

**Racing to the Bottom at Different Speeds?  
The Impact of Intra-State Competition  
On Abatement Generosity in Ohio**

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**Abstract**

Scholars often assert that intra-state competition increases the ability of firms to extract tax abatements by playing local governments off of one another. We test this proposition using data on the more than 5,000 tax abatement agreements signed in Ohio between 1983 and 2004 under its enterprise zone program. We articulate a political economic model of tax abatement generosity that models the interplay between the individual decisions of local governments and firms and the systemic political and economic forces shaping their decisions. We find that as intra-state competition increases, local governments offer larger abatements to firms. Rural governments, and urban poor governments to a lesser degree, significantly increased their generosity as intra-state competition increased.

Scholars have long advocated that tax abatements should be targeted at economically distressed areas. In practice however, spatially targeted incentive programs typically expand to include economically distressed and non-distressed communities alike. As the number of communities using tax abatements increases, so does the potential for firms to extract tax abatements by playing local governments off of one another. This jurisdictional competition increases the amount of subsidy to the firm in excess of what would have been sufficient to induce the incentives. Despite the prevalence of the race-to-the-bottom dynamic in accounts of tax incentive competition (Burstein & Rolnick, 1995; Lynch, Fishgold, & Dona, 1996), it has not been empirically documented.

Ohio is the ideal state to study the effects of intra-state competition for three reasons. First, the state dramatically expanded the number of enterprise zones from 14 zones in urban poor areas in 1983 to 359 zones throughout the state in 2004. Second, the Ohio Department of Development has a unique data set of every tax abatement agreement granted from 1983-2004 including the amount of the abatement by the government and the promised economic benefits from the firm. Third, in Ohio, each local government negotiates the size and duration of the tax abatement offered to firms, thus creating the perfect institutional framework for inter-jurisdictional tax competition. The autonomy of local governments, the availability of data, and the increase in the number of communities with tax abatement authority make Ohio ideal for examining the consequences of inter-jurisdictional competition on abatement generosity. Specifically, we seek to answer two questions. First, does increased competition among local governments increase the generosity of tax abatements offered to firms? Second, does increased competition affect all governments equally, or does it disproportionately affect certain types of communities?

The paper proceeds as follows. First, we review the scholarship on tax abatements and the history of the tax abatements in Ohio. Second, We articulate a political economic model of tax abatement generosity that models the interplay between the individual decisions of local governments and firms and the systemic political and economic forces shaping their decisions. Third, we test our model using the dataset of over 5,000 agreements. Fourth, we assess the influence of competition on different types of governments.

### **SCHOLARSHIP ON TAX ABATEMENTS**

Tax abatements are used by 54 percent of all cities (Reese & Rosenfeld, 2004) and 35 states (Dalehite, Mikesell, & Zorn, 2005). Tax abatements are popular because they are one of the few tools available to local governments to alter firms' cost function and they are easy to implement. Moreover, the use of tax abatements by neighboring jurisdictions increases pressure on local governments to also make use of the tax policy tool (Wolkoff, 1983). The widespread use of tax abatements continues despite the lack of conclusive evidence of their effectiveness. Peters and Fisher's meta-analysis of the past forty years of research on the effectiveness of tax incentives concludes that "the best case is that incentives work about 10 percent of the time, and are simply a waste of money the other 90 percent (2004, 32)"

Some contend that tax abatements make sense if implemented exclusively in blighted areas with slack labor markets (Bartik, 1991; Gramlich, 1997). However, state economic development programs that began spatially targeted have systematically expanded over time to include less or non-economically distressed areas either to build political support (Copeland & Meier, 1984) or to shift from poverty reduction to economic development (Talanker, 2003). As the number of governments in a state with tax abatement authority increases, so does the potential for local governments to compete with one another for firms. Goetz and Kayser (1993)

theorize that increased competition among local governments increases the amount of subsidy to the firm, or corporate surplus, in excess of what would have been sufficient to make them invest. The resulting intra-state or inter-jurisdictional incentive competition creates a race to the bottom (Burstein & Rolnick, 1995; Glickman & D., 1989; Hovey, 1986).

Other research suggests inter-jurisdictional competition may affect some communities more than other (Landers, 2000). The research on industrial site selection suggests that incentives are only important after a firm narrows its potential sites to a relatively small region based upon markets, workforce availability, transportation, and suppliers. In theory, targeted incentive programs like enterprise zones alter firms' location decisions by providing tax abatements to businesses locating or expanding within the economically depressed areas encompassed by the zone. By creating production cost and profit differentials between zone and non-zone business operations, enterprise zones encourage firms to invest in areas they might not otherwise consider.

As the number of jurisdictions with tax abatement authority increase, tax abatements no longer provide economically distressed areas with any competitive advantage. Studies of incentive competition in metropolitan settings such as Detroit (Anderson & Wassmer, 2000) and Minneapolis-St. Paul (Goetz & Kayser, 1993) have found that if the state does not restrict tax abatement usage to economically depressed communities, the more affluent communities on the periphery of urban areas are more likely to use incentives as the program ages. Landers (2000) suggests prosperous peripheral communities are able to bid development away from the core communities within which blighted and depressed areas tend to dominate. As he argues, "Given the divergence in the elasticity of demand for business sites in the two types of communities, more prosperous communities may be able to bid investment away from depressed communities

by making only marginal fiscal improvements through tax abatements, other incentives, or service enhancements.” In other words, increased incentive competition potentially affects communities differently based on their inherent desirability to business.

## **TAX ABATEMENTS IN OHIO**

In Ohio, the authority to issue tax abatements and cost of incentives resides with local government. Local governments apply to the state to receive enterprise zone certification. Once certified as an enterprise zone, local governments can exempt up to 75 percent of a firm’s investment in land and construction (real property) and machinery and inventory (personal property) from property taxes for a period of up to 10 years. Local governments negotiate the size and duration of tax abatement based on their evaluation of the benefits and costs of each individual project. Each local government must decide how generous an offer to make in order to win the firm, knowing that their generosity comes at the cost of less revenue for schools and increased taxes on citizens and non-exempted firms. For firms, the local property tax abatements are five times larger than the state tax credits (Peters & Fisher, 2002) and are thus the primary benefit of the state’s enterprise zone program.

In terms of program design, Ohio is very similar to the other 34 states with tax abatement programs. The local government awards the incentives, as they are in 28 other states (Dalehite et al 2007). The cost of revenues foregone is paid for by local governments, as in 28 other states. Moreover, local governments, as in 23 other states, determine the amount of the tax abatement. Until 2004, the maximum duration of the abatement was 10 years, as in 21 other states.<sup>1</sup> Ohio, like the majority of other states, abates both personal and real property investment. The similarity between Ohio and other states’ tax abatement programs facilitates the generalizability of our findings to other states and localities.

Unlike the majority of other states, the Ohio Department of Development has a 21-year longitudinal dataset from 1983-2004 with detailed information on the 5,234 tax abatement agreements negotiated between local governments and firms. Each agreement details both what local governments are “paying”-- the percentage and duration of the tax abatement from the local government; and what they are “getting”-- the amount of new and retained jobs and real and personal capital investment promised by the firm.

In 1981, Cleveland Mayor George Voinovich and East Cleveland Representative Ike Thompson drafted enterprise zone legislation to allow local governments in urban areas of high unemployment to offer tax abatements to employers who opened or expanded operations and hired at least 50 percent of workers who were on unemployment or welfare. Over time, the underlying rationale of Ohio’s enterprise zone program shifted from stimulating economic development in distressed urban communities to reducing the costs of Ohio’s tangible personal property tax and improving the competitiveness of the state overall (Bahl, 1996). As a result, from 1983-2004, the number of enterprise zones in Ohio increased from 14 to 359. In a 2006 editorial, the *Dayton Daily News* opined: “When [enterprise zones] were first proposed a couple of decades ago, they were supposed to be only in the most blighted areas of the biggest cities. Now they are all over the state, by the hundreds. In some cities, finding spots that are not enterprise zones is more difficult than finding spots that are (2006).”

The expansion of enterprise zones, as Professor Edward Hill noted, produced a “Tax Abatement War Within the State”, which facilitated inter-jurisdictional tax competition for employers, at substantial public cost (1994). According to the Ohio Department of Development’s own analysis, from 1982-1996, 446 enterprises with 23,963 employees proposed either closing or reducing Ohio facilities to relocate at a site in an enterprise zone elsewhere in

the state compared to only 97 facilities that close facilities outside of Ohio to locate at an enterprise zone site in Ohio (1997). In response to growing concerns that enterprise zones were fostering inter-jurisdictional poaching, the state adopted relocation restrictions in 1994, whereby any project involving an intrastate relocation within Ohio was required to seek a waiver from the Department of Development.

With the expansion of the enterprise zone program, the demographics of enterprise zone communities changed as well. Increasing numbers of affluent edge cities and rural greenfield areas were designated as enterprise zones and began offering tax abatements to firms. Professor Hill's early review of the enterprise zone program noted, "Ohio has . . . managed to find distress in the most unusual places. Lake County, a semi-rural county on the edge of the Cleveland's Primary Metropolitan Statistical Area is 'distressed' . . .poor woebegone Solon, home to Fortune 500 firms and a prototypical 'edge city,' uses an enterprise zone in abatement to abatement combat with 'impoverished' Twinsburg and Hudson" (1994).<sup>2</sup> In 1987, 85 percent of tax abatements went to firms located in urban poor municipalities. By 2004, less than 38 percent of tax abatements went to firms locating in urban poor municipalities. The expansion in the number and composition of enterprise zones in Ohio allows us to examine both the consequences of increased inter-jurisdictional competition in general, and whether it disproportionately affects some communities more than others.

#### Dependent Variable: Tax Abatement Generosity

There is significant variation in the rate and length of tax abatements granted in Ohio. Personal property abatements vary from a low of 10 percent to a high of 100 percent, with a mean of 72 percent. The duration of the abatements varies from 1-10 years, with a mean of 8.9 years. While Byrnes, Marvel, and Sridhar (1999) used the percentage of the investment abated

from local property taxes as their measure of abatement generosity in Ohio for 1993-94, we believe multiplying the percentage by the duration of the abatement is a more accurate measure of generosity. A firm that receives an abatement of 50 percent for 10 years receives a score of 500 percentage points. Alternatively, a firm that receives 100 percent abatement for 10 years receives a score of 1000 percentage points.

### **A POLITICAL-ECONOMIC MARKET OF TAX ABATEMENT GENEROSITY**

Traditional explanations of tax abatement generosity describe it as a negotiation between local governments and private firms whereby the outcome is determined by the relative power of each side (Byrnes, Marvel, and Sridhar 1999). Local governments that are more attractive to firms can offer smaller abatements than less desirable locales. Firms that are more attractive to local governments have more power to demand larger abatements. This individual level power dynamic is captured in the first row of Table 1 below.

#### **Table 1 A Political-Economic Market of Tax Abatement Generosity here**

However, theorizing tax abatements as a negotiation between individual governments and firms overlooks how systemic political and economic trends either enhance or diminish their relative power. The second row in Table 2 describes the systemic factors in terms of a supply and demand dynamic. An increase in competition between governments reduces the leverage that local governments have over firms, and thereby increases the likelihood that local governments must offer a more generous abatement for any given amount of investment. Alternatively, as economic conditions improve the supply of firms seeking to invest grows, the leverage firms enjoy over government decreases. We also differentiate between demand factors, related to the demand for private capital by local governments, and supply factors, related to the supply of capital from the private sector. We suggest the individual-level decisions of

governments and businesses are shaped by the systemic political and economic forces shaping the supply and demand for private investment, in other words, resemble a political economic market (Feiock, 2002; Markusen & Nesse, 2007).

Implicit in our analysis is that local governments are rational, that is they attempt to maximize the economic benefits their communities receive, while minimizing the cost they must pay in tax abatements, and that they respond in predictable ways to changes in political and economic conditions. Following Byrnes, Marvel, and Sridhar's (1999) study of tax abatement generosity in Ohio in 1993-94, we impute the locational desirability, socio-economic conditions, and fiscal conditions of local governments using school district level data. The advantage of using school districts is twofold. First, each abatement agreement includes which school district the firm is located in for tax purposes. Second, school districts more closely match the political and economic boundaries of local government than either county or zip code level data.

#### Individual Level Demand and Supply Side Factors

The first set of demand factors is local governments' perception of their competitiveness or locational desirability to business. The research on tax abatements has emphasized that economically distressed communities must either offer larger tax abatements to offset perceptions of negative business climate or compensate for locational disadvantages (Byrnes, Marvel, & Sridhar, 1999; Rubin & Rubin, 1987). The Ohio Department of Education (2004) uses Census data to classify each school district based on demographic characteristics such as land use, income levels, and poverty rates. Employing their typology, we identify four categories for assessing each local government's locational desirability to businesses, rural poor, rural greenfield, urban/suburban affluent areas, and urban poor. Rural poor districts are located in the Appalachian area of Ohio, have higher-than-average poverty, and the lowest percent of

population with a college degree. Rural greenfield districts are located in rural areas outside of Appalachia, have below average poverty rates, but have lower rates of college education and professional occupations. Urban/suburban affluent areas are located around major urban centers, have lower poverty rates, high median incomes, and a high percentage of college graduates and employees in professional/administrative occupations. Finally, urban poor districts encompass medium and large cities, have very high poverty rates, low median incomes, and a high percentages of minorities. While it is impossible to develop a perfect measure of locational desirability owing to the different locational needs of businesses, we believe these spatial categories better capture the cumulative effects of location, income, educational attainment, and poverty on the locational desirability of the site to businesses than alternative measures such as poverty rates, per capita income, race or urbanization. Table 2 shows the average per capita income, population, and percentage of African-American residents for each of the four categories.

**Table 2 Demographic Characteristics of School District Type here**

The second set of demand factors is their fiscal condition. We include two measures of municipalities' fiscal condition. First, we include municipalities real and personal property tax rates as a measure of their perceived fiscal competitiveness with other Ohio communities. Second, we also include a measure of municipalities' tax capacity, measured by their total property value divided by population (total property value per capita). The annual data on real and personal property millage rates and municipal property values is from the Ohio Department of Taxation (2005).

The individual supply factors affecting a municipality's generosity are the perceived value of the firm's offer. We measure the perceived value of the firm's offer by the number of

new jobs, the number of retained jobs, and the dollar value of the capital investment, as promised by the firm in the agreement. Also, under the enterprise zone program, local governments can only exceed the incentive cap if the local school board approves a side agreement whereby the company agrees to pay funds directly to the school district in lieu of property taxes, thus diminishing the financial impact of the abatement on local school funding. We include a dummy variable coded 1 if such a side agreement was signed. The firm level data is taken from the Ohio Department of Development Enterprise Zone Agreements Database (2005).

### Systemic Demand and Supply Side Factors

The relative power of an individual firm to extract larger tax abatement from a local government is affected by the number of local governments with the authority to offer tax abatements. The literature provides conflicting evidence on whom local governments view as their competition. Some suggest officials view all other municipalities in the state as their competition (Praeger 1995). Others studies of the Twin Cities (Goetz and Kayser 1993) and central Illinois (Gordon, 2007) suggest that local governments view their neighboring municipalities as their primary competition.

To measure competition, we calculated the cumulative number of municipalities that have signed a tax abatement under the enterprise zone program. These communities demonstrate by their actions that they are a potential bidder for any future private investment. The state competition variable equals the cumulative number of local governments that have offered tax abatements to date. The county competition equals the cumulative number of local governments in each individual county that have offered tax abatements to date. For example, in 1984 the first two local governments in Hamilton County granted tax abatements. Two years later another six local governments granted a tax abatement. The county competition variable for Hamilton

County would be 0 for 1983, 2 for 1984-1985, and 8 for 1986. For 2004, the final year of our analysis, the county competition varied from a low of 1 to a high of 36. The median for 2004 was 11. The measure of state level competition is the cumulative number of local governments participating in the program for each year.<sup>3</sup> The annual state and county competition variables were calculated using the ODOD Enterprise Zone Agreements Database (2005)

From a methodological perspective, including the measure of county competition in addition to the state measure also allows us to test whether the increase in tax abatement generosity is because of the increase in interjurisdictional competition in Ohio, rather than an unmeasured factor which also increased from 1983-2005 (such as increased competition from other states in general, or a preference for shifting the burden for funding local government and schools away from corporations to citizenry). If county competition, which varies spatially, increases tax abatement generosity, then it is interjurisdictional competition and not an unmeasured variable, which is affecting tax abatement generosity. In other words, we take advantage of the non-temporal variation in local competition within Ohio to refute the temporal explanation.

Just as the number of municipalities with tax abatement authority affects the relative power of local governments, the relative power of an individual firm to extract larger tax abatement from a local government is affected by the supply of firms seeking to expand or locate a new facility in the state. We measure state economic conditions using the annual percent change in Ohio's gross state product (GSP) from the previous year from the US Census.

## **ANALYSIS**

Local governments' tax abatement decisions are the product of a political economic market shaped by individual and systemic demand and supply forces.

### **Table 3 Modeling tax abatement generosity here**

#### Individual Level Factors

Individual governments' abatement decisions are shaped by their socio-economic and fiscal conditions. The magnitude of the effect for community types, which we use as a proxy for locational desirability, greatly outweighs the impact of other explanatory variables. The large and statistically significant coefficients for our spatial categories suggest that local governments are price takers or makers. Our results show that governments in rural greenfield and urban poor areas are price takers, which are forced to compete for firms by offering significantly larger property tax exemptions than the governments in urban/suburban affluent areas. Urban/suburban affluent zones offer firms abatements that are 75.7 percentage points (= % of investment abated from local property taxes \* duration of abatement in years) less than urban poor zones and 65.2 percentage points less than rural greenfield zones. These findings suggest that affluent urban/suburban communities can attract firms with only modest abatement offers, in essence being price-makers, because of their locational desirability to business. To put these numbers in perspective, for an urban poor zone to compete with an affluent urban/suburban zone for a firm, it must exempt 7.57 percent more of the firm's personal property investment from property taxes on a ten year term abatement. A rural greenfield enterprise zone would have to exempt 6.52 percent more.

Similarly, local governments' fiscal conditions affect their abatement decision-making. Governments with higher real property millage rates offer larger tax abatements, although governments with higher personal property millage rates offer smaller abatements. It is not clear why these two variables move in opposite directions since the correlation between them is high ( $r = .78$ ) although the direction and significance of each remains the same if the other variable is

omitted. Both real and personal property tax rates are positively correlated with the degree of urbanization and the size of the tax base suggesting that older industrial areas are more dependent on personal property taxes (which fall disproportionately on the manufacturing sector). Governments with a larger tax base, as measured by the total per capita value of taxable property, offer smaller abatements. For these governments, the potential economic benefits to be gained by offering a larger incentive to gain a single new firm are offset by having to offer lower personal property rates to their existing firms thus eroding the tax base.

#### Individual Supply Side Factors

Local governments offer larger abatements to firms that promise more economic benefits. Firms that promise to create new jobs, rather than retain existing jobs, receive larger abatements. A firm that offered to create 100 new jobs would get a tax abatement worth 13.6 percentage points more than a firm that merely offered to retain 100 jobs.<sup>4</sup> Similarly, firms that promised a larger capital investment also received a larger abatement. For each \$10 million a firm invested in personal property, it received an increase of nearly 5 percentage points on its abatement. The significant discrepancy in local governments' generosity between creating jobs and capital investment is consistent with other accounts of the importance of job creation in governmental decision-making (Markusen and Nesse 2007). Finally, firms that signed a side agreement to make payments to the local school district received larger abatements.

#### Systemic Demand Side Factors

Our systemic supply and demand measures are also significant. Both the county and state competition variables have a positive and statistically significant impact on tax abatement generosity. As the number of local governments offering tax abatements or bidders increases, so does the size of the tax abatements. Each new bidder in a county increases the average

abatement by 3.16 percentage points. The increase in state level competition also increases tax abatement generosity. For every forty new bidders in the state, the average local government would increase their tax abatement offer by 4.4 percentage points. These results suggest that as the number of bidders for firms increases, local governments bid higher. The expansion of tax abatement authority under the enterprise zone program has stimulated an inter-jurisdictional tax incentive competition that reduces the corporate surplus local governments receive from the private investment.

### System Supply Side Factors

Tax abatement generosity is also affected by the supply of private investment. The coefficient for GSP change is negative and statistically significant. As the supply of firms seeking to site new facilities increases, the price local governments have to pay in tax abatements is depressed. If Ohio's GSP increased by five percent from the previous year, the average personal property exemption dropped by 27.35 percentage points.

### **RACING TO THE BOTTOM AT DIFFERENT SPEEDS?**

In this section we examine whether the systemic effects of state and local competition differ across communities. Based on our analysis above, we hypothesize that competition does not affect all communities equally, but rather disproportionately affects communities that are less economically desirable to firms.

To assess the influence of competition on different types of zones, we segmented the dataset into our four spatial categories: urban/suburban rich, urban poor, rural greenfield, and rural poor and then ran the same model as above in Table 3. Segmenting the data offers the most conservative estimate of the influence of competition on generosity for each spatial category of

local government.<sup>5</sup> The results for similar for each of the spatial categories were similar to Table 3 and are included in Appendix A, except for the impact of state and local competition.

To facilitate interpretation of the differential impact of state and local competition, we calculated expected values for tax abatement generosity by multiplying the coefficients for each variable times their mean and then setting the state competition to its value for the four time periods (15 in 1986; 146 in 1990; 435 in 1997; and 677 in 2004), and adjusting the county competition variable one standard deviation above (“high competition”) and below the mean (“low competition”) for each spatial category. Table 4 reports, for the four spatial categories, the average number of local governments offering for tax abatements across four time periods, 1986, 1990, 1997, and 2004. As noted earlier, this non-temporal variation in local competition enables us to assess whether competition, and not an unmeasured variable that increased during that same time period, which is increasing abatement generosity. The expected values are used to create the lines for Figure 1 that shows how changes in state and local competition affect tax abatement generosity, while controlling for other factors.

#### **Table 4 Variation in Local Competition**

Figure 1 demonstrates how local governments’ abatement generosity is the product of the interaction between their locational attractiveness and the increase in state and local incentive competition.<sup>6</sup> The differences between the three time periods demonstrate the impact of the increase in state competition on tax abatement generosity. The differences between high and low competition for each spatial category demonstrate the impact of local competition on tax abatement generosity. The differences between the urban poor, urban/suburban affluent, and rural greenfield lines indicate the impact of locational attractiveness on abatement generosity. We calculated expected values for rural greenfield governments starting in 1990 because no rural

greenfield governments had tax abatement authority in 1986. We excluded rural poor governments are excluded from Figure 1 since their expected values were nearly identical to the rural greenfield governments.

**Figure 1. Effect of Competition on Abatement Generosity Across Geographic Areas**

The findings are striking. The results demonstrate that the expansion of tax abatement authority within Ohio has increased abatement generosity for all categories of local government except for the affluent urban and suburban governments. In 1990, when the level of state competition is low, the urban poor local governments offer the largest tax abatements and the rural greenfield governments the lowest. As state competition increases from 1990 to 2004, both the urban poor and rural greenfield governments become more generous. The impact of state competition is far more pronounced on rural greenfield governments, which steadily increase the level of their abatements to exceed the level of the urban poor local governments.

The impact of local competition, as measured by the difference between the high and low levels of local competition, is not as pronounced as the impact of state competition. However, the results indicate that an urban poor government facing high levels of local competition in 1997 would offer a larger abatement one facing low levels of local competition in 2004. Similarly, a rural greenfield government facing high levels of local competition in 2004 would offer a tax abatement more than 75 percentage points higher one facing low levels of competition.

In sharp contrast, the slope for generosity for the urban/suburban affluent areas is flat over time and there is no difference between the communities facing high and low local competition, even though an urban/suburban affluent local government facing high competition has 15 more bidders for investment than one with low competition. These affluent

municipalities are not increasing their abatements as the number of local governments offering tax abatements both in the state as a whole and the county has increased. This finding is even more significant when we recall from Table 4 that the urban/suburban affluent governments offer abatements that are significantly lower than zones in other parts of the state.

These results raise the question of how inter-jurisdictional incentive competition has affected local governments' property tax revenues. To do this, we calculated how much capital investment would be abated from local government property tax rolls in each spatial category for each for three time periods under high and local competition. We multiplied the value of firms' average personal property investment (\$6.6 million) by the value of the tax abatement percentage points divided by 7.8 years, the average duration, to determine the average dollar value of personal property exempted from local property taxes per year.

#### **Table 5 Fiscal Implications of Incentive Competition**

Table 5 demonstrates how the increase in competition at the state and local level erodes the tax base of all local governments, except the urban/suburban affluent. For example, the average rural greenfield local government facing low local competition in 1990 would exempt \$3,723,462 from the local property tax rolls in return for the average firm's investment of \$6.3 million. In 2004, the same government would exempt \$5,912,308 from local property tax rolls, an increase of \$2,188,846, to attract the same level of investment. A rural greenfield local government in a neighboring county facing high local competition would exempt even more, \$460,385, from its property tax rolls for the same level of investment. In contrast, neither state nor local competition reduces the tax base of urban/suburban affluent local governments.<sup>7</sup>

#### **CONCLUSION**

We began this paper with two broad questions. First, does an increase in intra-state competition affect the negotiations between local governments firms seeking tax abatements? Second, has the increase in jurisdictional competition disproportionately affected certain communities?

Our examination finds strong evidence of a political-economic market for property tax exemptions under the Ohio enterprise zone program. Local governments that are less attractive to firms, or perhaps more desperate for jobs, offer significantly larger incentives than those in urban/suburban affluent communities. The more economically valuable the firms, as measured by the promised amounts of jobs and investment, the larger the abatement received by the firm. As competition increases, as measured by the number of local governments with tax abatement authority at the state and county level, local governments offer larger abatements. When the state economy is growing and the supply of potential firms increases, local governments offer smaller incentives.

Our results also suggest that the increase in incentive competition has a disproportionate impact on urban poor and rural greenfield governments. The urban poor local governments have steadily abated a greater percentage of firm's investment from local property taxes as state and local competition has increased. However as Figure 1 powerfully illustrated, the rural greenfield local governments, which began offering abatements significantly smaller than the urban poor governments, have quickly raced past the urban poor governments in their abatement generosity towards firms. The increase in interjurisdictional competition has led these local governments to significant increase the amount of investment removed from their property tax rolls to attract the same level of investment. Only the affluent urban and suburban communities appear immune to the negative consequences of greater competition.

By expanding the number of enterprise zones in Ohio, the state has fostered the institutional conditions for intra-jurisdictional tax competition among local governments and altered the relative balance of power between local governments and firms. Competition increases firms' capacity to seek rents (Wolkoff, 1992), thus reducing the fiscal benefits from firms sitings to local governments and increasing the amount of "corporate surplus", that is, the amount of subsidy to the firm in excess of what would have been sufficient to induce investment. It also shifts the property tax burden for operating local governments and schools to individual citizens and firms that do not seek abatements. Allowing spatially targeted incentive programs, like enterprise zones, to expand beyond economically distressed areas not only harms the economically distressed communities the program was initially designed to help, but also the state as a whole. When governments compete, firms benefit, except in affluent suburban and urban areas.

Hypothetically, incentive competition could harm the tax base of local governments, but produce a net benefit to the state as a whole if the tax abatements were the tie-breaking factor that induced firms to invest in Ohio as opposed to another state or country. This would require that a significant portion of the firms receiving abatements were considering alternative sites outside of Ohio. Ohio's Department of Development requires all firms receiving abatements to identify whether the project involves the relocation of employment or assets from a location in Ohio or outside of the state. According to their records, from 1983-2004, only two percent of the 5,383 abatements were granted to firms that relocated from outside of the state. The remainder were relocations within the state or expansions of existing facilities (Ohio Department of Development, 1997). In other words, Ohio communities are overwhelmingly competing against other Ohio communities.

Our findings have three important policy implications. First, a growing body of research has identified a set of “best practices” for tax abatements such reporting requirements and clawbacks (Reese & Sands, 2006; Weber, 2007). Our results on how locational desirability and incentive competition affect the balance of power between governments and firms suggest that many local governments will be substantially compromised in their ability to negotiate or enforce these best practices.

Second, given the poor track record of states in keeping economic development programs targeted at economically distressed areas (Talanker, 2003; Turner & Cassell, 2007), local jurisdictions need to place greater emphasis on engaging in collective action at the regional level to prevent inter-jurisdictional bidding wars among neighboring communities. There is some evidence that policymakers are working in that direction. Current Cleveland Mayor, Frank Jackson has also stressed cooperation between the city and suburbs “instead of the customary competition” (Perkins, 2005). The local governments of Shaker Heights and Cleveland in Cuyahoga County have agreed not to engage in a bidding war to keep Office Max’s headquarters in Shaker Heights (Gomez, 2005). While regional cooperation is difficult, our research suggests that without a reduction in tax abatement competition, communities will lose the fiscal benefits of economic development even when they may be successful in attracting investment.

Third, our research points to the value of economic development strategies that are not premised solely on luring capital using tax incentives. The strategy of offering tax exemptions is flawed because the majority of local governments will be price takers, forced to continually offer larger exemptions to attract capital amidst greater inter-jurisdictional competition. Our research shows that certain communities are able to attract firms despite offering tax abatements that are considerably lower than what competing communities are offering. Business demand for sites in

these communities is not sensitive to tax incentives. A more effective strategy is for communities to strive to become price makers by investing in workforce development, infrastructure, and quality of life policies that raise the underlying desirability of these communities for businesses.

**Table 1 A Political-economic market of tax abatement generosity**

	Demand for investment	Supply of investment
<b>Individual</b>	Economic desirability of jurisdiction	Desirability of firm
<b>Systemic</b>	Competition among local governments	State economic conditions

**Table 2 Demographic characteristics of spatial categories**

	Urban/Suburban affluent	Urban poor	Rural greenfield	Rural poor
% African American	7.20%	30.10%	0.60%	2.30%
Per capita income	\$23,437	\$17,583	\$19,166	\$16,697
Taxable value per capita	\$21,456	\$12,114	\$15,190	\$12,238
Population	34,475	124,031	10,142	13,970

Source: Ohio Department of Education (2004)

**Table 3 Modeling tax abatement generosity**

		Coefficient	SE	P> z
<b>Individual demand side factors</b>	Urban poor	49.17***	10.4	0.00
	Urban/Suburban affluent	-26.52**	11.2	0.02
	Rural greenfield	38.65***	11.25	0.00
	Personal millage rates	-2.35***	0.4	0.00
	Real millage rates	4.855***	0.902	0.00
	Tax Capacity	-0.002***	0.0003	0.00
<b>Individual supply side factors</b>	New jobs committed	0.16***	0.04	0.00
	Retained jobs committed	0.024**	0.009	0.01
	Machinery investment	4.97***	1.03	0.00
	School agreement	167.99***	8.97	0.00
<b>Systemic demand side factors</b>	County competition	3.16***	0.663	0.00
	State competition	0.11***	0.027	0.00
<b>Systemic supply side factors</b>	GSP Change	-0.547**	0.19	0.00
	(Constant)	528***	24.73	0.00

**Method** OLS Regression. Probabilities based on a 1-tailed test. \*p<.10, \*\*p<.05, \*\*\*p<.01. Dependent Variable: % of investment abated \* length of abatement in years

**Table 4 Variation in local competition**

	County competition			
	1986	1990	1997	2004
Urban/Suburban affluent	3 (0)	4.86 (1.89)	11.67 (4.94)	14.04 (7.84)
Urban poor	1.56 (.78)	4.35 (2.53)	10.34 (5.77)	14.07 (8.18)
Rural greenfield	0 (0)	3.39 (2.11)	7.47 (3.42)	10.70 (4.91)
Rural poor	0 (0)	2.75 (1.91)	5.73 (3.34)	11.35 (5.92)

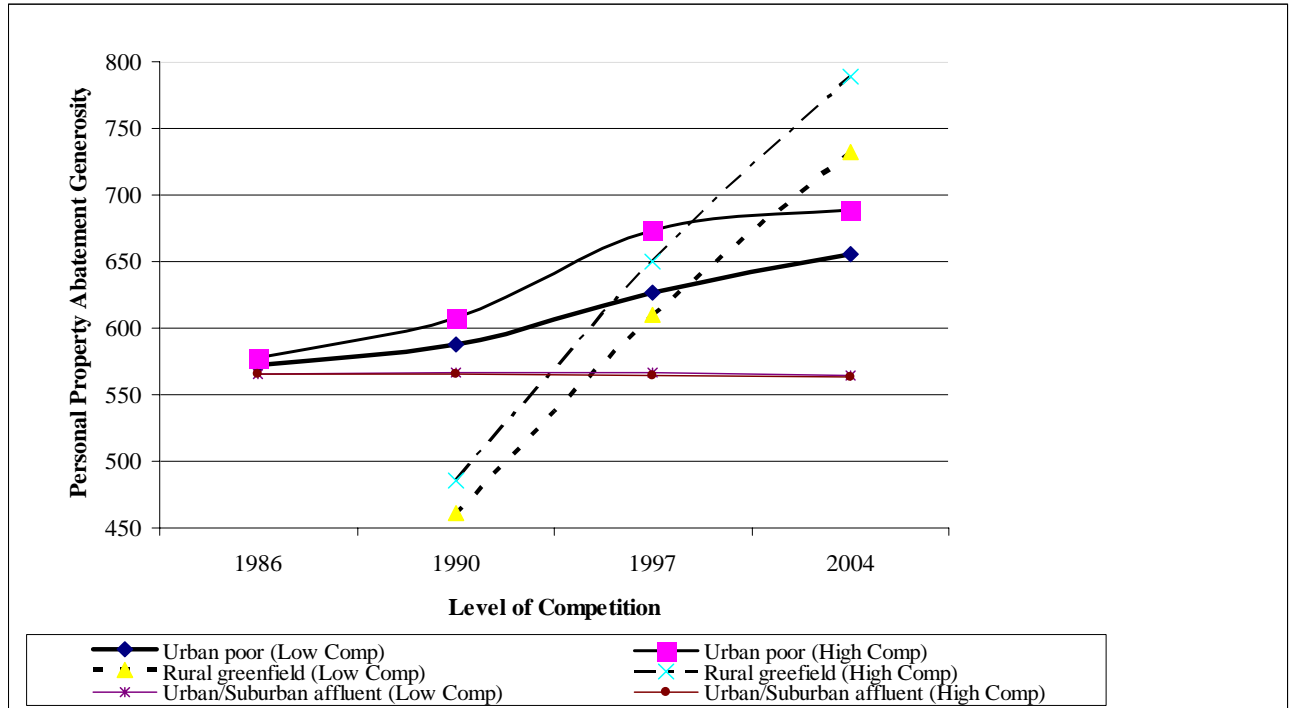
Each cell is the average county competition for each spatial category with the standard deviation in parenthesis.

**Table 5. Fiscal impact of state and local competition**

	Local Competition	1990	1997	2004	Impact of State Competition
		Rural greenfield	Low	\$3,723,462	
	High	\$3,925,385	\$5,250,000	\$6,372,692	\$2,447,308
Urban poor	Low	\$4,749,231	\$5,064,231	\$5,298,462	\$549,231
	High	\$4,910,769	\$5,435,769	\$5,565,000	\$654,231
Urban/Suburban affluent	Low	\$4,579,615	\$4,579,615	\$4,555,385	-\$24,231
	High	\$4,571,538	\$4,555,385	\$4,547,308	-\$24,231
Impact of local competition on rural greenfield governments		\$201,923	\$323,077	\$460,385	
Impact of local competition on urban poor governments		\$161,538	\$371,538	\$266,538	

Each cell shows how much of the average firms' investment of \$6.6 million would be exempted from local property tax rolls per year. The values are calculated by multiplied the value of firms' average personal property investment (\$6.6 million) by the value of the tax abatement percentage points in each spatial category for each for three time periods under high and local competition divided by 7.8 years, the average duration.

**Figure 1. Effect of Competition on Abatement Generosity**



**Appendix A Model used to create expected values for Figure 1 and Table 5**

	Urban/Suburban affluent			Urban poor			Rural greenfield		
	Coefficient	SE	P> z	Coefficient	SE	P> z	Coefficient	SE	P> z
Personal millage rates	-0.62	0.97	0.52	-3.06	0.58	0.00	-2.95	1.06	0.00
Real millage rates	1.21	1.84	0.51	9.15	1.35	0.00	6.42	2.06	0.00
Tax Capacity	0.00	0.97	0.52	0.01	0.58	0.00	0.01	1.06	0.00
New Jobs Committed	0.19	0.08	0.01	0.15	0.09	0.07	0.17	0.09	0.05
Retained Jobs Committed	0.08	0.02	0.00	0.03	0.02	0.18	0.03	0.01	0.01
Capital Investment	2.74	1.86	0.14	1.42	2.29	0.53	5.79	2.38	0.01
School agreement	108.81	18.38	0.00	197.68	15.76	0.00	180.15	16.73	0.00
County competition	-0.29	0.06	0.97	3.92	0.04	0.01	5.85	0.07	0.00
State competition	0.00	0.06	0.97	0.10	0.04	0.01	0.46	0.07	0.00
GSP Change	-0.45	0.37	0.23	0.13	0.31	0.68	-1.29	0.37	0.00
(Constant)	569.70	51.53	0.00	86.47	1.21	0.00	468.84	1.95	0.00
Prob>F		0.00			0.00			0.00	
R-squared		0.0797			0.1578			0.3073	
N		995			1731			995	

**Method** OLS Regression. Probabilities based on a 1-tailed test. \*p<.10, \*\*p<.05, \*\*\*p<.01.

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<sup>1</sup> The Ohio legislature expanded the program in 2004 to allow for tax exemptions for up to 15 years if the board of education of the city, local or exempted village school district approves the number of years in excess of ten (Ohio Revised Code Sections 5709.62 (C)).

<sup>2</sup> The cities of Hudson, Twinsburg and Solon are three of the wealthiest cities in Ohio.

<sup>3</sup> We checked for multicollinearity between our measures of county and state competition using the Variance Inflation Factor (VIF) test. A VIF of 5 or higher or a tolerance of under .05 would indicate there is a problem of

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multicollinearity. Our VIF scores are not above 3 and the tolerance scores are above .05. Thus, we included both the county and state measures of competition.

<sup>4</sup> In alternative specifications, we included measures of the promised payroll for new and retained employees. The relative size and direction of the coefficients was the same.

<sup>5</sup> We applied two additional methodologies to corroborate our results. In the first method, we included interaction terms for the three of the spatial categories, leaving out the spatial category in which we are interested. The coefficient for local competition measures the influence of competition for the omitted spatial category. A second method calculates the influence of competition for each school district type by including a single interaction term for each spatial category and then interpreting the interaction term as the influence of competition for that particular category. Our results did not differ under either method.

<sup>6</sup> To check our results we also calculated the expected values using a Monte Carlo simulation technique in Clarify Software (King, Tomz, & Wittenberg, 2000). The results from the Clarify simulations are the same.

<sup>7</sup> These estimates are a conservative estimate of the fiscal implication of incentive competition since the average personal property investment was lower in 1990 than in 2004.