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***Does Chicago's Tax Increment Financing (TIF) Program Pass the 'But-For' Test?
Job Creation and Economic Development Impacts Using Time Series Data***

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ABSTRACT

Chicago is one of the most extensive users of Tax Increment Financing (TIF) in the U.S. to promote economic development, with 160 districts designated since 1984. This paper conducts a comprehensive assessment of the effectiveness of TIF in Chicago in creating economic opportunities and catalyzing real estate investments at the neighborhood scale. This paper uses a unique panel dataset at the block group level to analyze the impact of TIF designation and funding on employment change, business creation, and building permit activity. After controlling for potential selection bias in TIF assignment, this paper shows that TIF ultimately fails the 'but-for' test and shows no evidence of increasing tangible economic development benefits for local residents. Implications for policy are considered.

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1. Introduction

In the wake of the Great Recession, local governments in the U.S. face severe fiscal stress and, in many cases, must make significant cuts to basic services such as schools, public safety, and infrastructure repair. Alongside declining revenue, cities also face a renewed challenge to create employment opportunities for residents in the face of persistently high unemployment. In this context, economic development policies which use local tax revenue to promote job creation are coming under intense scrutiny.¹ One of the oldest and most widely used tools that cities use to promote urban redevelopment and job creation is Tax Increment Financing (TIF). Although its legal form and usage varies across the 49 states that have enabling legislation, TIF is essentially an incentive tool that aims to increase private investment in defined “blighted” areas. In its most basic form, a local government designates an area as a TIF district that is targeted for redevelopment within a city or county. At the time of designation, property taxes from that district that normally flow to existing public budgets are frozen for a specified period (typically more than 20 years). Any new tax increment associated with increased property values pays for economic redevelopment projects or incentives only within the designated TIF district.

In some sense, TIF can be thought of as paying for economic development activities on a fiscal credit card, in that the up-front costs of redevelopment activities—such as infrastructure improvements, area beautification, or direct subsidies to private firms—are paid for with future tax revenue that does not yet exist. Critics of development policies like TIF claim that such policies divert potential tax revenue for localized redevelopment projects and thus reduce funds for public education and general city services. However, TIF advocates claim that funded

¹ California’s recent decision to eliminate all Community Reinvestment Authorities in the state and return property tax increments to the State’s general fund is one, well publicized example.

redevelopment activities create jobs and ultimately generate more tax revenue for all taxing jurisdictions in the future.

To evaluate the effectiveness of TIF and similar economic development practices, one needs to ask if future development would have occurred without the up-front intervention. While this “but-for” test is necessary to evaluate if TIF is an effective redevelopment tool, and thus a wise use of public funds, it is an elusive question for planners and policy researchers to accurately address². This paper attempts to provide a comprehensive evaluation of TIF usage in Chicago—which has used TIF extensively since the mid-1980s—that answers the “but-for” question. Specifically, this paper measures the impact of TIF designation and the subsequent TIF-funded investments on employment growth and private real estate development at the local level. Unlike previous TIF studies, this paper uses time-series data at the block group level. It also uses the timing of TIF designation in a difference-in-differences (DD) research design that compares outcomes in treated portions of the city to non-treated areas. Despite its extensive use throughout the City of Chicago, this paper finds no evidence that the TIF program resulted in any significant new job creation. While some individual TIFs may have positive impacts, Chicago’s use of TIF has not resulted in positive net employment benefits for city residents. This paper, by measuring building permit activity, finds no support for the claim that TIF designation acts as a catalyst for private investment—beyond what would have occurred otherwise—in the physical structure of local neighborhoods.

The remainder of this paper is organized as follows. Section 2 provides a narrative background on the emergence of TIF as a popular local economic development tool in the U.S. and summarizes the unique evolution of TIF usage in Chicago. Section 3 reviews the empirical

² The so called ‘but-for’ test is a basic criterion in cost-benefit analysis of public policies. Essentially the analyst must ascertain if the economic activity in question would not have occurred ‘but-for’ the policy intervention.

literature on the impact of TIF and presents the specific research questions of this paper. Section 4 lays out the methodology and data sources used to measure TIF impacts on employment and building permit activity. Section 5 presents the main results and discusses the robustness of the findings. The conclusion summarizes the implications of this research for policymakers in Chicago and beyond and offers a potential political explanation for the continued use of TIF despite its dubious record for job creation and overall failure to pass the “but-for” test.

2. Literature Review

During the 1980s, many large central cities in the U.S. faced a dual crisis: rapid job loss coupled with declining state and federal funds to promote urban redevelopment projects. The retrenchment of the federal role in urban redevelopment is well documented (Fainstein & Fainstein, 1989; Mollenkopf, 1983; Sagalyn, 1990) and is epitomized by the death of the Urban Development Action Grant (UDAG) program in 1988 (Reed, 1989). Faced with the responsibility to attract new businesses amid ongoing deindustrialization and suburbanization, many cities pursued alternative strategies intended to provide additional resources for economic development, but which would not rely on federal or state funds. The search for self-financed alternative economic development strategies resulted in a policy shift that favored market-based solutions that attempted to attract investment from increasingly mobile business. David Harvey (1989) labeled the shift toward public-private partnerships and public subsidization of business the “entrepreneurial” model of city development. Under this policy approach, cities must present a ‘business friendly’ posture in redevelopment efforts, often prioritizing the needs of business actors above those of low-income residents and the general public (Brenner & Theodore, 2002; Logan & Molotch, 1987; Peterson, 1981; Rubin, 1988; Savitch & Kantor, 2002; Stone, 1993). Cities that face deeper economic challenges are more likely to engage in business

attraction policies that offer direct subsidies to private developers or corporations, such as TIF (Felix & Hines, 2011; Warner & Zheng, 2011).

Tax Increment Financing is arguably one of the most common tools in the economic developer's toolbox; 49 states have enacted TIF legislation since its initial use in California in 1952. TIF also epitomizes the current "entrepreneurial" paradigm in economic development as it involves a high degree of risk-taking on the part of the public sector. In the typical TIF development scenario, the public sector borrows money in the form of a bond to write-down the cost of up-front redevelopment with the hope that increased property taxes collected in the future will fully cover the public investment. As Weber (2010) argues, the TIF relationship forces cities to make significant efforts to assure private bond holders that returns will materialize; this is a stance which further binds the city to a pro-growth strategy. As the case of Chicago indicates, once a city starts down the road of easy TIF spending, like the proverbial teenager with his first credit card, it is difficult to stop spending.

Because TIF is one of the most popular—and controversial—economic development tools at the disposal of local governments, it has received significant attention in the academic literature of economics, public policy, planning, and geography. This section briefly summarizes the most salient studies to put in relief the unique contributions of this paper's empirical work. Some theoretical studies have linked TIF—in a general sense—to the broader shift towards neoliberal policy-making (see Weber, (2002) or identified it as an indicator of the competitive nature of local government policy-making (Briffault, 2010). However, this paper focuses only on quantitative research that analyzes the impact of TIF on economic development outcomes.

The empirical TIF literature in the U.S. focuses mainly on its impact on real estate values either within district boundaries or at the aggregate, city-level and reveals mixed, but largely

negative, results. For example, Dye and Merriman (2000) use data from municipalities within the Chicago metropolitan area to examine whether TIF adoption impacts overall growth in equalized assessed value (EAV). They found that TIF adoption had a negative impact on municipality growth, even after controlling for a variety of municipal characteristics—community type, community location, and fiscal structure. They attribute this finding to higher growth within TIF districts at the expense of non-TIF portions of the city. This finding is echoed by Merriman, Skidmore & Kashian (2011) using city-level data from Wisconsin. In a similar study that focused only on TIFs in the City of Chicago, Weber, Bhatta and Merriman (2007) analyzed appreciation rates of single-family homes that sold more than one time from 1993 to 1999. After controlling for the characteristics of homes and neighborhood conditions, this study found mixed results that indicated that that proximity to an industrial TIF district negatively affected prices, but proximity to TIF districts with both commercial and residential parcels increased appreciation rates. A critical aspect of their study is the use as an additional control of information on TIF-funded activity. Thus, while the “treatment effect” of most TIF studies is the designation itself (i.e. whether a parcel falls inside or outside a TIF district), their paper included data on actual spending within the TIF. This is an aspect that is retained in the empirical work proposed in Section 4. Alternatively, using a geographically refined hedonic pricing model Smith (2006) found that inclusion in a TIF district had a positive impact on the price of multi-family properties.

Most papers that analyze TIF impact do not explicitly address the problem of endogeneity with regard to TIF designation. Specifically, since most TIF legislation requires that districts be created in portions of the city that have experienced “blight”, it is possible that TIFs are *only* created in less-desirable areas that one would not expect to grow at the same rate as

non-blighted sections. Smith (2009) is one of the only papers to directly address the issue of selection bias with respect to TIF-designation. He examines the impact of TIF on the change in individual commercial property values and predicts TIF assignment with a propensity score approach that controls for neighborhood characteristics, such as poverty, unemployment and housing values. This issue is potentially critical in attempting to answer the “but-for” question: in that comparisons between TIF districts and comparable non-TIF parts of the city are necessary. Smith’s results show that the implicit price of commercial properties in TIF districts increases faster than properties that are not in TIF districts. Further, the rates of change in real estate prices accelerates after TIF designation, even after controlling for the propensity of non-TIF areas to receive designation.

Finally, one of the few papers to directly examine the impact of TIF on job creation is Byrne (2010), which focuses on the effect of TIF adoption on municipal employment growth in Illinois. Specifically, Byrne uses a panel dataset consisting of employment and TIF adoption dates at the municipal level and uses a fixed-effect estimate approach to assess the impact of TIF adoption. Overall, the findings suggest that TIF adoption, in general, does not lead to higher employment. However, Byrne does not adequately control for the issue of selection bias in that cities that use TIF are potentially those that have experienced slower growth rates relative to rapidly-growing suburban areas. While Byrne uses a first-differenced fixed effects model that he claims eliminates the issue of selection bias, it is still possible that slower growth municipalities adopt a TIF after a recent period of slow growth. Lastly, as Byrne points out in discussing the detailed findings by industry, it is unclear whether we should even expect to find an municipal-level impact of TIF because its stated purpose is to increase economic development within a narrowly conscribed geographic area.

There is also a recent and growing international literature on TIF usage. While TIF has only recently been adopted outside the US and is in use in a limited number of countries (e.g. Scotland and other portions of the UK, Canada), there are several papers which examine TIF from the perspective of the policy transfer literature. For, example Squires and Lord (2012) use stakeholder interviews to understand under what conditions TIF could effectively be used in the UK. Adair, Berry and McGreal (2003) review the US policy literature on TIF in light of various options for local finance in the UK and the European Union. Also, TIF is also being considered as a mechanism for infrastructure financing and municipal land value capture in cities in developing countries, including South Africa (see Brown-Luthango, 2011). Given its limited and varied use outside the US, there are no directly applicable empirical analyses outside the US on the impact of TIF on local job creation.

This paper advances the empirical literature in several aspects. First, the analysis is conducted at a highly refined geographic scale (the block group level) to test whether TIF designation creates jobs at the same level at which it funnels investments. Second, this paper addresses the issue of selection bias by accounting for the likelihood of each block group to receive a TIF. Lastly, this paper is comprehensive in that it tests both of the leading hypotheses of TIF advocates: that TIFs creates jobs and catalyzes private sector development. As such, the goal of this paper is to assess the overall effectiveness of Chicago's TIF program in obtaining the primary outcomes that justify its use: jumpstarting employment growth, creating new businesses in targeted neighborhoods, and catalyzing real estate investment relative to similar non-TIF areas. In addition, this paper evaluates whether the timing of TIF designation or investments made from TIF revenues had a greater impact on the economic development of the designated district.

3. The evolution of TIF usage in Chicago

Before turning to the empirical analysis it is important to provide background on how TIF is used in Chicago and to motivate the hypotheses being tested here, namely that, beyond a simple financing mechanism, TIF is largely intended to spur economic development. In 2011, the City of Chicago held \$985 million in unallocated TIF funds across all of its 160 districts.³ However, the City of Chicago and the Chicago Public Schools (CPS) district face large budget deficits exacerbated by the Great Recession and the concomitant real-estate collapse. These massive deficits have resulted in reduced spending on fundamental services and justified the sale of public assets such as the Chicago Skyway and Midway Airport to private investors⁴. This glaring juxtaposition of City deficits and TIF surpluses is one reason why TIF has come under citywide scrutiny for the first time in nearly three decades of use.⁵ However, to fully evaluate the TIF program, it is critical to understand how the use of TIF evolved in Chicago in order to specify the mechanisms through which TIF may affect economic development outcomes.

By the late 2000s, TIF was widely known as “the only game in town” to fund a wide variety of economic and community development initiatives, ranging from direct subsidies for corporate relocations to neighborhood retail revitalization, infrastructure improvements, and targeted workforce development programs. Yet, as Chicago’s history with TIF indicates, the program grew from a rarely used tool targeted to “blighted” portions of the city to the City’s most flexible and broadly-used policy. Chicago’s first TIF was the Central Loop TIF, designated

³ Author’s analysis of data released by the City of Chicago in “TIF Projection Reports” available online: <http://data.cityofchicago.org/Government/TIF-Projection-Reports/> (accessed August 11th, 2011).

⁴ See Ahmed-Ullah, Noreen S. “CPS cuts back capital spending in 'difficult fiscal climate'” Chicago Tribune, 5/3/2012.

⁵ For example, the City Council passed the “TIF Sunshine Ordinance” in 2011 that required for the first time a public accounting of all TIF district spending and revenue collections. Also, Mayor Rahm Emmanuel convened a TIF advisory council in September 2011 made up of planners, academics, and previous TIF critics to advise him on making structural reforms to the City’s overall TIF program.

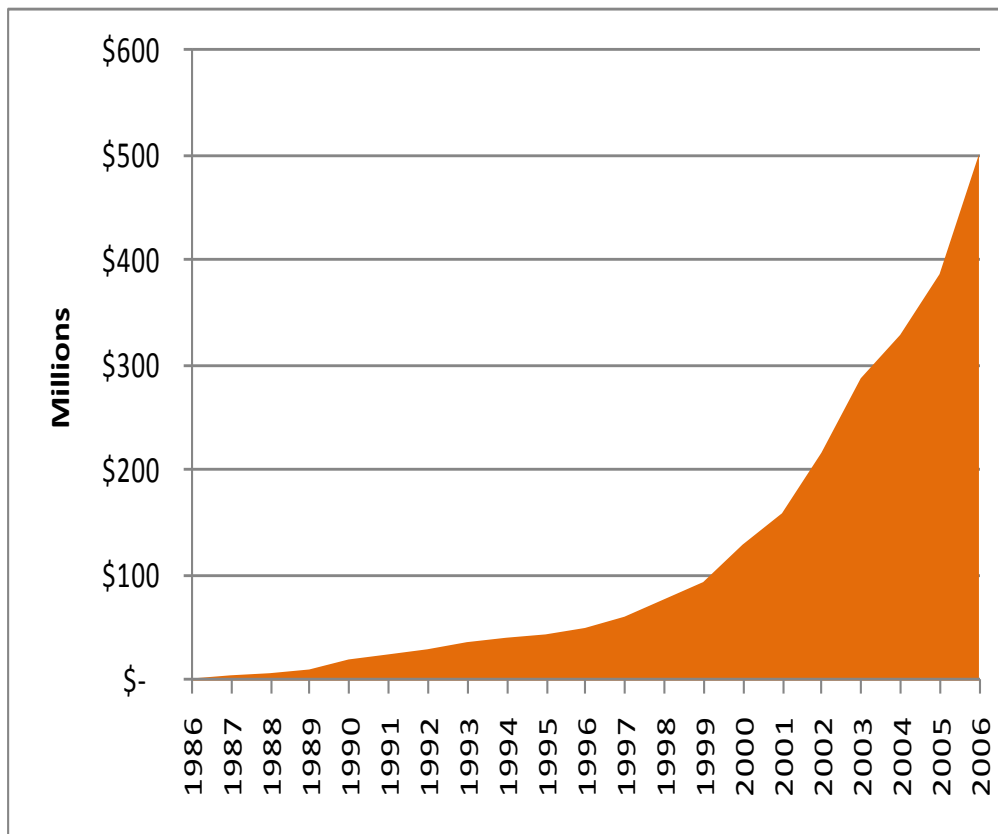
in 1983 and intended to redevelop commercial areas in the core downtown area, which was threatened by retail competition from suburban areas. Between 1983 and 1995, Chicago designated 29 more districts, 41% of which were in primarily industrial areas such as the Stockyards Industrial Corridor. After 1995, TIF usage accelerated significantly, extending into “conservation areas” that did not have to meet as many “blight” criteria. This made it easier for the City to justify the use of TIF in a much wider set of neighborhoods and for a broader set of economic and community development goals. During the late 1990s, the City used TIF funds to attract high-tech firms, such as the failed MarchFirst headquarters, and high-profile corporate headquarters relocations, such as Boeing and MillerCoors.

However, as TIFs spread throughout the city and as an increasing share of tax revenue was sequestered in TIFs, the City began spending TIF revenue on a variety of public capital improvements such as libraries, schools, and parks. Perhaps in response to criticism from community activists or individual alderman that too much TIF revenue was flowing to private developers and to attract mobile corporations, the City also began to use TIF funds to promote affordable housing, workforce development and created a TIF small business improvement program⁶. An alternative explanation for the “sprawl” of TIF funded projects away from traditional infrastructure and economic development uses could be the sheer amount of tax revenues collected as Chicago experienced a real-estate boom in the late 2000s. As figure 1 indicates, by 2008 the city was collecting over \$500 million each year in TIF increment.

⁶ Started in 2000, the Small Business Improvement Fund program offers direct grants up to \$150,000 to industrial or commercial properties located in a sub-set of TIF districts (currently 74 districts allow accrued increment to be used for SBIF). While grant funds can be used for property upgrades only, the expressed goal of the city is to free up capital for small businesses to create jobs and remain in the City. The City has funded over 600 SBIF applicants since the program’s inception, amounting to \$28 million in direct subsidies to small businesses and landlords. See: <http://chicagoinspectorgeneral.org/uncategorized/small-business-improvement-fund-sbif-recipients-thru-august-2011/>

By 2008, there were 160 active TIF districts in the City of Chicago, covering approximately one-third of the total assessed valuation of real property. This share of future property tax revenues will not flow into the city and county general funds and the public school system. Given the history of Chicago’s reliance on TIF districts as a development incentive tool, it is critical to understand how TIF might be expected to create the type of economic development benefits that are the subject of this paper, namely jobs, business growth, and private real-estate development. Below this paper generates a typology of TIF usage in Chicago.

Figure 1. Annual Revenue Collected in TIF Districts, 1986-06.

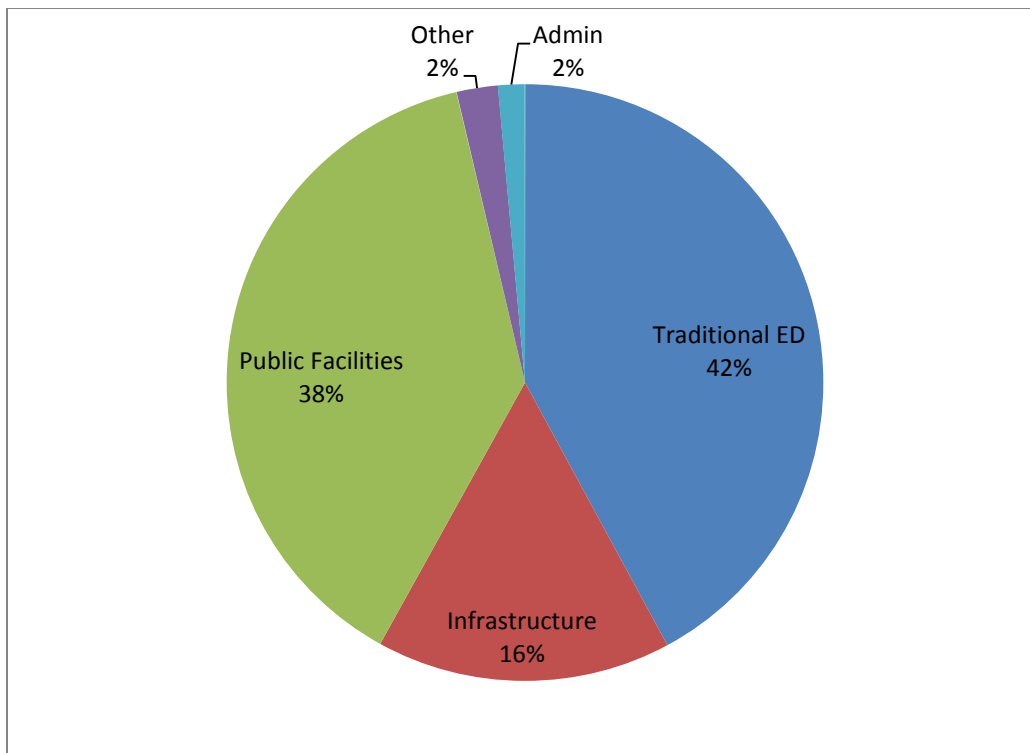


Sources: Cook County Clerk, 2007. Commissioner Mike Quigley’ Office Report, “A Tale of Two Cities”, April 2007.

Information on how the City actually spent TIF revenue has only recently become available to the public. As a result, a typology of recent TIF spending may not reflect the spectrum of uses in previous decades. Nevertheless, a categorization of all TIF funded

obligations in 2011 indicates that a significant share of resources flows into traditional economic development projects which have an explicit goal of job creation. As Figure 2 indicates, 42 percent of TIF revenue was spent on what this paper terms ‘Traditional Economic Development’ activities. This category includes all redevelopment agreements (RDAs) in which the City’s engages with a private developer. RDAs themselves cover a variety of projects but they typically involve a subsidy to a developer of a retail, mixed-use, or industrial project. These projects are either explicitly or implicitly justified on the basis of job creation, and new business attraction. This category also includes debt service on previous bond issues and land assembly and site development costs on private land.

Figure 2. A Typology of TIF Expenditures in Chicago, 2011



Source: Author’s categorization of TIF expenditure data from TIF Projection Reports produced by the City of Chicago (available: <http://data.cityofchicago.org/Government/TIF-Projection-Reports/zai4-r88e> (accessed 7/1/2012)). Categorization of all current obligations and potential projects listed for 2011. Traditional ED includes all redevelopment agreements, debt service on previous bond issues, land assembly and site development costs on private land. Infrastructure includes all TIF funded support for streetscaping, lighting, sewer improvements and any other infrastructure improvement. Public facilities includes TIF spending on traditional categories of public capital expenditure include upgrades to public schools, parks, and transit facilities.

The infrastructure category includes all TIF funded support for streetscaping, lighting, sewer improvements and any other infrastructure improvement that is external to a private property. A basic justification for improving infrastructure is to improve the economic conditions of neighborhoods, making it easier to conduct business. For example, improvements to alleys and widening streets improve the efficiency of truck transport and thus improve the competitiveness of local businesses, particularly manufacturers. Lighting and streetscaping increase the attractiveness and safety of retail corridors. As a result we can logically hypothesize that TIF funded infrastructure improvements may have an impact on job creation and business establishment growth.

Even the TIF dollars which flow to capital improvements of public facilities (38%) such as schools, parks, and transit facilities can be expected to generate measureable impacts on neighborhood economies. Such improvements may signal private investors that the City is taking an interest in broader redevelopment of a given neighborhood. In addition schools, parks, and other public facilities are community assets that stabilize neighborhood real estate markets. This signaling effect may create incentives for private land owners to renovate their properties as the neighborhood is seen as more stable or more physically attractive. Thus, while this portion of TIF funded investment—which is itself a more recent phenomena—may not be expected to generate direct employment growth, there is reason to believe that it may be catalytic in inducing increased real estate investment, which would be captured by measuring building permit activity.

Overall, a central claim of TIF advocates is that TIF is a critical economic development tool that ultimately creates jobs for Chicago's residents and expands business activity. As this limited typology indicates, the vast majority of TIF funds are still spent on activities which have a logical connection to economic development. Thus, this paper will first test the job creation

and business growth claims. Specifically, the paper asks: does TIF designation and/or subsequent investment increase the number of jobs or the number of business establishments within TIF districts relative to non-TIF areas? However, as the use of TIF has evolved to a wider geographic set of neighborhoods and for a broader set of public purposes (i.e. community development activities), TIF advocates have put forward an additional claim: TIF catalyzes the private real estate developers to invest in previously undesirable areas. Therefore, this paper examines the impact of TIF on building permit activity as well.

4. Methodology

This section describes the overall research design employed to estimate the impact of TIF on jobs and real estate investment. It also describes in detail the GIS selection techniques and other database construction steps employed to build the panel database that forms the basis of the empirical work.

4.1 Research Design

This paper uses an interrupted time-series research design to generate difference-in-differences (DD) estimates that compare changes in the outcome variables in a set of treated areas relative to a control group. In this framework, we define “treatment” in two ways. First, we examine the impact of TIF designation, using information on the date each district was officially established by the City. This is the approach taken by Smith (2009) and most of the extant empirical literature on TIFs because TIF designation is readily observable. However, because a large amount of TIF funds in Chicago remains unspent, there is some concern that simply measuring the impact of designation *per se* may mask the actual treatment that one expects to influence job creation or private development. For this reason, this paper provides a

parallel analysis that measures the impact of actual TIF-funded investments (e.g. infrastructure improvements, direct developer subsidies, or business incentives) on subsequent outcomes. The data on TIF investments that was compiled by the Neighborhood Capital Budget Group and now maintained by the UIC Center for Urban Economic Development—is less readily available and we are forced to make several simplifying assumptions about the nature of such investments to construct a consistent measure. All outcomes are measured and treatment is assigned at the level of 1990 U.S. Census block groups. Block groups are used as the unit of analysis since they comprise the smallest areal units for which socioeconomic control variables can be observed. Block groups are a standard measurement level for the decennial U.S. Census and typically have populations between 500 and 1500 persons. They are also fine enough that we can overlay the TIF district geography without mistakenly including too large an area for analysis. The dependent variables of interest derive from the two research questions. First, we measure changes in employment after designation and/or investment across five industry and establishment-type categories. In addition to the overall employment effect, we examine the impact of TIF on employment and the number of establishments in the retail, services, and manufacturing sectors and in establishments that are branches of multi-establishment firms. The latter category was broken out to test if TIF had a disproportional effect on non-local firms (i.e. formula retail chains), which are often the target of neighborhood-based redevelopment efforts in Chicago.⁷ Second, the number and value of building permits issued in treated block groups is measured to test if TIFs catalyze additional private market redevelopment. Equation 1 summarizes the basic modeling approach to measure the impact of TIF designation.

⁷ One of the more common uses of TIF dollars outside the Loop is to assist the development of retail centers, often in areas that have been without major grocery or general merchandise stores. For example, over \$100 million in TIF dollars were devoted to a shopping center that housed a Target Department Store in the Wilson Yards TIF on the north side.

$$[1] \quad \ln(y_{it}) = \alpha + \beta_1 TIF_{it} + \delta_t + \gamma_i + \mu_{it}$$

This model regresses the natural log of the outcome y_{it} on an indicator variable TIF_{it} that is coded (0) for each year (t) that a given block group (i) is not part of a TIF district and (1) for each full calendar year after designation. The model also includes fixed-effects for each year δ_t and each block group γ_i . The coefficient β_1 is a DD estimator, and is therefore identified solely by changes in the treatment indicator within a given block group over time. For all of the regression equations, robust standard errors are clustered at the TIF level.

However, because the timing of TIF designation and the timing of actual TIF-assisted investment can vary, we also estimate an additional equation (2) that uses TIF-funded investments, rather than designation, as the treatment variable.

$$[2] \quad \ln(y_{it}) = \alpha + \beta_1 \ln(INV_{it}) + \delta_t + \gamma_i + \mu_{it}$$

In this case, INV_{it} is the cumulative level of TIF funds spent in each TIF-associated block group in each year (t). As described in Section 4.3 below, since only aggregate TIF investment data by year was available at the TIF level, these figures are not allocated to the block group level. Thus, all block groups (i) inside a given TIF district will have the same data. While one might be concerned that variation of the key independent variable occurs at the TIF district level as opposed to the block group level, this is the same level of variation as equation 1 and allows for another way of testing the impact of TIF through varying the degree to which some districts received investment relative to others. Since standard errors are clustered at the TIF level we do

not overstate the precision of the estimates since variations within a TIF are discounted relative to variation across TIFs⁸.

To test for lagged effects of TIF treatment on each of the outcome variables described above, equations 1 and 2 are also estimated with three leads and lags of the treatment variable. Equation 3 below provides the general form of these models, the results of which are used to generate the time-path plots presented in Figure 3 and discussed in Section 5.

$$[3] \quad \ln(y_{it}) = \alpha + \sum_{k=t-3}^{k=t+3} (\beta_k TIF_{ik}) + \delta_t + \gamma_i + \mu_{it}$$

As a final robustness check the treatment sample of TIFed block groups was split into TIFs that were designated in “blighted” versus “conservation” areas to see if TIF funded economic development projects had a differential impact by the pre-existing level of neighborhood distress.

4.2 Addressing Selection Bias

A critical factor in accurately assessing whether observed TIF impacts would not have occurred “but-for” the TIF designation is to ensure that comparisons are made against a reasonable control group. In Chicago, as Gibson (2003) shows, TIF designation is non-random and “positively related to neighborhood distress”. To address the issue of the endogeneity of TIF designation (and by extension TIF investment), we use a propensity score weighting procedure (see Rosenbaum & Rubin, 1983) that predicts TIF treatment at the block group level based on a variety of pre-treatment observable characteristics. In addition to using census-based measures of demographics and neighborhood distress (e.g. poverty, vacancy rates, and housing values), we use factors that, in the case of Chicago, may have an influence on TIF designation to predict

⁸ For more discussion of clustering standard errors see Dube, Lester, Reich, 2010 in the context of policy evaluation. See Bertrand, Duflo, and Mullainathan (2004) for a broader discussion of clustering standard errors in difference-in-difference estimators.

treatment assignment. First, we include several land-use indicators (from 1990), including the percent of land in each block-group that was zoned for commercial or industrial use, because TIF districts are mainly targeted towards non-residential areas. Second, given the evolution of TIF in Chicago from the initial Central Loop TIF, we include a measure for the distance of each block-group centroid to the central business district. However, the goal of the propensity score analysis is not to predict the exact timing of TIF designation, but to control for factors that lead to TIF assignment during the entire period (1990-2008). Specifically, the predictors are also factors that may be correlated with either employment growth or building activity. Table 1 below summarizes the probit model used to generate the propensity score weights that are used in alternative specifications of models 1 -3 above.

Table 1. Probit Analysis of Block Group Inclusion in a Tax Increment Financing District

Independent Variable	Coefficient	Standard Error	Z-Score
Aggregate Household Income (\$M)	-0.048***	0.006	-8.59
Vacant housing units	-0.002***	0.000	-9.84
Median gross rent	-0.001***	0.000	-9.95
Aggregate housing value (\$M)	-0.028***	0.001	-25.42
Median housing value (\$000s)	-0.002***	0.000	-12.49
Share of residents with a B.A. or higher	-0.749***	0.068	-10.99
Share unemployed	0.343***	0.093	3.69
Share of workers who worked outside city limits	0.148**	0.062	2.41
Distance from CBD ⁽¹⁾	-1.978***	0.199	-9.92
Share of professional workers	0.54***	0.073	7.42
Total households (000s)	0.173***	0.016	10.57
Poverty rate	1.033***	0.060	17.2
Share of vacant homes	2.607***	0.152	17.18
% African American	-0.228***	0.027	-8.32
% Hispanic or Latino	-0.431***	0.059	-7.29
% of land zoned commercial ⁽²⁾	0.262***	0.025	10.31
% of land zoned industrial ⁽²⁾	1.367***	0.044	31.13
	0.054	0.051	1.06

Notes: All variables derived from the US Census Bureau, 1990 Census of Population and Housing, STF3. Except (1): Author's analysis of GIS Shapefiles available from ESRI, 2006 StreepMap USA, CBD defined as census block group that includes the intersection of State and Madison Streets. (2) 1990 Land Use Survey, Northern Illinois Planning Commission (NIPC). TIF designation derived from GIS shapefiles provided by the City of Chicago's GIS Portal.

4.3 Database construction

This paper uses the 1990 census block group as the unit of analysis because it is the smallest geographical unit at which socioeconomic variables that predict TIF designation are gathered. The 1990 geography was chosen to assess neighborhood characteristics before designation since only 11 of 160 districts were designated before 1990. To build our panel dataset, we used the spatial boundaries of each TIF district from the City of Chicago's GIS portal⁹ to associate each block group with a specific district. Since TIF boundaries are unique, in some cases stretching along a given commercial street or overlaying entire industrial or residential areas, we identified a threshold criteria to determine which block groups to consider "treated." If used a simple spatial join was used that selected any block group that intersected or touched a TIF district, the treatment group would include many areas that only have a very small portion of their areas in a TIF, perhaps overstating the degree of treatment. Also, in several instances block groups were intersected by multiple TIFs. To address this issue, TIF boundaries were overlaid with the census block centroids and the criteria that at least 50 percent of a block group's block-based population must be within a given district was applied. In such cases the block group in question was considered "TIFed" (i.e. assigned to the treatment group) and associated with a unique TIF id number. Information on the date of designation was also included on the GIS shapefiles. In cases where multiple TIFs overlapped a single block group, assignment was given to the TIF that contained the highest share of the block-group population. For block groups that were covered by more than one TIF, in which no single TIF covered more than 50% of the block group's overall population and in which the majority of a block group's population was covered by either TIF, then we assigned the block group to the TIF with the highest (minority) share (i.e. the plurality). At the end of the study period (2008), 1,026 block

⁹ Specifically, the GIS shapefile contained polygons for 160 active TIFs as of 2008.
<https://data.cityofchicago.org/browse?tags=gis>

groups (42.2 percent) were associated with a TIF based on this treatment method, while 1,403 (57.8 percent) were in the “control” group.

The next critical step in developing the panel dataset was to construct the time-series on the three main sets of dependent variables. Data on employment and establishment counts by industry came from the National Establishment Time-series (NETS) database. The NETS is a longitudinal dataset produced by Walls and Associates and based on 19 annual snapshots of the Dun and Bradstreet Inc. (D&B) business listing and credit rating service. Additional discussion of the NETS is available in Appendix A.

Address-level building permits records are available from 1994 through 2006 from an online data clearinghouse maintained by the Chicago Metropolitan Agency for Planning (CMAP)¹⁰. They created this dataset from annual extracts of building permit records from the City of Chicago Department of Buildings. This database included information on the date, type and stated value of construction put in place. This data covers both new construction and remodeling permits. Once geocoded, each record was associated with a unique block group and summary figures were generated for each block group-year.

Finally, to provide a richer treatment indicator than TIF-designation alone, we used data collected by the Neighborhood Capital Budget Group and updated and maintained by the Center for Urban Economic Development (UIC-CUED), which contained information about TIF-funded public expenditures in each TIF. The timeframe for this dataset covers all TIFs declared before 2006. It was gathered primarily from redevelopment agreements published in the City Council’s Journal of Proceedings or from documents prepared by TIF consultants and obtained by NCBG

¹⁰ The Chicago Metropolitan Agency for Planning (CMAP) is the federally recognized Metropolitan Planning Organization (MPO) for the Chicago region and is the successor organization of the Northeastern Illinois Planning Commission (NIPC). NIPC created and maintained a website called <http://www.chicagoareahousing.org> which hosted the building permits data.

through a Freedom of Information Act request. This dataset is used to construct the TIF investment variable. Specifically, the variable INV_{it} used in model 2 is defined at the cumulative level of TIF-funded investments observed in each TIF in each year. Throughout the study period the mean level of TIF-funded assistance in the average year was \$500,000 with a standard deviation of \$68,088. However, the observed pattern of TIF assistance is not only irregular over time—with intervals between investments—but is also uneven across the overall set of analyzed TIF districts. Specifically, the NCBG/UIC-CUED database does not observe any TIF assistance in 58 out of the 152 districts designated by 2006. This is not a sign of incomplete data coverage; many TIFs in Chicago were created without a prepared redevelopment plan. Sometimes the City, rather than float a TIF revenue bond to pay for up-front subsidies or investments, allows incremental funds to accrue for several years before investments are made within the TIF. This uneven pattern of TIF funding is one of the primary motivations for exploring this additional specification.

Table 2 provides summary statistics for employment change over the study period and various neighborhood and land-use characteristics for the treatment and control block groups. The difference in mean values is given with and without weighting by the propensity scores. Not surprisingly, block groups that received TIF designation (at any time throughout the 1990-2008 period) had higher unemployment, poverty and vacancy rates and had a higher proportion of African-Americans in 1990. While the TIF block groups showed higher rates of growth in both the overall 1990-2008 and the earlier 1990-1998 periods, this difference was insignificant after propensity scores weighting. While this weighting procedure did not reduce the differences between the treatment and control groups on all observable characteristics, the fact that pre-

treatment employment trends are smoothed is a good indicator that the weighting procedure effectively addresses the issue of selection bias.

5. Results

Overall, this analysis finds no support for either of the main hypotheses tested: that the use of TIF in Chicago generates economic development opportunities for local residents that would not have otherwise occurred or that TIF catalyzes private actors to invest in distressed neighborhoods.

5.1 Impact of TIF Designation

Table 3 contains the results of the difference-in-differences analysis summarized in equation 1. Estimates of the impact of TIF are presented for both the un-weighted (column 1) and propensity score-weighted (column 2) specifications. The results are also sorted into three panels according to the major set of dependent variables considered. The upper panel contains the estimates on employment across the five categories considered, and the middle panel summarizes the impacts on the number of business establishments in the same categories. The lower panel contains the impacts on building permit activity. Overall, the estimated impact of TIF designation on total employment is very close to zero (-.001 unweighted and -.003 weighted) with standard errors small enough to rule out anything larger than a 3 percent increase in employment with TIF block groups. At this most basic level, the TIF program in Chicago is shown to be an ineffective tool in creating jobs. In the retail and manufacturing sectors, the employment effects are slightly negative and, in the case of retail using the propensity score method (-.054), significant at the 10 percent level. Thus, in the sectors which are most closely associated with stated goals of TIF projects, there is no discernible impact on job creation. The

minor negative finding in retail may indicate that TIFs are speeding up the transition between smaller locally-owned stores to larger retail chains (which operate more efficiently)—as suggested by the positive coefficient on branch establishments, however this finding should not be viewed as strong causal evidence that TIF actually reduces local employment. The results for establishment counts are similar to those for employment, with all estimates centered near zero and insignificant. This indicates that, on average, there is little evidence that TIF has successfully supported entrepreneurship or new business development in an effective way.

The argument that TIF designation *per se* sends a signal to the private real estate market and acts as a catalyst for redevelopment activity is also soundly rejected. As the last panel in Table 3 indicates, none of these DD estimates is significant. Although the point estimate for the value of all building permits (including residential and institutional) is slightly positive (approximately 5%), it is not significant and, when controlling for the propensity scores, the effect is essentially zero. Interestingly, commercial building permit activity—which is the category that is most likely to be effected by TIF—is very close to zero and insignificant.

5.2 The Impact of TIF Investments

The preceding results simply measured the impact of TIF district designation on economic development outcomes in treated block groups. Because the timing to actual TIF-funded investments varies from the date of designation, it is plausible that one should not expect to find any positive outcome by examining designation alone. However, as the findings in Table 4 indicate, there is no evidence that TIF generated positive outcomes when we examine the timing of actual TIF-funded spending within the districts. To recall, the independent variable of interest here is the cumulative sum of publicly allocated TIF funds in each year in each TIF district. Thus, for a given TIF district designated in, say 1999, the INV_{it} variable captures the

actual timing of funded projects that may not have occurred until 2001 or later. The estimates here—although generated from a truncated sample—parallel the results of the designation analysis. Specifically, the estimated impact on total employment (-.002) and establishments (-.006) are very close to zero and measured with considerable precision to rule out more than a 1 percent increase in these core economic development outcomes. As in the case of the designation analysis, there is also no detectable relationship between the timing of TIF-funded investments—be they infrastructure improvements, direct subsidies to developers, or other public improvements—and private sector investments in the neighborhood built environment.

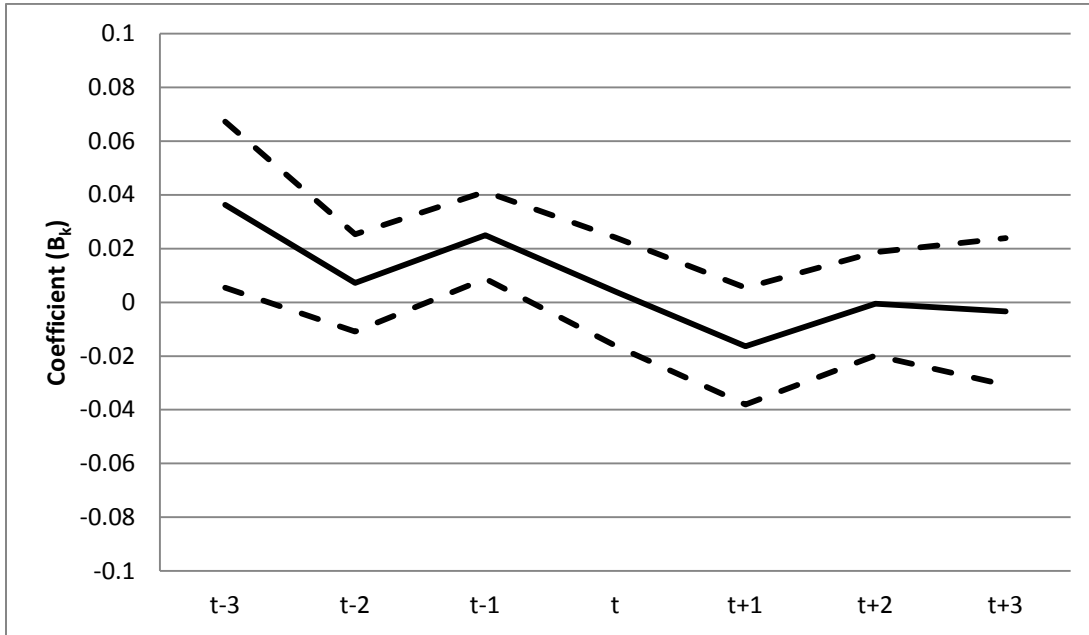
To clarify these findings, this analysis does not indicate that no building activity or job creation occurred in TIFed block groups, or resulted from TIF projects. Rather, the level of these activities was no faster than similar areas of the city which did not receive TIF assistance. It is in this aspect of the research design that we are able to conclude that the development seen in and around Chicago's TIF districts would have likely occurred without the TIF subsidy. In other words, on the whole, Chicago's TIF program fails the 'but-for' test.

5.3 Robustness checks

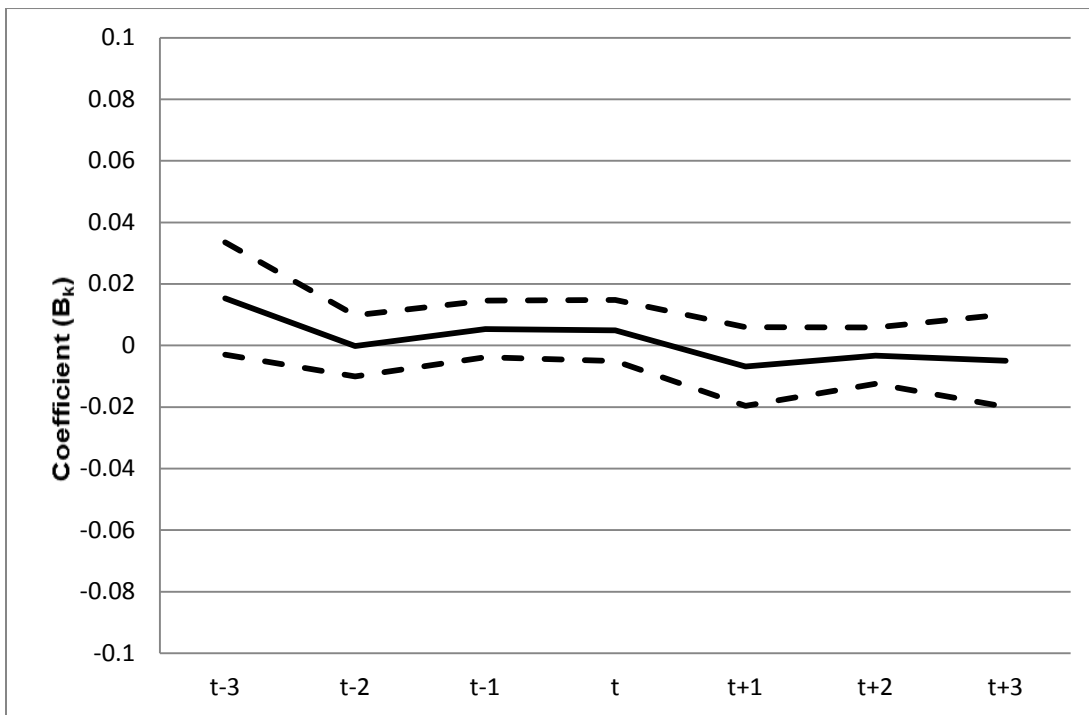
To ensure that the analysis conducted here is valid, a two robustness checks were performed. First, to rule out the possibility that there is an actual positive impact of TIF projects which may simply not be observed until a few years after the project was completed, the analysis was repeated using a distributed lag structure on the key independent variables (TIF designation), as presented in equation 3 above. This 'time-path' analysis presented in Figure 4 below also checks for the possibility anticipatory effects whereby employment increases just before the treatment itself.

Figure 4. Timepath of TIF Impacts on Employment, Establishments, and Building Permits

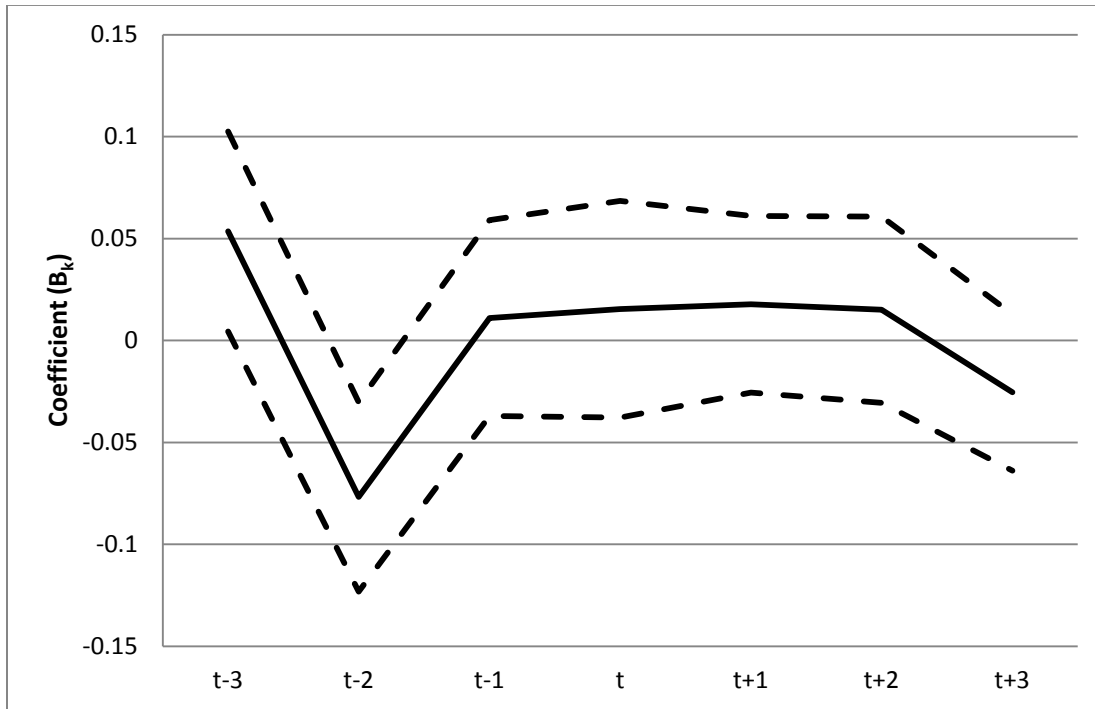
A. Impact on natural log of total employment, 3 Years Pre/Post TIF Designation



B. Impact on natural log of total establishments, 3 Years Pre/Post TIF Designation



C. Impact on natural log of building permit activity, 3 Years Pre/Post TIF Designation



If there were a causal impact of TIF designation, we would expect the time-paths in Figure 4 to rise sharply at $t=0$ (the year of treatment) and remain significantly above zero for all subsequent years. If there were a lagged impact of TIF on employment then this increase would appear after $t=0$. However, as the first panel (A) indicates the pattern of TIF impact is relatively flat and insignificant (i.e. dashed 90% confidence interval includes the zero line). The pattern for total business establishments is almost completely flat, with no marked increase or decrease before or after the time of treatment designation. The pattern for total building permit activity is more volatile with a large decrease in permits two years prior to designation and then impact estimates close to zero and insignificant for all subsequent lag terms. This volatility may be explained by the smaller sample period for which building permit data is available. However, there is no demonstrated positive impact that is associated with the timing of TIF designation. By examining the dynamic timepaths of estimates, we can test for and ultimately rule out the

possibility that TIF designation leads to positive yet lagged economic development outcomes on neighborhood economies.

The second robustness check performed is a simple sample division of the treatment group to test for any differential impact by the original purpose of the TIF district. As discussed in section 2 above, Chicago uses one of two primary legal justifications for designating a TIF district. Specifically, the collection of properties that comprise a TIF must be considered “blighted” and meet a given set of criteria including (e.g. lower property values, physical disrepair, etc.). Alternatively, the City also has the power to designate a TIF in “conservation” areas which do not currently exhibit blight but are either located near blighted areas or are otherwise at risk of becoming blighted. To the extent that TIF funded job creation prospects or neighborhood real estate potential is superior in “conservation” areas—as they face fewer neighborhood problems—we may expect TIF impacts to be higher for conservation areas. On the other hand, it could be that impacts are greater in “blighted” areas that are coming from a lower-level of economic development to begin with and thus even small net impacts will be amplified relative to similar blighted areas of the City. Table 5 contains the TIF impact estimates for the natural log (\ln) of total employment, establishments and building permit activity for both “conservation” and “blighted” TIF districts. Looking at these high-level outcome variables indicates that there is no evidence of a strong positive impact of TIF designation. The point estimates are all very close to zero and insignificant. As a result, we cannot conclude that grouping all TIF treatments—regardless of their intended purpose—masks an underlying positive effect.

6. Conclusion and Policy Implications

This paper effectively answers the “but-for” question at the level of the City of Chicago’s overall use of TIF. Overall, TIF failed to produce the promise of jobs, business development, or real estate activity at the neighborhood level beyond what would have occurred without TIF. This finding is made by comparing fundamental economic development outcomes in block groups that received TIF designation to those that did not, controlling for the initial underlying characteristics of these neighborhoods. Furthermore, when we measure the impact of actual TIF-funded investments, we still find no evidence that TIF effectively obtained desired economic development outcomes.

While the findings of this paper are clear and decisive, it is important to comment here on their exact extent and external validity, and to discuss the limitations of this analysis. First, the findings do not indicate that overall employment growth in the City of Chicago was negative or flat during this period. Nor does this research design enable us to claim that any given TIF-funded project did not end up creating jobs. Rather, we conclude that on-average, across the whole city, TIF was unsuccessful in jumpstarting economic development activity—*relative to what would have likely occurred otherwise*. Secondly, these results are limited to the universe of observations from which treatment was specified (i.e. the City of Chicago). Thus, these findings should not be interpreted as a broad indictment of the use of TIF in any context. Lastly, while this paper uses the most detailed information available and includes a test of not only TIF designation, but also aggregate investment levels on economic development outcomes, we still lack data at the “project-level,” which would allow one to separate out TIF investments in non-economic development related activities. While there is a good argument to be made that these investments themselves may increase local development activity, due to the City of Chicago’s

past reluctance to make TIF expenditure data public, a full accounting of TIF-funded projects is not possible at this time. Ultimately, however, this analysis and the story of TIF in Chicago more generally, should serve as a cautionary tale to jurisdictions throughout the U.S. and throughout the world.

The findings of this paper imply that the fiscal strain placed on the City of Chicago's General Fund, as well as the Chicago Public Schools and other public agencies that rely primarily on property taxes, is exacerbated by the sequestration of revenue in TIF accounts. Given that the job creation record of TIFs is negligible at best, as shown in this paper, policymakers in the City should strongly reconsider adopting new TIF districts and should even consider additional legislation that attempts to recoup some TIF funds for general public sector activities. In practice, a limited amount of TIF funds have been used to support the construction of school buildings and other authorized capital improvements. However, this means that City Hall, and not the local school district, is effectively in charge of decisions on how such funds are used. By definition, TIF localizes fiscal capacity, and this may generate structural inequality across the city.

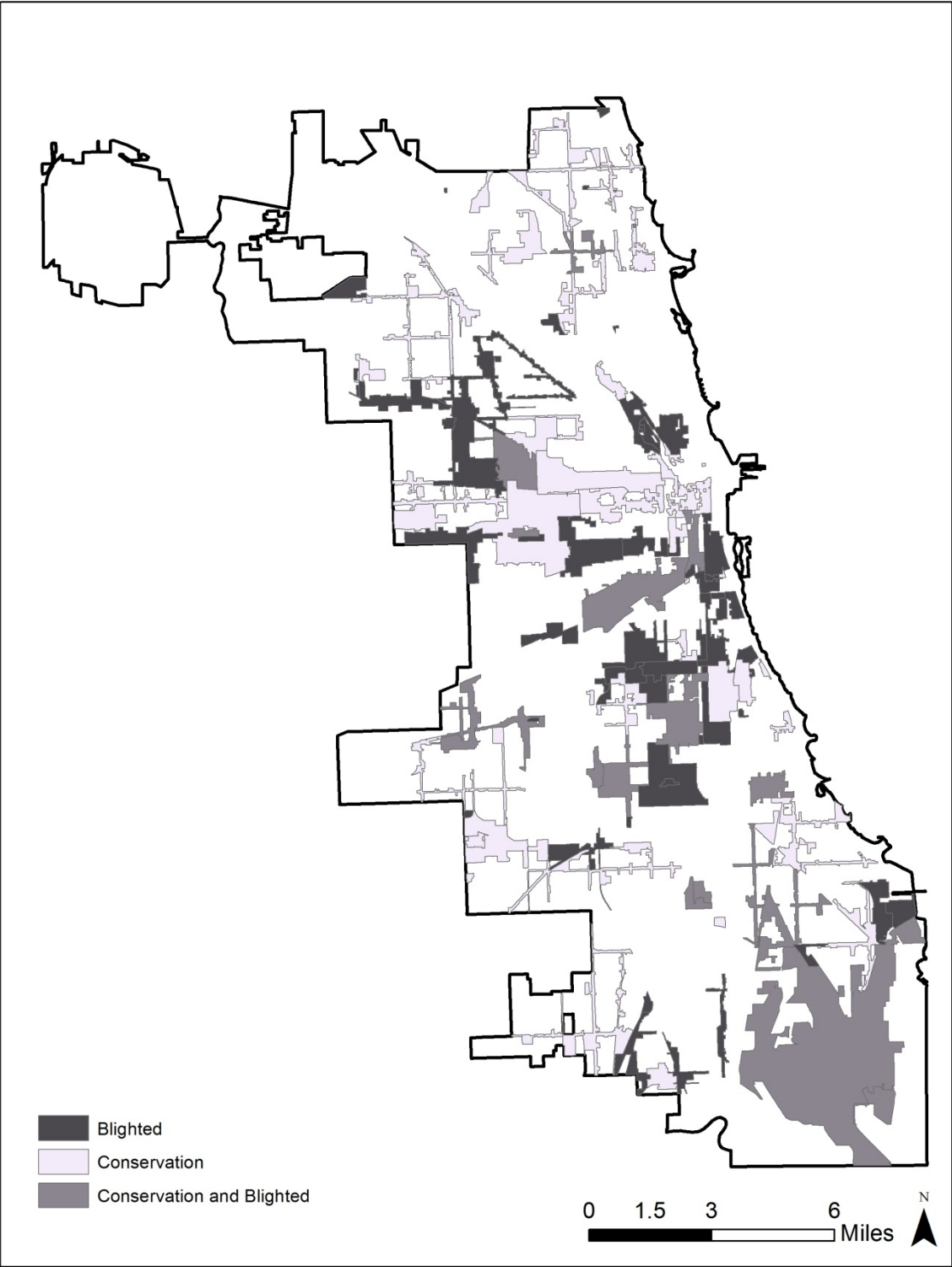
For policymakers outside the City of Chicago, there are applicable lessons to be taken from this paper. First, it is best to tie TIF designation to actual redevelopment proposals with a private sector partner up front. This is a requirement by state statute in North Carolina, where TIF has been used only sparingly. Second, each TIF proposal should be coupled with careful cost-benefit analysis that projects and clearly articulates the job creation outcomes of the redevelopment proposal. Third, while it was not an explicit aspect of this paper's empirical analysis, it is critical that public agencies considering TIF make all transactions as transparent as

possible so that the public can clearly understand where their sequestered tax dollars flow and hold public officials accountable for their decisions.

These findings also support the position put forward by some urban theorists that, as cities seek new ways to become “entrepreneurial” (Harvey, 1989), they essentially cede power to private capital, which may or may not be located with the city limits. In the case of TIF, as Weber (2010) elucidates, as more and more tax revenue is sequestered, the standing of developers and footloose capital is strengthened as resources are shifted to accommodate their interests, while the provision of public goods such as basic education and shared infrastructure are rationed in the name of “fiscal crisis”. Essentially, Chicago’s extensive use of TIF can be interpreted as the siphoning off of public revenue for largely private-sector purposes. Although, TIF proponents argue that the public receives enhanced economic opportunity in the bargain, the findings of this paper show that the bargain is in fact no bargain at all.

Figures and Tables

Figure 3 Map of TIF Districts in Chicago by Type, 2008



Source: City of Chicago Geographic Information Systems (GIS) portal.

Table 2. Block Group Characteristics by TIF Status, 1990

Block Group Characteristics	Mean Values		Difference	Weighted Difference
	TIF Block Groups	Non-TIF Block Groups		
Total population	1,120	1,302	-181.9***	-154.4***
Median gross rent (\$)	407	488	-80.89***	-54.8***
Median house value (\$)	60,097	102,324	-42226***	-27138***
% BA or higher	0.116	0.194	-0.078***	-0.053***
% Unemployed	0.173	0.097	0.076***	0.075***
% Working outside Chicago	0.214	0.249	-0.035***	-0.025***
% Manufacturing workers	0.192	0.189	0.003***	-0.011***
% Professional workers	0.231	0.230	0.000	0.009***
% Poverty	0.294	0.143	0.151***	0.151***
% Vacant units	0.122	0.068	0.054***	0.053***
% African-American	0.524	0.303	0.221***	0.203***
% Hispanic/Latino	0.182	0.176	0.005	-0.038***
% of land zoned commercial ¹	0.228	0.223	0.004	-0.017***
% of land zoned industrial ¹	0.107	0.032	0.075**	0.07***
Distance from CBD ²	0.105	0.131	-0.025***	-0.021***
% Chg. In Employment 1990-2008 ³	1.445	1.305	0.140***	-0.058
% Chg. In Employment 1990-98	0.856	0.749	0.107**	-0.076

Notes: All variables were constructed from the 1990 Census of Population and Housing STF3 unless otherwise noted. (1) 1990 Land use data were obtained from the Chicago Metropolitan Area Plan (CMAP) (formerly the Northeastern Illinois Planning Commission (NIPC)). (2) Author's calculation from ESRI Census block group shapefile, distance is in decimal degrees relative to the centroid of the block group that includes corner of State and Madison streets. (3) National Establishment Time Series (NETS). Weighted difference refers to the difference of means after weighting based on the propensity score of treatment assignment.

Table 3. The Impact of TIF Designation in Chicago Block Groups, 1990-2008.

Outcome Variables	(1)	(2)	(3)
	Unweighted	Propensity Weighted	
<i>Ln Employment</i> ⁽¹⁾			
	Beta	Beta	N
Total	-0.001 (0.017)	-0.003 (0.017)	42,406
Retail	-0.044 (0.030)	-0.054* (0.029)	23,009
Manufacturing	-0.039 (0.032)	-0.006 (0.038)	15,262
Services	0.034 (0.025)	-0.003 (0.032)	38,079
Branches	-0.011 (0.027)	0.026 (0.024)	29,209
<i>Ln Establishments</i> ⁽¹⁾			
Total	0.004 (0.011)	-0.002 (0.011)	42,406
Retail	-0.012 (0.015)	-0.017 (0.015)	23,009
Manufacturing	0.004 (0.018)	0.014 (0.019)	15,262
Services	0.028 (0.016)	-0.003 (0.018)	38,079
Branches	0.013 (0.018)	0.010 (0.015)	29,209
<i>Ln Building Permit Activity</i> ⁽²⁾			
Value of building permits (\$)	0.051 (0.051)	0.023 (0.057)	26,799
Number of building permits, all	-0.009 (0.020)	0.009 (0.021)	26,957
Value of commercial building permits (\$)	0.005 (0.053)	-0.023 (0.061)	23,494
Number of commercial building permits	0.007 (0.018)	0.015 (0.019)	23,900

Notes: All regressions include year and block group fixed effects. . Robust standard errors, in parentheses, are clustered at the TIF district level for all regressions. Significance levels are indicated by: * for 10%, ** for 5%, and *** for 1%. Column 1 contains unweighted estimates of β from equation 1 and column 2 lists estimates after weighting by the propensity score based on the prediction of TIF assignments. Data sources for outcome variables are (1) National Establishment Time Series (NETS); (2) CMAP/City of Chicago, Department of Buildings.

Table 4. The Impact of TIF Funded Investments in Chicago Block Groups, 1990-2006.

Outcome Variables	(1) Unweighted Beta	(2) Propensity Weighted Beta	(3) N
<i>Ln Employment</i> ⁽¹⁾			
Total	0.006 (0.012)	-0.002 (0.014)	4,497
Retail	-0.018 (0.026)	-0.016 (0.034)	2,584
Manufacturing	0.035 (0.028)	0.027 (0.035)	1,965
Services	0.032 (0.018)	0.039 (0.041)	4,182
Branches	0.032 (0.035)	0.033 (0.020)	3,449
<i>Ln Establishments</i> ⁽¹⁾			
Total	-0.001 (0.006)	-0.006 (0.008)	4,497
Retail	0.000 (0.016)	0.002 (0.019)	2,584
Manufacturing	-0.005 (0.010)	-0.003 (0.013)	1,965
Services	0.023 (0.010)	0.004 (0.019)	3,449
Branches	0.000 (0.016)	0.026* (0.013)	4,182
<i>Ln Building Permit Activity</i> ⁽²⁾			
Value of building permits (\$)	0.010 (0.122)	-0.045 (0.115)	2,831
Number of building permits, all	0.022 (0.045)	-0.002 (0.040)	2,855
Value of commercial building permits (\$)	0.036 (0.080)	0.023 (0.101)	2,377
Number of commercial building permits	-0.007 (0.036)	-0.024 (0.034)	2,444

Notes: All regressions include year and block group fixed effects. . Robust standard errors, in parentheses, are clustered at the TIF district level for all regressions. Significance levels are indicated by: * for 10%, ** for 5%, and *** for 1%. Column 1 contains unweighted estimates of β from equation 1 and column 2 lists estimates after weighting by the propensity score based on the prediction of TIF assignments. Data sources for outcome variables are (1) National Establishment Time Series (NETS); (2) CMAP/City of Chicago, Department of Buildings.

Table 5. The Impact of TIF Designation by TIF Designation Type, 1990-2008

	Conservation TIFs	Blighted TIFs
Ln total employment ⁽¹⁾	-0.008	-0.016
(N=35,598, 23308)	(0.021)	(0.042)
Ln total establishments ⁽¹⁾	-0.004	0.014
(N=35,598, 23308)	(0.016)	(0.018)
Ln total building permits ⁽²⁾	0.003	-0.006
(N=22,706, 14,691)	(0.022)	(0.046)

Notes: All regressions include year and block group fixed effects. . Robust standard errors, in parentheses, are clustered at the TIF district level for all regressions. Significance levels are indicated by: * for 10%, ** for 5%, and *** for 1%. N for total employment and establishments are 35,598 and 23,308 for conservation and blighted TIFs respectively. N for building permits impacts is 22,706 and 14,691 respectively. All estimates are weighted by the propensity score based on the prediction of TIF assignments. TIFs classified as both blighted and conservation were coded as blighted. Data sources for outcome variables are (1) National Establishment Time Series (NETS); (2) CMAP/City of Chicago, Department of Buildings.

References

- Adair, A., Berry, J., & McGreal, S. (2003). Financing Property's Contribution to Regeneration. *Urban Studies*, 40(5-6), 1065-1080.
- Ahmed-Ullah, N. (2012, May 3rd). CPS cuts back capital spending in 'difficult fiscal climate'. *Chicago Tribune*.
- Brenner, N., & Theodore, N. (2002). *Spaces of neoliberalism : urban restructuring in North America and Western Europe*. Malden, Mass. Oxford: Blackwell.
- Briffault, R. (2010). The Most Popular Tool: Tax Increment Financing and the Political Economy of Local Government. *The University of Chicago Law Review*, 77(1), 65-95.
- Brown-Luthango, M. (2011). Capturing Land Value Increment to Finance Infrastructure Investment—Possibilities for South Africa. *Urban Forum*, 22(1), 37-52.
- Byrne, P. F. (2010). Does tax increment financing deliver on its promise of jobs? the impact of tax increment financing on municipal employment growth. *Economic Development Quarterly*, 24(1), 13-22.
- Dye, R. F., & Merriman, D. F. (2000). The effects of tax increment financing on economic development. *Journal of Urban Economics*, 47(2).
- Fainstein, S. S., & Fainstein, N. (1989). The Ambivalent State. *Urban Affairs Review*, 25(1), 41-62.
- Felix, R. A., & Hines, J. R., Jr. (2011). Who Offers Tax-Based Business Development Incentives? *National Bureau of Economic Research Working Paper Series, No. 17466*.
- Gibson, D. (2003). Neighborhood characteristics and the targeting of tax increment financing in Chicago. *Journal of Urban Economics*, 54(2), 309-327.
- Harvey, D. (1989). From Managerialism to Entrepreneurialism: The Transformation in Urban Governance in Late Capitalism. *Geografiska Annaler. Series B, Human Geography*, 17(1), 3-17.
- Logan, J. R., & Molotch, H. L. (1987). *Urban fortunes : the political economy of place*. Berkeley, CA: University of California Press.
- Merriman, D. F., Skidmore, M. L., & Kashian, R. D. (2011). Do tax increment finance districts stimulate growth in real estate values? *Real Estate Economics*, 39(2), 221-250.
- Mollenkopf, J. H. (1983). *The contested city*. Princeton, N.J.: Princeton University Press.
- Neumark, D., Zhang, J., & Wall, B. (2005). Employment Dynamics and Business Relocation: New Evidence from the National Establishment Time Series. *NBER Working Paper No. W11647*.
- Peterson, P. E. (1981). *City Limits*. Chicago: University of Chicago Press.
- Reed, I. W. (1989). The Life and Death of UDAG: An Assessment Based on Eight Projects in Five New Jersey Cities. *Publius: The Journal of Federalism*, 19(3), 93-109.
- Rosenbaum, P., & Rubin, D. (1983). The central role of the propensity score in observational studies of causal effects. *Biometrika*, 70(1), 41-55.
- Rubin, H. J. (1988). Shoot Anything that Flies; Claim Anything that Falls: Conversations with Economic Development Practitioners. *Economic Development Quarterly*, 2(3), 236-251.
- Sagalyn, L. B. (1990). Explaining the Improbable Local Redevelopment in the Wake of Federal Cutbacks. *Journal of the American Planning Association*, 56(4), 429-441.
- Savitch, H. V., & Kantor, P. (2002). *Cities in the International Marketplace*. Princeton: Princeton University Press.
- 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.

- Squires, G., & Lord, A. D. (2012). The transfer of Tax Increment Financing (TIF) as an urban policy for spatially targeted economic development. *Land Use Policy*, 29(4), 817-826.
- Stone, C. (1993). Urban regimes and the capacity to govern: a political-economy approach. *Journal of Urban Affairs*, 15(1), 1-28.
- Warner, M., & Zheng, L. (2011). Economic Development Strategies for Recessionary Times: Survey Results from 2009. In ICMA (Ed.), *Municipal Yearbook 2011*. Washington, D.C.: ICMA Press.
- Weber, R. (2002). Extracting value from the city: neoliberalism and urban redevelopment. In N. Brenner & N. Theodore (Eds.), *Spaces of Neoliberalism: Urban Restructuring in North America and Western Europe*. Malden, Mass. Oxford: Blackwell.
- Weber, R. (2010). Selling City Futures: The Financialization of Urban Redevelopment Policy. *Economic Geography*, 86(3), 251-274.
- Weber, R., Bhatta, S. D., & Merriman, D. (2007). The Impact of Tax Increment Financing on Residential Property Values *Regional Science and Urban Economics*, 37(2), 259-281.

APPENDIX A- Description of the National Establishment Time Series (NETS)

Database

Because it is based on information from D&B—which has a strong economic incentive to reach every business—the NETS is a near census of business establishments in the U.S. The NETS contains detailed information on employment, sales, primary industry, and birth and death year at the establishment level. While some observers are concerned with the measurement of employment levels at establishments, employment figures at an aggregate level are consistent with trends observed in publically available sources, such as the Quarterly Census of Employment and Wages (QCEW) and the County Business Patterns (CBP) (see Neumark, Zhang, & Wall, 2005). Each record also contains detailed geographic information for each establishment’s current or final location and a detailed inventory of all establishment moves. To generate accurate block-group level counts of employment and the number of existing establishments in each year, each record in Cook County, Illinois was geocoded based on its listed latitude and longitude and associated with a unique block group for each year that the establishment operated in that location. A subset of NETS records that moved one or more times during the 1990-2008 period were also geocoded based on their origin latitude and longitude information on the move table of the NETS. The process of geocoding these movers was repeated up to six times to uniquely identify the place-year combination of each record. Through this process, for example, the employment count calculated for a given block group in 1998 only includes establishments that were located there and operating in 1998, even if some businesses subsequently moved.