Financing Growth with Future Property Taxes*

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ABSTRACT

Can cities use future incremental property tax revenue in underdeveloped areas to finance current investment and stimulate business dynamism? Exploiting the staggered rollout of Tax Increment Financing (TIF) legislation beginning in the 1960s, we find that allowing municipalities to earmark future incremental property tax revenue for economic development increases the annual net-entry rate of small firms. This dynamism creates new jobs, reduces poverty rates, and lowers enrollment in food-assistance programs among individuals without a college degree. However, TIF also raises municipalities' borrowing costs and diverts funds from other public services, implying spillover costs up to $637,000 per additional firm created.

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1 INTRODUCTION

Most countries face significant and persistent spatial disparities in business dynamism. Place-based policies, through targeted public investments and subsidies, seek to reshape this geography of economic activity by spurring business creation. However, most place-based policies rely on cross-subsidization, whereby wealthier taxpayers fund investments in underdeveloped regions, a design that frequently incites political opposition. Fewer interventions tap on expected future value creation to finance current investment, partly due to challenges in measuring value creation and designing commitment mechanisms for recoupment.

One potential approach is to capture value through projected property tax revenues. Since property values often reflect the value of new economic activity, municipalities can pledge anticipated increments in property taxes to finance current investment, such as infrastructure improvement or direct subsidies. On one hand, this policy could work: local governments have large expertise at assessing property values. On the other hand, information asymmetries may make it difficult to screen out businesses that do not need support, risking cross-subsidization as funds could be diverted from other public services.

To date, nearly all U.S. states have enacted legislation permitting municipalities to earmark future increments of property tax revenue for economic development. This mechanism—commonly known as tax-increment financing (TIF)—is widely used, with more than 10,000 TIF districts nationwide capturing a substantial share of property tax revenue (Merriman, 2018).[1] Despite its prevalence, much of the existing research is restricted to one-city settings, focusing on the impact on real-estate prices (Merriman, 2018; Neumark and Simpson, 2015).[2] While a few single-city studies find no significant effects on job creation (Czurylo, 2023; Dye and Merriman, 2000), our understanding of TIF's impact on broader economic outcomes remains limited.[3]

[1] For example, in 2023 TIF revenues accounted for 42% of the City of Chicago's property tax collections (Cook County Clerk's Office, 2024).

[2] A significant portion of the literature examines Chicago, which has made historical maps of all TIF districts publicly available.

[3] For a recent review, see Greenbaum and Landers (2014).

Focusing on outcomes at the county and state levels, far beyond the boundaries of individual districts, we provide new evidence on whether TIF impacts net new business formation and employment, rather than simply shifting development from one location to another. Our paper is the first to examine, at a national scale, how this financing mechanism affects business dynamism, job creation and destruction, and poverty rates. We also introduce a simple framework that captures the key features of TIF. Firms with heterogeneous, privately known productivities face fixed entry costs and pay property taxes. Municipalities fund support from the project's incremental property tax, to target firms that are marginally profitable, at the risk of attracting highly profitable firms that may mimic the targeted recipients. To deter such mimicry, municipalities must design policies that over-subsidize small firms.[4]

We find evidence consistent with our framework. Using exogenous variation in access to TIF, we estimate that the policy increases the annual growth rate of business establishments by 0.7 percentage points—about a 40% rise relative to the baseline—with effects that persist for over a decade. The impact is mostly concentrated among small businesses, and present in both nontradable and tradable sectors. This suggests that the policy stimulates the creation of local firms that otherwise would not have existed, but it also finances firms that should not qualify for support. Using government finance data, we estimate the fiscal cost to municipalities per additional business created under this policy to be up to $637,000.

To identify the impact of TIF on economic development, we use the roll out of state-level legislation that allow municipalities to earmark future property tax revenues for economics development. A potential concern with our staggered DiD analysis is the endogeneity associated with the timing of state adoption of incremental property tax financing laws. U.S. states facing declining business dynamism or weaker economic prospects may have been more likely to adopt this financing mechanism, potentially biasing our estimates. However, both historical context and empirical evidence suggest otherwise. The emergence of this financing mechanism rested on a fundamental tension:

[4]The framework also yields additional testable predictions, which we discuss below.

cities felt pressure from private developers to enable incremental-revenue financing, while legislators, who were wary of reallocating property tax revenues amid a nationwide tax revolt, hesitated to adopt an untested policy tool. This tension created large uncertainty over which states pioneered these laws first.[5] Consistent with this institutional background, we confirm that a broad set of economic variables – including income levels, poverty rates, educational attainment, unemployment rates, and political alignment – do not predict the timing of legislative changes. We further verify no evidence of differential pre-trends in the outcomes of interest prior to the adoption, based on the event-study estimates.

We assemble a new dataset that combines the timing of state-level legislative changes, county-level adoption dates, and bond issuance activity. We merge these data with measures of business creation and destruction from the County Business Patterns (CBP) and the Business Dynamics Statistics (BDS), as well as individual-level data from the Current Population Survey (CPS) and the Panel Study of Income Dynamics (PSID). Finally, we link this dataset to local public finance information from the Census of Governments (CoG).

We find that TIF increases the statewide net annual business-entry rate by 0.52 percentage points. This effect is driven primarily by small firms with fewer than 5 employees, for which the net annual entry rate rises by 1.04 percentage points. Among firms with more than 20 employees, the effect is roughly one-fifth as large and not statistically different from zero. We also find that small-business entry occurs across several sectors—including retail, construction, and manufacturing. This widespread creation across the tradable and non-tradable sectors sheds light on the efficacy of this financing policy. Whereas entry by small non-tradable businesses depends on local economic conditions, entry in tradable sectors is less dependent on the local economy and may reflect subsidy-seeking.

Beyond state- and county-level business outcomes, we examine how this financing mechanism affected individual economic outcome. Using the staggered adoption of enabling laws, we find

[5] U.S. States who did not adopt this new financing tool initially continued to rely on traditional funding mechanisms.

large and persistent distributional effects. Adoption reduces statewide poverty rate among individuals without a college degree by 1.2 percentage points – nearly a 10% decline relative to the mean. Using a longitudinal panel, we show that this group experiences greater income stability and fewer years with very low earnings, while the incomes of college-educated individuals remain unaffected. These effects are not driven by selective migration or displacement, indicating genuine improvements in local labor market conditions for lower-skilled workers.

Lastly, using Census of Governments data, we quantify the spillover effects of TIF on overlapping local governments. We find sharper increases in interest payments for counties and declines in general expenditures for municipalities. This pattern suggests that counties – typically not direct issuers of TIF, bear much of the fiscal burden through higher borrowing costs, while municipalities absorb the risks by reducing essential services. Aggregating the cost, we find that the spillover cost of creating one additional firm for a typical county ranges from $49k to $637k.

We then provide additional evidence on the mechanisms behind these outcomes. First, we show that the observed effects are driven by the actual implementation, rather than mere legislative approval, using newly hand-collected data on the first adoption dates at the county level. Moreover, the intensity of financing – proxied by amount of bond issued per capita – strongly predicts establishment growth, emphasizing the role of information frictions in limiting its impact. Finally, we demonstrate that other place-based policies are unlikely to confound our results by showing uncorrelated timing of their implementation years.

Taken together, our findings show that enabling local governments to reinvest future property tax revenues in underdeveloped areas into their own communities can stimulate business growth and increase demand for lowe skilled labor, thereby reducing poverty and inequality. To the best of our knowledge, this paper is the first to provide a comprehensive analysis of the long-run economic and distributional consequences of this widely used local financing tool on a national scale.

Literature review. [To be completed] Most of literature on TIF has primarily examined its impact on real estate prices (Neumark and Simpson, 2015). Evidence on its broader economic impact of

TIF remains scarce, as much of the existing research is limited to a single-city analysis and relies on weak causal settings (Merriman, 2018).[6] This body of work suggests that TIF has no significant impact on economic development and may sometimes have a negative effect (Czurylo, 2023; Dye and Merriman, 2000).[7] However, it is unclear whether this lack of evidence of TIF effects stems from limitations in causal inference and data availability, or whether it reflects the true absence of meaningful positive effects. California's recent decision to end TIF after six decades further questions the potential impact of this policy tool.

2 TAX INCREMENT FINANCING

Although it was initially used to target blighted neighborhoods, TIF has since been expanded to foster economic development in any type of land. It allows municipalities to allocate a portion of future tax revenues—generated by rising property values within a designated district—to finance current investments in infrastructure, redevelopment, or other public improvements. The key insight is to leverage anticipated growth in property taxes to fund projects that would not exist without public funding or enhancements to public infrastructure.

While the specific steps vary for each US State, initiating a TIF project usually begins with identifying a target area—typically one that is blighted or underdeveloped—and preparing a comprehensive proposal.[8] This proposal outlines not only the planned physical improvements but also includes detailed financial projections, such as anticipated increases in property values and the corresponding tax revenue (the "increment") expected from these enhancements. The increment in property tax revenue may stem from new building construction (*extensive margin*) or from value appreciation (*intensive margin*) of existing commercial and residential real estate—we detail

[6] A significant portion of the literature focuses on Chicago, as the city has made historical mapping of all TIF districts publicly available.

[7] For a recent review of the literature, see Greenbaum and Landers (2014).

[8] Examples of TIF projects include downtown revitalization initiatives that renovate historic districts and create vibrant public spaces, the redevelopment of abandoned industrial sites into mixed-use facilities, infrastructure improvements that upgrade roads and transit systems, and the creation of sports and entertainment districts designed to attract visitors and stimulate local spending. Section 2.3 offers three specific examples.

below how the increment is computed.[9] A key part of the process is conducting rigorous feasibility studies that involve economic forecasting and boundary delineation to precisely define the district where the future tax increment will be captured. At this stage, proponents may also craft a financing strategy, choosing between issuing TIF bonds or securing a loan.

Following the initial proposal, the project moves to the public hearings phase where community members are invited to review and offer feedback on detailed plans. These public hearings and legal notices help promote transparency and allow stakeholders to express concerns regarding the potential diversion of tax revenue from other public services, especially from school districts. Once public input has been gathered, specialized committees, often comprising planning department officials or TIF advisory groups, review the proposal for legal and fiscal compliance. After potential refinements, the proposal is submitted to the local legislative body, such as a city council, where a formal vote takes place. If approved, the project then proceeds to the financing execution phase. For projects that lead to the issuance of TIF bonds, this means drafting a bond indenture, working with underwriters, and establishing repayment schedules tied to future incremental revenues. For projects using loans, it involves negotiating terms with financial institutions that match the forecasted cash flows. With financing secured, the TIF district is formally established through local ordinances, and the funds are allocated to carry out the redevelopment.

TIF is particularly beneficial for projects requiring upfront capital to overcome development barriers, such as inadequate infrastructure, obsolete facilities, or lack of coordination among companies. By leveraging projected tax revenues from future growth, local governments can finance these investments without raising overall tax rates or depleting general funds.[10] TIF also aligns public and private interests by linking the returns of public investments to increases in private property values.

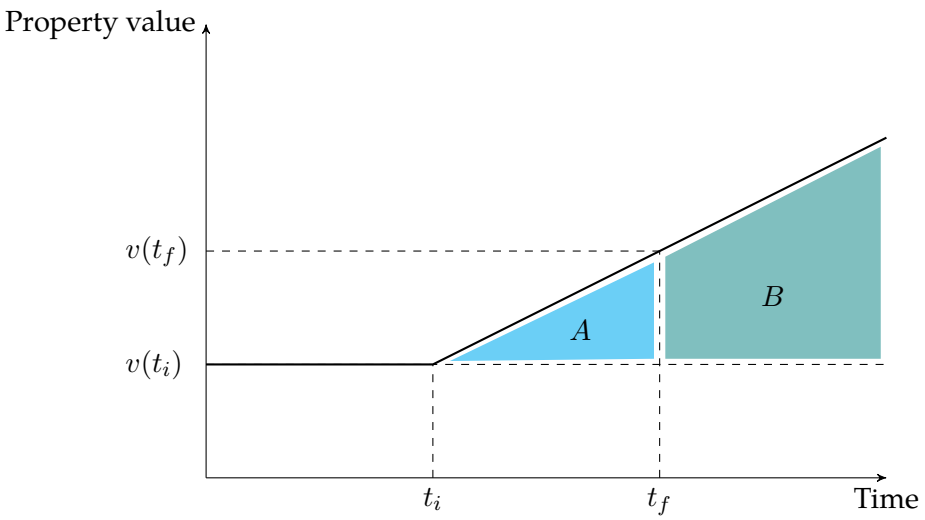
[9] For public improvements – such as road widening, sidewalk upgrades, or new streetlights – the full cost is repaid by adjacent properties within the district.

[10] Unlike other programs aimed at promoting local economic development, such as business improvement districts or special assessment programs, tax increment financing does not impose new taxes, fees, or rate increases. Taxpayers inside and outside the district face the same rates; only the distribution of revenues differs.

2.1 Computation of the *Increment*

When TIF district is established, the assessed value of all property within its boundaries on the start date is set as the "base" value. Taxes generated from this base continue to fund schools, counties, and other local government services. Any incremental increase in property tax revenue above this base— the "increment" – resulting from rising property values or new development is set aside to support development projects within the district, such as building new infrastructure or providing incentives for private investment. Cities can finance these projects upfront through bonds or loans backed by future tax revenues, or they can reimburse costs over time, all without raising statutory tax rates.

Figure 1: TIF cash-flows



Notes: This figure illustrates the incremental increase in property taxes generated by economic activity within the TIF district (Area A), which is then used to fund public infrastructure and provide subsidies within the district. The figure also depicts the additional tax base growth that occurs after the TIF district's termination (Area B), which can then be allocated to any public service across the county.

Figure 1 illustrates the cash flows generated in a TIF district. The value $v(t_i)$ represents the tax base value prior to the creation of the TIF district. This tax value continues to contribute to the tax base used for public services throughout the county after the creation of the TIF district. Area A depicts the total increase in property tax revenues that occur only due to the creation of the TIF

district at time t_i. This incremental revenue is directed toward development within the TIF district. TIF districts have a set duration, which may vary from 10 to 100 years. After their termination, the remainder of the increase in property taxes (Area B) will flow back into the county tax base.

2.2 TIF Financing

Municipalities offer funding to developers by pledging future increases in property tax revenue generated by a development to help finance that project. The most common approach is "pay-as-you-go" (PAYGO), where the developer fronts the costs and is reimbursed over time from the tax increment their project creates. Alternatively, cities may issue TIF bonds—debt repaid solely from the future tax increment—to provide upfront capital for infrastructure or site improvements. In some cases, municipalities may support private loans by pledging TIF revenues as repayment or offer direct tax rebates resembling TIF.

The structure depends on the size of the project, local policy, and the municipality's risk tolerance. PAYGO is lower-risk for the city and common for smaller projects, while TIF bonds are often used for large-scale developments requiring immediate funding. All arrangements are typically governed by a development agreement that outlines the terms, reimbursable costs, and performance expectations.

2.3 Three TIF examples

To provide a clearer understanding of TIF, section 8 in the Internet Appendix offers three examples: Millennium Park in Chicago, Hudson Yards in New York City, and State Road 46 in Bloomington, Indiana. The first two are large-scale projects that attracted significant media attention, while the latter is less well-known and may better represent a typical TIF project in a small urban/rural area.

2.4 Adoption of TIF

Although California introduced TIF in 1952, it did not become widely adopted until the 1970s and 80s, a period of declining federal funding to local governments for urban renewal. As federal grants and loans for urban redevelopment shrank, municipalities faced mounting pressure to find alternative ways to finance revitalization projects. TIF emerged as an innovative and novel option since it allowed cities to generate revenue for redevelopment by capturing future tax growth within designated districts, all without raising taxes or relying on state or federal funds. However, to use TIF, municipalities require a modification in state legislation, since TIF needs to "capture" an incremental increase in future property values.

Some municipalities pressed state legislators for the adoption of state-wide TIF laws.[11] Private developers also lobbied for the modification of state constitution (Weber and O'Neill-Kohl, 2013). However, the 1970s and 80s were marked by a tax revolt, a widespread public backlash in the United States driven primarily by frustration over rapidly rising property taxes (Campbell, 1998; Martin, 2008; Mound, 2020; Musgrave, 1979). Fueled by high inflation, soaring home assessments, and stagnant household incomes, the revolt started in California and quickly spread to the rest of the country.[12] Politically, the movement embodied growing resentment toward government expansion and inefficiency. This political environment created an aversion to want to adopt new policies that were associated with property taxes.

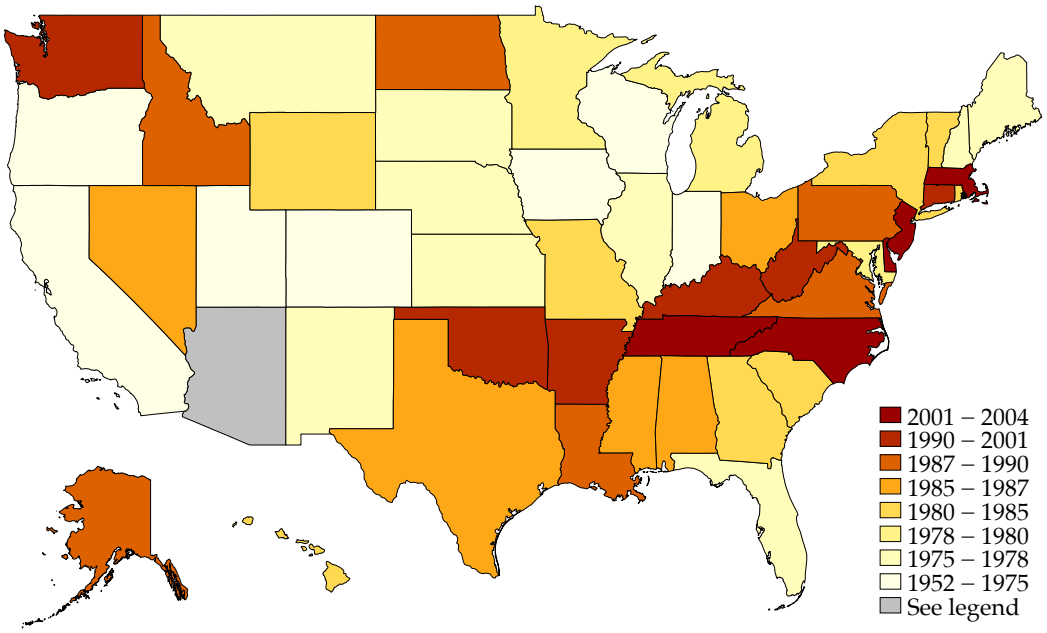
This tension—between the need to compensate for a lack of federal funding at the local level, pressure from private developers, and state legislators' political aversion to enacting legislation that would reallocate property taxes—creates uncertainty about which states might adopt TIF first. Indeed, the timing of adoption of laws permiting use of TIF varied across states. In states with more

[11] For example, in 1976 the city of Miami proposed a project to redevelop South Miami Beach and convert the area into a "mini" Venice with several canals. This project cost over $500 million in 1976 and planned to use $130 million in TIF funds provided via a TIF bond. Planners lobbied the state to amend the constitution to allow municipalities to use TIFs. The Legislature adopted an amendment—effective in 1977—that allowed community redevelopment agencies (CRAs) to use TIF. However, the project ultimately did not take off.

[12] This movement culminated most famously in California's Proposition 13 in 1978, which dramatically limited property taxes to 1% of a property's assessed value and restricted future assessment increases.

centralized governance or heightened public skepticism about new fiscal tools, state legislators may slow the adopt TIF laws. Massachusetts, for example, exhibited significant caution in approving TIF due to concerns about its potential misuse and the implications for diverting funds from essential services like education. Political risk aversion in such states was driven by fears of public backlash or unintended consequences, leading to more deliberate legislative processes.

Figure 2: Adoption of Tax Increment Financing across U.S. States



Notes: This figure depicts the staggered roll-out of state legislation introducing tax increment financing. Gray depicts states that either adopted TIF too early to be capture by the CPS data (California-1952, Oregon-1960), or do not allow the usage of TIF (Arizona). States that do not allow TIF are included in the analysis as never treated states.

Figure 2 shows the staggered adoption dates of TIF laws across various U.S. states. Light (dark) colors indicate states that adopted TIF laws earlier (later). A simple visual inspection reveals that there is no clear geographic pattern, as every region (Northeast, Midwest, South, and West) includes both early and late adopters. Arizona never adopted TIF laws. Section 5.2 tests whether a wide range of economic variables predict the introduction of TIF laws.

3 THEORETICAL FRAMEWORK

3.1 Setting

This section develops a simple framework to characterize the types of firms TIF successfully supports and the extent of revenue losses from subsidizing projects that would have entered regardless. In our model, there are $1 + \lambda$ mass of potential projects whose inputs are only capital: low types $\theta_L \sim \text{Unif}[0, 1]$ and a mass λ of high types with $\theta_H = 1$. Each project faces per-unit user cost of capital $r > 0$, pays property tax $\tau\epsilon k$ on the real estate share of capital $\epsilon \in (0, 1]$, so the effective capital cost is $\tilde{r} = r + \tau\epsilon$. Entry requires a fixed cost $F_e > 0$. This cost represents the investment needed to establish the basic infrastructure supporting the business, such as paving access roads, extending plumbing, and connecting electricity.

A type-θ firm chooses $k \geq 0$ to maximize profits under Cobb–Douglas technology $y = \theta k^\alpha$, $\alpha \in (0, 1)$:

$$\pi(\theta) = \max_{k \geq 0} \{\theta k^\alpha - \tilde{r}k\} - F_e.$$

The FOC gives

$$k^*(\theta) = \left(\frac{\alpha\theta}{\tilde{r}}\right)^{1/(1-\alpha)}, \quad \pi^*(\theta) = (1-\alpha)\theta\left(\frac{\alpha\theta}{\tilde{r}}\right)^{\alpha/(1-\alpha)} - F_e.$$

A firm enters iff $\pi(\theta) \geq 0$, implying cutoff

$$\theta_0 = \left(\frac{F_e}{1-\alpha}\right)^{1-\alpha}\left(\frac{\tilde{r}}{\alpha}\right)^{\alpha} \tag{1}$$

with normalization $F_e \leq (1-\alpha)(\frac{\alpha}{\tilde{r}})^{\alpha/(1-\alpha)}$ so that $\theta_H = 1$ always enters and $\theta_0 < 1$.

TIF Subsidy. Municipalities use TIF to cover entry costs F_e for low-type marginal entrants with $\theta < \theta_0$, financed by property taxes. For simplicity, we assume that the TIF support must

be covered by the project-level property tax collections.[13] Incremental property tax revenue is $\Delta T(\theta) = \tau\epsilon(\frac{\alpha\theta}{\tilde{r}})^{1/(1-\alpha)}$, and for TIF to be fiscally feasible, revenues generated by a subsidized project must be sufficient to repay the upfront support. This implies a break even requirement: $F_e < \Delta T(\theta)$, so $\theta > \theta_{\min}$, with

$$\theta_{\min} = \frac{\tilde{r}}{\alpha}(\frac{F_e}{\tau\epsilon})^{1-\alpha} \tag{2}$$

Policy and eligibility (observable k). Because types are unobservable but k is verifiable, the municipality offers TIF subsidy $s = F_e$ conditional on the realized capital choice. Using the entry cutoff θ_0 in (1) and the fiscal cutoff $\theta_{\min}$ in (2), the *TIF-eligible types* are $\Theta \equiv [\theta_{\min}, \theta_0] \cap (0,1)$ and the corresponding *eligible capital band* is $\mathcal{K} \equiv \big[k(\theta_{\min}),\, k(\theta_0)\big]$ with $k(\theta) = \left(\frac{\alpha\theta}{\tilde{r}}\right)^{1/(1-\alpha)}$. The mass of subsidized low types is $m_L = \max\{0, \theta_0 - \theta_{\min}\}$.

High types and mimicry Because types are unobservable but k is verifiable, a high type ($\theta_H = 1$) can choose $k = k(\theta)$ for some $\theta \in \Theta$ and claim $s = F_e$. Mimicry is privately profitable iff $\pi(1) \leq \pi(\theta) + F_e$. Let $\theta^* \in (0,1)$ solve $\pi(1) = \pi(\theta^*) + F_e$. Then the *mimic-prone portion* of the eligible set is

$$\Theta_M \equiv \big[\max\{\theta^*, \theta_{\min}\},\ \theta_0\big] \cap \Theta, \tag{3}$$

and separation obtains exactly when $\theta^* \geq \theta_0$.

Policy choice. The municipality can (i) *separate* by narrowing eligibility to $\mathcal{K}_{\text{sep}} = [k(\theta_{\min}),\, k(\min\{\theta^*, \theta_0\})]$, which eliminates mimicry at the cost of excluding some low types; or (ii) *accept* mimicry by keeping the full band $\mathcal{K} = [k(\theta_{\min}), k(\theta_0)]$ and trading off induced low-type entry against subsidized high-type take-up.

[13] We treat $\Delta T(\theta)$ as the post completion *flow* of incremental property tax revenue. The municipality finances the one-time F_e with a TIF bond and repays it from these flows, abstracting from discounting/interest; thus the break-even rule $F_e \leq \Delta T(\theta)$ is interpreted as a flow condition over the repayment window.

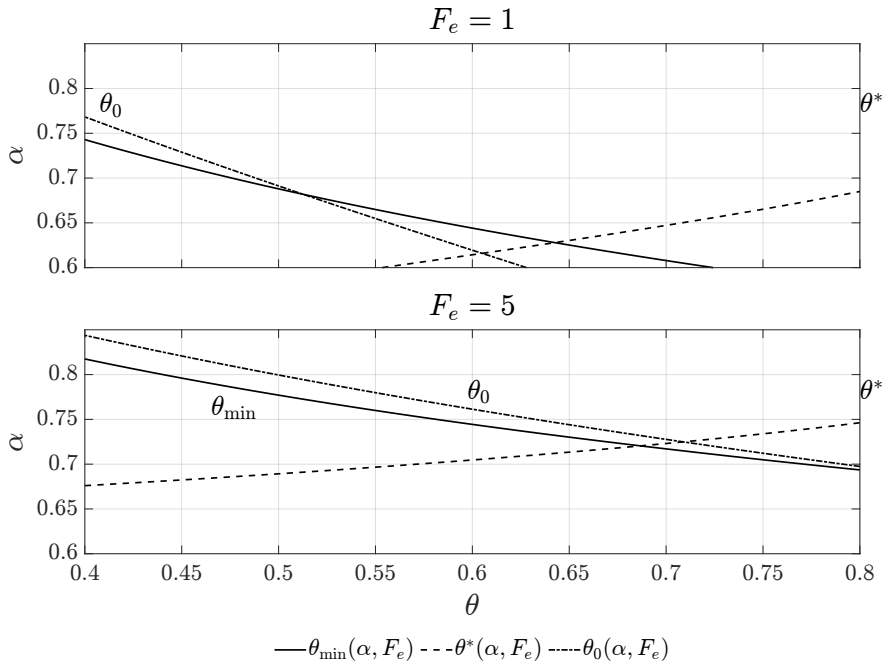


Figure 3: TIF threshold by productivity

Figure 3 plots the three thresholds by α for two fixed cost sizes ($F_e = 1, 5$): the fiscal cutoff ($\theta_{\min}$, solid), the no-TIF entry cutoff (θ_0, dash–dot), and the mimicry threshold (θ^*, dashed). For any α, the TIF-eligible types are the horizontal segment $[\theta_{\min}, \min\{\theta^*, \theta_0\}]$; when the dashed line lies below the dash–dot line, the upper part of this segment is mimic-prone (high types would downscale to claim the subsidy). For low fixed cost ($F_e = 1$), the eligible band is narrow and there is no mimicry wherever $\theta_0 > \theta_{\min}$ we have $\theta^* \geq \theta_0$. By contrast, with $F_e = 5$ the band widens and the dashed curve dips below the dash–dot line over part of the range, indicating a mimic-prone upper segment.

Figure 4 collapses these segments into the induced low-type mass $m_L(\alpha)$ for $F_e = 1$ (blue) and $F_e = 5$ (green), with dotted portions indicating values of α where mimicry siphons subsidies. Consistent with the model, a larger F_e expands eligibility over a range of α but also enlarges the mimic-prone region, so apparent gains in $m_L(\alpha)$ can overstate truly induced entry.

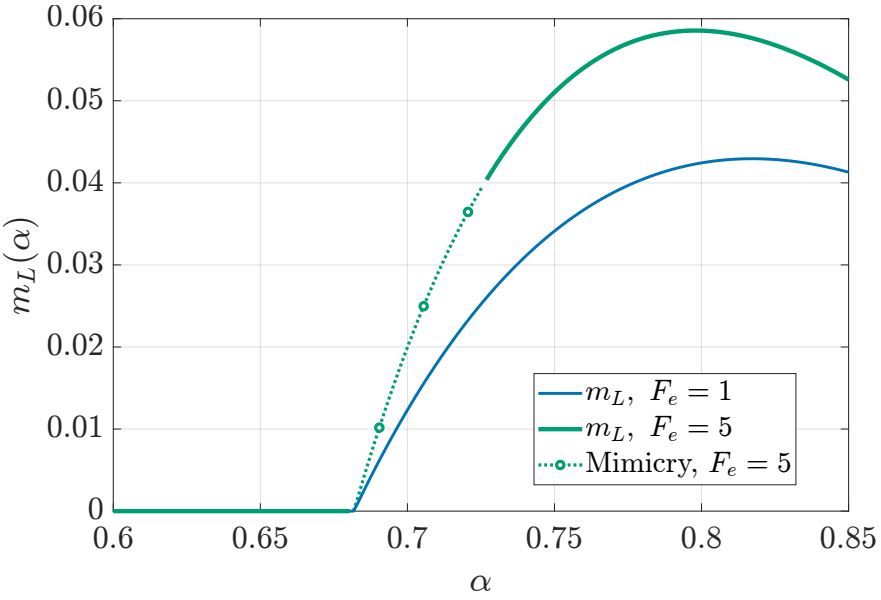


Figure 4: TIF Entry Mass

Empirical Predictions. The model generates three testable predictions.

Hypothesis 1: Subsidized entry is concentrated in smaller projects. Because eligibility is verified via k, only projects with $k^*(\tilde{\theta})$ for $\theta \in [\theta_{\min}, \theta_0]$ qualify. Hence TIF induces *small-scale entrants*, even if high types mimic. If policymakers wish to avoid subsidizing mimicry, restricting support to $\theta < \theta^*$ further limits eligibility to smaller projects.

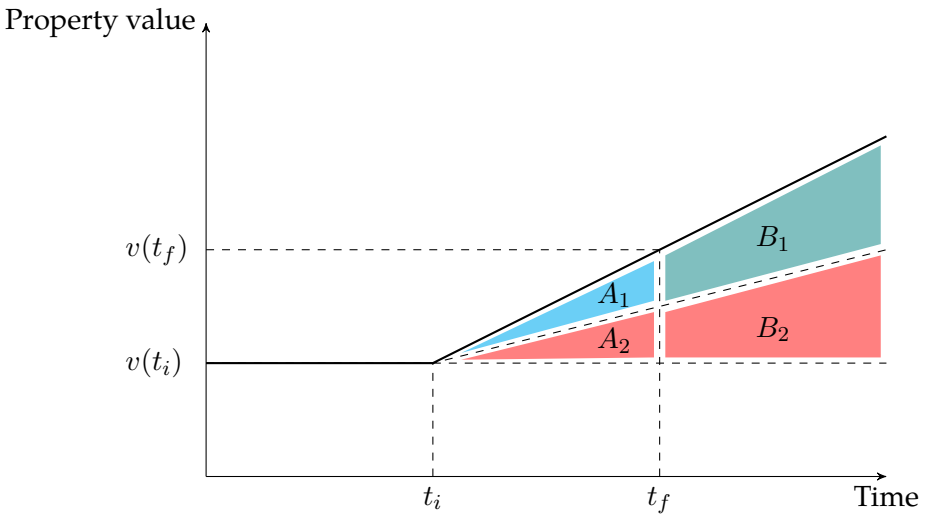
Hypothesis 2: TIF-induced entry is larger in industries and places with higher capital productivity and real-estate intensity.

We expect the TIF entry margin to be larger in industries and places with greater real-estate intensity and higher capital productivity, and smaller where the effective user cost of capital is higher. Accordingly, the TIF entry gradient should rise with sector-level real-estate intensity (e.g., structures share, rent-to-sales) and local property growth, and fall with borrowing costs and tax burdens. In the model, the eligibility margin m_L is positive iff $(2\alpha - 1)\,\tau\epsilon > (1 - \alpha)\,r$; in particular, when $\alpha < \frac{1}{2}$ no choice of $\tau\epsilon$ or r yields TIF-supported entry. Moreover, as shown in Figure 4, the induced entry mass is *inverted-U* in α: it increases from low values of α and then declines beyond

an interior threshold, so very high capital productivity can reduce the induced mass.

Hypothesis 3: Larger fixed-cost support expands eligibility but raises mimicry risk. Larger F_e broadens eligibility but also increases the incentive for high types to downscale to $k^*(\tilde{\theta})$, weakening "but-for" claims. Separation requires $\theta^* \geq \theta_0$, which is more likely when F_e is low (subsidy less valuable), α is high (capital especially productive, making deviation costly), and $\tilde{r} = r + \tau\epsilon$ is low (capital cheaper, reducing incentives to mimic). Empirically, this implies bunching of capital at policy targets, with stronger bunching in fiscally weaker or high-cost environments.

Figure 5: TIF cash-flows: Positive selection



Notes: This figure illustrates a case of partial positive selection, where part of the tax increment (A_2) would have occurred even without the establishment of the TIF.

Figure 5 visualizes *incremental* property-tax flows over time; shaded areas are schematic present values. In our selection model, TIF supports types in $[\theta_{\min}, \min\{\theta^*, \theta_0\}]$. The lower segment $[\theta_{\min}, \min\{\theta^*, \theta_0\})$ corresponds to *truly induced* entry; its PV is A_1. The upper segment $[\max\{\theta^*, \theta_{\min}\}, \theta_0]$ is *mimic-prone* when $\theta^* < \theta_0$ (high types downscale to qualify); its PV is A_2, i.e., inframarginal or siphoned revenue that would have occurred without TIF or via mimicry. After TIF designation at t_f, B_1 denotes the induced increment that remains in the tax base, while B_2 is the baseline component that would have accrued anyway.

A higher F_e expands eligibility but typically lowers θ^* relative to θ_0, enlarging the mimic-prone share and shifting area from A_1 to A_2 (Hypothesis 3). Along technology, the induced mass is *inverted-U* in α: it rises from low α as the eligible band opens and then contracts beyond an interior threshold, with the mimic-prone share potentially increasing–consistent with Figure 4 (Hypothesis 2).

4 DATA

4.1 Business Dynamics Statistics (BDS)

The Business Dynamics Statistics (BDS) compiles data from the Longitudinal Business Database (LBD) to provide insights into job creation and destruction, as well as establishment births and deaths in private and non-agricultural sectors. These metrics are categorized by establishment characteristics such as NAICS code and size and are further aggregated across various geographical levels, including ZIP code, county, metropolitan statistical area (MSA), and state. The granularity of geographic detail depends on the specificity of establishment characteristics. In our analysis, we specifically examine the establishment entry rate, exit rate, and job creation rate in state and county-level.

4.2 County Business Pattern (CBP)

We use Census Bureau's County Business Patterns (CBP) to aggregate the number of establishments and employment counts by sector at the state level. For earlier years (1947 – 1974), we rely on the County Business Data assembled by Eckert et al. (2022). This early version of CBP data includes county-level panel of establishment counts by size and employment numbers at the 2-digit SIC level.

For the later years, we directly download the files from the U.S. Census. This data includes the number of establishment by size and employment counts by SIC for years before 1998 and

by NAICS from 1998 onward. Using these sources, we construct a panel dataset that tracks the number of establishments and employment by sector: manufacturing, construction, and all other industries.[14] We next categorize industries into tradable, nontrdable, construction, and other sectors following the classificatoin in Mian and Sufi (2014), based on the 4-digit NAICS codes.[15] CBP also reports the number of businesses in each size category based on the number of employees, though the size criteria changed in 1973. To ensure consistency, we use common thresholds across versions. We define *very small establishments* as those in the first size bin—fewer than 5 employees for 1974 and later, and fewer than 4 employees before 1974. *Small businesses* are defined as those with fewer than 20 employees, while *large businesses* are defined as those with 500 or more employees.

4.3 Current Population Survey (CPS)

We use data from the Current Population Survey (CPS). The CPS is a monthly survey conducted by the U.S. Census Bureau and the Bureau of Labor Statistics, serving as a key source of labor force statistics in the United States. It collects detailed data on employment, earnings, and demographic characteristics of a representative sample of the U.S. population. The CPS involves a rotating sample of approximately 60,000 households. Each household is surveyed for four consecutive months, left out of the sample for the next eight months, and then surveyed again for four additional months to ensure a mix of new and returning participants over time. Some variables used in our analysis (e.g., housing tenure) are collected by the Annual Social and Economic Supplement (ASEC). The ASEC is administered each spring, typically in March, and involves additional questions asked of CPS participants to provide a comprehensive snapshot of their household.

We use the microdata available in IPUMS. To conduct our analysis, we perform tabulations of the microdata and then aggregate up to the state level using the person weights provided in the

[14] We classify an industry as manufacturing if its 2-digit NAICS code is 32 or its 2-digit SIC code is 19/20, construction if its 2-digit NAICS code is 23 or its 2-digit SIC code is 15, and all else for all other NAICS/SIC codes.

[15] For the years from 1975 to 2018, we use the data assembled by Eckert et al. (2020) which records employments figures at the 2012 NAICS code.

survey. We use data from all available March surveys, starting in 1962 and continuing through 2024. We use several variables from these surveys, namely: *Total Income*, representing all income sources in the past year; *Poverty Status*, and indicator equal to one if the total family income is below poverty levels determined by the federal government; *Educational Attainment*, which captures the highest education level completed; *Employment Status*, categorizing individuals as employed, unemployed, or out of the labor force; and *Housing Tenure*, dicating whether a respondent owns or rents their residence.

4.4 Panel Study of Income Dynamics (PSID)

We use the Panel Study of Income Dynamics (PSID), a nationally representative longitudinal survey that follows U.S. families and their children since 1968. From the PSID raw files, we build an individual-year panel of household heads and spouses from 1968 to 2021. We only maintain respondents with an identifiable state of residence in every interviewed wave. Our main sample includes individuals aged 21 and older. We define the college subsample as having more than 12 but less than or equal to 17, and the lower-skill or high school or less subsample as having 12 or fewer years of education. We assign treatment using the TIF adoption year of the state in which the individual is first observed, and focus the main analysis on never-movers.

4.5 Census of Government Finances (CoG)

We use two cleaned version of the U.S. Census Bureau's Census of Governments Finance dataset that are publicly available. First, we use Urban Institute's State and Local Finance Data (SLF-DQS), which compiles CoG into consistent state-level aggregates of revenues, expenditures, and debt across the state and all subordinate local governments within each state (state, municipal, township, special districts, and school districts) from 1977 to 2022. We focus on property tax revenues and general expenditures. We also use the Government Finance Database of Pierson et al. (2015), a harmonized panel covering counties, municipalities, townships, special districts, and school dis-

tricts, from 1967 to 2015 with standardized variable names.[16] Because CoG only contains the entire universe of local governments in years in 2 or 7 and the intervening years are sample surveys, we use these census years for our baseline regressions and do the robustness with all years. For local government analysis, we use general expenses, total outstanding debt, and interest payments for counties, municipalities, and school districts. We focus on municipalities, counties, and school districts because they are the primary entities affected by TIF. Because municipalities are the most frequent initiators of TIF and counties/school districts share most of the overlapping property tax base, diversion and spillovers due to TIF– if any – will show up most clearly in their budgets. Conversely, we exclude townships and special districts. Townships have rare and inconsistent authority to use TIF. Special districts, even those involved in TIF implementation, are excluded because they are typically single-purpose, have fragmented boundaries, and often rely on fees rather than a broad property tax base.

[16] In CoG, municipal governments are cities, towns, villages incorporated under state law.

5 EMPIRICAL DESIGN

5.1 Empirical Design: Staggered Adoption of TIF Across States

The staggered adoption of TIF laws across U.S. states provides a potential quasi-natural experiment to estimate the causal effects of allowing municipalities to use projected property tax revenues to promote economic development. We assess the impact of this financing tool on key economic outcomes such as business creation, income, and poverty levels. This variation in adoption timing enables a difference-in-differences (DiD) approach, where treated states (those that adopt TIF) are compared to untreated states (those that have not yet adopted TIF or never adopted it) before and after adoption:

$$Y_{s,t} = \alpha_s + \gamma_t + \delta \cdot \text{TIF}_{s,t} + \epsilon_{s,t}, \tag{4}$$

where $Y_{s,t}$ represents the outcome variable for state (or county) s at time t (e.g., income, poverty levels, or unemployment). State fixed effects (α_s) control for time-invariant differences across states, while year fixed effects (γ_t) capture shocks common to all states in a given year. The treatment indicator ($\text{TIF}_{s,t}$) takes a value of 1 if a state has implemented TIF by time t, and 0 otherwise. The coefficient of interest, δ, represents the average treatment effect of TIF adoption on the outcome variable.

The primary outcome variables analyzed include establishment growth, employment growth, business and job creation, business exits, job destruction, poverty levels (the proportion of the population living below the poverty line), wage growth, and unemployment rates. To explore whether TIF policies have differential impacts by different population characteristics (e.g., industry), the regressions are also conducted separately for sub-samples of these characteristics.

In order to assess its long-term impact, we also explore the dynamic effects of TIF adoption by examining how state-level outcomes evolve with varying durations of exposure to the TIF policy:

$$Y_{s,t} = \alpha_s + \alpha_t + \delta_e^{-K}\text{TIF}_{s,t}^{<-K} + \sum_{e=-K}^{-2} \delta_e \cdot \text{TIF}_{s,t}^{e} + \sum_{e=0}^{L} \delta_e \cdot \text{TIF}_{s,t}^{e} + \delta_e^{K}\text{TIF}_{s,t}^{>K} + \epsilon_{s,t}, \tag{5}$$

where δ_e represents the differences in outcome between treated and untreated observations from e years from TIF adoption relative to the differences in outcome of treated and untreated places in the excluded periods.

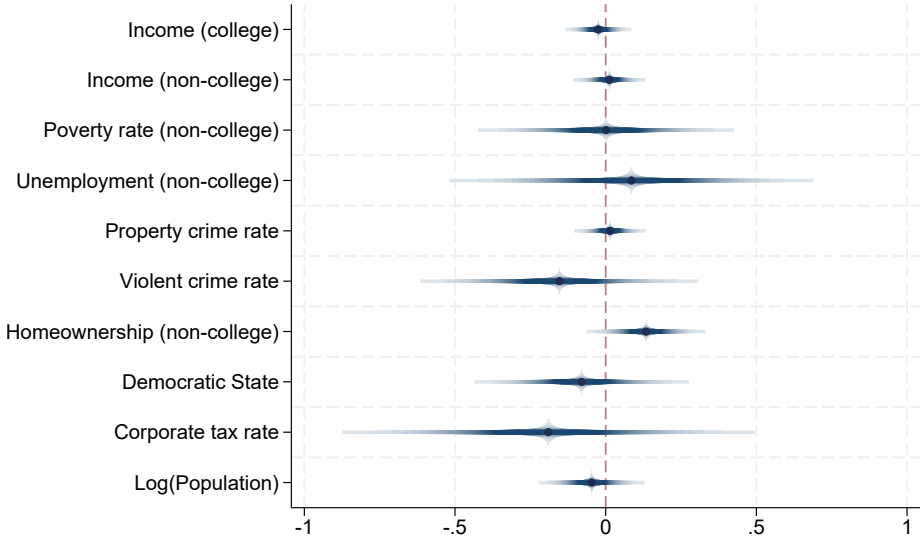
Recent research has shown that conventional two-way fixed effects (TWFE) and event-study estimates can be biased in staggered treatment settings, especially when the number of never-treated units is small and treatment effects are heterogeneous (Baker et al., 2022; Borusyak and Hull, 2020; De Chaisemartin and d'Haultfoeuille, 2020; Goodman-Bacon, 2021; Sun and Abraham, 2021). Our setting presents both of these challenges. With Arizona as the only never-treated state, our analysis relies heavily on comparisons between early and late adopters. Furthermore, treatment effect heterogeneity is likely due to varying local economic conditions and levels of state oversight across TIF districts. We also anticipate heterogeneity across cohorts, as later adopters may face stricter oversight or benefit from the experience of earlier adopters, and over time, as the impacts of the legislation evolve with project maturity.

To mitigate potential biases arising from the staggered treatment adoption in our setting, we employ the *Callaway and Sant'Anna* (*2021*) difference-in-differences estimator (CS-DiD). This method provides robust treatment effect estimates by addressing the limitations of traditional two-way fixed effects (TWFE) regressions. Specifically, CS-DiD accounts for both time- and group-specific heterogeneity in treatment effects by estimating and aggregating group-time-specific average treatment effects (ATTs). Since we only have one never treated state in our setting, we estimate all regressions in the main paper by including not yet treated states as control groups along with the never treated State.

5.2 Do state characteristics predict the timing of the TIF rollout?

To validate our empirical approach, we examine whether the introduction of state-wide legislation allowing TIF is predicted by socioeconomic or demographic variables, such as the income levels of college-educated and non-college-educated populations, poverty rates, unemployment rates, state-level corporate tax rates, and property and violent crime levels. To investigate this, we conduct a predictive regression analysis using annual data on these variables to estimate the likelihood of a state adopting TIF legislation in the following year. The predictive power of each variable is assessed separately in a univariate regression. We report the association between economic variables and the probability of a state adopting TIF, using a linear probability model and controlling for cohort effects by including year-fixed effects. Figure 6 reports the point estimates from this regression, together with the 95% confidence bands. The results indicate that none of these variables exhibit economic or statistical significance in forecasting the introduction of TIF legislation. These findings suggest that the timing of TIF adoption is not driven by socioeconomic factors, supporting the credibility of our causal framework. Appendix Table A3 reports the estimates of this linear regression along with the estimates from the Cox proportional hazard model. In Section 6, we also report the event-plot graphs and show that our variables of interest have no pre-trends after the inclusion of state and county fixed effects.

Figure 6: What characteristics predict the state-wide introduction of TIF?



Notes: The figure examines the predictors of legislation allowing the use of Tax Increment Financing (TIF) by presenting the results of regressions where the dependent variable is an indicator for whether the law was introduced in the following year. Each regression is estimated separately for the independent variables, which include income (for college and non-college populations), poverty rates, unemployment among non-college individuals, property crime, violent crime, political leaning, and state corporate tax rates. The crime variables were multiplied by 10, and the political leaning variable—indicating whether the state voted Democratic in the most recent presidential election—was divided by 10 for scaling purposes. Year fixed effects are included in all regressions. The dots represent the point estimates for each variable, while the shaded areas around the dots depict the 95% confidence intervals. The results show that none of these variables significantly predict the introduction of TIF-related legislation, as the confidence intervals overlap zero for all estimates, indicating no statistically significant relationships.

5.3 Do TIF enabling law actually led to the actual implementation?

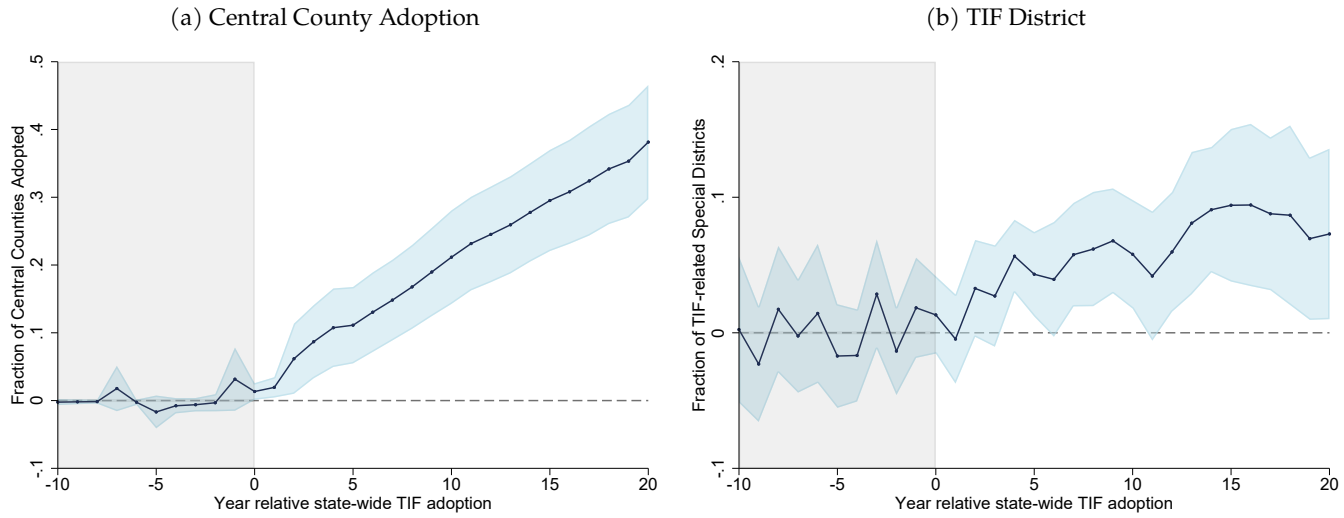
In order to interpret statewide enabling laws as economic shocks, we must verify that those laws led to real implementation at the local level. While our identification strategy exploits the staggered timing of enabling state legislation, the estimated effects are valid only if municipalities or counties subsequently created TIF districts.

We assess this link in two ways. First, for every state, we hand collect the year a TIF district was first created in its central counties by searching municipal archives, local government websites, and contemporaneous newspaper reports. Second, we use data from the Census of Governments

to track the creation of new special purpose districts, whose stated functions align with typical TIF districts' functions. [17]

Our outcomes of interests are: (i) the cumulative share of counties that have ever created a TIF district and (ii) the annual fraction of special-purpose districts in the CoG roster whose functions align with TIF activity. Both measures increase steadily following statewide authorization. Twenty-five years after enactment, about half of all counties have at least one TIF district established within its boundary, and the TIF-related fraction of special districts is roughly ten percentage points higher than in the pre-statute period.

Figure 7: First Stage Results



[17] Appendix Figure A9 lists each state's enabling year alongside the first documented TIF creation year for all central counties. For counties that has ever adopted TIF, we observe an average lag of 17 years between statutory authorization and initial implementation in county-level. We classify a special district as TIF-related when its Census of Governments function code is one of the following: 03 (Miscellaneous Commercial Activities), 42 (Industrial Development), 44 (Regular Highways/Road-Improvement Districts), 45 (Toll Highways), 50 (Housing and Community Development), 61 (Parks and Recreation), or 89 (Other/multipurpose redvelopment authorities).

6 RESULTS

This section examines the impact of statewide TIF adoption on various economic outcomes, including firm entry and exit. We then assess how TIF affects job creation and also examine its impact on individual earnings. Third, we investigate its impact on government finance and evaluate which local jurisdictions absorb the fiscal costs of TIF and to what extent.

6.1 Establishment Growth

State-level Number of Establishment Entry We first analyze how TIF affects business dynamism by looking at their effects on the state-level number of businesses, entry and exit rates. We use CBP data and aggregate the number of establishments per state using County Business Patterns data across different industries and sizes, and then compute the establishment growth rate. We also try to decompose the effect into the establishment entry and exit, to explore how TIF affects new business creations and affects the existing businesses.

Table 1 presents the average treatment effect estimators of Callaway and Sant'Anna (2021), where the treatment is the year a state enacts its TIF-enabling legislation. Panel A uses CBP data for 1946–2022; Panels B and C use BDS data for 1978 – 2021.

When examining the effect on overall establishment growth rates (Panel A), our findings indicate that, on average, states adopting TIF experience a .723 percentage point faster annual growth rates in total establishments – a 38% increase relative to the sample mean of 1.9 percent. This effect is mainly driven by the small firms: establishments with fewer than 5 employees grow 0.78 percentage point faster (column 2), whereas growth among larger size businesses is not significant. If tax increment financing (TIF) operates as intended – improving local economic development – its effects should not be most pronounced in the manufacturing sector, where firms do not directly serve local area. In columns 5 to 7, we find that the effect is also concentrated in non-tradable business: small establishments in Construction and the "all other" sectors experience 2.51 and 0.62 percentage points faster growth, while Manufacturing sector experiences no statistically signifi-

cant increase. This pattern aligns with the fiscal logic of TIF, which captures future property tax increments – more easily achieved through high-visibility commercial projects that generate substantial increases in assessed property values, either by spillovers or by increasing amenity values (Koster et al., 2019; Pope and Pope, 2015; Song and Knaap, 2004). Manufacturing projects, on the other hand, often provide less significant or unpredictable property value appreciation, making them less attractive targets for this financing structure.

Panel B and C decompose the net growth into entry and exit rates. Consistent with the CBP results in Panel A, entry rates increase by 0.52 percentage points overall, which is an increase of 4.4 percent of the mean. The increase again comes from the smallest establishments. However, the business entry effect is statistically significant in all sectors, including Manufacturing. Panel C shows that the point estimates for exit rates are uniformly negative and that the exit rates do not rise. These estimates imply genuine net firm creation rather than mere intra-state relocation. Because the outcome aggregates all municipalities, any moves from non-TIF to TIF jurisdictions cancel out by construction. Thus, even after accounting for local competition, TIF expands the state's overall economic base. The heterogeneity patterns suggest two channels – TIF projects often subsidize site preparation and infrastructure, so it may lower fixed costs for small firms. Second, the significant estimates in construction and all-else sector implies that TIF is used to support local demand.

Figure 8 presents an event-study plot illustrating the dynamic effects of TIF adoption on the entry rates of state-level total establishments and small establishments. Two key patterns stand out. First, the coefficients in the pre-statute period are small and statistically insignificant for both total business entry rates and for small business's entry rates, indicating no evidence of pre-trends. Second, the post-statute coefficients are persistently non-negative and becomes statistically significant after 15 years of state-wide adoption of TIF, which corresponds to the average lag between a state's initial TIF approval and the first establishment of a TIF district by a central county. Aggregating the estimated average effect implies a cumulative increase of about 14 percent in the total number of establishments by year 25 after legislation. Appendix Figure A12 plots the event-study plot for

Table 1: Impact of TIF Adoption on Establishment Dynamics

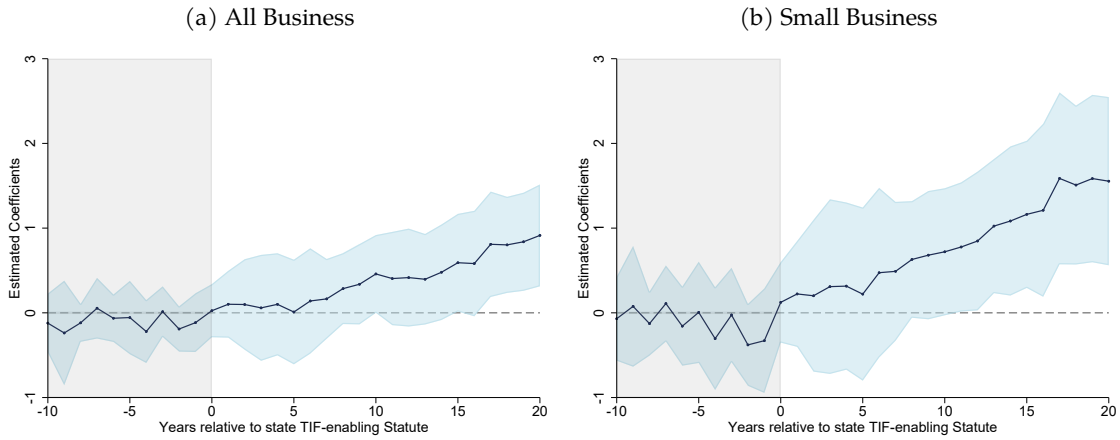
	Panel A: Establishment Growth Rates (1946 – 2022)						
	All	By Size			By Sector (< 5 employees)		
	(1) All	(2) <5 employees	(3) 5–20 employees	(4) >20 employees	(5) Manufacturing	(6) Construction	(7) All Else
ATT	.723*	.784*	.478	.747	.131	2.51**	.622*
	(.419)	(.406)	(.518)	(.633)	(.861)	(1.04)	(.369)
Mean DV	1.901	1.758	1.829	2.804	1.351	2.394	1.701
$(\beta/\bar{y})(\%)$	38.042	44.583	26.134	26.644	9.666	104.794	36.599
Observations	2,273	2,273	2,273	2,273	2,695	2,273	2,273
	Panel B: Establishment Entry Rates (1978–2021)						
	All	By Size			By Sector (< 5 employees)		
	(1) All	(2) <5 employees	(3) 5–20 employees	(4) >20 employees	(5) Manufacturing	(6) Construction	(7) All Else
ATT	.524**	1.04***	.244*	.195	1.28**	3.37***	.674**
	(.233)	(.365)	(.13)	(.228)	(.649)	(.924)	(.327)
Mean DV	11.950	19.203	4.160	7.089	19.904	23.139	18.620
$(\beta/\bar{y})(\%)$	4.382	5.403	5.867	2.748	6.434	14.585	3.617
Observations	1,182	1,151	1,151	1,151	1,151	1,151	1,151
	Panel B: Establishment Exit Rates (1978–2021)						
	All	By Size			By Sector (< 5 employees)		
	(1) All	(2) <5 employees	(3) 5–20 employees	(4) >20 employees	(5) Manufacturing	(6) Construction	(7) All Else
ATT	-.534	-.7	-.0978	-.451**	-.604	-2.21	-.51
	(.356)	(.587)	(.132)	(.223)	(.589)	(1.49)	(.469)
Mean DV	10.554	17.418	3.778	5.752	19.305	21.489	16.772
$(\beta/\bar{y})(\%)$	-5.060	-4.016	-2.590	-7.843	-3.129	-10.276	-3.043
Observations	1,182	1,151	1,151	1,151	1,151	1,151	1,151

Notes: The table presents regression results from the Callaway and Sant'Anna (2021) estimation, which evaluates the effect of the introduction of Tax Increment Financing (TIF) on the rate of change in number of establishments within a state. The rate in year t is defined as the change in number of establishment between year $t-1$ and t divided by the average number of establishment over years $t-1$ and t times 100. Panel A uses data from the County Business Patterns (CBP), covering the period from 1946 to 2022. Panel B and C uses data from the Business Dynamics Survey, covering the period from 1978 to 2021. We define the Manufacturing sector as NAICS code 31–33, Construction as NAICS code 23, and All Else as all other two-digit NAICS sectors. Statistical significance: ***p<0.01, **p<0.05, and *p<0.10.

total establishment growth rates and exit rates.

Business and job creation rate (County) While TIF statutes are enacted at the state level, individualdistricts are often established and administered by municipal governments. As each district lies within municipal boundaries, county-level analysis reveals which locations actually gain from

Figure 8: TIF Impact on State-Level Establishment Entry Rates



Notes: The figure shows the effect of establishment growth rates over time relative to the statewide adoption of Tax Increment Financing (TIF) legislation. The x-axis represents years relative to TIF enabling statues, with year 0 marking the TIF legislation year, while the y-axis measures change in the establishment entry rate between year t and $t-1$. The solid line represents the point estimates from a CS-DiD regression analysis, and the shaded area indicates the 95% confidence interval around these estimates. The gray region highlights the pre-adoption period, providing a baseline for comparison

statewide authorization. We therefore examine establishment entry rates for all counties and for key county subgroups.

Table 2 presents the results. Panel A shows that TIF statute raises the average county's establishment entry rate by 0.51 percentage points, identical to the statewide estimate. To determine whether these gains reflect firms relocating from across the border, we exploit geographic heterogeneity. If TIF simply poaches activity from elsewhere, the effect should concentrate in border counties – those sharing a boundary with the neighboring state – while non-border counties should see little change. Consistent with some interstate competition, the coefficient is slightly larger in border counties, yet it is positive and statistically significant in non-border counties, rejecting a pure zero-sum story. Industry-level estimates further indicate that the effects are persistently present in "All Else" category.

Table 2: Impact of TIF Adoption on County-level Establishment

	Panel A: All Counties				
	All Sectors		By Sector		
	(1) All	(2) Small Business	(3) Manufacturing	(4) Construction	(5) All Else
ATT	.51***	.452**	1.14***	.906	.49***
	(.171)	(.204)	(.335)	(.618)	(.157)
Mean DV	11.574	12.997	5.470	12.723	8.428
$(\beta/\bar{y})(\%)$	4.410	3.480	20.790	7.122	5.816
Observations	68,031	67,167	62,394	65,192	66,999
	Panel B: All Non-Border Counties				
	All Sectors		By Sector		
	(1) All	(2) Small Business	(3) Manufacturing	(4) Construction	(5) All Else
ATT	.382*	.376*	1.18**	.741	.396**
	(.197)	(.224)	(.463)	(.675)	(.162)
Mean DV	11.582	12.976	5.300	12.502	8.221
$(\beta/\bar{y})(\%)$	3.296	2.901	22.346	5.929	4.819
Observations	57,537	56,938	52,337	55,037	56,770
	Panel C: All Border Counties				
	All Sectors		By Sector		
	(1) All	(2) Small Business	(3) Manufacturing	(4) Construction	(5) All Else
ATT	.751***	.502	.876*	.471	.671***
	(.230)	(.315)	(.510)	(1.250)	(.253)
Mean DV	11.530	13.109	6.353	13.924	9.574
$(\beta/\bar{y})(\%)$	6.517	3.833	13.786	3.386	7.012
Observations	10,494	10,229	10,057	10,155	10,229

Notes: The table presents regression results from the Callaway and Sant'Anna (2021) estimation, which evaluates the effect of the introduction of Tax Increment Financing (TIF) on establishment entry rates. The sample consists of county-year data covering the period from 1978 to 2022. Columns 1 show the impact on the overall establishment entry rate. Columns 2 to 4 show the same specification separately for Manufacturing, Construction, and all remaining two-digit NAICS sectors, respectively. A county is classified as border if it shares a boundary with the central county of an adjacent state; all other counties are defined as non-border. Standard errors are clustered at the state level.

6.2 Does TIF affect employment and earnings?

Table 3: Impact of TIF Adoption on Employment Dynamics

	Panel A: Job Creation Rates (1978–2021)						
	All	By Size			By Sector		
	(1) All	(2) <5 employees	(3) 5–20 employees	(4) >20 employees	(5) Manufacturing	(6) Construction	(7) All Else
ATT	1.08***	1.83***	.995**	.941***	.912	.761	.927***
	(.311)	(.588)	(.441)	(.319)	(.709)	(.998)	(.302)
Mean DV	16.035	32.651	19.536	14.001	10.720	23.656	16.666
$(\beta/\bar{y})(\%)$	6.731	5.615	5.095	6.722	8.505	3.217	5.565
Observations	1,182	1,182	1,182	1,182	1,182	1,182	1,182
	Panel B: Job Destruction Rates (1978–2021)						
	All	By Size			By Sector		
	(1) All	(2) <5 employees	(3) 5–20 employees	(4) >20 employees	(5) Manufacturing	(6) Construction	(7) All Else
ATT	-.454	-.82	-.398	-.508	-.201	-1.06	-.503
	(.48)	(.75)	(.54)	(.454)	(.627)	(1.09)	(.461)
Mean DV	14.382	29.730	17.554	12.526	11.681	22.124	14.448
$(\beta/\bar{y})(\%)$	-3.158	-2.757	-2.266	-4.059	-1.721	-4.777	-3.480
Observations	1,182	1,182	1,182	1,182	1,182	1,182	1,182

Notes: The table presents regression results from the Callaway and Sant'Anna (2021) estimation, which evaluates the effect of the introduction of Tax Increment Financing (TIF) on the employment dynamics within state. The rate in year t is defined as the change in number of employment between year $t-1$ and t divided by the average number of employment over years $t-1$ and t times 100. Panel A and B uses data from the Business Dynamics Survey, covering the period from 1978 to 2021. We define the Manufacturing sector as NAICS code 31–33, Construction as NAICS code 23, and All Else as all other two-digit NAICS sectors. Statistical significance: ***p<0.01, **p<0.05, and *p<0.10.

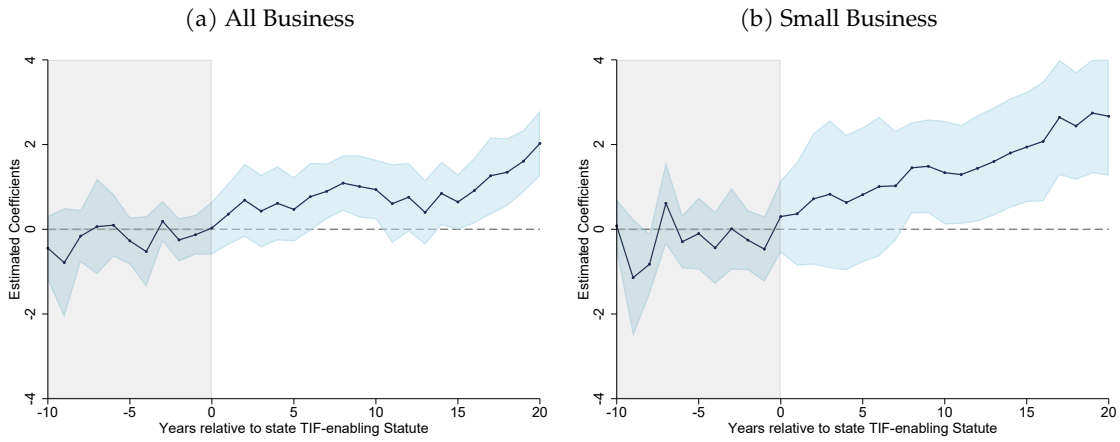
Next, we examine whether the increase in business dynamism translates into better labor market outcomes for resident. Using both CBP and BDS we estimate the effect of TIF on job creation rates and job destruction rates.

Because early CBP versions do not report employment by firm size, we present the sectoral results using all firms, in contrast to our establishment analysis which focuses on small firms where the effects are statistically significant. Appendix Table A7 reports that states with TIF experience a 0.79 percentage points higher annual employment growth rates, a 32 percent increase relative to the sample mean.

Table 3 presents the results for job creation and destruction rates. We find that states with TIF

experiences a 1.08 percentage points increase in job creation rates, with effects about twice as large for smaller businesses. Interestingly, within sectors, the only statistically significant increase occurs in the "All Else" non-tradable category rather than in Construction, highlighting the role of local demand channel. Panel B shows no corresponding rise in job destruction, alleviating concerns that TIF merely displaces existing jobs.

Figure 9: TIF Impact on State-Level Job Creation Rates



Notes: The figure shows the effect of employment growth rates over time relative to the statewide adoption of Tax Increment Financing (TIF) legislation. The x-axis represents years relative to TIF enabling statues, with year 0 marking the TIF legislation year, while the y-axis measures change in the establishment entry rate between year t and $t-1$. The solid line represents the point estimates from a CS-DiD regression analysis, and the shaded area indicates the 95% confidence interval around these estimates. The gray region highlights the pre-adoption period, providing a baseline for comparison

Figure 9 presents event-study plots showing the dynamic effects of TIF adoption on state-level employment growth, job creation, and job destruction rates. The patterns closely mirror those in Figure 8, with a persistently positive effect on job creation over time and a larger effect for small businesses. Appendix Figure A13 presents the event-study plots for overall employment growth rates and job exit rates, indicating no evidence of pre-trends, no significant effect on job exits, and a net positive effect on employment growth.

Poverty Rates. Next, we examine whether the increase in business dynamism impacts residents' welfare by analyzing poverty rates and income levels. We first use the Current Population Survey

(CPS) data by looking at the mean outcome of interest in state level. The poverty rate is determined based on the annual poverty threshold set by the federal government. Table 4 shows that TIF significantly reduces poverty among individuals with high school degree or less. Specifically, TIF adoption decreases poverty by 1.9 percentage points for those without a college degree. However, the impact of TIF on poverty is statistically insignificant for college graduates.

Columns 3 to 5 show the impact of TIF on income, specifically for individuals without a college degree, across different poverty threshold definitions. While TIF significantly reduced poverty when defined at the standard threshold, no significant effects were observed at 1.25 times the poverty threshold or between 1.25 and 1.5 times the threshold. Interestingly, TIF was associated with an increase in poverty rates when the poverty threshold was defined at 1.5 times the standard level. This evidence suggests that TIF helps individuals without a college degree experience a significant income increase that pushes them well over the poverty threshold.

Table 4: Effect on Poverty by Poverty Thresholds

	Poverty rate		High School or Less		
	(1) College Grads	(2) High school or less	(3) $Pov < Inc < 1.25 \cdot Pov$	(4) $1.25 \cdot Pov < Inc < 1.5 \cdot Pov$	(5) $Inc > 1.5 \cdot Pov$
ATT	-.000987	-.0187***	-.0034	.000898	.0227***
	(.00314)	(.00517)	(.00263)	(.00269)	(.00777)
Mean DV	0.046	0.134	0.049	0.051	0.598
$(\beta/\bar{y})(\%)$	-2.152	-13.904	-6.922	1.767	3.805
Observations	1,876	1,789	1,789	1,789	1,789

Notes: The table reports regression results from the Callaway Sant-Anna (2021) estimation, which evaluates the effect of the introduction of Tax Increment Financing (TIF) on poverty rates. We assess whether a household receives total income under the poverty rate level using the rates measures available in the microdata of the Current Population Survey (CPS). Statistical significance: ***p<0.01, **p<0.05, and *p<0.10.

Total Personal Income. Next, we analyze the impact of TIF on earnings. Table 5 shows the effect of TIF on wage income for workers using data from the PSID (Panel Study of Income Dynamics). The advantage of utilizing the PSID is its longitudinal nature which allows us to follow the same individuals over time. It is critical to determine whether the previously observed results from the CPS

dataset reflect income growth among individuals already residing in states before TIF adoption, or whether they originate from compositional changes – specifically, the displacement of lower-income individuals or in-state migration of higher-income individuals post-TIF implementation.

To address this, our analysis specifically focuses on "never-movers", who reside in the same state throughout the study period. Focusing on this group enables a clear assignment of treatment status, whereas individuals who frequently move could experience multiple transitions between treated and control states. We note that about 77% of our sample of individuals without a college degree are never-movers, continuously residing in the same state during the PSID sample period. We repeat the CS-DiD analysis with this individual-level panel data, thereby absorbing time-invariant individual traits.

Column 1 of Table 5 shows that TIF raises the income of individuals without a college degree by about 12 %, but the effect is not statistically significant. Columns 2 through 4 demonstrate that this rise in income primarily results from a significant increase in the probability of individuals earning a non-zero income by 2 percentage points. Specifically, the Log(1+Income) measure used in Column 1 includes zero-income observations, capturing income improvements from transitions out of zero income, while the Log(Income) measure in Column 2 excludes these zero-income observations. This distinction underscores that TIF contributes to greater income stability among individuals with very low-income. Columns 5 through 8 show interesting age-specific patterns: TIF reduces the frequency of zero-income years among older individuals.

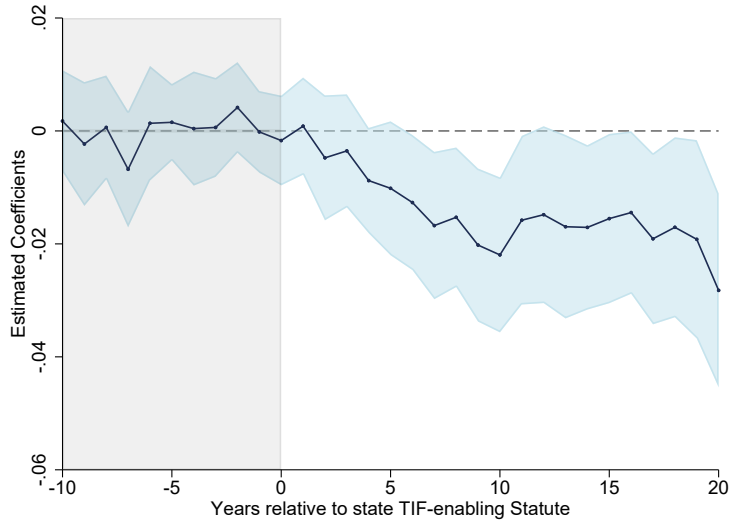
Figure 10 shows event-study estimates of TIF's effects on (i) the statewide poverty rate (CPS) (Column (2) from Table 4 and (ii) an individual's probability of earning positive income (Column (3) from Table 5). Coefficients for pre-adoption years are statistically indistinguishable from zero, and post-adoption poverty rates decline effect becomes stronger over time. For the PSID outcome, estimates peak around 15 to 17 years after adoption; beyond +17, confidence intervals widen and the series becomes noisy, likely because fewer individuals are observed that far from adoption – especially for the later treated cohort.

Table 5: Effect on Total Personal Income

	All High-school or less				HS & young		HS & Old	
	(1) Log(1+Inc)	(2) Log(Inc)	(3) Inc>0	(4) Inc>Pov	(5) Inc>0	(6) Inc>Pov	(7) Inc>0	(8) Inc>Pov
ATT	.123	-.0239	.02**	.012	.0135	.00942	.0332***	.0234
	(.0939)	(.0268)	(.00915)	(.0103)	(.00935)	(.0124)	(.0112)	(.0155)
Descriptive Statistics for $\bar{y}$								
Mean	6.305	9.115	0.715	0.605	0.897	0.788	0.590	0.477
Std. Dev.	4.298	1.143	0.452	0.489	0.304	0.409	0.492	0.499
Observations (Regression)	76,988	52,050	83,457	83,457	31,212	31,212	48,278	48,278

Notes: The table presents regression results from the Callaway and Sant'Anna (2021) estimation, which assesses the impact of the introduction of Tax Increment Financing (TIF) on log(income). Income data were obtained from the Panel Study of Income Dynamics (PSID) microdata. *All High-school or less* refers to individuals with a high school diploma or less. *HS & young* refers to the sub-sample of individuals younger than 40 and older than 21, while *HS& and older* refers to the sub-sample of individuals older than 40 and younger than 65. Statistical significance: ***p<0.01, **p<0.05, and *p<0.10.

Figure 10: TIF Impact on Poverty Rates



Notes: The figure shows the dynamic effects of TIF adoption on state-level poverty rates and on the probability that individuals earn positive income for individuals having high school degree or less. Poverty rates are measured as the proportion of the working-age population with incomes below the federal poverty line. The individual-level analysis is restricted to residents who have continuously lived in the same state. The x-axis represents years relative to TIF enabling statues, with year 0 marking the TIF legislation year, while the y-axis measures change in the establishment entry rate between year t and $t-1$. The solid line represents the point estimates from a CS-DiD regression analysis, and the shaded area indicates the 95% confidence interval around these estimates. The gray region highlights the pre-adoption period, providing a baseline for comparison

We use CPS data to examine whether TIF reduces reliance on public assistance. Using CPS sampling weights, we construct state-year mean aggregates for three measures: (i) welfare income – mean annual cash public assistance income among residents; (ii) food stamps/SNAP — proportion of residents receiving SNAP benefits in the previous year; and (iii) months on welfare – mean number of months residents received cash public assistance.

Columns 1 to 3 in Table 6 present the CPS results. We find that TIF leads reductions across all three measures, although statistical significance is only observed for the share of residents receiving food stamps. Welfare income decreases by $10.6 on average, the share of residents receiving food stamps decreases by 1.6 percentage points, and months on welfare decreases by 0.04 months on average. Columns 4 to 6 report complementary estimates from the PSID, using the individual panel data to explore heterogeneity. Controlling for unobserved individual characteristics related to food stamp receipt, the effect is not significant for the full sample or the younger subsample. However, we find a statistically significant 3.8 percentage point reduction among older individuals, consistent with the effect of TIF on raising the likelihood of earning nonzero income for this group.

Table 6: CPS Income

	Welfare Results (CPS)			Food Stamps(PSID)		
	(1) Welfare Inc	(2) Food Stamps	(3) Months on Welfare	(4) All	(5) Young	(6) Old
ATT	-10.6	-.016***	-.0396	-.0252	.00704	-.0372***
	(8.87)	(.00609)	(.0416)	(.0153)	(.0237)	(.0137)
Mean DV	68.857	0.115	0.201	0.118	0.129	0.108
Observations	1,576	1,115	496	83,457	31,212	48,278

Notes: The table reports regression results from the Callaway Sant-Anna (2021) estimation, which evaluates the effect of the introduction of Tax Increment Financing (TIF) on reliance on public assistance. Columns 1 to 3 use CPS microdata to measure (i) the amount of welfare income, (ii) the probability of receiving food stamps, and (iii) the duration of welfare receipt. Columns 4 to 6 use PSID microdata to estimate the probability of receiving food stamps. Statistical significance: ***p<0.01, **p<0.05, and *p<0.10.

6.3 Mechanisms

We first provide evidence that our results are not likely to be driven by the displacement of individuals. We then offer evidence that the documented positive effect of TIF on business dynamism is driven by specific features of the program that alleviate information frictions. Lastly, we explore whether the effects are driven by other place based policies.

6.3.1 Displacement or In-Migration

Poverty reduction and income gains could arise either because TIF improves incumbent residents' economic conditions or because it changes demographics by displacing lower-income households or attracting higher earners. We present evidence against the latter channel. Using PSID, we test whether TIF is associated with a higher probability that high school educated individuals move out of state and find no such effect, ruling out the displacement channel.

Table 7 presents the results. Using CPS, we find a modest rise in in-migration among high-school educated adults: the share of residents who moved from out of state increases by about 0.5 percentage points, which is about 21% of the baseline mean, with no significant effect on overall state population growth. While this suggests that some newcomers may benefit from local economic improvements, our earlier PSID analysis of never-movers (incumbent residents) shows that TIF raises the probability of having positive income and reduces the probability of receiving SNAP benefitsâdemonstrating that the main effects are not driven by newcomers but are realized by long-term residents.

6.3.2 The Impact of TIF Bonds

TIF projects are frequently financed through the issuance of TIF bonds. To analyze the relationship between TIF bond issuance and business dynamism, we collected detailed bond issuance data from the Mergent database. We identify TIF-related bond if issuer or project name contains TIF-related keywords such as "TAX INCREMENT FINANCING" and "TIF". This dataset provides reliable

Table 7: Migration Results

	CPS				PSID	
	In-Migration		Pop Growth		Out-Migration	
	(1) All	(2) High-school	(3) All	(4) High-school	(5) All	(6) High-school
ATT	.00333	.00496*	.00172	.00559	.00208	.00046
	(.00259)	(.00258)	(.0213)	(.0192)	(.00228)	(.00265)
Observations	1,876	1,789	1,827	1,778	155,533	107,099

Notes: The figure shows the effect of TIF on migration and poulation growth rates. Columns 1 to 4 uses CPS data, aggregated on the year-state level, and columns 5 and 6 use PSID data, an individual panel. In-migration is defined as the proportion of population within a state in which in previous year wasn't residing in a given state. Population growth is defined as the log change in population. Out-migration is defined as the case in which an individual resided in a TIF state in year $t-1$ and moved out of that state in year t. Statistical significance: ***p<0.01, **p<0.05, and *p<0.10.

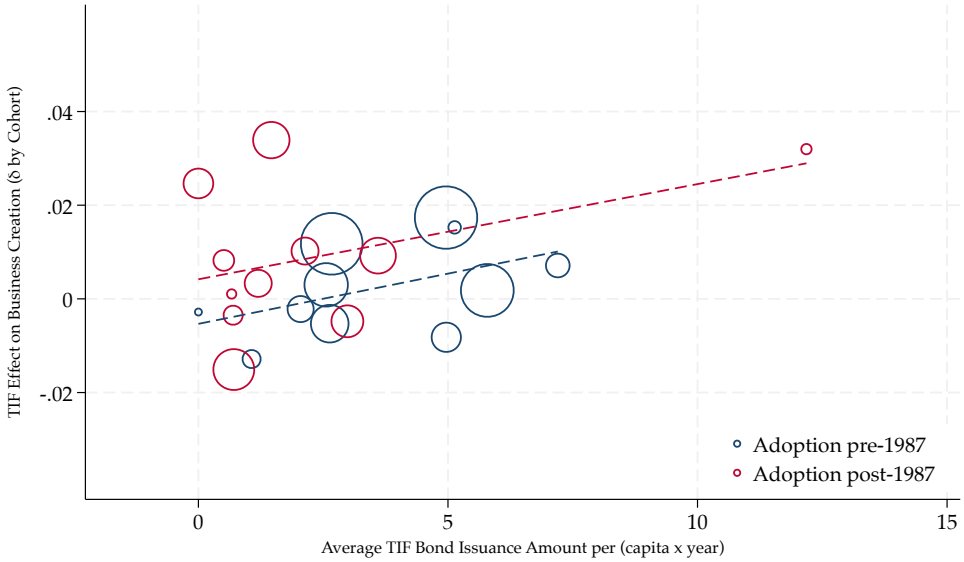
information starting in 1992. We collected every TIF bond recorded by Mergent between 1992 and 2011. For each U.S. state, we calculate the total amount issued and normalized this amount by dividing by the number of years since the state adopted TIF legislation. For states that adopted TIF before 1992, we limited this division to the years between 1992 and 2011.

We then examine whether the positive impact of TIF adoption on establishment growth is stronger in states issuing larger amounts of TIF bonds per capita. To test this hypothesis, we use the aggregated cohort effects provided by the CSDiD package. We use the estimated effect of TIF on establishment growth using CBP data rather than BDS, as CBP data spans an earlier period and includes a larger number of cohorts. We then computed the per capita average of annual TIF bond issuance for each cohort, obtaining a proxy for TIF expenditure per capita per year.

Figure 11 illustrates the correlation between the average annual per capita bond issuance and the estimated effects of TIF on establishment growth by cohort.[18] The size of each bubble in the figure corresponds to the population size of the respective cohort. The figure separates cohorts into pre-1987 and post-1987 groups, each comprising 11 cohorts, and includes fitted linear regression lines for both groups. The figure highlights a robust positive correlation in both periods between the intensity of bond issuance and the positive impact of TIF on establishment growth.

[18] These are the effects that compose the ATT reported in Table **??**.

Figure 11: TIF Bonds and the impact of TIF on Establishment growth



Notes: This figure shows the relationship between the average effect of TIF on establishment growth rates and annual TIF bond issuance per capita. Bubble size reflects the cohort's population. Dotted lines represent fitted linear regressions for pre-1987 and post-1987 adoption groups.

This positive relationship may reflect the role of financial discipline imposed by bond issuance. The financial commitment to repay bonds encourages local governments to undertake a more thorough due diligence and prioritize projects with high economic potential, which, in turn, may have larger positive spillover effects and foster subsequent business creation in surrounding areas.[19] This process also helps alleviate information frictions by increasing transparency and involving underwriters, whose participation introduces additional layers of scrutiny. The combination of increased resources, rigorous project selection, and external validation may result in more successful and sustainable firm formation.

The results also indicate other several mechanisms: First, it reinforces that the effect we saw

[19] If the revenue increment is insufficient to cover debt obligations, the municipality may suffer a number of negative consequences. First, defaulting on or modifying TIF bonds can impair a city's credit rating, not only for the TIF bonds but also for its general obligation bonds. Second, reputational harm may deter future private investment, as developers and financial markets lose faith in the municipality's ability to carry out and fund redevelopment projects. This reputational effect can especially be pronounced in competitive areas where towns compete for scarce investment funding.

in the preceding section may arise from the genuine effect of TIF implementation. If more bond issuance implies more widespread use of TIF in general, this is a good indicator that the results are driven by the intensity of use. States that issue more TIF bonds have bigger effects on business formation, most likely due to scale and selectivity. Higher bond issuance allows for larger public investments in infrastructure and site development, making places more appealing to new businesses.

6.3.3 Other Place Based Policies

We consider several mechanisms that might be driving these results by assessing whether the effect is confounded by the other place-based policies. Appendix 9.3.1 discusses three major place-based policies enacted around the same date as Tax Increment Financing: Empowerment Zones, Business Improvement District, and Main Street Program. We find for each state, either the first adoption or approval years, or the adoption intensity of these policies does not systematically correlate with the TIF statute approval years, alleviating concerns about attributing these other place-based policies' effects on economic outcomes to TIF's.

6.4 Government Finances

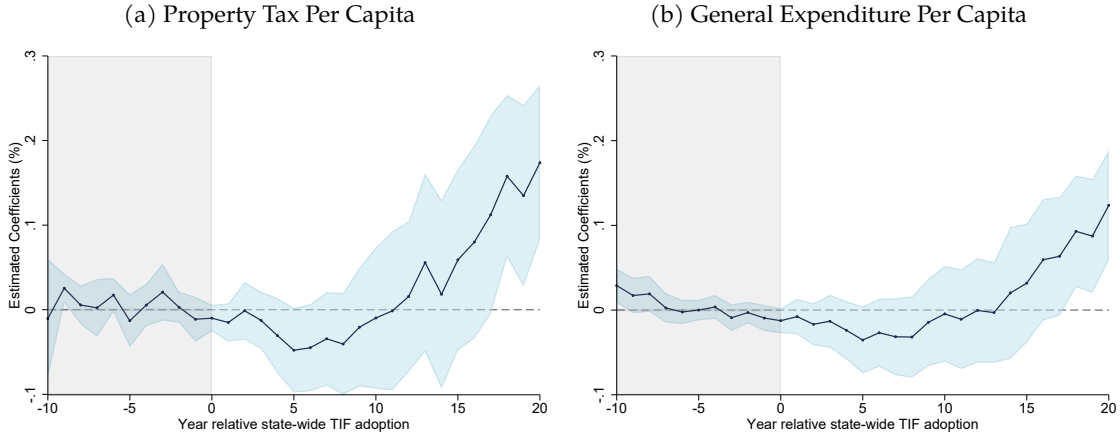
TIF is often criticized for diverting revenue from overlapping taxing jurisdictions: at designation, the property tax base within the district is frozen at its base year level, and subsequent growth in property tax revenues is redirected to the TIF fund rather than to counties, school districts, and other overlapping entities.

This setup creates vertical competition – competition across overlapping governments for revenues from a shared property tax base (Weber et al., 2008). Classic critiques of TIF emphasize that overlapping districts lose access to the increment constrained by statute or intergovernmental agreements. While earlier sections document TIF's net gains in business creation, the key policy questions remain: What are the costs of TIF, and which jurisdiction bears them? We examine

how government finances change such as borrowing, interest costs, and expenditures after TIF across the jurisdictions most directly implicated by vertical competitions: municipalities (the typical adopters), counties, and school districts.

We first test whether the increase in net business creation after TIF translates into a larger property tax base. As TIF district is financed by pledging incremental property tax revenue, any development that would not have occurred without TIF should raise aggregate property tax collections. We use the Urban Institute's State and Local Finance database which aggregates U.S. Census of Governments data for each state by summing up revenues and expenditures across all governmental levels – state governments, counties, municipalities, townships, special districts, and school districts – so that the property tax captures every dollar levied anywhere in the state, regardless of where individual government record TIF-related flows (Urban Institute, 2019).

Figure 12: TIF Impact on State-Level Fiscal Outcomes



We focus on two statewide outcomes: total property tax revenue, and general expenditure – which is measure of service outlays excluding of inter-governmental transfers and utility operations. We use log per capita amount to calculate the effect of TIF as a percentage change for the average resident. The results demonstrate a persistent increase in property tax revenue per person, indicating a larger tax base. We also see an increase in general expenditure per person, consistent

with governments translating extra revenue into additional public services, increasing the public service bundle enjoyed by the resident within the State.

Next, we examine the impact of TIF on three types of governments – counties, municipalities, and school districts. Nationwide, about a half of every property tax collected finances school districts, while counties and municipalities each receive about a quarter(Gárate and Pennington-Cross, 2023; Kenyon and Reschovsky, 2014). When a TIF district is created, the growth in the assessed value inside the district is diverted to the TIF fund rather than being shared proportionately with these overlapping governments. As a result, even growth from inflation is excluded from their tax base and these government may either cut expenditures or issue additional debt to maintain their service levels.

To assess whether revenue diversion places fiscal pressure on local governments, we examine how outstanding debt, interest payments, and general expenditure per capita change in government units within states that have enabled TIF. We use log specifications to express the results in percentage terms.

Table 8: Impact of TIF Adoption on Government Finances

	County			City			School Districts		
	(1) Outstanding Debt	(2) Interest Payments	(3) General Expenditure	(4) Outstanding Debt	(5) Interest Payments	(6) General Expenditure	(7) Outstanding Debt	(8) Interest Payments	(9) General Expenditure
ATT	.371***	.484***	-.0465	-.038	-.0586	-.0829**	.0698	.0961	.0274
	(.109)	(.149)	(.0455)	(.0752)	(.0907)	(.034)	(.12)	(.138)	(.035)
Mean DV	-2.235	-5.237	-1.283	-1.284	-4.184	-1.488	-0.053	-3.039	1.195
Observations	15,625	15,518	23,948	78,346	64,921	126,803	70,311	69,854	96,202

Notes: The table presents regression results from the Callaway and Sant'Anna (2021) estimation, which assesses the impact of Tax Increment Financing (TIF) on government finance outcomes. Government finance data were obtained from Pierson et al. (2015), who compiled a panel from the U.S. Census of Governments, covering the years 1967 to 2015. All dependent variables are in log per capita terms. Statistical significance: ***p<0.01, **p<0.05, and *p<0.10.

Table 8 reveals different fiscal responses of local governments to TIF. Counties absorb the revenue diversion by increasing outstanding debt by 37.1 percent, and interest payment by 48.4 percent, indicating higher effective costs of borrowing. However, they do not reduce service provision; per capita general expenditure is statistically unchanged. Municipalities, on the other hand, trim

their budgets, reducing per capita general expenditure by 8.3 percent, while keeping debt levels relatively stable, with both outstanding debt and interest payments remaining flat or declining slightly.

Interestingly, school districts, whose budgets rely heavily on property tax revenues, on average, does not experience statistically significant changes in general expenditures, debt levels, or interest payments. While statistically insignificant, the estimated coefficients are positive. One possible explanation is that districts often negotiate revenue sharing agreements with TIF authorities during the public hearing process, which helps offset a significant portion of the lost tax revenues. Moreover, because state aid formula typically excludes revenues received from such agreements, some districts may be compensated both by the state and the TIF district, as stated by Weber et al. (2008). With overall revenues treams stabilized – we see that districts issue slightly more debt

A possible explanation is that districts frequently negotiate revenue sharing agreements with TIF authorities during the public hearing process, which offsets a significant portion of the lost tax base. However, because the equilibrium formula of transferring to the school district does not include the received revenues, some school districts may be compensated both by the state and the TIF district, as stated by Weber et al. (2008), resulting in an increase in general spending. With overall revenue streams stabilized – or even enhanced – we see that districts issue more debt by 19.5 percent without incurring higher borrowing costs.

Quantification of Costs The fiscal effects of TIF on government finances in Section 6.4 enable an estimation of the costs associated with TIF. Using data from the latest available Census of Government with full sample, we estimate the county-level costs of creating one additional business establishment in 2012. We quantify TIF's fiscal spillovers by quantifying a direct financing cost and an indirect change in local service provision. Using 2012 Census of Governments data and our dynamic DiD, per capita county interest payments rise by 0.484 log points while per capita debt outstanding rises by 0.371, implying an increase in the effective borrowing cost of about 11 %.

Applied to the average county's per capita interest payments ($0.047k), this yields an annual

direct cost of roughly $5.28 per capita. We do not attribute a comparable premium to other jurisdictions: for municipalities and school districts, the gap between interest and debt is economically negligible and the interest estimate is statistically indistinguishable from zero. Indirect effects are captured by per-capita general expenditure for municipalities. Scaling by the average population of county (Appendix 9.5), the costs imply a total net fiscal cost per county of about $6.74m (2012 dollars).

To express magnitudes per unit of activity, we scale by induced entry. TIF raises the county business-creation rate by about 0.51 p.p. annually; at the 2012 mean of 2,072 establishments, this implies about10.6 additional establishments per year. The direct fiscal cost is therefore $\$49.93$k per new establishment ($527.71k/10.6), and accounting for the net service decrease implies a net cost of $\$637.2$k per new establishment ($6.735m/10.6). These magnitudes are comparable to firm-targeted discretionary deals which averages around $160 million dollars for 1,500 jobs in 2017 dollars (Slattery and Zidar, 2020).

7 CONCLUDING REMARKS

Our findings shed light on the efficacy of TIF as a place-based economic development tool. Exploiting national data and a quasi-natural experiment, we offer evidence that TIF promotes business creation, and improves income outcomes for underserved communities. The decline in poverty rates and gains in income among individuals without a college degree demonstrate TIF's potential to reduce economic inequality. Furthermore, the persistence of these effects over a decade suggests that TIF can serve as a long-term policy for local economic development without inducing displacement of low-income residents.

Despite our positive findings, TIF's impact may vary across states, with some possible experiencing little to no economic gains. Effective design and implementation of TIF districts are critical to ensure its success. Future research should explore which TIF features—such as funding options, types of monitoring, and geographic targeting—maximize success. Additionally, identifying the

types of projects, such as infrastructure, commercial developments, or mixed-use initiatives, that generate the largest welfare gains could help design TIF and offer guidance to policymakers.

References

Baker, A. C., D. F. Larcker, and C. C. Wang (2022). How much should we trust staggered difference-in-differences estimates? *Journal of Financial Economics 144*(2), 370–395.

Borusyak, K. and P. Hull (2020). Non-random exposure to exogenous shocks: Theory and applications. Technical report, National Bureau of Economic Research.

Callaway, B. and P. H. Sant'Anna (2021). Difference-in-differences with multiple time periods. *Journal of econometrics 225*(2), 200–230.

Campbell, B. C. (1998). Tax revolts and political change. *Journal of Policy History 10*(1), 153–178.

Carroll, D. A. (2008). Tax increment financing and property value: An examination of business property using panel data. *Urban Affairs Review 43*(4), 520–552.

Cook County Clerk's Office (2024). 2023 Tax Increment Financing (TIF) Report. Available at https://www.cookcountyclerkil.gov/sites/default/files/pdfs/2023%20TIF%20Report.pdf (accessed May 15, 2025).

Cox, D. R. (2018). *Analysis of survival data*. Chapman and Hall/CRC.

Czurylo, T. (2023). The effect of tax increment financing districts on job creation in chicago. *Journal of Urban Economics 134*, 103510.

De Chaisemartin, C. and X. d'Haultfoeuille (2020). Two-way fixed effects estimators with heterogeneous treatment effects. *American economic review 110*(9), 2964–2996.

Dye, R. F. and D. F. Merriman (2000). The effects of tax increment financing on economic development. *Journal of Urban Economics 47*(2), 306–328.

Eckert, F., T. C. Fort, P. K. Schott, and N. J. Yang (2020). Imputing missing values in the us census bureau's county business patterns. Technical report, National Bureau of Economic Research.

Eckert, F., K.-l. Lam, A. R. Mian, K. Müller, R. Schwalb, and A. Sufi (2022). The early county business pattern files: 1946-1974. Technical report, National Bureau of Economic Research.

Gárate, S. and A. Pennington-Cross (2023). Heterogeneity in property tax capitalization: Evidence from municipalities in wisconsin. *Real Estate Economics 51*(5), 1285–1314.

Goodman-Bacon, A. (2021). Difference-in-differences with variation in treatment timing. *Journal of econometrics 225*(2), 254–277.

Greenbaum, R. T. and J. Landers (2014). The tiff over tif: A review of the literature examining the effectiveness of the tax increment financing. *National Tax Journal 67*(3), 655–674.

Kenyon, D. A. and A. Reschovsky (2014). Introduction to special issue on the property tax and the financing of k–12 education.

Koster, H. R., I. Pasidis, and J. van Ommeren (2019). Shopping externalities and retail concentration: Evidence from dutch shopping streets. *Journal of Urban Economics 114*, 1–29.

Lyons, R. C., A. Shertzer, R. Gray, and D. N. Agorastos (2024). The price of housing in the united states, 1890-2006. Technical report, National Bureau of Economic Research.

Martin, I. W. (2008). *The permanent tax revolt: How the property tax transformed American politics*. Stanford University Press.

Meltzer, R. (2012). Understanding business improvement district formation: An analysis of neighborhoods and boundaries. *Journal of Urban Economics 71*(1), 66–78.

Merriman, D. (2018). *Improving tax increment financing (TIF) for economic development*. Lincoln Institute of Land Policy Cambridge, MA.

Mian, A., K. Rao, and A. Sufi (2013). Household balance sheets, consumption, and the economic slump. *The Quarterly Journal of Economics 128*(4), 1687–1726.

Mian, A. and A. Sufi (2014). What explains the 2007–2009 drop in employment? *Econometrica 82*(6), 2197–2223.

MORÇÖL, G. and D. Gautsch (2013). Institutionalization of business improvement districts: A longitudinal study of the state laws in the united states. *Public Administration Quarterly*, 240–279.

Mound, J. (2020). Stirrings of revolt: regressive levies, the pocketbook squeeze, and the 1960s roots of the 1970s tax revolt. *Journal of policy history 32*(2), 105–150.

Musgrave, R. A. (1979). The tax revolt. *Social Science Quarterly 59*(4), 697–703.

Neumark, D. and H. Simpson (2015). Place-based policies. In *Handbook of regional and urban economics*, Volume 5, pp. 1197–1287. Elsevier.

Pierson, K., M. L. Hand, and F. Thompson (2015). The government finance database: A common resource for quantitative research in public financial analysis. *PloS one 10*(6), e0130119.

Pope, D. G. and J. C. Pope (2015). When walmart comes to town: Always low housing prices? always? *Journal of Urban Economics 87*, 1–13.

Slattery, C. and O. Zidar (2020). Evaluating state and local business incentives. *Journal of Economic Perspectives 34*(2), 90–118.

Smith, B. C. (2006). The impact of tax increment finance districts on localized real estate: Evidence from chicago's multifamily markets. *Journal of Housing Economics 15*(1), 21–37.

Smith, B. C. (2009). If you promise to build it, will they come? the interaction between local economic development policy and the real estate market: Evidence from tax increment finance districts. *Real Estate Economics 37*(2), 209–234.

Song, Y. and G.-J. Knaap (2004). Measuring the effects of mixed land uses on housing values. *Regional Science and Urban Economics 34*(6), 663–680.

Sun, L. and S. Abraham (2021). Estimating dynamic treatment effects in event studies with heterogeneous treatment effects. *Journal of econometrics 225*(2), 175–199.

Urban Institute (2019). State and local finance initiative data query system (slf-dqs). Data originally sourced from the Annual Survey of State and Local Government Finances. Licensed under ODC-BY 1.0.

Weber, R., S. D. Bhatta, and D. Merriman (2007). Spillovers from tax increment financing districts: Implications for housing price appreciation. *Regional Science and Urban Economics 37*(2), 259–281.

Weber, R., R. Hendrick, and J. Thompson (2008). The effect of tax increment financing on school district revenues: Regional variation and interjurisdictional competition. *State and Local Government Review 40*(1), 27–41.

Weber, R. and S. O'Neill-Kohl (2013). The historical roots of tax increment financing, or how real estate consultants kept urban renewal alive. *Economic Development Quarterly 27*(3), 193–207.

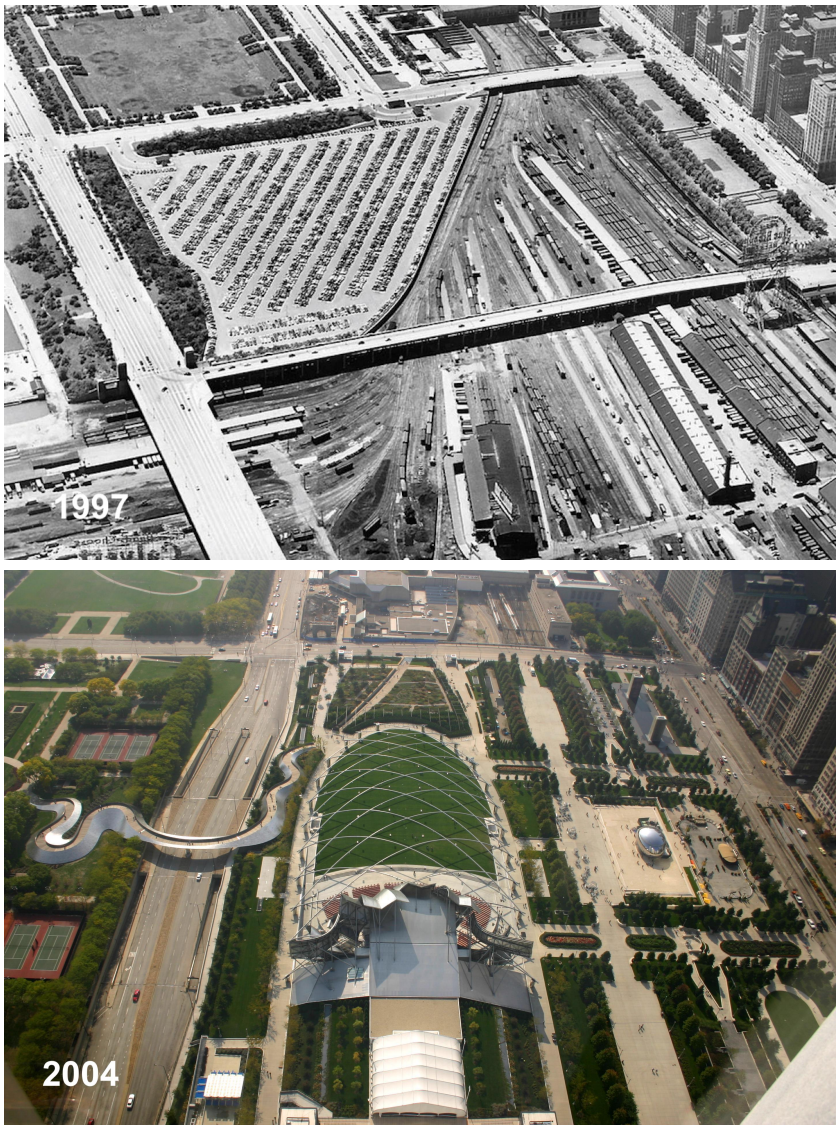
Yadavalli, A. and M. Delgado (2018). Tax increment financing and spatial spillovers.

Ziff, A. L. (2024). *Essays in the Economics of Place Based Policies*. Ph. D. thesis, Duke University.

INTERNET APPENDIX

For Online Publication

Figure A1: Millennium Park in Chicago



Notes: The figure illustrates the transformation of the Millennium Park area in Chicago, comparing the area in 1997, prior to construction, with the area in 2004, following the completion of the park. The 1997 image highlights the pre-redevelopment conditions, characterized by rail yards, parking lots, and underutilized spaces. The 2004 image shows the completed Millennium Park, featuring some of its iconic attractions, landscaped spaces, and cultural amenities. This comparison highlights the significant urban improvement resulting from the investment this area.

Figure A2: Hudson Yards in New York City



Notes: The figure illustrates the transformation of the Hudson Yards district in New York City, comparing its state in 2015, prior to the start of major construction, with its state in 2018, after significant development. The 2015 image depicts the area as it was before redevelopment, characterized by rail yards, industrial infrastructure, and vacant spaces. The 2018 image showcases the completed and ongoing Hudson Yards project, featuring modern skyscrapers, public plazas, and cultural landmarks, including The Vessel and surrounding facilities. This comparison highlights the dramatic urban redevelopment and the emergence of Hudson Yards as a vibrant, mixed-use neighborhood.

Figure A3: State Road 46 TIF District, Bloomington, IN



Notes: The figure presents an aerial view of development along State Road 46 in Bloomington, Indiana, following the establishment of a TIF (Tax Increment Financing) district in 2005. The top image highlights the areas where a bank, a credit union serving farmers, and a pediatric clinic were constructed post-2005, showcasing growth in both financial and healthcare infrastructure. The bottom image focuses on the development of three healthcare facilities and an assisted living facility, emphasizing the district's expansion into health and senior care services. Together, these images illustrate the transformation after the *State Road 46 TIF District* was formed..

Table A1: State Road 46 Economic Development Area

TIF Name:	State Road 46 Economic Development Area
TIF Code:	T53013
Authorized by:	Monroe County
Associated Bonds:	None reported
Property Metrics:	
Total number of properties in this TIF	214
Real property records in this TIF	214
Value Metrics:	
Gross Assessed Value (all properties)	$64,413,300
Net Assessed Value (all properties)	$42,598,156
Base Value (all properties)	$9,017,519
Incremental Value (all properties)	$33,580,637
Financial Metrics:	
Total Revenues for this TIF	$500,099
Total Expenses for this TIF	$5,430

Table A2: Parcel Details for State Road 46 Economic Development Area

Property Owner	Parcel Type	Gross Assessed Value	Net Assessed Value	Base Assessed Value	Incremental Assessed Value
Trilogy Real Estate Bloomington LLC	Commercial	$18,212,600	$14,752,206	$124,512	$14,627,694
GLC Bloomington Health LLC	Commercial	$8,320,000	$961,400	$17,379	$944,021
Brawley Capital - Medical LLC	Commercial	$3,757,300	$3,757,300	$58,827	$3,698,473
Indiana University Health Bloomington In	Exempt	$3,641,300	$0	$0	$0
Indiana University Health Bloomington In	Exempt	$2,906,000	$0	$0	$0
North Park GW, LLC	Commercial	$2,751,700	$2,751,700	$12,738	$2,738,962
Hanna Properties LLC	Commercial	$1,355,400	$1,355,400	$849,133	$506,267
High Rock Church Incorporated	Exempt	$1,172,200	$0	$0	$0
Farm Credit Services Of Mid-America, FLC	Commercial	$1,035,000	$1,035,000	$0	$1,035,000
Owen County State Bank	Commercial	$980,600	$980,600	$297,292	$683,308
E & B Paving Inc	Industrial	$917,500	$917,500	$515,969	$401,531
C-Ray Properties LLC	Commercial	$876,800	$876,800	$15,852	$860,948
Packing House Road LLC	Industrial	$706,200	$706,200	$339,560	$366,640

Table A3: Prediction Model of Statewide TIF legislation

	(1) income(college)	(2) income(nocollege)	(3) Poverty	(4) unemployed	(5) property crime rate	(6) violent crime rate	(7) Homeownership	(8) Democrats	(9) Corporate Tax	(10) Population
Cox Model	1.470	1.302	1.041	1.032	0.943	0.596	1.017	0.892	0.957	0.917
	(1.612)	(1.540)	(0.0318)	(0.0464)	(0.112)	(0.374)	(0.0133)	(0.390)	(0.0583)	(0.157)
Observations	1163	1114	1114	1114	1312	1312	1114	1249	841	1163
Linear Prediction Model	-0.0244	0.0124	0.00126	0.0853	0.0143	-0.154	0.134	-0.0800	-0.190	-0.0464
	(0.0426)	(0.0465)	(0.164)	(0.234)	(0.0461)	(0.179)	(0.0761)	(0.138)	(0.264)	(0.0680)
Observation	870	822	822	822	1253	1253	822	1185	361	870

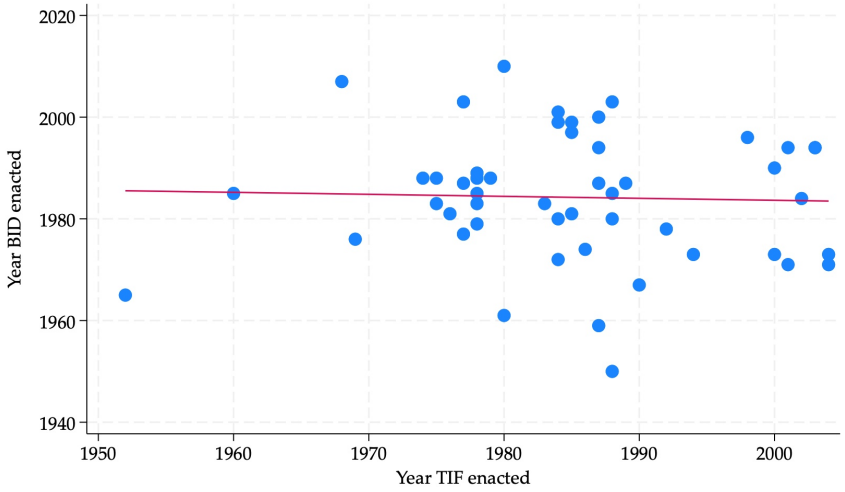
Notes: The table presents regression results from the Cox proportional hazards model (Cox, 2018) and a linear probability model, each including a univariate independent variable and year fixed effects. The Cox model reports hazard ratios for the level of the independent variable relative to the hazard associated with a one percent decrease in that variable. A hazard ratio below one indicates a reduction in the hazard (i.e., a lower likelihood of adopting TIF), while a ratio above one indicates an increase in the hazard (i.e., a higher likelihood of adopting TIF). For the Cox model, rate variables are scaled from 0 to 100 (i.e., as percentages). In the linear probability model, crime variables are multiplied by 10, and the political leaning variable–indicating whether the state voted Democratic in the most recent presidential election–is divided by 10 for scaling purposes.

Table A4: BID Effect on Business Dynamics

	Establishment		Employment		
	(1) Entry Rate	(2) Est Exit Rate	(3) Net Job Creation Rate	(4) Job Creation Rate	(5) Job Destruction Rate
ATT	-.308	-.359*	.852*	.141	-.711*
	(.389)	(.204)	(.507)	(.35)	(.384)
Descriptive Statistics for $\bar{y}$					
Mean	12.398	10.758	2.004	16.819	14.815
Std. Dev.	2.311	1.588	3.212	3.005	2.607
Observations (Regression)	1,057	1,057	1,057	1,057	1,057
$(\beta/\bar{y})(\%)$	-2.48	-3.33	42.53	0.84	-4.80

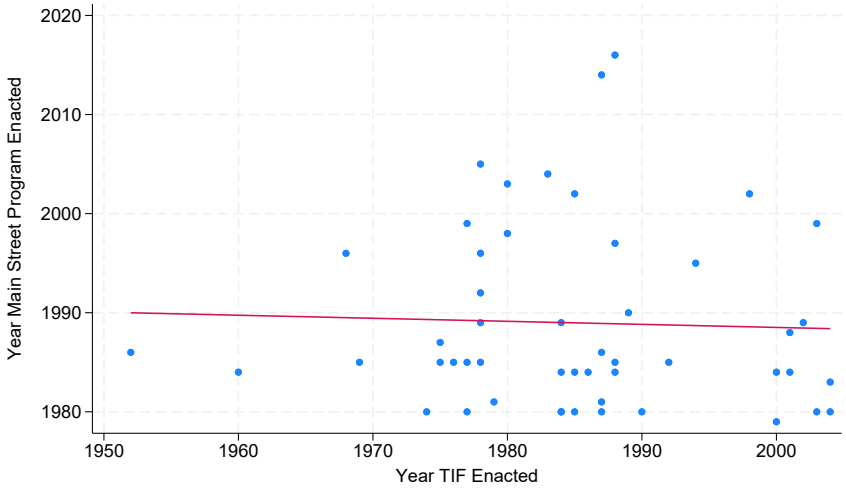
Notes: The table presents regression results from the Callaway and Sant'Anna (2021) estimation, which evaluates the effect of the introduction of Business Incentive Districts (BID) on establishment openings and job creation. The sample consists of state-year data on the establishment data covering the period from 1978 to 2022.Columns 1 and 2 report results on establishment entry and exit rates, while columns 3 to 5 present results on job creation and destruction rates.

Figure A4: Statewide adoption timing of TIF and BID



Notes: The figure presents a scatterplot showing the statewide adoption year of TIF and BID. The data for BID adoption years is obtained from MORÇÖL and Gautsch (2013).

Figure A5: Statewide adoption timing of TIF and the Main Street Program



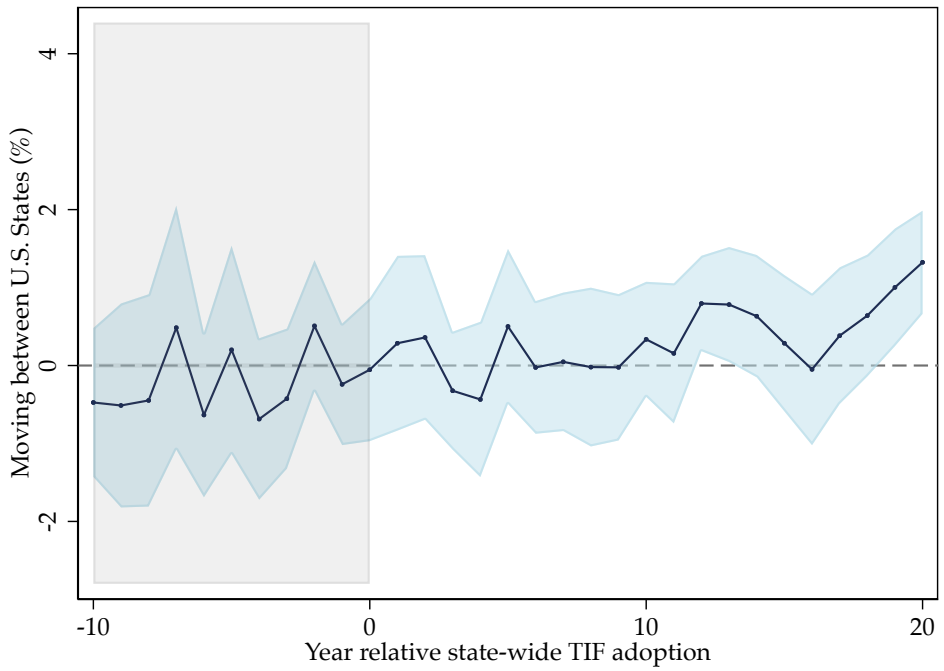
Notes:

Table A5: Empowerment Zone Presence and Intensity

	Adoption			Intensity		
	(1) Round I (1994)	(2) Round II (1998)	(3) Round III (2002)	(4) Round I (1994)	(5) Round II (1998)	(6) Round III (2002)
Adopted TIF	-.22	-.0255	.171	-.0023	-.033*	-.000817
	(.165)	(.149)	(.172)	(.00303)	(.015)	(.0226)
Constant				.00925**	.0436**	.0275
				(.00268)	(.0134)	(.0214)
N	50	50	50	50	50	50
ysumm	.56	.78	.78	.00746	.0172	.0268

Notes: The table presents regression results predicting whether a state contains at least one Empowerment Zone and the intensity of Empowerment Zone adoption, based on TIF adoption. The *Adopted TIF* variable equals 0 if the state has not adopted TIF in a given year and 1 if the state has adopted TIF that year. Columns 1 to 3 show the results of a probit model, where the independent variable is 1 if the state has ever adopted Empowerment Zones and 0 if it has never adopted them. Columns 4 to 6 show the OLS results, where the independent variable is the intensity of Empowerment Zone adoption, proxied by the percentage of census tracts designated as Empowerment Zones. Statistical significance: ***p<0.01, **p<0.05, and *p<0.10.

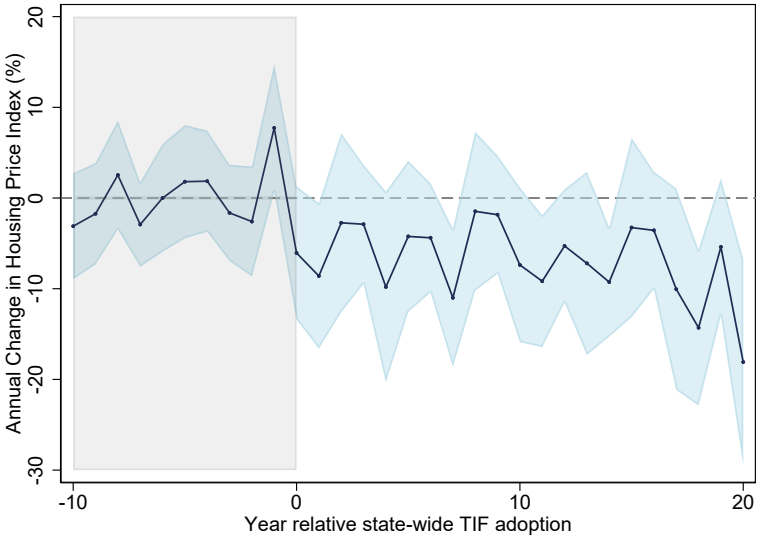
Figure A6: Effect on out-of-state migration



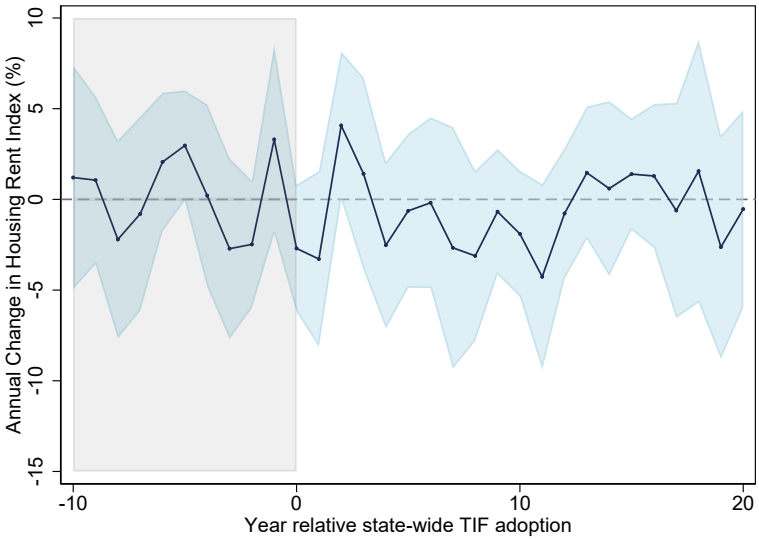
Notes: The figure illustrates the effect of statewide TIF (Tax Increment Financing) adoption on out-of-state migration rates, measured as the percentage of individuals moving between U.S. states. The x-axis represents years relative to the adoption of TIF, with year 0 indicating the year of adoption, and the y-axis shows the change in migration rates. The solid line represents the point estimates from regression analysis, and the shaded area represents the 95% confidence intervals. The gray region highlights the pre-adoption period, serving as a baseline. The results show no significant changes in out-of-state migration rates prior to TIF adoption, followed by a gradual increase in migration rates in the years after adoption, though with considerable uncertainty as shown by the widening confidence intervals.

Figure A7: Effect on housing price index

Panel A: HPI for 30 largest US Cities

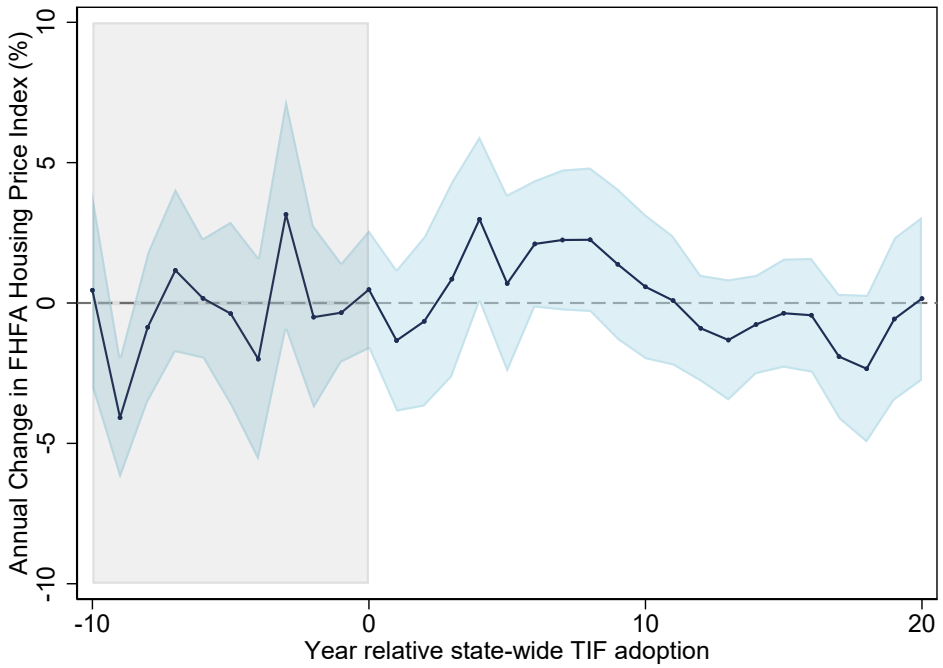


Panel B: Rent Index for 30 largest US Cities



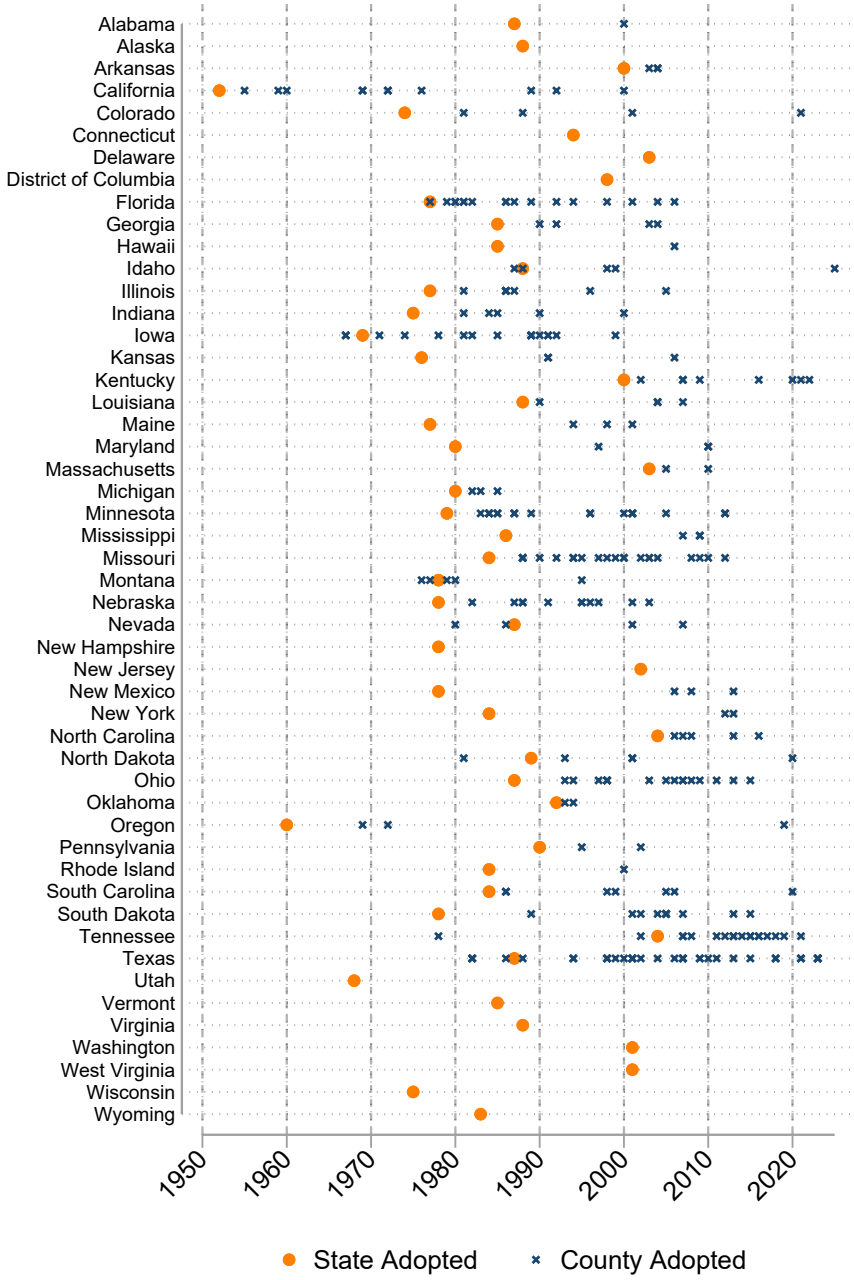
Notes: The figure illustrates the effect of statewide TIF (Tax Increment Financing) adoption on housing price index, with Panel A representing housing sales price index and Panel B representing rental price index in the 30 largest cities. The x-axis shows years relative to TIF adoption, with year 0 marking the adoption year, and the y-axis represents city-level annual changes in housing price index in percentage. The solid lines depict the point estimates from regression analyses, while the shaded areas indicate 95% confidence intervals. The gray regions highlight the pre-adoption period, serving as a baseline. The results indicate that TIF adoption is associated with a slight decrease in the housing price index; however, this effect is not statistically significant (Panel A). No discernible trend is observed in the rent index (Panel B).

Figure A8: Effect on FHFA housing price index



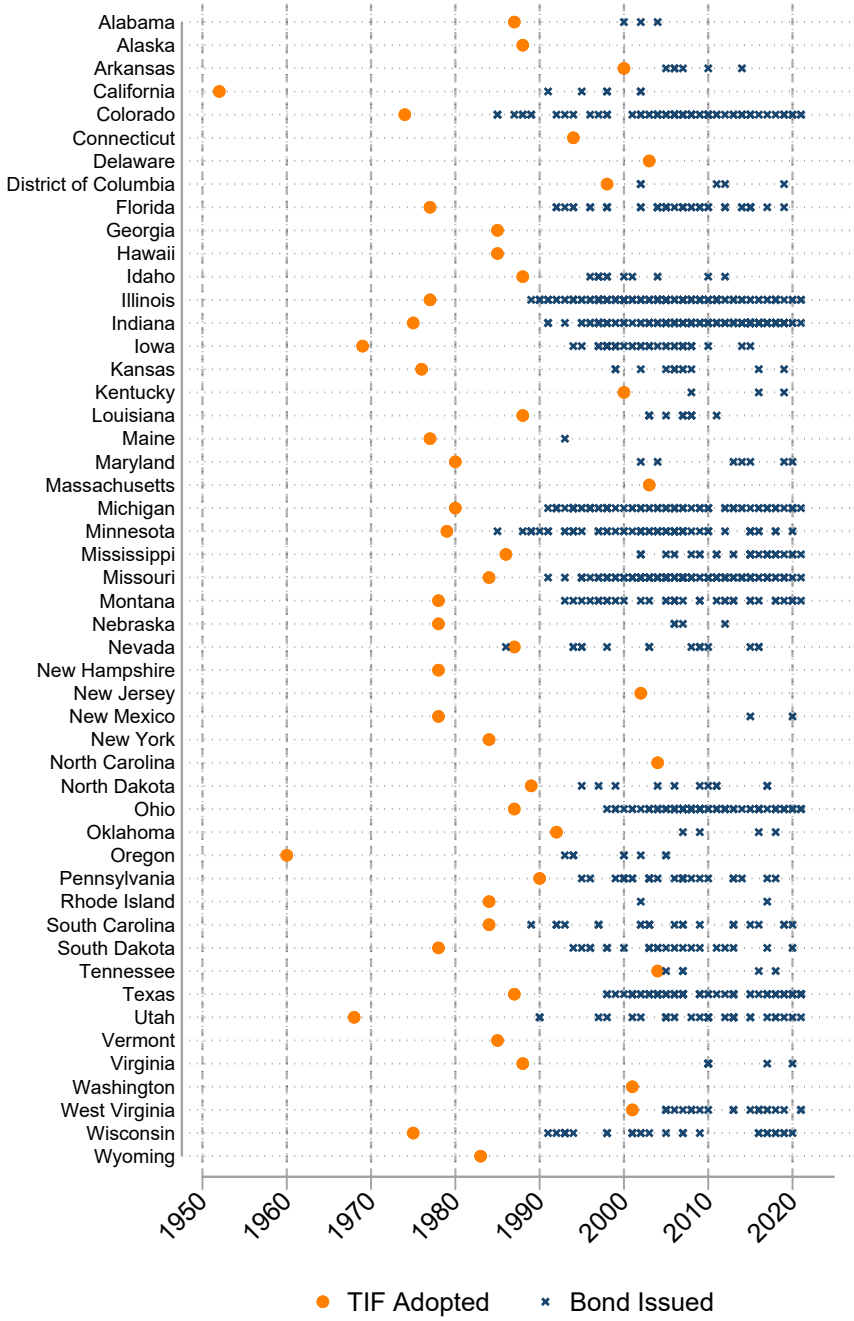
Notes: The figure illustrates the effect of statewide TIF (Tax Increment Financing) adoption on state-level housing price index provided by FHFA. The x-axis shows years relative to TIF adoption, with year 0 marking the adoption year, and the y-axis represents state-level annual changes in housing price index in percentage. The solid line represents the point estimates from regression analysis, and the shaded area represents the 95% confidence intervals. The gray region highlights the pre-adoption period, serving as a baseline. The results show an increase in the annual price index during the first 10 years, followed by a decrease and a rebound within 20 years. However, these effects are statistically insignificant.

Figure A9: TIF legislation and county-adoption year



Notes: This figure shows the year of TIF legislation for each state, along with the first year that select counties adopted TIF. We report the initial adoption years for central counties surrounded by poorer outlying counties, where we observe the most significant effects on net job creation. We identify the first adoption year as the earliest date reported in local newspapers or the date of the first TIF district establishment, as documented in local government agency reports. The orange dots represent the years of statewide TIF legislation, and the blue x-dots represent the first TIF project initiated within the select counties of each state.

Figure A10: TIF legislation and bond-issuance year



Notes: This figure shows the frequency of TIF bond issuance for each state, along with the year TIF was adopted. The orange dots represent the years of statewide TIF legislation, and the blue x-dots represent TIF bond issuances by entity in each state.

8 Three exaples of TIF

Millennium Park, Chicago, IL Millennium Park in Chicago, IL, received a significant amount of money from a TIF fund. The city utilized these funds to convert a former rail yard and parking lot into a public space featuring art, architecture, and green areas. Of the $490 million total project cost, $95 million came from TIF bonds issued through the Central Loop TIF. Construction began in October 1997 and was completed by July 2004. Figure A1 in the Internet Appendix illustrates the area where Millennium Park is now located, showing its state in 1997 before construction and in 2004 after completion. Private investment in surrounding high-end residential and commercial properties followed the park's development. Today, the park is a major tourist destination and generates substantial revenue. While subject to controversy, this project is often referred to as a successful use of TIF funds.

Hudson Yards, New York City, NY The Hudson Yards redevelopment project in Manhattan, one of the largest real estate developments in U.S. history, relied heavily on Tax Increment Financing (TIF) to fund infrastructure improvements, including the extension of the No. 7 subway line. Figure A2 in the Internet Appendix depicts the area where Hudson Yards is located now, showing its progress between 2015 when construction was ongoing, and 2018 after the completion of the majority of the project. While the project has been economically successful, it has also sparked significant controversy. Critics argue that public subsidies were unnecessary for Hudson Yards, given its prime location and strong market demand. They contend that the funds could have been better allocated to affordable housing or infrastructure in underserved areas.

State Road 46, Bloomington, IN The State Road 46 Tax Increment Financing (TIF) District, also known as the North Park TIF, was established by Monroe County in December 2002. The district covers approximately one square mile. In 2005, the Monroe County Redevelopment Commission authorized the issuance of up to $7 million in taxable TIF revenue bonds to fund infrastructure improvements within the district, aiming to make the area more attractive for development. The final payment on these bonds was made on February 1, 2021. Figure A3 provides a current aerial view of a portion of State Road 46, highlighting some of the new businesses established under the TIF district. Tables A1 and A2 in the Internet Appendix present a breakdown of tax increment financing for this district.

9 Additional Robustness Results

9.1 Migration or Displacement

We further investigate whether the observed increase in income and decrease in poverty rates are driven by migration or displacement. Specifically, we consider the possibility that TIF projects may attract higher-income individuals while pushing out lower-income residents. If so, those who leave the area may continue to face poverty and low income, but they would no longer be reflected in the statistics for TIF-affected states, implying that TIF may not generate genuine social benefits. To assess this, we examine two key indicators: out-of-state migration and changes in the rent index.

Figure A6 presents an event study plot of the results. We find that TIF projects do not significantly increase out-of-state migration. Over a 20-year period, we observe a positive trend, suggesting that other dynamics may be at play rather than large-scale displacement of residents. Furthermore, Panel B in figure A7 reveals that is no significant impact on the rent growth rate following the introduction of TIF. This suggests that TIF states have not become increasingly unaffordable for existing low-income residents, providing evidence that displacement due to rising rents is unlikely to have occurred.

9.2 Housing Wealth Channel

Given that the primary goal of tax increment financing (TIF) is to repay development-related financing through increased property tax revenues, we begin by examining whether rising household spending power driven by increases in housing values contributes to the observed income growth. Mian et al. (2013) suggest that higher housing values lead to increased consumption. In a related study, Mian and Sufi (2014) find that housing net worth influences consumer demand, which in turn affects employment in non-tradable sectors. Since TIF has been associated with higher employment in non-tradable sectors, we investigate whether this effect is driven by increased consumer demand rather than the direct creation of jobs in those sectors as a result of TIF.

[Table on transition to homeownership and prices here]

However, the evidence on property value increases associated with TIF is mixed. While numerous studies support the notion that TIF directly enhances property values within the TIF designated district (Carroll,

2008; Smith, 2006, 2009), some research indicates negative spillover effects on property values in surrounding areas (Weber et al., 2007; Yadavalli and Delgado, 2018; Ziff, 2024).

The impact of TIF on average property values in broader area is, therefore, not ex-ante not obvious. On the one hand, the introduction of TIF can increase amenity values and opportunities in targeted areas, enhancing their desirability and increasing property values. However, if resources are concentrated in small, targeted areas at the expense of surrounding regions, the aggregate effect on broader property values may net to zero. Furthermore, if TIF initiatives spur significant residential construction, the resulting increase in housing supply could exert downward pressure on housing values in general areas. To explore these channels, we examine whether the introduction of TIF has led to an increase in state-level and metro-level housing price indices.

Our analysis begins with the Federal Housing Finance Agency (FHFA) Housing Price Index, a repeated-sales measure designed to control for quality and capture changes in fundamental housing values. Specifically, we use the growth in the housing price index, defined as: P_{it}/P_{it-1}. To supplement this, we incorporate data from the Historical Housing Prices (HHP) Project developed by the Philadelphia Fed (Lyons et al., 2024). This index uses a hedonic model that accounts for unit attributes and spans a longer time period. We focus on the 30 largest U.S. cities included in the dataset and examine how the housing price index for each city changes following the state's adoption of TIF.

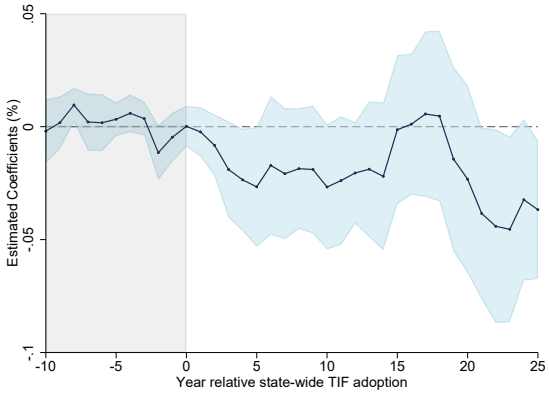
Figure A8 shows no clear pattern in changes to housing prices. The effect appears slightly positive from year 2 to year 10 but is imprecisely estimated. Since the FHFA data begins only in 1975, we lack information on earlier trends and states that enacted TIF laws prior to that year. To address this limitation, we use the HHP index, which covers representative cities starting from 1890. Using the HHP index, we find no significant impact on the housing price index for major cities (Panel A in Figure A7). If anything, there appears to be a slightly negative effect on housing prices, which does not support the hypothesis of increased consumption through higher housing wealth.

9.3 TIF Bond Issuers

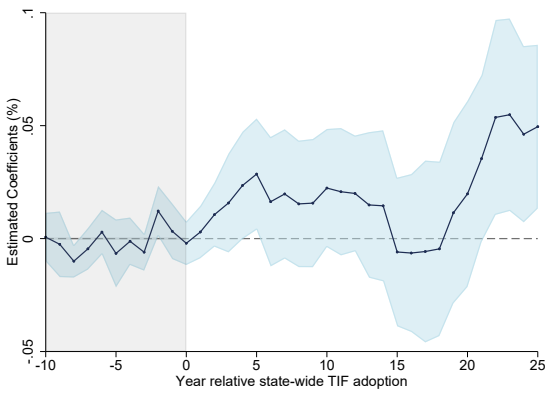
We examine which governmental units issue TIF bonds by looking at the Mergent Municipal Securities Database for any issue whose project title or issuer name contains "TIF" or "TAX INCREMENT." This conservative screen yields 1,380 bonds issued between 1985 and 2021, associated with 553 distinct issuer names.

Figure A11: School Districts Revenue Composition

(a) Property Tax Share



(b) Intergovernmental Transfer Share



We classify each issuer with an AI and flag whether the issuer operates at the state, county, municipal, or special district level. Table A6 presents examples of the issuer name and their classification. We find that among 553 distinct issuers, 391 are associated with cities, 52 are counties, 9 are townships, 3 are states, and 98 remain unclassified.

Table A6: A Random Sample of TIF Issuer Names and Their Classifications

Issuer's Name	Related To	Issuer's Name	Related To
FORT LAUDERDALE FLA CENT BEACH	City	DEERFIELD TWP OHIO TAX INCREME	Township
BLOOMINGTON MINN PORT AUTH TAX	City	ST JOHN MO TAX INCREMENT	City
TAYLOR MICH TAX INCREMENT FIN	City	RACINE WIS	City
COLUMBUS IND ECONOMIC DEV TAX	City	HUNTLEY ILL TAX INCREMENT	City
ANNAWAN ILL TAX INCREMENT REV	City	ST PAUL MINN PORT AUTH ENERGY	Other
GREENVILLE OHIO TAX INCREMENT	City	RIVERSIDE MO TAX INCREMENT REV	City
BUTTE SILVER BOW MONT CITY & C	Other	MISSOURI CITY TEX DEV AUTH TAX	City
WESTMINSTER COLO ECONOMIC DEV	City	FORT WAYNE IND REDEV DIST TAX	City
HANNIBAL MO INDL DEV AUTH TAX	City	LAPEER MICH TAX INCREMENT FIN	City
BRANSON MO INDL DEV AUTH TAX	City	EVANSDALE IOWA URBAN RENEWAL	City
RIVERDALE UTAH REDEV AGY TAX	City	SOUTH HOLLAND ILL TAX INCREMENT	City
RIVERSIDE MO INDL DEV AUTH TAX	City	TROY MICH DOWNTOWN DEV AUTH	City
NORTH VERNON IND REDEV DIST TA	City	CRAWFORDSVILLE IND REDEV COMMN	City
BATTLE CREEK MICH TAX INCREMEN	City	WEST BURLINGTON IOWA URBAN	City
ST ANTHONY MINN HSG & REDEV	City	PORT ORANGE FLA CMNTY REDEV	City
BLOOMINGTON IND REDEV DIST TAX	City	BOCA RATON FLA CMNTY REDEV AGY	City
STILLWATER MINN TAX INCREMENT	City	NEW ALBANY IND REDEV DIST TAX	City
SOUTH BEND IND REDEV DIST TAX	City	PUEBLO COLO URBAN RENEWAL AUTH	City
ARVADA COLO URBAN RENEWAL AUTH	City	MORTON GROVE ILL TAX INCREMENT	City
DEKALB ILL TAX INCREMENT REV	City	MOUND MINN HSG & REDEV AUTH	City
SPRINGFIELD MICH TAX INCREMENT	City	AURORA COLO URBAN RENEWAL AUTH	City
PLAINFIELD IND REDEV COMMN TAX	City	WHITEFISH MONT TAX INCREMENT U	City
BIRMINGHAM ALA TAX INCREMENT F	City	VALPARAISO IND REDEV DIST TAX	City
WEST CHESTER TWP OHIO TAX	Township	BRENTWOOD MO TAX INCREMENT REV	City
RIVER BEND CMNTY DEV CORP TEX	Other	LOMBARD ILL TAX INCREMENT REV	City
BUTLER CNTY OHIO REV	County	DALLAS TEX TAX INCREMENT FING	City
BURLINGTON IOWA URBAN RENEWAL	City	WEST VY CITY UTAH REDEV AGY	City
JEFFERSON CNTY IOWA URBAN RENE	County	VINCENNES IND REDEV DIST TAX INCREMENT	City
NORTH CHARLESTON S C LTD OBLIG	City	SPRINGFIELD ILL TAX INCREMENT	City
CAROL STREAM ILL TAX INCREMENT	City	CHICAGO ILL TAX INCREMENT	City
WHEELING W VA TAX INCREMENT	City	NORTHAMPTON CNTY PA INDL DEV	County
GWINNER N D TAX INCREMENT REV	City	LAKE ZURICH ILL SALES TAX	Other
INDIANA BD BK REV	State	MOLINE ACRES MO TAX INCREMENT	City
WINROCK TOWN CTR TAX INCREMENT	Other	ALLEGHENY CNTY PA REDEV AUTH T	County
HARRISON TWP OHIO TAX	Township	JEFFERSONVILLE IND REDEV COMMN	City
FAYETTEVILLE ARK TAX INCREMENT	City	VANDERBURGH CNTY IND REDEV COM	County

9.3.1 Other Place-Based Policies

A key challenge in estimating the impact of TIF is the potential for confounding effects from other economic development policies introduced around the same time. When states implement complementary programs, such as Empowerment Zones, Business Improvement Districts (BIDs), tax incentives, or infrastructure investments, these initiatives can also influence economic outcomes, making it difficult to isolate TIF's true effect. Both Empowerment Zones and BIDs, for example, aim to encourage economic development by offering various benefits and incentives to businesses. As a result, their simultaneous implementation alongside TIF may lead to overlapping effects, complicating the estimation of TIF's independent impact. To address this concern, we analyze the timing and scope of these concurrent policies and assess their potential to introduce bias into our estimates.

Empowerment Zones. First introduced in the early 1990s, Empowerment Zones target highly distressed urban and rural communities, using incentives to encourage private-sector economic development and job creation. Qualifying businesses within Empowerment Zones are eligible for tax credits, employment credits, and other incentives. The Empowerment Zones were implemented through three rounds – 1994 (Round I), 1998 (Round II), and 2001 (Round III) – at the county or census tract level. We obtain the Empowerment Zone designations for all three rounds at the census tract level and first examine whether the adoption of TIF predicts the timing of the first Empowerment Zone designation within a State. As Empowerment Zones can expand, remand active, or be retired and redesignated, we investigate whether the state-wide intensity of Empowerment adoption – proxied by the ratio of census tracts designated as Empowerment Zones to the total number of census tracts within each state in each round – can be predicted by the prior adoption of TIF.

The regression results in the Appendix Table A5 examine the relationship between TIF adoption and the presence and intensity of Empowerment Zones across states. The first three columns present probit model estimates, where the dependent variable indicates whether a state has ever adopted Empowerment Zones. The last three columns display OLS estimates, with the dependent variable representing the intensity of Empowerment Zone adoption, measured by the percentage of census tracts designated as Empowerment Zones. We find that TIF adoption does not predict either the extensive or intensive margins of Empowerment Zone adoption, with the exception of a weakly significant 10% coefficient on TIF adoption in column 5. Overall, this weak correlation alleviates concerns that Empowerment Zone adoption is driving the results presented in the previous sections.

Business Improvement District. A Business Improvement District (BID) is a designated area where businesses voluntarily agree to pay additional fees to fund local improvement projects. These projects often include street cleaning, security services, and infrastructure enhancements. First established in the United States in New Orleans in 1974, BIDs are created through a petition process initiated by economic representatives of an industry or commercial area. Similar to TIF, the formation of a BID requires state legislative approval to ensure regulatory oversight and compliance. To assess whether the statewide adoption of TIF coincides with BID adoption, we find that the adoption timings are uncorrelated (Appendix Figure A4), reducing concerns that BIDs might confound the effects of TIF on statewide-level variables. Appendix Table A4 presents the outcomes when replacing TIF adoption years with BID adoption years. Contrary to the adoption of TIF, we find that BID adoption does not have a statistically or economically significant effect on establishment entry rates or job creation rates. However, BID adoption appears to reduce establishment exit and job destruction rates, aligning with the program's intended objectives. Since BIDs are typically initiated by *pre-existing* industries seeking improvements, it is plausible that these areas already host established businesses, which may limit opportunities for the entry of new firms. Moreover, Meltzer (2012) finds that BIDs are more likely to be formed in areas with higher property values. In this context, the enhancements provided by BIDs may contribute to the retention of these businesses by improving the local business environment, thereby reducing exit rates.

Main Street Program The Main Street Program is a community-driven initiative that began in the early 1980s, launched by the National Trust for Historic Preservation in the United States. It was created to revitalize declining downtown areas and historic commercial districts, while promoting sustainable economic growth. By focusing on a mix of historic preservation, economic development, and community planning, the program provided a framework for towns and cities to rejuvenate their main streets. The intent of the Main Street Program is to transform aging downtowns into vibrant, thriving centers. Through a collaborative approach, it engages a wide range of stakeholders, including municipal governments, local business owners, and community organizations.

Both the Main Street Program and TIF aim to stimulate local economic development and revitalize urban areas, which can make it challenging to identify the effect of TIF. To try to disentangle the impact of TIF from the Main Street Program, we collected the dates when each state started their first Main street program, and examine whether there is any correlation between the introduction of these to incentive programs. Figure

A5 depicts the starting dates of the Main Street Programs at each against the TIF adoption years at each U.S. state. The figure shows that there is no correlation between the introduction of TIF laws with the year when states introduced the Main Street Program.

9.4 Additional Results

Figure A12: TIF Impact on State-Level Establishment Outcomes

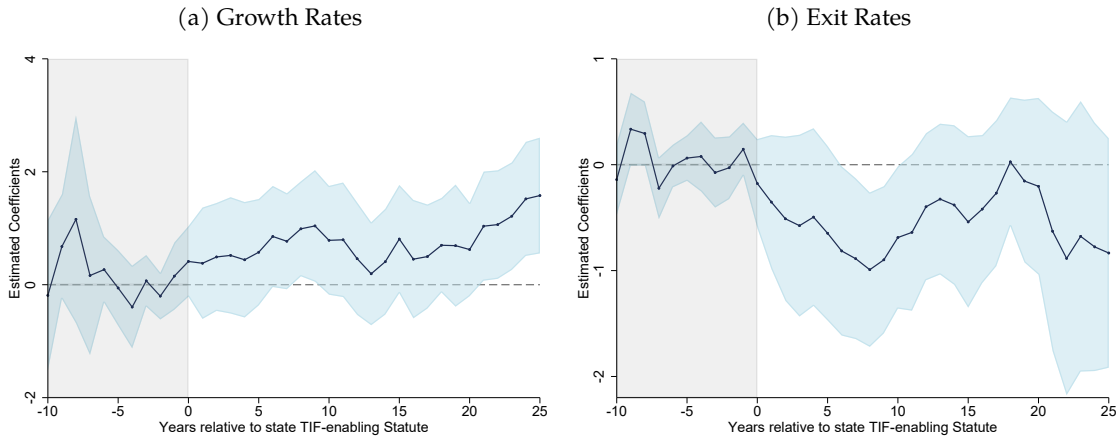
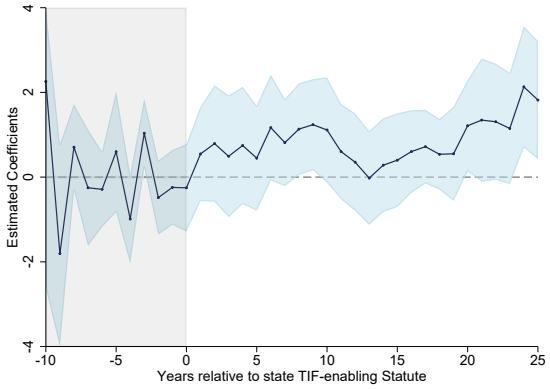


Table A7: Impact of TIF Adoption on Employment Dynamics

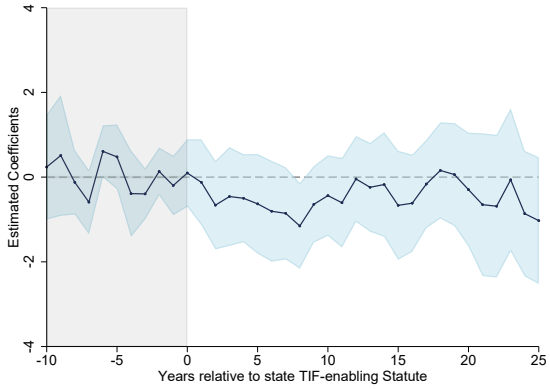
	All	By Sector		
	(1) All	(2) Manufacturing	(3) Construction	(4) All Else
ATT	.79*	.929	.0748	.487
	(.463)	(.647)	(1.51)	(.463)
Mean DV	2.443	0.444	2.111	3.150
$(\beta/\bar{y})(\%)$	32.315	209.017	3.542	15.453
Observations	2,276	2,697	2,276	2,276

Figure A13: TIF Impact on State-Level Employment Outcomes

(a) Growth Rates



(b) Destruction Rates



		(1)	(2)	(3)	(4)
		Unique Observations	Sample Mean ($1,000)	Estimated Effect of TIF	Average Costs ($ per capita) (2)*(3)
County	(a) Total Interest on Debt	2,489	0.0467	0.113	5.277
Municipality	(b) General Expenditure	19,441	1.248	-0.0829	-103.46

Table A8: Cost Calculation of TIF in 2012 dollars

9.5 Decomposition of the Effect

Our analysis quantifies these costs into two primary components: the direct fiscal burden on county governments, and the indirect costs, proxied by the value of foregone public services enjoyed by the residents.

Table A8 separates the fiscal impact of TIF on counties into two channels. We view the direct cost as the incremental interest burden. Interest payments increase by 0.484 pp after TIF, while the debt stock increases by only 0.371 pp (coefficients from Table 8). This difference represents a 11.3 % increase in effective borrowing costs – a risk premium that counties must pay, either due to investors' recognition of higher leverage or the elevated risk associated with TIF projects in which counties often have no control over, as counties rarely administer TIF districts.

We define indirect cost as a contraction in public service provision. Per-capita general expenditure falls (coefficient $\beta_{\text{gen.exp}} < 0$ for municipalities in Table 8), which implies that residents within the municipality receive fewer municipal services – such as public safety – than they would have in the absence of TIF. We interpret the negative of this coefficient as the cost residents bear by the forgone services. Conversely, the increased expenditures for school districts suggests a net increase in service provision for schools. The combination of this risk premium and the change in general expenditure provides a robust back-of-the-envelope estimate of TIF's total fiscal burden on county finances and the that the schools receive more services. The interest premium and the drop in general expenditure together provide a concise back-of-the-envelope estimate of TIF's direct fiscal burden on county finances and the indirect economic costs borne by the community whose public services are reduced.

We can translate the estimated fiscal impacts to the annual cost of TIF per new business establishment. TIF is estimated to increase the county-level annual business creation rate by 0.51 percentage points per year on average. In a typical county with an average of 2072 establishments (BDS, 2012), this translates to approximately 10.57 new firms annually.

On the fiscal side, we calculate the total costs borne by the community in a typical county by summing the direct fiscal costs and the net indirect costs. In column 4, the direct fiscal cost per capita is $ 5.28. The indirect cost is the net change in public service provision, measured as the decrease in municipal general expenditure, which amunts to approximately $103.46 per capita. Assuming an average county has a population of 100,000, and that 60 % of its residents live in incorporated areas (municipalities), the total cost amounts to roughly $ 6.74 million per county.

Dividing this total cost by the number of new firms created annually provides a direct cost per new establishment of approximately 66.14k ($\approx$ $.527 million/10.57). Considering the net decrease in the service provision, this would imply the cost per new establishment of approximately $ 637.2k ($\approx$ $6.735 million/10.57).