

Renaissance Zones, Economic Variables, and Property Crime in the Counties of Michigan

Abstract: This paper attempts to determine if a relationship be drawn between tax incentive programs and the changes in employment and income in Michigan counties and also between employment and income and property crime in Michigan counties. Drawing on a variety of research and data sources, the paper finds neither a link between these tax incentive programs and employment and income nor between employment and income and property crime rates.

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Introduction

Significant bodies of research have been devoted to trying to determine the relationship between the creation of tax incentives in specific areas and economic variables, as well the relationship between economic variables and crime rates. This paper will review such literature and then focus on the U.S. state of Michigan. The results show that no statistically significant relationship can be drawn between these areas of tax incentives and the percentage of the population that is employed or the per capita income in the counties where the areas of tax incentives exist. Similarly, no significant relationship can be drawn between employment percentages and per capita income in Michigan counties and the rates of property crime experienced in these counties.

Michigan Renaissance Zones

In an effort to revitalize economically distressed areas, Michigan enacted in 1996 legislation to create geographic areas, known as Renaissance Zones, where businesses could operate largely free of state and local taxes (Michigan 1996).

The idea for Renaissance Zones originated in the 1970s in Great Britain under the name Enterprise Zones. In the early 1980s, New Jersey enacted a similar program and since then, over forty states and the U.S. Federal Government have implemented such programs, the premise being that businesses are more likely to operate and expand in areas where taxes are lower (Zhu 2005).

As is the case with other programs, the Michigan program requires that local governments wishing to have some area under their jurisdiction be part of the program apply to a review board where they state their case for why such a program is needed, what the geographic boundaries of the zone will be, and how long the program would last for, with 15 years being the

maximum period allowed. The board evaluates the request. If the board grants the request, in most cases, the local government agrees to forego collecting local taxes on businesses operating within the zone (Michigan; Zhu). Most of the Renaissance Zones have been placed in areas that previously had been sites of major economic activity for the area, such as former factory sites (Zhu).

Beginning in 2011, Michigan began to phase out Renaissance Zones that covered geographic regions and towards a program where specific business in areas such as food processing and renewable energy received the tax benefits (Michigan Economic Development Corporation 2013).

During the period from 1997 (the first year when Renaissance Zones existed) and 2010, 14 counties in Michigan, out of a total of 83, had areas that were part of a Renaissance Zone. The breakdown by year is as follows.

Year	Number of Counties with an RZ in them	Percent of Michigan's 83 Counties
1997	12	14.46%
1998	13	15.66%
1999	13	15.66%
2000	13	15.66%
2001	14	16.87%
2002	14	16.87%
2003	14	16.87%
2004	14	16.87%
2005	14	16.87%
2006	14	16.87%
2007	13	15.66%
2008	12	14.46%
2009	10	12.05%
2010	10	12.05%

Source: Michigan Department of the Treasury.

Although Michigan moved away from these geographically-based zones, little research has been done on their effectiveness in Michigan. Zhu looked at specific zip codes where Renaissance Zones were located and concluded that these zones correlate with greater employment but also lower real wages. Another study found that, on the whole, the status of being a Renaissance Zones did lead to greater investment and employment in those zones, but that the effectiveness varied significantly between the zones (Sands 2003).

Research looking at tax abatement zones outside of Michigan has not led to any definitive conclusions as to their impact. Amongst the results are that these zones encourage greater employment (Bartik 1991; Ge 1995), encourage aggregate job growth but the impact goes away once the incentives are removed (O'Keefe 2004), encourage aggregate job growth but inefficiently, given the public revenue foregone (Wilder and Rubin 1996), and are ineffective at encouraging aggregate job growth (Boarnet and Bogart 1996; Bondonio and Engberg 2000; Greenbaum and Engberg 1998). One factor complicating efforts to measure the impact of these zones is that enterprises have an incentive to locate operations that would have occurred elsewhere inside of these zones (Anderson and Wassmer 2000; Dewar 1998; Fisher and Peters 1997; Ladd 1994).

Property Crime and Economic Variables

Interest in the relationship between economic variables and the prevalence of crime dates back at least to the 1800s, with unemployment usually being seen as the more important unit of measurement (Cantor and Land 1985; Neustrom et al 1988). Much of this early work was theoretical, as opposed to empirical, and focused on the ways in which unemployment causes

decreases the disincentives of punishment and increases the incentives stemming from criminal activity. More precisely, the idea is that individuals who cannot achieve their economic goals through the normal labor market are strongly tempted to pursue those goals through criminal actions (Becker 1968; Neustrom et al; Young 1993) or that unemployed individuals simply have more time to commit crime (Grogger 1998).

In the second half of the twentieth century work became more empirical, but less definitive. For instance, using data from the Federal Bureau of Investigation's Uniform Crime Report, Fleischer found that increased unemployment was correlated with greater arrest rates for those aged 14-19 (1963). Cantor and Land found that changes in unemployment rates in the United States did not have an impact on violent crime but did impact property crimes such as robbery, with the impact being negative (1985). In contrast, and again looking at the U.S., Cook and Zargin found a small but significant correlation between decreases in unemployment and increases in property crime, which they attributed to the growth of opportunity for crime (1985). Neustrom et al. analyzed crime and unemployment data from a 54-month period in a section of Louisiana known for significant cyclical variations in the unemployment rate and found significant and sizeable positive correlations between the unemployment rate and rates of both violent and property crimes (1988). Similar studies have not been able to resolve this issue with some pointing towards a positive correlation between unemployment and crime (Andresen 2012; Raphael and Winter-Ebmer 2001) while another found a positive correlation between employment and crime (Marvel and Moody 2001).

Attempts to look at the issue beyond the U.S. have also provided little clarification with one study concluding there was a positive relationship (Altindag 2012) and another finding little connection (Young 1993).

With such a lack of consensus on the relationship between fluctuations in the unemployment rate and crime, researchers have understandably tried to see if a greater connection could be found between crime and another economic variable. Looking at the U.S., and in addition to observing no correlation with unemployment rates, Allen found that crime seemed only modestly correlated with inflation and that no correlation could be established between property crime and poverty levels and economic inequality (1996). Building on other observations that participation in criminal activity is most common amongst people in their late teens, Grogger found that stagnating or declining wage rates for young workers were correlated with greater criminal activity by people in their late teens. Krivo and Peterson found that property crime amongst young adults was correlated with the prevalence of low wage employment but not amongst older adults in the same labor market (2004). Yearwood and Konis found that unemployment and property crime were correlated but not to the extent that property crime was correlated with other economic variables such as inflation and per capita income (2011).

Design

The aims of this paper are threefold:

- Determine if a connection can be drawn between the placement of Renaissance Zones in Michigan counties and changes in the percentage employed and per capita income of those counties.
- Determine if a connection can be drawn between changes in the percentage employed and per capita income experienced by Michigan counties and the rate of property crimes in those counties

-If possible, determine if the placement of Renaissance Zones in Michigan counties has an impact on the property crime rate.

More precisely, this paper will extend the work of Sands and Zhu by trying to determine the effectiveness of Renaissance Zones in Michigan at spurring economic growth, specifically as it relates to employment and income. Unlike, Sands and Zhu, however, the unit of observation will be counties. This will be done in order to try to account for jobs that are located in Renaissance Zones because of the tax incentives, but which would otherwise be located elsewhere.

The equation for percentage of the population of a county that is employed will be:

Employed Percentage

$$\begin{aligned} &= \text{Placement of a Renaissance Zone} \\ &+ \text{Percentage of the County in the Renaissance Zone} + \text{Population} \\ &+ \text{Median Age} + \text{Percent of the Population that is Black} \\ &+ \text{Percent of the Population that is Male} + i.\text{year} \end{aligned}$$

Because Renaissance Zones vary in geographic size, this paper has included the percentage of each county that is inside of the Renaissance Zone. The percentages here are all quite small and under 1%. Population size has also been included as a way to try to account for the greater ability of geographically larger counties with lower population densities to devote more space to Renaissance Zones.

The equation for per capita income (adjusted to 2016 dollars) of a county will similarly be:

Per Capita Income

$$\begin{aligned} &= \text{Placement of a Renaissance Zone} \\ &+ \text{Percentage of County located in the Renaissance Zone} + \text{Population} \\ &+ \text{Median Age} + \text{Percent of the Population that is Black} \\ &+ \text{Percent of the population that is Male} + i.\text{year} \end{aligned}$$

Data on the location and size of Renaissance Zones comes from the Michigan Department of the Treasury. Data on population, demographics, and the size of counties comes from the U.S. Census Bureau (n.d.; 1982; 1992; 2001; 2013). Economic data as it relates to employment rates and per capita income comes from the U.S. Bureau of Economic Analysis (n.d.; 2010).

This paper will also build off of Yearwood and Konis by trying to determine if there is a correlation between per capita income and property crime in counties located in Michigan.

Chircos makes the point that local data has an advantage over broader data as the particularities of economies -some communities may be in decline economically while others are doing fine, for example- may be lost when looking at broader data (1987). Michigan is a particularly good place for this type of study because its largest city, Detroit, has a popular reputation for high rates of crime (Day to Day 2007).

The equation used will be:

Property Crimes Per 100 People

$$\begin{aligned} &= \text{Employed Percentage} + \text{Per Capita Income} + \text{Median Age} \\ &+ \text{Percent of the Population that is Black} \\ &+ \text{Percent of the Population that is Male} + i.\text{year} \end{aligned}$$

One final regression will be done to see if being a younger and poorer county in Michigan has any correlation with the property crime rate. Here the equation will be:

Property Crimes Per 100 People

$$\begin{aligned} &= \text{Employed Percentage} + \text{Per Capita Income} + \text{Median Age} \\ &+ \text{Percent of the Population that is Black} \\ &+ \text{Percent of the Population that is Male} + i.\text{year} + \text{Below Median Age} \\ &+ \text{Below Median Per Capita Income} + \text{Below Median Age} \\ &* \text{Below Median Per Capita Income} \end{aligned}$$

The variables second and third from last are dummy variables that indicate whether a particular county in a particular year had a median age or a real per capita income that was below the average of all Michigan counties for that year. This is done to see if relative youth or income has any impact on property crimes. The interaction term is created to see if being both younger and poorer than the average Michigan county has any impact on property crime rates.

Although the first Renaissance Zone did not occur in Michigan till 1997, the years covered will be 1985-2010, so as to get more comparison years and use more years of crime data. Crime data comes from the Federal Bureau of Investigation's Uniform Crime Reports database, which consists of the voluntary submissions of crime data from law enforcement agencies that oversee areas with at least 10,000 people (2017). The year 1985 was chosen as a starting point because FBI crime data from 1985 forward is not compatible with prior data (Cantor and Land). The FBI defines property crime as crimes such as burglary and larceny where the goal is the taking of money and property and violence or the threat of violence is not used against the victims (n.d.). Law enforcement agencies in 40 of Michigan's 83 counties submitted crime reports for a majority of the years in the time period covering 1985-2010.

All regressions are done using fixed effects, using 1985 as a base for the year variable, and clustering counties for errors.

Analysis

Table 1. Impact of Renaissance Zones on Employment Rate Per 100 People

Variable	Coefficient	Standard Error
General Renaissance Zone	-0.604	1.453
Percent of County in Renaissance Zone	-9.836**	3.714
Population*10000	0.029	0.085
Median Age	-0.016	0.230
Percent Black	-0.116	0.353
Percent Male	0.010	0.558
1986	0.926***	0.216
1987	2.473***	0.290
1988	2.885***	0.395
1989	3.891***	0.512
1990	4.990***	0.609
1991	4.561***	0.701
1992	4.777***	0.792
1993	5.159***	0.884
1994	6.833***	1.008
1995	7.967***	1.130
1996	8.397***	1.182
1997	9.343***	1.272
1998	9.344***	1.341
1999	9.912***	1.430
2000	10.655***	1.525
2001	9.527***	1.756
2002	9.357***	1.642
2003	9.381***	1.883
2004	9.786***	1.993
2005	9.999***	2.097
2006	10.032***	2.206
2007	9.902***	2.306
2008	10.148***	2.421
2009	6.283*	2.444
2010	6.017*	2.537
Constant	38.229	29.160
N	2156	
R ²	0.56	

*p<0.05, **p<0.01, ***p<0.001

There is a negative coefficient of roughly -9.84%, which is statistically significant at the 1% level, associated with the percent of the county that the Renaissance Zone covers. This is to say that for every one percent increase in the share of the county covered by the Renaissance Zone, which should expect to see on average a nearly 10 percent drop in the percentage of the population that is employed. This is hard to understand, but it is worth noting that none of the 14 counties that ever had a Renaissance Zone ever had fully 1% of their land mass covered by a Renaissance Zone. Still it may be that there are negative returns associated with expanding a Renaissance Zone beyond very specific sections.

Another notable aspect of the results is that all of the years except 2009 and 2010 have statistically significant coefficients at the 1% level. And the coefficients 2009 and 2010 are statistically significant at the 5% level. This suggests that statewide trends play a bigger role in determining the percentage of the population that is employed in any given year than the presence of Renaissance Zone or any of the demographic data.

Table 2. Impact of Renaissance Zones on Log Real Per Capita Income

Variable	Coefficient	Standard Error
General Renaissance Zone	0.010	0.025
Percent of County in Renaissance Zone	-0.179	0.106
Population*10000	0.002	0.001
Median Age	0.006	0.003
Percent Black	-0.021***	0.006
Percent Male	0.008	0.009
1986	0.038***	0.003
1987	0.038***	0.005
1988	0.043***	0.007
1989	0.073***	0.008
1990	0.053***	0.010
1991	0.044***	0.012
1992	0.061***	0.012
1993	0.081***	0.013
1994	0.119***	0.015
1995	0.124***	0.016
1996	0.135***	0.016
1997	0.164***	0.019
1998	0.183***	0.020
1999	0.203***	0.021
2000	0.200***	0.023
2001	0.214***	0.025
2002	0.201***	0.026
2003	0.206***	0.028
2004	0.214***	0.029
2005	0.198***	0.031
2006	0.194***	0.032
2007	0.203***	0.034
2008	0.197***	0.036
2009	0.087*	0.039
2010	0.127**	0.040
Constant	9.598***	0.473
N	2156	
R ²	0.81	

*p<0.05, **p<0.01, ***p<0.001

Here again, the clear majority of coefficients associated with years are statistically significant at the 1% level. The only year not significant on that level, 2009, is statistically significant at 5% level.

Three non-year variables are statistically significant at the 10% level. The model suggests that for each 1% increase in the percent of a county in the Renaissance Zone you would expect to see on average a roughly 0.18 decrease in the log of real per capita income and for each 1 year increase in the median age, you would expect to see a roughly 0.01 increase in the log of real per capita income. Also, significant at the 10% level is the 0.006 coefficient for median age. For each one year increase in median age, the regression suggests there would be 0.006 additional property crimes per 100 residents.

Significant at the 1% level is the coefficient associated with the percentage of the county that is black. For each 1% increase in the black population, a county should on average see an approximately 0.02 decrease in the log of real per capita income. This might be indicative of hiring and/or wage discrimination.

But the most notable finding of each of these regressions is that no statistically significant correlation can be shown to exist between the presence of a Renaissance Zone and either the percent of the population that is employed or the real per capita income.

Table 3. Impact of Economics Variables on Property Crimes Per 100 People

Variable	Coefficient	Standard Error
Percent Employed	-0.001	0.001
Real Per Capita Income*10000	-0.002	0.005
Population*10000	0.005*	0.002
Median Age	0.002	0.002
Percent Black	-0.006**	0.002
Percent Male	0.006	0.003
1986	0.003	0.001
1987	0.002	0.001
1988	0.000	0.002
1989	0.002	0.002
1990	0.001	0.003
1991	0.001	0.004
1992	-0.002	0.004
1993	-0.004	0.005
1994	-0.004	0.005
1995	-0.006	0.005
1996	-0.006	0.006
1997	-0.007	0.007
1998	-0.009	0.007
1999	-0.01	0.008
2000	-0.012	0.008
2001	-0.013	0.010
2002	-0.014	0.010
2003	-0.015	0.011
2004	-0.017	0.011
2005	-0.017	0.011
2006	-0.018	0.012
2007	-0.019	0.013
2008	-0.020	0.013
2009	-0.022	0.015
2010	-0.023	0.015
Constant	-0.276	0.185
N	1031	
R ²	0.51	

*p<0.05, **p<0.01, ***p<0.001

In contrast to the first two regressions, the coefficient for only one of the years, 1986, is statistically significant here. Significant at the 10% level is the roughly 0.01 coefficient associated with the percentage of a county's population that is male. On average, for each 1% increase in

the male population, there would be an 0.01 increase in the number of property crimes per 100. In a county of 10,000, a 1% increase in the male population would be expected to result in a 1 additional property crime.

Statistically significant at the 5% level is the coefficient for population, but because the coefficient is virtually zero, this seems to indicate that the population of a county does not impact the rate of property crimes per 100 people.

The percentage of a county that is black has a coefficient is statistically significant at the 1% level and is equal to about -0.01. This means, quite similarly to the situation with the percentage of the population that is male, that in a county of 10,000 people a 1% increase in the black population as a share of the overall population would, on average, be expected to go along with a decrease of 1 property crime. The coefficient of

Notably, there is no statistically significant relationship between the percentage of the population that is employed or real per capita income and the property crime rate.

Table 4. Impact of Young and Poor Counties on Property Crime Rates Per 100 People

Variable	Coefficient	Standard Error
Percent Employed	-0.001	0.001
Real Per Capita Income*10000	0.000	0.049
Population*10000	0.005*	0.002
Median Age	0.001	0.001
Percent Black	-0.006**	0.002
Percent Male	0.005	0.003
County Below Median Income	-0.008	0.007
County Below Median Age	-0.004	0.003
Below Median Income*Below Median Age	0.006	0.003
1986	0.003	0.002
1987	0.002	0.002
1988	0.001	0.002
1989	0.002	0.003
1990	0.002	0.004
1991	0.002	0.004
1992	-0.001	0.004
1993	-0.003	0.005
1994	-0.002	0.005
1995	-0.004	0.006
1996	-0.005	0.006
1997	-0.005	0.007
1998	-0.007	0.007
1999	-0.009	0.008
2000	-0.010	0.008
2001	-0.010	0.008
2002	-0.012	0.009
2003	-0.013	0.010
2004	-0.014	0.010
2005	-0.014	0.011
2006	-0.014	0.011
2007	-0.016	0.012
2008	-0.016	0.012
2009	-0.019	0.014
2010	-0.020	0.014
Constant	-0.227	0.151
N	1031	
R ²	0.52	

*p<0.05, **p<0.01, ***p<0.001

This final regression that looks at relative age and per capita income and the interaction of these variables shows little change from the previous regression. The two new variables do not have statistically significant coefficients. The interaction term is significant at the 10% level with a coefficient of roughly -0.01. This suggests that areas that have both below average median ages and below average per capita incomes have 1 less property crime per 10,000 people. Given how small this is, it seems substantively insignificant. The coefficient for population remains statistically significant at the 5% but is still nearly zero. The coefficient for the percentage of the population that is black is significant at the 1% level and the coefficient for the percentage of the population that is male is significant at the 10%, but neither value changes much with the addition of the new variables. Similarly, the coefficient for 1986 remains statistically significant at the 10% level with a very similar value. All the other years have statistically insignificant coefficients.

Further Work

Further work on this project would attempt include data on educational levels as well as look at the employment and income opportunities available to those on lower end of the economic spectrum and expand this analyses beyond Michigan and use Metropolitan and Micropolitan Statistical Areas as the unit of observation. Such areas may be better for analysis as they represent, or at least attempt to represent, local units of economic activity (Management and Budget Office 2010).

Conclusion

As was stated above, despite much research, no consensus exists on the relationship between tax abatement programs and economic growth, as measured by such variables as the percentage of the population that is employed and real per capita income, or the relationship

between such variables and the occurrence of property crime. While modest in its scope, this paper could not find any strong relationship in either case. Rather than the presence of a Renaissance Zone, employment and income in counties seems to be more impacted by broader trends that go at least statewide. Similarly, the impact of employment and income on property crime rates appears, at most, small compared to demographic factors. Because of this lack of links, there is little reason to believe that Renaissance Zones have an impact on property crime rates.

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