# Evaluating State and Local Business Incentives

Cailin Slattery, Columbia GSB

Owen Zidar, Princeton & NBER

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## Motivation

- State and local governments spend billions of dollars each year on tax incentives and subsidies to attract and retain firms (Bartik, 2017, Slattery, 2019)

- Incentive policies are highly controversial
  - Attracting industrial activity is key for local economic growth and prosperity
  - Others question incentive spending effectiveness and mounting costs

- Evaluating these incentives requires overcoming three challenges
  1. Data limitations: difficult to measure prevalence, size, and composition of incentives
  2. Lack of transparency: hard to determine selection process
  3. Do not observe how economic activity would have evolved in the absence of deals

- New data on incentives from Slattery (2019) enable us to make progress

**This paper**

1. Characterize these incentive policies
2. Describe the selection process that determines which places and firms give and receive incentives
3. Evaluate the economic consequences and discuss policy implications

## Summary of Findings

1. Policy:
   - In 2014, states spent $5-$216 per capita on incentives for firms via range of forms
   - Total state & local incentive spending at least $30 billion
   - Average discretionary subsidy is $178M for $\sim$1,500 promised jobs.
   - Discretionary subsidies roughly 1/4 of total incentive spending

2. Selection:
   - Often big, profitable firms in auto, aerospace, chemical mfg; tech; finance and oil
   - Firms accept deals from places that are richer, larger, and more urban
   - Poor places provide larger incentives and spend more per job

3. Impacts:
   - Comparing "winning" and runner-up locations, we find that average employment within the 3-digit industry of the deal increases by $\approx$ 1,500 jobs
   - Little/weak evidence of spillovers and no impact on county-level economic growth

## Outline

# 1. Conceptual Framework

## Outline

1. Stated goals and the state and local govt objective function

2. Three business tax incentive policy instruments

3. Costs and benefits of each instrument

4. Tradeoffs between policy instruments

## Stated Goals of Business Incentive Programs

The stated goal of most state and local business incentives is to stimulate local economic activity, create jobs, and boost wages.

*The purpose is to stimulate economic activity and to create new jobs for the citizens of the State by encouraging and promoting the expansion of existing business and industry within the State and by recruiting and attracting new business and industry to the State.*

– NC Job Development Investment Grant

*Whether in Baltimore City, Prince Georges County or Montgomery County, we need to make it happen. It's jobs, jobs, jobs and more jobs.*

– MD State Senator on Amazon HQ2 deal

## State and Local Objective Function

Suppose state and local govts maximize the well-being of three groups: workers, capital owners, and themselves

Consider how business incentives affect each group:

1. **Workers** benefit from employment, higher wages, lower local prices, lower taxes, high-quality government services
2. **Capital owners** benefit from higher after-tax-and-incentive profits, product demand, productivity
3. **Politicans** benefit from increases in re-election odds, campaign contributions, pork provision opportunities

There are several policy instruments with which to maximize this objective function

## Three Business Tax Instruments

1. **Lowering the corporate tax rate**: Lowers tax bill for all C-corps, encouraging entry of new firms and expansion of existing firms

2. **Narrowing the corporate tax base**: Lower tax bill for set of firms, based on activity/industry. Encourages entry of new firms in that industry/increase in targeted activity

3. **Offering firm-specific tax incentives**: Offer one firm a subsidy for their commitment to locate in the jurisdiction and create a certain level of employment and investment

## States take different approaches

|  | Average | AL | CA | NV | NY | PA | SC | TN | WV |
|---|---|---|---|---|---|---|---|---|---|
| *Instrument 1:* | | | | | | | | | |
| Corporate Tax Rate (%) | 6.5 | 6.5 | 8.8 | 0 | 7.1 | 10 | 5 | 6.5 | 6.5 |
| Corporate Tax Revenue Per Capita ($) | 162 | 90 | 246 | 0 | 264 | 193 | 81 | 193 | 118 |
| *Instrument 2:* | | | | | | | | | |
| Tax Credits per capita ($) | 19 | 11 | 60 | 0 | 33 | 15 | 32 | 16 | 0 |
| Econ Development per capita ($) | 34 | 15 | 2 | 5 | 142 | 25 | 8 | 35 | 177 |
| *Instrument 3:* | | | | | | | | | |
| Number of subsidies | 14 | 15 | 13 | 4 | 20 | 3 | 16 | 12 | 4 |
| Cost per job ($) | 45,785 | 12,466 | 4,997 | 42,339 | 11,712 | 93,406 | 6,433 | 11,805 | 34,345 |
| Incentives as a percent of Corp Tax Revenues (%) | 38 | 29 | 25 | N/A | 66 | 20 | 49 | 26 | 150 |

# States with high corporate tax rates have narrower bases
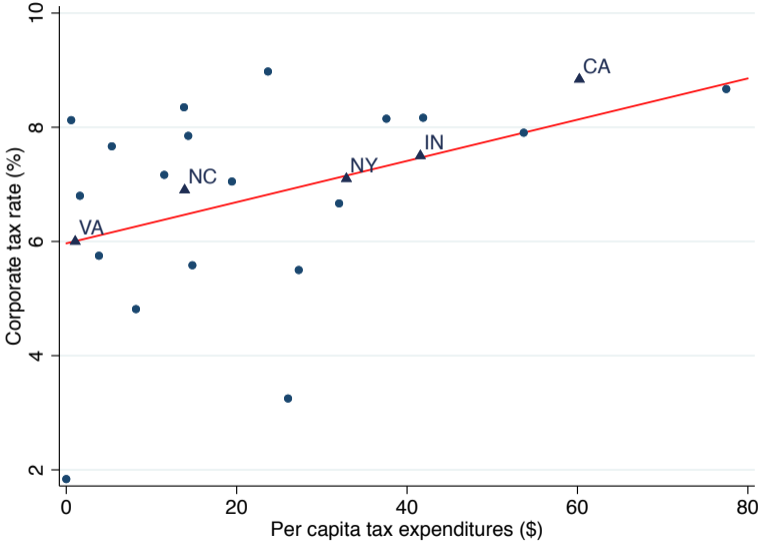
## Costs and Benefits

### Firm-specific incentive

1. **Workers**: Firm hires local workers, magnitude of welfare gain depends on previous employment, wages
   + Increased local labor demand increases wages for workers outside new firm.
   − Financing the incentive can lead to increases in taxes or decreases in public goods
   − Congestion from entry leads to increase in land prices

2. **Capital owners**: Owner of firm receiving incentive benefits directly
   + Owners of other firms benefit from productivity and demand spillovers
   − ...but face higher wages, prices, taxes

3. **Politicans** benefit from publicity of salient plant arrival, economic growth, goodwill from recipient firm, among other considerations

## Costs and Benefits

### Lower corporate tax rates

- **Workers**: Benefit if increased activity increases labor demand and increases wages
  - Higher taxes or lower public service provision to finance corp. tax cut (e.g. Kansas)
- **Capital owners**: All C-corps in state benefit directly from lower tax bill
  - Increased labor and input demand increases prices
  - Reduction in public services may have adverse effects on productivity
- **Politicans** goodwill from incumbent firms, among other considerations

### Narrow corporate tax base

- Direct effects similar to lowering corp tax rate
- Indirect effects similar to offering a firm-specific tax incentive

**Why offer a firm-specific tax incentive?**

1. Attract a "high-benefit" firm
   - e.g. Firm can attract skilled workers, broaden industrial mix of the area
   - Firm arrival leads to higher productivity and more prosperity
     *Bartik (1991), Glaeser (2001), Garcia-Mila & McGuire (2002), Greenstone & Moretti (2003)*

2. Can contract with firms on investment and hiring

3. Don't have to lower revenue collected from all firms in the state

4. Target mobile firms, raising revenues more efficiently *(Ramsey 1927)*

5. Retain a valuable firm
   - e.g. Firm has hard-to-build relationship-specific capital with local suppliers

## Costs to using firm-specific tax incentives

1. It is hard to pick winners
   - Rationale for targeting assumes state and local governments can identify "high-benefit" firm and forecast effect on local economy
   - Estimating agglomeration economies **very** difficult

2. It is hard to know if firm is inframarginal

3. Lack of transparency leaves incentives exposed to political capture
   - This year, report exposed lobbying and corruption in subsidy deals in New Jersey

4. Most distressed places may not be able to afford to compete

5. Providing generous incentives requires raising revenue from other taxes
   - Social cost of higher taxes grows quickly with size of tax
   - Benefit of incentives diminish with size of incentives

## Example #1: VA in 2011 financing deals by reducing gov spending

"Gov. Bob McDonnell wants to tap into six funding sources to offset $50 million in new spending for his jobs and economic-development initiatives."

- Daily Progress, January 2010

- Increases Governor's "Opportunity Fund" by $12.1M
- Adds $5M to "industrial mega-site fund"
  - Both are funds primarily used to create firm-specific subsidy deals

- **Where the money is coming from:**
  - Delay planned increase in state worker retirement
  - Decrease hiring for Department of Corrections
  - Tax Amnesty Program
  - Federal funding for food stamps

## Examples #2 and #3: TX in 2017 and FL in 2009

Proposed and actualized cuts to incentive spending funds

In 2017 Texas House voted to decrease "Enterprise Fund" by \$43M

- Planned to divide funds across (1) Child Protective Services and foster care funding, (2) disabled children's therapy sessions
- Gov Abbott threatened to veto budget if didn't increase fund by \$100M
- Abbott won incentive funds

Florida faced with \$2.3B budget deficit in 2009

- One of the cuts was \$24M "Quick Action Closing Fund"

## 2. A firm-specific incentive for Volkswagen

# 2008 Volkswagen Deal in Tennessee

"There's nothing quite like the automobile industry to bring in money, raise family incomes and bring in jobs"

- VW chooses Chattanooga for new assembly plant
  - Promises 2,000 emp and $1B investment

- TN grants VW a subsidy worth **$558 million**
  - Local property tax abatements over 30 years ($200M)
  - Enhanced state job and investment tax credits over 20 years ($200M)
  - Property given to VW ($81M)
  - Worker training ($30M)
  - Highway and road construction ($43M) + Rail line upgrades ($3.5M)

- TN promises specialized tax credits for any neighboring suppliers

- TN projected VW would have $100M in annual payroll, help create 14,000 total jobs, and have a total economic benefit of $600M per year

## Tennessee's Business Tax Incentive Policy

Some incentives available to any qualifying firm in TN (at lower levels)

- Job Tax Credits
    - Boost general incentive of \$4,500 per job for one year by \$1,000 per job for 20 years
- also Industrial Machinery Tax Credit, Job Training Grant

Discretionary incentives come from specific funds or approved in special session

- TN Economic Development Fund
    - Provides additional support but "only used in exceptional cases where the impact of the company on a given community is signficant"
- Capital grants for "significant projects"
    - Only 9 companies (including VW, Amazon, GM, Nissan)
        - ▸ How does TN compare to other states?

## Volkswagen Location Decision

Location decision was "truly a very close competition"

- Initially considered "more than 100 candidate sites"
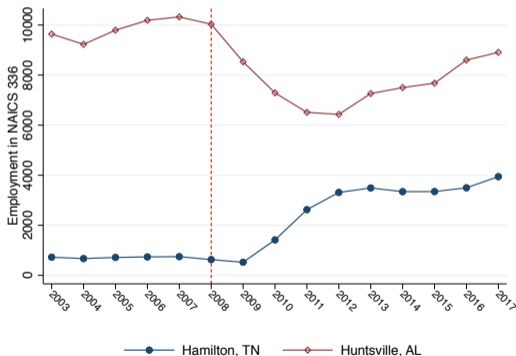- Runner-up in Huntsville, AL, subsidy offer at least **$386 million**
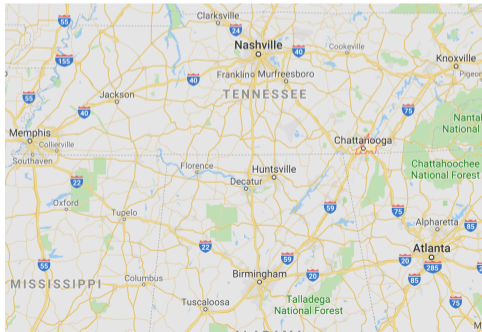


|  | TN | AL |
|---|---|---|
| Corp Tax (%) | 6.5 | 6.5 |
| Sales Tax (%) | 7 | 4 |
| Income Tax (%) | 0 | 3.3 |
| Right to Work | ✓ | ✓ |
| Sector Wages ($1,000) | 50.5 | 68.4 |
| Unemployment (%) | 5.7 | 4.2 |
| Income per cap ($1,000) | 39.4 | 41.1 |

# 2008 Volkswagen Deal: winner vs runner up

Impact of the 2008 Volkswagen deal on local auto employment (NAICS 336)



Employment in Transportation Equipment Manufacturing

Differences in Employment Between Winner and Runner-up

3854 workers

Hamilton, TN — Huntsville, AL
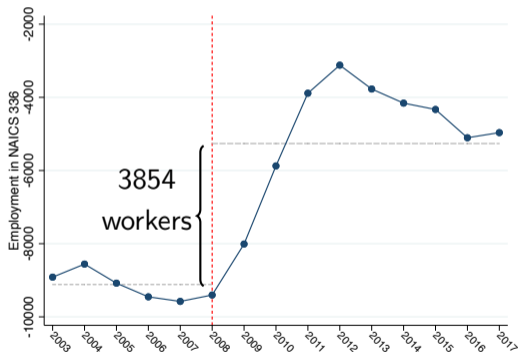
▸ Hard to detect indirect effects, which is focus of many deals (NC)

# 3. Data on State and Local Business Incentives

**Outline**

1. Measurement Challenges

2. Approaches to measuring tax incentives

3. Magnitude of total incentive spending

4. The two datasets we use in this paper

5. Descriptive Statistics
   - How generous are these incentives?
   - What types of firms receive incentives?
   - What types of places give incentives?
   - When do states increase spending?

## Measurement Challenges

Most empirical work focuses on tax rates or one type of tax credit, incentive program

1. Substantial complexity and heterogeneity within and across policies
   - State and local goverments have many levers to build subsidy deal
     - VW deal: tax abatements, specialized credits, land, job training, etc.
   - Many rules for non-discretionary tax credits
     - Generousity can depend on exact industry, investment, employment, location within state, and allocation of activity and sales across states

2. State and local govts do not report establishment-level credits or incentives
   - Instead report tax rates, tax credit rules, total tax expenditures, incentive program rules, incentive program budgets

# Approaches to measuring state and local business tax incentives

1. **Rules-based:** Collect data on the rules of each tax, incentive offered in a locality, and predict incentive level, given estimated activity (Bartik 2017)
   - $+$ Can simulate what would happen if incentive was modified, has both state and local
   - $-$ Have to assume balance sheet of firm, qualifies for all incentives available

2. **Expenditure-based:** Measure the outlays for each tax credit and incentive program from tax expenditure reports and budget documents (Slattery 2019)
   - $+$ Actual state outlay for each program and credit each year
   - $-$ Only for states, combines the size of incentives and the level of activity

3. **Narrative-based:** Assemble a data set of firm-specific incentives by reading articles and press releases (Slattery 2019)
   - $+$ Can learn about discretionary incentives, distribution of spending across firms
   - $-$ Do not observe the contract or rules, take terms of deal as given when reported

# Magnitude of state and local business tax incentives

- **Rules-based:** Bartik (2017) estimates state + local govts spent **$45B** in 2015
  - $13.5B attributed to local property tax abatements
  - Total contribution from local govts ~1/3

- **Expenditure-based:** Slattery (2019) estimates state govts spent $20B in 2014
  - Assuming same relative contribution from local → **$30B** total incentive spending
  - Roughly size of Unemployment Insurance program in U.S.

  *Differences between Bartik and Slattery totals due to approach; $30B is a lower bound*

- **Other estimates:** The *New York Times* reported that total state and local business incentives amounted to **$80B** in 2012
  - Takes both narrative and expenditure approach, resulting in some double-counting
  - Also includes sales tax exemptions that could apply to individuals, existing companies

## Our data: Expenditure-based and Narrative-based from Slattery (2019)

State-level expenditures on tax credits and incentive programs (2007-2014)

- Tracks the budget for each program (like job training grants) and expenditure on each tax incentive (e.g., investment tax credit) from state documents

Firm-specific subsidies: 543 deals (2002-2017)

- Start with all $5M+ deals in Good Jobs First Subsidy Tracker
- Keep if deal involves discretionary program, mentions expansion/relocation
- Add any deal from *Site Selection Magazine* Top Deals of the Month
- Read news articles about each deal to fill in details on subsidy size, job promises, investment, runner-up locations
- ~30% of sample mention contribution from local govts

## Generosity of state business tax incentives

Total spending (economic development budget + tax expenditures): $20B

- Significant heterogeneity: Ranges from $5 to $216 per capita
- Top 5 spenders: 40% of state health and hospital spending, 11% of education
- On average, incentive spending is ∼40% of corporate tax revenues
  - 5 states have no corporate tax but spend $44 per capita on incentives

|  | Average | AL | CA | NV | NY | PA | SC | TN | WV |
|---|---|---|---|---|---|---|---|---|---|
| Corporate Tax Rate (%) | 6.5 | 6.5 | 8.8 | 0 | 7.1 | 10 | 5 | 6.5 | 6.5 |
| Corporate Tax Revenue Per Capita ($) | 162 | 90 | 246 | 0 | 264 | 193 | 81 | 193 | 118 |
| **Incentives per capita ($)** | **53** | **26** | **62** | **5** | **175** | **40** | **40** | **51** | **177** |
| Incentives as % of Corp Tax Revenues | 38 | 29 | 25 | N/A | 66 | 20 | 49 | 26 | 150 |

## Generosity of firm-specific tax incentives

Total spending: $96B over the sample, or $6.4B per year

- Increasing over time — 14 incentives in 2003, 53 in 2012
    - Bartik (2017) finds incentives increased over longer period
      *10% of gross taxes in 1990, 30% in 2015*

- Average deal is $178M for 1,500 promised jobs: $120k per job
    - Significant heterogeneity: $13.3k per job at 10th percentile, $1M at 90th
    - Subsidy deal normalized to 10 year contract $\rightarrow$ $12k per job per year

- Over 1/4 of state and local total incentive spending
    - This goes to handful of firms, creating <2% of new jobs in the U.S.

**Large establishments are more likely to receive subsidies**

| | All Discretionary Subsidies (2002-2017) | | |
|---|---|---|---|
| Jobs promised | # Subsidies | Estab Entry | % Coverage |
| 1 - 99 | 39 | 8,971,339 | 0.00 |
| 100 - 249 | 47 | 26,126 | 0.18 |
| 250 - 499 | 80 | 4,251 | 1.88 |
| 500 - 999 | 141 | 1,419 | 9.94 |
| 1000+ | 236 | 639 | 36.93 |

- Most establishments that enter are small (1-99 employess)
- Firms are more likely to receive a discretionary subsidy when they build a new establishment with 1000+ employees

## Subsidized establishments are part of very large, profitable firms

| | All Compustat | | Subsidized Firms | | Subsidized Firms: Year of Deal | |
| | Mean | Median | Mean | Median | Mean | Median |
|---|---|---|---|---|---|---|
| Employees (1000s) | 9.0 | 0.6 | 72.0 | 34.2 | 100.9 | 64.3 |
| Capital Stock ($M) | 1,514.4 | 28.2 | 12,098.3 | 3,004.6 | 18,865.2 | 7,720.1 |
| Revenue ($M) | 3,461.8 | 184.5 | 40,095.5 | 14,849.7 | 61,753.6 | 40,660.0 |
| Gross Profit ($M) | 1,139.8 | 67.5 | 13,239.3 | 4,007.9 | 20,743.3 | 8,969.8 |
| Market Value ($M) | 2,997.1 | 189.5 | 45,988.1 | 13,305.6 | 76,582.2 | 27,924.0 |
| State Income Taxes ($M) | 5.1 | 0.0 | 57.8 | 8.4 | 96.8 | 15.3 |
| Total Income Taxes ($M) | 99.7 | 1.0 | 1,239.1 | 275.5 | 1,790.3 | 627.2 |
| Observations | 107,219 | | 2,470 | | 313 | |

*Notes:* This table includes descriptive statistics on all firms included in Compustat, 2002-2014, and the Compustat firms that received discretionary subsidies. 61% of the firms receiving discretionary subsidies were found in Compustat. Dollars are measured in 2016 dollars.

**Most subsidies go to manufacturing, technology, and high-skilled services**

| | # of Deals | Subsidy ($ M) | Jobs Promised | Cost Per Job ($) | Investment ($ M) |
|---|---|---|---|---|---|
| Full sample | 543 | 178.4 | 1,487 | 119,972 | 757.5 |
| Automobile manuf. (3361) | 56 | 293.6 | 2,768 | 106,057 | 854.8 |
| Aerospace manuf. (3364) | 31 | 585.8 | 2,734 | 214,237 | 534.5 |
| Financial activities (5239) | 25 | 92.3 | 2,652 | 34,809 | 286.8 |
| Scientific R&D svc (5417) | 22 | 113.7 | 518 | 219,259 | 185.0 |
| Basic chemical manuf. (3251) | 18 | 187.4 | 196 | 956,701 | 779.0 |

*Notes:* This table includes the mean deal characteristics (subsidy size, jobs, investment) for select industries. Dollars in 2017 USD.

- Automobile manufacturing most popular, has largest expected multiplier
  - Policymakers target firms with large agglomeration effects
- 10 industries make up 47% of sample *(also includes pharmaceuticals, IT, semiconductor, data processing, rubber manuf., petroleum manuf.)*

## Low-wage locations provide more generous subsidies
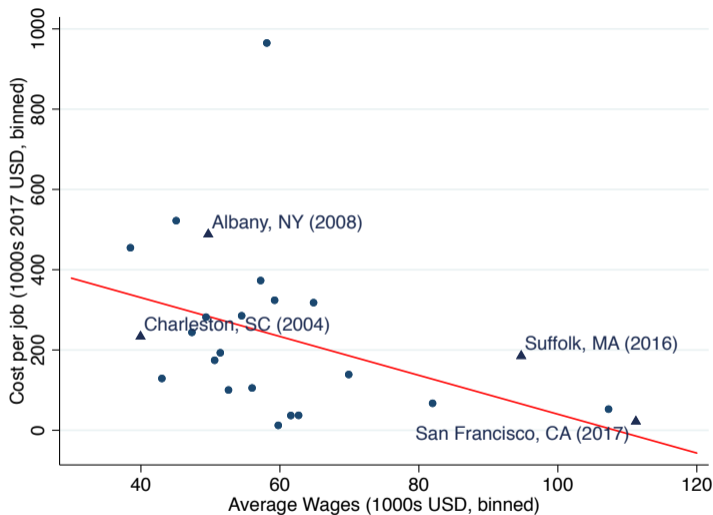


*Notes:* Average wages are measured in the year of the firm-specific deal. Triangles in plot are individual data points; circles are binned data. Best fit line estimates are taken from population-weighted linear regression of cost per job on average wages.

# Increase in spending correlates with employment decline, re-election bids

| | Per Capita Incentives Increase by 20% | | | | | |
|---|---|---|---|---|---|---|
| Governor can run as incumbent | 0.05 | | | | -0.02 | -0.02 |
| | (0.06) | | | | (0.06) | (0.06) |
| Election year | | 0.11* | | | -0.08 | -0.07 |
| | | (0.06) | | | (0.10) | (0.10) |
| GDP per capita ($1000) in $t-1$ | | | 0.00 | | | 0.02* |
| | | | (0.01) | | | (0.01) |
| % of population employed in $t-1$ | | | | -0.05 | | -0.09** |
| | | | | (0.03) | | (0.04) |
| Gov can run as incumbent $\times$ Election year | | | | | 0.27** | 0.25** |
| | | | | | (0.11) | (0.11) |
| Observations | 336 | 336 | 336 | 336 | 336 | 336 |
| R-squared | 0.17 | 0.18 | 0.17 | 0.18 | 0.20 | 0.21 |

*Notes:* The dependent variable is an indicator for whether per capita incentive spending increased by more than 20%. States increased per-capita spending by over 20% 63 times, or 19% of the sample of state-years. The sample period is 2007-2014.

**Taking Stock**

- States spend about $53 per capita on incentives for business

- Firm-specific incentives are a substantial, increasing part of total spending

- Large estabs from large, profitable firms are most likely to receive subsidies, and industries with large multipliers or high wages are the focus

- Lower-wage places spend more per job, but the most distressed places likely cannot compete

- Changes in incentive policy often occur after a negative economic shock or in tandem with a re-election campaign

**Next step:** *What happens when a county wins a firm? Are these policies effective?*

# 4. Effects of State and Local Business Incentives

## Outline

## Conceptual Issues

1. State and local govts may be more likely to enact policies/increase generosity when economic conditions are deteriorating
   - We see poorer places give larger subsidies per worker
   - We see states increase spending after decreases in employment

2. Alternatively, places may be more likely to enact policies when they have more slack in their budget
   - We see states increase spending after increases in GDP

We use data on runner-up locations:

- For a set of subsidy deals for which we know the runner-up location in the competition, we compare outcomes in the winning county with outcomes in the runner-up (following Greenstone Hornbeck Moretti (2010))

## Event Study Specification

**Sample:** Winner and runner-up counties listed in deals between 2002-2012, with non-missing and positive log employment, log population and log average wages 10 year before the deal.

For every period in event time $t \in [-5, 5]$, we run the following regression

$$\ln Y_{it} = \alpha_t + \beta_t Winner_i + \mathbf{X_i}\gamma' + \delta_{dealyr} + \varepsilon_{it}$$

- $\ln Y_{it}$: log employment in the 3-D industry of the deal $t$ periods relative to year of deal

- $Winner_i$ is an indicator for county $i$ having won a discretionary deal, 0 for runner up

- $\alpha_t$: controls for year fixed effects

- $\mathbf{X_i}$: controls for log employment, log population, and log average wages 10 years pre-deal

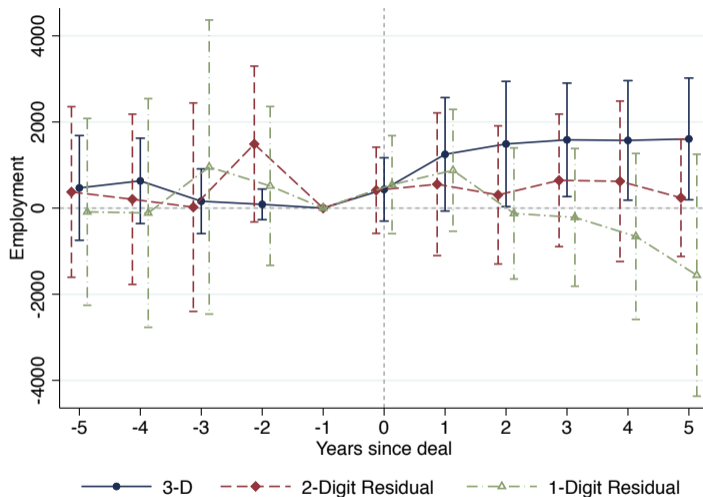- $\delta_{dealyr}$: calendar year-of-deal fixed effects

We then plot $\beta_t - \beta_{t=-1}$ for $t \in [-5, -4, -3, -2, 0, 1, 2, 3, 4, 5]$.

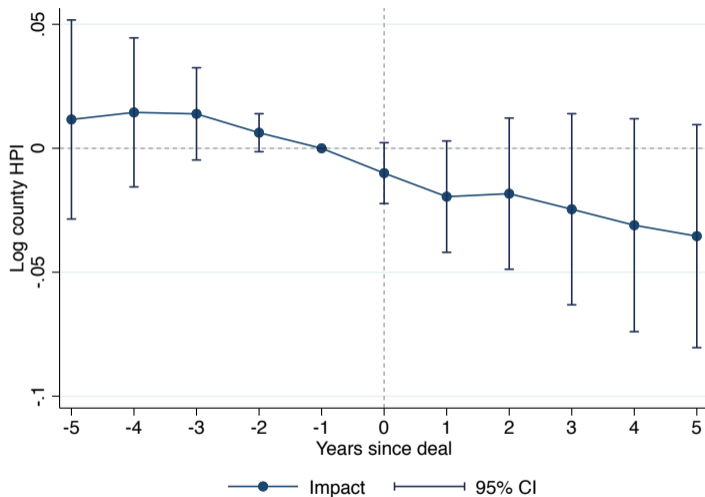# Event Study: Within-Industry Employment Effects of Subsidy
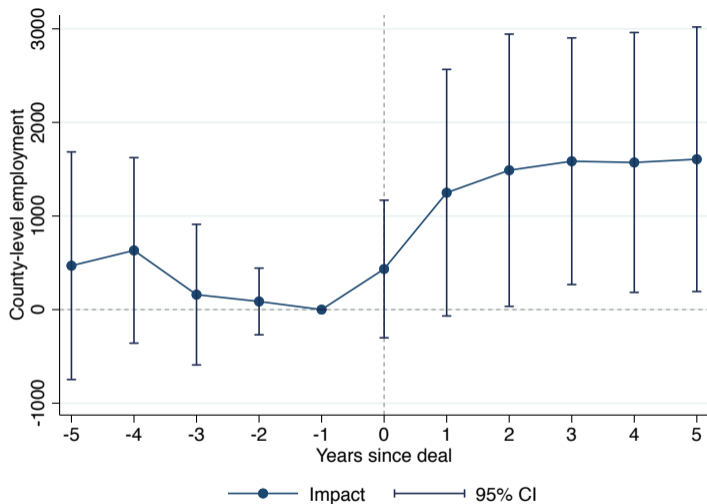


*Notes:* This figure shows the event study estimates of the effect of winning a firm-specific deal on county level employment within the NAICS 3-digit industry of deal

# Event Study: Spillover Effects of Winning a Subsidy Deal



*Notes:* This figure shows event study estimates of the effect of winning a firm-specific deal on three outcomes: employment in 3-digit industry of deal, 2-digit residual employment, and 1-digit residual employment.

# Event Study: Effect of Winning a Firm on County-level Housing Prices



*Notes:* This figure shows the event study estimates of the effect of winning a firm-specific deal on county level house prices

## Difference-in-Differences Specification

**Sample:** Winner and runner-up counties listed in deals between 2002-2012, with non-missing and positive log employment, log population and log average wages 10 year before the deal.

$$\ln Y_{it} = \beta_0 + \beta_1 Winner_i + \beta_2 Post_t + \beta_3 Winner_i \times Post_t + \mathbf{X_i}\gamma' + \delta_{dealyr} + \varepsilon_{it}$$

- $\ln Y_{it}$: log employment in the 3-digit industry of the deal
- $Winner_i$: 1 for counties that won a discretionary deal between 2002-2012, 0 for runner-up
- $Post_t$: equals 1 in the year of the deal, and in the 5 years after
- $\mathbf{X_i}$: controls for log employment, log population and log average wages 10 years pre-deal
- $\delta_{dealyr}$: calendar year-of-deal fixed effects

## Difference-in-Differences Estimates

| | 3-D Ind. Employment | Res. 2-D Ind. Employment | Res. 1-D Ind. Employment | Res. County-wide Employment | Personal inc. | log HPI | Emp/pop |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| *Panel A. Levels Estimates* | | | | | | | |
| Winner × Post | 1108.287** | 780.238 | 53.154 | -1920.430 | -1090.989 | N/A | -0.001 |
| | (539.686) | (1096.283) | (1928.740) | (5301.175) | (716.305) | N/A | (0.002) |
| Mean of outcome | 9326.605 | 15763.784 | 49393.076 | 2.80e+05 | 49826.006 | N/A | 0.470 |
| *Panel B. Log Estimates* | | | | | | | |
| Winner × Post | 0.149** | 0.026 | 0.030 | 0.003 | -0.005 | -0.040* | -0.002 |
| | (0.068) | (0.027) | (0.019) | (0.013) | (0.012) | (0.021) | (0.004) |
| Mean of outcome | 7.965 | 9.037 | 9.922 | 12.006 | 16.667 | 4.858 | -0.759 |

*Notes:* This table shows difference-in-differences estimates of the effects of winning a firm-specific deal on a variety of county-level outcomes.

## Comparison with Prior Results

We detect direct effect of winning a firm on local employment within industry of deal

- Don't find effects on employment outside the directly affected industry

Previous studies have found more support for spillover effects using estab.-level data

- "Million Dollar Plants" data: 82 subsidy deals from *Site Selection Magazine*, mostly manufacturing, in 1980s and 90s *(Greenstone & Moretti 2003)*
- Greenstone, Hornbeck & Moretti (2010) find substantial TFP spillovers for estabs in winning areas *(Patrick (2016) findsmuch more modest spillover effects)*
- Bloom et al. (2019) expand dataset to 2000s and also find spillovers using establishment-level data

Our data selected on subsidy size, MDP data selected on size of investment

- Comparison with Million Dollar Plants:  ‣ Industry Employment  ‣ Spillover

# 5. National Considerations

# Are state and local business incentives in the national interest?

**National perspective:** Consider effects in all locations, not only place with incentive

- Literature on tax competition highlights race to the bottom, over-subsidization of firms, under-provision of public goods

- Some policymakers have called for subsidy bans in the U.S. (EU restricts state aid)

**Baseline** Frictionless Benchmark

- Suppose no externalities and the optimal level of govt service provision

- In this case, business incentives likely reduce aggregate welfare

- Moving a firm where it would not go without incentives misallocates resources and has fiscal costs *(Gaubert 2018, Fajgelbaum, Morales, Suarez Serrato & Zidar 2018)*

## National Perspective: Adding externalities to the baseline

Consider fiscal externalities and productivity spillovers

- Firms do not internalize externalities (e.g., spillover employment, tax revenue)
- State and local govts can use tax incentives to compensate firm for locating where social benefit is larger
  - Increases allocative efficiency of firm locations *(Glaser 2001, Ossa 2015, Slattery 2019)*

Example: Move a technology firm from San Francisco, CA to Columbus, OH

- May lead to more service employment, wage growth, and local fiscal benefits in OH than in CA
- However, overall US innovative activity may be higher if firm remains in CA *(Moretti 2019, Glaeser and Hausman 2019, Sollaci 2019)*

## National Perspective: Equity Considerations

Income and opportunity vary substantially across regions

- Regional disparities may reflect labor market frictions, distortions from tax system
- Place-based policies can provide unique targeting benefits for addressing these disparities *(Gaubert, Kline and Yagan 2019)*
- Search frictions $\rightarrow$ large gains from incentivizing firms to move to high unemployment areas *(Bilal 2019)*
- Shadow value of a job or resources highly unequal across regions

Not in the frictionless benchmark: Role for incentives to address regional disparities

- Equity gains limited if most distressed places, which may benefit most from attracting a firm, do not have enough revenue to offer incentives

# 6. Policy Discussion

## Taking Stock: What we have learned

- State and local governments devote substantial resources towards attracting firms and capital

- Industries with larger multiplier effects are more likely to receive subsidies, and receive more subsidy dollars per job

- Poorer places spend more per job

- Limited evidence that subsidized firms have employment spillovers in the local economy

$\rightarrow$ Argument for this place-based policy rests heavily on equity considerations

## Improvements to current policy

Policymakers can design incentives with equity considerations in mind

- Target tax incentives to hard-hit regions *(Bartik 2019)*
- Subsidize employers who promise to hire local residents *(Bartik 2019)*
- Target marginal investments and job creation for high-multiplier *industries*
    - More transparent and less political than incentives for *individual firms*
- Should also evaluate whether incentives "trickle down"

Need more rigorous evaluation and transparency requirements

- Federal accounting rules require incentives reporting, but reports are low quality
- Few states require systematic evaluation of incentive programs

## Considering harmonization

Various U.S. governors have proposed "truce" on subsidy competition

- NY lawmakers propose "End Corporate Welfare Act", urge others to sign on
- This is more attractive to NY than in more distressed regions

THE WALL STREET JOURNAL.

# The Kansas-Missouri Subsidy Armistice

Two states agree to quit shuffling jobs back and forth across the border.

Aug. 14, 2019 7:17 pm ET

Harmonization may be more effective at the regional level (e.g. Kansas City)

- However, both states rushed to finalized deals right before truce enacted

# A larger (super-)federal role

Centralized approach may be key to avoid competition and address equity concerns

- Federal programs with lenient requirements unlikely to be effective
    - E.g. Opportunity Zone program in the U.S.
- Empowerment Zones increased employment in places with poverty rates above 40%, unemployment over 15% *(Busso, Gregory and Kline 2013)*
- Recent Proposal: Tennessee Valley Authority for the 21st century *(Austin, Glaeser and Summers 2018)*

The EU restricts state aid to reduce concerns about tax competition

- Structural funds implemented at super-federal level
- Encourage investment, capital deepening, and econ development in distressed areas, to reduce regional disparities

## Open questions and directions for future research

1. How much do state and local business tax incentive policies improve the well-being of underemployed and low-income workers?
   - As argued in Amazon HQ2 NYC case, will all good jobs go to migrants and high-skilled, leaving locals with more congestion and higher prices?
2. Are the most distressed places able to attract firms with tax incentives?
3. How effective are these approaches relative to other policies?
   - Places could instead invest in education, amenities
4. How big of a role does politics play in subsidy-giving?
   - Distribution of resources within a state?
   - Actual effects on re-election success?
5. Does targeting subsidies at the largest firms have anti-competitive effects in the product market?
   - Implications for conversation on increasing industrial concentration?

## Conclusion

1. Policy:
   - Average discretionary subsidy is \$178M for 1500 promised jobs. Approx 30 deals/year
   - In 2014, states spent \$5-\$216 per capita on incentives for firms via range of forms

2. Selection:
   - Often big, profitable firms in auto, aerospace, chemical mfg; tech; finance and oil
   - Poor places provide larger incentives and spend more per job

3. Impacts:
   - Comparing "winning" and runner-up locations, we find that average employment within the 3-digit industry of the deal increases by $\approx$ 1000 jobs
   - Little/weak evidence of spillovers and no impact on county-level economic growth

4. Discussion
   - Best argument for local business tax incentives involves equity considerations
   - Much more to learn about distributional effects

Thank you!

## Corporate tax rates and per capita incentive spending
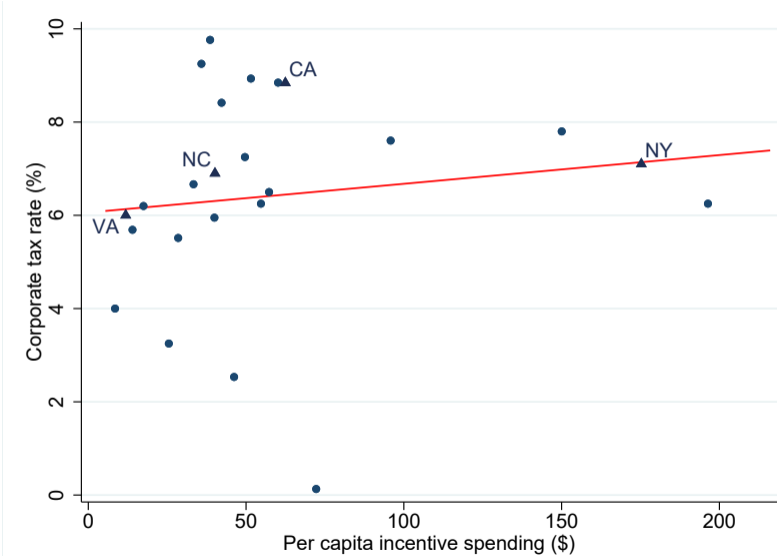
## Determinants of Subsidy Size: Evidence from North Carolina

- Subsidy ↑ $29K per direct job

- Subsidy is higher for high-wage firms

- Subsidy ↑ $100 for $1 of average wages
  → going from wage $64K (mean) to
  $125K (P95) gives ≈ 2X subsidy

- NC predicts a multiplier of 1.4 for a
  median subsidy deal and 2.5 for every
  new skilled tradable job (close to local
  multiplier effects in Moretti (2010))

Correlates of Firm-Level Subsidies in NC
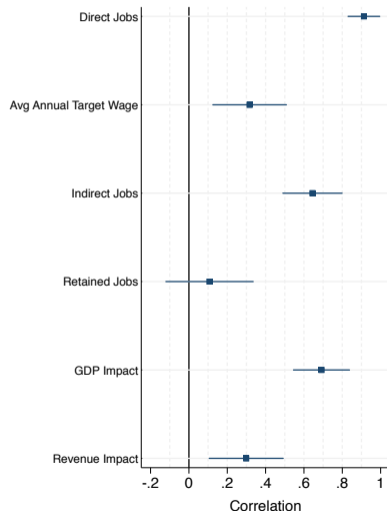
# North Carolina's projected effects of firm subsidies on tax revenue and GDP

Revenue Impact ($M)



GDP Impact ($M)
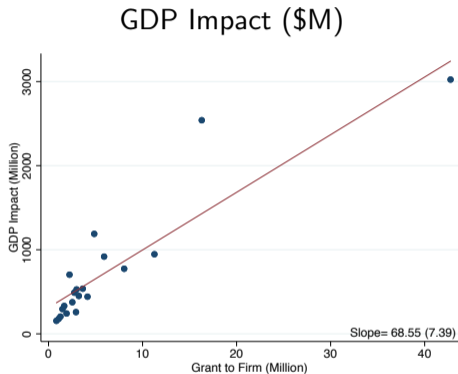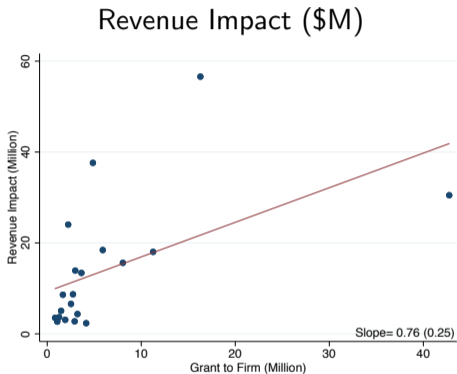


- NC projects recovering $0.76 of tax revenue and $68 of GDP per dollar of subsidy

## Which Places Provide Firm-Specific Subsidies?

Unique counties in 2000

| County: | Winner (Full) | | Winner (Analysis) | | Runner-up | | Average | | Pop > 100K | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Median | Mean | Median | Mean | Median | Mean | Median | Mean | Median |
| Employment (K) | 201.3 | 82.0 | 229.1 | 142.9 | 303.5 | 157.5 | 44.1 | 11.3 | 197.1 | 102.9 |
| Population (K) | 407.0 | 171.2 | 453.9 | 285.1 | 610.0 | 308.1 | 90.9 | 25.2 | 400.8 | 208.6 |
| Average wages (K) | 45.5 | 42.8 | 48.6 | 45.0 | 48.6 | 45.0 | 34.8 | 33.1 | 44.4 | 42.1 |
| Population density | 1,096.7 | 285.3 | 1,524.9 | 485.2 | 1,702.1 | 506.3 | 229.4 | 42.4 | 1,088.5 | 341.0 |
| % emp in mfg. | 21.5 | 18.0 | 20.1 | 16.0 | 17.6 | 15.3 | 19.3 | 17.3 | 16.4 | 14.8 |
| % emp info & prof svcs. | 19.3 | 17.2 | 22.4 | 22.1 | 24.1 | 24.0 | 9.6 | 8.3 | 21.2 | 19.6 |
| % urban | 73.2 | 78.5 | 81.0 | 90.6 | 82.8 | 91.8 | 39.1 | 38.4 | 80.4 | 85.0 |
| % Bachelor's or more | 22.1 | 20.3 | 25.4 | 24.6 | 26.9 | 25.4 | 16.5 | 14.5 | 24.9 | 23.3 |
| % white | 78.1 | 81.1 | 77.4 | 79.2 | 75.7 | 77.8 | 84.5 | 91.3 | 79.5 | 83.0 |
| % Hispanic | 7.0 | 3.1 | 8.1 | 3.9 | 8.1 | 3.9 | 6.2 | 1.8 | 9.1 | 4.3 |
| % foreign-born | 6.2 | 3.5 | 7.7 | 4.7 | 8.5 | 5.5 | 3.5 | 1.7 | 7.7 | 5.2 |
| log housing units | 11.2 | 11.2 | 11.5 | 11.6 | 11.7 | 11.7 | 9.4 | 9.3 | 11.5 | 11.4 |
| Wage bill (M) | 10,969.5 | 3,403.9 | 12,789.2 | 6,751.4 | 17,477.6 | 7,689.0 | 2,086.8 | 376.7 | 10,059.3 | 4,207.9 |
| Personal income (M) | 19,640.2 | 6,592.2 | 23,161.7 | 11,790.5 | 31,131.8 | 14,512.0 | 3,968.0 | 792.9 | 18,809.3 | 8,473.0 |
| Personal inc/capita (K) | 40.9 | 39.3 | 44.5 | 41.8 | 45.6 | 41.7 | 34.1 | 32.8 | 42.9 | 40.6 |
| Unemployment rate (%) | 4.0 | 3.7 | 3.7 | 3.4 | 3.8 | 3.5 | 4.4 | 4.1 | 3.9 | 3.6 |
| Observations | 268 | | 115 | | 126 | | 3,107 | | 537 | |

## Comparison: Within-Industry Employment Effects of Subsidy Deal



Our Subsidy Deals Dataset
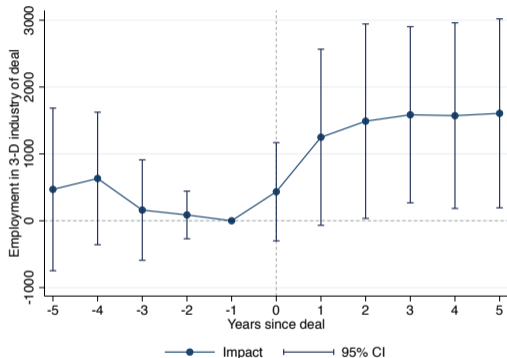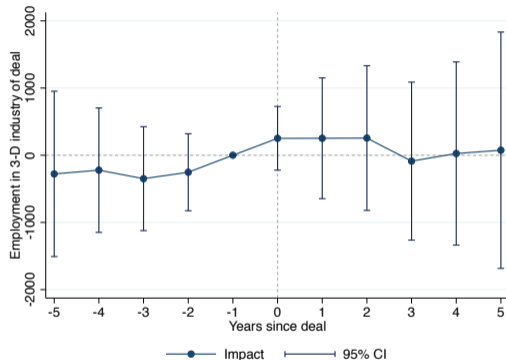
Million-Dollar Plants Dataset

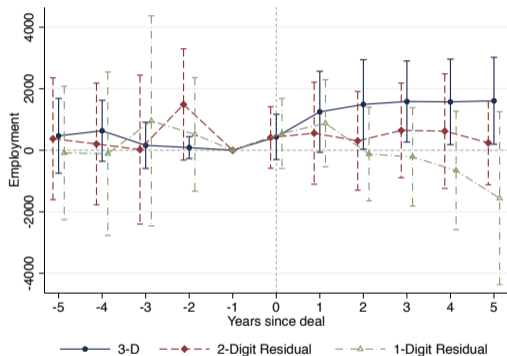*Notes:* This figure plots event study estimates of the effect of winning a firm-specific deal on employment in NAICS 3-digit industry of deal.
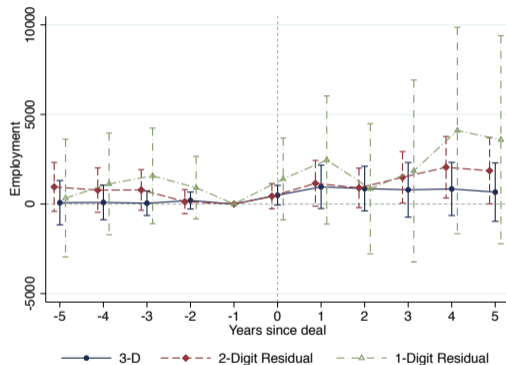
## Comparison: Spillover Effects of Winning a Subsidy Deal



Our Subsidy Deals Dataset

Million-Dollar Plants Dataset

*Notes:* This figure plots event study estimates of the effect of winning a firm-specific deal on on three outcomes: employment in 3-digit industry of deal, 2-digit residual employment, and 1-digit residual employment.