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Essays on Economic Development Policies

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ESSAYS ON ECONOMIC DEVELOPMENT POLICIES

DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy in the
Graduate School at the University of Kentucky

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ABSTRACT OF DISSERTATION

ESSAYS ON ECONOMIC DEVELOPMENT POLICIES

Tax increment financing (TIF) policy is the most popular economic development policy in the United States. Despite the popularity of research on TIF, only a few comprehensive reviews of previous studies on TIF policy tool have been conducted. In light of this, the purpose of this paper is to review previous TIF studies relating to the controversy surrounding TIF programs. Specifically, previous studies do not provide clear answers about the efficacy of TIF and, indeed, raise more questions than answers. At the same time, this situation begs the question: why do local governments frequently use economic development policies? This is the most urgent task in the economic development academic area because previous studies have not answered that question in detail. To analyze the effects of competition and the forms of government on the utilization of business incentives at the local government level, this study focuses on two major incentives: tax credit and tax increment financing. The statistical results show that the competition mechanisms operate differently for each of the incentives. More specifically, the council-manager system considerably constrains the overall adoption and extent of use of business incentives. These results could indicate the prevalence of a particular form of government for economic development policies. To determine why local governments often use tax-based incentives, this study focuses on five major tax-based incentives: job creation tax credits, investment tax credits, R&D credits, property tax abatements, and customized job training subsidies. The statistical results indicate that a state government's prevailing political ideology influences the choice of economic development activities. Accordingly, a more liberal state may be more likely to discourage property tax abatements and customized job-training subsidies and encourage job creation tax credits. Additionally, the competition mechanism does not operate as a trigger for tax-based incentives. This study also finds that state economic conditions are inversely related to the use of incentives. This result could imply the prevalence of political factors in the use of incentives. Clear evidence about the effectiveness of economic development incentives is limited. To bridge this research gap, this study uses the Upjohn Institute Panel Database on Incentives and Taxes (PDIT). Unemployment and employment rates are used to analyze the effectiveness of tax-based incentives. Statistical results indicate that tax incentives have a marginal impact on employment status and limited benefits to states. Only the R&D tax credit statistically significantly increases employment rates. This result supports the interpretation of economic development policies as a zero-sum game

KEYWORDS: Tax increment financing, Tax credit, Tax-based incentives, Zero-sum game, Diffusion mechanism

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ESSAYS ON ECONOMIC DEVELOPMENT POLICIES

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CHAPTER 1. AN OVERVIEW OF ECONOMIC DEVELOPMENT POLICY: TAX INCREMENTAL FINANCING.

1.1 Introduction

Confronted with a high unemployment rate, state and local governments have experienced double torture (Wu, 2012), with the resulting crisis locking local governments in a vicious cycle. Specifically, high unemployment leads to significant reductions in local government revenues and requires government to spend more resources and operate more programs. Statistical indicators support this serious situation. Not only have 27 metropolitan areas among 45 in the Northeast already faced "chronic distress," `but also 33 Midwest metropolitan areas have experienced a similar fate since the 1970s (Porter, 2018). Thus, state governments are actively operating local development policies that are aimed at increasing local tax bases and jobs. The extent and type of economic development policies varies depending on each state (Wang, 2018).

Substantial attention and interest have existed in the academic field due to the dramatic spread of economic development policies, with the majority of studies analyzing the effect of such policies at the local level (Betz, Partridge, Kraybill, & Lobao, 2012). As more studies are conducted, academic disputes continue about the effect of economic development policies. A few studies suggest that there is a positive relationship between economic outcomes and economic development policies (Peters & Fisher, 2002; Rodriguez-Poase & Arbix, 2001). Many previous studies have made counterarguments concerning the positive effects of economic development policies. Some argue that a possibility exists that incentive policies could have a negative impact on local areas because of the evils of competition (Ellis & Rogers, 2000; Patrick, 2014). Others argue that this severe competition could lead to the under-provision of public goods because

economic development policies simply relocate businesses (Bartik, 1991; Fisher & Peters, 1997; Gorin, 2008; Wang, 2016). Furthermore, Burstein and Rolnick (1995) suggest that targeting incentives for a specific industry could cause losses in the national economy. We can confirm that the results of economic development policies are mixed. Surprisingly, few studies analyze why local governments continue to engage in economic development policies even though supporting evidence is lacking.

The most widely used policies are diverse subsidies and incentives including industrial parks and tax abatement (Betz et al., 2012). One of the most popular of many economic development policies that local governments offer is tax increment financing (Hall & Bartels, 2014; Nguyen-Hoang, 2018). As discussed, promoting economic development is an essential function of local governments and requires cooperation between municipalities and private investors. Tax increment financing (TIF) is one of the options that local governments can use to encourage economic development in a specific area. It allows local governments to increase property tax revenue based on expected higher property values following investment in a TIF district. TIF is also an incentive tool that can boost local economies (Yadavalli & Landers, 2017). Local governments often issue bonds to finance TIF projects because municipalities expect increased tax revenues to be generated as a result of the projects. If all goes as planned, TIFs can fund redevelopment programs and the construction of infrastructure. However, the evaluation of the previous studies about TIFs is also controversial, like other economic development policies.

Despite the popularity of research on TIF, not much attention has been devoted to a comprehensive review of past literature on this popular fiscal tool (Brueckner, 2001).

The main focus of the previous studies is whether TIF programs can produce planned desirable output in a relevant area. Although there are many studies, it is difficult to recognize the relevant economic development and TIF overall issues because each study usually focuses on a specific program and area. In this regard, it is necessary to find unsatisfactory and undeveloped research topics and issues about economic development policies by reviewing previous TIF studies. In light of this, the purpose of this paper is to review previous TIF studies relating to the controversy surrounding the program. One of the contributions of this study is summarizing the relevant economic development issues and finding weak spots in current studies to suggest further studies. This study bridges this gap by the following methods. First, this paper will provide a brief background on economic development such as tax-based incentives. Then, it will review TIF studies, including discussions of the definition of TIF, its rationale, process, and present status. Finally, this study will summarize the issues and suggest further studies.

1.2 Economic Development

Many countries have used economic development policies to address population growth, competition among municipalities, and war. Limited resources tend to make it difficult at the national level. State and local governments usually experience more difficulty than federal governments during an economic crisis because they lack financial resources and professional manpower. This concern is becoming a reality. State and local governments face a particular challenge: the high rate of unemployment after a recent economic crisis (Wu, 2012). This means that the local government must devote more money to the unemployed and face a decline in revenue because of economic downturn. In this situation, if the state and local governments use inappropriate policy tools, there

may be a negative impact on the local government and a delay in the pace of economic recovery (Wu, 2012).

To overcome this situation, state and local governments need to be aware of how a change in economic development policies can influence the economic situation. This is because economic development policies that usually benefit a specific type of government are not designed to benefit other municipalities In addition, there is increasing demand for state and local governments "to do something about jobs" (Bartik, 2012, p.545). As municipalities take action on economic development, tax increment financing (TIF) has been regarded as the most compelling alternative public financing tool (Briffaulff, 2010).

Although there is always significant doubt about the effectiveness of an economic development policy such as business incentives (Warner & Zheng, 2013), these policies have been used for long periods and adapted with the times. The use and adoption of economic development policies became a common tool between the 1970s and the 1990s. This trend naturally led to intense competition among the municipalities (Buss, 2001; Watson, 1995). In general, three waves or types of economic development policies are acknowledged in the previous studies (Zheng & Warner, 2010). A business attraction strategy is the first wave. The characteristics of this tool are defined by programs that pursue or target a specific business to expand or relocate to local governments (Zheng & Warner, 2010). The classic examples of business attraction among economy development policies are tax exemptions, direct payments, and subsidized loans (Koven & Lyons, 2006; Olberding, 2002). The second wave of economic development strategy, business retention, differs slightly from the previous wave. Specifically, this strategy focuses

mainly on existing businesses and firms that cluster locally through the provision of marketing support and improvement of local infrastructure (Christopherson & Clark, 2007; Porter, 2000). In other words, this strategy is aimed at maintaining the competitive edge of local government (Fosler, 1992). The typical example of the second wave economic development policy is technical support, marketing, and revolving loans funds that promote the remaining businesses in the community (Olberding, 2002). While these first and second wave policies have received considerable attention, they have drawn sharp criticism from previous studies. The greatest criticism of these two waves of policies is that the benefits of these policies are concentrated on a specific group, such as highly skilled workers and businesses requiring high skills (Koven & Lyons, 2006).

Lastly, the third wave of economic development policy extended the scope of policy targets. This type of policy has more diverse objectives than the previous waves: (1) promoting public investment for improving quality of life and (2) correcting social justice for the local community (Warner, 2001). Compared to the previous policy waves, this one tends to consider the overall community level. For example, microenterprises for small business owners and development policies for low-density areas are typical examples of third wave policies (Bennett & Giloth, 2008; Gunn & Gunn, 1991). This type of strategy has become common among local governments since 2000 (Bennett & Giloth, 2008). Because the purpose of a TIF program is to revive deteriorating or blighted areas to achieve overall community development, it is classified as a third-wave policy type. However, tax credit, the other research subject, is included in the first wave of policy strategy because tax credit policy is generally granted to specific firms and groups. In this sense, it would be meaningful to analyze the extent to which competition has an

effect on municipalities' decision-making regarding economic development priorities, as well as how it differently affects the extensive use of each business incentive as an economic development policy.

1.2.1 Definition of Economic Development

Local governments in the U.S. have continuously made efforts to retain business or to attract investment. This is because intense competition among municipalities could easily cause a local government to backslide from the current economic status if municipalities shirk their responsibility and fail to correctly diagnose their circumstances. To maintain their current position, the adoption of economic development policies and incentives to attract business is the main and easiest method that has been widely accepted among the municipalities. Economic development policy is a generic term to describe the process that is aimed at increasing or improving communities' social well-being and material status (Bowman, 1988). Each government has different goals when adopting economic development policies. Specifically, the primary purposes of an economic development policy consist of providing job opportunities, increasing capital investment, and promoting community development (Bowman, 1988).

First, we will discuss how economic development has been defined. The broad consensus is that it refers to "Changes that affect a local economy's capacity to create wealth for local residents" (Bartik, 2012, p.545). More specifically, it refers to:

State and local governments making an effort to boost or secure employment opportunities or business activity in an area. The way of improving the relevant area is based on existing natural, human, and institutional resources (Leigh & Blakely, 2013).

The main goal of local economic development is to provide more local employment opportunities for residents (Leigh & Blakely, 2013).

Therefore, various economic indicators could be used as reference points for state and local economic situations. New plants, population growth, employment growth, foreign direct investment, and new plant openings are economic indicators (Wu, 2012). In the literature, there are two types of factors that influence economic development. The first are nonfiscal factors (Wu, 2012). These include, for example, labor quality, market demand, energy costs, climate, and natural resources. The second type are fiscal factors (Wu, 2012). These include state and local government taxes of corporations and firms. Because TIF is a fiscal factor, this paper will focus on the second type. The difference between nonfiscal and fiscal factors depends on whether the government has control. The government can easily control tax policy. However, it is difficult for the government to control nonfiscal factors.

1.2.2 Evaluation Standard for Economic Development

A value judgement is required to estimate degrees of economic development. This is because each person has different criteria for assessment. To address this problem, Courant (1994) proposed some criteria of assessment. According to him, policies should focus on improving economic welfare (Greenbaum, Russell, & Petras, 2010). However, the meaning of economic welfare can be vague. As such, it is necessary to define economic welfare in order to specify the variables. The meaning of economic welfare relates to how well the policies are structured (Peters & Fisher, 2004).

Studies on economic development are numerous and diverse. However, the results of these studies have not given us clear guidance in terms of effectiveness (Patrick,

2014). Indeed, research into the impacts of TIF have produced mixed results (Greenbaum & Landers, 2014).

1.2.3 Present Condition of Economic Development

Two types of research are being carried out to obtain more conclusive information on local economic development. One type of research looks at general tax policies, while the other type examines incentives in specific business fields. Recently, research flow has shifted from tax policies to tax incentives (Wu, 2008).

1.2.3.1 General Tax Policies

Many policy makers in the United States have focused substantial attention on the role of tax policy in economic development. A substantial body of research has examined the effects of tax policies on local economic development. One of the major questions about this field is the degree to which higher taxation distorts business activities. Generally, statistical results have indicated that major local taxes tend to have a negative effect on business employment (Wu, 2012). Local property tax has been one of the main subjects discussed in relation to economic development. Specifically, property and income taxes have had significantly negative effects on job location in the Philadelphia metropolitan area (Luce, 1994). Furthermore, in the Chicago area, a high property tax rate has hampered business location decisions (Dye, McGuire, & Merriman, 2001). If there is a tax cut, it will have a positive impact on employment growth (Zidar, 2019). However, there are different results concerning the effect of government tax policy on development. For example, a few studies suggest that there is no statistically significant effect on economic development (McGuire, 2003; Wasylenko, & McGuire, 1985). McGuire (2003) argues that just eight estimated tax coefficients are significant, and this

is strong evidence for the insignificant effect of taxes. Other previous studies also suggest that the average tax rate is not statistically related to economic growth, such as GDP (Agell, Lindh, & Ohlsson, 1997; Koester & Kormendi, 1989).

To date, previous studies have not shown an empirical consensus about general tax policies (Wu, 2012). It is no wonder that discrepancies exist about the results because over 50 variables are significantly associated with economic activities (Levine & Renelt, 1992). At the same time, these mixed results induce us to do more comprehensive empirical research.

1.2.3.2 Tax Incentives

Business or economic-development incentives are "tax breaks, cash, or services that are at least somewhat customized to the need(s) of an individual business and are awarded with some discretion" (Bartik & Erickcek, 2014, p. 315). For example, state and local governments may designate a specific area as an enterprise zone to induce private investment. If a firm moves to the targeted area, it receives benefits, including tax abatements. In return, governments expect to boost the local economy by attracting more investment and increasing employment and consumption. In other words, the purpose of business incentives is to impact business expansion, openings, and location.

During an economic crisis, state and local governments usually experience more difficulties than the federal government because they often lack financial resources and professional staff to weather the storm and have difficulty running budgetary deficits. Currently, the primary challenge facing state and local governments is the high rate of unemployment after the recent economic crisis (Wu, 2012). In addition, increasing demand exists for state and local governments "to do something about jobs" (Bartik,

2012, p. 545). Local governments need to devote more money to unemployed people while facing a decline in revenue brought on by economic downturns. In such situations, local and state governments try nearly everything to increase private investment and job creation. Rubin described this effort as "shooting anything that flies and claiming anything that falls" (Rubin, 1988, p. 236). However, raising taxes may affect the local government negatively and delay the pace of economic recovery in the current situation (Wu, 2012). For instance, higher taxes on firms may add to the cost of business.

To overcome this situation, state and local governments actively have engaged in tax-based incentives, the rationale behind which is that they lead to business investment and new jobs, stimulating local demand for goods and services, and giving rise to further rounds of economic growth. However, differences of opinion exist on this point. Furthermore, policymakers who favor this approach argue that economic growth increases public revenue, allowing for improved public services or a decrease in tax rates (Peters & Fisher, 2004). However, certain studies criticize economic-incentive policies for often being wasteful and having, at best, a minor impact on growth in employment or investment (Hanson, 2009; Neumark & Kolko, 2010).

Most states have several types of tax-based incentives, such as tax credits, tax exemptions, and infrastructure investments (Pew Center Report, 2012). Tax-based incentives substantially have grown over the past 25 years, but they vary from state to state. Figure 1.1 shows this variation. The darker the color, the more tax-based incentives offered by the state.

The first map shows the status of tax-based incentives in 1990, when few state governments used them. Those that made extensive use of them include Nebraska,

Michigan, and New York. The second map shows the variation in tax-based incentives from 1990 to 2000. The shade of color used indicates the difference between tax incentives from 1990 to 2000. State governments actively increased the use of tax-based incentives during this time. Kentucky is one example. The third map reveals the differences in tax-based incentives between 2000 and 2007. Although tax-incentive use continued to increase, the pace slowed down. The last map depicts the variation from 2007 to 2015. Overall, some states cut back on tax-based incentives while others increased their use. The figures demonstrate that state governments favored tax-based incentive policies from the late 1990s to the early 2000s. Now, it seems that the situation dictates whether a state will utilize such policies.

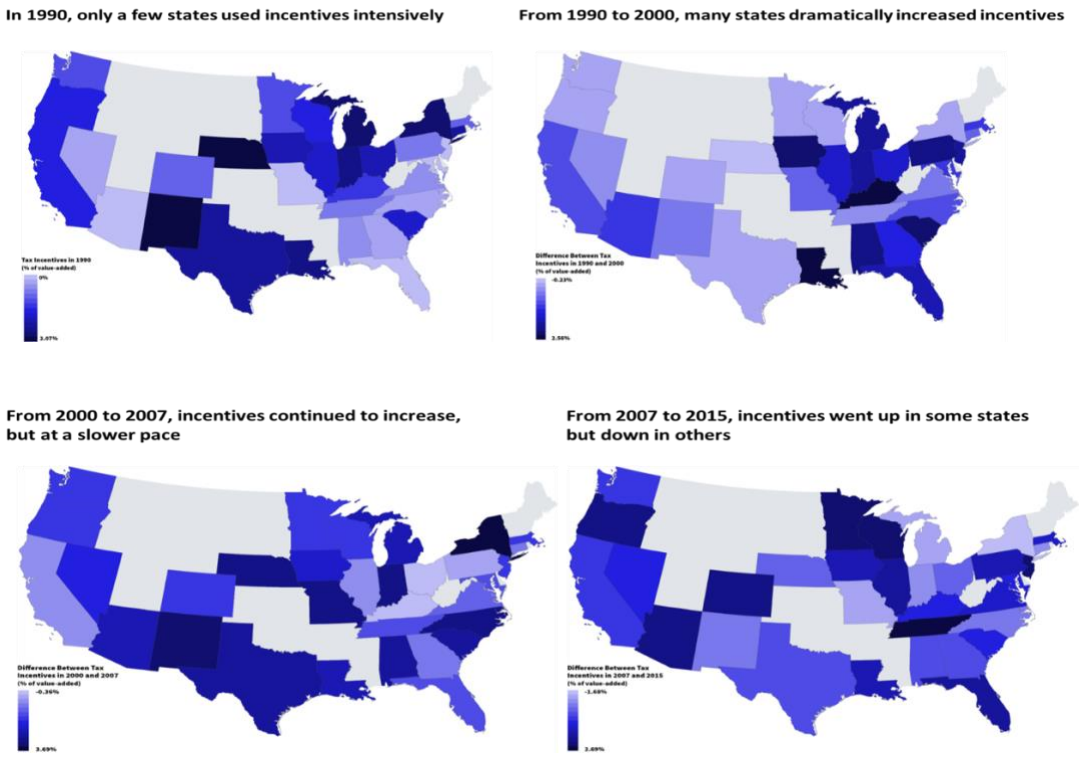

Figure 1.1 State variations in tax-based incentives
(Source: Upjohn Institute).

1.2.3.3 Economic Effects of Tax-based Incentives

Many studies have argued that tax-based incentives fail to achieve their intended policy outcomes. They have attributed the problem with current policies to the local decision-making process, as local policymakers often overestimate the benefits of incentives. Moreover, this debate is dominated by business interests (Bartik, 2005). For example, state and local governments often provide tax incentives where job creation is too expensive or is unlikely to improve the employment opportunities of residents (Bartik, 2005). In addition, many tax incentives target firms or industries rather than people in need. Peters and Fisher (2004) examined both tax-based incentives—such as property tax abatements, tax-increment financing, sales tax exemptions, and credits for investment or jobs—as well as non-tax incentives, such as business grants, loans, and loan guarantees. They found that, in all cases, the firm was the initial recipient of the incentive.

Since the 1980s, researchers have conducted studies to determine the factors that are important for determining a firm's location. According to the previous literature, state and local taxes did not significantly affect a firm's location (Buss, 2001). Some studies have found that incentives have a negligible impact on a firm's location and investment decisions because state and local taxes constitute a small fraction—approximately 1.8%—of an average company's costs of doing business (Bartik, 2003; Betz et al., 2012; Davis, 2013; Felix & Hines, 2013). Peters and Fisher (2004) found that, in as many as nine times out of ten, firms would hire or invest even absent the incentive.

Until the 1990s, few attempts were made to distinguish general tax policy and public service (Bartik & Erickcek, 2014). By the late 2000s, many studies had examined

the effects of business incentives. Several have analyzed the overall business or several incentives (Calcagno & Thompson, 2004; Gabe & Kraybill, 2002; Lee, 2008). A few studies have focused on specific cases, such as new factories that received business incentives (Edmiston, 2004; Fox & Murray, 2004). Others have analyzed one type of business incentive, such as enterprise zones, customized job training, manufacturing extension services, tax-increment financing districts, or tax credits tied to job creation (Bartik & Erickcek, 2014). Table 1.1 briefly summarize the key literature on the economic effects of tax-based incentives (TIFs).

Table 1.1 Summary of the key literature on the economic effects of tax-based incentives (TIFs).

Author (year)	Study subject	Time period	Unit of analysis	Analytic method	Are economic development incentives effective?
Holzer et al. (1993)	State-financed training grant program	1987–1989	Michigan	Difference in differences	Yes, the grant program achieved the goal.
Wassmer (1994)	TIF projects	1947–1992	Detroit	Regression analysis	Yes, they had a positive impact on retail employment and retail sales.
Peters and Fisher (2004)	Business incentives	1961–2002	Previous studies	Comprehensive reviews	No, it is necessary to radically change incentive policies
Bartik (2005)	Economic development policies	1986–2004	Research literature	Comprehensive reviews	No, they are too expensive.
Goetz et al. (2011)	State economic performance	2000–2007	State	Benchmark regressions	No, they are more likely to harm growth.
Bartik and Erickcek (2014)	MEGA tax credit program	1996–2007	Michigan	Regional economic model	No, there was no positive effect on employment growth.
Lester (2014)	TIF	1990–2008	Chicago	Difference in differences	No, there was no evidence of economic benefits.

Some studies have revealed that business incentives are not only inefficient: They also have no positive effect on employment growth (Bartik & Erickcek, 2014). Goetz, Partridge, Rickman, and Majumdar (2011) examined the extent to which economic development policies promote growth and produce economic gains across the population.

They found no evidence of the effectiveness of lower taxes on a state's economic performance, suggesting that targeted tax incentives and financial assistance are more likely to harm growth and income inequality. The likely reason is that lower taxes may reduce government revenue—which could be used to provide services such as education and infrastructure—without expanding or increasing employment. If this is the case, such a policy not only fails to bring promised economic benefits to a community but also wastes money states could otherwise use to build a solid foundation for economic development (Williams, 2017). On the other hand, several studies have indicated that customized job training has a positive impact on the local area (Hollenbeck, 2008; Holzer, Block, Cheatham, & Knott, 1993; Hoyt & Jepsen, 2008). Although recent trends have shifted toward building a firm's capacity, developing human capital, and enhancing quality of life, economic-development policy historically has focused on attracting new businesses or preventing companies from leaving by offering financial incentives, usually in the form of tax abatements. As research on business incentives offers mixed results, it is necessary to analyze why state and local governments still actively use tax-based incentives with uncertain results.

Generally, there are two justifications for why local governments have adopted economic incentives. Peter (1988) provided two reasons: (1) Economic incentives are expected to increase business investment, thereby creating new jobs, which will facilitate economic growth; (2) This economic growth will increase local government revenue, which will improve the quality of public services. TIF is also a place-based incentive and addresses both justifications as a policy tool.

1.3 Tax Increment Financing

1.3.1 What is TIF?

The National Association of Home Builders' report evaluated TIF as the most popular financing tool among state practices (Kane & Weber, 2016; Smith, 2006). In the 1980s, fiscal responsibility shifted from federal to local government. This trend contributed to the proliferation of TIF as a policy tool (Huddleston, 1981; Weber & O'Neill-Kohl, 2013). Historically, many people have supported TIF because it is a self-financing economic development tool that does not lead to reduced government revenue (Greenbaum & Landers, 2014). This self-financing characteristic distinguishes it from other economic development programs such as tax credits, tax abatements, enterprise zones, and other subsidy programs.

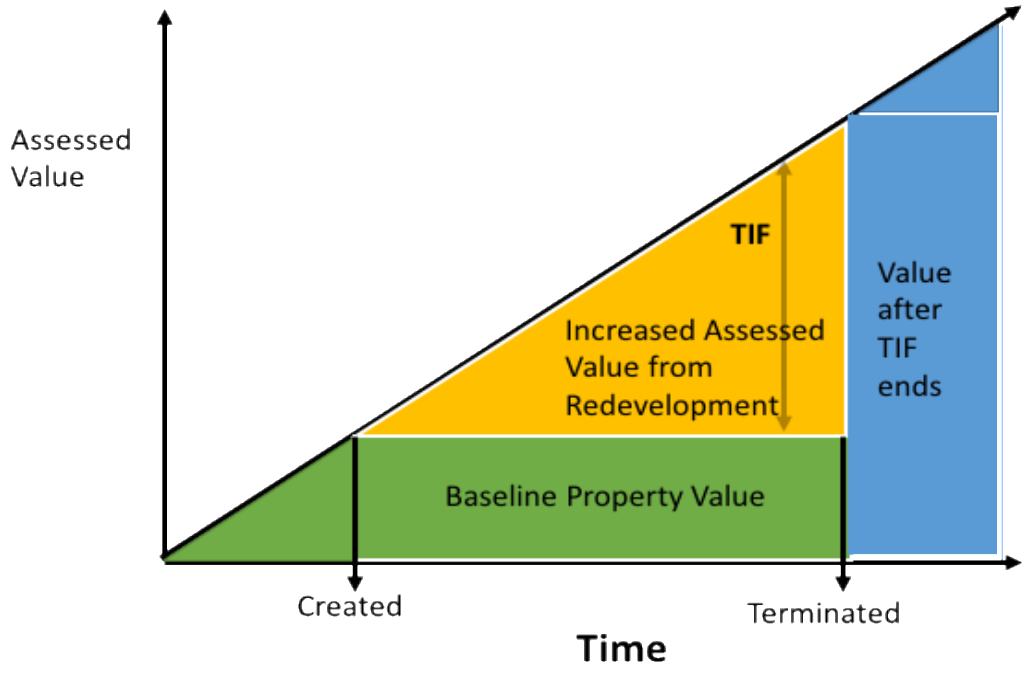

Figure 1.2 The mechanism of TIF

Figure 1.2 explains the process of Tax Increment Financing (TIF). Local governments must borrow capital when they implement a TIF project, and they usually use bond issuance to finance its development. Both public and private economic activities have been increased due to TIF projects. Thus, they have led to a net inflow of economic activities. Finally, the effects of the activities give rise to higher property tax revenues, which will be used to repay revenue bonds and interest. This process is the basic concept of TIF.

When implementing a TIF program, local government officials are typically deeply involved because they designate TIF program areas, which are expected to finance certain aspects of economic development. Growth in local tax revenue is expected in the TIF program area. Specifically, there are two components: base revenues and incremental revenues. Base revenues refer to a certain amount of total tax revenues before a TIF program is implemented. Incremental revenues indicate the difference between excess future revenues and base revenues. TIF projects lead to excess revenues compared to base revenues. Based on incremental revenues, local governments that implement TIF programs independently provide residents with economic development subsidies to promote economic growth and to cover program expenditure. This is the basic logic of TIF programs.

1.3.2 Local Policy Environment

Discussing the TIF should be preceded by explaining the local policy environment because this influences the local TIF projects. There are two essential concepts in the local policy area, “Dillon’s rule” and “Home rule.” Specifically, Dillon’s rule originated from Clark v. City of Des Moines (1865) (Richardson, 2011). It indicates that local

government could have power and authority when the state government clearly grants such authority (Richardson, Gough, & Puentes, 2003). Now, 39 states adopt Dillon's rule when they define the authority of local government, and 31 states apply Dillon's rule to the entire local area (Richardson, 2011). The majority of U.S. states currently employ Dillon's rule.

The adoption of the Home rule began with backlash against the current Dillon's rule. Specifically, Dillon's rule did not efficiently control local governments, and state legislatures failed to specify the role of local governments (Barron, 2003). The definition of the Home rule is that local governments could have their power and authority through the state constitution and legislative action. It means that local governments with the Home rule tend to have more discretionary authority than local governments with Dillon's rule.

If we apply this issue to the TIF project, we realize that TIF projects have characteristics of both rules. Specifically, most state governments enable local governments to undertake TIF projects through each state TIF legislation. In other words, local governments could have discretionary authority by state government grant. At the same time, local governments usually have enough power to enact policy in the TIF projects. In this sense, TIF, one of the main economic development policies, is a mixture of both rules.

1.3.3 The TIF Process and Conditions

State legislation allows municipalities to use TIF. Most state laws specify detailed checklists and activities for operating and establishing a TIF program. Each state has a

different implementation scope and process (Kane & Weber, 2016). Nonetheless, there are generally two common denominators regarding preconditions for TIF. First, many states require a certain amount of evidence regarding blight (Weber & O'Neill-Kohl, 2013). For example, Illinois requires five types of evidence: blighted area, excessive vacancy, obsolescence, deleterious land use layout, lack of ventilation, and proof of below structure minimum code standard (Kane & Weber, 2016). After this first condition is met, the municipality needs to demonstrate the "but for" condition. This refers to whether, without the benefit of a TIF program, a designated area will fail to experience economic growth (Briffaulff, 2010). When these two preconditions are satisfied, local governments can establish a TIF ordinance and designate a certain area as a TIF district.

To implement TIF, municipalities should carefully select a specific geographic area for redevelopment in order to increase tax revenue to offset the cost of development. During this process, local governments generally issue debt, such as revenue bonds, to cover the costs of developing the designated area (Kane & Weber, 2016). If the TIF project achieves its goals—namely, inducing private investment and making the district an attractive place to do business—then property prices will increase. This increment will cover TIF-related expenses. The creation of such a virtuous circle is the intent behind the basic TIF process.

1.3.4 The Goal and Rationale of TIF

The fundamental purpose of this policy tool is to promote redevelopment and economic development. This goal is present in TIF legislation, which is designed to revive blighted or deteriorating local areas and to create new jobs (Kane & Weber, 2016). In this sense, TIF is regarded as a catalyst for local development. To achieve this goal,

public investment in deteriorating areas that are less likely to induce new business or investment without public intervention should be prioritized. According to Bland and Overton (2014), public investment is necessary for a partnership's success. Such a partnership is based on private investment that will increase local property values. Ultimately, the goal of TIF is to attract investment from private companies and sectors to achieve economic development.

1.3.5 Trends in TIF and the Present Status of TIF

In 1952, California became the first state to begin using TIF (Lefcoe & Swenson, 2014). After TIF was authorized, many states began using TIF, leading to a dramatic increase in its implementation during the 1970s and 1980s (Greenbaum & Landers, 2014). California passed Proposition 13 in 1978, which limited local governments' ability to increase property taxes for tax revenues (Dardia, 1998). Proposition 13 directed municipalities to find alternative policy tools for capital improvement (Lefcoe & Swenson, 2014). Before TIF, municipalities had three options to encourage redevelopment. The first option was the abatement of property taxes. The second was for cities to use fund project that are not included in general funds. The third option was to issue general obligation bonds (Weber, 2010). In this regard, tax reform was a catalyst for the proliferation of TIF.

Currently, the District of Columbia and 49 states have diverse forms of TIF totaling thousands of TIF districts in the United States (Krohe & Boyanoski, 2007; Lester, 2014). For example, the city of Chicago has 145 TIF districts (Spielman, 2015). Chicago experienced a $400 million increase in tax revenues, which was used to finance reimbursement (Spielman, 2015). In 1999, Arizona became the first state to repeal TIF

legislation (Weber & O'Neill-Kohl, 2013). In 2012, California ended the use of TIF (Lefcoe & Swenson, 2014). First, the state of Arizona repealed the TIF legislation because the Arizona Supreme Court concluded that the legislation was unconstitutional (Lefcoe, 2010). Specifically, the Supreme Court ruled that a more stringent inquiry was necessary to argue the public purpose of TIF projects. Second, the state of California ended the use of TIF for practical reasons. When the state government decided to end the use of TIF, the state had 425 redevelopment agencies involved in the project (Thomas, 2012). These agencies typically oversaw projects to the value of approximately $8 billion every year. This total TIF project value exceeded the permissible range of the state government because the state government had declared a fiscal emergency in 2010. Many local governments still use TIF as a first option among incentive programs. Even so, the TIF reversal in California has had serious implications for TIF policy. In other words, the time is right to conduct a review of the TIF policy tool.

Table 1.2 and Figure 1.3 below show sources of eligible tax revenue by state. All states use property tax revenues to capture tax increments. We suggest that the success or failure of TIF policy closely depends on whether property values within each district increased after the implementation of TIF. The next highest eligible source is sales tax revenues. Sixteen states use property tax and sales tax revenues for TIF sources. If a state uses sales tax as a revenue source, the projects will be closely related to retail TIFs. This policy decision involves two issues: (1) the difficulty of predicting sales tax revenue; and (2) that variation causes greater risk regarding the sustainability of tax revenue.

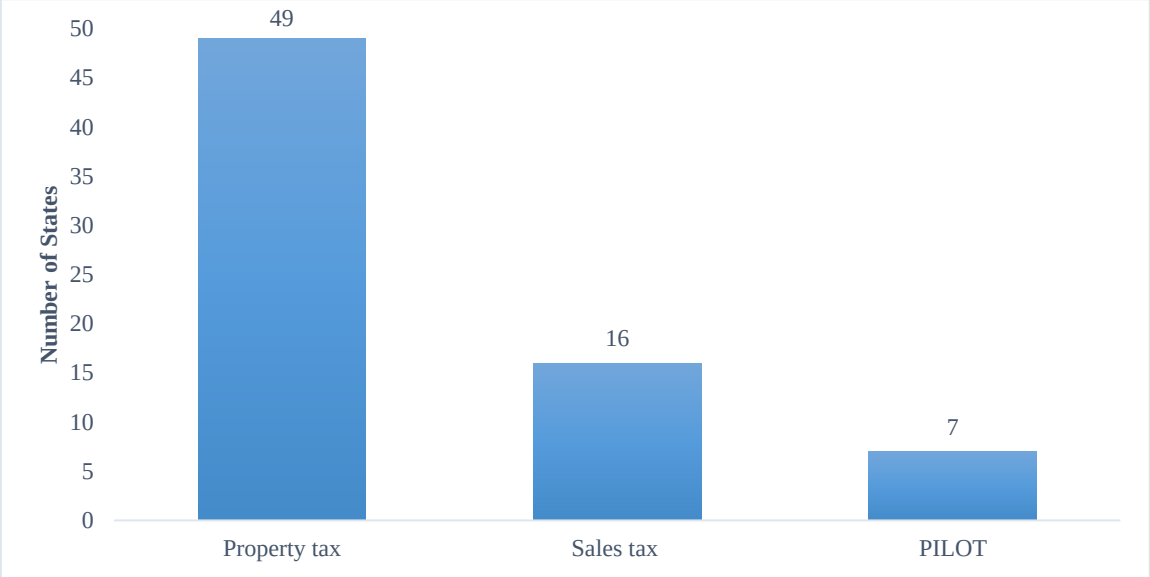

Figure 1.3 Eligible revenue sources by state

Table 1.2 Tax increment finance state-by-state

State	Year Authorized	Eligible Tax Revenue Source			TIF counts
		Property tax	Sales tax	PILOTs	
Alabama	1987	✓			Unknown
Alaska	2001	✓			1
Arizona	N/A				0
Arkansas	2001	✓		✓	9
California	1952	✓			743
Colorado	1975	✓	✓	✓	140
Connecticut	1959	✓	✓		4
Delaware	2002	✓			0
Florida	1969	✓			222
Georgia	1985	✓			64
Hawaii	1985	✓			Unknown
Idaho	1987	✓			78
Illinois	1977	✓	✓		1238
Indiana	1981	✓		✓	700 to 800
Iowa	1969	✓	✓		3340
Kansas	1976	✓	✓	✓	11
Kentucky	2000	✓	✓		23
Louisiana	1988	✓			9
Maine	1977	✓			483
Maryland	1980	✓			28
Massachusetts	2003	✓			Unknown
Michigan	1975	✓			634
Minnesota	1979	✓			1719
Mississippi	1986	✓	✓		25
Missouri	1982	✓	✓	✓	468
Montana	1974	✓			50
Nebraska	1978	✓			828
Nevada	1959	✓			22
New Hampshire	1979	✓			32
New Jersey	2009	✓	✓	✓	49
New Mexico	2006	✓	✓		16
New York	1984	✓			2
North Carolina	2004	✓			3
North Dakota	1973	✓			48
Ohio	1976	✓			1278
Oklahoma	1992	✓	✓		48
Oregon	1960	✓			244
Pennsylvania	1990	✓	✓	✓	Unknown
Rhode Island	1956	✓			5
South Carolina	1984	✓			17
South Dakota	1978	✓			172
Tennessee	1978	✓	✓		29
Texas	1983	✓	✓		1378
Utah	1968	✓	✓		84
Vermont	1985	✓			9
Virginia	1988	✓			9
Washington	2001	✓	✓		38
West Virginia	2002	✓			31
Wisconsin	1975	✓			1241
Wyoming	1983	✓			Unknown

Source: Tax increment Finance State-by-State Report by Council of Development Finance Agencies (CDFA) (Merriman, Qiao, & Zhao, 2018).

1.4 Literature Review: Classification of Previous Studies on TIF

Many previous TIF studies have been conducted in magazines, newspaper articles, books, and academic journal articles. In addition, many references have been accumulated over time. This paper will mainly address recent empirical studies. Most previous studies have focused on output or outcomes of TIF in specific municipalities. Some studies have also analyzed the effects of TIF on tax revenues, employment growth, and sales. This review will begin by examining the previous studies that have analyzed land valuation. Next, the effect of TIF on other outcomes will be reviewed. To do this, previous findings will be placed into appropriate categories.

1.4.1 Land Valuation Studies

Many studies have closely analyzed the effect of TIF on land valuation. As an economic development tool, the influence of TIF on real estate value is a key topic in academic debate (Weber, 2003). Some studies have found that the adoption of TIF had a positive impact on overall property values (Anderson, 1990; Dardia, 1998; Man & Rosentraub, 1998; Wassmer & Anderson, 2001; Yadavalli & Landers, 2017). For example, Anderson (1990) found that cities that adopted TIF experienced greater growth in property values compared to cities without TIF. However, not all studies that have analyzed the effects of TIF on property values have found the same result. For instance, a few studies have concluded that TIF projects failed to increase property values because TIF projects did not offset investment costs (Dardia, 1998; Merriman, Skidmore, & Kashian, 2011). However, Dye and Merriman (2000) found that municipalities with TIF saw an increase in property values while property value growth in municipalities with

TIF was lower than in municipalities without TIF. These mixed results have led to the continuation of controversy over the effects of TIF.

1.4.2 Building Valuation Studies

Compared to land valuation studies, fewer studies have analyzed the effect of TIF on building values. Smith (2006) found that the values of buildings located in TIF districts showed greater rates of property value growth than buildings in districts without TIF. In their study of Chicago, Byrne (2006) found that TIF projects led to about a 30% faster growth rate in property value than in areas without TIF projects. Weber, Bhatta, and Merriman (2003) also analyzed the Chicago area. They classified buildings into three categories: industrial, commercial, and residential properties. They found that industrial buildings in mixed-use districts showed greater property value growth rates than other building types (Weber et al., 2003). This research did not produce consistent results, however. For example, Merriman et al. (2011) found no significant growth rate for industrial and residential properties. The mixed and limited results of studies investigating the effects of TIF projects on property values suggest a need for future research.

1.4.3 Unit of Analysis

Early studies on TIF have usually analyzed the effects of TIF projects on specific municipalities. More specifically, these early studies have compared municipalities that have TIF projects with municipalities that do not have TIF projects (Anderson, 1990; Dye & Merriman, 2000; Man & Rosentraub, 1998). For example, using the municipalities of Michigan as a case study, Anderson (1990) found that cities with TIF showed greater

growth rates in property value than cities without TIF. Man and Rosentraub (1998) also used the city as their unit of analysis, finding the same result in Indiana as the Anderson study found in Michigan. (Dye & Merriman, 2000) achieved consistent results by using TIF area as a unit of analysis. This method is logical because it directly compares the effects of TIF. However, using TIF districts is not easy because it is difficult to collect observational data about TIF projects and to find non-TIF areas with similar conditions. To increase the validity of their results, recent studies have used the propensity score matching method (Funderburg, 2018).

A few studies have used census data to control for the demographic characteristics of the TIF district. Representative of such a research approach is Lester (2014), which used block group level to analyze the effects of the TIF district. According to his paper, block group data is a reasonable unit of analysis because it enables researcher to combine socioeconomic and demographic data with other data (Lester, 2014). Gibson (2003) used census tract data when analyzing Chicago TIF areas. When used in this way, census geographic data has clear research benefits. Furthermore, when demographic information is necessary, multiple datasets can be included. On the other hand, there is a problem with this data because it might be difficult to match block group or census tract data to TIF project areas. It is always possible that TIF projects will have different sizes than census tracts indicate.

Lastly, some studies have used parcel level data as a unit of analysis. For instance, Weber et al. (2003) analyzed the effects of TIF in Chicago by using parcel levels. According to their study, the effect of TIF projects could differ depending on the type of parcel used, such as industrial, residential, or commercial (Weber et al., 2003).

This review of previous studies suggests that there are several ways to estimate the effects of TIF projects. Nonetheless, most studies have used property value as the key element for analyzing the effects of TIF. This is because it provides researchers with direct information. In future studies, it would be useful to understand the strength of each data level.

1.4.4 Economic Development Outcomes

Previous studies have analyzed the economic development outcomes of TIF projects. Man (1999) analyzed Indiana municipalities between 1985 and 1992 and found a positive relationship between TIF projects and local employment. Wassmer (1994), whose study was conducted in Detroit, analyzed more economic development outcomes than did Man (1999). These included sales in manufacturing and retail, as well as employment. It was also conducted over a longer period (1947–1997). Wassmer (1994) found that TIF projects had statistically significant and positive impacts on retail employment rates and retail sales. However, modern studies have conflicted with previous studies. For example, Byrne (2010) studied Illinois cities between 1981 and 1999 to analyze the effects of TIF and found that TIF projects had a negative impact on retail employment in general. However, when he focused on industrial development, his findings showed a positive relationship between employment and TIF projects. Moreover, Lester (2014) analyzed business creation and employment in Chicago between 1990 and 2008 by using block group data and the propensity score matching method. He did not find any effect of TIF on employment and private investment. Although some studies have analyzed economic development outcomes, the results were mixed regarding TIF projects.

1.4.5 Fiscal Outcomes

Some studies have analyzed the effects of TIF on fiscal outcomes, such as tax revenues. These studies have usually compared the cost of the TIF project with increases in revenues. Huddleston (1981) examined 16 TIF projects in the Wisconsin area from the 1970s. According to his projected estimate, only 10 of 16 local governments would break even within 20 years. Dardia (1998) examined the California TIF districts to analyze how TIF impacted the property tax increment. He used a control group that did not adopt TIF projects to analyze the true TIF effect. He found that less than 25% of TIF districts recovered more than their TIF costs or broke even (Dardia, 1998). Kriz (2001) used a Monte Carlo simulation to analyze the effect of TIF on fiscal outcomes based on several assumptions about public expenditure, tax rates, property value growth, and other policies regarding local Minnesota governments. Based on these reasonable assumptions, he concluded that local governments with TIF projects were likely to experience financial loss (Kriz, 2001). These previous studies suggest that TIF projects are not likely to generate a net gain for their municipalities. In other words, many local governments have failed to enjoy the expected effects of TIF. Greenbaum and Landers (2014) suggested two reasons: (1) There is a possibility that growth in property values may have occurred regardless of TIF projects; (2) Other economic development tools that do not include TIF led to the growth in property values. At the same time, they argued that TIF could have an impact on income, business activity, and employment (Greenbaum & Landers, 2014). A few studies have supported this argument, claiming that TIF has a positive impact on business establishment, employment, and sales activity (Byrne, 2010; Lester, 2014; Man,

1999; Wassmer, 1994). In conclusion, for accurate assessment, more comprehensive analyses that include other tax revenues are needed.

1.4.6 Evaluation of Previous TIF Studies

A substantial body of research has analyzed the effectiveness of TIF in municipalities. Many studies have also evaluated the TIF system itself. Overall, there is a great deal of support for TIF. First, municipalities may have greater tax revenues due to TIF projects (Nguyen-Hoang, 2018). Such increases in tax revenues are the principal reason for the diffusion of TIF. Second, TIF has been evaluated as a flexible tool because TIF-related decisions are typically made at the local level without approval of state or federal government (Greifer, 2005). For example, enterprise zone programs as well as state and federal grant programs require several time-consuming approval and application processes. The relative flexibility of TIF enables local governments to more easily adopt TIF programs. Third, TIF is a "self-financing" policy tool. This is because the increased property tax base brought about by TIF could be devoted entirely to expenditure on public infrastructure. This strength could be appealing to local governments reluctant to increase the tax burden (Greenbaum & Landers, 2014). Lastly, TIF enables municipalities to avoid the debt limit. Many states still limit the amount of debt in local government, and a complicated process is required for a municipality to issue more. However, if a local government links a TIF project to a special revenue obligation, the bonds are not perceived as "debt" (Selby & Hunter, 2004). Many previous studies have pointed to these advantages. If a TIF district did not exist, developers would have to pay infrastructure costs. TIF ensures that property taxes are used to pay for infrastructure that directly

benefits the developer's property or business. In this sense, TIF functions as an incentive for private investors to invest in a specific location (Leavitt, Morris, & Lombard, 2008).

Despite these advantages, several problems with TIF have been discussed in previous studies. First, TIF projects could lead to financial crises for local governments. For example, if a TIF project did not produce a proper future tax increment, there is a possibility that local governments might experience worsening crises or even default (Kane & Weber, 2016). Second, more diverse evaluation criteria are necessary for TIF programs in the short and long term. This is because property value growth does not represent the overall effect of TIF. For instance, increasing property values could decrease wellbeing for residents because it could force tenants to leave their homes (Hackworth, 2002; Newman & Wyly, 2006). In short, there are concerns regarding inequity between property owners and tenants. A third criticism is that it takes a long time for the expected outcomes of TIF projects to occur. TIF projects are usually conducted over long periods of at least ten years. Opponents of TIF programs have pointed out this problem, arguing that lengthy project periods increase program uncertainty (Hipler, 2007).

1.5 Summary and Recommendations

As with other economic development incentives, TIF is aimed at economic growth and the revitalization of blighted areas. According to previous studies, local governments might benefit from increased growth in income, private investment, and employment if TIF projects achieve their goals. However, previous studies of property value have had mixed results. Outcomes have been similar regarding fiscal and economic

development. According to Weber and Goddeeris (2007) , “research on the effect of TIF has raised more questions than it has answered” (p. 54). This statement reflects the current status of TIF studies and economic development policies. At the same time, this situation brings into question why local governments have adopted economic development policies that have uncertainty about the result. This is the most urgent task in the economic development academic area because previous studies have not provided an answer in detail or even produced any issues about the reason.

The literature review identified several directions for future study and recommendations for practitioners and researchers. According to Kane and Weber (2016), further studies of TIF projects are essential because there is still doubt regarding whether TIF leads to property value growth. Greenbaum and Landers (2014) made the same point, also arguing that it is necessary to analyze the overall economic impact of TIF on municipalities. Bartels & Hall (2012) argued that too few studies have analyzed how internal management practices impact TIF performance. When TIF projects are established, local government officials intend certain goals for the project. Yadavalli and Landers (2017) claimed that this practice leads to inherent bias, recommending that an improved research method is essential to address such bias. In this regard, more detailed and comprehensive studies employing advanced methods are needed.

CHAPTER 2. A THEORETICAL MODEL FOR A ZERO-SUM DILEMMA AND THE DIFFUSION MECHANISM OF ECONOMIC DEVELOPMENT POLICIES (TAX INCREMENT FINANCE)

Abstract

Tax increment finance (TIF) is intended to increase economic activity in a local area. TIF has spread rapidly in recent years in America to become an essential part of the policies of American local government. Research finds little evidence of aggregate effects on total production, consistent with TIF as a zero-sum game for local government. The popularity of TIF results from local governments competing with or learning from other local governments, imposing fiscal externalities on each other. The theory is similar to the race to the bottom in costly activities like welfare spending and in tax cuts which result in fiscal stress on local government activity. Although little attention has been paid to political factors in economic development policies, they are theoretically closely related to the adoption and extent of fiscal incentives.

2.1 Introduction

Economic development incentives are currently the most common tool adopted by local and state governments (Pew Center Report, 2012). The reason why this policy tool became trendy is that economic development incentives tend to promise rosy futures such as creating jobs, economic growth, and attracting investment. Indeed, according to a recent *New York Times* investigation on incentives, the total number of incentive programs is 1,874, and state governments have spent about $80.4 billion per year on them (Story, Fehr, & Watkins, 2012). These economic development policies have become an essential part of the policies of American local governments (Fleischmann, Green, & Kwong, 1992), leading to many empirical studies that analyzed the effects of development policies (Wang, 2016). However, this prior academic literature fails to suggest a clear direction on the effectiveness of economic development incentives.

At the same time, the popularity of these policies gives rise to strategic interaction between state and local governments. To be precise, a state's or municipality's policies indirectly impact other local governments' choices. As a result, this strategic behavior causes state and local governments to compete via the adoption of incentives and taxes to win the game. Although many empirical studies about tax competition exist, their results do not reach any consensus (Leiser, 2017). However, there is a comparative lack of theoretical studies that analyze why economic development policies are structurally and actively adopted by local governments. While many studies have analyzed the effects of economic development policies, surprisingly little research has been conducted to explain which factors are associated with the extent of the use of economic development policies.

Furthermore, these economic policies face a "zero-sum dilemma" (Snow, 1995). For example, economic development incentives yield no significant changes regarding overall local economic growth indicators, such as the total number of jobs (Sridhar, 1996). Several studies also suggest tax incentive policies are considered a zero-sum game (Chrinko & Wilson, 2008; Goolsbee & Maydew, 2000; Wilson, 2009). To the best of my knowledge, no studies have analyzed how a zero-sum game could be modeled in economic development policies. In this sense, it is necessary to question whether economic policies structurally lead to net benefits in local areas.

This article intends to theoretically examine the proposition that tax increment finance (TIF) is a zero sum game, as TIF is the most popular economic policy tool (Man & Rosentraub, 1998), by applying the zero-sum dilemma to TIF and analyzing why the project does not produce the intended outcome. Additionally, the study theoretically highlights the diffusion mechanism of economic development policies by using TIF, specifically examining why adopting TIF in a community leads to TIF adoptions in other communities. Lastly, based on existing political theories, this article explains theoretically why local governments that political actors are involved with cannot desist from using diverse economic development policies such as TIF.

2.2 The Characteristics of Economic Development Policy

When state and local governments adopt economic development policies, they expect to create something new, such as increasing investments and jobs. However, many studies do not draw conclusions about the effectiveness of economic development policies (Bartik & Erickcek, 2014; Patrick, 2014; Swann, 2017). There is even the

argument that economic development policies have a negative impact on the national economy (Burstein & Rolnick, 1995). Specifically, the competitive adoption of economic development policies causes the under-provision of public service, as these policies only relocate investments and businesses across locations (Bartik, 1991; Fisher & Peters, 1997; Wang, 2016). Thus, a few studies on economic development have recognized policy effects as a zero-sum game (Chrinko & Wilson, 2008; Goolsbee & Maydew, 2000; Wilson, 2009). In this situation, we face questions regarding the reasons state and local governments have scrambled to implement economic development policies.

We can easily understand the characteristics of economic development policy if we review the process of policy adoption. At the start of the process, as one state adopts a new economic development policy, the probability of other states adopting the same policy is increased because other state residents hear of the expected benefits (Leiser, 2017). These states also start to experience the loss of wealth, that is, the zero-sum nature of damage because of the new policy. As time goes on, the comparative benefits of the economic development policy decrease because several other states adopted the same policy. In other words, early adopters can no longer enjoy their once unique benefits. Additionally, states that do not adopt the new policy try to differentiate from other states that have already adopted the policy by using other policies to attract new investors; indeed, the probability of adoption begins to decrease after a short peak time, with economic development policies tending to show an inverted U-shape adoption probability. This repeating process indicates that state governments recognize the use of economic development policies as a zero-sum game (Leiser, 2017).

2.3 The Purpose of Applying the Theory of Zero-Sum Games to TIF

TIF is regarded as a powerful tool for local development. Private or public investment in underprivileged areas that are less likely to attract new investment or businesses without policy intervention proceed with TIF to achieve their goals. Most previous studies focused on the output or outcomes of TIF in certain municipalities. More specifically, these studies tended to review how property value changes after TIF implementation (Greenbaum & Landers, 2014). The reason for this is that growth in property value is the key mechanism to maintain the virtuous circle of TIF. However, many property value studies have had different results.

The diffusion of TIF is the same as with other economic development policies. As discussed above, only a few states adopt TIF in the early stage, though most states have already adopted other TIF policies to keep from being left behind in the current economic situation. Still, TIF is clearly evaluated as a zero-sum game in previous research (Snow, 1995). Taking this into consideration, it is reasonable to theoretically test the characteristics of a TIF policy as a representation of economic development policies.

2.4 Theoretical Model for a Zero-Sum Dilemma

The present study is based on a theoretical model of public infrastructure (Boarnet, 1998) , but it has been slightly modified to apply to a TIF case. This portion designs a model of TIF in two cities, labeled A and B. Each city has a public authority and both public authorities produce identical local outputs, such as public services with identical technologies. The local output of each public authority is evaluated by the national market at price p. I also assume that supply of capital and labor are perfectly

inelastic in each city in the short run. In the long run, both factors of local outputs can freely move between cities. Finally, total economic activities, such as jobs and businesses, are in fixed supply, as nothing is created that does not already exist. To focus on the effect of TIF, I also assume that there is no cost for providing public capital and F is a neoclassical production function.[1]

Based on previous assumptions, each city produces public local outputs to residents according to

$$Q = (G)F(L,K),$$

where

Q = city or local output,

G = public capital,

L = labor force,

K = physical capital,

In this situation, I assume that City A increases public capital due to the TIF project. The increased public capital with TIF will provide benefits for the owners of physical capital and workers in the short run. During this process, City A generally issues debt, such as revenue bonds, to cover the cost of increasing public capital. Thus, the increase in the amount of public capital is equal to the debt (D).

[1] The neoclassical production F(K,L) has the following properties: (1) Both factors are necessary, (2) both factors contribute to output, and (3) the production exhibits constant returns to scale.

In the long run, the increased public capital with the TIF project will be attractive to labor and physical capital in City B. As a result, factors (L, K) will migrate from City B to City A in the long run to get benefits. After the shift of factors is complete, the two cities' local output is

$Q_A = (G_A + \Delta G - D)F(L_A + \Delta L, K_A + \Delta K) \qquad \Delta G = D$

$Q_B = (G_B)F(L_B - \Delta L, K_A - \Delta K)$

Given that the TIF project in City A leads to local output increases in City A and decreases in City B, the above model demonstrates the basic logic of a zero-sum dilemma in a TIF project. Figure 2.1 shows the TIF program is necessarily located in the zero-sum line, a non-positive and non-negative sum area. Accordingly, this study proposes the following hypothesis:

Hypothesis 1: A tax increment financing project is a zero-sum game among municipalities.

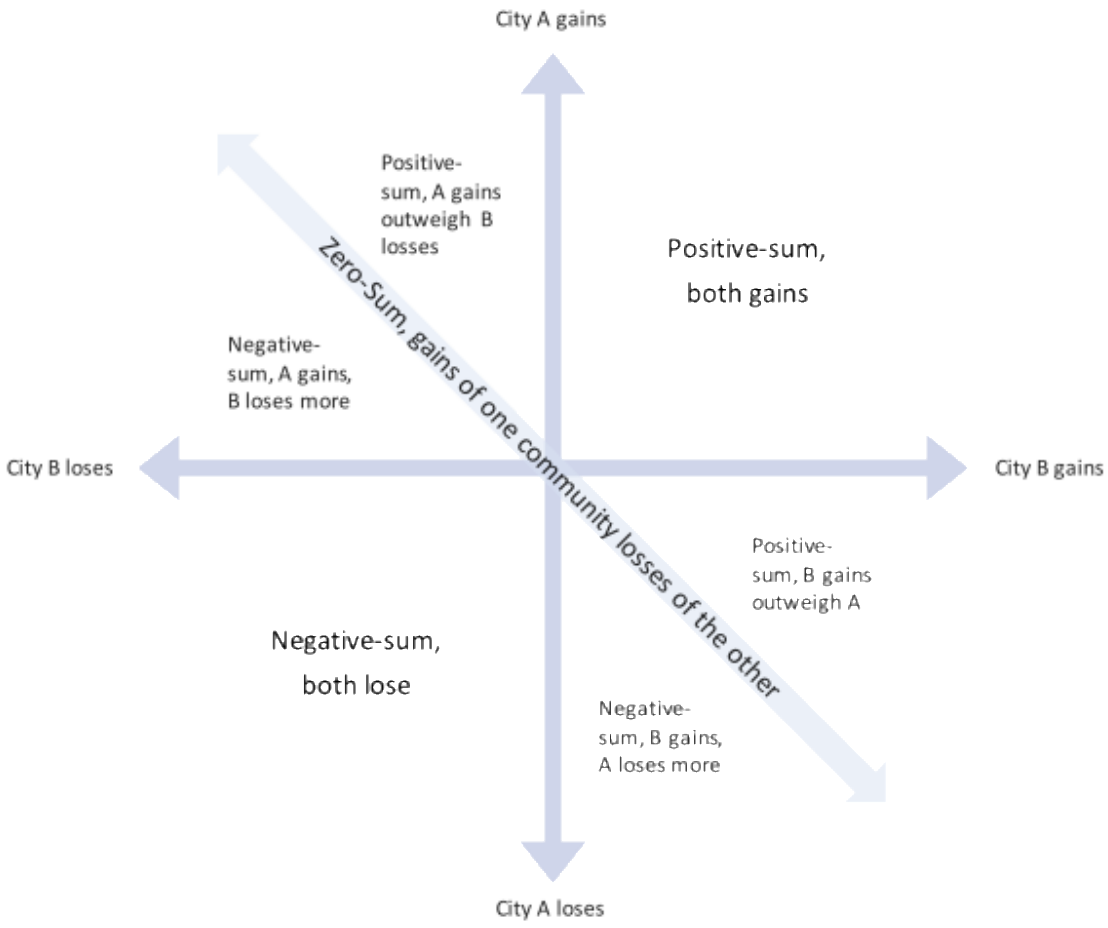

Figure 2.1 Zero-sum dilemma in TIF

2.5 The Diffusion of Economic Development Policy

States have been recognized as "laboratories of democracy" because state governments can experiment with diverse policies more than the federal government can due to considerable discretion in making public policy (Hearn, Lacy, & Warshaw, 2014). A state government's novel innovation allows public officials to try experiments which have high-risk to implement nationwide. If a state government or local government's new policy is successful, the diffusion of the policy may occur both vertically and

horizontally, enabling these governments to learn from other state governments' experiments.

2.5.1 The Definition of Innovation and Diffusion

State and local governments usually try various attempts to address social problems. Although most governmental actions are incremental in that they marginally change budgets and programs, some governments pursue innovation (Berry & Berry, 2014). If we only analyze the incremental governmental actions, we cannot say that we understand policymaking because there are few innovative actions. When we usually think about innovation, we usually come up with something new as an innovation. However, in the policy area, innovation means that "governmental jurisdiction can innovate by adopting a program numerous other jurisdictions established many years before" (Berry & Berry, 2014, p.307).

After a state or local government adopts a new policy, other governments tend to follow the innovation. In that way, the innovation can spread nationwide. This process is called the diffusion of policy, which is defined as "the process by which an innovation is communicated through certain channels over time among the members of a social system" (Berry & Berry, 2014, p.307). The same thing is happening with TIF, considering the growth in the number of states with the TIF since California adopted it. In this sense, the innovation and diffusion model could apply to TIF.

2.5.2 The General Mechanism for Diffusion

Many researchers have analyzed what leads to the diffusion of policy. At least four mechanisms have been discerned: learning from adopters, competition among nearby cities, imitation, and coercion by state governments (Shipan & Volden, 2008).

First, learning leads to diffusion. State governments and public officials face diverse social problems. In this situation, collecting all of the information related to the problems and identifying all of the alternatives seem to be ideal. In reality, it is impossible to rationally compare all of the options for finding an optimal alternative because of time and budget restrictions. These constraints make governments focus on the learning process (Berry & Berry, 2014). The learning process means that policy decision makers make an effort to find a policy that has already proven successful when they address their own social problems.

Second, competition can lead to diffusion. Competition is often compared to learning to clarify its meaning. Competition refers to individuals who are living near state borders, while learning usually occurs across states generally (Berry & Baybeck, 2005). Considering the nature of interconnectivity in the US, policy makers are more likely to adopt a policy if their neighboring states have it. However, there is evidence to suggest that adjacent state competition has not statistically influenced adoption (Hearn et al., 2014; Miller & Richard, 2010). Furthermore, some studies have argued that states or local governments could easily become susceptible to a "race to the bottom" in generosity of benefits because of competitive federalism (Volden, 2002). In other words, the fear of losing local jobs and businesses could lead to the adoption of the policy.

Third, imitation is one of the mechanisms for diffusion. We can understand the meaning of imitation through a comparison with learning. Shipan & Volden (2008) distinguished imitation from learning in the following way: Imitation mainly focuses on actors, while learning mechanisms concentrate on actions. This means that if a state government takes an imitation approach, it is more interested in which other governments adopted the policy than in the policy itself. Thus, the imitation mechanism means that "government A imitates government B when A adopts a policy simply in order to look like B" (Shipan & Volden, 2008, p842). Imitation is also called copying or emulation to resemble other governments.

Fourth, coercion leads to diffusion. Compared to other mechanisms, this mechanism is marked by compulsion. For example, a central government or state government could compel a local government through its authority and laws. Coercion could also originate with horizontal government through international organizations like the United Nations (Shipan & Volden, 2008). Although there is a horizontal case in terms of the coercion mechanism, the US federal system provides researchers with more opportunities to focus on vertical coercion (Berry & Berry, 2014). TIF is not based on vertical coercion because there is no mandatory regulation and state governments independently adopt the policy without coercion.

2.6 The Mechanism of Tax Competition and Economic Development Policy Diffusion

Many state and local governments have attempted to adopt new policies to promote economic growth and jobs, competing with each other to generate businesses and households for a long time (Goetz et al., 2011). The origin of this competition is based on an idea from Tiebout (1956) called theory of efficient tax competition (Munongo, Akanbi, & Robinson, 2017). This model assumes that there is competition among municipalities, and this competition leads to the efficiency of public services (Rendon-Garza, 2006). A model from Zodrow and Mieszkowski (1986) also provides a critical theory, called the Z-M model, about tax competition, which is based on several assumptions: 1) there is a fixed and homogenous community; 2) each community has inelastic capital and elastic labor; 3) perfect competition and constant returns to scale technology exist; and 4) governments aim to achieve social optimization between taxation and public goods. The Z-M model also concludes that tax competition among communities leads to a shift of tax burden from mobile capital to immobile labor.

Recently, tax competition studies have suggested that state or local governments compete with each other not only with taxes, but also with economic development policies (Leiser, 2017). In particular, although geographic proximity is not an important factor for economic development policy competition (Hearn et al., 2014), other dimensions such as industry structure facilitate competition among states (Fletcher & Murray, 2006). Leiser (2017) also suggested that competition actually exists among states regarding tax incentives, a pattern similar to a race to the bottom.

2.7 The Goal and Purpose of Application of the Mechanism for Diffusion

Many local governments have adopted TIF for similar reasons. First, local governments have tended to establish TIF to correct market failure (Greenbaum & Landers, 2014). Without public intervention, blighted areas will suffer greatly. For instance, local governments have used TIF to address spatial inequities, such as concentrated poverty and infrastructure concerns. Second, to improve efficiency, TIF has been widely used by local governments. Specifically, some local governments have attempted to foster agglomeration economies to maximize economies of scale through the TIF (Greenbaum & Landers, 2014). Lastly, competition among local governments has led to the adoption of TIF. In other words, local governments have adopted TIF because of competition for new investment and business among municipalities (Anderson, 1990; Man, 1999; Mason & Thomas, 2010). Some researchers have concluded that the competitive dynamics generated by the TIF policy process justify its adoption. However, other researchers argue that the amelioration of financial crisis is the main reason to adopt TIF programs. While this competitive view is often criticized, Byrne (2005) showed that local governments are less likely to consider neighboring governments' decisions. Considering these circumstances, conducting a study about why municipalities adopt TIF and the mechanism of diffusion would be timely research. Therefore, the following section aims to apply the diffusion mechanism to TIF in order to analyze why these projects have spread across the country.

2.8 Theoretical Model for Diffusion of a TIF

The present study is based on a conceptual Tiebout model and the model of Filer (1992), but slightly modified.[2] The present study also adds a new residential option, creating a community with a TIF project beyond staying in one's current place or moving to an alternative place with a TIF project, as a response to changes in the community's TIF policy. Consider two communities, X and Y. The communities are identical in all aspects, except the fiscal package (e.g., tax rate and level of government services) provided by a local government. At period t_0, each community is comprised of residents with identical preferences, but the residents in Community X have different preferences from those in Community Y. Now, suppose that a new TIF project is implemented in the communities in period t_1. The implementation of this new TIF project changes the current condition of the communities, which eventually changes the utility of residents.

Since residents can freely choose the community in which they live by "voting with their feet," some will move to an alternative location if they anticipate that the utility to be gained from moving is greater than the current community's utility level. This can be expressed using the following equation:

$$B_i = (C_i - C_*) - R_{i*} > (C_j - C_*) - R_{j*},\ i \neq j,$$

where C_i and C_j represent the location's benefits including wages, the probability of employment, the natural environment (e.g., climate), and other advantages. C_* represents the location benefits of the current residential site. R_{i*} and R_{j*} represent the costs involved

[2] This study is based on several Tiebout Model assumptions, not all. Specifically, (1) residents are perfectly mobile. (2) residents have full information, and (3) there are no spillovers among communities.

in moving from the current location to the alternative location. B_i equals 0 if the current location is optimal for residents.

For example, Resident A in Community X will move to Community Y if $(C_y - C_*) - R_{y*} > (C_x - C_*) - R_{x*}$. Otherwise, he or she will stay in Community X. Resident B in Community Y will also move to Community X if $(C_x - C_*) - R_{x*} > (C_y - C_*) - R_{y*}$. Otherwise, he or she will stay in Community Y.

However, it is also possible to form a new community rather than choosing among the existing ones, if the net benefits expected to be gained from a new community with a new TIF project are greater. Consider a hypothetical Resident C in Community X. If the implementation of TIF changes their utility, she would consider moving to Community Y or creating a new Community Z with a new TIF project.

$$(C_z - C_*) - R_{z*} > (C_y - C_*) - R_{y*},$$

where C_z refers to the location benefits for the new Community Z, and R_{z*} represents the costs involved in creating a TIF and moving to Community Z. Assume benefits are distributed continuously so that net benefits for Community Z have probability zero of being the same as those for Community Y. If there is no difference in the benefits expected to be gained from each community, people will choose one of the existing communities rather than creating a new one. If $(C_z - C_*) - R_{z*} > (C_y - C_*) - R_{y*}$, Resident C will create a new community with a new TIF project. If $(C_y - C_*) - R_{y*} > (C_z - C_*) - R_{z*}$, they will move to Community Y.

Hypothesis 2: The adoption of a tax increment financing project in a community accelerates the adoption of TIF in other communities.

2.9 The Influence of Political Factors in Economic Development Policies

Two main theories, structure and agency, have competed with each other to explain the adoption and extent of economic development policies. This continuing debate about economic development policy has led to the development of several theoretical and case studies (Kantor, 1988; Wong, 1988).

First, the basic assumption of structural theory is that social and economic conditions determine economic development policies. One of the typical examples of structural theory is an economic condition in which a local government heavily depends on manufacturing (Fleischmann, Green, & Kwong, 1992). Unemployment and poverty rates are also included as components of structural theory; Peterson (1981) argues that local governments make an effort to improve these social indicators to maintain their socioeconomic position among other governments. Additionally, public officials usually feel a great deal of pressure regarding these structural indicators because residents are likely to ask them to do something if they face poor local conditions. Thus, structural theory argues that socioeconomic indicators are key determinants of the adoption and extent of economic development policies.

Human agency theory, meanwhile, mainly focuses on specific actors. One example of this argument is growth machines theory, which claims that actors who profit from community growth play an important role in shaping economic development policies (Fleischmann et al., 1992); for instance, politicians, retailers, realtors, and mortgage companies are actors who are deeply involved in local development. A related aspect of this agency theory is political leadership. Specifically, a mayor-council system is more likely to adopt development policies because mayors tend to be more responsive

and sensitive than politicians in a council-manager system (Feiock & Clingermayer, 1986).

Previous studies have mainly focused on structural factors such as socioeconomic indicators. On the contrary, only a few studies have analyzed the political factors that are closely related to economic development policies, even though these factors play important roles in shaping policies (Betz et al., 2012). In this sense, this study theoretically examines why these political factors are important in this field and how they influence the adoption and extent of economic development policies.

2.9.1 Political Actors

As discussed above, political actors are closely associated with economic development policies. The reason why political actors continuously adopt and use incentives is that this decision and behavior are rational. Specifically, the political rationality model claims that the adoption and use of economic development policies can provide an opportunity for public officials and political actors to appeal to their residents (Clingermayer & Feiock, 2001; Sharp, 1991). This policy tool is very useful when elected officials want to strengthen their political positions. Similarly, using economic development policy is an instrument for credit-claiming (Feiock & Clingermayer, 1986). When a local area faces an economic recession or difficulties, elected officials receive much pressure from their residents, and constituent groups ask them to do something. In this situation, Feiock (1986) suggests that economic development policies are effective and politically advantageous to elected officials because they are visible projects. Thus, people easily recognize through them that elected officials are doing something for the community, regardless of a policy's true effectiveness.

There may be a question of why local elected officials actively use economic development policies even if their effectiveness is uncertain. This behavior is also explained by elected officials' rationality, as it is rational to assume that local elected officials mainly focus on their activities' impact on their local area. In other words, local elected officials are not concerned with the zero-sum characteristics of fiscal incentives at the state or national level. From their point of view, attracting and inducing investments for employment bring them political benefits, and that is enough for them. In this regard, this study concludes that elected local officials rationally use economic development policies.

2.9.2 Political System

There is no doubt that there would be different economic development strategies if each local government had significant differences. This general assumption is the same for political systems. For instance, Lubell, Feiock, and Ramirez (2005) suggest that the form of government is one explanation for the variation in economic development policies. Unlike other countries, the U.S. has an especially unusual local government system, where local residents can choose their local government structure. Thus, it is expected that this difference in government structure influences the adoption and extent of economic development policies. Although there are several types of government, many previous studies primarily focus on two: the mayor-council and council-manager systems.

The main difference between these two systems is based on the role of the mayor and manager in each system. The mayor-council system is more responsive than the council-manager system because the former implies that mayors are more likely to be

sensitive to local demands to win the next election compared to managers who work in a council-manager system. Although this condition could lead to positive results in local areas, such as innovative practices and citizen participation (Nelson & Svara, 2012; Yang & Callahan, 2011), the mayor-council system permits the reckless use of fiscal incentives.

On the other hand, city managers in the council-manager system tend to pursue professional goals and long-term economic development (Feiock, Jeong, & Kim, 2003). This is because managers do not have incentives for elections. In this sense, managers are highly likely to deal with economic development policies from a more calculated point of view and are expected to constrain the indiscriminate use of fiscal incentives.

Based on these difference in political systems, this study asserts that there are significant variations between these two government structures. The mayor-council system may be positively associated with the adoption and extent of economic development policies.

2.9.3 Political Climate and Ideology

There are two theories that relate to the political climate over economic development policies. First, due to fiscal policy interdependence, municipalities and states do not make independent policy decisions in isolation. Rather, local governments tend to consider and review other governments' current policies carefully within a system of fiscal policy interdependence (Brueckner, 2003; Revelli, 2003). This indirect fiscal policy interdependence also triggers a specific state mood and opinion regarding economic development policies. Thus, when local governments make a decision

regarding fiscal incentives, there is a possibility that they could be swayed by strong public opinion. Second, the yardstick competition theory assumes that there is an information externality among local governments (Besley & Case, 1992). Specifically, voters who receive imperfect information about other local government policies evaluate their current government using this information as a reference point for this information and then tend to pressure incumbents accordingly. This information externality thereby accelerates fiscal competition among jurisdictions (Besley & Case, 1995; Bordignon, Cerniglia, & Revelli, 2003; Ermini & Santolini, 2007; Solé-Ollé, 2003). Finally, this information externality forms the basis of strong political pressure for the adoption and extent of the use of economic incentives.

Additionally, some studies have indicated that political ideology could have an influence on economic development policy choices. Generally, Democrats are more likely to support government interventions in the economy and are reluctant to create benefits for companies without concomitant job creation (Betz et al., 2012). Republicans usually take a different position to Democrats on economic development policies. Republicans support the notion of helping business, but they do not prefer to help pick winners (Betz et al., 2012). A few studies have analyzed the relationship between specific fiscal incentives and ideology. Notably, Lewis (2002) found that there is a negative relationship between Democratic Party strength and retail development incentives. Similarly, Jenkins, Leicht, and Wendt (2006) ascertained that Democratic Party strength has a negative impact on industrial recruitment and entrepreneurial strategies. Given the current situation, more research is needed because the literature does not offer a clear

answer regarding the general relationship between the most frequently used economic development policies and ideology.

In summary, based on previous studies, we can deduce that political factors play an important role in shaping economic development policies, including TIF. Figure 2.2 provides an implicit view of the importance of political factors. There is a relative lack of empirical studies analyzing the relationship between local political factors and fiscal incentives compared to such analyses in socioeconomic factor studies.

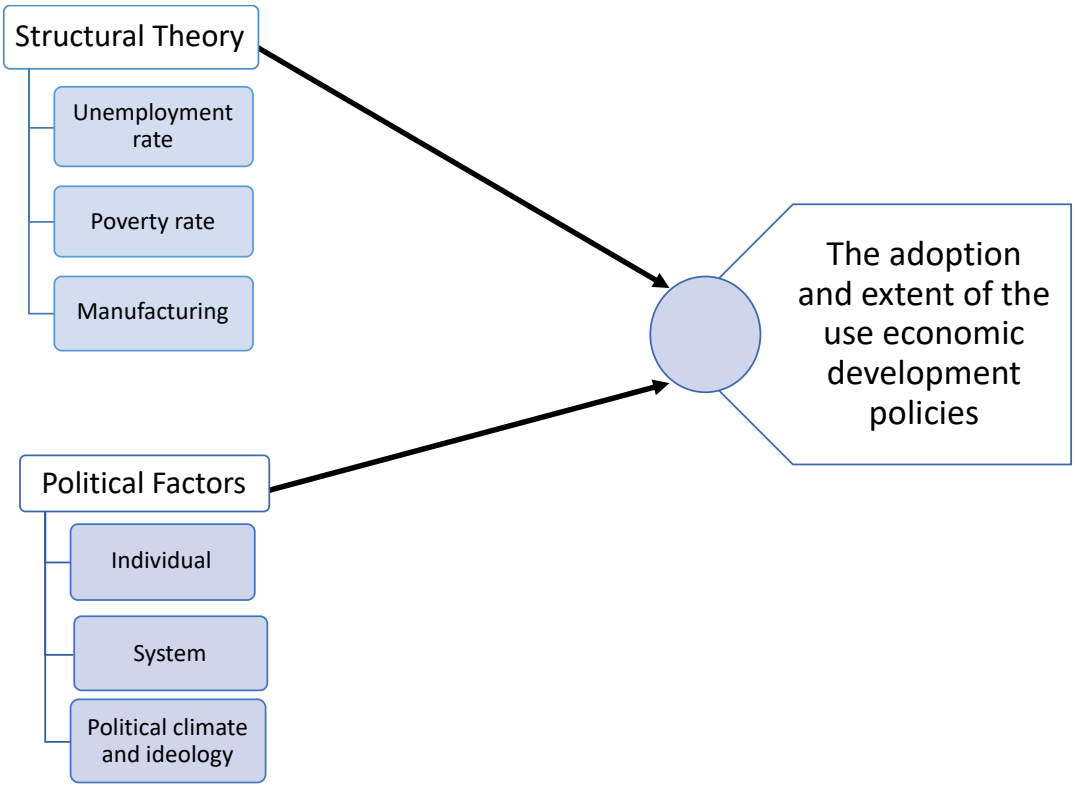

Figure 2.2 The relationship between determinants and the adoption and extent of the use of economic development policies

2.10 Theoretical Extensions

As discussed, most state and local governments adopt economic development policies. If we have to describe the current situation, we must first refer to Rubin (1988), which states, “Shoot anything that flies; claim anything that falls” (p. 236). Although most studies concentrate on the effectiveness of economic development policies, they fail to give us clear answers on why. In addition, these studies do not explain why local governments structurally and actively use economic policies and why we get mixed effectiveness results. This study has attempted to answer these two questions.

The first model shows that a TIF project contains the characteristics of a zero-sum game. In other words, the implementation of TIF may not have positive impacts on the local area. This is consistent with some previous literature. However, there are some studies that contain opposing arguments (Anderson, 1990; Dardia, 1998; Man & Rosentraub, 1998; Wassmer & Anderson, 2001; Yadavalli & Landers, 2017). In this regard, further empirical studies are needed to test this proposition. The second model implies that each community can be composed of people with homogeneous preferences if they reach an equilibrium. If Community Y offers a TIF project that people find attractive, then some groups of residents in X (e.g., small business owners, private investors, etc.) will respond by moving to an alternative place. At the same time, some groups of residents in X and Y could leave their communities because a TIF project in Community Y changes their utilities. They are likely to try to cooperate with other people to create a new community with a new TIF project that meets their preferences. This theoretical logic could explain a considerable portion of the current diffusion of TIF.

There is a need for empirical studies to clarify the mechanism of TIF adoption. The third part provides a theoretical explanation of how political factors are associated with economic development polices. This study found that there is a relative lack of research on the political determinants of fiscal incentives because the previous literature does not indicate a general relationship, even though political factors play an important role in economic development policies. Studies that include political factors in the model are therefore needed in this field

CHAPTER 3. THE EFFECTS OF COMPETITION AND FORMS OF GOVERNMENT ON THE UTILIZATION OF BUSINESS INCENTIVES

Abstract

To analyze the effects of competition and the forms of government on the utilization of business incentives at the local government level, this study focuses on two major incentives: tax credit and tax increment financing. The statistical results show that the competition mechanisms operate differently for each of the incentives. More specifically, the council-manager system considerably constrains the overall adoption and extent of use of business incentives. These results could indicate the prevalence of a particular form of government for economic development policies.

3.1 Introduction

As in most countries, economic development is repeatedly an important and highly competitive issue in the United States (U.S.) (Hawkins, 2017). This observation of the current situation is supported by the fact that U.S. municipalities commonly offer at least one economic development policy to induce business investment. In addition, state and local governments have spent large budgetary amounts to offer economic development incentives to potential businesses (Wang, 2018). Even the recent economic recession has not affected this upward trend. For instance, . In 2017, there was fierce competition among the states when Toyota and Mazda revealed that they will build a new plant that would be expected to create 4,000 quality jobs (Boudette, 2018). According to latest news, over 10 states—among those are Kentucky, Alabama, North Carolina, and Michigan—joined the bid to attract the investment. Toyota and Mazda revealed that they received incentive packages of at least 1 billion dollars (Boudette, 2018) . This appears to be a classic example of competition among state governments in terms of economic development policies. The recent Toyota–Mazda case is a typical example of competition. However, governments do not always compete against each other in all program projects. NIMBY (Not In My Back Yard) is an example of such cases. For instance, the city of Vancouver planned Rain City housing aimed at providing houses for people who suffer from addictions, mental illness, and other challenges. When this project was released, many residents were concerned about safety and were therefore resisting such changes (Woo, 2012). These extreme cases show that governments and residents have different attitudes toward economic development policies, depending on the type of development plan and its expected benefits. At the same time, this field is facing strong criticism because of the indiscreet behavior of local governments.

According to some studies, local governments tend to adopt and use business incentives without adopting any specific tactic (Grady, 1987; Wolman, 1988). It seems that offering a competitive mechanism for the purpose of maintaining or improving an economic position is made largely in spite of strong doubt that economic development policies overall are effective. For example, the metaphor of an arms race is used to describe the current situation, in which "shopping lists" for policy options almost always favor the promotion of the local economy and winning the competition at all costs. This situation is similar to the idea of a "race to the bottom" (Buss, 2001; Koven & Lyons, 2006). Given these conditions, it is undeniable that having an economic development policy has become the agenda that draws the most attention from the financial sector. As the popularity of economic development policies has grown, it becomes imperative to understand the logic that motivates business incentives.

Regarding current trends, two problems can arise. There is a strong likelihood that when local governments make a decision, they do not carefully consider the unique conditions and variations of their particular situation (Fleischmann et al., 1992). The second problem is that there are no widely accepted explanations for variations of economic development policies among the municipalities. Although structure and agency theories compete with each other, the literature has so far been unable to reach a definite conclusion.

To keep up with the flow, many previous studies have analyzed how local governments develop their own features in determining the adoption and extending the offer of an economic development incentive (Felix & Hines, 2013). Despite these articles, little empirical evidence exists whether or not the use of a business incentive is a

purely financial mechanism or the result of competitive behavior. Specifically, to estimate the degree to which business incentives are driven by competition, these studies simply count the number of questionnaire items about the topic (Warner & Zheng, 2013; Zheng & Warner, 2010). Although this method could indirectly measure the level of competition, it is difficult to achieve an exact estimate of the competitive level. Additionally, the number of business incentive programs is used as an indicator of the extent of economic development policies (Green & Fleischmann, 1991; Sharp, 1991; Warner & Zheng, 2013). However, none of these approaches reliably measure the extent to which incentives are used. One main strand of the literature focuses mainly on the adoption of economic development incentives (Feiock, & Clingermayer, 1992; Felix & Hines, 2013; Green & Fleischmann, 1991; Zheng & Warner, 2010). These previous studies have a definite limitation because it is impossible to analyze the degree to which a community's characteristics have an influence on the use of business incentives.

To address the limitations of previous studies, this study uses the 2014 International City/County Management Association (ICMA) Economic Development Survey. Previous studies have usually depended on the ICMA surveys of 1999, 2004, and 2009 to obtain basic information about the business incentives of municipalities. One main difference between the 2014 and previous surveys is that the 2014 survey changed its questionnaire items. This change enables us to estimate to what extent competition influences local government's decision regarding economic development priorities for the adoption and extensive use of business incentives. Thus, it is possible that the conclusions of this study could differ from previous studies.

To bridge the literature gap, this study is based on unique data that is distinctive from previous data sets. The paper not only includes structure theory variables but also adds agency theory variables to compare the degree of effect on the use of business incentives. This study differentiates the use of business incentives by two representative types: tax credit and tax increment financing (TIF). Accordingly, this paper aims to contribute to the field of economic development policy by posing and answering the following questions: (1) To what extent, if at all, does competition influence the local government's decision regarding economic development priorities and affect the adoption of business incentives? (2) To what extent, if at all, does competition influence local government's decision regarding economic development priorities and affect the extensive use of tax credits and TIF? (3) What impact does the form of government have on the adoption and extensive use of tax credits and TIF? (4) To what extent, if at all, does competition influence local government's decision regarding economic development priorities as concerns the total number of business incentives? Additionally, this study analyzes the causal relationship between explanatory variables and the utilization of business incentives. A few studies have supported that independent variables, such as competition, government structure, and change in political leadership, have a significant impact on economic development policies. However, it is difficult to find studies that support that economic development policies have an impact on the competition of local governments, form of government, and government ideology. In this regard, the main purpose of this dissertation is to analyze the causal relationship and not the correlation.

The remainder of this study is structured as follows. The first section is a brief explanation of economic development policy trends and reviews the previous studies

about competition for development between municipalities and the general determinants of business incentive policies, as well as the foremost theories. The next section presents the data and method, and the paper concludes with a summary of the results and a discussion of the noteworthy implications.

3.2 Literature Review

3.2.1 Factors that Affect the Extensive Use of Business Incentives

Questions have been repeatedly raised about why local governments still use business incentives for economic development, given some concern in the field about the effectiveness of the policy. Several scholars have tried to answer these questions. For instance, political calculation, economic, and fiscal conditions have an impact on the adoption of business incentives (Fisher & Peters, 1998; Wolman, 1988). Additionally, previous studies point out that inconclusive studies on the effectiveness of incentives have led to encouraging the use of such policies among municipalities (Bartik, 2003; Lynch, 2004). At the same time, many local governments are still reluctant to offer business incentives. This is because local governments take account of the risk of revenue loss, doubtful effectiveness, and calculations of profit and loss for such policies (Felix & Hines, 2013). Although some governments already know the mixed results of the ineffectiveness of business, they continue using incentives because of the footloose nature of investment and the widespread popularity of incentives (Bartik, 2005; Lynch, 2004). In this regard, this paper examines the extent of the effect of competition on the decision-making of municipalities regarding economic development priorities; specifically, the aim is to determine the effect of the adoption and extensive use of

business incentives by comparing incentive users with non-users because few empirical studies have analyzed the effect of competition on the adoption and extensive use of business incentives.

Competition

The interaction of capitalism and federalism has given birth to the phenomenon of a common pool in the economic development policy (Berry, 2008; Bowman, 1988). Decentralized local governments can freely exploit a shared tax base because federal government total tax revenues are not important for local governments (Drucker, Funderburg, Merriman, & Weber, 2020). Many local governments also overlap the tax base with several jurisdictions at the same time. This local fragmentation and economic gap among the municipalities force local governments to continuously compete with each other by the use of business incentives. Thus, we can conclude that business incentives, including tax credits, aggravate the zero-sum situation because the resources that municipalities can gain are limited (Hawkins, 2017).

Local governments have two alternatives to overcome the tragedy of a common pool and zero-sum situation. One is cooperation and the other is competition to win. However, a local government necessarily chooses competitive behavior instead of cooperation because the justification for cooperation with other governments will diminish if the amounts of benefits or gains cannot be shared equably among other governments (Bowman, 1988). In other words, "Competition is said to occur when benefits are returned to a subset of the jurisdiction seeking them" (Bowman, 1988, p.512). Previous studies have already predicted the inevitable consequence of the jurisdictional competition orientation (Stone, 1984). Tiebout (1956) argues that, in

theory, a system of a high level of fragmented local government is necessary to achieve the optimal level of public service. This fragmentation allows local governments to select an almost infinite combination of spending and taxes and give almost perfect information to each resident. This theoretical foundation makes it difficult to choose cooperation because residents are highly likely to apply considerable pressure on the local government to follow other governments' incentive offers. As a practical consideration, municipalities unavoidably choose competitive behavior. The first reason is that the almost unlimited mobility of capital leads to the increasing impulse to compete among the local governments (Hawkins, 2010). The number of municipalities also makes cooperative behavior more difficult because the increasing complexity of relationships between local governments results in making cooperation problematic. In this sense, competitive behavior of local governments is an inevitable result when we consider the given circumstances.

Competitive behavior does not necessarily always produce negative results. There is an argument that competition can conversely lead to positive results. Specifically, according to the public choice theory, competition has a positive impact on organizational performance (Boyne, 1996). This competitive ethos compels local governments to "do the right things and do things right" (Boyne, 1996, p.704). To the contrary, many previous studies indicate that there is a possibility that incentive competition can result in threatening the local economy (Ellis & Rogers, 2000; Patrick, 2014). Additionally, this intense competition for business incentives results in a low quality of public service because business incentives can only relocate the business across municipalities and not lead to the real change of economic growth (Bartik, 1991; Fisher

& Peters, 1997; Wang, 2016). If we assume the extreme case, previous studies raise the possibility of border wars (Wang, 2018). Although there is a theoretical argument that supports the positive effect of competitive behavior of local governments, the destructive aspect of competition among municipalities is generally more persuasive in this field.

Many previous studies have analyzed the relationship between competition and business incentives and, usually, have found a positive relationship between incentives and competition. Zheng and Warner (2010) found that a government is more likely to use incentives if it faces intergovernmental competition. According to a study by Felix and Hines (2013), a government that is located close to a state border line is more likely to adopt a program of business incentives and competition. Green and Fleischmann (1991) found that a municipality is more likely to follow other municipalities' choice of the business incentive if the other municipalities are located in the same Census Region. Bowman (1988) also found that cities tend to have a competitive ethos and this attitude results in aggressive economic development programs. In general, previous studies support the idea of a positive relationship between economic development incentives and horizontal competition.

Despite these previous studies, little direct evidence exists as to the extent to which competition influences local government's decision regarding economic development priorities and affects the probability of extensively adopting the use of business incentives in a municipality. Unfortunately, previous studies do not clearly answer this question. For example, Bowman (1988) focuses only on southeastern cities, making it difficult to generalize the result. When Zheng and Warner (2010) estimate the extent of the use of business incentives and the degree of competition, they simply count

the average number of business incentives used and address the issue of competition among six questionnaire categories. In other words, we cannot know exactly the extent to which competition influences local government's decision regarding economic development priorities and the impact it has on the extensive use of business incentives. Green and Fleischmann (1991) also use a similar method when they estimate the level of competitiveness. In their study, they used the average number of business incentives of a number of local governments when they estimated regional competition. Felix and Hines (2013) analyze the factors of tax credits, tax abatement, and TIF, but they focus only on the probability of adoption, not the extensive use of business incentives.

To address these limitations, this paper used a new survey to estimate the extent to which competition influences local government's decision-making regarding economic development priorities. By changing the survey method of ICMA, we were able to obtain more exact data about the extent to which competition influences local government's decision regarding economic development priorities and the extent of business incentives. Specifically, the 2004 and 2009 ICMA surveys of economic development asked the survey participants to simply identify a jurisdiction's competition category and the adoption status of business incentives. Structurally, it is not possible to obtain detailed information about competition and business incentives. By changing the questionnaire methodology, the 2014 ICMA survey offered an opportunity to contribute to the field of business incentives.

By following and expanding the logic of previous studies, we can easily conclude that a positive relationship likely exists between the extent to which competition influences local government's decision regarding economic development priorities and

the extensive use of incentives. In line with previous studies, we propose the following two hypotheses:

> **Hypothesis 1**: As the extent to which competition affects the decision of municipalities regarding economic development priorities gets stronger, the probability of adopting business incentives is likely to be increased.
>
> **Hypothesis 2**: As the extent to which competition affects the decision of municipalities regarding economic development priorities gets stronger, the extent of business incentives is likely to be increased.

3.2.2 Theoretical Perspective of the Use of an Economic Development Policy

Generally, there are two meaningful features that affect the use of business incentives in the community. The first character is the degree of proximity of other states (Felix & Hines, 2013). If a community is close to other states, this fact may increase the level of competitiveness of the environment. As a result, the community is more likely to adopt or use business incentives. The second feature is related to the political culture. Troubled political cultures lead to the greater likelihood that business incentives will be offered (Felix & Hines, 2013). In this paper, the concept of a troubled culture is estimated by the corruption rate of a state. Apart from these general explanations, there are several perspectives that theoretically explain the adoption and use of economic development policies.

The political rationality model explains that economic development initiatives offer local political actors an opportunity to appeal to their constituent groups (Clingermayer & Feiock, 2001; Sharp, 1991; Wolman & Spitzley, 1996). This distinctive

feature of business incentives enables elected officials to strengthen their policy support by using the visible function of business incentives as a reward for political support. For example, the popularity of a mayor and elected officials is closely related to their administration's economic development policy (Bowman, 1988). By slightly expanding the findings of previous studies, we anticipate that the structure and form of government has a relationship with the extensive use of business incentives. The previous studies already show the possibility of a close relationship between government structure and incentives. Several studies have found that the form of government has an impact on innovative practices, citizen participation, and economic development policies (Nelson & Svara, 2012; Sharp, 1991; Yang & Callahan, 2011). If we fully understand the differences between typical government structures, such as the mayor-council and council-manager systems, we can infer the relationship. Basically, the mayor-council system is evaluated as being a more responsive system than the manager-council system because the mayor-council system is based on short-term electoral incentives (Lyons, 1978). Although this incentive could lead to positive outcomes, such as organizational innovation (Williamson, 1988), the mayor-council system can lead to the reckless pursuit of visible programs that usually increase the financial burden. On the other hand, because managers in the council-manager system pursue long-term strategies and professional goals, the council-manager system has institutional strategies and devices to preclude political opportunism. When choosing a manager, the degree of the manager candidate's professionalism is a key criterion. Such professionalism is evaluated by the experience, education, and membership of professional associations (Zhang & Feiock, 2009). In this sense, it is reasonable to assume that the council-manager system tends to use business

incentives less compared to the mayor-council system. Other researchers indirectly support this idea that the council-manager system results in less local spending and taxation (Lineberry & Fowler, 1967; Stumm & Corrigan, 1998). On this basis, the next hypothesis follows:

> **Hypothesis 3**: The council-manager system is negatively associated with the adoption of business incentives.
>
> **Hypothesis 4**: The council-manager system is negatively associated with the extent of use of business incentives.

There has been a continuous debate over which theory has more explanatory power in terms of business incentives. The representative debate is that of structure versus agency, and this dispute has led to several case studies (Kantor, 1988; Wong, 1988). The basic logic of structural theory is that economic and social conditions determine a city's economic development policies. This theory has something in common with the City Limits theory of Peterson (1981). According to Peterson's theory, local government is similar to private firms because municipalities compete against each other to enhance their economic position and social prestige (Fleischmann et al., 1992). This competition forces public officials to pay close attention to social and economic indicators, such as unemployment and poverty rates. Local public officials naturally feel pressure to do something to attract new investment to maintain or improve the current economic position (Fleischmann et al., 1992). In other words, structural theory claims

that a city's social and economic conditions are factors influencing the use of business incentives.

On the contrary, human agency theory argues that specific actors are the key factors affecting local development policy. This theory naturally links to the growth machine theory. This theory explains that local elite groups, which include politicians, the media, and companies, have driven the city's economic growth. Thus, human agency theory concludes that a changing political leadership and coalition building play an important role in shaping economic development policies because they usually put a high value on economic growth through development policies.

Strategic interaction with other local governments is also associated with the adoption and extensive use of business incentives. For example, if a local government adopts a TIF program, this has an impact on the decisions of other local governments. Byrne (2005) found that strategic interaction acts as an important mechanism when municipalities adopt TIF programs. Business incentives are intended to operate as competitive levers. A certain degree of fiscal policy interdependence has been identified by previous studies as explaining mutual interaction among municipalities (Brueckner, 2003; Revelli, 2005). Specifically, municipalities are reluctant to independently select a fiscal policy and check the choices of other, neighboring governments. Case, Rosen, and Hines (1993) found that per capita expenditure of state government is statistically positively associated with neighboring state governments. This fiscal policy interaction is also influenced by the yardstick of political competition. Municipal residents, who usually have imperfect information about other governments, tend to impose political pressure on their local leaders to ask the government to follow or imitate the policy status

of neighboring governments. This mechanism is supported by previous studies (Besley & Case, 1995; Ermini & Santolini, 2007; Ollé, 2003), which offer an abundance of theoretical explanations for the adoption and use of economic development policies.

3.2.3 Practical Perspective on the Use of Economic Development Policies

Many previous studies that have analyzed economic development policy have also been conducted according to a practical social index to explain the mechanisms involved. A well-known argument addresses the effect a city's wealth condition has on the use of business incentives. According to a few studies, business incentives are more likely to be used if a city is prospering (Reese, 1991; Rubin, 1988). These conclusions have attracted a lot of counterarguments. Conversely, a city under severe fiscal stress is more likely to offer business development incentives (Feiock & Clingermayer, 1992; Felix & Hines, 2013). For example, the unemployment rate is used as a proxy for the fiscal stress of a municipality. A higher unemployment rate is positively associated with an incentive package (Fisher & Peters, 1997). Wang (2018) found that a rising unemployment rate leads to increasing economic development incentive spending. Man (1999) found that there is more adoption of TIF if a community has a lower income level, while a higher personal income is negatively related with spending on economic development incentives (Wang, 2018). The manufacturing share of employment is also used as an indicator of economic distress. Fleischmann et al. (1992) found no significant relationship between the percentage of jobs in manufacturing and economic development policies. Wang (2018) found the same result about the manufacturing share of employment. Overall, the literature supports the idea that conditions of economic distress lead to more adoption and use of economic development incentives.

A municipality's demographic characteristics have an impact on economic development incentives. One such representative indicator is population size and city size. For instance, larger cities are more likely to offer businesses incentive programs because they tend to have more resources and be under greater pressure (Cook & Beck 1991; Friedman, 1990). This trend is also confirmed by recent studies. Felix and Hines (2013) found that a greater population is significantly associated with offering tax incentives. More detailed demographic information is also used in studies. Rork (2003) argues that the size of the elderly population could affect the economic development incentives because elderly people are more active voters than young people.

Additionally, several general complementary reasons explain why local governments actively engage in business incentive programs (Wolman & Spitzley, 1996). First, the increased mobility of capital contributes to increasing the competition among governments at the same level and expanding the use of business incentives (Clarke & Gaile, 1989). Second, slow economic growth could have an influence on business incentive policy because a declining economic situation results in more pressure to do something for residents with economic difficulties (Wolman & Spitzley, 1996). This pattern is also confirmed by the recent economic recession. Warner and Zheng (2013) found that local governments tend to respond to recession through the use of business incentives. Third, economic restructuring could lead to increasing the number of economic development programs. For example, if a municipality has a higher level of manufacturing employment, the municipality is more likely to adopt a development program. Lastly, Clarke and Gaile (1989) point out that decreasing federal government assistance may be one reason for increasing business programs. Although many

explanations exist for explaining the use of business incentives, only a few studies have analyzed the impact that economic and social factors have on the extensive use of business incentives.

3.3 Data

This study is based on the 2014 survey of municipality economic development trends conducted by ICMA. This survey was sent to 5,237 county and city-type governments in June 2014. Among local governments, 1,201 participated in this survey and the response rate was 23%. Like previous surveys, chief municipal administrative officers responded to this one. The ICMA survey estimated a variety of business incentives—16 components in all. For example, zoning assistance, utility reductions, and regulatory flexibility are included in this category. The average number of business incentives used is approximately eight. This paper limits the scope of subject to tax credits and TIF because these two business incentives are widely accepted, and research has been actively conducted on these two topics. The changed style of questionnaire allowed us to estimate the extent of the use of tax credits and TIF. This is one of the main differences with previous studies.

To analyze which factors determine or motivate the adoption of business incentives and the extent of the use of business incentives, this study includes motivated economic development priorities. This category includes competition and political leadership. Due to the new style survey, this study can measure the extent to which competition has an impact on the decision-making of municipalities regarding economic development priorities. This survey also asked municipalities the number of barriers that impede the use of business incentives among municipalities. The average level of

economic development barriers is calculated by the average level of a total of 21 barriers. The scale of barriers is coded as follows: 1 = “None,” 2 = “Low,” 3 = “Medium,” and 4 = “High.” As shown in descriptive table 3.1, the average level of barriers is about 2.19, which is between low and medium level. Additionally, the form of government and barriers faced is also added as a factor of business incentives. To address the issue of endogeneity, lagged social and economic condition variables were derived from 5-year estimates of the 2011 American Community Survey. Lastly, the paper used the 2012 Government Finance Database (Pierson, Hand, & Thompson, 2015) for local government financial data. Although the survey sample starts from 1200 municipalities, this study was able to use approximately 700 municipalities in the final dataset after matching socioeconomic and financial data: general fund balance, per capita general total revenue, and total outstanding debt.

Table 3.1 Descriptive statistics

Variable	Mean	SD	Min	Max
Tax credit1 (Binary)	.54	.5	0	1
Tax credit2 (Ordered)	1.87	.97	1	4
TIF (Binary)	.62	.49	0	1
TIF (Ordered)	2.26	1.17	1	4
Total number of business incentives (of 16)	8.44	3.66	0	16
Increased competition	2.81	.92	1	4
Unemployment rate	8.58	3.44	1.7	29.5
Poverty rate	13.09	7.82	1.8	45.9
% of manufacturing employment	14.24	7.53	1.05	50.34
Median family income (log)	10.9	.37	9.84	12.25
Form of government	.77	.42	0	1
Change in political leadership	.76	.43	0	1
Average level of economic development barriers	2.19	.43	1	3.33
Per capita total revenue	1.87	1.24	.25	10.86
General fund balance	1.05	.21	.48	3.28
Total debt (% of total revenues)	1.24	1.51	0	24.09
Population (log)	10.46	.89	8.07	14.2
Bachelor's degree or higher (%)	31.02	15.63	3.1	87.9
The average level of use incentives	1.86	0.67	0	3.5
Sample size	694			

Note: Tax credit1: 1 = Use, 0 = No use; Tax credit2: 1 = No use, 2 = Low, 3 = Medium, 4 = High; TIF1: 1 = Use, 0 = No use; TIF2: 1 = No use, 2 = Low, 3 = Medium, 4 = High; Increased competition: 1 = No motivation, 2 = Minimal motivation, 3 = Moderate motivation, 4 = Significant motivation; Form of government: 1: Council-manager, 0: Mayor-council; Change in political leadership: 1 = Motivation, 0 = No motivation; Average level of economic development barriers: 1 = None; 2 = Low; 3 = Medium; 4 = High.

3.4 Model

One frequently asked question concerns which of the variations among municipalities have had an influence on the adoption and extent of the use of economic development incentives. Previous studies in the literature have made and tested diverse hypotheses to identify and analyze the factors of business incentives. The purpose of this study is also aimed at understanding the logic of business incentives. Specifically, this

paper seeks to determine whether the driving factors of incentives are different depending on business incentive type or not and if the adoption or use of incentives by municipalities can be differentiated from non-adopting local governments. First, logit analysis is used to analyze the effect of explanatory variables on the utilization of tax credit and TIF. As Wooldridge (2013) suggests, we can change the logit coefficients to probability changes. The average partial effect is used for this analysis. Second, this study uses the ordered probit model because the dependent variables are ordinal. Third, a negative binominal model is used because the total number of business incentives is a non-negative integer with a count value. Although we can use the Poisson regression model as a count model, this study uses a negative binomial model because the Poisson model operates under the assumption that the variable is equally dispersed (Zheng & Warner, 2010). In this case, the total number of business incentives to be counted is overdispersed (tendency to 0 and large values). Thus, the negative binomial model is more appropriate than the Poisson model.

The dependent variables of this study are tax credits, TIF, and total number of business incentives. To compare the non-adoption and adoption groups, this study creates two dummy variables for tax credit and TIF. We then code the extent of use of tax credit and TIF as follows: 1= "No use," 2 = "Low," 3 = "Medium," and 4 = "High." Figure 1 shows the detailed information on the use of business incentives. Lastly, we count the total number of business incentives to estimate the extent of the use of business incentives as another proxy. The paper measures the degree of adoption of incentives and uses it with the following independent variables derived from previous studies. As mentioned above, the variables listed in the literature include competition, socioeconomic

condition, political leadership, form of government, and financial conditions. Detailed information for each variable is presented below.

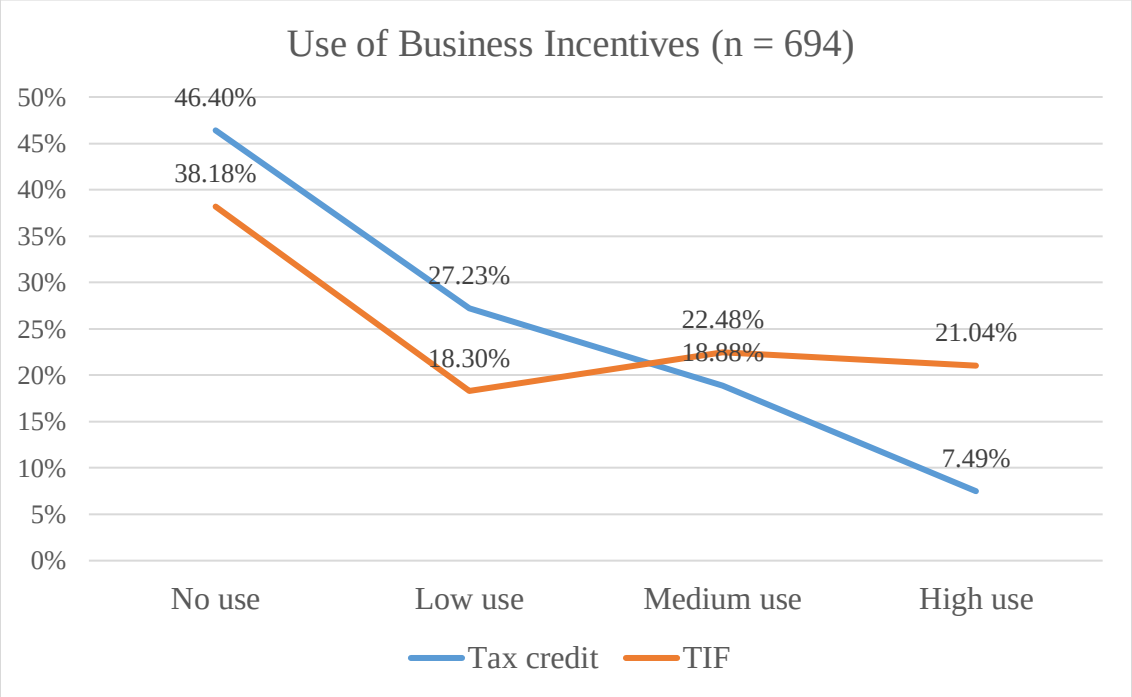

Figure 3.1 Tax credit and tax increment financing use, U.S. municipalities, 2014

Competition

Earlier studies have shown that local governments are facing intense competition with other governments. We confirm that this competitive behavior has an influence on overall economic development incentives. Structurally, municipalities cannot easily cooperate with each other because the context of economic development contains the characteristics of a zero-sum game. Based on this fact, this study constructed the hypotheses in a previous section. We predict that there is more probability of the adoption and extensive use of business incentives if the extent to which competition has an impact on the decision-making of municipalities regarding economic development

priorities is stronger. The variable is coded as follows: 1 = “No motivation,” 2 = “Minimal motivation,” 3 = “Moderate motivation,” and 4 = “Significant motivation.”

Socioeconomic and Demographic Conditions

A business incentive is usually designed with the purpose of expanding the tax base and increasing job creation. Based on the goals described by various policies and studies in the literature, we expect that higher rates of poverty and unemployment lead to heavier use by local governments. Recently, the manufacturing share of employment is recognized as an indicator of economic distress. Thus, we anticipate that there may be a positive association between the percentage of jobs in manufacturing and business incentives. It is also expected that median family income may be negatively associated with business incentives. In line with the literature, a higher population may be more likely to increase the use of business incentives. Lastly, the percentage of bachelor’s or higher degrees is included as an additional environmental context.

3.4.1 Political Reasons and Government Structure

This study also analyzes whether changes in political leadership influence a local government’s decision regarding economic development priorities and thus affect the adoption and extent of business incentives. Human agency theory suggests that a specific actor can determine the direction of business incentives. In other words, changing the political leadership can lead to a higher use of business incentives. If a significant change in the political leadership of a local government has more of an impact on the decision-making processes of municipalities regarding economic development priorities, then we expect that there is a higher probability of the adoption and extensive use of business incentives. Additionally, we raise the possibility that the council-manager system is likely

to constrain the use of business incentives because the manager in the council-manager system is likely to pursue a more long-term perspective.

3.4.2 Economic Development Barriers

We anticipate governments that have more barriers to economic development will be less likely to adopt and use business incentives. For example, a local government could not easily obtain momentum if the government is facing strong citizen opposition to economic development. In this regard, a higher level of barriers to economic development leads to the less adoption and use of business incentives. In 2014, the top three barriers were cost of land, lack of capital/funding, and lack of buildings.

3.4.3 Fiscal Condition

We use per capital total revenue, general fund balance, and the ratio of total outstanding debt to total revenue to control the fiscal conditions of local government. The per capita total revenue indicates budgetary solvency (Gorina, Maher, & Joffe, 2018). General fund balance is an indicator of cash solvency; thus, it is expected that there is a positive relationship with the extent of use of business incentives. Debt as a share of total revenue shows the level of the long-term solvency of local government (Gorina, Maher, & Joffe, 2018), suggesting a negative association with the extent of use of business incentives.

3.5 Model Results

The first results test the effects of increased competition and the form of government on the use of tax credit incentives and TIF. The results are presented in Table 3.2 Column 1 including only tax credits, measured by binary variables, and Column 2 including TIF as binary dependent variables. As shown in Column 1, the council-manager system is 7.8% less likely than the mayor-council system to incentivize tax credits. This result supports hypothesis 3. As the extent to which changes in political leadership impacting the decision-making of municipalities regarding economic development priorities gets stronger, the probability of tax credits being adopted is likely to be increased. This result supports the human agency theory. As we expected, the average level of economic development barriers has a negative impact on the implementation of the tax credit policy. Consistent with previous studies, population size increases the implementation of the tax credit policy. Column 2 in Table 3.2 shows that as the extent to which competition affects the decision of municipalities regarding economic development priorities gets stronger, the probability of adopting TIF is likely to be increased. In contrast to the case of the tax credit system, increased competition increases the adoption of TIF. Although unemployment, poverty rates, and median family income decrease the adoption of TIF, the manufacturing employment rate increases the adoption of TIF. The negative effects of poverty and unemployment rates are not consistent with previous findings in the literature. In fact, the council-manager system is 11.1% less likely than the mayor-council system to adopt TIF. This result also supports the hypothesis.

Table 3.2 Logistic regression: Effects of increased competition and the form of government on the adoption of tax credit policies and TIF.

VARIABLES	(1) Tax credit (Binary)	(2) TIF (Binary)
Increased competition	-0.006	0.037*
	(0.020)	(0.020)
Unemployment rate	-0.008	-0.015**
	(0.007)	(0.007)
Poverty rate	0.002	-0.009*
	(0.006)	(0.006)
% of manufacturing employment	0.003	0.006**
	(0.003)	(0.003)
Median family income (log)	-0.204	-0.533***
	(0.138)	(0.133)
Form of government	-0.078*	-0.111**
	(0.045)	(0.046)
Change in political leadership	0.095**	0.009
	(0.042)	(0.043)
Average level of economic development barriers	-0.110**	-0.058
	(0.045)	(0.045)
Per capita total revenue	0.027*	-0.014
	(0.016)	(0.015)
General fund balance	-0.057	-0.080
	(0.091)	(0.090)
Total debt(% of total revenues)	0.010	0.016
	(0.015)	(0.016)
Population (log)	0.116***	0.029
	(0.022)	(0.022)
Bachelor's degree or higher (%)	-0.004*	0.005**
	(0.002)	(0.002)
Observations	694	694

Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Second, the maximum likelihood estimation does not directly show the magnitude of the effects. Thus, this study uses marginal effects for interpretation. Table 3.3 presents the marginal effects of the variables on the extent to which tax credits are used. This table enables us to interpret the magnitude of the impact of both increased competition and the form of government, holding other variables at mean values. For example, a local government experienced a 10% increase in the probability of not using tax credits,

whereas it experienced a 3% decrease in the probability of high use of tax credits as the governments converted their forms from mayor-council to council-manager, with other variables being held at their mean values. Increased competition does not have a statistically significant association with the extent of use of tax credits. A local government with a population that is 1% above average has 11% decreased probability of choosing "No Use," and 5% and 3% increased probability of choosing "Medium Use" and "High Use," respectively. Additionally, as the extent to which a change in the political leadership of a local government has an impact on the decision-making of municipalities regarding economic development priorities, a municipality experiences a 7% decrease in the probability of choosing "No Use," but it experiences a 3% increase in the probability of choosing "Medium Use".

Table 3.3 Marginal effects of variables on the extent of use of tax credit

VARIABLES	No Use	Low Use	Medium Use	High Use
Increased competition	-0.02	0.01	0.01	0.01
Unemployment rate	0.01	-0.00	-0.00	-0.00
Poverty rate	0.00	-0.00	-0.00	-0.00
% of manufacturing employment	-0.00	0.00	0.00	0.00
Median family income(log)	0.34**	-0.07**	-0.17**	-0.10**
Form of government	0.10**	-0.02**	-0.05**	-0.03**
Change in political leadership	-0.07*	0.01	0.03*	0.02
Average level of economic development barriers	0.09**	-0.02**	-0.05**	-0.03**
Per capita total revenue	-0.03*	0.01*	0.01*	0.01*
General fund balance	0.06	-0.01	-0.03	-0.02
Total debt(% of total revenues)	-0.00	0.00	0.00	0.00
Population (log)	-0.11***	0.02***	0.05***	0.03***
Bachelor's degree or higher (%)	0.00*	-0.00	-0.00*	-0.00*

Note: *** p<0.01, ** p<0.05, * p<0.1. Rows might not add up to 0 owing to rounding.

Table 3.4 presents the marginal effects of variables on the extent of use of TIF. Unlike the case with tax credits, as the level of competition increases by one level, the probability of choosing "No Use" decreases by 5%, while the probability of choosing "Medium Use" and "High Use" increases by 1% and 3%, respectively. Table 3.4 also shows the marginal effects of other variables while holding other variables at mean values. Specifically, a municipality with an unemployment rate 1% above the average unemployment rate has 2% increased probability of choosing "No Use," and a 1% decrease in probability of choosing "Medium Use" as well as a 1% decrease for "High Use." This result is different from those of previous studies. More specifically, previous studies suggest that economic distress leads to more extensive use of economic development incentives. This study also found that a municipality experiences a 13% decrease in the probability of choosing "No Use" if the government is mayor-council as opposed to council manager with a 9% increase in the probability of choosing "High Use." This result supports the general idea of the effect of government structure.

Table 3.4 Marginal effects of variables on the extent of use of TIF

VARIABLES	No Use	Low Use	Medium Use	High Use
Increased competition	-0.05**	-0.00	0.01**	0.03**
Unemployment rate	0.02***	0.00	-0.01**	-0.01***
Poverty rate	0.01*	0.00	-0.00*	-0.01*
% of manufacturing employment	0.01*	-0.00	0.00**	0.00**
Median family income(log)	0.50***	0.02	-0.15***	-0.37***
Form of government	0.13***	0.00	-0.04***	-0.09***
Change in political leadership	0.01	0.00	-0.00	-0.00
Average level of economic development barriers	0.08**	0.00	-0.03**	-0.06**
Per capita total revenue	0.01	0.00	-0.00	-0.01
General fund balance	0.11	0.00	-0.04	-0.08
Total debt(% of total revenues)	-0.00	-0.00	0.00	0.00
Population (log)	-0.03	-0.00	0.01	0.02
Bachelor's degree or higher (%)	0.00*	-0.00	0.00*	0.00*

Note: *** p<0.01, ** p<0.05, * p<0.1. Rows might not add up to 0.0 owing to rounding.

Table 3.5 shows the predicted marginal values converted from the negative binomial regression model for the total number of business incentives in a municipality. As shown in Table 3.5, as increased competition is boosted by one level, the total number of business incentives increases by 0.53 while controlling for all other variables. As the share of manufacturing employment increases by 1%, the total number of business incentives increases by 0.06. This study found that the form of government does not have an association with the total number of business incentives. In fact, it is actually per capita total revenue and population size that have a positive impact on the total number of business incentives.

Table 3.5 Model result (Predicted Marginal Values) for total number of business incentives

VARIABLES	Total number of business incentives
Increased competition	0.53***
	(0.14)
Unemployment rate	-0.04
	(0.05)
Poverty rate	-0.02
	(0.04)
% of manufacturing employment	0.06***
	(0.02)
Median family income(log)	-4.23***
	(1.03)
Form of government	0.06
	(0.32)
Change in political leadership	0.43
	(0.30)
Average level of economic development barriers	0.34
	(0.31)
Per capita total revenue	0.20**
	(0.10)
General fund balance	-1.42*
	(0.75)
Total debt(% of total revenues)	0.12
	(0.09)
Population (log)	0.96***
	(0.14)
Bachelor's degree or higher (%)	-0.01
	(0.01)

Note. Marginal value derived from the negative binomial model. Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Lastly, this study used the average level of business incentive use because the total number of business incentives is just an arithmetic quantity and fails to express the degree of use of business incentives. To obtain the average level of business incentive use, the average of a total of 16 incentives was calculated. For example, enterprise zones, training support, and one-stop permit issuance were included. The scale of the barriers was coded as follows: 1 = "No use," 2 = "Low," 3 = "Medium," and 4 = "High." The

average level of business incentive use was about 1.85, which is between the low and medium levels. Table 3.6 shows that increased competition has a statistically significant impact on the overall average level of business incentive use. This result supports the findings of previous studies on the effect of competition among local governments. Additionally, the percentage of manufacturing employment and population had a positive impact on the average level of business incentive use. This result also supports the findings of previous studies. However, other variables, such as the form of government and changes in political leadership, did not have a statistically significant impact on the average level of business incentive use.

Table 3.6 Model result for the average level of business incentive uses

VARIABLES	The average level of use of business incentives
Increased competition	0.08***
	(0.03)
Unemployment rate	-0.02
	(0.01)
Poverty rate	0.01
	(0.01)
% of manufacturing employment	0.01***
	(0.00)
Median family income(log)	-0.36*
	(0.19)
Form of government	0.01
	(0.06)
Change in political leadership	0.03
	(0.06)
Average level of economic development barriers	-0.08
	(0.06)
Per capita total revenue	0.02
	(0.10)
General fund balance	-0.12
	(0.10)
Total debt(% of total revenues)	0.01
	(0.02)
Population (log)	0.11***
	(0.03)
Bachelor's degree or higher (%)	0.00
	(0.00)

Note. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

3.6 Conclusion

This study has analyzed a unique data set that enables us to estimate the degree to which a local government's features influence the adoption and use of business incentives. This study focuses on determining what factors differentiate the municipalities that promote business incentives from those that do not. This study found that as the extent to which competition affecting the decision of municipalities regarding economic development priorities gets stronger, the probability of introducing TIF is

likely to increase. However, increased competition does not have a statistically significant association with the implementation of tax credit policies. This could be evidence that the competition mechanism is inconsistently influencing the implementation of economic development policy. Human agency theory is partially supported by these findings because a change in political leadership has only a statistically positive impact on the introduction of tax credit incentives. Furthermore, the effect of the form of government on the implementation of business incentives shows consistent results. Those in a council-manager system are less likely than those in a mayor-council system to utilize tax credit incentives and TIF. This result supports the idea that the council-manager system constrains short-term interest that favors economic development policies (Feiock et al., 2003).

The distinctive data enables us to analyze the marginal effect of variables on the extent of use of business incentives. This study found that the effect of increased competition could be different depending on the type of incentive. Specifically, as the extent to which competition affects the decision of municipalities regarding economic development priorities gets stronger, the utilization of TIF is likely to increase. However, this competition mechanism shows different results in terms of the use of tax credit incentives. As expected, the average level of economic barriers has a negative impact on the extent of use of business incentives. This study could not provide clear evidence of the effects of economic distress on the extent to which business incentives are used.

If we limit the scope of the dependent variable to account for the total number of business incentives, the results are different. The form of government does not have a statistically significant effect on the total number of business incentives. As the extent to

which competition affects the decision of municipalities regarding economic development priorities increases by one level, the total number of business incentive uses increases. This means that the competition mechanism has a positive association with the total number of business incentives that are used.

To sum up the main findings, this study suggests that the effects of the competition mechanism could be different depending on the type of incentive that is considered. The council-manager system constrains the overall adoption and extent of use of economic development policies. Only few studies have been conducted on the adoption and extent of use of incentives; likewise, very few have analyzed the effects of the form of government on business incentives. Using unique data on economic development policies, this study could contribute to the development of a more nuanced logic of business incentives use among local governments.

CHAPTER 4. WHY DO STATE GOVERNMENTS OFTEN USE TAX-BASED INCENTIVES?

Abstract

To determine why local governments often use tax-based incentives, this study focuses on five major tax-based incentives: job creation tax credits, investment tax credits, R&D credits, property tax abatements, and customized job training subsidies. The statistical results indicate that a state government's prevailing political ideology influences the choice of economic development activities. Accordingly, a more liberal state may be more likely to discourage property tax abatements and customized job-training subsidies and encourage job creation tax credits. Additionally, the competition mechanism does not operate as a trigger for tax-based incentives. This study also finds that state economic conditions are inversely related to the use of incentives. This result could imply the prevalence of political factors in the use of incentives.

4.1 An Initial Statement of the Policy Issue of Interest

Many state and local governments in the United States offer incentives to attract businesses to their cities. For instance, Amazon's search for a location for its second headquarters recently created a bidding war worth millions or even billions of dollars. Wisconsin promised to provide $3 billion in incentives to Foxconn in exchange for a TV factory, and New Jersey offered $5 billion to entice Amazon (Porter, 2018). These types of incentives have a long history, but competition seems to be heating up among state and local governments. The number of state business-incentive programs has more than doubled from less than 1,000 in 1999 to nearly 2,000 in 2015 (Council for Community and Economic Research (CCER), 2015). Thomas (2000) estimated conservatively that total state and local expenditures on economic-development incentives totaled around $48.8 billion in 1996, and Peters and Fisher (2004) similarly estimated them at around $50 billion. While facing high unemployment rates and dwindling state tax revenue during the recovery from the Great Recession, local governments increasingly have been engaging in economic-development policy to boost their economies. To achieve their objectives, policy makers, for example, may designate industrial parks or invest in infrastructure, among many potential policy alternatives.

Although a vast body of literature on tax-incentive policies already exists, these studies do not provide clear answers about the efficacy of policy (Bartik, 1991; Goetz et al., 2011; Patrick, 2014). This raises the question of why state and local governments actively use tax-based incentives despite a lack of supporting evidence. Although recent studies have analyzed the factors tied to local tax-based policy at the city and county levels (Basolo & Huang, 2001; Dewees, Lobao, & Swanson, 2003; Lewis, 2002; Lobao & Kraybill, 2005; Reese, 2006), few studies have analyzed tax-based incentives at the

state level, at which the available data is limited, even though the influence of state governments continues to increase and many tax-based incentives have been provided by state governments for a long time (Carlton, 1983). The role of state governments has become crucial because the discretion and responsibility for many federal public programs has shifted to state governments, starting with the Reagan administration (Heinrich, 2002). Economic development policy has followed the same pattern, and, in this sense, more state-level studies are needed.

The determinants of previous studies have mainly included socioeconomics, fiscal forces, and demographic factors (Reese, 2006). In other words, there has been little attention paid to political factors on the use of tax-based incentives. To bridge the literature gap, this study focuses on the state level and uses comprehensive tax-based data. The paper expands the scope of the subjects of study to include 32 states and five widely used tax-based incentives. The characteristics of the study could differentiate between previous studies that only focused on specific areas and single incentives. In addition, this study includes government ideology to analyze the effects of politics on economic development policies. Accordingly, this paper aims to contribute to the field of tax-based incentives by positing the following research questions: (1) What are the primary factors that increase the use of tax-based incentives by state governments? (2) What is the impact of the socioeconomic factors, government capacity, politics, neighboring states and industrial composition of states on the use of tax incentives?

The results suggest that the use of tax-based incentives varies by the type of incentive. Generally, the strength of liberalism in a state plays an important role in the overall use of incentives. This result could partially explain why state governments use

incentives despite the lack of supporting evidence. Economically poor state governments tend to resist offering customized job training subsidies but are likely to increase the use of investment tax credits. The neighbor effect does not operate as a trigger for the use of tax-based incentives. The percentage of manufacturing employment has a negative impact on the use of two incentives, which is somewhat surprising given the condition of manufacturing industry.

The remainder of this paper is structured as follows. The first section comprises a brief explanation of tax incentives and reviews the literature concerning the determinants of economic-incentive policy decisions, as well as the foremost theories. The subsequent section describes the data and methods, and the study concludes with the results and a discussion of noteworthy findings.

4.2 Literature Review

4.2.1 Determinants of Tax-Based Incentives

As many governmental functions, including economic-growth initiatives, have been decentralized to local governments since the 1980s, local governments have been at the forefront of crafting major local economic-development policy that aims to meet the locality's needs and improve its economic status (Lobao & Kraybill, 2005). Therefore, the primary interest of the literature centers around the efficacy of financial incentive programs. However, literature exists that has investigated whether a broad range of demographic, economic, geographical, industrial, and political factors affects the motivation of local governments concerning financial-incentive programs (Basolo & Huang, 2001; Sullivan, 2002; Dewees et al., 2003; Fleischmann, Green, & Kwong, 1991;

Goetz et al., 2011; Lobao & Kraybill, 2009; Laura A. Reese, 2006; Scott L. Minkoff, 2009). Scholars have examined variations in the conditions under which local governments are willing or able to adopt different policies, although their views diverge in explaining the variation, with some citing economic and political structure and others citing actions tied to local political and economic actors (Fleischmann et al., 1991). The structural explanation assumes that social and economic factors – including the location and size of a community, median household income, poverty, and other factors – make it difficult for public officials to determine whether to adopt economic-incentive policies. On the other hand, literature that emphasizes the actions of local political and economic actors points toward the importance of leadership, coalition building, organization, political influence, and similar elements in the local policy process (Fleischmann et al., 1991). As many studies suggest, a broad range of economic and political factors also influences a state's motivations for turning to financial-incentive programs. Also, the Council for Community and Economic Research (CCER, 2015) documents that states launch more business-incentive programs in response to national recessions and after major state elections, especially those involving big political shifts. A substantial portion of recent incentive programs created over the past few years has included capital-access programs, mainly due to the inception of the State Small Business Credit Initiative of the U.S. Treasury Department. Following the Great Recession of 2007-09 and the state elections of 2010, which brought 27 new governors to power, states enacted almost 100 new incentive programs in 2011 (CCER, 2015).

Socioeconomic Factors

According to Peterson (1981), 'city limit theory' emphasizes economic principles that make communities compete with each other to retain or attract investment and capital (Deslatte, 2015). Local governments seek to promote their own interests, such as making their communities robust and healthy or increasing tax revenue. This economics-based theory is built on the belief that decisions of cities are made using principles designed to raise public utility and the desire to achieve a strong economic position among competing localities. However, such interest-seeking behavior is limited by a concern that people and businesses may move out of their communities if a tax rate is too high or the quality of public services is low compared with adjacent or competing neighborhoods. The competition effect and the pressure of constituents may force policy makers to offer economic incentives excessively, leading, in turn, to an economic arms race. In this sense, this theory explains why a tax-based policy is popular and often is overused. To put it simply, local officials have little knowledge of the authentic needs and desires of the residents or businesses that they wish to attract. Because of this uncertainty, localities tend to provide more economic incentives than necessary to hold or attract businesses (Betz et al., 2012).

City-limit theory suggests that local governments are more likely to engage in economic-incentive programs if the share of the poor population is high, median-household income is low, or the quality of public services is low. One argument contends that areas with extreme poverty tend to favor economic-development policy because of the burden of redistributive programs or the pressure of constituents (Peterson, 1981). Rubin and Rubin (1987) examine the practice of Illinois cities of offering cash subsidies, revenue bonds, water-rate reductions, or infrastructure to attract and retain business

activity. This study reports that cities with low income residents and high unemployment are more likely than affluent cities to offer infrastructure improvements, tax abatements, and tax-increment financing (TIF). A study by Felix and Hines (2013) provides supporting evidence that the probability of offering economic-incentive programs falls by 3.2 percent when median household income rises by 10 percent. This study also shows that if communities contain a larger share of households with median incomes below $25,000, they are more likely to offer incentives.

However, growing evidence in the literature indicates that disadvantaged communities are less likely to adopt economic-incentive programs, suggesting that economically challenged local governments may find it difficult to invest resources in economic-development strategies. Dewees et al. (2003) studied the extent to which county governments have undertaken local economic-development initiatives to improve community well-being. The main conclusions show that rural counties are less likely than urban counties to engage in economic-development activities, a difference that is attributable to socioeconomic characteristics such as poverty and education. However, a multivariate analysis suggests that the use of financial incentives is better predicted by education and poverty levels than by geography. Once these variables are controlled, the rural effect diminishes or disappears. The findings indicate that high poverty and less education are associated with less use of economic-development tools, suggesting that more-affluent localities use economic-development incentives to a greater degree than less-affluent localities, enabling the rich to get richer (Reese, 2006).

Another factor that can influence choices concerning economic-incentive policy is city size. A large city is more likely to offer financial-incentive-based programs than a

small city because of a broad range of resources and pressures that are limited in small cities (Sullivan, 2002; Fleischmann et al., 1991). Felix and Hines (2013) estimate that 10 percent population growth increases the likelihood of offering tax incentives by 0.8 percent. Lobao and Kraybill (2005) found that metro governments are more likely than nonmetro governments to implement economic-development programs, noting the superior position of metro governments in population attributes, local economic conditions, and government capacity and resources. Also, they found that metro areas and adjacent counties use financial incentives to retain or expand business activities, while remote counties use them to attract new businesses and develop small-business activities. Furthermore, recent literature findings go against the city-limit theory, suggesting that the likelihood of offering tax incentives is higher for large localities than for small ones. Although previous studies have used similar factors or determinants, the results have been mixed.

4.2.1.1 Government Capacity

Gargan defines *government capacity* as " the ability of a local government to do what it wants to do" (Gargan, 1981, p. 656). Many previous studies have defined it similarly (Swann, 2017; Wang et al., 2018). Generally, existing research shows that a local administration's capacity also affects economic-development policy. Local governments with bigger staffs and more expertise or experience tend to adopt such a policy, particularly when the government has a specialized department in charge of local economic development (Sullivan, 2002; Fleischmann et al., 1991; Lobao & Kraybill, 2009). These specialized units may be another aspect of the race to the bottom because of the pressure that bureaucrats feel to do something. As discussed in a study by

Fleischmann et al. (1992), a positive association exists between government capacity and number of economic-incentive programs. However, resistance to this argument has surfaced. For instance, York, Feiock, and Steinacker (2013) suggest that bureaucratic capacity is not a predictive factor, one reason being that local governments with specialized administrative units may be more analytical in designing economic-development policy, enabling careful reviews of evidence of the efficacy of programs, thereby leading to less-frequent adoption.

Political Factors

Logan and Molotch (1987) criticized Peterson's city-limit theory and developed a growth-machine theory that emphasizes political factors, rather than economic ones, as principal determinants of decisions of localities on economic-development policy (Logan & Molotch, 1987). They explain the mechanism of local economic development through the actions of business and political interests. Those who actively participate in local issues have the most to gain or lose. Policy actors such as politicians, local media, retailers, utility companies – all of whom benefit from community growth – act together to increase property values (Molotch, 1976). However, those who do not benefit from such growth might not have enough political power to exert influence, so their interests tend to be ignored in the decision-making process. Furthermore, local political ideology impacts economic-development policy choices. Specifically, local governments led by Republicans are more likely to offer more incentives (Betz et al., 2012).

Regarding political factors, Felix and Hines (2013) suggest an interesting argument that localities with troubled political cultures are more likely to adopt economic incentives. They investigated the relationship between corruption and the number of

selected programs, and found that the likelihood of favoring economic-incentive programs rather than other types of economic-development policy (e.g., investment in infrastructure) increases by 5.9 percent when government officials are convicted of federal corruption crimes at a rate higher by 1 per 100,000 residents over the past 13 years. This suggests that some government officials may adopt economic-incentive programs in return for money, political support, or other forms of payouts. In turn, it may cause a dysfunctional tax system, making it more difficult for the locality to compete for businesses without economic-incentive programs. Localities in states with high rates of public-corruption convictions are more likely than others to offer incentives.

4.2.1.2 Industry Factors

Many local governments compete with other nearby governments to hold their own position or to attract new businesses. Adoption of tax-based incentives is one form of such competition. However, not all communities have the same strong desire to implement economic-development policies because each community has different industrial structures and demographics (Felix & Hines, 2013). This difference leads to a diverse trade-off among economic development policies. Differences in willingness to offer incentives may reflect the composition of industries and firms that are potential beneficiaries (Byrnes, Marvel, & Sridhar, 1999). Communities with a large manufacturing base are more likely to provide business tax incentives. A 10 percent greater fraction of the workforce in manufacturing is associated with an 8.4 percent greater probability of offering tax incentives (Felix & Hines, 2013). Other studies also found a positive association between substantial manufacturing employment and more active use of tax-based incentives (Reese, 2006; Wang, 2018).

4.2.1.3 Neighbor Effect

Generally, we assume that state and local governments do not make independent economic development policy decisions. Rather, most governments consider and review the choices of other governments when they make fiscal decisions. Previous studies also support this propensity of local governments (Brueckner, 2003; Revelli, 2005). This situation is called policy interdependence and strategic interaction (Wang, 2018). More specifically, previous studies have mainly focused on the adoption of policies due to the neighbor effect. McHone (1987) indicated that local governments tend to mimic the fiscal decisions of neighboring communities. Man (1999) also found that a jurisdiction is more likely to adopt TIF if a neighboring jurisdiction did so. Byrne (2005) reported similar results, where a community is more likely to offer more TIF if a neighboring community did the same. Based on these studies, we can conclude that local governments may affect each other's fiscal policies.

4.2.2 Hypotheses

The literature does not offer a consistent estimate of the efficacy of fiscal policy (Bartik, 1991; Goetz et al., 2011) and fails to provide a clear direction on which policies best promote growth and economic well-being. As discussed briefly above, tax incentives account for a negligible portion of business costs, so they rarely determine business decisions. As Peters and Fisher (2004) show, almost 90% of firms that received incentives said they would have approved investments or hires even without them. Also, it is difficult to keep benefits from spreading to other localities, even in cases in which tax incentives make an impact, considering the interconnected nature of the U.S.

economy (Davis, 2013). The evidence demonstrates that tax incentives are of little benefit to states or localities, and are a drag on economic development.

Nonetheless, states and local governments have used tax incentives significantly, and the best available estimates suggest that states and localities are devoting almost $50 billion to them annually (Davis, 2013). Why, then, do local governments often use tax-based incentives? The literature suggests key determinants.

First, socioeconomic characteristics, particularly income, can explain variations in the use of tax incentives across localities, which may be more likely to offer tax-based incentives if they have a large population of low-income residents. It is not difficult to understand why poor communities use tax-based incentives in an effort to boost business activities. A typical poor community, on average, lacks infrastructure and highly skilled labor, making investments in such communities less attractive. From this perspective, a tax-based incentive aims to offset a less attractive community environment by lowering costs for businesses to invest. Recent literature, on the other hand, provides opposing evidence that economically challenged localities are less likely to adopt economic-incentive programs due to limited resources. Although growing evidence supports a positive relationship between local economic conditions and tax-based incentives, the literature suggests that consensus among researchers has not been reached. On this basis, the first hypothesis follows:

Hypothesis 1: If a state has a large share of low-income residents (based on poverty rate and a percentage of residents on public assistance), the state will be more likely to adopt tax-based incentives (socioeconomic factor).

Basically, economic-development policies of local governments are based on fiscal and economic conditions (Fisher & Peters, 1998). The concept of economic and fiscal status is reasonably measured by the unemployment rate (Feiock, & Clingermayer, 1992; Reese, 1991). Rubin and Rubin (1987) also conceptualize this economic status as citizen need. Specifically, a high unemployment rate indicates a high demand for local economic-development policies. Thus, the city is more likely to try to help residents through tax-based incentives. Higher unemployment rates are positively associated with the use of economic-development programs (Betz et al., 2012; Lobao & Kraybill, 2005). In line with these previous studies, the following hypothesis is proposed:

Hypothesis 2: If a state has a high unemployment rate, it will be more likely to adopt tax-based incentives (socioeconomic factor).

Evidence indicates that communities suffering from political unrest provide general tax relief to avoid at least some potential criticism within the communities experiencing economic downturns. In troubled political cultures, offering incentives may be easier than tailoring new programs or renewing existing ones through negotiations. Also, the number of adopted programs may be related to corruption in some cases (Felix & Hines, 2013). This suggests that some government officials may choose economic-incentive programs in return for money, political support, or other forms of payout. There is scant literature that examined whether tax-incentive policy adoption is related to political elections or corruption. That suggests the following hypothesis:

Hypothesis 3: If a state has more corruption, the state will be more likely to adopt tax-based incentives (political factor).

Political ideology as it relates to tax-based incentives has been analyzed to a lesser extent compared with socioeconomic factors, but political factors are highly likely to impact local tax-based incentives. For instance, Republicans are more likely to favor helping businesses, but they tend to be reluctant to pick winners (Betz et al., 2012). Democrats may be more likely to intervene in the economy to create good jobs, but they are reluctant to offer corporate welfare to help businesses without creating better jobs (Betz et al., 2012). Previous studies support this argument. Specifically, Lewis (2002) suggests that a city with Democratic leaders is less likely to offer retail-development incentives, negatively impacting industrial recruitment and entrepreneurial strategies (Jenkins et al., 2006).Thus, the following hypothesis is proposed:

Hypothesis 4: If a state has a more liberal political ideology, the state will be less likely to adopt tax-based incentives (political factor).

State governments increasingly have been engaging in economic-development policy to boost their economies, while facing high unemployment rates and dwindling state tax revenue following recessions (Dewees et al., 2003). While some research indicates that local governments with larger staffs and more expertise or experience tend to adopt such policies, the literature has not found straightforward evidence of a relationship between capacity and economic-incentive policy usage (York et al., 2013). To measure government capacity, previous studies have used expenditure ratio and per capita government expenditures (Morgan, Hoyman, & McCall, 2019). Broadly speaking, local government revenues, expenditures, and employment levels are used as a proxy for government capacity (Jeong & Feiock, 2006; Oh, Lee, & Bush, 2014). It is reasonable to

ask how government capacity affects choice of tax-based incentives. On that basis, the next hypothesis follows:

Hypothesis 5: If a state has greater government capacity, such as revenue per capita, the state will be more likely to adopt tax-based incentives (government-capacity factor).

Past literature has focused on examining a particular industry, mainly manufacturing, and tends to generalize its determinants to entire economic-development programs (Felix & Hines, 2013). Other studies also support this argument (Byrnes et al., 1999; Reese, 2006; Wang, 2018). Another determinant in explaining economic-development activity choices entails declines in certain economic sectors (Wolman & Spitzley, 1996). The U.S. manufacturing industry has been suffering since the 1980s, especially in Midwestern states collectively called the Rust Belt. In this regard, it is reasonable to ask how a community's manufacturing industry impacts the adoption of economic incentives. Thus, the following hypothesis is proposed.

Hypothesis 6: If a state has a larger manufacturing base, it will be more likely to adopt tax-based incentives (industry factor).

Finally, the literature has identified the neighbor effect on fiscal policies. For instance, Anderson and Wassmer (1995) provided evidence that a community adopts property tax abatement in response to other communities' adoption of property tax abatement. Felix and Hines (2013) reached similar conclusions, that if a community is closer to state borders, the community is more likely to offer business incentives. The main purpose of analyzing the neighbor effect and strategic interaction is to test whether economic development policy is partly influenced by competition among neighboring communities (Byrne, 2005). Although we confirm the neighbor effect on incentives, we

do not know the extent to which neighboring business incentives affect communities, as previous literature is limited in this regard. We propose the following hypothesis: *Hypothesis 6: If neighboring states offer more tax-based incentives, a state is more likely to offer more tax-based incentives via the neighbor effect.*

4.2.3 Research Design

This study's objective is to examine why state governments adopt tax-based incentives. This section describes data sources, key variables, and a model that will be used in the analysis.

4.2.3.1 Data

The study period covers 1990 through 2015. The primary data source is the Upjohn Institute Panel Database on Incentives and Taxes (PDIT, from the W.E. Upjohn Institute, 2019). Economist Tim Bartik played a central role in developing this unique database, which includes taxes and incentive data for 45 industries and 32 states. Although data-collection limits prevent the PDIT from including every state and industry, the 32 states examined account for 92% of U.S. GDP, and the 45 industries examined encompass 91% of U.S. compensation (W.E. Upjohn Institute, 2019). There is a practical reason for why not all states are included. Specifically, Bartik (2017) explained that 50% more researcher's work is needed to cover all states, but 18 states alone account for a minor portion of business activities. The PDIT does not include all incentives, but does contain the five most commonly used: investment tax credits, research and development (R&D) tax credits, job-creation tax credits, property tax abatements, and customized grants (W.E. Upjohn Institute, 2019). State-corruption data are from the Public Integrity

Section of the Department of Justice. The state-corruption rate indicates "the number of public officials in the state in which a community is located convicted of federal corruption-related crimes" (Felix & Hines, 2013, p. 84). To measure state government ideology, this paper is based on Berry et al. (2010). A government's ideology is evaluated based on average elected officials (Berry et al., 2010). Americans for Democratic Action (ADA) and the AFL-CIO Committee on Political Education (COPE) conducted the evaluation (Berry et al., 2010). The first version of the data is based on COPE and ADA scores that are unadjusted interest-group ratings (Berry et al., 2010). After updating, state government ideology data are based on NOMINATE[3] common-space scores.

To analyze the neighbor effect and measure neighbor business incentives, this paper uses a method similar to previous studies. For instance, Besley and Case (1992) referenced the average tax change of geographically neighboring states when they defined the neighbors' tax change; this paper comparably defines neighboring average total tax incentives. Neighboring average total tax incentives indicate the average geographically neighboring state tax-based incentive percentage. The secondary data sources for socioeconomic variables are the Decennial Census and American Community Survey, while data on state government expenditures are taken from the Annual Survey of State and Local Finances. The details are presented in Table 4.1.

[3] This is " an aggregate measure that accounts for partisan affiliation and power in the governor and state legislature" (Leiser, 2017, p 345).

Table 4.1 Variable definition and data sources

	Variable	Definition	Data Source
Dependent Variables	Total Incentives (sum of the following five variables)	The Percentage of Tax incentives of State-local Business Taxes	Panel Database on Incentives and Taxes (PDIT 1990, 2000, 2005-2015)
	Job Creation Tax Credit	The Percentage of Tax incentives of State-local Business Taxes by Job Creation tax credit	
	Investment Tax Credit	The Percentage of Tax incentives of State-local Business Taxes by Investment Tax credit	
	Research and Development (R&D) Tax Credit	The Percentage of Tax incentives of State-local Business Taxes by R&D tax credit	
	Property Tax Abatement	The Percentage of Tax incentives of State-local Business Taxes by Property Tax Abatement	
	Customized Job Training Subsidy	The Percentage of Tax incentives of State-local Business Taxes by Customized Job Training	
Independent Variables	Poverty rates	The ratio of the number of people whose income falls below the poverty line	US Decennial Census (1990, 2000, and 2010) and ACS (2005-2009, 2011-2015)
	Unemployment rate	The Percentage of unemployed workers	
	Percentage Public Assistance	The Percentage of Households with cash public assistance or Food Stamps	
	Neighboring average total tax incentive	The average Percentage of Tax incentives of neighboring State-local Business Taxes	Panel Database on Incentives and Taxes, (PDIT 1990, 2000, 2005-2015)
	State Corruption rate	Public Corruption Convictions per 100,000 population	Department of Justice
	Government ideology indicator	Conservative (0) to Liberal (100)	Berry et al., 2010, and Fording's website
	Revenue per capita	Revenue divided by population	Government Finance Database (Pierson, Hand, & Thompson, 2015a)
	Percentage Infrastructure Expenditure	The percentage of transportation and highways expenditure in total revenue	
	Percentage Welfare Expenditure	The percentage of social service and public welfare expenditure in total revenue	
	Percentage of Manufacturing Employment	Manufacturing as a share of employment	US Decennial Census (1990, 2000, and 2010) and ACS (2005-2009, 2011-2015)
Control Variables	Percentage BA Degree or higher	Percentage of population with bachelor's degree or higher	US Decennial Census (1990, 2000, and 2010) and ACS (2005-2009, 2011-2015)
	Percentage Over 65	Percentage of population 65 years and over	
	Median Income (log)	Median log of income in dollars	

4.2.3.2 Variables

Dependent Variable

This paper examines five widely used tax-based incentives: job-creation tax credits, investment tax credits, R&D tax credits, property tax abatements, and customized job-training grants. The unit-of-incentive measure is the percentage[4] of tax incentives compared with state and local business taxes. To clarify, "The measure shows present value of incentives divided by present value of gross taxes" (Bartik, 2017, p. 47). In other words, it measures to what extent a state uses incentives: A high value denotes heavy use of incentives. As Figure 4.1 shows, the primary dependent variable includes total incentives and each type of business incentive from 1990 to 2015. The total value of incentives is the sum of the value of job-creation tax credits, investment tax credits, R&D tax credits, property tax abatements, and customized job-training subsidies. Figure 4.1 shows the trend of business incentives included in this study. Generally, state government average total use of tax incentives has increased steadily since 1990, but the when and where of the incentives vary. The use of job-creation tax credits has grown between 2005 and 2015, but the use of other incentives has remained static. States have invested less in R&D tax credits and customized job-training subsidies but have spent comparatively more in investment tax credits and property tax abatements.

[4] "Present value calculated using 12 percent discount rate for new facility begun in 2015 and operated at same scale for 20 years" (Bartik, 2017, p. 47).

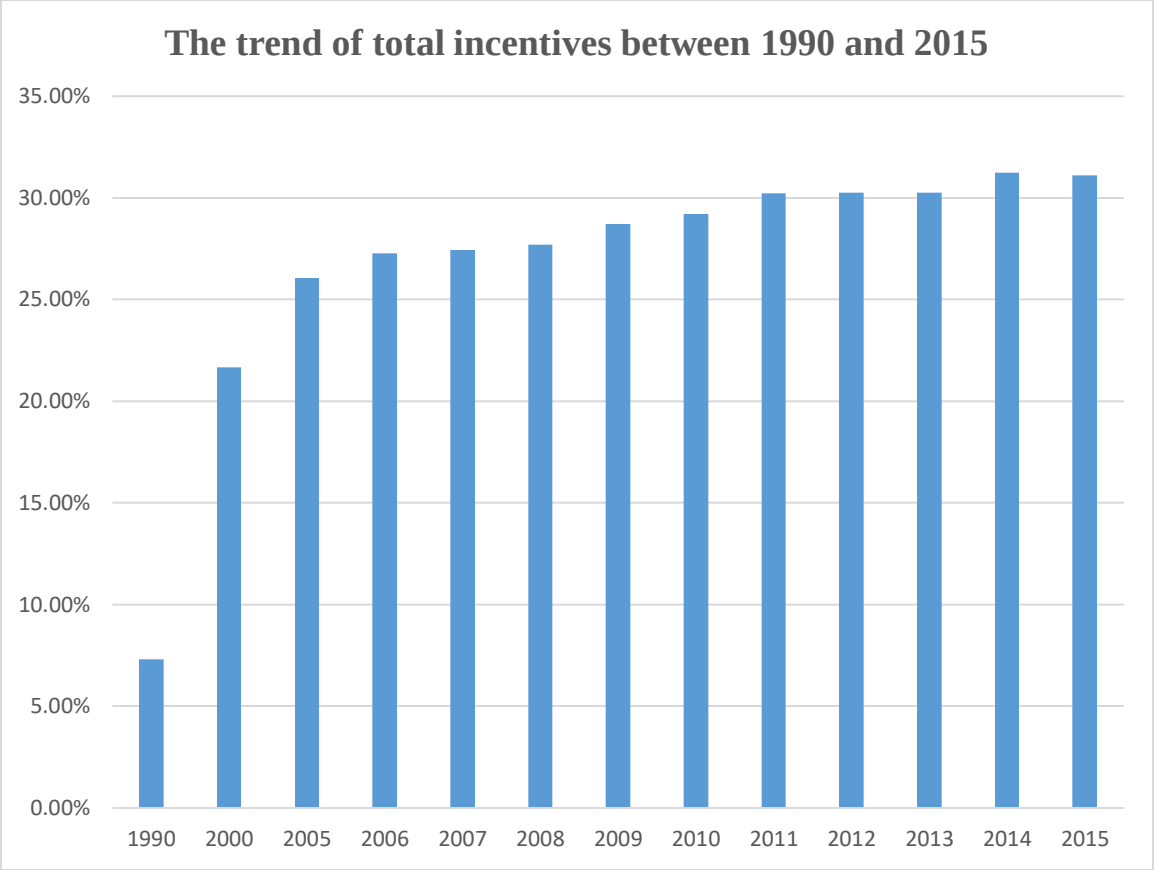

Figure 4.1 The trend in total incentives between 1990 and 2015.

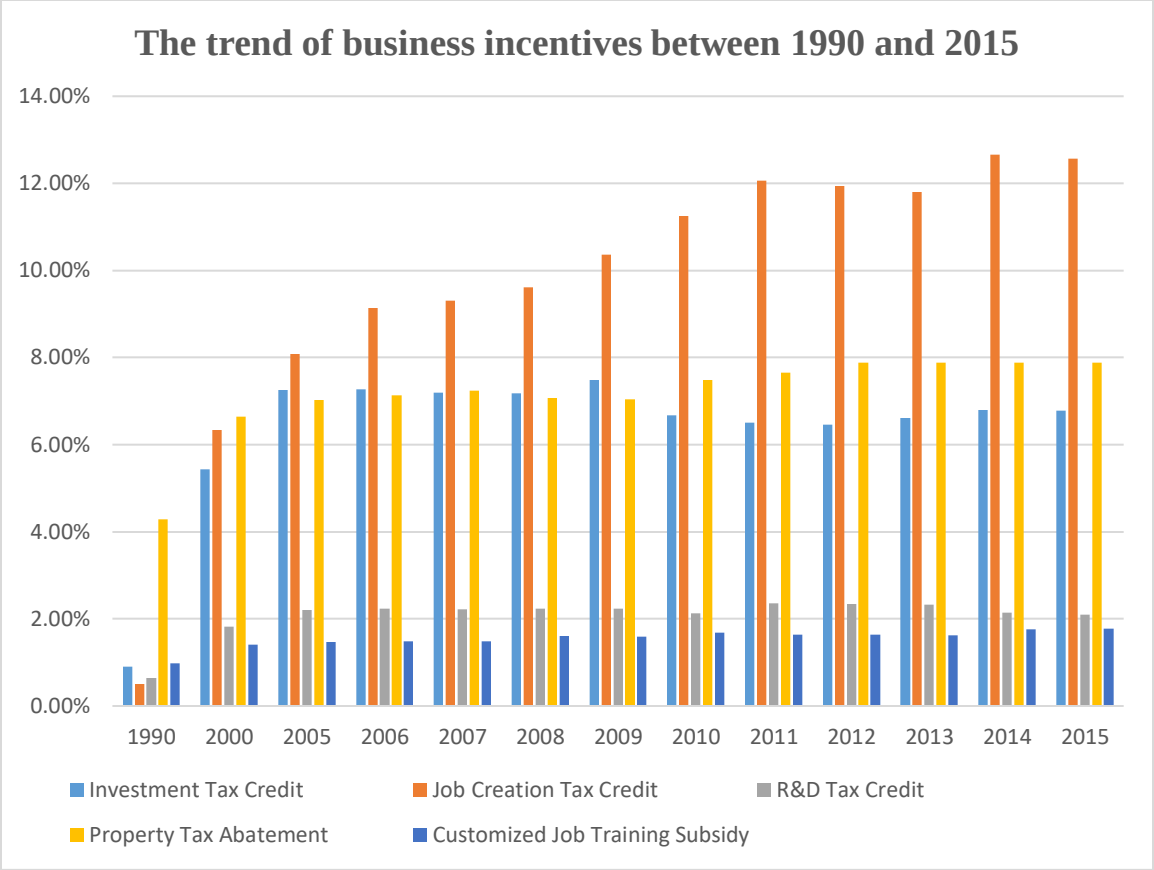

Figure 4.2 The trend in business incentives between 1990 and 2015

Independent Variables

Many studies use socioeconomic factors to analyze determinants of tax-based incentives (Sullivan, 2002; Dewees et al., 2003; Felix & Hines, 2013; Fleischmann et al., 1992;. Reese, 2006; Rubin & Rubin, 1987). Based on previous studies, the primary independent variables include poverty rate, percentage of public assistance, and unemployment rate as socioeconomic factors, and as political factors, state-corruption rate and government-ideology indicators. Percentage of infrastructure expenditures, percentage of welfare expenditures, and revenue per capita measure state government

capacity. The share of employment in manufacturing is a state industry factor. Lastly, neighboring average total tax incentive is included as a neighbor effect.

Control Variables

The relationship between tax-based incentives and the primary independent variable is tested while controlling for demographic characteristics and environmental context. The demographic characteristics include percentage of bachelor's degrees or higher and percentage 65 years old and up. The percentage over 65 years old is controlled because older people are more likely to be active political participants (Rork, 2003). The environmental context includes a set of variables indicating a state's income level: median income and manufacturing income. The details on all variables are presented in Table 4.2.

Table 4.2 Descriptive statistics

VARIABLES	(1) Sample size	(2) Mean	(3) SD	(4) Min	(5) Max
Total Incentives	416	26.80	20.88	0.00	99.44
Job Creation Tax Credit	416	9.59	11.49	0.00	57.44
Investment Tax Credit	416	6.42	12.84	0.00	72.04
R&D Tax Credit	416	2.08	2.46	0.00	12.35
Property Tax Abatement	416	7.16	9.63	0.00	43.69
Customized Job Training Subsidy	416	1.55	1.81	0.00	6.89
Poverty rate	416	13.54	3.57	5.00	21.90
Government Ideology Indicator	416	46.95	16.34	17.51	73.62
% Over65	416	12.99	1.56	9.20	18.60
% BA or Higher	416	26.97	5.31	13.63	40.50
Unemployment Rate	416	7.14	2.18	2.46	12.70
% Infrastructure Expenditure	416	6.29	2.12	1.80	17.77
% Public Assistance	416	10.05	3.91	1.71	24.15
% Welfare Expenditure	416	22.93	4.18	7.48	38.78
Median income (log)	416	10.83	0.25	10.00	11.45
State Corruption rate (Federal Public Corruption Convictions per 100,000)	416	0.32	0.23	0.00	1.24
% of Manufacturing Employment	416	12.01	4.52	3.60	26.69
Revenue per capita (log)	416	5.74	1.79	1.52	10.65
Total incentives in neighboring states	416	27.98	14.39	0.46	61.99

Note: Data includes 32 states over 13 years

4.2.3.3 Model

This study uses fixed-effects panel estimates for 32 U.S. states between 1990 and 2015 to examine what makes tax-based incentives attractive to policy makers. The purpose of this method is to control time-invariant characteristics of states that could

have impacts on the use of tax incentives. Allison (2009) explains 'the fixed effects methods effectively controls for all time invariant predictors, both measured and unmeasured' (p.26). One way to explore determinants of tax-based incentives in U.S. states is to include all control variables in a year the same as the dependent variable. However, a potential problem is that the incentives and other control variables, specifically government-expenditure variables, are likely to be endogenous because state government officials may decide on the types and amount of government expenditures to use in year *t* based on the amount of tax incentives in year *t-1*. Therefore, this study uses lagged values for independent variables to address the potential endogeneity issue. The methodology used in this study is consistent with previous studies (Gittell & Tebaldi, 2007; Gittell et al., 2014). Also, this study includes year fixed effects to control for macroeconomic and political factors that could impact the trend of tax incentives at the national level. The following model is estimated:

$$\text{Tax incentives}_{it} = \beta 1\ \text{Socioeco}_{it-1} + \beta 2\ \text{Gov't Capacity}_{it-1} + \beta 3\ \text{Politic}_{it-1} + \beta 4\ \text{Industry}_{it-1} + \beta 5\ \text{Neighboring}_{it-} + \beta 6\ X_{it-1} + \alpha_i + d_{t+} \varepsilon_{it}$$

in which *i* indexes state, *t* indexes time, tax incentives indicate the percentage of tax incentives relative to total state and local business taxes within a state i in year t. It measures to what extent a state uses incentives. The parameter β_1 measures the effect of socioeconomic variables on tax-based incentives, and β2, β3, β4 and β5 measure the primary independent variable effects on incentives. Other covariates that capture a state's socioeconomic conditions and likely affect tax incentives are included in vector $X_{i,t-1}$. Finally, α_i denotes a set of state-fixed effects, d_t indicates a set of year-fixed effects, and ε is the error term.

4.2.4 Results

4.2.4.1 Primary Determinants

Table 4.3 shows the results from panel fixed-effects estimates on primary determinants and a series of control variables. The coefficients in five subcategories add up to the total effect estimated overall because the dependent variables are defined as mutually exclusive and exhaustive subcategories. Column 1 in Table 4.3 indicates that socioeconomic factors such as percentage of public assistance and poverty rate have no statistically significant effect on the total use of tax-based incentives. This result does not support findings in previous studies that socioeconomic factors have a statistically significant effect on the total use of tax-based incentives (Betz et al., 2012; Lobao & Kraybill, 2005). However, the results differ by category. Specifically, the findings show that a 1% increase in the poverty rate increases the average percentage of investment tax incentives in gross taxes by 0.77%, holding all other variables constant. The unemployment rate statistically reduces the percentage of customized job-training subsidies from gross taxes. This result supports the contention that economically poor local governments may find it difficult to invest resources in economic-development strategies (Dewees et al., 2003; Reese, 2006).

Rows 1 and 2 of Table 4.3 show the effect of political factors on the use of tax-based incentives. This study did not find statistically significant evidence that a rise in the state corruption rate would increase the use of tax-based incentives. On the other hand, the government-ideology score impacted the use of tax-based incentives. The findings show a 1-point increase in state government ideology score (high score = more liberal, range = 100 points) increases the percentage of job creation tax credits from gross taxes

by 0.09%. Liberalism in a given state increases the use of job-creation tax credits, but reduces investment tax credits, property-tax abatement, and customized job-training subsidies. A state government's ideology has a statistically significant impact on the type of tax-based incentives. We can suggest that government ideology could serve as a powerful mechanism in the allocation of tax-based incentives.

Three variables measure state government capacity. The findings vary depending on the type of tax-based incentives involved. First, revenue per capita increases the use of R&D tax credits and statistically decreases the use of property tax abatement. Second, the percentage of infrastructure expenditures has no statistical impact on the type of tax-based incentive.

Finally, the percentage of welfare expenditures is positively associated with total incentives and investment tax credits. Although these results partially support previous studies that indicate the level of government capacity is closely related to the use of tax-based incentives, they also indicate that capacity has different effects based on the type of expenditure and incentives (York et al., 2013).

Table 3 shows that the percentage of manufacturing employment does not support the findings of previous studies. As the percentage of manufacturing employment increases, total incentives, job creation tax credit, and property tax abatements decrease. Considering the U.S. manufacturing industry's condition, this finding is especially surprising. Perhaps communities have observed that manufacturing industry often leaves in later years and doubt the long-term value of the investment.

Neighboring states' average tax incentives have an unexpected impact on the use of business incentives. That is, as the percentage of their average tax incentives increases,

total incentives and job creation tax credit decrease. This result is contrary to previous studies and may suggest that competition strategies among the states may not trigger tax-based incentives. This result suggests the possibility that the empirical data indicating that tax-based incentives are not effective may be utilized as a control mechanism in local governments. In other words, learning mechanisms demonstrating the ineffectiveness of incentives may arrest the spread of adoption. Additionally, a negative relationship between the use of the neighboring states' total incentives and the extent of these incentives may suggest that these tax-based incentives are substitutes rather than complements to each state.

4.2.4.2 Control Variables

Demographic factors partially impact the use of incentives. Specifically, the percentage of residents with bachelor's degrees or higher reduces the use of R&D tax credits and customized job-training subsidies, and median income reduces the use of customized job training subsidies. However, the percentage of residents over age 65 has no statistically significant effect on tax incentives.

Table 4.3 Panel regression results: The effect of determinants on the tax-based incentives

VARIABLES	(1) Total Incentives	(2) Job Creation Tax Credit	(3) Investment Tax Credit	(4) R&D Tax Credit	(5) Property Tax Abatement	(6) Customized Job Training Subsidy
Government Ideology	-0.03	0.09***	-0.03*	0.00	-0.09***	-0.01***
Indicator (high: liberal) t-1	(0.04)	(0.03)	(0.01)	(0.00)	(0.03)	(0.00)
State Corruption rate	-2.17	-2.93	0.97	-0.22	-0.12	0.13
(Public Corruption	(2.65)	(1.87)	(0.99)	(0.31)	(1.66)	(0.18)
Conviction per 100,000) t-1						
Revenue per capita(log) t-1	0.04	0.76	-0.11	0.15*	-0.83**	0.07
	(0.70)	(0.50)	(0.26)	(0.08)	(0.44)	(0.05)
% Infrastructure	-0.00	0.15	0.13	0.06	-0.33	-0.01
Expenditure t-1	(0.38)	(0.27)	(0.14)	(0.04)	(0.24)	(0.03)
.% Welfare Expenditure t-1	0.54**	-0.00	0.28***	-0.01	0.25	0.01
	(0.26)	(0.18)	(0.10)	(0.03)	(0.16)	(0.02)
% BA or Higher t-1	0.36	0.29	0.49	-0.19*	-0.10	-0.12*
	(0.91)	(0.64)	(0.34)	(0.11)	(0.57)	(0.06)
% Over 65% t-1	-0.09	-0.58	0.66	-0.17	-0.06	0.06
	(1.67)	(1.18)	(0.62)	(0.19)	(1.05)	(0.12)
Neighbor effect t-1	-0.18**	-0.10*	-0.02	-0.01	-0.05	-0.00
	(0.08)	(0.06)	(0.03)	(0.01)	(0.05)	(0.01)
Median income (log) t-1	4.61	21.20	-9.62	-1.51	-1.33	-4.13***
	(22.00)	(15.50)	(8.21)	(2.55)	(13.83)	(1.53)
Unemployment Rate t-1	-2.33***	-1.18*	-0.76**	-0.10	-0.18	-0.11*
	(0.89)	(0.62)	(0.33)	(0.10)	(0.56)	(0.06)
Poverty Rate t-1	1.29	0.73	0.77**	-0.11	-0.01	-0.08
	(0.81)	(0.57)	(0.30)	(0.09)	(0.51)	(0.06)
% Public Assistance t-1	0.35	0.31	-0.04	-0.01	0.06	0.02
	(0.37)	(0.26)	(0.14)	(0.04)	(0.24)	(0.03)
% of Manufacturing	-1.40***	-0.62*	0.27	-0.08	-0.99***	0.01
Employment t-1	(0.50)	(0.35)	(0.19)	(0.06)	(0.31)	(0.03)
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-18.34	-211.42	73.68	23.66	25.57	46.73***
	(235.18)	(165.65)	(87.80)	(27.11)	(147.81)	(16.37)
Observations	384	384	384	384	384	384
R-squared	0.19	0.22	0.10	0.08	0.11	0.16
Number of states	32	32	32	32	32	32

Note: Standard errors in parentheses *** p<0.01, ** p<0.05, *p<0.1. The coefficients in the total incentives regression are the sums of the coefficients in the five subcategories, as they are defined as mutually exclusive and exhaustive subcategories

4.3 Conclusion

While many studies argue that tax incentives have a negligible impact on local economies, tax incentives have long played a role in economic-development policy in the

U.S. and continue to be a popular policy tool used by state and local governments. Recent competition to attract Amazon's second headquarters reveals how governments are willing to offer billions of dollars in tax breaks and other subsidies to attract such corporations. The designation of opportunity zones in low-income neighborhoods is in line with tax-based incentive policy because they offer preferential tax treatment to investors.

A state government's prevailing political ideology influences the choice of economic-development activities, indicating that political conditions play an important role in state economic policy. Thus, a more liberal state may be more likely to discourage the use of investment tax credits, property tax abatement, and customized job-training subsidies. The empirical results in my study show that local politics could be an important factor that increases or decreases the use of economic development policies. According to previous results, the form of government, changes in political leadership, and the government ideology indicator influence the use of economic development policies. It is worth noting that local government factors have acted as a major selective force in economic development policies. Specifically, any local politics does not consistently have a significant impact on the use of policies, but the results show which factors have a significant relationship in the local area. Elective influence of local government is the main contribution of this dissertation. This study also finds that state economic conditions are inversely related to the use of incentives. For example, as unemployment rates increase, state governments are likely to decrease their total incentives, job creation tax credits, investment tax credits, and customized job-training subsidies. This result could imply the prevalence of political factors in the use of

incentives. Finally, the extent of tax-based incentives in neighboring states reduces the total use of tax incentives. These results suggest that tax-based incentives may be a substitute among states, or perhaps the ineffectiveness of the incentives is observed by neighboring states.

Only a few national studies have been conducted on this question. Using new data on nationwide tax incentives at the state level, this study examined determinants of tax incentives across the U.S. over time. Both political and economic factors are associated with business-incentive policies.

CHAPTER 5. THE EFFECTS OF STATE TAX-BASED INCENTIVES ON U.S. LABOR MARKETS, 1990–2015: BOON OR BOONDOGGLE?

Abstract

Clear evidence about the effectiveness of economic development incentives is limited. To bridge this research gap, this study uses the Upjohn Institute Panel Database on Incentives and Taxes (PDIT). Unemployment and employment rates are used to analyze the effectiveness of tax-based incentives. Statistical results indicate that tax incentives have a marginal impact on employment status and limited benefits to states. Only the R&D tax credit statistically significantly increases employment rates. This result supports the interpretation of economic development policies as a zero-sum game.

5.1 Introduction

Many states and local governments in the United States offer economic development incentives to boost their local area. The effectiveness of these incentives is an emerging issue (Bartik & Erickcek, 2014). The analysis is based on two underlying reasons. First, each state needs to increase the number of jobs available to overcome the Great Recession (Bartik, 2001). Second, billions of dollars have been spent on incentives across the nation (Peters & Fisher, 2004). Despite the importance of this issue, we do not have clear information about the effectiveness of economic development incentives because the literature shows opposing results.

Previous studies argue that tax incentives positively impact local investment, economic growth, and employment (Hollenbeck, 2008; Holzer et al., 1993; Hoyt, Jepsen, & Troske, 2008). On the contrary, other studies report that business incentives do not significantly impact local areas (Boarnet & Bogart, 1996; Carlton, 1983). Therefore, previous studies only partially addressed the question whether economic development incentives are effective.

Accordingly, this paper aims to contribute to the field of business incentives by posing the following research questions: (1) How important are tax incentives to overall unemployment rate and employment rate by state? (2) What is the impact of incentives on the unemployment rate and employment rate of states? The first section outlines the research design. The next section analyzes the results, and the final section offers conclusions.

5.2 Research Design

The aim of this study is to examine the effects of state tax-based incentives on economic performance measured as the unemployment rate and employment rate of U.S. states over time. Additionally, this article empirically tests the proposition that economic development policies have the nature of a zero-sum game. This section discusses data, key variables, and a model that will be used for analysis.

5.2.1 Data

The study period is from 1990 to 2015. The primary data source is the Upjohn Institute Panel Database on Incentives and Taxes (PDIT). The PDIT includes the five most commonly used tax-based incentives: investment tax credits, research and development (R&D) tax credits, job creation tax credits, property tax abatements, and customized grants (W.E. Upjohn Institute, 2019). The secondary data sources for socioeconomic variables are the Decennial Census and American Community Survey, while data on state government expenditures are taken from the Government Finance Database. The details are presented in Table 5.1.

Table 5.1 Variable definitions and data sources

	Variable	Definition	Data Source
Dependent variable	Unemployment Rate Employment Rate	The percentage of unemployment within a state The percentage of employment within a state	US Decennial Census (1990, 2000 & 2010) and ACS (2005-2009, 2011-2015)
Independent Variables	Total Incentives (sum of the following five variables)	The percentage of Tax incentives of State-local Business taxes	Panel Database on Incentives and Taxes, PDIT (1990, 2000, & 2005-2015)
	Job Creation Tax Credit	The Percentage of Tax incentives of State-local Business Taxes by Job Creation tax credit	
	Investment Tax Credit	The Percentage of Tax incentives of State-local Business Taxes by Investment Tax credit	
	Research and Development (R&D) Credit	The Percentage of Tax incentives of State-local Business Taxes by R&D tax credit	
	Property Tax Abatement	The Percentage of Tax incentives of State-local Business Taxes by Property Tax Abatement	
	Customized Job Training Subsidy	The Percentage of Tax incentives of State-local Business Taxes by Customized Job Training Subsidy	
Control Variables	% Public Assistance	The percentage of households with cash public assistance or Food Stamps	US Decennial Census (1990, 2000 & 2010) and ACS (1990, 2005-2009, 2011-2015)
	% of owner occupied housing	The percentage of households in owner occupied housing	
	Housing value (log)	Median housing value in dollars	
	Population (log)	Total population	
	% Under 5	Under 5 year (%)	
	% Over 65	65 years and over (%)	
	Median Income (log)	Median income in dollars	
	% BA Degree or higher	Percent bachelor's degree or higher	
	% Edu Expenditure	The percentage of education expenditure in total revenue	Annual Survey of State, Local Finance (2000-2015) Government Finance Database (Pierson et al., 2015b)
	% Infrastructure Expenditure	The percentage of transportation and highways expenditure in total revenue	
	% Welfare Expenditure	The percentage of social service and public welfare expenditure in total revenue	

5.2.2 Variables

Dependent Variable

Many studies use employment indicators to evaluate the effect of incentives (Ham, Swenson, Imrohorğlu, & Song, 2011; Hanson & Rohlin, 2013; Reynolds & Rohlin, 2015). Wasylenko and McGuire (1985) use percentage change in employment as a dependent variable to determine the effect of the business climate on the state economy. Bartolome and Spiegel (1997) rely on the level of employment to evaluate the effects of economic development agency spending. Gabe and Kraybill (2002) use unemployment rates to analyze the effect of state business incentives. Accordingly, this study also uses employment indicators as outcome variables. To measure the effect of state business incentives on the state economy, the unemployment and employment rate are used as the dependent variables because those indicators represent the effect of the incentives overall. As shown in Table 5.2, states in this sample average a 7.14% unemployment rate. The range of unemployment rate is between 2.46% and 12.70%.

Independent Variables

This study also examines five tax-based incentives: R&D tax credits, job-creation tax credits, property tax abatements, investment tax credits, and customized job-training grants. The unit of incentive measure is the percentage of tax incentives of state-local business taxes. It measures the extent to which a state government uses incentives, with a high value indicating a high use of incentives. One of the key strengths of this database is that it is exceptionally comprehensive because it covers the majority of business activities from 1990 to 2015, which is a relatively long period.

Table 5.2. Descriptive statistics

Variables	Obs	Mean	Std. Dev	Min	Max
Employment rate	416	59.94	3.60	52.50	68.20
Unemployment Rate	416	7.14	2.19	2.46	12.70
Total Incentives	416	26.80	20.88	0.00	99.44
Job Creation Tax Credit	416	9.59	11.49	0.00	57.44
Investment Tax Credit	416	6.42	12.84	0.00	72.04
Research and Development Credit	416	2.08	2.46	0.00	12.35
Property Tax Abatement	416	7.16	9.63	0.00	43.69
Customized Job Training Subsidy	416	1.55	1.81	0.00	6.89
Poverty rate	416	13.54	3.57	5.00	21.90
% Owner Occupied Housing	416	67.25	4.46	52.20	76.30
Housing Value (log)	416	12.02	0.45	10.73	13.19
Population	416	15.69	0.68	13.99	17.46
% Under Age 5	416	6.66	0.57	5.30	8.40
% Over Age 65	416	12.99	1.56	9.20	18.60
Median Income (log)	416	10.83	0.25	9.99	11.45
% BA Degree or higher	416	26.97	5.30	13.63	40.50
% Edu Expenditure	416	28.72	7.66	6.73	44.22
% Infrastructure Expenditure	416	6.29	2.12	1.80	17.77
% Welfare Expenditure	416	22.93	4.18	7.48	38.78

Control Variables

Many studies that examine the employment effects of tax incentives include several control variables that measure socioeconomic characteristics and government expenditures, including public education, infrastructure, and welfare. Wasylenko and McGuire (1985) separate their control variables into three categories: labor, fiscal, and

market. The labor category includes prime working age population (age 25 to 55); the fiscal category includes a set of variables that indicate state and local governments' expenditure on education and welfare; and the market category includes state population density and per capita state income. Freedman (2012) similarly categorizes control variables: demographic characteristics, housing characteristics, and change in neighborhood characteristics. The demographic characteristics include the population, the number of persons under age 5, the number over age 65, median income, and poverty rate. Housing characteristics include the share of owner-occupied housing, and median household income and median housing value are included to measure neighborhood characteristics.

As many other previous studies also follow this pattern (Goss & Phillips, 1999; Ham et al., 2011; Hanson, 2009; Hanson & Rohlin, 2013; Reynolds & Rohlin, 2015), this study includes a set of variables that measure each state's socioeconomic characteristics and government expenditures on public services. Over the study period, the average poverty rate is 13.54% across 32 states. Population, age structure, education, and median household income, are also used as socioeconomic characteristics. This study also includes variables related to housing, such as the percentage of owner-occupied housing and median housing values, because the quality of the neighborhood is capitalized in housing if the housing market works efficiently. As Table 5.2 shows, the average percentage of owner-occupied housing was 67.25% over the study period. Finally, three variables that measure state government spending on public education, infrastructure, and welfare are included because the level of government expenditure is closely related to the local economy (Wasylenko & McGuire, 1985). The details are presented in Table 5.2.

5.2.3 Model

This study uses fixed-effects panel estimates for 32 U.S. states in each year between 1990 and 2015 to examine the effects of incentives on unemployment rate and employment rate. The first model presented below applies to unemployment rates, and the second model applies to employment rates. Each model estimates the effects of total tax incentives and sub-five categories of tax incentives, respectively. One way to evaluate the effects of tax incentives on unemployment rate and employment rate is to include all control variables in a year as the same as the dependent variable. However, a potential endogeneity problem may exist, because state government officials may decide the types and amount of tax incentives to use in year *t* based on employment status in year *t-1*. Therefore, this paper uses lagged values for independent variables to address the potential endogeneity issue. The following models are estimated:

$$\textit{Unemployment rate}_{i,t} = \beta_0 + \beta_1 \text{Tax } \textit{Incentive}_{i,t-1} + \beta_2 \textit{Socioeco}_{i,t-1} + \beta_3 \textit{Gov't Capacity}_{i,t-1} + \beta_4 \textit{Industry}_{i,t-1} \beta_5 X_{i,t-1} + \alpha_i + d_t + \varepsilon_{i,t}$$

$$\textit{Employment rate}_{i,t} = \beta_0 + \beta_1 \text{Tax } \textit{Incentive}_{i,t-1} + \beta_2 \textit{Socioeco}_{i,t-1} + \beta_3 \textit{Gov't Capacity}_{i,t-1} + \beta_4 \textit{Industry}_{i,t-1} \beta_5 X_{i,t-1} + \alpha_i + d_t + \varepsilon_{i,t}$$

where *i* indexes states, *t* indexes time, and *Incentive* measures the percentage of tax incentives of state-local business taxes. The parameter β_1 measures the effect of tax incentives on unemployment rate and employment rate. All other covariates that capture a state's socioeconomic conditions that likely affect employment are in vector $X_{i,t-1}$.

Finally, α_i denotes a set of state fixed effects, d_t indicates a set of year fixed effects and ε is the error term.

5.3 Results

Tax-based Incentives

Table 5.3 shows the results of a regression analysis on the effects of business incentives on the unemployment rate in 32 states from 1990 to 2015. Column 1 in Table 5.3 is the results of the OLS analysis, and Column 2 reveals the results of panel fixed-effects estimates on the use of tax incentives and a series of control variables. The panel fixed-effect model is preferable to the OLS model.

Although OLS shows a 1% increase in total tax incentives is likely to reduce the average unemployment rate by 0.01%, holding all other variables constant, when state and year fixed effects are included, the negative effects of tax incentives on unemployment rate disappear. In other words, the sign of the coefficient on total incentives was positive and statistically insignificant. There is significant variation between states and over time.

Table 5.4 shows the results of five regression analyses on state unemployment rate using five tax-based incentives as key independent variables. Column 1, the employment effects of job-creation tax credits, does not support findings in previous studies that the incentive has a statistically significant effect on the unemployment rate (Bartik & Erickcek, 2014). Considering that the average use of job-creation tax credits in U.S. states has more than doubled between 2000 and 2015, this finding is especially surprising.

Column 2 of Table 5.4 shows the employment effects of investment tax credits and a positive coefficient on tax credits. Moreover, this study did not find statistically significant evidence that an increase in investment tax credits would reduce unemployment rates, as standard economic theory suggests. Conversely, the results show that investment tax credits statistically increase unemployment. These results suggest that investment tax credit does not influence employment because it is usually related to a specific asset, such as equipment. Similarly, column 3 reports the effects of R&D tax credits and shows no significant decrease in unemployment rate. As shown in Columns 4 and 5, this study also did not find a significant effect of providing grants for property tax abatements and customized job training subsidy. These findings suggest that untargeted incentives based on whether an industry provides jobs, wages, or R&D do not significantly affect employment. Targeted incentives, such as customized job training, failed to achieve the intended policy outcome. Note that state governments have invested heavily in this field.

Across all models, this study finds consistent evidence on the effects of socioeconomic characteristics on the unemployment rate in U.S. states. Briefly, the results indicate the poverty rate and population size have a positive effect on the unemployment rate. On the other hand, the percentage of owner occupied housing has a negative effect on the unemployment rate.

This study included three variables that measure state government expenditures on education, infrastructure, and welfare, as many previous studies argue that the level of government expenditure is closely related to employment status in the local labor market. While the findings vary depending on the types of expenditure examined, most found that

higher spending on education tends to have a positive impact on employment factors such as job growth (Wasylenko & McGuire, 1985). However, across all models, this study demonstrates that state expenditure on education does not statistically significantly impact the unemployment rate. Results of this study also indicate a higher share of state spending on infrastructure positively and statistically significantly affects the unemployment rate. Additionally, the findings show an increase in welfare spending increases the unemployment rate.

Table 5.3 OLS and panel regression results: The effects of total incentives on unemployment rates

	Unemployment rates	
VARIABLES	(1)	(2)
Total Incentives $_{t-1}$	-0.01**	0.01
	(0.00)	(0.00)
Poverty rate $_{t-1}$	0.37***	0.37***
	(0.02)	(0.05)
% of Owner Occupied Housing $_{t-1}$	-0.01	-0.11**
	(0.02)	(0.05)
Housing Value (log) $_{t-1}$	0.53*	-0.34
	(0.32)	(0.40)
Population (log) $_{t-1}$	0.30***	2.27***
	(0.10)	(0.70)
% Under 5 $_{t-1}$	-1.66***	-1.01***
	(0.19)	(0.19)
% Over 65 $_{t-1}$	-0.12*	0.16
	(0.07)	(0.12)
Median Income (log) $_{t-1}$	1.44***	-0.72
	(0.46)	(1.64)
% BA or higher $_{t-1}$	-0.06**	0.09
	(0.02)	(0.06)
% Edu Expenditure $_{t-1}$	0.03**	0.01
	(0.01)	(0.02)
% Infrastructure Expenditure $_{t-1}$	-0.15***	0.06**
	(0.04)	(0.03)
% Welfare Expenditure $_{t-1}$	-0.03*	0.03
	(0.02)	(0.02)
State Fixed Effects	No	Yes
Year Fixed Effects	No	Yes
Constant	-8.59*	-14.34
	(4.71)	(17.47)
Observations	384	384
R-squared	0.68	0.93

Note: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 5.4 Panel regression results: The effects of each tax incentives on unemployment rate

	Unemployment Rate				
VARIABLES	(1)	(2)	(3)	(4)	(5)
Job Creation Tax Credit $_{t-1}$	0.01				
	(0.01)				
Investment Tax Credit $_{t-1}$		0.01**			
		(0.01)			
Research and Development Credit $_{t-1}$			-0.04		
			(0.03)		
Property Tax Abatement $_{t-1}$				-0.00	
				(0.01)	
Customized Job Training Subsidy $_{t-1}$					-0.05
					(0.05)
Poverty rate $_{t-1}$	0.37***	0.37***	0.36***	0.36***	0.36***
	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)
% of Owner Occupied Housing $_{t-1}$	-0.13**	-0.10*	-0.11**	-0.13**	-0.12**
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Housing Value (log) $_{t-1}$	-0.29	-0.30	-0.34	-0.28	-0.31
	(0.40)	(0.40)	(0.40)	(0.41)	(0.40)
Population (log) $_{t-1}$	2.15***	2.23***	2.01***	2.01***	1.97***
	(0.69)	(0.69)	(0.68)	(0.69)	(0.69)
% Under 5 $_{t-1}$	-0.70	-0.99	-0.88	-0.75	-0.95
	(1.65)	(1.64)	(1.65)	(1.65)	(1.66)
% Over 65 $_{t-1}$	0.17	0.17	0.19	0.19	0.16
	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)
Median Income (log) $_{t-1}$	-0.70	-0.99	-0.88	-0.75	-0.95
	(1.65)	(1.64)	(1.65)	(1.65)	(1.66)
% BA or higher $_{t-1}$	0.08	0.09	0.08	0.08	0.07
	(0.06)	(0.06)	(0.06)	(0.06)	(0.07)
% Edu Expenditure $_{t-1}$	0.01	0.01	0.01	0.01	0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
% Infrastructure Expenditure $_{t-1}$	0.06**	0.05**	0.06**	0.06**	0.06**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
% Welfare Expenditure $_{t-1}$	0.03*	0.03	0.03*	0.03*	0.03*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
State Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Constant	-12.77	-12.10	-9.43	-10.47	-7.21
	(17.41)	(17.27)	(17.36)	(17.40)	(17.64)
Observations	384	384	384	384	384
R-squared	0.93	0.93	0.93	0.93	0.93

Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 5.5 shows the results of six regression analyses on state employment rate using total incentives and the five tax-based incentives as key independent variables. The results are similar to the previous results on unemployment rate. The finding shows that a 1% increase in R&D tax credit is likely to increase the average employment rate by 0.09%. This study suggests that tax incentives marginally impact the employment rate. Conversely, investment tax credits negatively impact the employment rate. Similar to the case of unemployment, this result could support the interpretation of economic policies as a zero-sum game because the total sum of the effect of tax-based incentives on employment status is close to zero.

Based on the previous results, socioeconomic characteristics statistically influence the employment rate. Briefly, the results indicate that median housing value, poverty rate, and share of population over 65 negatively affect the unemployment rate. Contrarily, share of population under age 5 and owner-occupied housing positively influence the employment rate.

Table 5.5 Panel regression results: The effects of each tax incentives on employment rate

	Employment Rate					
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Total Incentives $_{t-1}$	-0.00					
	(0.00)					
Job Creation Tax Credit $_{t-1}$		0.01				
		(0.01)				
Investment Tax Credit $_{t-1}$			-0.02**			
			(0.01)			
R&D Credit $_{t-1}$				0.09***		
				(0.03)		
Property Tax Abatement $_{t-1}$					-0.00	
					(0.01)	
Customized Job Training Subsidy $_{t-1}$						-0.04
						(0.05)
Poverty rate $_{t-1}$	-0.54***	-0.53***	-0.54***	-0.52***	-0.54***	-0.54***
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
% of Owner Occupied Housing $_{t-1}$	0.31***	0.30***	0.29***	0.29***	0.31***	0.31***
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Housing Value (log) $_{t-1}$	-1.57***	-1.55***	-1.58***	-1.50***	-1.55***	-1.57***
	(0.41)	(0.41)	(0.41)	(0.41)	(0.42)	(0.41)
Population (log) $_{t-1}$	0.11	0.31	-0.09	0.18	0.13	0.10
	(0.72)	(0.71)	(0.70)	(0.69)	(0.71)	(0.71)
% Under 5 $_{t-1}$	0.39*	0.36*	0.44**	0.36*	0.39*	0.37*
	(0.20)	(0.20)	(0.20)	(0.19)	(0.20)	(0.20)
% Over 65 $_{t-1}$	-0.74***	-0.76***	-0.73***	-0.77***	-0.74***	-0.76***
	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)
Median Income (log) $_{t-1}$	0.96	1.00	1.28	1.31	0.94	0.78
	(1.70)	(1.69)	(1.68)	(1.67)	(1.70)	(1.71)
% BA or higher $_{t-1}$	-0.13*	-0.12*	-0.14**	-0.13*	-0.13*	-0.14**
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
% Edu Expenditure $_{t-1}$	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
% Infrastructure Expenditure $_{t-1}$	0.03	0.02	0.03	0.02	0.02	0.02
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
% Welfare Expenditure $_{t-1}$	-0.02	-0.02	-0.02	-0.03	-0.02	-0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	61.23***	58.11***	62.11***	57.23***	60.98***	63.48***
	(18.02)	(17.88)	(17.70)	(17.60)	(17.88)	(18.14)
Observations	384	384	384	384	384	384
R-squared	0.88	0.88	0.88	0.89	0.88	0.88

Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

5.4 Conclusion

While many studies argue that tax incentives have a negligible impact on local economies, tax incentives have long played a role in economic development policy in the United States and continue to be a popular policy tool used by state and local governments. The recent competition to attract Amazon's second headquarters reveals governments are willing to offer billions of dollars in tax breaks and other subsidies to attract such corporations. The designation of opportunity zones in low-income neighborhoods is in line with tax-based incentives policy because they offer preferential tax treatment to investors. Despite the popularity of tax incentives, it is not yet known if these incentives are effective.

To the best of my knowledge, only a few national studies have been conducted on this question. Using new data on nationwide tax incentives, this study examined the employment effects of tax incentives across the United States over time, providing more nuanced understandings on the effects of tax incentives overall. The results of this study show that tax incentives in general have no impact on employment, contradicting the theory that offering tax incentives to firms will lead to job growth. However, the findings support tax-based incentives as one of the popular economic development policies being a zero-sum game. Results of this study could explain the opposing ideas of previous studies on the effectiveness of tax-based incentives. It is likely that the previous studies have analyzed only the zero-sum nature of costs and benefits. Therefore, this study contributes to understanding the characteristics of different economic development policies.

CHAPTER 6. POLICY IMPLICATION AND LIMITATION OF DISSERTATION

The essays in this dissertation focus on economic development policies in the US and offers unique contributions to the literature. First, by comprehensively reviewing extant studies, the first essay provides a nuanced understanding of economic development policies by using TIF. Specifically, policy makers in local government could quickly notice the current situation of economic development policies and TIF. This is an essential process before local government officials consider or implement economic development policies because many governments recently tend to adopt competitive development policies without adequate considerations. In this regard, the first chapter helps give policy makers an opportunity to know related issues, such as policy effectiveness. This part of TIF, which is highlighted, enables readers to comprehend the history, mechanism, and recent studies on TIF. This would help policy makers establish policy.

When policy makers in local governments consider economic development policies, the first consideration may be the effectiveness policies. The second chapter theoretically gives a foundation about the characteristics of policies. Based on TIF policies, this chapter concludes that TIF programs have necessarily become a zero-sum game. This feature offers meaningful implications to policy makers. For example, adopting a new development policy in a specific area could be beneficial for the corresponding district. However, if policy makers would look at their communities as a whole, they could realize that doing so would not be as beneficial as they expected. This theoretical background will help policy makers assume a cautious attitude toward economic development policies. In other words, this chapter could call attention to

potential problems of unorganized development policies. Additionally, upper government levels, such as state, could have justification for intervening in uncontrolled economic development policies of local governments.

In the third chapter, this dissertation narrows the range of the research subject to analyze the diffusion mechanism of economic development policies. Generally, competition among local governments may lead to introducing competitive new polices. However, we do not know exactly how the extent of competition among municipalities impacts the utilization of business incentives. This chapter helps find the significant link between competition and economic development policies. Thus, this chapter enables us to logically understand one of the diffusion mechanisms of development policies. Second, this chapter compares mayor–council and council–manager systems in terms of their adoption and extent of use of business incentives. Council–manager system tend to considerably constrain the adoption and extent use of incentives. This result could provide policy makers with meaningful implications because only a few studies analyze how economic development polices can be effectively constrained. This chapter gives a reasonable answer and serves as basis for future studies. Additionally, the result could give adequate justification for local government reform from mayor–council to council–manager systems.

The fourth chapter focuses on the state government to analyze the determinant of business incentives. One of the strengths of this chapter is that this analysis is based on comprehensive data. Most previous studies mainly focus on specific areas, not the national level. Consequently, it is difficult to generalize the result and find meaningful implications for related fields. In contrast, the study data cover most parts of US

utilization of business incentives. Based on this unique data set, this chapter reveals the importance of politics for economic development policies. The relationship between politics and development policies is vague, and the causality between politics and incentives is unknown. This chapter helps reveal such relationship, specifically how political ideology differently affects each business incentive. This result could also give a blanket answer for constraining unnecessary incentives. The exclusion of politics from development policies could alleviate the reckless use of business incentives. In this sense, this would be a valuable implication for policy makers.

Lastly, the fifth chapter holds further significance because it provides valuable evidence of the effectiveness of policy in this field by using comprehensive data. Although we theoretically anticipate the characteristics of development policies, there is no clear empirical evidence supporting the zero-sum mechanism of such policies. Based on the employment and unemployment rates of most states, we confirm that the effect of business incentives is negligible. This result may persuade policy makers to reconsider overall economic development policies and could become a strong empirical counterargument to supporters of economic development policies.

Although this dissertation is aimed at contributing to the current literature by overcoming previous limitations, a few limitations may be suggested. First, the problem of endogeneity could arise. Specifically, causality from government structure to economic development policy decisions can be influenced by causality by the other way. This possibility would require a change of the form of government, which sometimes occurs, mostly moving toward the council-manager form, which is the direction the dissertation recommends. However, the changes of the form of government are slow and

infrequent because the requirements to change are strict, unlike elections. Additionally, using only cities that actually changed would reduce the data set too much. In this sense, this study assumes that the government structure has long been fixed. It is less likely to be endogenous if the form has long been fixed.

Second, there is a possibility that this study has omitted variable bias although it tries to include all relevant variables. For example, omitted variables concerning a local government's financial condition could bias the estimated effect of the form of government if the financial conditions are related to the form of government. There is another possibility that municipalities managed better, in general, tend to choose to have a council-manager system. This possibility would, however, be consistent with the point of the dissertation that the council-manager system is likely to have better financial prospects than the mayor-council system.

This study is concerned mainly with state policy, which is important because only a few studies have focused on the state level in economic development policies. Although chapter three deals with the local government level in economic development policies, it does not analyze the overall effect of economic development policy at the local government level. It is an undeniable fact that local policy can be very influential in economic development policies, such as TIF matters. In other words, theoretically, it is desirable to consider state policy and local policy at the same time. However, considering the conditions given, the data requirements to obtain an equivalent amount of information are much higher. This fact suggests a future study direction that would be a valuable addition to the study of the topic.

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2. **Hakyeon Lee** & Chisung Park (2012). "Comparison on social enterprise policy transfer between local governments: Focused on ordinance of local governments" *The Korean Association for Policy Studies*, 21(3), 183-208 [*In Korean*]

Working Papers:

1. **Hakyeon Lee**, Jinsol Park, & JS Butler. "The effects of municipal structure on bond credit ratings." *Public Administration Review*, ***(Revise & Resubmit)*** [SSCI]

2. Jinsol Park, **Hakyeon Lee***, JS Butler & Dwight Denison (**corresponding author*). "Quality of financial reporting and municipal bond ratings." *Local Government Studies*, **(*Revise & Resubmit*)** [SSCI]

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2. Hakyeon Lee & Jinsol Park (2019, November) “The effects of municipal structure on bond dredit ratings” 2019 Association for Public Policy Analysis and Management (APPAM)APPAM, Denver, Colorado
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6. Hakyeon Lee (2019, June) “Exploring the determinants of tax-based incentives in U.S. States” 2019 Public Management Research Conference (PMRC), Chapel Hill, NC
7. Jinsol Park, Hakyeon Lee & Dwight Denison (2019, March) “Does quality of financial management increase the quality of municipal bond credit ratings?” 2019 Annual Conference of American Society of Public Administration (ASPA), Washington, DC
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