: Pinto, Santiago; and Waddell, Sonya Ravindranath. (July 2025) "Impacts of Government Spending Changes on Local Economies." *Federal Reserve Bank of Richmond Economic Brief*, No. 25-28.

Views expressed in this article are those of the authors and not necessarily those of the Federal Reserve Bank of Richmond or the Federal Reserve System.

Topics

Economic Growth | Fiscal Policy | Employment and Labor Markets

Subscribe to Economic Brief

Receive a notification when Economic Brief is posted online.

By submitting this form you agree to the **Bank's Terms & Conditions and Privacy Notice.**

Email Address

Subscribe

@ Contact Us

RC Balaban