

A REPORT FROM

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ZONED OUT:
DISTRIBUTION AND BENEFITS
IN OHIO'S ENTERPRISE ZONE PROGRAM

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EXECUTIVE SUMMARY

In 2005, Ohio lawmakers will likely consider whether or not to renew the law authorizing Ohio's Enterprise Zone Program (EZP), a popular program initially created to spur economic development and job creation in depressed areas. Enterprise zones provide property tax abatements to firms that locate, expand, or increase investment within zone borders. Discussion and debate will likely center on whether the program increases investment or simply subsidizes firms for investment they would have made anyway. These are valid questions well worth answering.

This study explores a different question: Which communities in the state benefit most from the jobs and investment attributed to the enterprise zone program? In contrast to other states, Ohio's enterprise zone program is older, more expansive and has stricter reporting requirements. All of these features make it a particularly good place to examine these distributive questions.

This paper examines information compiled through a cooperative effort between firms who participate in the program, local economic development directors, Tax Incentive Review Councils and the Ohio Department of Development. The information is cumulative and does not include agreements that expired or were terminated prior to 2001. The data were supplemented with data from the National Center for Education Statistics. The information concerns benefits attributed to enterprise zone agreements.

The paper examines school districts in Ohio to determine whether likelihood of participating in the program, amount of real property investment, amount of personal property investment and number of jobs attributed to the program differ by income of the school district. Given program goals, we expected to find that lower income districts more likely to take part in the program, and that benefits of all three kinds would be more likely to accrue to lower income districts, controlling for population, racial composition and degree of urbanization.

Only one finding was in keeping with expectations based on goals of the program. We found that lower-income districts were slightly more likely to have an enterprise zone agreement than higher-income districts, controlling for population and other factors. When we did not control for those factors, low- and high-income communities were equally likely to have an enterprise zone.

All other findings were in contrast to expectations based on program goals. These included:

- ◆ Higher-income districts are likely to have more new jobs associated with the program than lower-income districts, controlling for population, racial composition and degree of urbanization.
- ◆ Higher-income districts are likely to have more real property investment associated

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with the program than lower-income districts, controlling for the same factors.

- ◆ Districts with a higher percentage of urban residents are likely to have less personal property investment associated with the program than districts with lower urban percentages.
- ◆ Racial composition of a district was not related to any of the EZ-related benefits.
- ◆ Very high-income districts were likely to receive twice as many new EZ-related positions as very low-income school districts.
- ◆ Very high-income districts were likely to receive nearly five times as much EZ-related real property investment as very low-income school districts.

Controlling for race and level of urbanization, a very low-income Ohio school district, with an average household income of \$21,910, is expected to have 14.98 new EZ-related jobs and \$658,466 in EZ-related real property investment for every 1000 residents. An average-income district, with household income of \$43,630, is expected to have 21.62 new EZ-related jobs and \$1,219,972 in EZ-related real property investment for every 1000 residents. Finally, a very high-income district, with household income of \$65,340, is expected to have 28.20 new EZ-related jobs and \$1,774,436 in EZ-related real property investment for every 1000 residents.

Ohio's Enterprise Zone Program was designed to help urban communities with high poverty and large numbers of minorities. Created to give lower-income districts a tool to encourage firms to locate within their boundaries, the program was assumed to make distressed communities more appealing places to locate jobs, personal property investment and real property investment. This study finds that lower-income districts are slightly more likely to participate in the program, but higher-income districts reap most of the jobs and investment associated with the program. These findings should be considered when the program is reevaluated.

“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”

-- Professor Edward Hill, Cleveland State University, in a 1994 report on Ohio's Enterprise Zone Program.

INTRODUCTION

In 2005, Ohio lawmakers will likely consider whether or not to renew the law authorizing Ohio's Enterprise Program (EZP), a popular program among liberals and conservatives alike that was initially created to give “tax incentives to businesses in depressed areas to promote job creation and economic development.”¹ Discussion and debate will likely center on the cost-effectiveness of the program: whether the program increases investment or whether it subsidizes firms for investment they would make without the program.

This study does not weigh in on whether Ohio's EZP works in attracting investment and jobs. Instead, this research seeks to orient the discussion toward the question of who the actual beneficiaries of the Ohio's EZP are. Clearly firms benefit from the tax breaks. Such subsidies were considered acceptable because people believed there were clear and direct benefits to Ohio's distressed areas. This report presents evidence that challenges such assumptions. The research seeks to provide policymakers with answers to important distributive questions that are likely to be raised during the upcoming discussions.

Ohio is a particularly good state for examining such distributive questions. It is a relatively old program, so it has had an opportunity to develop and evolve. It is also an expansive program, with 339 active enterprise zones currently in effect. More importantly, Ohio is unique among states with EZPs, in that the state requires that all firms participating in the EZP be subject to annual review by Tax Incentive Review Councils (TIRCs).² Ohio law further requires that TIRCs forward the assessment information to the Ohio Department of Development, which collects and organizes the information into a statewide database. TIRCs and local economic development directors, in cooperation with the Ohio Department of Development, provide important data about each agreement including how much actual

¹Ohio Revised Code, sec. 5709.61.

²TIRCs are comprised of local citizens who are appointed, typically by county economic development officers to assess whether a firm is meeting its obligations and commitments as specified in the original enterprise zone agreement.

investment and job creation occurred and where. The data set is cumulative not annual.³ Each data point reports on the amount of jobs and investment over the course of the agreement.⁴ The data set excludes agreements that expired on their own prior to 2001 or that were terminated prior to 2001. The omissions bias the results in a direction that puts the program in its best light since agreements determined to be unsuccessful by the TIRCs prior to 2001 are not included in the overall results.

This introduction is followed by a summary of findings. We then briefly describe how the program works in Ohio and review previous research. The paper goes on to present findings on participation in the program and on distribution of the benefits attributed to the program. The study ends with a brief conclusion.

SUMMARY OF FINDINGS

Drawing on enterprise zone agreement data provided by the Ohio Department of Development and the National Center for Education Statistics, we first examined whether income of a school district is related to the likelihood of a district having an enterprise zone agreement. After controlling for racial composition, level of urbanization and population, we found that higher income school districts are slightly less likely to have an enterprise zone agreement. The findings are expected for a program that was established to help economically disadvantaged communities. However, research on the actual benefits attributed to the program presents a different picture.

We focused on the three central benefits associated with the tax abatement program: real property investment, personal property investment, and the number of new positions created by the firm. We used data on benefits that were confirmed by local Tax Incentive Review Councils rather than on the stated commitments in the agreement. In addition to population, we also controlled for racial composition of the district and the degree of urbanization.⁵ We expected to find that greater program benefits would be more likely to go to school districts with lower median household incomes. We did not find this relationship and in two of the cases we found the opposite to be the case.

After controlling for population, urbanization, and race, we found that higher income

³ Although most of the agreements included in the dataset are those signed more recently, the cumulative nature of the dataset also means that the analysis does not consider changes that may have occurred in the program.

⁴ Most agreements stipulate that investment occurs within the first three years of an agreement while the agreement itself may typically remain in effect for ten years.

⁵ Urbanization is measured by the percentage of the population in the school district that live in areas that meet one of the following characteristics: 1) one or more block groups or census blocks have a population of at least 1000 per square mile; 2) surround block groups or census blocks each have a density of 500 per square mile; or 3) less densely settle blocks that form enclaves or indentations or are used to connect contiguous areas with qualifying densities. http://nces.ed.gov/surveys/sdds/pdf/appA_geography.pdf.

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school districts were more likely to have more new positions and more real property investment associated with their enterprise zones. Equally surprising were our findings that: 1) the racial composition of a school district was not related to any of the EZ related benefits; and 2) the degree of urbanization was unrelated to two of the benefits and negatively related to personal property investment. The greater the percentage of urban residents in the district the less personal property investment benefit occurred.

The analysis revealed that income of a school district matters a great deal in predicting where the benefits of Ohio's EZP occur. However, in contrast to our expectations, very high-income districts are likely to receive twice as many new EZ-related positions as very low-income school districts. And, very high-income districts are likely to receive nearly five times as much EZ-related real property investment as very low-income school districts. For example, a school district with a median household income⁶ of \$21,910, an average percentage of African Americans, and an average urban population is expected to have 14.98 EZ-related new positions and \$658,466 in EZ-related real property investment per 1000 residents. By contrast, a district whose household median income is \$65,340, controlling for the same variables, is expected to have 28.20 EZ-related positions and \$1.7 million in new real investment per 1,000 residents.

Before turning to the analysis, the following section offers some important context for understanding Ohio's EZP.

HOW ENTERPRISE ZONES WORK IN OHIO

Enterprise zones as a policy concept were imported to the United States from a British scholar enamored with the economic dynamism of Hong King and Singapore under laissez-faire economic policies (Hall 1982). The idea was to remove the constraints of government regulation and taxation from economically depressed urban areas and let market forces generate economic growth.

Ohio's Enterprise Zone program offers firms tax incentives in the form of property tax exemptions on eligible new investment. To create an enterprise zone in Ohio, the local jurisdiction that has authority over a region first identifies an eligible geographic location that includes areas that are appropriate for business development and areas that show several distress characteristics. The defined area must meet minimum population requirements. Enterprise zones proposed within counties with a population greater than 300,000 must have a minimum population of 4,000. Enterprise zones proposed within counties with populations less than 300,000 must have a minimum population of 1,000. The zones themselves must have a continuous boundary. Once defined, the local legislative authorities participating in the creation of the zone must submit a petition to the Ohio Department of Development (ODOD) along with local legislation approving the zone, a map of the zone, a written

⁶ These are 1999 household income data from the National Center for Education Statistics.

description of the boundary and if necessary, the required information documenting distress. A Central City metropolitan statistical area (MSA) can petition the ODOD directly. All other municipalities must request that their county submit the petition to ODOD.⁷

There are two types of enterprise zones in the state: Distressed-Based Zones, which give communities the authority to grant a tax abatement for any project, and Non-Distressed Based Zones, under which communities may not consider projects that involve relocating resources from one part of the state to another, unless a waiver is obtained from the Director of ODOD. To establish a Distressed-Based Zone local authorities must document that specific distress levels exist within the zone boundary in their petition to the ODOD. The distress criteria include:

- ◆ Average unemployment during past 12 months was 125 percent of the state average;
- ◆ Population declined by at least 10 percent between 1970 and 1990;
- ◆ Vacant or demolished commercial or industrial facilities are prevalent (minimum of 5 percent);
- ◆ 51 percent of population is below 80 percent of the area's median income;
- ◆ Specific vacant industrial facilities exist (zone applies only to those facilities); and
- ◆ Income-weighted tax capacity of the school district is below 70 percent of the tax average.

To become a Distressed-Based Zone, Central City MSA and Appalachian Counties must meet only one of the six criteria, while all other locations are required to document two of the distress criteria. Non-Distressed Based zones can be established by any Ohio community and do not require that any distress be documented.

In Ohio, enterprise zones can be found in nearly every county in Ohio, and include cities, villages and townships. Zones encompass entire local jurisdictions, parts of jurisdictions, and often overlap more than one jurisdiction. As of January 2003, more than half (531) of all cities and villages in the state had an enterprise zones in their jurisdiction, and nearly half (576) of all townships in Ohio also had an enterprise zone located in their jurisdiction.

School districts are not the local authority that petitions the ODOD.⁸ Yet, school districts are the jurisdictions most directly negatively impacted by enterprise zone agreements. The taxes that are exempted under the program would accrue primarily to the school district if they were paid. However, the income tax benefits that potentially result from new projects go primarily to state and local governments, not the school districts.

⁷ For a detailed description of the process see the ODOD website:
<http://www.odod.state.oh.us/edd/ez/AgreemtProcess.pdf>.

⁸ Municipalities or counties are not required to seek approval from school districts for an agreement that is considered a contract between a firm, a city and/or county.

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Municipalities can sign contracts with firms in which the municipality offers “Exemption of real and/or personal property assessed values of up to 75 percent for up to ten years or an average of 60 percent over the term of the agreement on new investments in buildings, machinery/equipment and inventory and improvements to existing land and buildings for specific projects.”⁹

The Enterprise Zone law also permits unincorporated areas to offer “Exemption of real and/or personal property assessed values of up to 60 percent for up to ten years or an average of 50 percent over the term of the agreement on new investments in buildings, machinery/equipment and inventory and improvements to existing land and buildings for specific projects.”

The Enterprise Zone law, in other words, allows municipalities and townships to exempt a portion of a new project from real and tangible personal property taxes. From the municipalities' perspective, exempting property taxes does not pose a financial problem since most cities rely on other taxes, particularly income taxes, to fund their operations. School districts, however, are disadvantaged under the program since they rely primarily on property taxes including taxes on firms' real and tangible personal property.

Furthermore, the law requires only that school districts be notified by a municipality in advance of most agreements. The law requires consent of the school districts only if the tax exemption exceeds 75 percent of the new investment for cities and villages or exceeds 60 percent of the new investment for townships. In 1994 the Ohio legislature passed regulations that allowed school districts to be compensated for lost revenues resulting from property tax exemptions.¹⁰ However, the compensation rules are complicated and only apply to projects where the net new income taxes from a new EZ-related project exceed \$1 million.¹¹ More importantly, how much a school district is compensated for losses in taxes revenues depends largely on the number and type of new jobs. A company, for example, that improves its property but adds no new workers brings no compensation to the school district.

⁹ <http://www.odod.state.oh.us/EDD/ez/Incentives.pdf>

¹⁰ Section 5709.83 Ohio Rev. Code.

¹¹ The rules require a municipality to negotiate an agreement with a school board that has lost taxes as result of the EZ project. If an agreement cannot be reached the law requires that the new net income taxes be split 50/50 between the district and the municipality. The law, however, allows a number of infrastructure costs incurred by the city to be factored into the equation, reducing the compensation to school districts. While there has not been a study of how much school districts have been compensated, the 2002 Annual Report of Ohio's Enterprise Zone Program, published by the ODOD, noted that of the 268 new agreements signed in 2002, only 78 (29 percent) were subject to the mandatory income tax revenue sharing rule (ODOD, 2003, p. 8).

ENTERPRISE ZONE RESEARCH REVIEW

Research on enterprise zones has focused primarily on whether the policies succeed in attracting new business and investment (Papke 1993; Rubin and Wilder, 1989; Wilder and Rubin, 1996). The difficulty for policy analysts is that while opponents and supporters of such abatement policies want clear and definitive answers, the effectiveness of enterprise zone programs is notoriously difficult to assess. In an examination of Ohio's tax abatement policy in 1994, Edward W. Hill (1994) noted that enterprise zone programs were difficult to evaluate because, “[O]nce legislation is passed, abatements tend to become matters of right, and control groups and other forms of experimental design become impossible to implement” (p. 1). Hill also wrote that evaluations are rarely mandated and data collected by the state are often not intended to generate the information needed to effectively evaluate program results. “This means,” according to Hill, “that it is nearly impossible to determine if the programs had their desired effects.” The studies that have been done report mixed results.¹²

While the effectiveness of attracting jobs and investment has received the bulk of attention among policy scholars, surprisingly little attention has been given to how effective enterprise zone programs are in targeting assistance to economically depressed areas. Despite the fact that a common element among all state enterprise zone policies -- and what distinguishes them from other types of economic development programs -- is that they attempt to stimulate investment in geographically targeted areas, few studies have looked expressly at which areas within states receive the benefits attributed to enterprise zones.

Hill’s 1994 study noted that Ohio's EZP put the most distressed areas of the state at a competitive disadvantage, stimulated intrastate tax competition for employers at substantial public cost; and “was unlikely to produce a net gain in job formation due to the way in which

¹² An analysis of enterprise zones in Indiana found that unemployment claims at offices in enterprise zones decreased by 19-25 percent (Papke 1994). A cross sectional analysis of 357 enterprise zones in 17 states found enterprise zone designation increased job growth by 5 percent a year. The study also found the number of incentives offered by states’ enterprise zone programs was positively and significantly related to investment and job growth (Erickson and Friedman 1990). Other research found that rates of unemployment of zone population decreased during the 1980s more than unemployment rates of non zone areas (Papke 1993). These studies are consistent with a review of state assessments of enterprise zones which found a consistent relationship between enterprise zones and increased job growth and investment (Wilder and Rubin 1996).

Other scholars found little effect from enterprise zones. Underlying these arguments is the idea that enterprise zone incentives alone do not make up for the locational disadvantages of inner city enterprise zones, such as traditional location factors, infrastructure, transportation costs (Dabney 1991). These scholars suggest that many of the optimistic assessments of enterprise zones are the result of job creation data that come from coordinators who have an incentive to inflate growth and which don’t include job losses (Rubin 1989). When the econometric models are more closely specified, enterprise zones are found to have no positive impact on housing market, income, or employment outcomes in 6 states (Engberg and Greenbaum 1999). Other studies have found that the value of incentives or program features have no impact on employment growth (Bondonio and Engberg 2000). Sheldon and Elling conclude variation in job generation are mostly due to local and state economic and market conditions, not enterprise zones.

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it is both designed and implemented.”¹³ In a recent report, Talanker *et al.* (2003) build on Hill's earlier work and find that although Ohio's program was initially intended to reduce blight in distressed urban areas, amendments between 1987 and 1994 changed this purpose to reducing Ohio's business property taxes in order to keep and attract companies to the state.¹⁴ Talanker *et al.* argue that the amendments expanded the program and made it more difficult to keep the program targeted on economically disadvantaged areas.¹⁵

Missing from the analyses is an empirically grounded, systematic examination of the relationship between the economic adversity of an area and the benefits the area receives as a result of the program. This study takes up the challenge by examining how four outcomes, associated with Ohio's EZP, are distributed across school districts with different median household incomes. The four outcomes (or dependent variables) the research examines include:

1. Whether an enterprise zone agreement exists in a school district or not.
2. The number of actual new positions attributed to the EZP, and verified by a local Tax Incentive Review Council;
3. The amount of actual personal property investment attributed to the EZP, and verified by a local Tax Incentive Review Council;
4. The amount of actual real property investment attributed to the EZP, and verified by a local Tax Incentive Review Council.

The variables are taken from the Ohio Department of Development's data set of all 3160 enterprise zone agreements. Each observation in the data set is an agreement that was active or terminated in 2001. The data include the school district in which the investment was made and information verifying the actual number of jobs created and the amount of investment in personnel and property made by the firm as of 2001. The enterprise zone database was supplemented with county data from the Ohio Census 2000 Population data¹⁶ and school district data from the National Center for Education Statistics.¹⁷

Examining enterprise zone agreements through the geographic lens of school districts is justified on several counts. First, as noted above, school districts are the most vulnerable under the enterprise zone program. It also makes practical sense from a research design standpoint to use school districts to analyze where enterprise zone benefits are going since

¹³ Hill, Edward W. 1994. *Tax Abatement: War Within a State: Ohio's Enterprise Zone Tax Abatement Program*. Report, The Urban Center.

¹⁴ Talanker et al. build on a study published by Cleveland State University's Urban Center, titled, *An Assessment of the Costs, Benefits, and Overall Impacts of the State of Ohio's Economic Development Programs*, 1999.

¹⁵ An example of this dynamic is legislation in 1994 that allowed non-distressed areas in Ohio to be classified as enterprise zones (Lloyd, 1996).

¹⁶ <http://www.odod.state.oh.us/osr/cen2000.htm>

¹⁷ <http://nces.ed.gov/surveys/sdds/c2000.asp>

there is significant variation in the income of school districts and the level of EZ-related benefits. The variation enables one to assess the independent effect of income on benefit levels. Finally, as relatively small jurisdictions, school districts provide a focused unit of analysis through which to examine who benefits from Ohio's enterprise zones.¹⁸

The next section begins the analysis by examining data from all Ohio school districts to explore whether lower-income school districts are statistically more likely to have an enterprise zone than higher-income districts.

PARTICIPATION IN OHIO'S ENTERPRISE ZONE PROGRAM

The decision of a local government and business to participate in Ohio's EZZP is a complicated one. A tax abatement on a portion of new investment is only one factor among many -- public infrastructure, skills of local labor market, available financing, just to name a few -- that influence a business' decision to invest in a particular location. At the same time, a city or county economic development director's familiarity with Ohio's EZZP, the city's relationship with its school districts, or the tax base of a community are all factors that potentially influence the decision of a government to participate in Ohio's EZZP.

The genesis of the EZZP was to aid economically depressed urban areas. The program was later revised to include economically depressed areas throughout the state. Therefore, it is important to consider empirically the relationship between an area's economic status and the likelihood that it participates in Ohio's EZZP. Are poorer school districts more likely to have an enterprise zone program than wealthier districts?

To answer the question, a statistical technique called logistic regression is used. The method is used when trying to explain an outcome that has only two options, in this case whether a school district has an enterprise zone agreement in its jurisdiction or not. Logistic regression examines a number of possible explanatory factors and identifies which of these are statistically significant predictors of the result (for example, whether population or income is related to the likelihood that a school district has an enterprise zone agreement).¹⁹

Table 2.1 summarizes the model, which looks at all 612 school districts in Ohio and tries to determine the effect of several explanatory variables on the districts' probability of

¹⁸ A preliminary examination of the distribution of Ohio EZZP benefits across counties revealed that most of the benefits went to the highest-income counties. However, because the high-income counties are economically heterogeneous (e.g. Cuyahoga County contains some of the wealthiest and poorest areas in the state) it was difficult to draw clear conclusions about who benefits from the program.

¹⁹ A note of caution here concerning the models: what is being tested is how strong the relationship is between the results we are trying to explain and the variables being used to explain the results. It would be overstating the case, for example to claim that the models test whether income causes EZ agreements in a school district. The models suggest instead that based on theoretical considerations, a district's income independently influences whether a school district has an enterprise zone agreement or not.

having an enterprise zone in its jurisdiction. The explanatory variables examined include median household income, population, racial make-up of the population and percent of the population that lives in an urban area.

Table 2.1 Summary of the Model

What is the unit of analysis?	612 School Districts in Ohio
What is being explained?	The probability of a school district having an enterprise zone in its jurisdiction.
What variables are used to explain the outcome?	<ul style="list-style-type: none"> ◆ Var. 1: The school district's median household income; ◆ Var. 2: The school district's population; ◆ Var. 3: The percentage of the school district population that is African-American; ◆ Var. 4: The percentage of the school district's population that is living in an urban area.

Results. The statistical results are presented in Appendix A. Table 2.2. below summarizes the statistical findings by reporting on which of the factors are statistically related to whether or not a school district has an enterprise zone agreement.

Table 2.2 Factors associated with existence of an enterprise zone in a school district

Model 1	
Enterprise Zones	
Yes=1, No=0	
Variables	
Median School District Income	Statistically significant and negatively related to whether a district has an agreement (low-income districts slightly more likely to have an agreement).
School District Population	Statistically Significant and positively related to whether a district has an agreement (populous districts more likely to have an agreement).
Percentage African-American	Not statistically significant.
Urban percentage of district	Statistically significant and positively related to whether a district has an agreement (more urban districts more likely to have an agreement.)

Source: Author's analysis of Ohio Department of Development, Enterprise Zone Reports, December 2001 and Ohio Department of Taxation.

As of the end of 2001 the ODOD reports indicated that more than half the school districts in Ohio had an enterprise zone agreement: 386 have an agreement, while 226 districts do not.

The analysis of those agreements reveals that, as predicted, there is a statistically significant relationship between the median household income of a school district and the probability of the district having an enterprise zone agreement. Higher-income districts are slightly less likely to have an agreement, when controlling for race, urbanization and population.²⁰

The relationship between having an enterprise zone agreement and the two control variables -- population and urban percentage -- is also significant and in the direction we expected. The more populous a school district, the more likely it is to have an enterprise zone agreement. And, the more urban a school district, the more likely it is to have an enterprise zone agreement. In contrast to expectations, the variable measuring percent African-American did not show a statistically significant relationship to whether a district had an enterprise zone or not.

In short, except with regard to race, participation in Ohio's EZP conforms to what one might reasonably expect, given the original purpose of the program. The more urban, more populated, and poorer a school district, the more likely the district is to take advantage of the program²¹. The following section examines the benefits attributed to the program.

DISTRIBUTION OF ENTERPRISE ZONE-RELATED BENEFITS

What is the relationship between how wealthy a school district is and how much the district benefits from the state's most popular tax abatement program? Do poorer areas benefit more from Ohio's EZP than wealthier areas? These questions get at the heart of the program's initial mission of helping economically disadvantaged communities in Ohio. They are important to assessing the distributive results of the program. Previous research has looked at the socio-economic factors that explain whether an area is designated as an

²⁰ There is a 66 percent chance that district with an average population, average income, average percentage of African-American residents, and average percentage of urban residents will have an enterprise zone agreement. Although the likelihood of having an enterprise decreases slightly when income is adjusted up, very high-income school districts (two standard deviations above the average or \$67,020) still have a 61 percent chance of having an enterprise zone agreement in their district. When we did not control for population, race and degree of urbanization, there was no relationship between income and participation in the program.

²¹ The income relationship, as explained in the previous footnote, is not a strong one.

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enterprise zone or not.²² However, just because an enterprise zone exists does not mean a business will take advantage of it. Nor, does having an enterprise zone say anything about the type or intensity of benefits that might accrue to an area that has one.

This study analyzes how three specific types of benefits associated with Ohio's program are related to a variety of factors including median household income. The data used in the analysis include the 385 school districts with at least one agreement. An analysis of the income distribution of school districts with agreements reveals that there are a roughly equal number of high-income districts in the state with enterprise zone agreements as low income districts, and that the mean income of districts with enterprise zones is only slightly lower than the mean income of all school districts combined.²³

The first benefit analyzed is the dollar value of the EZ-related personal property investment. Personal property investment refers to the additional investment a firm makes in new machinery and equipment, inventory, and furniture and fixtures. A second benefit examined is the value of the EZ-related real property investment in school districts. Real property investment refers to the value of new real estate purchases or improvements made by a firm as result of a new project. Finally, a third variable is the number of EZ-related new positions created. Many enterprise zone agreements require that a firm create a certain number of new positions in exchange for a tax abatement.

The statistical technique appropriate for testing the models is called multivariate regression.²⁴ As with logistic regression, multivariate regression allows us to list a number of possible factors that help explain where EZ-related benefits occur, to identify which of these are statistically significant predictors of the results, and to identify how they influence the result (i.e. are they positively or negatively related to the result). The socio-economic variables included in the models are similar to the ones used to analyze the probability of a school district having an enterprise zone.

²² See work by Robert Greenbaum (2000; 2003). He looked at the question of spatial outcomes by examining where states locate enterprise zones. He looked at ten states with active programs. Using the ZIP codes that corresponded to an EZ he looked what role indicators of distress played in whether a place became an EZ or not.

²³ To make sure that our data set was not biased toward lower-income districts, we divided all school districts in Ohio into quintiles and then examined the frequency distribution of districts with enterprise zone agreements, i.e., how many districts with agreements fall into the wealthiest 20 percent, the next 20 percent, down to the lowest 20 percent. We find an even distribution across all quintiles. This means that of districts that have agreements: 18.4 percent fall into the wealthiest fifth of school districts in the state, 21.5 percent are in the next fifth, 18.7 percent in the next fifth, 21 percent in the next fifth, and 20.2 percent in the lowest fifth. In addition, the mean household income of districts that have agreements is not significantly different from the mean income of all districts. In short, we find no bias in the data set.

²⁴In the earlier model we used logistic regression because the variable we wanted to explain had only two options (an enterprise zone exists in the district or does not). In this case we use multivariate regression because the variables we want to explain – amount of investment or number new positions -- have a greater range of possible outcomes.

The variables are all at the school district level and include household income, population, percent African-American, percent of the labor force not working, and percent urban. We expect income to be negatively related to the EZ-related benefits given that the purpose of the program is to help economically disadvantaged areas. Population is included in the model to derive the per capita benefit levels. The other control variables are expected to be positively related to EZ-related benefits. We expect a greater percentage of African-Americans and a higher percentage of urban population to be associated with higher per capita benefit levels.

Results. The statistical results are presented in the appendix. Table 3.1 summarizes the statistical findings by reporting on which of the factors are statistically related to the three types of EZ-related benefits.

Table 3.1 Relationship between school district per capita benefits from the enterprise zone program and socio-economic variables for districts with at least one agreement

Variables	Model 1 Per capita personal property investment in the school district	Model 2 Per capita real property investment in the school district	Model 3 Per capita new employment positions created in the school district
Median Household Income	Not statistically significant	Statistically significant and positively related. (more investment in higher-income districts)	Statistically significant and positively related. (more jobs in higher-income districts)
Percentage African-American	Not statistically significant	Not statistically significant	Not statistically significant
Urban percentage	Statistically significant and negatively related (more investment in less urban districts)	Not statistically significant	Not statistically significant

Source: Author's analysis of Ohio Department of Development Data, December 2001.

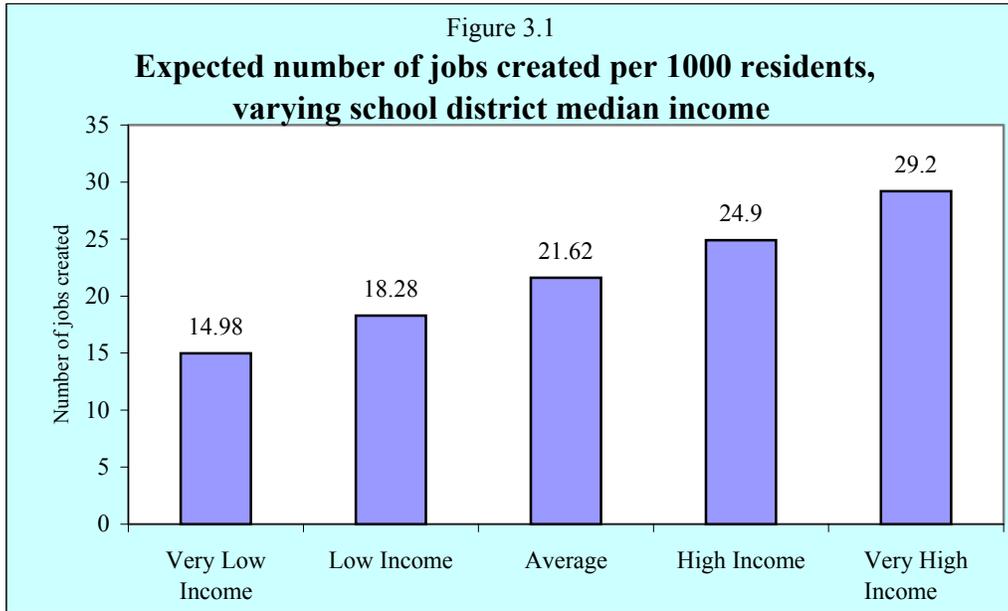
In contrast to expectations based on the goals of the program, we find that, of districts participating in the program, higher-income districts are likely to have more per capita real property investment and more positions attributed to the enterprise zone program than lower-income districts. Further, we found that urban districts are likely to have less per capita personal property investment attributed to the program than non-urban districts. All other

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variables examined were not statistically significant. For example, the percentage of the population that is African American was not correlated with greater or lesser amounts of investment or job creation. Because the program was established to benefit lower-income and urban districts, it is surprising that higher-income and non-urban districts receive more of the benefits attributed to the program.

While the findings do not contradict those in the previous section, they cast a very different light on the program. Poorer and more urban school districts are slightly more likely to participate in the program when controlling for population and race, but they are likely to receive fewer of the benefits associated with the program. School districts with higher household incomes experience greater benefits from the program than poorer districts, even after controlling for population, urbanization, and the racial composition of the district. In all three models there was no support for the assertion that the poorer a district is the more benefits it receives from the EZP.

While the models reported in Table 3.1 show a statistically significant positive relationship, they do not answer the important question: What is the independent effect of changes in the school district's household income on the benefits gained from Ohio's EZP? To answer this question, we use a probability simulation called Clarify Software (King et al. 2000), developed by Gary King at Harvard University. Holding all other variables constant, we vary school district-level median household income from average (mean of \$43,630) to low-income (one standard deviation below the mean, or \$32,770) and very low-income (two standard deviations below the mean, or \$21,910). We also adjust mean income to high-income areas (one standard deviation above the mean, or \$54,490) and very high income (two standard deviations above the mean, or \$65,340). The statistical analysis is presented in the appendix.



Probability based on multivariate regression model presented in Appendix A with percent African-American and percent urban held at their mean.

Figure 3.1 above displays the number of new positions per 1000 residents in school districts of different income levels, controlling the percent of African-American and urban population in the district. A school district with an average income, an average percentage of African Americans, and an average urban population is estimated to have 21.62 new positions per 1000 residents. A very high-income school district²⁵, controlling for the same variables, is estimated to have 28.20 new positions per 1,000 residents. A very low-income district is estimated to have 14.98 new positions per 1000, controlling for the same variables. To put it in a slightly different way: very high-income districts are estimated to receive nearly twice as many new positions as very low-income districts, controlling for other variables.

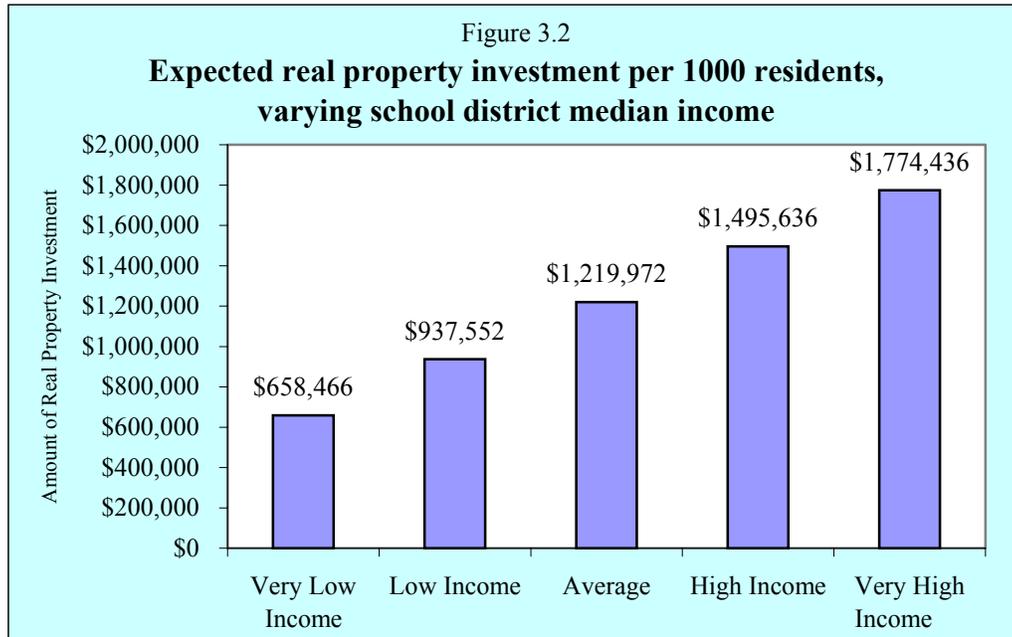
Figure 3.2 describes the relationship between the median household income of a school district and the amount of new EZ-related real investment per 1000 residents that has occurred in the school district. Figure 3.2 controls for population, percent urban and percent African-American, while adjusting household income. A school district with an average median household income is estimated to have had \$1,219,972 in real property investment per 1000 residents, controlling for race and urbanization.²⁶ A very low-income school district is estimated to have had \$658,466 in real investment per 1000 residents, controlling for the same variables. In contrast, a very high-income school district enjoys \$1,774,436 in

²⁵ High Income and Very High Income are defined as one and two standard deviations above the mean. Low Income and Very Low Income are defined as two standard deviations below the mean.

²⁶ Keep in mind that this is for the cumulative life of the program not a single year.

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real property investment per 1000 residents. To put it more clearly: Very high-income school districts are estimated to have 63 percent more real investment than very low-income school districts, controlling for population, race and urbanization.



Probability based on multivariate regression model presented in Appendix A, with percent African-American and percent urban held at their mean.

CONCLUSION

The findings presented support empirically what other scholars have found anecdotally. We find that poorer and more urban school districts are slightly more likely to participate in the program than wealthier and rural districts when controlling for race, population and urbanization. At the same time the benefits attributed to the program are accruing disproportionately to wealthier districts. This study is a first step in moving the discussion beyond the anecdotal to empirically demonstrating a significant bias in the program's beneficiaries toward higher-income areas.

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APPENDIX A

Table 2.2 Does a school district have an enterprise zone agreement? (All Ohio school districts)

Variable	β (se)	p> z
Median household income in the school district	-.016 (.008)	.04
School District Population	.028 (.10)	.003
Percentage of the district that is African-American	-1.665 (1.127)	.140
Percentage of the district that lives in an urban area	.879 (.285)	.002
N	612	
Pseudo R ² = .06		
Chi-Square = 50.43		

Source: Author's analysis of Ohio Department of Development, Enterprise Zone Reports, December 2001 and National Center for Education Statistics. Unstandardized logistic regression coefficients are presented, standard errors are in parentheses; probabilities based on a 2-tailed test. Statistically significant coefficients at more than 95% confidence interval in bold. Dependent variable 1= enterprise zone, 0 = no zone.

Table 3.1 Factors associated with per capita enterprise zone benefits (School District Data)

Variable	Model 1 Per capita personal property investment		Model 2 Per capita real property investment		Model 3 Per capita new employment positions	
	B (se)	p> z	β (se)	p> z	β (se)	p> z
Median School District Income	37.605 (45.179)	.406	26.164 (10.11)	.01	.0003 (.0001)	.045
Percent African-American	-1195.250 (5642.689)	.832	366.324 (1260.55)	.772	-.017 (.019)	.377
Percent Urban	-3812.753 (1410.824)	.007	-376.41 (314.052)	.231	-.004 (.005)	.336
N	379		380		380	
R ²	.212		.324		.264	

Source: Author's analysis of Ohio Department of Development Data, December 2001. Unstandardized regression coefficients, standard errors in parentheses; probabilities based on a 2-tailed test. Statistically significant coefficients at more than 95% confidence interval in bold.

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Data used to create Figures 3.1 and 3.2. Expected number of new position and new real investment per 1000, varying school district median income and controlling for racial and urban composition of Ohio school districts

INCOME OF SCHOOL DISTRICT	JOBS CREATED PER 1000 RESIDENTS	REAL PROPERTY INVESTMENT PER 1000 RESIDENTS
Very Low Income	14.98 (3.77)	\$658,466 (\$157,440)
Low Income	18.28 (2.37)	937,552 (157,440)
Average	21.62 (1.64)	1,219,972 (106,220)
High Income	24.9 (2.32)	1,495,636 (152,129)
Very High Income	28.20 (3.70)	1,774,436 (245,558)
Percentage Difference in the Benefit Very Low Income and Very High Income School Districts Receive from Enterprise Zones	47%	63%

Note: Based on multivariate regression model. Standard deviations are in parentheses. To simulate different levels of income, the variable school district median income was set at its mean and one and two standard deviations above and below the mean. Values for population and number of abatements were set at their mean. Estimations were produced using Clarify: Software for the Interpreting and Presenting Statistical Results, by Michael Tomz, Jason Wittenberg, and Gary King. Based on author's analysis of ODOD data.