Corporate Responses to Place-Based Policies *

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Abstract

Local, state, and federal governments offer firms combinations of tax incentives and financial intermediation to help attract or retain jobs and investment for their constituents. Tax breaks are often implemented as place-based policies (PBPs), for which firms must allocate resources to a particular locality to maximize subsidy amounts. Tax instruments underlying PBPs can take many forms, including tax breaks for specific firms in critical sectors, broad-based subsidies for hiring and capital expenditures, industrial policies which operate through intergovernmental development plans, and local revitalization programs targeting neighborhoods which appear to be distressed based on measures such as unemployment and poverty rates. While there is a large body of research examining the equity-efficiency tradeoffs inherent in PBPs based on aggregated real economic outcomes and via quantitative spatial models, less is known about how firms alter their production processes and corporate strategy in responding to policy nudges. Data limitations, especially in contexts with small, privately held firms, prevent comprehensive analyses of these margins of adjustment. On the labor side, firms can use subsidies to engage in labor hoarding; for multi-plant firms, PBPs induce firms to shift the spatial distribution of worker skills within the firm's internal network, with ambiguous implications for regional inequality. Firms also alter their investment plans over time, across space, and between physical and intangible capital inputs; funds obtained through place-based programs may substitute for external financing sources. Metrics for scoring PBPs aimed at firms range from *ex post* partial equilibrium cost per job or general equilibrium NPV calculations to *ex ante* criteria based on compatibility of firms' incentives with policymakers' objectives and the scope for welfare losses from inter-jurisdictional tax competition. Large variation in the same metric across studies focusing on the same type of corporate tax instrument underscores challenges in extrapolating the successes and failures of any one PBP into general policy design principles.

Keywords: place-based policies, industrial policy, tax breaks, local public finance, corporate finance, capital structure, job creation, physical capital investment, regional development, inter-jurisdictional competition

JEL classifications: E24, G31, H25, L21, R58

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1 The Global Landscape of Place-Based Policies Targeting Firms

Place-based policies (PBPs) targeting firms aim to attract or retain jobs and investment to economically peripheral areas by offering tax breaks made contingent on the allocation of resources to a particular locality.[1] PBPs for firms take the form of four major categories: individual agreements between governments and large multi-plant or multi-national firms, broad-based local tax breaks applying to all qualifying firms operating within a jurisdiction, revitalization programs which target distressed neighborhoods, and top-down industrial policy offering incentives to firms in critical sectors of the economy operating in regional clusters.[2] Versions of these policies exist in all advanced economies with an income tax system, and can span federal, state, and local governments, or be inter-jurisdictional in nature (OECD, 2025).

There is uncertainty as to the aggregate size of place-based tax concessions granted to firms. This is true even for federal policies where it is, in theory, possible to tabulate the size of the aggregate tax break from administrative tax return filings. Estimates of total annual U.S. state and local place-based firm transfers range from $45 billion (Bartik, 2017) to $80 billion, with the latter based on data collected by the nonprofit Good Jobs First and journalist reports at the *The New York Times* likely double-counting program totals and individual deals (Slattery and Zidar, 2020).[3]

Figure 1 plots total federal subsidy spending from the U.S. Bureau of Economic Analysis (BEA) by major economic sector in Panel A, and subsidies by governmental level (federal, state, and local) in Panel B. To visualize cyclical trends, we restrict attention to the years prior to the sharp increase in federal subsidy spending during the COVID-19 pandemic.[4] Total annual spending on subsidies by the federal government averages $77 billion between 2010 and 2019. Of this total, the "other" category comprising the bulk of tradable sector firms accounts for one-fifth of federal subsidy spending. Subsidy outlays towards agriculture, housing, and defense-related transportation are procyclical, whereas other subsidy spending is slightly countercyclical.

Total BEA-implied annual subsidy spending by state and local governments averages $24 billion over the period 2010 to 2019, slightly declining to an annual average of $21 billion

[1] This is an expansive definition of PBPs relative to other definitions adopted in the literature in the sense that it potentially encompasses all sub-national corporate tax and commercial-use property tax policy.

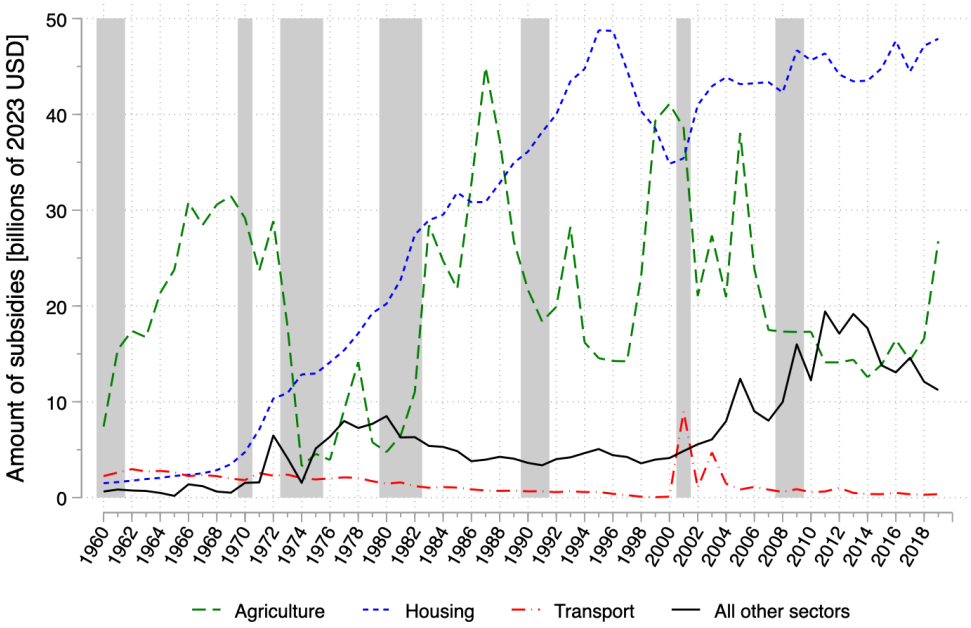
[2] Austin et al. (2018) divide their taxonomy of place-based categories into four alternative categories based on the type of policy instrument: direct public investment, tax benefits for businesses, tax benefits for individuals, and regulatory relief. Bartik (1991) devises a similar but broader typology distinguishing between financial incentives aimed at recruiting branch plants and "new wave" policies aimed at small or existing businesses. These authors focus on the ability of policies to solve joblessness, whereas the goal of this article is to analyze how firms respond to a family of location-specific tax incentives. Accordingly, the taxonomy we adopt here categorizes PBPs based on the conditions firms must meet to obtain the tax benefits.

[3] Slattery (2019) collects state-level data on incentives, estimating that under the same relative contribution of transfers from local governments implied by the estimates in Bartik (2017), total state and local business incentives were $30 billion in 2014.

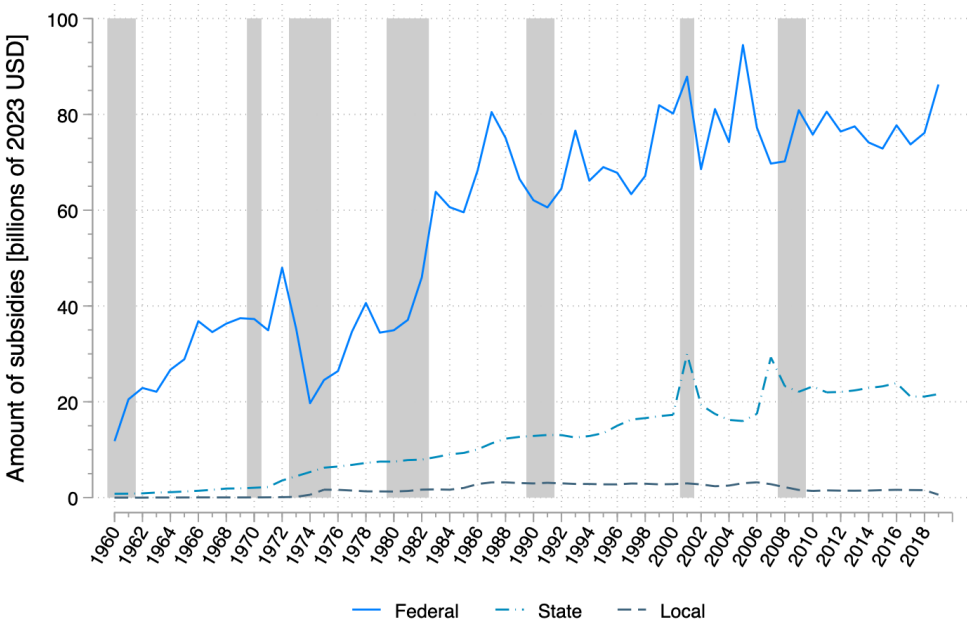
[4] Federal stimulus programs phased in between 2020 and 2022 led to a sharp rise in total subsidy spending by the federal government of $821 billion in 2020 and $682 billion in 2021. Spending remained elevated relative to its long-term average in 2022 and 2023 with the passage of a new wave of infrastructure-related bills.

FIGURE 1. Total Transfers Granted to Firms Based on U.S. BEA Data

A. Federal Government Subsidy Spending by Major Sector



B. Subsidy Spending by Governmental Level



Notes: The figure plots time series of subsidy spending broken down by major economic sectors receiving federal subsidies in Panel A, and by the level of government (i.e., federal, state, or local) conducting the spending in Panel B. Gray bars indicate NBER recessions. To visualize cyclical trends, we restrict the time sample to the post-1960 period when all series are available and focus on the years before the unprecedented rise in federal subsidy spending during the COVID-19 pandemic. In Panel A, we combine subsidy spending on the maritime sector and aircraft carriers into a single "Transport" category; most of this spending reflects subsidies to transportation-related manufactures to be used towards national defense. All subsidy series are deflated to 2023 USD using the CPI-U. Each series is based on the Gross Domestic Product tables produced by the U.S. Bureau of Economic Analysis (BEA) and downloaded via the Federal Reserve Econonmic Data (FRED) database. The BEA defines subsidies as "monetary grants paid by government agencies to private business or to government enterprises at another level of government."

between 2020 and 2023. This total is a lower bound on total state and local subsidy spending, since the BEA definition includes only direct transfers to private businesses and therefore does not include prominent forms of place-based policies by which firms' activities are indirectly subsidized through tax abatements, reimbursements, and enterprise zones.[5] In contrast to total federal subsidies, total state and local subsidies are fairly acyclical.

We now turn to describing the four main types of place-based policies and the evidence on how firms respond to these incentives.

1.1 Tax Breaks Granted to Individual Firms

Based on an earlier version of the database constructed by Slattery (2025), Slattery and Zidar (2020) report $82 billion, or roughly $5 billion per year, granted across 543 firm-specific subsidies between 2002 and 2017. Subsidy-giving targeted to individual firms has increased over time according to both the Bartik (2017) and Slattery (2025) datasets. Bartik (2020) estimates total spending on U.S. place-based policies to be $61 billion per year prior to the COVID-19 pandemic, of which 80% was cash grants and tax credits or rebates to firms.

A key resource for identifying firms benefiting from place-based transfers is the Good Jobs First (GJF) database, as constructed by Mattera and Tarczynska (2025). The GJF "Subsidy Tracker" is a searchable compilation of economic development subsidies granted by federal, state and local governments to firms operating in the U.S. It includes more than 722,000 entries of individual awards (of which approximately 582,000 are state/local and roughly 140,000 are federal) across nearly 1,900 programs. Each record typically identifies the recipient company (or parent company), the subsidy program used, the jurisdiction granting the award, and the dollar amount when disclosed. The database allows users to search by company, subsidy type (e.g., tax credits, grants, abatements), state or local jurisdiction, and program.

Figure 2 presents subsidies in the GJF database classified by program type and totaled across all three levels of government in Panel A, and restricting to large state-level subsidies in Panel B.[6] The earliest federal subsidy entries in GJF are dated from 2000, with some state and local-level entries dating from the 1990s. However, we start the sample at 2008 after which the database coverage is more stable. Total spending on firm subsidies based on the GJF data ebbs from over $15 billion in 2008 to nearly $48 billion in 2022.

To produce and update the GJF database, the authors collect the data from a combination of open records requests, government agency webpages, and other online sources. Hence, state and local governments' voluntary compliance with the Government Accounting Standards

[5] Hanson et al. (2025) propose a more expansive definition of PBPs which includes spending on Small Business Administration (SBA) loan and grant programs, as well as regional commissions, community colleges, and Community Development Financial Institutions Funds. Adopting this definition yields pre-2020 annual average spending of $100 billion across federal plus state and local programs, closely matching total annual subsidy spending across all three government levels implied by the BEA estimates in Figure 1.

[6] We exclude the 32.0% of subsidies which have undisclosed total package amounts, and a smaller number (1.3%) missing the year in which the award was granted.

Board (GASB) affects the coverage of the GJF database, meaning the totals in Panel A of Figure 2 match neither the total subsidies implied by the BEA estimates in Figure 1 nor the conventions followed by Bartik (2020). For this reason, comparisons across jurisdictions should be approached cautiously.[7] To mitigate these coverage issues, in Panel B of Figure 2 we restrict attention to large awards exceeding $5 million which carry a more robust paper trail. Comparing the state-level subsidies to the totals in Panel A, megadeals – defined as packages exceeding $50 million in nominal dollars – comprise a much larger share of subsidies for state governments, with the 163 of such deals comprising 26% of all state-level subsidies. By contrast, the federal government relies far more on smaller, direct grants to firms.

An oft-cited rationale for attracting big firms is not just the hope that transfers will eventually pay for themselves, but also that these companies will bring "good jobs," especially to areas located at the epicenter of the decline in traditional manufacturing output in advanced economies since the 1970s. Are the dollar values of the subsidies justified by the quality of the jobs created for local residents? En route to answering this question – a central one in the literature on place-based policies – it is instructive to consider a few case studies of big firms' location decisions in response to receiving subsidy packages.

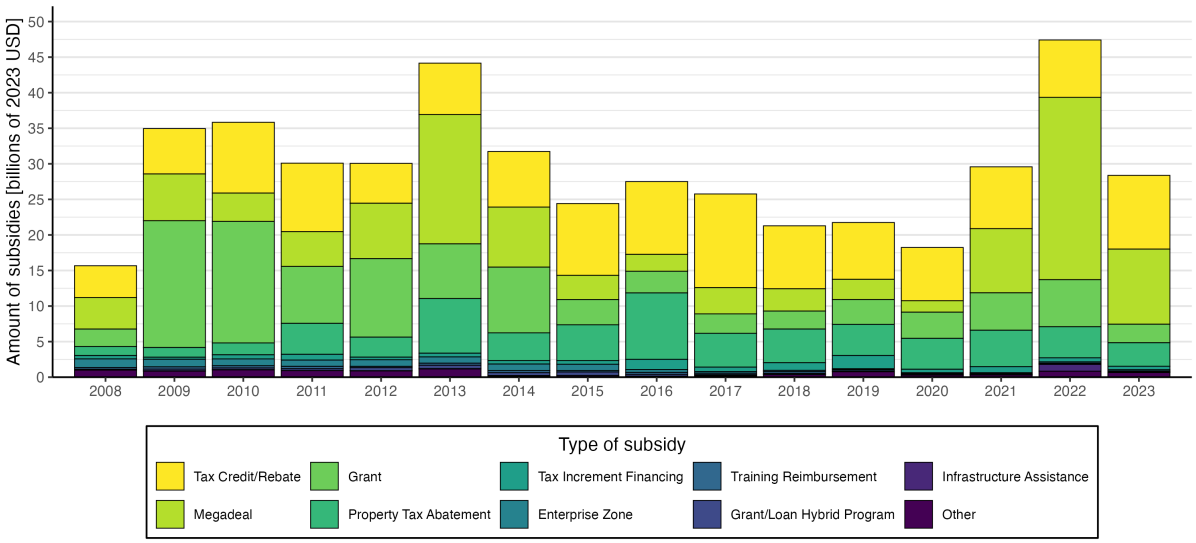
In late 2017, Amazon launched a search for an "HQ2" location — its second North American headquarters — promising about $5 billion in investment and up to 50,000 jobs. The company outlined clear site selection criteria, including a metro area with more than one million people, strong transit and airport access, up to 8 million square feet of office space, and a sizable talent base (Parilla, 2018). Cities and regions across the U.S. and Canada responded in droves: 238 proposals came in from 54 states, provinces and territories. Many of these competing metros offered generous incentive packages of tax credits, grants, infrastructure investments, and fast-track approvals to make their bids more attractive (Blackwell et al., 2018). After a short-listing process in early 2018, Amazon ultimately announced in November 2018 that it would split its HQ2 between National Landing in Arlington, Virginia and Long Island City in New York, choosing two major metros that offered large talent pools, infrastructure and business ecosystems rather than smaller, lower-cost cities, despite many of those cities offering even larger incentive packages.

In February 2019, Amazon canceled its planned New York location after strong opposition from stakeholders within the state. New York planned to give Amazon tax breaks of at least $1.525 billion, cash grants of $325 million, and other incentives. Figure 3 shows how subsidies received by Amazon have evolved over time along with the relative importance of its business segments. The final outcome of the bidding war can be clearly visualized by the 2019 spike in subsidies granted by Virginia, amounting to $801 million. In exchange, Amazon agreed to hiring targets of 25,000 new jobs around HQ2 by 2030 while meeting annual targets en route; that

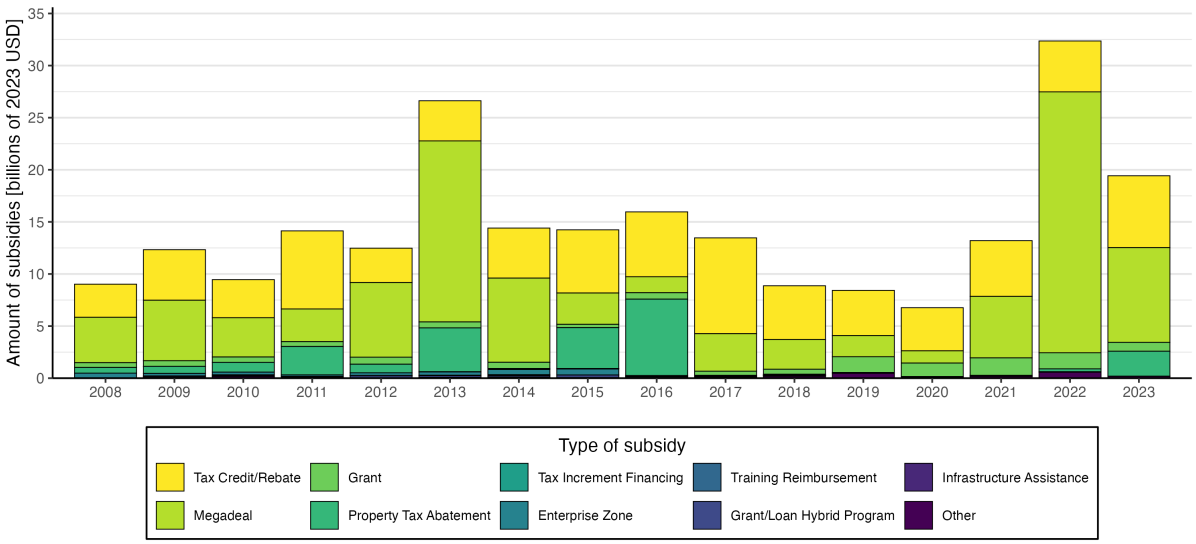
[7]The top ten states according to the compliance/transparency index compiled by GJF are, from more to less transparent: Nevada, Connecticut, Illinois, Virginia, Indiana, North Carolina, Michigan, New York, Wisconsin, and Kentucky (Tarczynska et al., 2022). These ten states account for 44% of all state-level subsidies granted over the sample period.

FIGURE 2. Total Transfers Granted to Firms by Tax Instrument or Program Type

A. All Subsidies: Federal, State, and Local Levels

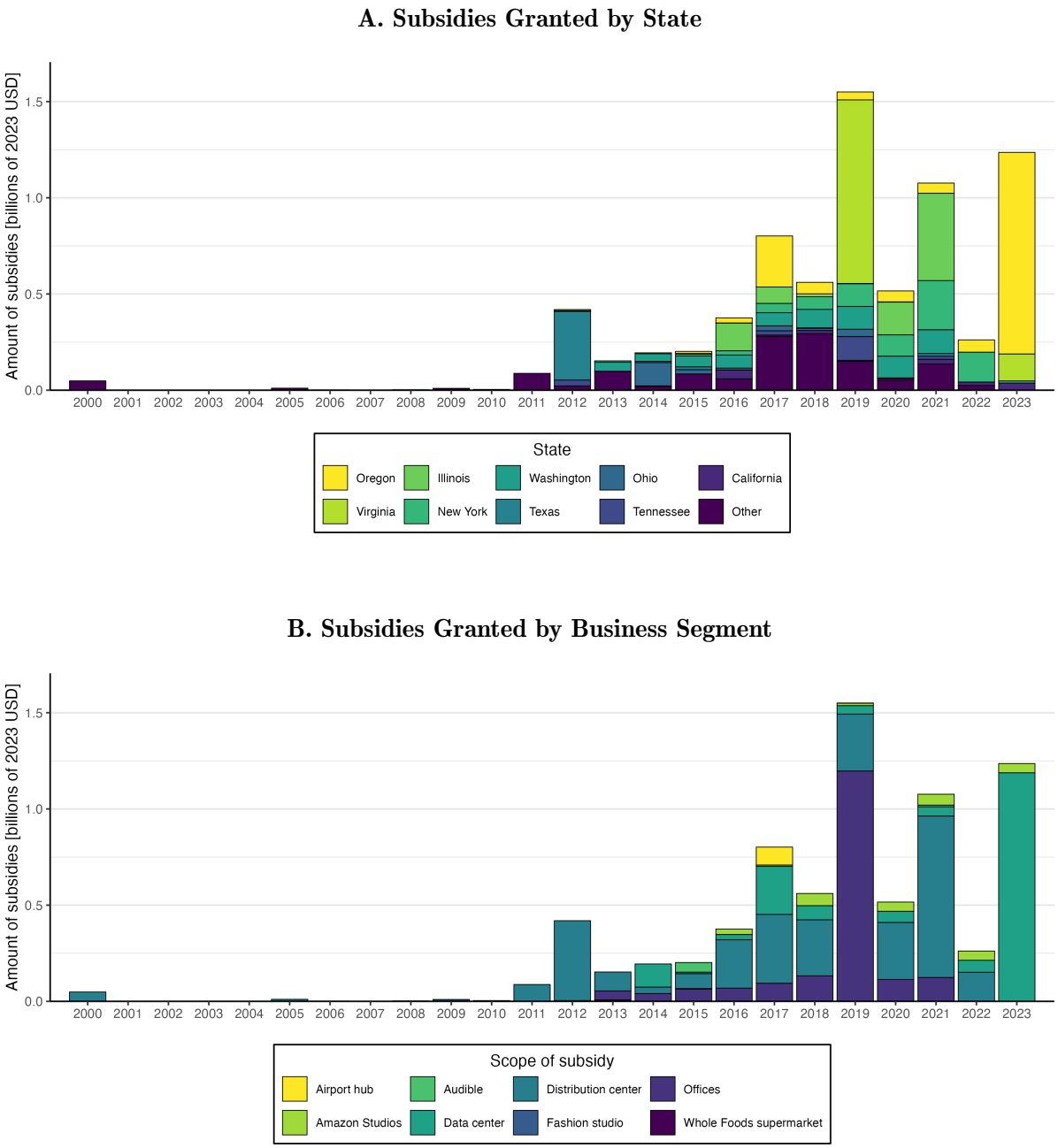


B. Large State-Level Subsidies (Amounts > $5 Million)



Notes: The figure displays the evolution from 2008 to 2023 of transfer amounts granted to firms, organized by the most commonly reported types of tax instruments or programs used to confer benefits. In Panel A, we pool all transfers granted by federal, state, and local governments. In Panel B, we restrict attention to transfers sponsored by state governments with amounts exceeding $5 million. We exclude subsidies below this threshold in the state-level data, because smaller subsidies are not subject to disclosure requirements in most states during the sample period. In cases where state-level transfers are offered with cooperation across multiple governmental levels (i.e., state and local), we include such amounts towards the Panel B totals. In each panel, megadeals are defined as subsidy packages exceeding $50 million in value, following the Good Jobs First definition. In each panel, subsidy amounts are deflated to 2023 USD using the CPI-U. We exclude from the sample subsidies with undisclosed amounts or those missing the year the government awarded benefits. Data obtained from the Good Jobs First Subsidy Tracker, downloaded on September 10, 2025 (Mattera and Tarczynska, 2025).

FIGURE 3. Subsidies Granted to Amazon by State and Business Segment



Notes: The figure displays the evolution from 2000 to 2023 of subsidy amounts granted to Amazon by U.S. state in Panel A and by the segment of Amazon's business receiving subsidies in Panel B. In Panel A, we report separate subtotals for the top nine states by subsidy amount, with subsidies granted by all other states included in the "other" category. These top nine states account for 46% of all Amazon subsidy dollars (or 47% of the number of subsidies) granted over the sample period. In each panel, subsidy amounts are deflated to 2023 USD using the CPI-U. A subsidy in this figure refers to a variety of possible tax instruments, including tax credits/rebates, grants, property tax abatements, tax increment financing, or a combination of these incentives. We exclude from the sample subsidies with undisclosed amounts, representing 27 of the total 344 subsidies reported. Data obtained from the Good Jobs First Amazon Tracker, downloaded on September 7, 2025 (Mattera and Tarczynska, 2025).

horizon has since been pushed out to 2038, with Amazon citing shifting work habits after the COVID-19 pandemic as a cause of the delay (Washington Post, 2024).

With the rapid advent of generative artificial intelligence chatbots such as ChatGPT in 2022, the purpose of subsidies to Amazon has shifted towards building data centers. Just over $1 billion in incentives from Oregon accompanied Amazon's expansion of its Amazon Web Services data center portfolio in the eastern part of the state in 2023. As of 2025, Amazon reports investing $39.2 billion in its Oregon data centers since 2011, supporting 8,320 full-time jobs and paying $54.2 million in property taxes (Amazon, 2025). Comparing this stated job creation to the total $1.53 billion in state-level incentive packages from Oregon in the GJF database from 2011 to 2023 results in an implied cost per job (net of property taxes) of $177,379.

Do large, mobile firms like Amazon form target amounts when eliciting subsidy packages, or is the process of seeking bids from multiple jurisdictions a function of firms learning about their relocation costs? Bartik (1991), together with colleagues at the Upjohn Institute, conducts a survey of possible sites that would meet the criteria for General Motors's (GM) search for a location of its new Saturn manufacturing plant in 1987. The researchers create a list of candidate sites that would generate the lowest costs of transporting the cars to market. They then estimate costs per car for each candidate location, decomposed into transport and labor costs and state and local taxes, applying the NBER's TAXSIM model to compute tax burdens. Nashville, Tennessee comes out on top as the lowest cost per car for Saturn's plant – just 35 miles from the site GM eventually chose in Spring Hill, Tennessee.

The General Motors case study suggests that firms know their cost structure and that the actual tax breaks required to induce firms to move to a location are much smaller than those observed in the data, possibly due to bidding wars between jurisdictions (see Section 5.3 for a discussion of tax competition). Nashville offered GM property tax abatements reducing the cost per car by $34. Based on the simulation, this subsidy amount would have been sufficient, but about one-third greater than what would have been required for Nashville to beat out Lexington, Kentucky and St. Louis, Missouri for the GM plant (Bartik, 1991, Ch.2).

Beyond the quality of jobs or investment that the subsidies purchase, a concern provoked by case studies of large firms is that firms will "toe-dip," meaning they will make small reversible investments to capture tax benefits and then exit the subsidized area shortly thereafter. A prominent example of toe-dipping is the aborted 2018 deal between the state of Wisconsin and Foxconn, a Taiwanese multinational electronics manufacturing firm. Brokered by Governor Scott Walker and President Donald Trump, Foxconn initially received a pledge of $4 billion in subsidies and tax credits in exchange for a promise to bring 13,000 workers and $10 billion in investment to Racine, Wisconsin. By the end of 2019, Foxconn had hired only 281 workers and invested 2.8% of its pledge into an empty facility (Tabak, 2022). Firms also renege on the intensive margin of their promises. 24% of the GJF subsidies pictured in Panel A of Figure 2 feature targets with a strictly positive number of job slots. Among publicly listed U.S. firms receiving state-level subsidies between 2003 and 2015, 63% meet their promised job creation targets within the originally proposed time frame (Dong et al., 2023).

1.2 Broad-Based Local Tax Breaks

Governments can also implement tax breaks which apply more broadly to firms located within their borders. State and local tax policy is always implicitly place-based in the sense that, in deciding on tax rates, policymakers compete with other jurisdictions for revenue and business activity. In many cases, decisions to change tax rates are explicitly place-based, as policymakers will reference objectives of fostering job creation or improving business competitiveness for their constituents. In maximizing profits, firms (and individuals) compare the vector of tax rates offered by different locations and allocate resources to minimize their tax liability. Hence, when one government cuts taxes for firms, this may siphon investment and jobs away from other areas which are otherwise close substitutes in the firm's production process. This renders the net effect of place-based policies for the aggregate economy theoretically ambiguous.

A wide body of empirical evidence shows that firms are indeed mobile and responsive to changes in state and local corporate income tax rates on both the extensive and intensive margins. Giroud and Rauh (2019) estimate short-run corporate tax elasticities of employment and the number of establishments for multi-plant C-corporations of -0.4 to -0.5 and elasticities of -0.2 to -0.4 for pass-through entities with respect to personal income tax rates. Half of the elasticity arises from firms reallocating resources from other states, and tradable sector firms are among the most mobile. Elasticity estimates are much greater over longer time horizons of 10 years (Suárez Serrato and Zidar, 2016). Firms also respond to other features of a state's business environment, for example, by avoiding states with more pro-union laws (Bartik, 1985; Holmes, 1998), exiting high-tax states during recessions to avoid paying unemployment insurance taxes (Guo, 2023), and being more likely to take advantage of subsidies when there are more existing plants in the same industry located nearby (Devereux et al., 2007). The latter result suggests firms internalize the productivity gains from agglomeration when making their location decisions.

As with transfers negotiated with specific firms, broad-based PBPs can take many forms other than cuts to headline tax rates. Tax instruments include credits, direct subsidies or grants for specific types of investment (e.g., to defray the cost of new plants), bonus depreciation, and loans charging interest rates below the prevailing market rate. 25 out of 44 U.S. states levying a corporate income tax offer their own subsidies for physical capital by allowing firms to claim bonus depreciation on top of normal depreciation schedules for straight-line or declining balance methods (Bloomberg Tax, 2023).[8] Bonus depreciation is a popular policy tool because it leaves long-run corporate income tax revenues unchanged by giving firms the same dollar value tax break they would normally qualify for except that some of the savings may be claimed earlier in the life of the investment. For firms, this an attractive feature of the state tax code to the extent they face fixed adjustment costs, financing constraints which do not allow them to smooth out their cash flow needs over time, or a combination of the two frictions. As a result, smaller and

[8] 44 states have a corporate income tax, but of the six that do not, four have a gross receipts tax, which effectively functions like an income tax. Only South Dakota and Wyoming have neither.

younger firms with higher discount rates or those relying on longer-lived assets like industrial equipment are more reactive to bonus depreciation schemes (Zwick and Mahon, 2017).[9]

Federal bonus depreciation schedules, while not place-based, subsidize capital in some parts of the country more than others because areas differ in the concentration of industries using long-duration assets as production inputs (Garrett et al., 2020). Places experiencing larger investment subsidies through this channel witness an increase in employment, but no difference in earnings per worker. Ohrn (2019) examines two types of state-level bonus depreciation under the pre-2017 U.S. federal tax code: the Section 179 bonus allowance for small firms, and state conformity to federal bonus rules. State adoption of 100% bonus depreciation generates large increases in physical capital investment responses of 18%. Because most empirical estimates of responses to broad-based tax breaks use difference-in-differences approaches leveraging variation in the geographic cross-section, they do not account for general equilibrium forces such as local increases in employment due to firms selling equipment to meet new demand from the firms receiving capital subsidies.

1.3 Local Revitalization Programs

The largest share of the literature on place-based policies analyzes local revitalization programs, which carve out special tax code areas in *ex ante* distressed neighborhoods with the hope of attracting developers to improve underutilized or vacant properties and encouraging businesses to relocate and create jobs. This type of tax instrument predominantly exists in the U.S. and U.K., where conservative political movements in the 1970s and 1980s gave rise to the idea that localized tax cuts could be used to combat the hollowing out of urban manufacturing centers (Rubin and Richards, 1992). Prominent examples of PBPs in this category include Empowerment Zones, Opportunity Zones, and tax increment financing districts.

Created as part of the Omnibus Budget Reconciliation Act of 1993, Empowerment Zones (EZs) were a U.S. federal anti-poverty program administered through the Department of Housing and Urban Development (HUD).[10] EZs offered firms hiring credits, increased expensing allowances for business assets, and regulatory waivers. Before their expiration at the end of 2011, a defining feature of EZs was a 20% credit against wages paid to employees who both lived and worked within the zone. A close relative of Empowerment Zones are the now mostly-defunct

[9]Prior to the Tax Cuts and Jobs Act (TCJA) of 2017, firms could not claim bonus depreciation for placing properties into service. The One Big Beautiful Bill Act of 2025 reinstated 100% bonus depreciation for real estate at the federal income tax level. States which conform to federal bonus depreciation policy will therefore also have this provision. Due to the long lifespan of properties, LaPoint and Sakabe (2021) show that bonus depreciation for real estate can be a powerful tool to encourage firms to make irreversible investments in struggling areas.

[10]EZs collectively refer to Empowerment Zones, Enterprise Communities, and Renewal Communities, all designated through the Omnibus Budget Reconciliation Act and Empowerment Zones and Enterprise Communities Act of 1993.

state-led enterprise zones which many states started experimenting with in the 1980s.[11] Busso et al. (2013) compare EZs to non-EZ areas which also petitioned HUD for funding but were not selected. Population and earnings did not increase, but poverty and unemployment fell by large magnitudes of 5 percentage points and 4 percentage points, respectively. Decomposing these gains into finer geographies, reductions in the poverty rate are due to higher-income households sorting into the *ex ante* relatively affluent areas within zones (Reynolds and Rohlin, 2015).

The 2017 Tax Cuts and Jobs Act implemented the Opportunity Zones (OZs) program. The program allows state governors to designate up to 25% of qualifying low-income Census tracts as OZs, subject to approval by the U.S. Treasury Department.[12] Census tracts must satisfy one of several eligibility criteria, including having a poverty rate above 20%, median income less than 80% of the statewide median income, or being contiguous to a tract with median family income less than 125% of the adjacent qualifying tract. Unlike their predecessor EZs, in an OZ *investors* rather than firms are the recipients of subsidies in the form of deferred and reduced capital gains tax bills.[13] To benefit, participants invest proceeds from capital gains realized through non-OZ investments into a Qualified Opportunity Fund (QOF) which in turn invests in the creation of businesses and/or infrastructure improvement in the OZ. Through 2022, 75% of OZ investments consisted of residential real estate projects (Corinth et al., 2025).

Early evidence suggests that place-based redistribution through OZs may be limited due to the decentralized nature of the program. Using confidential tax return filings from the early years of the program, Kennedy and Wheeler (2022) show that relatively affluent OZ Census tracts already undergoing gentrification – as measured by income growth – garnered a majority of the $41.5 billion invested in opportunity zone funds by tax year 2020; 63% of designated OZ tracts received zero investment dollars. Three-quarters of the investments are made by affluent individuals rather than firms.[14] These findings are echoed by Corinth et al. (2025), who contrast OZs with another federal revitalization policy, the New Markets Tax Credit (NMTC) which awards tax credits to specialized financial intermediaries called Community Development Entities but with similar objectives to the OZ program.[15] Corinth and Feldman (2024) rationalize the extreme geographic clustering of OZ investments by conducting simple

[11] The literature on U.S. enterprise zones has found mostly no impact of these programs on local economies. Greenbaum and Engberg (2004) track establishments in the Census data across six states' enterprise zones to conclude that, if anything, overall value added declines in the zones because growth in new establishments occurs at the expense of previously expanding ones already located in a zone. Neumark and Kolko (2010) use precise maps of enterprise zone boundaries in California but find no increase in employment or shift in employment towards low-wage workers.

[12] As of 2024, over 8,700 Census tracts, or roughly 10% of all tracts, are located in an Opportunity Zone.

[13] Investors only defer their capital gains tax liability for investments left in the QOF up to five years. Investors earn a basis step-up of 10% after year five, 15% after year seven, and 100% after year ten. Thus, after ten years, the original tax liability goes to zero.

[14] The 2012 Jumpstart Our Business Startups (JOBS) Act laid the foundation for OZ funds to crowdsource capital from accredited investors, who are high net worth individuals with at least $1 million in wealth excluding their primary residence. Platforms designed to crowdsource equity for real estate deals have grown dramatically since 2020 (Huang and Ivanov, 2025). Opportunity zones therefore allow developers to pass through the savings from tax-deferred capital gains to small equity investors.

[15] Established in 2000 through the Community Renewal Tax Relief Act, the NMTC offers investors in qualified Community Development Entities a tax credit totaling 39% of the total investment spread over seven years.

back-of-the-envelope calculations based on the tax code. OZ projects with a pre-tax annual rate of return above 7% would generate strictly positive excess returns relative to non-OZ investments even in the absence of the capital gains tax break. Hence, the tax benefits provide a windfall to investors in the most *ex ante* promising OZ tracts.

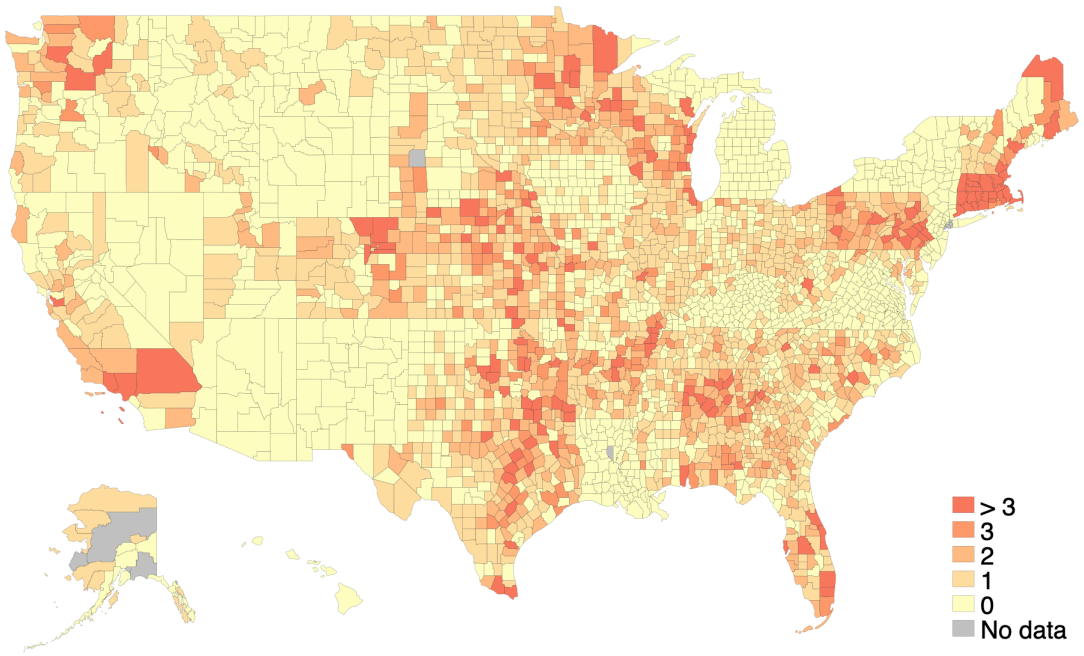
Whether OZs have been successful at creating jobs for zone residents is hotly debated. Arefeva et al. (2025) conclude that OZ designation in urban areas increases business employment growth relative to otherwise similar non-designated tracts by 3.0 to 4.5 percentage points in the first two years of the program. However, employer-employee matched administrative data indicate that most of these jobs are taken by workers who commute in from non-OZ Census tracts. Freedman et al. (2023b) instead compare designated Opportunity Zones to eligible but not designated tracts and find no discernible effects on employment, earnings, or poverty rates for zone residents; analysis using the same research design but with updated data replicates these conclusions (Freedman et al., 2025). The local value creation of the OZ program remains ambiguous, as house price capitalization is statistically zero under border-pair difference-in-differences approaches (Chen et al., 2023). Corinth and Feldman (2022) use credit card data and OZ eligibility criteria to compare just barely eligible tracts to just barely ineligible ones but find no uptick in business spending, new business formation, or commercial diversity.

Discrepancies in the evidence on OZs can be partially explained by different identification strategies adopted by the researchers to estimate causal effects. Comparisons of geographically close or very similar Census tracts generally yield null results. Research into Opportunity Zones is likely to continue given that the 2025 One Big Beautiful Bill Act (OBBBA) permanently extended and enhanced the OZ program. Among the amendments are increased tax benefits for investment in rural Census tracts and a more stringent set of criteria determining whether a tract is eligible for nomination (Wessel, 2025).

Beyond these examples of neighborhood revitalization programs enacted at the state and federal levels, local governments can create special tax assessment districts catering to industrial, infrastructure, or general economic development. Examination of the Census Annual Survey of State and Local Government Finances (ASSLGF) reveals that 3,029 out of 3,132 counties with available data contain at least one special tax assessment district.[16] Of these, 1,765, or 56.4%, contain districts where the taxing authority earmarks the revenues for industrial or residential development. Figure 4 maps the geographic distribution of these economic development-focused special tax districts. A small handful of states account for a large share of special development districts across the country; the top four states of Texas, Massachusetts, Georgia, and Pennsylvania alone contain 29% of the 3,441 development districts active as of 2017. In contrast, states which designate development districts at the state level (e.g., New York with its Empire Zone program) do not rely on the property tax system to finance local revitalization incentives.

[16]Classification codes for special assessment districts in the post-2012 ASSLGF include fire protection, health, highways, housing and community development, parks and recreation, police, sewage, waste management, electric and water supply utility, and industrial development.

FIGURE 4. Special Assessment Districts for Economic Development in the U.S.



Notes: The map shows the geographic distribution in quintiles of the number of special assessment districts located across U.S. counties where the tax revenues are earmarked either for industrial or residential development. Tabulations based on the 2017 wave of the Census Annual Survey of State and Local Government Finances (ASSLGF). In most years, the survey only includes responses from a certainty sample covering the largest jurisdictional units, which censors out many smaller governments; every five years, the survey includes all government entities included in the sampling frame. We use the 2017 survey wave since it contains the last pre-COVID year with full coverage. Although the public-use files distinguish unincorporated towns, counties are the finest available standardized geography level.

Within the class of special assessment districts, tax increment financing (TIF) districts exist in 49 out of 50 U.S. states plus D.C.[17] Municipalities designate a TIF district, which is an area that is deemed to be "blighted" in some way such that future development would not occur through private market mechanisms "but for" TIF.[18] In creating a TIF district, jurisdictions bet that a development project will increase property and sales tax revenues by the tax increment (TI), which is the difference in revenues after and before the development. The municipality can then fund a development project up to the present value of the TI over the term of the TIF district.[19] Funds can be pledged towards corporate income tax credits, property tax abatements, or equity share agreements where private stakeholders receive a share of the TI. Hence, the financial success of a TIF depends on a municipality's credit rating and the accuracy of its tax revenue

[17]The Arizona state legislature banned local jurisdictions from creating TIF districts and providing firm tax credits in 1999.

[18]TIF districts are known by a variety of other names depending on the state, including tax increment districts (TID), tax increment financing areas, or special financing districts.

[19]The term of the TIF district and corresponding bond maturity varies across municipalities, but usually falls between 20 and 30 years. Property taxes accelerate to such an extent that the costs incurred by the original TIF investment are paid off by the increment, then the district is closed before the term ends.

projections.[20]

TIF is often used in conjunction with targeted tax breaks to specific "anchor" firms. For instance, TIF was a key component of the planned Wisconsin Valley Science and Technology Park created around Foxconn in Racine, Wisconsin (Tabak, 2022). The two tools are viewed as complementary for two reasons. First, other businesses are needed to support large new employers, leading to a desire for sectoral diversification. Achieving agglomeration externalities purely through individualized corporate tax breaks would likely be expensive, as the Foxconn episode illustrates. Second, in two-thirds of states, TIF confers the power of eminent domain upon towns (Somin, 2015), allowing for land assembly without long time lags in building due to bureaucracy or bargaining with local residents.[21]

Because the authority to create special tax districts is delegated to local governments, there is no centralized or comprehensive database of TIF locations, their financial viability, or the type of projects they help fund. Prior research focuses on the determinants of TIF adoption and its subsequent effects on employment outcomes. Strategic interaction between municipalities (Byrne, 2005), macroeconomic boom periods (Dye et al., 2014), and being near a state border (Felix and Hines, 2013) all positively predict the probability that an area is subject to TIF. TIF adoption is also positively correlated with the presence of Empowerment Zones (Gibson, 2003). Similar to the above findings for OZs, Czurylo (2023) argues that strong job growth in Chicago TIF Census blocks results from firms relocating operations to the TIF rather than hiring local residents. Although the financial architecture of TIF aims to achieve incentive-compatible capital investment by spreading the proceeds across stakeholders, TIF faces the same difficulties in funneling net gains to distressed communities as other local revitalization schemes.

Local revitalization programs can also be conceived when local town planning boards receive seed funding to remove a bottleneck and then consult with nonprofits, private developers, and state and local governments to construct a development plan. For environmental cleanup efforts, the U.S. Environmental Protection Agency (EPA) offers competitive grants which serve as a major source of seed funding. Cleanup can occur on severely contaminated sites, known as Superfund sites, or on brownfields which are generally less contaminated but remain abandoned or underutilized due to the high and uncertain cleanup costs imposed by the

[20] Although the total dollar value of TIF subsidies at stake seems small in the Good Jobs First (GJF) data, as tabulated in Figure 2, there are two reasons to believe that subsidies originating from economic development districts are underestimated. First, among states making the greatest use of TIF, such as those with a high prevalence of development special tax districts in Figure 4 (e.g., Georgia and Massachusetts), most have poor beneficiary disclosure requirements according to the index of Tarczynska et al. (2022). Second, there are several benefits rolled up into TIF, such that it is unclear whether incentives like property tax abatements are only made possible through the presence of a TIF district. Abatements make up a large fraction of the state and local subsidies tabulated in Figure 2.

[21] Owens et al. (2020) do not directly address the desirability of TIF or other local revitalization programs, but show through the lens of a quantitative spatial model that coordination of developers and residents is important to avoid the wave of vacancies that befell Detroit after the collapse of the automobile industry in the 1960s. Eminent domain is a method for forcing that coordination.

Superfund legislation and related statutes.[22] Superfund cleanup increases house prices and spurs gentrification (Gamper-Rabindran and Timmins, 2011, 2013), indicating local value creation. Imposing *ex post* environmental liability can also act as a place-based policy by rendering it more difficult for firms to divest from polluted land (Chen, 2025). The literature currently lacks analyses of how businesses react to place-based environmental policies like the expansion of EPA grant funding towards rural brownfield cleanup under the Inflation Reduction Act and Bipartisan Infrastructure Law of 2022 (Environmental Protection Agency, 2024).

1.4 Place-Based Industrial Policy

Place-based industrial policies (PBIPs) designate geographically large regions (e.g., commuting zones) to receive preferential tax treatment and/or direct government investment to cultivate the growth of firms in particular sectors.[23] PBIPs share the objective of other place-based policies to bring jobs to struggling regions (so-called "good jobs externalities") but with an added emphasis on raising the global competitiveness of specific industries (Juhász et al., 2024). Because of these twin goals, the federal government crafts the eligibility criteria and selection process, often delegating the management of the funds to consortia of local private and nonprofit entities such as economic development organizations (Hanson et al., 2025).

As is the case with neighborhood revitalization programs, a major challenge in eliciting causal effects of industrial policy is that catchment areas eligible for benefits are *ex ante* different from ineligible areas in terms of economic conditions. Further complicating causal inference is the fact that sectors selected for subsidization are also on differential growth trends in years prior to the policy. For example, even within the same relatively fine geographic area, steel manufacturing firms pummeled by positive input price shocks or increased global trade competition may face lower employment growth relative to more downstream high-tech manufacturers.

Criscuolo et al. (2019) address the geographic dimension of the selection problem using changes in weights placed on various local eligibility criteria (e.g., unemployment or per capita GDP) from the U.K. Regional Selective Assistance (RSA) program which offers physical investment grants for manufacturing firms. Since the formula determining sub-national eligibility is set by the European Commission for the entire EU, shifts over time in the eligibility of U.K. regions is plausibly exogenous to local growth trends. Ignoring geography-based negative selection leads to attenuation of the positive estimated effects on local manufacturing employment. Within subsidized sectors, the government's selection of areas to receive PBIP funds may be governed by complex scoring rules, admitting strict cutoffs that are difficult for local officials to manipulate

[22] In the U.S., cleanup of severely contaminated sites is governed by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLA empowers the EPA to identify highly contaminated Superfund sites, place them on a National Priority List, and seek cleanup funds from potentially responsible paries such as polluting firms.

[23] As noted in Juhász et al. (2025), most industrial policies post-2010 contain elements of export promotion through subsidizing particular sectors – usually ones with a pre-existing comparative advantage. Here we focus the discussion on place-based versions of these policies which delineate clear beneficiary regions on top of any sectoral eligibility criteria.

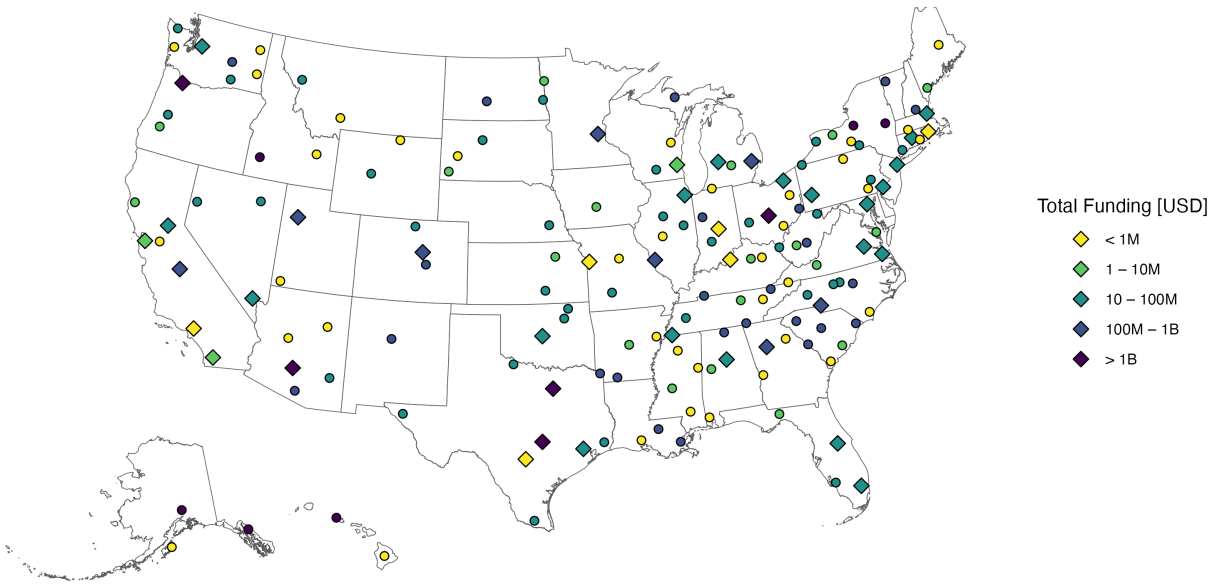
to the advantage of their constituents. Hasan et al. (2021) implement a regression discontinuity design in India in the 1990s, where the government designated "backward" manufacturing districts as eligible for subsidies according to a composite score based on indicators such as the urbanization rate and per capita gross value added. India's policy rule led to large, but short-lived gains in light manufacturing firm entry and employment in the just-eligible districts which were partially offset by partial displacement of activity in nearby just-ineligible districts. Mitrunen (2025) examines forced war reparations from Finland to the Soviet Union in goods exports as a natural experiment to identify positive effects of state subsidies on local development – including greater educational attainment and upward mobility – and industrialization. Finland paid reparations in fixed proportions of paper and timber products and advanced metal industry goods, thus leading the Finnish state to subsidize firms in those sectors to meet non-market production demand. A unique feature of this setting is that the geographic distribution of subsidies is largely pre-determined by municipalities' existing industrial specialization, lending credibility to a shift-share exposure research design.

Aside from allowing for identification of causal effects, how should governments select areas to subsidize as part of a larger industrial policy scheme? Answering this question has taken on renewed importance with the U.S. pledging $80 billion in funds towards PBIP initiatives through a wave of bills passed between 2021 and 2023, including $17 billion appropriated for the creation of tech hubs outside major cities (Haskins and Parilla, 2024). As of December 2024, $41 billion in PBIP funding across 13 federal programs initiated by the American Rescue Plan Act (ARPA), Bipartisan Infrastructure Law (BIL), CHIPS and Science Act, and Inflation Reduction Act has been allocated towards company-based investment incentives (e.g., CHIPS Incentives Program) and coalition-based challenge grants (e.g., the Good Jobs Challenge and Build Back Better Regional Challenge). 94% of these funds were awarded to companies, with priority given to semiconductor, battery, and clean energy firms.

Figure 5 displays the locations of 349 industrial investment awards granted between 2021 and 2024 through legislation enacted under the Biden Administration. 64% of grants but only 36% of dollars awarded under these initiatives went towards projects located outside the top 50 MSAs by population, indicating limited subsidization of less-populated areas. The proportions of funding allocated to more or less urban areas are similar even after restricting the sample to the 253 non-academic grantees, or within the same sectoral cluster classification. During this episode, 88% of funds directed towards more rural areas came in the form of direct grants to firms under the BIL and CHIPS programs rather than through regional redevelopment programs such as the Regional Innovation and Technology Hubs and Regional Innovation Engines programs.

Rossi-Hansberg et al. (2021) study the theoretical problem of a central planner tasked with allocating workers engaged in routine and cognitive non-routine tasks across cities with pre-existing industrial clusters. Calibrating the model to the observed spatial distribution of industrial employment and wages in the U.S., the optimal solution for the planner involves nucleating more inland health and education clusters around regional hub cities like Denver and Minneapolis than currently exist. The logic underlying the wedge between the current

FIGURE 5. Locations of U.S. Place-Based Industrial Investment Awards, 2021–2024



Notes: We scrape the information from the Place-Based Industrial Investment Tracker compiled by Haskins and Parilla (2024), which includes 352 awards funded by either the American Rescue Plan Act (ARPA), Bipartisan Infrastructure Law (BIL), CHIPS and Science Act, or Inflation Reduction Act (IRA). We assign grants to metropolitan statistical areas (MSAs) based on whether a city contained within an MSA is listed as the location. Grants awarded to areas depicted on the map as diamonds consist of the top 50 MSAs by 2020 Census population, whereas areas depicted as circles pertain to locations outside the top 50 MSAs (i.e., smaller MSAs or micropolitan statistical areas). We divide awards into bins based on the nominal funded amount, with a median award of $1 million. The map excludes three awards in the database which are not tied to a specific location.

spatial distribution of economic activity and the planner's allocation arises from productivity spillovers across workers within the same occupation. This is one theoretical justification for the concentration of U.S. PBIP funding in large regional hub metros between 2021 and 2024.

A related question is how to implement industrial policy – that is, which types of policy instruments are successful at improving the long-term performance of critical sectors? Few PBP campaigns feature different types of subsidies directed towards the same regions and industries but during distinct periods, rendering it difficult for researchers to benchmark estimated effects against counterfactual policy designs. Using firm-level data on subsidies provided to China's coastal shipbuilding industry from 1998 to 2014, Barwick et al. (2025) conclude that entry subsidies are wasteful, while production and investment subsidies increase global market share. Through the lens of their structural model of Cournot competition with firm entry and exit, a key insight is that policymakers can mitigate distortions by targeting low-cost firms to receive subsidies and by adopting each type of subsidy in isolation. Aghion et al. (2015) make a related point, using data covering all Chinese industries to show that industrial policies fostering competition in a sector increase firm-level productivity growth. This can be done by either dispersing funds more broadly across firms within a sector or subsidizing activity in a concentrated sector to increase firms' incentives to innovate.

Teasing out clear causal effects of a tax change within broader industrial policy campaigns is also confounded by the simultaneous provision of other non-tax federal levers and resources by state and local governments. For instance, state and local governments provide roads or other forms of transportation infrastructure and impose land use restrictions which may amplify or reduce firms' responses to federal policy incentives (Glaeser and Gottlieb, 2008). Federal spending on infrastructure can, in turn, crowd-out (Knight, 2002) or crowd-in (Leduc and Wilson, 2009; Garin, 2019) spending at lower levels of government. We return to the topic of industrial policy in Section 6 by assessing the scope for place-based policies to have persistent effects on regional development. The fact that industrial policy became more prevalent in the twentieth century means that most empirical evidence on the long-run effects of place-based policies originates from federal programs born out of geopolitical competition.

2 How Firm Factors of Production Respond to Place-Based Incentives

Having characterized the four main types of place-based tax incentives for firms, this section turns to micro-level evidence of how firms respond by adjusting factors of production on the intensive and extensive margins.

2.1 Labor Adjustments

Employment increases either in areas subject to PBPs or among establishments benefiting from the policies suggests firms use the proceeds from the transfers to hire workers. However, few studies decompose the response of net employment into separate categories of flows. An exception is Greenbaum and Engberg (2004), who distinguish between employment and payroll expansion in enterprise zones driven by establishment entry and exit vs. the expansion or contraction of existing firms already operating within the zone. The overall null effect on total zone employment masks churn in the composition of firms – with negative job growth from firms that were expanding prior to the zone's inception offsetting positive growth from the birth of new firms. Hyman et al. (2023) analyze the California Competes Tax Credit (CCTC), which induces firms to begin new investment projects in California through a competitive application process that replaced the state's enterprise zone program. Despite the fact that the tax credits are concentrated among a small number of large firms operating across multiple states (e.g., Tesla), firms do not hire California workers at the expense of workers in other states.

A common feature of PBPs is that government support for underdeveloped regions places few constraints on whom subsidized businesses must hire. Conditioning place-based transfers on the location of the investment but not the type of labor can lead to new jobs accruing to non-residents of policy areas, contrary to policymakers' objectives of creating jobs for residents of struggling communities (Freedman, 2015). Cerqua and Pellegrini (2022) study a program in Italy that scores project proposals using similar criteria and post-award monitoring to the

CCTC, but again without imposing constraints on who firms must hire if the project receives subsidies. Subsidized firms retain their most valuable staff and hire more qualified young people, with limited displacement effects.

PBPs can displace existing workers in an area through several mechanisms. Providing funds to some firms can lead to the exit or destruction of existing firms in the policy area. Newly subsidized entrants to an area may poach workers at incumbent firms by using program funds to offer higher wages than their competitors (Soskice, 1994). In thin labor markets where the costs of hiring, firing, and training workers are greater, firms engage in labor hoarding by retaining employees with essential skills during downturns (Biddle, 2014). PBPs can also help firms defray the costs of keeping critical workers employed during bad times, especially in cases where firms face multi-year job targets as a condition for the continued receipt of funds. Effectively, firms' predisposition towards labor hoarding means PBPs place a premium on workers who are difficult to replace and are less likely to be employed at lower productivity sites. Unemployment insurance payroll taxes can amplify this labor hoarding channel by raising the costs of firing workers. LaPoint and Sakabe (2021) find in their analysis of Japan's industrial tech hubs program ("Technopolis") that capital subsidies encouraged multi-plant firms to hoard labor at ineligible areas on the eve of a major recession.

How labor markets change in terms of their industrial diversity and firm demand for certain workers' skills remains an open question. Studies examining outcomes at the establishment level primarily rely on either administrative tax return data or confidential Census datasets which contain limited information about employees. New data on job postings can offer a glimpse into how occupations and job pre-requisites change in response to PBPs. Atkins et al. (2025) echo much of the preceding literature on Opportunity Zones (OZs) by exploring data from Burning Glass Technologies to show null effects on job postings in OZ Census tracts relative to eligible, non-OZ tracts, but positive effects on job postings after restricting the sample to postings in real estate and construction sector occupations in urban areas.

Job postings data can be decomposed further by text parsing job descriptions to link firms receiving place-based transfers to their specific skill demands. Doing so will reveal how place-based policies alter corporate strategy. For example, do place-based policies favor workers with remote or hybrid work arrangements which are more prevalent after the COVID-19 pandemic? This question has implications for equity within local labor markets but also long-term growth prospects of a PBP to the extent that such jobs are more likely to be occupied by college-educated workers in population dense areas in the information, finance and insurance, and business services industries (Barrero et al., 2023).

2.2 Physical Capital Investment

Most place-based policies condition firms' access to funds based on their ability to create jobs. This means that even if physical capital investment is not directly subsidized, harvesting the full benefits of a policy would require tradable sector firms to do some capital expenditure

(CAPEX), either through creating a new plant or deploying machines to expand their operations at an existing location. Policy phase-out schedules can also alter the timing of investment plans, encouraging firms to delay or move up their timetable to maximize subsidy rates, as shown by Eichfelder and Schneider (2014) in their analysis of expiring investment subsidies in 1990s East Germany following reunification. Production taxes function like capital taxes in industries relying on resource extraction. Location-specific production tax rates (such as oil "severance" taxes or value-added taxes) can influence CAPEX decisions by greater magnitudes than movements in goods prices (Brown et al., 2018), since price changes alter both the benefit and the opportunity cost of production.

Listed firms' reporting requirements render the subtotal of property, plant, and equipment (PPE) widely available in standard datasets such as Compustat. To limit the reporting burden on firms, financial regulations rarely require firms to itemize PPE by location or by subcategories of spending. For this reason, few studies empirically separate the extensive and intensive margins of capital spending in response to a PBP. An exception is LaPoint and Sakabe (2021), who use detailed manufacturing census data from Japan to decompose PPE into machinery and real estate components and rank firms based on their use of long-lived assets. For large multi-plant firms, the CAPEX response to location-specific capital subsidies is on the intensive margin, involving the physical expansion of an existing plant site.

Understanding how firms adjust their physical capital structure under a PBP is paramount for assessing whether firms are making relatively irreversible investments in the lagging regions targeted by policymakers. Requiring or encouraging long-lived investments, such as the construction of new buildings, can be an alternative incentive compatibility device to imposing "clawbacks" on firms if they do not achieve job targets (see Section 5.2). Tax instruments like bonus depreciation, which allow firms to expense a larger fraction of asset purchase costs upfront, help firms overcome fixed costs of relocating to a new area.

Cooper and Haltiwanger (2006) show that a combination of convex and non-convex adjustment costs, combined with irreversible investments, is required to match the lumpiness of investment, as evidenced by lengthy periods of inaction at the typical plant in establishment-level panel data. Higher productivity, capital-intensive firms – those in high-tech manufacturing sectors relying on R&D – also face greater fixed costs of capital. Adding this insight into a model of firm sorting with agglomeration leads to a "two-sided sort," whereby both low fixed cost firms and high fixed cost but productive firms locate to urban cores (Forslid and Okubo, 2014). Fixed costs may also depend on the agglomeration of physical capital in an area, as younger firms benefit from having older incumbent firms nearby from whom they can purchase used machines at lower prices, thus avoiding transportation costs (Ma et al., 2022).

2.3 Intangible Capital and R&D Investment

Firms may respond to PBPs by ramping up their intangible capital investments – either by hiring inventors and scientists, purchasing patents, or investing in technological systems to improve

productivity within their network of locations. Incumbent firms may also engage in "killer acquisitions" by targeting competitor firms with the aim of discontinuing the target's innovation projects and protecting their market share (Cunningham et al., 2021). The willingness for firms to spend on research and development (R&D) depends on the complementarity of R&D with labor and traditional capital inputs. The advent of generative AI in the 2020s has renewed debate on the extent to which firms' investments in technological advancements supplant workers (McElheran et al., 2024). In the pre-AI era, estimates of the elasticity of substitution between physical capital and labor based on bonus depreciation provision suggest the two inputs are complements (Curtis et al., 2022), but Acemoglu and Restrepo (2022) show that firms' adoption of robots leads to lower employment at the county level by shifting market share away from relatively labor intensive firms towards more automated firms.

Patenting activity is frequently used as a proxy for firms' R&D investments. Data on patent filings and citations are readily available and can be geocoded based on the locations of the inventor and their parent firm. There are two major issues with applications of these data: a truncation problem featuring growing lags between patent application and approvals, and changes in the composition of inventors across regions and sectors over time (Lerner and Seru, 2022). Biases stemming from the interaction of these two issues survive even after aggregating the data to the firm level. For listed firms, Compustat reports R&D spending, defined as "costs incurred during the year that relate to the development of new products or services," but with frequent missing values. A dearth of comprehensive measures of how firms use intangible capital inputs has limited research into whether place-based R&D subsidies may be counterproductive to fostering local job growth. Addressing this gap is important, because, as discussed in Section 5.4, the existence of knowledge spillovers across locations can overturn the benchmark theoretical result that PBPs are welfare-reducing due to resources being misallocated to low marginal productivity locations.

Some PBPs directly incentivize R&D, acting under the dual premises that such investments are critical to the long-run growth trajectory of the local economy, but also to maintaining geopolitical competitiveness. Incubating high-tech clusters in China led to more patents and grants filed in treated cities, although the precise change in incentives leading to this effect is unclear given the multi-pronged approach of China's industrial development policy combining corporate income tax exemptions with regulatory exemptions and subsidized loans (Tian and Xu, 2022). Starting in the mid-1930s, Soviet Russia's Science Cities program nucleated 95 urban centers through the top-down reallocation of scientists and researchers to work in newly created high-tech manufacturing establishments. This led to those urban areas having a larger number of workers in R&D and IT jobs being paid higher wages and producing more patents even 80 years later (Schweiger et al., 2022). Cooperative research and development agreements (CRADAs) in the 1980s U.S. established joint venture laboratories for firms in chemical and electrical engineering and heavy manufacturing companies, leading to more patents and company-financed R&D (Adams et al., 2003). Agglomeration effects from research collaborations make geographically clustering R&D resources an effective policy at boosting

aggregate innovation (Moretti, 2021).

Government subsidization of universities, either through land grants or research grants, is a more implicit form of place-based policy with major effects on R&D spending. In the U.S., such subsidies can also take the form of Federally Funded Research and Development Centers (FFRDCs), or sites owned by the federal government but often operated by a consortium of industrial firms, universities, contractors, and nonprofits.[24] Neumark and Simpson (2015) survey the evidence on links between industrial clusters and universities, arguing that while areas do benefit from productivity spillovers from higher education, these spillovers are often highly localized, industry-specific, and pertain to already affluent areas surrounding prestigious universities. The co-location of private sector R&D labs and universities in Great Britain is skewed towards locations with highly rated departments relevant to pharmaceuticals, chemical engineering, and machinery manufacturing, especially for labs funded by multi-national firms (Abramovsky et al., 2007). Evidence from a natural experiment in Sweden in which the government established new colleges and elevated existing colleges to university status points to place-based investment in higher education as an effective tool for improving local labor productivity, but productivity spillovers quickly decay with distance from the campus (Andersson et al., 2009).

2.4 Entrepreneurship and New Business Formation

On top of attracting investments from pre-existing firms, PBPs can encourage individuals to form new businesses in an area. Younger firms account for most net job growth in the U.S. (Decker et al., 2020). New firms also amplify positive shocks to the local economy through a "startup multiplier," whereby new firms' hiring results in local spending increases and demand for new firms (Walsh, 2023). PBPs can strengthen industrial clusters by lowering fixed entry costs for entrepreneurs through tax credits and increasing labor intensity (Glaeser et al., 2009), and by increasing the probability of startups' survival (Delgado et al., 2010).

Besides being more mobile than the general population, firm founders may be encouraged by personal vs. corporate income tax differentials generated through place-based subsidies to leave their existing jobs to start a new company (Bryan and Guzman, 2023). Curtis and Decker (2018) study the responsiveness of startups – defined as firms less than two years old – to changes in corporate, personal, and sales tax rates via a county border-pair research design, but conclude that only corporate tax shocks have any effect on startup activity. More work is needed to establish whether reforms to relative tax rates across the local corporate and personal income tax systems are a lever through which PBPs can successfully restart struggling local economies. The role of tax base arbitrage in startup creation remains opaque given the lack of financial information about private firms' activities. Studying this question is easier in European countries given the existence of private firm registries, such as Companies House in the U.K.

[24] As of 2021, there are 42 active FFRDCs, with $15.4 billion of reported obligations in the 2020 fiscal year, representing 10.2% of total estimated federal R&D spending Gallo (2021).

and the Orbis and Osiris databases maintained by data vendor Bureau van Dijk (Moody's).[25]

Very few PBPs promote new business formation by providing separate benefits to entrepreneurs. As such, most studies focus on business creation as an incidental outcome of other place-based programs. The U.S. experience with Opportunity Zones suggests that neighborhood-level policies can discourage new business formation in the non-tradable sector when tax incentives are granted to investors rather than directly to firms (Xu, 2022). One prominent example of policies targeting entrepreneurs are angel investor tax credits active in most U.S. states. Granting tax credits to angels does not increase entrepreneurial activity, because subsidizing angel financing crowds out alternative early-stage firm funding sources such as venture capital or accelerator programs providing seed funding in exchange for equity (Denes et al., 2023).

Credit constraints impede the growth of small businesses, as younger and smaller firms struggle to obtain external financing through traditional lenders (Hadlock and Pierce, 2010). Although not explicitly place-based, U.S. Small Business Administration (SBA) lending programs help deliver subsidized credit to entrepreneurs through a network of local intermediaries. SBA loans may be used for a variety of purposes, including real estate, machinery and equipment, working capital, and refinancing debt. The SBA offers private lenders partial loan guarantees of 50% to 90%, with larger commercial banks involved in the cost-subsidized Preferred Lenders Program underwriting a majority of all SBA loans (Brown and Earle, 2017).[26] Small banks' commercial credit supply decisions are more sensitive to distance due to the additional costs associated with screening borrowers (Brevoort and Hannan, 2006), indicating that access to local branches of banks participating in SBA lending plays a vital role in promoting new business formation.

Besides its core loan guarantee programs, since 1980 SBA administers place-based support via counseling and training to small business owners through its Small Business Development Centers (SBDC) program (Levin, 2023). The 8(a) HUBZone program defines a set of low-income and high-poverty counties and Census tracts wherein small businesses obtain preferential federal government contracting opportunities (Blackford, 2025). SBA programs share the job creation ethos of other PBPs by requiring new hires as a condition for financing (as in the case of 504 loans), requiring that 35% of a HUBZone firm's workforce resides in a HUBZone for the duration of a government contract, or by partially defining eligible areas based on unemployment rates.

[25]Most European countries have mandatory reporting into national business registries, which forms the basis for the data in Orbis and Osiris. See Kalemli-Özcan et al. (2024) for an overview and discussion of the representativeness of the Orbis database.

[26]With the exception of disaster loans, the SBA does not engage in direct lending. 7(a) loans, administered mainly through Preferred Lenders, require borrowers to prove that they have been unable to secure funding from other sources at a reasonable cost. 504 loans are intermediated by Certified Development Companies – nonprofit corporations operating solely within a geographic area approved by SBA. Total SBA lending across the 7(a) and 504 programs has averaged approximately $25 billion annually from 2010 onward (Hanson et al., 2025).

3 Redistribution within Firms' Internal Markets

In addition to deciding where to locate, firms with operations spanning plants across different locations may respond to PBPs by shifting around resources within their internal network, subject to constraints which impact labor and capital mobility. Hsieh and Klenow (2009) show theoretically that in an economy with heterogeneous firms facing monopolistic competition, firms distribute labor and capital across plants such that the marginal product of each input is equated across locations. Those authors estimate large misallocation wedges using manufacturing plant-level data from China and India, arguing that, in practice, within-industry departures from this theoretical benchmark arise from policy-induced frictions, such as government control or size restrictions, which are prevalent in a developing country setting.

Could place-based tax incentives further distort the allocation of resources across plants? While state-run enterprises comprise a much smaller share of the U.S. economy than in China and India, because PBPs are generally proposed for areas which are *ex ante* more distressed and have lower value added per worker or per unit of capital, they likely encourage inputs to flow to regions in a way that does not maximize total factor productivity. Moreover, even if a program favors high marginal productivity areas, the question then becomes why are such incentives necessary to nudge firms to move to those areas? Indeed, a common theme emerges from the PBP studies surveyed in Section 1: when firms are allowed to choose, they geographically concentrate capital in the most affluent areas among those eligible for subsidies. In Section 5.4, we discuss the equity-efficiency tradeoffs inherent in PBPs, as illustrated by quantitative spatial equilibrium models.

Empirical evidence on how firms reallocate resources within their internal capital and labor markets in response to PBPs is scarce. Examining this question requires measures of establishment-level production inputs and a method to link establishments to their parent firm to determine eligibility and takeup of place-based incentives. Using manufacturing census data linked to balance sheets of listed firms, LaPoint and Sakabe (2021) conclude that Japanese firms in high-tech sectors take advantage of capital subsidies by investing in eligible areas, but then use the proceeds to hire in areas not directly targeted by place-based industrial policy. Firms can also engage in nominal rather than real reallocation of economic activity. In studying the distribution of local corporate income tax rate changes in Germany, Fuest et al. (2018) emphasize that workers bear a large share of the tax incidence due to profit-shifting. Through a dynamic general equilibrium model with production networks, Atalay et al. (2023) evaluate a Turkish PBP setting province-specific investment and wage subsidies. Those authors find that the stickiness of input-output links across firms in subsidized regions trading with unsubsidized regions limits any long-run improvements in spatial inequality.

Under what conditions will PBPs induce multi-plant firms to siphon resources away from relatively tax-disadvantaged locations? Financially unconstrained firms expand in locations with lower costs of capital without substituting away from other high-cost locations (Giroud and Mueller, 2015). Besides external financing constraints, there are other frictions which can

prevent firms from expanding across space in response to local incentives schemes. Research highlights the role of geographic barriers to firm expansion. Briant et al. (2015) show that the connectedness of transportation networks is a key factor in new establishments forming in enterprise zones; for this reason, many of the industrial policies described in Section 1.4 feature federal transportation infrastructure investments. Distance can matter due to the costs of shipping goods and production inputs across markets or managerial span of control costs. Atalay et al. (2019) focus on the former reason and report that vertical integration can increase shipment volumes across firm locations by a comparable magnitude to a 40% reduction in distance. Exploiting the opening of new airline routes, Giroud (2013) documents a negative relation between investment in new areas and the distance between pre-existing plants. For firms with more time-constrained managers who struggle to monitor and acquire information about plant performance, distance is a larger hurdle for geographic expansion (Gumpert et al., 2022). While the work-from-home era ushered in by the COVID-19 pandemic may have widened the boundaries of some firms, managers report new challenges related to monitoring remote workers' output (Bloom et al., 2023).

A common finding in the corporate tax literature is that multinational enterprises (MNEs) exhibit greater elasticities with respect to local tax rates than domestic firms. The larger scale of their operations leads to improved access to financing and allows MNEs to shop for lower taxes across national borders. State tax rates play a critical role in foreign direct investment in the U.S. (Hines, 1996). Based on the Good Jobs First data, between 2008 and 2023, 16% of plants receiving economic development subsidies were part of a parent firm headquartered outside the U.S. This fact underscores MNEs' importance to policymakers as a source of job growth. Owing to tax competition across a small number of municipalities in Germany, the business tax cuts needed to bring in one foreign MNE are substantial, representing a 15% cut relative to the typical municipality's average rate (Becker et al., 2012). Focusing on megadeals to attract foreign multinationals, Setzler and Tintelnot (2021) conclude that two-thirds of the wage increases accruing to local workers arise from indirect productivity spillovers to local domestic firms gaining access to the global supply chain.

4 How Corporate Balance Sheets Respond to Place-Based Tax Breaks

How PBPs influence firms' capital structure is an understudied channel. Does offering firms subsidies or tax breaks help them to reduce their reliance on debt and equity issuance? Or are government-sponsored cash flows complementary to external financing methods? Answering this question is important to addressing what makes certain policies more successful than others, since firms differ in the severity of financing constraints they face, and capital markets may be less integrated in lower-productivity areas receiving place-based subsidies (Becker, 2007; Aguirregabiria et al., 2025).

Standard pecking order theory (POT) in corporate finance argues that firms prefer cash to debt and prefer debt to equity issuance for financing their investments (Myers and Majluf, 1984). The logic behind POT is that asymmetric information leads firms to prefer internal financing as a way to avoid signaling to shareholders negative information about the firm's performance. Hence, if firms receive direct transfers through a PBP, then, holding fixed the scale of investment, POT would imply that they use the cash flows to substitute for external financing. LaPoint and Sakabe (2021) show that firms receiving place-based physical capital subsidies reduce their equity issuance without reducing their reliance on credit lines. The fact that most PBPs operate through annual tax return filings after firms have already made their investments means that firms do not receive the funds immediately, and therefore may still rely on debt financing for qualifying projects. Tax credits and subsidies for physical capital can also be complementary to leverage to the extent that subsidized assets can be pledged as collateral. In countries where firms rely heavily on real estate collateral to secure bank loans and lines of credit, place-based policy can relax firms' financing constraints by increasing property values, thereby allowing them to take on more debt (LaPoint, 2021).

For publicly listed companies, researchers largely agree that leverage and tax rates are positively related. Consistent with this hypothesis, Graham (1996) simulates marginal corporate income tax rates for individual firms, combining the federal, state, and local tax codes while accounting for investment tax credits, net operating losses, and the alternative minimum tax. Heider and Ljungqvist (2015) exploit state-level changes in corporate income tax rates in a staggered difference-in-differences setting to document heterogeneous, but positive effects of tax rate hikes on leverage that are more pronounced for investment-grade firms facing lower marginal costs of issuing debt. In contrast, Ivanov et al. (2024) use regulatory data on small private firms to show a negative causal relation between taxes and leverage. Those authors build a dynamic model of firm leverage to illustrate that the tax shield benefit of debt can be offset by two forces when firms receive tax cuts: credit spreads falling from a lower likelihood of default, and a greater marginal product of capital which encourages firms to take on more debt. In a descriptive study, Fleckenstein et al. (2020) construct a time series of corporate leverage using corporate income tax returns filed by public and private firms from 1926 to 2013, finding a positive correlation between marginal tax rates and leverage for all but the smallest firms.

Even less is known about whether PBPs help improve firm profitability net of any tax breaks. What happens to corporate profits matters, because if the PBP helps increase taxable income, then overall tax revenues can increase beyond pre-policy levels, meaning that the policy pays for itself. Measuring fiscal positions with respect to local tax policies is complicated by the fact that, in instances where the PBP is broad-based (e.g., a subsidy per job created within a zone which is available to all firms), it is challenging to determine the total value of subsidies granted without referencing data from administrative tax return filings. Further, if the PBP is specific to state and local jurisdictions, then whether a firm benefited from such transfers would not necessarily appear in federal corporate income tax filings. We discuss the role of corporate profits in the *ex post* evaluation of place-based policy successes in the next section.

5 Determinants of Successful Corporate Place-Based Policies

After discussing the many ways in which corporate strategy and production can change in response to local incentives, this section introduces cost-benefit metrics to evaluate whether place-based policies are successful in accomplishing their redistributive objectives.

5.1 *Ex Post* Evaluation Metrics

The most widely used measure to evaluate the success of corporate place-based policies is the cost per job (CPJ) ratio, defined as the number of new jobs created relative to the government's cost incurred to implement the program in terms of the change in the net fiscal position. The CPJ metric has a number of attractive features – most notably its simplicity and the ability to use the measure to compare across different types of job creation policies, even ones without any place-based component. For instance, CPJ is widely cited in debates on the efficacy of policies ranging from job training programs (Liu et al., 2020) to counter-cyclical federal government stimulus (Council of Economic Advisers, 2009). Characterizing the success of a PBP in terms of jobs gained vs. revenues potentially lost is also supported by GASB 77, introduced in 2015, which requires governments adhering to Generally Accepted Accounting Principles (GAAP) to annually disclose the gross dollar amount of taxes forgone by offering tax breaks.[27]

Assessing the partial equilibrium value creation of PBPs requires defining the appropriate counterfactual setting – that is, would firms have engaged in the investment opportunities nudged by the PBP even without the policy being in place? Policy briefs may refer to a statistical CPJ, in which the program's costs are divided by job growth reported among firms receiving benefits.[28] Since such a calculation may reflect firm hiring (or lack of firing if there is labor hoarding) that would have occurred even in the absence of the policy, economists may instead rely on causally identified estimates comparing recipient firms to a control group of otherwise comparable firms that either did not qualify for benefits or that are eligible for less generous benefits based on program criteria.

Depending on the sample definition used to implement the research design, it may be inappropriate to rely on cost estimates produced by official reports. For example, a study using a difference-in-differences (DiD) design to compare recipient to non-recipient manufacturing firms within an eligible area may not capture the full population of firms at that location, upon which the government bases its cost projections. Firms in the treatment and control groups

[27] Thrall and Jensen (2025) find that the introduction of GASB 77, representing an exogenous increase in transparency of tax incentives, had no effect on local jurisdictions' willingness to use tax breaks as an economic development tool.

[28] Slattery and Zidar (2020) tabulate a nationwide average cost per job of $45,785 for large corporate subsidies exceeding $5 million. Again focusing on larger corporate subsidies, Slattery (2025) calculates a $107,000 cost per job and $10,700 cost per job per year pooled across all discretionary subsidies granted from 2002 to 2017, with large dispersion in this number across states.

may also have different policy take-up rates than the general population of firms, leading to a missing "first stage." Moreover, as noted previously, unless implemented as direct grants to firms, program costs may be difficult to tabulate without having access to tax returns.

One way to overcome these limitations in measuring the numerator of the CPJ ratio is to apply an accounting identity known as the fiscal cost and plug in estimates of the parameters originating from the same sample used to estimate job gains. The fiscal cost is defined as the present discounted value over the policy regime $t \in [start, end]$ of the subsidy per dollar of investment, scaled by the takeup rate in each period t. This identity can be written as:

$$\text{Fiscal cost} = \sum_{t=start}^{end} \frac{\tau_t}{(1+r)^t} \times \left(B_t^{PBP} - B_t^{normal} \right) \times \text{Takeup}_t \tag{5.1}$$

where r is a discount rate which reflects the government's cost of capital (e.g., a short-term Treasury bond rate), and τ_t is the marginal corporate income tax rate. The gap in revenues $B^{gap} \equiv B^{PBP} - B^{normal}$ represents the average benefit amount to firms and can be defined on a per dollar of investment basis, in which case the fiscal cost is a subsidy rate.

Garrett et al. (2020) adopt the fiscal cost approach to estimate CPJ in the context of bonus depreciation, where the gap in revenues with and without the tax break is heterogeneous across firms and would otherwise be impossible to calculate without combining state and federal corporate tax returns. LaPoint and Sakabe (2021) show how the notion of the counterfactual used to compute B^{gap} matters quantitatively for the CPJ. Holding all other parameters in (5.1) to be the same, computing B^{gap} as a naïve average of claimed tax breaks among eligible firms before vs. after the policy reform results in CPJ estimates which are over twice as large as those based on a DiD approach to obtain the average subsidy.

Table 1 compares CPJ estimates (all deflated to real 2023 USD) from studies of PBPs on the basis of the type of policy instrument, the sample of firms used by the authors, and the identification strategy. Although there is a wide range of studies conducting partial equilibrium cost-benefit analyses, we focus on studies providing causal estimates of job creation.[29] Because of the focus on causal estimates, each of the studies listed in Table 1 was published or completed since 2000, after which innovations in computing technology and the availability of administrative data dramatically lowered the cost of applying quasi-experimental methods in economics (Currie et al., 2020). The modern literature satisfying these criteria spans 11 distinct place-based programs across five countries throughout the twentieth and twenty-first centuries. Clearly, more research is needed to allow for cross-country comparisons of PBPs given their global usage.

Several patterns emerge. First, there is a wide range of CPJ estimates, ranging from $4,209

[29]The Upjohn Institute relies on an econometric simulation model, Regional Economic Models Inc. (REMI), to generate projections of the CPJ from place-based incentives. REMI takes as inputs parameters sourced from empirical studies of past PBPs, including local jobs multipliers based on spillovers to upstream or downstream firms, typical elasticities of jobs with respect to state wage subsidies, and the distribution of job creation across residents and non-residents (Bartik, 2018). From these simulations, we learn that incentives directly subsidizing business production inputs tend to result in lower costs per job.

TABLE 1. Cost Per Job Estimates (Real 2023 USD) for Place-Based Policies Targeting Firms

Study	Country	Program	Cost Per Job	Policy Instrument	Target Areas	Sample Units	Identification Strategy
Siegloch et al. (2025)	Germany	East German GRW	[23,812, 50,116]	Capital subsidies	Underdeveloped regions	Manufacturing plants	Event studies with multi-signed treatment
Cerqua and Pellegrini (2014)	Italy	Italian Law 488/1992	95,584	Capital subsidies	Least-developed regions	Firms applying for subsidies	RDD
Pellegrini and Muccigrosso (2017)	Italy	Italian Law 488/1992	59,575	Capital subsidies	Least-developed regions	Firms applying for subsidies in Southern Italy	RDD
Cingano et al. (2025)	Italy	Italian Law 488/1992	[87,059, 114,844]	Capital subsidies	Least-developed regions	Firms applying for subsidies	RDD
Incoronato and Lattanzio (2024)	Italy	Industrial Development Areas	[33,923, 47,234]	Investment subsidies	Lagging municipalities	Municipalities	Spatial difference-in-discontinuities
LaPoint and Sakabe (2021)	Japan	Technpolis/Intelligent Location	[21,956, 31,049]	Bonus depreciation	Lagging regional hub cities	Listed, high-tech manufacturing firms	Staggered and exposure DiD
Criscuolo et al. (2019)	UK	EU Regional Selective Assistance	[4,822, 37,127]	Investment subsidies	Disadvantaged areas based on multiple criteria	Areas (wards) and small firms	IV and DiD
Freedman (2012)	US	New Markets Tax Credit	75,587	Investment tax credits	Low-income neighborhoods	Tract-level CDFI fund investments	RDD
Busso et al. (2013)	US	Empowerment Zones	25,562	Grants, hiring credits, other benefits	Clusters of distressed Census tracts	Census tracts applying for HUD designation	Propensity score matching
Kline and Moretti (2014a)	US	Tennessee Valley Authority (TVA)	107,587	Employment through infrastructure projects	Rural Tennessee Valley area	Counties included in TVA vs. proposed sites	Propensity score matching
Garrett et al. (2020)	US	State-level bonus depreciation	27,945	Bonus depreciation	No restriction – state-level policy	County-by-3-digit industry cells	Exposure share DiD
Arefeva et al. (2021)	US	Opportunity Zones	17,511	Deferred capital gains	High-poverty rate Census tracts plus phase-out provision	Program-eligible Census tracts	DiD
Freedman et al. (2023a)	US	California Competes Tax Credit	4,209	Corporate income tax credits	Priority for high-poverty or high-unemployment areas	Program-eligible Census tracts	Matched DiD
Hyman et al. (2023)	US	California Competes Tax Credit	[9,414, 12,061]	Corporate income tax credits	Priority for high-poverty or high-unemployment areas	Firms applying for tax credits	RDD

Notes: The table summarizes the scope of causal empirical analyses of PBPs resulting in cost per job (CPJ) estimates. Cost per job is defined as forgone tax revenue per net job created by the policy. For studies that report multiple CPJ estimates (e.g., derived from regression specifications with different sets of controls, OLS vs. IV, etc.), we report the lower to upper bound interval. Studies will sometimes attempt to adjust CPJ estimates for deadweight losses generated by the tax instrument used to implement the policy. To render the estimates as comparable as possible across studies, we report CPJ estimates exclusive of deadweight losses. For identification strategies, DiD refers to difference-in-differences and RDD to regression discontinuity design. Unless otherwise noted, all CPJ estimates refer to a cost per job-year, as they are based on annual panel data. All costs are converted to real 2023 USD. In cases where the study reports an overall cost per job estimate identified using multiple years of data, we convert the estimate to real 2023 dollar terms using the midpoint year of the sample time period. In cases where the cost per job is reported in a currency other than USD, we apply historical exchange rates from the University of British Columbia Pacific Exchange Rate Service (available at https://fx.sauder.ubc.ca) and then convert to real USD using the all items U.S. CPI-U.

in Freedman et al. (2023a) to $114,844 in Cingano et al. (2025). Later studies compute lower cost per job numbers than earlier studies. Comparing only studies last updated on or after 2020 applying to manufacturing firms, this range shrinks to a CPJ of between roughly $22,000 (LaPoint and Sakabe, 2021) and $28,000 (Garrett et al., 2020). Second, some of the dispersion in CPJ can be rationalized by distinguishing between long-run and short-run estimates. The studies in Table 1 conduct their analyses using time samples of very different lengths; for example, the administrative data on the California Competes Tax Credit used by Hyman et al. (2023) cover three post-policy years, compared to five post-policy decades of data in Incoronato and Lattanzio (2024) on Southern Italy's Industrial Development Areas. Even though the estimates are reported on a standard cost per job-year basis using average effects obtained from annual panel data, because employment effects tend to increase over time in short-run dynamic event study analyses – due to agglomeration effects or firms learning about tax programs over time – before leveling off or diminishing, shorter-run estimates may produce larger CPJs than longitudinal studies. Systematically tracing out how the CPJ, or other efficiency metrics, evolve over the duration of a policy requires access to longitudinal panel data and keeping track of overlapping policy regimes that may introduce confounding influences on firms' behavior.

Other factors complicate direct comparison across the studies in Table 1 and render it difficult to extrapolate lessons from this small handful of PBPs into general policy design principles. First, program costs may be severely underestimated in studies of policies offering firms multiple sets of incentives, where selection into treatment along the dimension of each type of incentive is determined by correlated factors. For example, CPJ estimates may be less conservative in studies of federal place-based industrial policies if federal incentives crowd-in subsidy spending by state and local governments. Second, there is a tension between strict rules (i.e., the grant scoring mechanisms leading to natural regression discontinuity designs) and political discretion on the part of selection committees. Cingano et al. (2025) use the L488/92 law in Italy to isolate an 11% to 13% greater CPJ due to political discretion in auctions of subsidies to firms. Third, without detailed information on hours worked within firms granted subsidies, there is no way to rescale job creation on a full-time equivalent (FTE) basis. Indeed, most PBPs do not offer firms separate menus of incentives for part-time vs. full-time employment, thus incentivizing firms to create more part-time positions and lowering the CPJ on an FTE basis.

The CPJ is a partial equilibrium notion of value in that it only analyzes employment implications and assesses a policy's cost to the government assuming the size of the tax base stays fixed. Some studies broaden the set of outcomes to estimate the overall welfare effects of PBPs using the reduced-form counterfactual (RFCF) approach pioneered by Busso et al. (2013), who assess the incidence of U.S. Empowerment Zones. RFCF takes estimates $\widehat{\beta}$ for policy-induced changes in outcomes y capturing the benefits accruing to workers, firms, and the net fiscal position. Conditional on the validity of the research design generating $\widehat{\beta}$, for each

outcome the difference between actual and counterfactual flows can be computed as:

$$\Delta y = y - \widetilde{y} = y - \frac{y}{1+\widehat{\beta}} = \frac{y \cdot \widehat{\beta}}{1+\widehat{\beta}} \tag{5.2}$$

where $\widetilde{y}$ is the counterfactual level of the outcome in the absence of the policy. Scaling up their DiD estimates according to (5.2), Busso et al. (2013) cannot statistically reject an overall welfare loss from the block grants, albeit under modest estimates of worker productivity gains based on specifications from a structural model the program is, on net, welfare-improving.

Chaurey (2017) adds corporate profits to the set of outcomes in studying India's 2003 New Industrial Policy. The capital subsidies increased GDP by 0.11% to 0.36%, mainly through increased profits rather than wages, with the caveat that the gains might have been driven by moderate reductions in firms' tax avoidance or evasion. Using village-level data from China's Special Economic Zones (SEZs), Lu et al. (2019) decompose the welfare gains into wage bills and corporate profits, netting out any lost tax revenues computed as the difference between actual corporate income taxes paid and counterfactual taxes. LaPoint and Sakabe (2021) adopt the RFCF approach but additionally isolate the response of corporate *taxable income* rather than profits, showing that a regionally-targeted bonus depreciation program in Japan enlarged the tax base. Thus, in that episode the tax breaks granted to large firms paid for themselves. Policies can also induce cross-tax base spillovers. Siegloch et al. (2025) estimate negative spillovers to income and property tax revenues after local governments lower their manufacturing subsidy rate, necessitating rate hikes on those tax bases.

In instances where data on these other outcomes of interest are hard to come by, researchers examine changes in residential or commercial real estate values as a proxy for the net welfare effects (e.g., Greenstone and Moretti, 2003). The intuition underlying this approach is that changes in real estate values induced by a policy reflect residents' willingness to pay for the neighborhood improvements generated by that policy.[30] A related concept is the Marginal Value of Public Funds (MVPF) introduced by Hendren (2016) and Hendren and Sprung-Keyser (2020), which divides the willingness to pay for a benefit – computed via dynamic causal estimates – by the costs incurred by the government. Policies that pay for themselves over time have an infinite MVPF. Directly translating a CPJ estimate into an MVPF requires heroic assumptions, such as the assumption that all newly created jobs are taken up by local residents who were previously jobless. The MVPF metric is rarely invoked in the PBP literature (Hyman et al., 2023 and Siegloch et al., 2025 being notable exceptions), likely due to a lack of longitudinal data on the costs and benefits accruing to all local stakeholders.

[30] Theoretically, whether the cost of a policy is capitalized into land values depends on whether it is financed by property taxes. In such cases, appreciation in land price indices is a more appropriate measure of the potential welfare effects.

5.2 Incentive Compatibility Constraints in Policy Design

Ex ante methods for scoring the design of PBPs involve assessing the scope for firms receiving transfers to renege on their promises. In other words, do the policies align the incentives of policymakers with those of participating firms? The Foxconn deal summarized in Section 1.1 is a cautionary tale of what can happen when contracts granting large tax breaks do not account for possible reversals in corporate decisions. The ultimate costs to taxpayers can be larger than the headline amounts pledged to firms. Acting through local planning and development boards, municipalities may set aside additional funds for investments which are irreversible in the short-run, such as improving road or utility access to make way for an incoming manufacturing plant. To the extent many of these publicly sponsored capital improvement projects are financed through municipal bond issues linked to tax revenue forecasts, corporate reversals can hamper a jurisdiction's ability to repay debt and lead to downgrades in its credit rating.

To protect taxpayer interests, tax breaks negotiated with individual firms might contain clauses allowing the government to take back funds ("clawbacks") or revoke benefits altogether ("rescissions") if certain goals are not met within an agreed upon time frame (Ledebur and Woodward, 1990). Governments may also renegotiate with companies or impose penalties if firms fail to achieve previously pledged jobs or investment numbers.[31] Local revitalization schemes include phase-out provisions to encourage long-term investments; Opportunity Zone investors only receive a basis step-up towards reducing their capital gains tax bill after leaving their money in an opportunity fund for at least five years. Programs like those offered through the Small Business Administration (SBA) monitor whether funds are used to to create jobs or simply enrich the company's founders. At the same time, raising compliance costs may limit firms' interest in participating in a PBP and increase the costs of administering the program (Matkin, 2010).

Clawback clauses appear widely in programs run by cities or states with high administrative capacity yet are inconsistently enforced (Peters, 1993). In a few cases, clawbacks coupled with flexibly negotiated performance agreements lead to positive outcomes such as increased employment and business expansion, as in the California Competes Tax Credit program (Freedman et al., 2023a; Hyman et al., 2023). However, when clawbacks are enforced in isolation of other incentive compatibility features, they have no effect on job creation (Jensen, 2017). Since the empirical evidence on clawbacks is based on case studies from a handful of states and time periods, modern tools for text-based analysis can be applied to press releases and any non-confidential agreement documents to generalize best principles in contract negotiation for governments. Doing so will also allow researchers to better isolate the role of individual clauses on program performance.

Governments can discipline firms by instituting mandatory reporting requirements for the

[31] The state of Wisconsin eventually renegotiated its deal with Foxconn. Wisconsin scaled down the original 2018 deal of $2.85 billion in state tax credits in exchange for 13,000 jobs and $10 billion in investment to $80 million in exchange for 1,454 jobs offering an average wage of at least $53,875 and investments of $676 million (Tabak, 2022).

use of subsidies or tax abatements and issuing press releases to increase transparency. Like clawbacks, mandated monitoring through disclosure provisions exhibits mixed effectiveness. Renegotiation of contracts, as seen with the Texas Enterprise Fund (Jensen and Thrall, 2021), is common but often leads to reduced transparency and weaker enforcement, with firms more likely to challenge public accountability measures. Internal monitoring (i.e., laws requiring disclosure between government agencies) is linked to enhanced local employment and reduced subsidy dependency, whereas external disclosure has little impact on local economic outcomes. The null effect of external disclosure comes from governments posting stale information that inhibits monitoring by the public (De Simone et al., 2025).

The repeated game aspect of place-based subsidy-giving can act as a disciplining device for firms that rely heavily on tax benefits. That is, if policymakers display their willingness to deny future subsidies to firms due to past failures to meet targets, then this may improve program performance. Firms that meet their targets are more successful at obtaining subsequent subsidies in both the same state and other states (Dong et al., 2023). By sharing records across agencies and jurisdictions, internal monitoring can thus facilitate the writing of incentive-compatible contracts through the credible threat of policymakers playing a grim trigger strategy.

5.3 Inter-Jurisdictional Tax Competition

A drawback to place-based policies is that they may contribute to a "race to the bottom" problem, whereby the tax-preferred treatment of firms in one jurisdiction encourages other state and local governments to compete for corporate investment by cutting tax rates or instituting their own PBPs. In the U.S., states compete more intensely on out-of-pocket tax incentives (e.g., grants and direct subsidies) than on tax revenues forgone through tax breaks (Wang, 2018). Inter-jurisdictional tax competition may have contributed to the increase in incentive spending (as a percentage of gross taxes) from 10% in 1990 to 30% in 2015, according to the Bartik (2017) database. An increase over time in local business tax incentive spending is consistent with a pattern of local governments escalating non-cooperative prisoner's dilemma behavior, which has led to bans on firm-specific subsidies within the European Union.[32]

Ferrari and Ossa (2023) incorporate this game-theoretic intuition into an economic geography model in which states compete by adjusting their total transfers to firms. Observed subsidies are closer to the cooperative equilibrium, but full Nash competition would result in a national welfare loss of 1.3%. Local jurisdictions may also engage in competition for tax revenues, subject to constraints imposed by higher levels of government, or yardstick competition if elections are sufficiently contentious and voters use tax policy as a litmus test for the competence of incumbent politicians (Agrawal et al., 2022). The private benefits derived by politicians' increased reelection chances from attracting businesses intensifies competition between nearby towns (Kim, 2023).

[32]Most models of inter-jurisdictional tax competition do not feature dynamics. An exception is Barseghyan and Coate (2016) who present a dynamic Tiebout sorting model focusing on the interplay between zoning and property taxes rather than incentives aimed at firms.

Within the class of auction models, a famous theoretical result from Black and Hoyt (1989) is that competition for industry is not necessarily a zero-sum game and can lead to efficiency gains. This result relies on the assumption that providing firms tax relief helps governments price discriminate for publicly provided goods and services and thus raise revenues more efficiently. There is a long history in the U.S. of communities submitting bids with the help of firm relocation brokers such as the Fantas Factory Locating Service, founded in 1919 and eventually absorbed into consulting giant Deloitte in 1996 (Phelps and Wood, 2023). Narratives from the real estate journal *Site Selection* indicate that large firms' plant location choices typically occur in two stages – an initial stage in which firms create a shortlist of suitable locations, and a final round of bidding between two or three shortlisted candidate sites (Greenstone and Moretti, 2003).

The narrative evidence motivates modeling tax competition as an open outcry ascending (English) auction to account for the stage-based nature of the bidding process. A private-value auction setting with these features calibrated to data on firm-specific subsidies leads to the conclusion that competition increases welfare by 4% compared to a subsidy ban, as in the EU. Yet, firms capture the entire surplus generated by competition, leaving state governments worse off than in the counterfactual scenario of a federal subsidy ban (Slattery, 2025).

There is limited empirical evidence on the relation between local tax competition and real economic outcomes. This is partly to do with the fact that the intensity of competition a government faces is endogenous to the local economic conditions driving their decision to implement place-based policies. Mast (2020) devises an instrument based on the fixed boundaries of counties to document that competition between New York municipalities results in increased property tax abatements but with virtually no effect on firms' location decisions. Wilson (2009) assumes a CES production function for R&D services and estimates that competition via state R&D tax credits is a zero-sum game; a state's own elasticity of R&D investment with respect to in-state user costs of capital is empirically equivalent to the same elasticity with respect to out-of-state user costs. Existing evidence is more in line with the conjecture that local tax competition is zero sum.

5.4 Equity-Efficiency Tradeoffs

The first explicit reference to a "place-based policy" is in Winnick (1966), who criticizes PBPs as distortionary and counter-productive. Winnick (1966) contrasts place-based policies with "people-based policies" in which transfers are given directly to individuals, arguing that improving aggregate welfare can only be accomplished through directing funds to the most productive places. In a famous metaphor, Arthur Okun raises a similar concern that attempts at tax-based redistribution may ultimately backfire: "the money must be carried from the rich to the poor in a leaky bucket. Some of it will simply disappear in transit, so the poor will not receive all the money that is taken from the rich" (Okun, 1975, p. 91).

Place-based policies feature an equity-efficiency tradeoff. In the absence of market failures such as incomplete or asymmetric information and incomplete financial markets, firms will engage

in NPV-positive projects. In choosing to subsidize particular firms or locations, firms invest in some projects that are profitable but not NPV-positive from the perspective of unsubsidized entities or those whose taxes finance the subsidies. Okun was concerned with leakages related to administrative costs of the tax system and taxes dis-incentivizing wealth accumulation, but PBPs create distortions related to firms allocating resources across space. Accounting for fiscal federalism in a model where both workers and firms can freely sort across states on the extensive margin, Fajgelbaum et al. (2019) estimate that harmonizing state personal and corporate income tax rates would increase worker welfare by 1.2% in the long run.

The bidding war between municipalities initiated by Amazon's 2017 announcement to open a second headquarters (HQ2) illustrates how local tax breaks to attract firms can create a wedge between the best interests of the firm and those of the broader economy, as proxied by house prices. Amazon initially decided to locate HQ2 in Long Island City in Queens, New York, resulting in a preemptive spike in nearby house prices of 17.5%, compared to a 4.9% increase in house prices around Crystal City, Virginia where Amazon eventually located after facing unforeseen political opposition in New York (Chen et al., 2024). Misallocation in PBPs can also occur across locations on the intensive margin. Cerqua and Pellegrini (2018) estimate a concave relationship between per capita GDP growth and the intensity of transfers received by lagging regions from EU Structural and Cohesion Funds. Hence, excess funds granted to some regions could be allocated to other regions without harming economic growth.

Efforts to quantify equity-efficiency tradeoffs through the lens of spatial models with firms sorting across locations indicate that the welfare losses of top-down PBPs can be substantial.[33] When mobile firms with heterogeneous productivity react to financial incentives and face agglomeration externalities based on city size, place-based subsidies lead to large welfare losses by reducing aggregate TFP, even after accounting for gains from decreasing congestion; Gaubert (2018) shows in simulation exercises that a 1% subsidy to smaller cities reduces aggregate TFP by 1.05% and welfare by 1.4%. Alternatively, policies which increase housing supply elasticities by relaxing statutory constraints on building allow cities to freely grow, amplifying agglomeration externalities and increasing aggregate productivity.[34] Removing barriers to new development can be a powerful place-based policy tool in that it lowers firms' fixed costs to entering new markets.

Workhorse models assume a constant agglomeration elasticity across locations, meaning that a firm hiring an additional worker in New York City generates the same productivity externality as an otherwise identical firm hiring one more worker in Baltimore (Kline and Moretti,

[33]This class of models abstracts from allocative inefficiencies arising from inter-jurisdictional tax competition by considering policies which are implemented by a central planner. Hence, the quantitative findings are mostly relevant to federal place-based policies.

[34]The magnitude of the productivity gains from potentially relaxing housing supply constraints is subject to debate in the quantitative spatial economics literature. Hsieh and Moretti (2019) find in a neoclassical spatial model that relaxing land-use regulations in the three most productive U.S. cities (New York, San Francisco, and San Jose) would increase GDP by 3.7%. However, modeling land use restrictions as a shock to an elasticity renders the welfare effects dependent on the choice of a denominator (i.e., house price elasticity with respect to population levels vs. population growth). Accounting for this problem by adjusting the elasticities in a unit-invariant way and then performing the same counterfactual exercise, Greaney (2025) revises down the bump in GDP to 0.02%.

2014b). Relaxing this assumption can overturn the standard result that place-based policies are welfare-reducing if agglomeration forces are stronger in poorer areas. Kline and Moretti (2014a) show evidence of constant agglomeration spillovers across locations with different population density levels, leading to the conclusion that the TVA's positive effects on local manufacturing productivity cancel out in aggregate. Glaeser and Gottlieb (2008) express skepticism about PBPs given that these elasticities are difficult to estimate, leading to instances where the government picks the wrong locations to subsidize from an efficiency perspective. Causally estimating local agglomeration effects would require an exogenous shock to labor inflows that only influences firm output through productivity and not through the shock's impacts on other factors of production. A candidate shock frequently proposed in the literature is the opening of "million dollar plants," with which researchers compare productivity changes in winner counties where a large manufacturing plant decided to locate to shortlisted, counties that made an unsuccessful bid for the plant (Greenstone et al., 2010).

Using a canonical urban framework with agglomeration spillovers, Fajgelbaum and Gaubert (2025) derive cases in which the equity-efficiency tradeoff disappears. On top of allowing for heterogeneous spillovers across locations, if there are sufficiently negative spillovers from density (i.e., congestion) or positive spillovers from high to low-skilled workers within a location (as in Fajgelbaum and Gaubert, 2020), then it is possible to increase efficiency by redistributing to lagging regions. Making the latter amendment would be consistent with empirical evidence that higher-skilled workers are scarce in low-wage areas, and thus, for this reason, firms participating in revitalization programs tend to hire workers who reside outside the subsidized zones. Incorporating cross-regional knowledge spillovers through firms is another way to weaken the equity-efficiency tradeoff. Abstracting from tax revenue collection, locating million dollar plants in less-developed areas can be welfare improving when plants in the same industry share knowledge with each other (Giroud et al., 2024).

Models of firms sorting across location do not allow firms to invest physical capital across locations on the intensive margin. Oberfield et al. (2024) enrich the standard firm sorting paradigm by allowing firms to choose where to locate and how many plants to open at a particular location. The model is rich enough to include cannibalization of demand among local plants, span of control costs, and transport costs. However, by not allowing the physical size of plants to vary across locations, there is still no intensive margin of capital investment. Incorporating firms' dynamic investment problem into quantitative spatial equilibrium would accommodate the possibility of agglomeration through capital inputs, but at the cost of computational tractability. Newly developed methods for solving dynamic urban models (e.g., Greaney et al., 2025) may help recover the welfare implications of capital investment for place-based policies.

6 Persistent Effects on Regional Development

While there are many studies of regional development policies, the literature has mostly investigated the effects of transfers to firms during periods when a place-based program is still active. Given that policymakers craft PBPs with a goal of reversing longer-term trends of widening inequality across regions, failing to study long-run effects leads to the question of whether this objective is realized. If local subsidies are only effective at attracting young firms at the greatest risk of failure, or mature firms with more mobile or reversible investments – that is, those less dependent on physical inputs – then jobs and capital may vacate struggling areas soon after a program expires.

Addressing this question is important due to a common pattern across OECD countries of a decline in regional convergence or even divergence in incomes in the late 20th century. Regions are said to be economically converging if initial conditions are negatively correlated with subsequent growth, or diverging if there is a positive correlation. For instance, if within a particular country cities with higher initial per capita incomes experience greater long-run per capita income growth, that country would be experiencing divergence. Since the decline of traditional manufacturing beginning in the 1970s, the U.S. has witnessed a stark decline in per capita income convergence (Ganong and Shoag, 2017) and prime-age male employment rates (Austin et al., 2018), while poverty rates have converged across locations Gaubert et al. (2021).

Evidence on the persistent effects of PBPs is more prevalent for industrial policies initiated at the federal level which define precise geographic boundaries wherein firms are eligible for special benefits. Notable examples of historical industrial policies in this vein include the Tennessee Valley Authority (TVA) during the New Deal Era of the U.S. (Kline and Moretti, 2014a), the creation of Science Cities in mid-1930s Soviet Russia (Schweiger et al., 2022), South Korea's Heavy and Chemical Industry Drive in the 1970s (Choi and Levchenko, 2025), and Japan's Technopolis and Intelligent Location tech hubs programs during the 1980s and 1990s (LaPoint and Sakabe, 2021). With few exceptions, studies assessing long-run persistence do not track individual firms over time, relying instead on local aggregate outcomes. The lack of longitudinal data on outcomes for firms renders the economic mechanisms for successful place-based development opaque. Linking large amounts of underlying documents across manufacturing firm censuses with the aid of modern machine learning and AI-based digitization techniques pioneered in the 2020s can help overcome this hurdle (Dell, 2025).

The long-run net effects for areas selected by industrial PBPs are mixed and differ depending on which inputs to firm production receive subsidies. Ehrlich and Seidel (2018) study a West German policy active from 1971 to 1994, the *Zonenrandgebiet* (ZRG), designed to help compensate firms close to the East German border for being cut off from markets on the other side of the Iron Curtain by offering them loan guarantees and investment subsidies. The ZRG generated persistent positive effects on population density and the capital stock along the old West-East German border up to 2010. Lane (2025) documents persistent TFP gains from Korea's experience in the 1970s, which promoted comparative advantage among heavy-chemical

industries in the southeast part of the country; Choi and Levchenko (2025) show using firm-level data that firms subsidized by the same policy have higher sales growth even thirty years later. In the twenty years after Technopolis began, LaPoint and Sakabe (2021) find no evidence that the program helped cities home to tech hubs eligible for physical capital subsidies catch up to ineligible cities in terms of manufacturing employment or real value added measures. In contrast, Italy's attempts to establish industrial clusters in the 1960s and 1970s led to agglomeration spillovers to the service sector, resulting in higher local wages and human capital attainment up to fifty years later (Incoronato and Lattanzio, 2024). Pellegrini and Muccigrosso (2017) ask whether firms receiving place-based subsidies through the European Union Structural Funds Program in Italy survive longer and conclude that firms receiving start-up assistance have greater survival probabilities even after the five-year vesting period ends.

In the U.S., much of the evidence on long-run effects comes from research into the local labor market impacts of industrial mobilization around World War II, again with mixed evidence of persistent net gains for targeted regions. Garin and Rothbaum (2024) show that children born to lower-income families benefited from higher-wage jobs in adulthood as a result of government-financed construction of manufacturing plants outside major urban centers. Cobb (1993) argues via narrative evidence on campaigns to attract large firms led by local officials in the South in the 1930s and 1940s that boosters' campaigns may have kept wages low relative to the North due to an emphasis on industrial agriculture. Jaworski (2017) empirically validates this negative view of southern industrial policy by documenting no differential postwar growth in counties receiving more capital investment during WWII. Freedman (2017) zooms in on Mississippi's 1930s Balance Agriculture with Industry Program, which primarily brought new textile plants and persistently raised female labor force participation but lowered male labor force participation.

A consistent feature among long-run successes in the policies previously described is the philosophy of a "big-push" strategy combining direct transfers to firms with government infrastructure investment. Historical case studies highlight the importance of solving the problem of lower initial marginal productivity in areas selected for place-based assistance. Given financial constraints and the large fixed costs involved in improving transportation networks, firms acting on their own may find it unprofitable to invest in solutions using funds they directly received from place-based subsidies. Inferior transportation infrastructure can increase managerial span of control costs (Gumpert et al., 2022) and inhibit skill-based matching between workers and firms (Michaels, 2008).

7 Conclusions

Place-based policies (PBPs) offer tax breaks and credit to firms conditional on the allocation of jobs or capital to specific areas. Policymakers often hope that PBPs will be a useful lever for mitigating regional inequality or fostering political goodwill among their constituents. Given their importance from a fiscal budget perspective and policymakers' focus on bringing jobs to

economically peripheral areas, research has extensively focused on employment growth relative to forgone tax revenues (i.e., the cost per job metric) or house price capitalization effects to gauge the success of PBPs.

Beyond these commonly invoked metrics of policy success, two major insights have emerged from the literature using micro-data on firms receiving place-based subsidies. One is the role of competition among firms and incentive compatibility clauses in the contracts, such as clawbacks in the event that firms scale back their local operations or are otherwise unable to fulfill their promises to the government. The absence of these features can lead to spatial misallocation and benefits failing to accrue to residents of areas targeted by the policy. The second is the importance for takeup rates of frictions related to distance between policy catchment areas and the nucleus of a firm's operations. The remoteness of the tax-advantaged area matters for several reasons, including transportation costs, managerial span of control costs, and the thickness of local labor markets along worker skill dimensions that are critical for the firm's production process (e.g., semiconductor engineers).

Primarily owing to data limitations, far fewer studies have been conducted on other dimensions of corporate or small firm responses to place-based tax incentives, particularly on how firms might alter their non-labor production inputs and capital structure or reconfigure their competitive strategy over longer-run investment horizons. Empirically identifying these underexplored margins of firm adjustment to PBPs is a crucial task for rationalizing discrepancies between cost-benefit estimates across different policy experiments, even when those studies exploit the same tax instrument (e.g., bonus depreciation) and use similar samples of firms. Doing so will allow the academic literature to converge towards a set of general policy design principles. Spillovers across tax-bases may undo or amplify the net revenue position of the original place-based tax incentives offered. Accurately measuring the overall costs of a given program would then require linking firm balance sheets to administrative tax data – efforts which have become increasingly common since the 2010s.

The early twenty-first century has ushered in a new era of place-based policies expanding the traditional corpus of targeted subsidies or neighborhood revitalization plans implemented through the income tax system. Large-scale federal industrial policies, such as the 2022 CHIPS and Science Act in the U.S. and the EU Structural Funds Program, combine regional redistribution objectives with mandates to strengthen domestic supply chains in high-tech manufacturing sectors deemed vital for continued economic growth. The scale and complexity of top-down industrial policies requires vertical integration of federal, state, and local agencies with participation by private firms and nonprofits who help funnel funds to local experts and source human capital (Hanson et al., 2025). Place-based policies continue to evolve to meet global societal challenges such as climate change adaptation and mitigation – problems which will impose unequal costs both within (Bilal and Rossi-Hansberg, 2023) and across countries (Newman and Noy, 2023). Firms will continue to play an integral part in the innovations and reallocation of resources necessary to overcome these challenges. Generative AI-powered digitization methods can process large amounts of textual documents pertaining to building

permits, job postings, economic consulting reviews of development projects, and local public budget reports. Modern digitization techniques thus provide new avenues for researchers to scale up analyses of existing place-based policies and pierce the corporate veil.

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