Examining the Effects of Poverty on Municipal Public Finances:1980-2010

Aaron A. Scholl*

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Abstract

While poverty rates in the United States declined in the mid-nineties, local poverty rates have increased by almost three percentage points from 2000 to 2010. I exploit this variation in municipality poverty rates to examine the relationship between poverty and government finances in a sample of the largest 150 fiscally standardized cities in the U.S. Based on my theoretical foundation, I hypothesis that areas with greater resident-shares in poverty experienced reduced public expenditures as a result of a decreased revenue base. My preferred instrumental-variables specification indicates that a one percent increase in a locality's poverty rate reduced per capita general tax revenue by almost 10 percent, over a 10-year period of time. Conservative estimates indicate this yields $171.7 (in 2010 $) million in forgone tax revenue for the average city in my sample – $132.1 million in forgone property tax revenue, alone, as a result of increased poverty.

1 Introduction

The United States has a higher rate of poverty than most other Western industrialized nations (Garfinkel et al., 2006). In any given year from 1987 to 1996, about one in five of all American children – an estimated twelve to fourteen million – lived in families in which total income failed to exceed thresholds used to define poverty (Duncan and Brooks-Gunn, 1999). In 2010 the poverty threshold for a family of four was $22,314, placing 15.1 percent of the American population in poverty, or just over 46 million Americans, up from 12.5 percent in 2007 (Mishel et al., 2012). That so many citizens of the wealthiest nation in the world are living poor is cause for concern. Poverty not only affects various behavioral and cognitive outcomes in adolesensce, but these effects also persist into adulthood[1]. There are also economic consequences of poverty in terms of

*University of Nebraska–Lincoln; aaron.scholl@huskers.unl.edu

[1]See Yoshikawa et al. (2012) for a discussion on the effects of poverty during adolesensce.

forgone revenues, increased crime, and poorer health conditions (Holzer et al., 2007). Moreover, the income that the poor might have earned represents a loss of output and forgone revenues that ultimately reduces the aggregate value of the economy. By this argument, it is not only fair and just to reduce poverty in the U.S., but may be in the nation's self-interest as well (Holzer et al., 2007).

In this article, I examine the relationship between poverty and local public finances at the municipality level in the United States from 1980 to 2010. Specifically, I address the following question: how does poverty affect taxation, public expenditure, and components of each at the municipal level? Poverty burdens the rest of U.S. society and robs it of some of its productive potential. Expenditures on poverty reduction can be viewed as public or social investments, which generate returns to society over time in the form of higher real gross domestic product (GDP), reduced expenditures on welfare or healthcare problems, and improvements in everyone's quality of life. Viewed in this economic way, it is necessary to estimate the costs associated with poverty, as well as some sense of the returns on poverty reduction.

Rather than directly examing the effects of poverty on local government finances, much of the recent literature has focused on the effects of income inequality (Boustan et al., 2013; Corcoran and Evans, 2010; Hearey, 2016); however, Mishel et al. (2012) document that income inequality was the largest contributor to increases in aggregate poverty levels from 1979-2007. While income inequality is of significant economic importance, it is most commonly measured using the Gini coefficient (Boustan et al., 2013; Corcoran and Evans, 2010; Bigsten and Levin, 2001). Yitzhaki and Schechtman (2013) discuss difficulties in using the Gini coefficient as it is a measure of dispersion, similar to that of the coefficient of variation, and thus, fails to capture important information on the population of interest[2]. Furthermore, in relatively affluent communities, measuring inequality of wealth using the Gini coefficient lacks meaningful interpretation. That is, rather than focusing on the spread of the tails of the income distribution, as the Gini coefficient does, policymakers may have more interest in examining the left hand tail and its impact on the public sector. Thus, I focus on poverty rates in my analysis rather than measures of dispersion between the wealthy and poor.

My study has several advantages over existing empirical work. First, I implement a database that fiscally standardizes cities. This sample of the 150 largest fiscally standardized U.S. cities allows me to make meaningful local public finance comparisons at the city level. While some city governments provide a full array of public services, others share the responsibility with overlying independent governments. Because the delivery of public services is organized in very different ways across cities, previous work can be misleading in fiscal comparisons of municipal governments[3]. Second, I develop an instumental variables strategy to

[2]See Gini (1936)for a discussion of the Gini coefficient.

[3]A list of the 150 fiscally standardized cities is available here: http://datatoolkits.lincolninst.edu/subcenters/fiscally-standardized-cities/sample-cities

mitigate concerns about potential reverse causality from endogenous sorting of households across localities. Specifically, I construct synthetic poverty rates in a city at a point in time by applying national trends in poverty to the initial (1980) poverty rate in an area. Third, I provide aggregate estimates as to how poverty has constrained components of local government finances over time.

Overall, I find evidence that increases in poverty reduce city-level tax revenue primarily through reductions in propety and sales tax revenues; however, this reduction in tax revenue is almost entirely offset by increased state aid. My IV estimate suggests that a one percent increase in a city's poverty rate reduces general tax revenue by almost 10 percent, or $130 per capita over a 10-year period of time. In turn, state aid increases by almost nine percent, or $101 per capita over that same period of time, as a result of a one percent increase in a city's poverty rate. I also find strong evidence that local governments who operate under unified city-county jurisdictions experience reductions in overall revenue. Specifically, a consolidated city-county government reduces its general revenue by almost 15 percent, or $559 per capita over a 10-year period.

In terms of local expenditure, I find evidence that increases in poverty are associated with reduced expenditures on police services, fire protection, and highway maintenance. While my IV specification is estimated with greater imprecision, I find that under convential levels of significance a one percent increase in a city's poverty rate reduced fire protection services by 5 percent, or about $7 per capita over a 10-year period of time. Additionally, my estimates suggest that residents who live in a city with a consolidated city-county government are penalized greatly. A consolidated city-county government reduces general expenditures by almost 20 percent, or $735 per capita over a 10-year period of time. The largest of this expenditure reduction coming in the form of reduced healthcare expenditures–a reduction of 96 percent, or $92 per capita over a 10-year period.

Lastly, I investigate the relationship between a municipality's racial composition and finances. My estimates suggest that a one percent increase in the share white is associated with an increase in general revenues of 1.2 percent, or $46 per capita over a 10-year period; however, a one percent increase in a city's share of Hispanic population is associated with a 0.7 percent decline in general revenues over a 10-year period. In examining local expenditures, the significant relationship between the share of a city's population that is Hispanic and general expenditures remains. A one percent increase in the share Hispanic is associated with a decline in general expenditure of 0.8 percent over a 10-year period.

The remainder of the paper is organized as follows. The next section briefly discusses relevant literature as it relates to poverty, its determinants, and local government finances. Section 3 presents the theoretical foundation by which poverty affects municipal revenues and expenditures. Section 4 describes the data and methodology, including the fiscally standardized city dataset and IV approach, respectively. Section 5

presents the results describing the relationship between poverty and local public finances. Section 6 offers discussion and concluding remarks.

2 A Brief Review of the Literature

Hoynes et al. (2006) explore poverty trends in America from 1959 to 2003. While the U.S. experienced increases in real GDP per capita–more than doubling over the past 45 years–living standards among the poor have remained stagnate. The reasons for which remain largely a puzzle. Over this period, female labor-force participation grew explosively, the average level of education increased, and poverty among the elderly fell from 24.6 percent in 1970 to 10.2 percent in 2003 (Hoynes et al., 2006). Consistent with my data, the authors document that the overall poverty rate in 2003 was 12.8 percent; however this rate is quite heterogeneous. Using data from the Current Population Survey, Hoynes et al. (2006) further explore poverty by subgroup. Their analysis shows that poverty was greater for females, nonmarried couples with children, blacks and Hispanics, and those with lower education levels. Most notably, 31.3 percent of families in which the head has less than a high school education are below the poverty line, compared to 9.6 percent of families in which the head has at least a high school education.

A vast literature consistently cites labor market opportunities as important determinants of local poverty levels. Some study poverty rates as they relate cyclically to unemployment spells (Hines Jr et al., 2001; Hoynes, 2000). Others focus on three separate factors: growth, inequality, and macroeconomic conditions. Blank et al. (1993) estimate that the growth of wage inequality reduced average incomes in the lowest two quintiles of the income distribution by 4 percent, while increasing those in the top three quintiles by 3 percent, over the 1980s. Blank et al. (1993) further show that the changing composition of those in poverty offset the decline in incomes for those in the lowest two quintiles. That is, while growth in income inequality increased poverty for low-income earners, improvements in the living standards of the elderly offset increases in poverty, leaving the rate largely unchanged over the 1980s. Furthermore, Bigsten and Levin (2001) document that countries enjoying economic growth have also been successful in reducing poverty levels; however, the strength of this relationship largely depends on the landscape of the income distribution. The authors document that rapid growth and an improved income distribution, have reduced poverty the fastest.

In the current analysis, I am interested in studying the effects of poverty on local government finances. Holzer et al. (2007) study the economic costs of children growing up poor in the United States. Their estimates suggest that the costs associated with childhood poverty total $500 billion per year, or the equilavent of 4 percent of GDP. In examining other economic costs, Holzer et al. (2007) estimate that the annual incidence of crime attributable to poverty is 20 percent. Lastly, the authors estimate forgone "health capital",

in terms of the economic value of lost quantity and quality of life. Holzer et al. (2007) estimate lost "health capital" to be about $149 billion per year, assuming a poverty rate of 15 percent–lower than the rate found in my sample of cities.

Instead of focusing on those in the left-hand tail of the income distribution, Boustan et al. (2013) measure the impact of the change between the high- and low-ends of income distribution on local public finances. Overall, the authors find that an increasing income distribution is related with larger increases in tax revenues and faster growth in public expenditures at municipality and school district levels. Their estimates suggest a 4 to 5 point increase in the Gini coefficient, the average magnitude of change experienced from 1970 to 2000, increased local expenditure by $88 per resident. This increase in expenditure was used to fund increased services like police and fire protection and infrastructure maintenance. At the school district level, increased income inequality changed the composition of revenue. Increases in within school district-generated revenue, as a result of increased income inequality, were almost entirely offset by reductions in state aid.

My analysis most closely resembles the analysis found in Boustan et al. (2013); however, there are several key distinctions. First, I focus on a sample of fiscally standardized cities to ensure that comparisons of local public finances across cities are fair. Second, my analysis may be more relevant for policymakers as I restrict my focus to the most vulnerable population–those below the poverty threshold. Lastly, I contribute to the literature by providing city-level aggregate measures of costs associated with local poverty rates.

3 Theoretical Foundation

In this section, I present theoretical framework examining the relationship between poverty and a city's public financing. The general idea is based upon the Peacock-Wiseman Hypothesis (Peacock, 2004) suggesting that public expenditure increases as income growth increases. In this case, I am interested in effects working in the opposite direction. That is, the effect of declining incomes–measured in terms of increased poverty–on local public financing. I adopt the model developed in Borge and Rattsø (2004) to study this relationship. The key insight to the model, as first applied in Meltzer and Richard (1981), is that when the median voter has less income than the mean, the typical income distribution observed, the decisive median voter will apply forms of taxation for redistribution. Below presents a stylized model of local governments choosing between a consumption tax and redistributive tax, such as the property tax, to finance local public services at the margin[4]:

The community comprises of N voters with identical Cobb-Douglas utility functions:

[4]For a full discussion of the model and its assumptions see Borge and Rattsø (2004).

$$U_i = c_i^{\alpha} h_i^{1-\alpha} g^{\beta}, \quad 0 < \alpha < 1, \ \beta > 0, \ i = 1, ..., N \tag{1}$$

The utility function includes private consumption (c), housing (h) and per capita provision of local public services (g). The individual voter chooses a mix of private consumption and housing by solving the following maximization problem:

$$\underset{c_i,\, h_i}{max}\ c_i^{\alpha} h_i^{1-\alpha} \quad s.t. \ \ c_i + (1+t)h_i = y_i - f. \tag{2}$$

The voters have different exogenous income (y_i) that finances private consumption, housing and the consumption tax (f). The market prices of private consumption and housing are normalized to unity, and the gross price of housing is $1+t$ where t is the property tax rate. Housing supply is perfectly elastic. Individual optimization of equation (2) yields the following demand functions for private consumption and housing:

$$c_i = \alpha(y_i - f),$$

$$h_i = \frac{1-\alpha}{1+t}(y_i - f). \tag{3}$$

Substituting the demand functions into the utility function, yields the indirect utility function:

$$W_i = A(1+t)^{\alpha-1}(y_i - f)g^{\beta}, \quad where\ A = \alpha^{\alpha}(1-\alpha)^{1-\alpha}. \tag{4}$$

The property tax rate, the consumption tax, and the provision of local public services are determined by political decision-making. The political choice set is restricted by the local government budget constraint as:

$$g = th + f + l. \tag{5}$$

The unit cost of local public services is normalized to unity, and h is the average housing demand and l per capita grants from the central government. Inserting the government budget constraint, I can write the indirect utility function as a function of t and f, the policy instruments:

$$W_i = A(1+t)^{\alpha-1}(y_i - f)(th + f + l)^{\beta}. \tag{6}$$

By restricting preferences to the class of intermediate preferences, a majority rule equilibrium can be ob-

tained[5]. The condition for intermediate preferences is shown in the following form of the indirect utility function:

$$W_i = J(f,t) + K(y_i)H(f,t), \tag{7}$$

where $K(y_i)$ is monotonic in y_i, and $J(f,t)$ and $H(f,t)$ are common to all voters. By substitution, $J(f,t) = -A(1+t)^{\alpha-1}(th+f+l)^{\beta}f$, $H(f,t) = A(1+t)^{\alpha-1}(th+f+l)^{\beta}$ and $K(y_i) = y_i$. The political equilibrium is the policy preferred by the voter with median income, and is characterized by:

$$\frac{\partial W_m}{\partial f} = \frac{\partial W_m}{\partial t} = 0, \tag{8}$$

where subscript m denotes the voter with median income. The equilibrium property tax rate and consumption tax are determined by median income, mean income and central government grants. Under a normal distribution where median income equals mean income, the solution implies a zero property tax (redistributive tax) and public goods are financed by a consumption tax only. With a typical right-skewed income distribution the property tax rate will be positive. The effect of more unequal distribution can be found by investigating equation (8). Comparative static analysis with respect to the median income yields the following impacts on policy choice:

$$\frac{\partial f}{\partial y_m} > 0, \quad \frac{\partial t}{\partial y_m} < 0, \quad \frac{\partial g}{\partial y_m} > 0. \tag{9}$$

The results in expression (9) show that higher median income (holding mean income constant) will change both the tax structure and level of local government spending. This reflects that a relatively more wealthy median voter prefers less redistribution, and less redistribution is achieved by shifting the financing from the redistributive tax (property tax) to the consumption tax. The increase in the consumption tax revenue more than offsets the reduction in the redistibutive tax and is reflected by an increase in local public services, g.

For the purposes of this research, our main interests lie in estimating the relationship between poverty, the redistributive tax, and local government expenditure. As the poverty rate increases, the share of the city's population that is in poverty increases. That is, the wealth of the median voter decreases, or ${}^{\partial y_m}/_{\partial Poverty\ Rate} < 0$. Thus, our compartive statics of interest become:

$$\frac{\partial t}{\partial Poverty\ Rate} > 0, \quad \frac{\partial g}{\partial Poverty\ Rate} < 0. \tag{10}$$

Expression (10) presents the empirical hypotheses of this research. That is, as poverty increases, I expect

[5]Borge and Rattsø (2004) provide a more detailed discussion of the restriction to intermediate preferences.

to find increases in redistributive tax revenue, such as federal and state aid, property tax, welfare programs, etc; however, as the poverty rate increases and the median voter's income is reduced, the government is further constrained in providing local public services. The following econometric analysis focuses on how poverty affects local government revenues and expenditures in the largest 150 fiscally standardized cities in the U.S.

4 Empirical Analysis

4.1 Data Sources and Descriptive Statistics

I collect decadal data on poverty rates and municipality characteristics from 1980 to 2010 in the 150 largest U.S. cities. County poverty rate data come from the U.S. Census Bureau's Historical County Level Poverty Estimates[6]. In addition to poverty rates, I collect municipality characteristics from a variety of sources. I collect city population and whether the locality operates within a unified city-county jurisdiction from the fiscally standardized city (FiSC) database. I discuss the FiSC data in greater detail while describing a city's public finances. County-level demographic characteristics including share white, black, Hispanic, and age 65+ come from the U.S. Census Bureau's Population and Housing Unit Estimates Program[7]. Lastly, I collect average weekly wage data at the county level from the Burea of Labor Statistics Quarterly Census of Employment and Wages[8]. All monetary variables are reported in year 2010 dollars. Table 1 presents descriptive statistics on these variables from 1980 to 2010.

Poverty rates grew modestly from 1980 to 2000 where they reached 13.41 percent in 1990 before declining in 2000; however, in more recent times poverty has greatly increased in the U.S.–by almost three percentage points–to almost 16 percent[9]. Heterogeneity in poverty across localities is demonstrated by large standard deviations, and further distinguished by the maximum poverty rate over time. Note that the maximum poverty rate is relatively unchanged from 2000 to 2010, but average poverty rose dramatically, by 22.5 percent, in this last time period. This indicates that while poverty may not be worsening in already poor areas, more areas are impoverished relative to 2000. Increases in poverty rates and growing average weekly wages further document the growing inequality between the rich and poor. Also, note that counties have become more racially diversified over time as the share of Hispanic and black citizens has increased greatly since 1980.

Per capita detailed data on public finances for 150 of the largest U.S. cities come from the fiscally

[6]https://www.census.gov/library/visualizations/time-series/demo/census-poverty-tool.html
[7]https://www.census.gov/programs-surveys/popest/data/tables.html
[8]https://www.bls.gov/cew/
[9]Edin and Shaefer (2013) document and discuss the rapid expansion of extreme poverty from 1996 to 2011.

Table 1: Average Fiscally Standardized City Characteristics, 1980-2010

	Year			
Variable	1980	1990	2000	2010
Poverty rate (%)	12.20	13.41	12.96	15.88
	(4.13)	(4.81)	(4.48)	(4.40)
Maximum poverty rate (%)	26.41	31.60	27.90	27.24
Consolidated city-county government (%)	16.67	16.67	18.67	19.33
	(37.39)	(37.39)	(39.10)	(39.62)
Average weekly wage (in 2010 $)	626.42	673.15	817.79	884.55
	(91.53)	(111.22)	(195.45)	(201.94)
city population (1,000s)	351.43	377.07	409.76	431.74
	(689.00)	(713.75)	(767.75)	(784.26)
Share white (%)	84.19	81.62	77.84	74.69
	(13.66)	(14.14)	(15.04)	(14.94)
Share black (%)	13.67	14.71	15.87	16.59
	(13.82)	(14.41)	(15.46)	(15.36)
Share hispanic (%)	N/A	9.14	12.71	16.25
		(12.82)	(14.92)	(16.21)
Share age 65+ (%)	10.33	11.54	11.51	11.15
	(2.95)	(2.76)	(2.38)	(2.26)
N	150	150	150	150

Note: Poverty rates reflect the percent in poverty at the county-level for the calendar year. Maximum poverty rate is the maximum poverty rate for the respective year. Consolidated city-county government is the percentage of cities that have been merged into one unified jursidiction. Average weekly wage is reported in 2010 dollars. City population is reported in 1,000s. Share white, black, hispanic, and age 65+ is the percentage of the county population of the respective demographic. Standard deviations are reported in parentheses.

standardized city (FiSC) database. While some city governments provide a full array of public services, others share the responsibility with overlying independent governments. The FiSC database accounts for these differences by adding up revenues and expenditures for the city government and an appropriate share of revenues and expenditures from overlying counties, school districts, and special districts. For example, spending by the city government in Las Vegas, NV accounts for about one-quarter of all local government expenditures, while in Boston, MA, where there are neither overlying county governments nor independent school districts, the city government spending pays for almost all local government public services. Thus, it is crucial to account for differences across cities when making fiscal comparisons. Tables 2 and 3 provide descriptive statistics for revenue and expenditure by detailed category over time, respectively.

In examining average revenue and its components, it is clear that the per capita fiscal size of the government has increased tremendously over the last four decades. In real terms, general revenue per capita grew from about $2700 in 1980 to almost $5000 in 2010, or over 90 percent throughout four decades. Notably, intergovernmental transfers shifted from federal sources to state sources during the 1990s and early 2000s; however, federal aid again increased by 52 percent in the most recent decade. As the size of local governments grew during this time, so did the range of services offered by the government. Direct charges for public services increased by over 100 percent to $886 per person in 2010. Operating on the basis of balanced budgeting, expenditure statistics are similar and discussed in Table 3.

Table 2: Average Fiscally Standardized City Revenue and Components, 1980-2010

	Year			
Variable	1980	1990	2000	2010
General revenue	2568.59	3402.65	4260.04	4966.22
	(838.49)	(1154.64)	(1336.89)	(1712.90)
City revenue	1472.80	2203.34	2606.72	3034.42
	(468.35)	(770.00)	(952.60)	(1210.88)
Federal aid	336.70	190.81	246.64	375.95
	(266.29)	(267.83)	(286.14)	(493.83)
State aid	759.29	1008.47	1406.65	1555.77
	(367.02)	(536.66)	(669.21)	(762.97)
Tax revenue	932.46	1296.36	1542.66	1832.27
	(347.19)	(534.67)	(652.36)	(793.91)
Property tax	660.91	899.75	1003.45	1246.95
	(247.94)	(340.50)	(363.36)	(470.97)
Sales tax	166.93	244.92	335.84	379.31
	(169.37)	(221.07)	(302.75)	(317.21)
Direct charges	342.35	533.28	705.81	886.15
	(230.21)	(338.47)	(469.44)	(663.42)
Misc. general revenue	197.77	373.85	358.23	316.05
	(96.62)	(223.15)	(171.22)	(217.27)

Note: Revenues are reported in per capita terms in 2010 dollars. Federal aid and state aid reflect intergovernmental transfers to the city. Tax revenue reflects general tax revenue collected in the city. Property tax and sales tax revenue are the largest two components of tax revenue collected by the city. Direct charges are current charges for services provided by the city. Standard deviations are reported in parentheses.

Table 3: Average Fiscally Standardized City Expenditure and Components, 1980-2010

	Year			
Variable	1980	1990	2000	2010
General expenditure	2507.69	3397.5	4159.27	5008.27
	(789.46)	(1160.22)	(1295.32)	(1781.58)
Police expenditure	168.18	221.93	297.17	364.46
	(68.78)	(86.04)	(104.46)	(135.76)
Fire services	103.52	128.85	154.41	193.73
	(43.85)	(45.84)	(52.95)	(76.96)
Highway expenditure	138.33	167.54	187.41	213.32
	(66.82)	(82.68)	(101.33)	(125.88)
Welfare expenditure	101.18	132.36	146.40	166.64
	(171.62)	(216.53)	(268.26)	(396.21)
Hospital expenditure	123.11	153.90	186.57	255.36
	(189.46)	(272.74)	(440.25)	(607.78)
Healthcare expenditure	47.81	75.75	117.16	142.56
	(36.58)	(63.56)	(116.99)	(158.11)
Misc. expenditure	200.40	205.70	275.83	358.52
	(176.58)	(195.58)	(225.33)	(276.48)

Note: Expenditures are reported in per capita terms in 2010 dollars. Standard deviations are reported in parentheses.

Real expenditure levels increased by almost 100 percent from about $2508 per capita in 1980 to $5008 per capita in 2010. The largest component of this growth came in the form of increases to local police forces–also almost increasing by 100 percent. While poverty increased significantly over this period, welfare expenditures did not keep pace. Welfare expenditure grew the slowest, increasing by only about $65 per person in real terms; however, both hospital and healthcare expenditures increased by 101 percent and about 200 percent, respectively over this four decade time span. Next, I will present the empirical methodology in examining how poverty rates affect local public finances.

4.2 Empirical Methodology

My empirical analysis is composed of two parts. The first component implements an Ordinary Least Squares (OLS) approach in order to identify the existence of a relationship between poverty and municipal government finances. The second strategy uses an Instrumental Variables (IV) approach in which plausibly exogenous shocks are applied to a city's local poverty rate in order to identify a causal relationship between poverty rates and local public finances. The OLS modeling specification can be expressed as:

$$ln(y_{i,t}) = \alpha_0 + \beta(Poverty\,Rate_{i,t}) + \Gamma X_{i,t} + \delta_i + \psi_t + \epsilon_{i,t} \tag{11}$$

where i indexes the city in year t. $ln(y_{i,t})$ is the natural logarithm of the outcome of interest. α_0 is a constant term. β is the coefficient of interest and identifies the relationship between a city's poverty rate and natural logarithm of the outcome variable. $X_{i.t}$ contains a set of time varying city characteristics including: whether the local government is consolidated at the city-county level; natural logarithm of the average weekly wage; natural logarithm of the city's population; share black; and the share over age 65. δ_i and ψ_t are city and year fixed-effects, respectively. The inclusion of such greatly reduces the risk of an omitted variable bias resulting from variables common to all cities that are changing over time, or fixed differences across geographic areas that might also influence the poverty rate. $\epsilon_{i,t}$ is an idiosyncratic-error term and is clustered at the city-level to account for unobserved correlation within cities over time.

Even after including city and year fixed-effects, Equation (11) is not sufficient on its own to establish a causal relationship between a city's poverty rate and local government finances. The level of poverty may also affect government activity through the preferences of local voters. Additionally, it is also possible that changes in government expenditures could induce shifts in the local poverty rate. For example, Tiebout (1956) hypothesizes that households sort themselves into communities with their preferred level of public services. Thus, these unaccounted-for issues may be correlated with local poverty rates, and bias OLS estimates.

To mitigate concerns of reverse-causality, where households sort into communities with the desired level of public services and determine local poverty levels, I construct an instrument which freezes the poverty rate distribution in 1980. Boustan et al. (2013) and Hearey (2016)employ a similar shift-share Bartik Style empirical strategy; however, their strategy may potentially violate the exclusion restriction necessary for IV estimation[10]. If the city for which the instrument is being estimated has a significantly large enough component in the national trend, then unobserved components may still be correlated with the error term. To overcome this, I implement the leave-one-out strategy, following Autor and Duggan (2003). Specifically, I construct synthetic poverty rates for a particular city at time t based on the poverty distribution in 1980. Using the 1980 poverty distribution, I then apply national growth trends in poverty. This strategy excludes the city for which the instrument is being constructed. More formally, my instrument is constructed as follows:

Let $\mu_{-i,t}$ be the sample average poverty rate at time t, excluding city i. That is,

$$\mu_{-i,t} = \frac{1}{N-1} \sum_{j \neq i}^{N} Poverty\, Rate_j.$$

The synthetic poverty rate for city i in year t is then constructed as:

$$Synthetic\, Poverty\, Rate_{i,t} = \eta_{i,t_0} \left[1 + \frac{\mu_{-i,t} - \mu_{-i,t-10}}{\mu_{-i,t-10}} \right],$$

where $\mu_{-i,t-10}$ is the sample average poverty rate excluding city i, 10 years prior. By construction, the synthetic poverty rate is equal to the actual poverty rate in 1980, η_{i,t_0}, the year in which the poverty rate distribution is frozen. Thus, using two-stage-least squares (2SLS) estimation, the first-stage equation for the IV approach is:

$$Poverty\, Rate_{1,i,t} = \alpha_{1,0} + \beta_1 (Synthetic\, Poverty\, Rate_{i.t}) + \Gamma_1 X_{i,t} + \delta_{1,i} + \psi_{1,t} + \epsilon_{1,i,t} \tag{12}$$

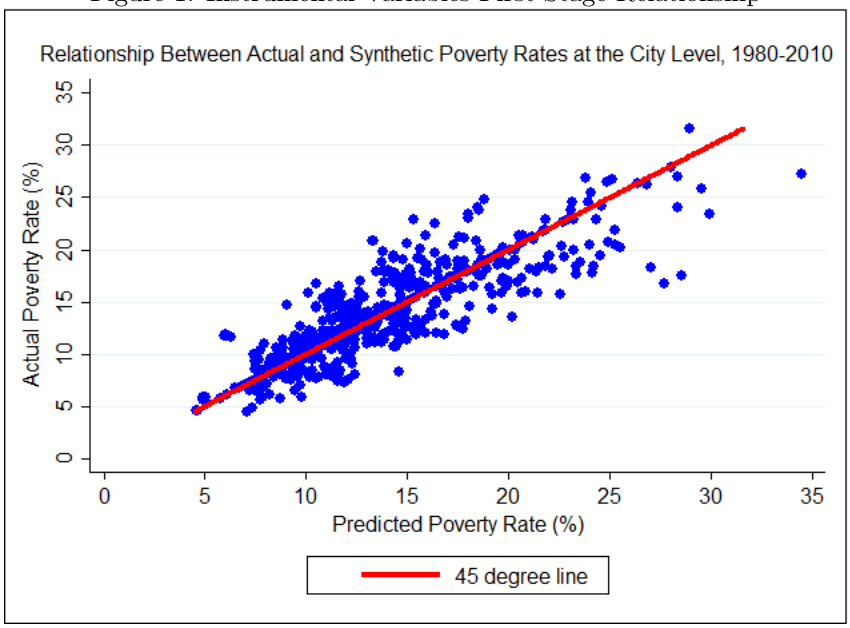
where the subscript 1 denotes first-stage estimation. Using predicted poverty rates, $\widehat{Poverty\, Rate}_{1,i,t}$, generated from equation (12), I then estimate the impact of a city's synthetic poverty rate on the of the outcome of interest in the following second-stage equation:

$$ln(y_{2,i,t}) = \alpha_{2,0} + \beta_2 \widehat{Poverty\, Rate}_{1,i.t} + \Gamma_2 X_{i,t} + \delta_{2,i} + \psi_{2,t} + \epsilon_{2,i,t} \tag{13}$$

where the subscript 2 denotes second-stage estimation. Equation (13) parallels equation (11), except

[10]See Bartik (1991) for the construction of the Bartik instrument. For a more recent discussion, see Goldsmith-Pinkham et al. (2018).

Figure 1: Instrumental-Variables First-Stage Relationship



Note: Each point in the scatter diagram represents a city's actual and predicted poverty rate. The estimated relationship between actual and predicted poverty rates is 0.837 and significant at the 1% level (std. error=0.02).

$Poverty\,Rate_{i,t}$ is replaced with the predicted poverty rate generated from equation (12). Results from this analysis indicate whether exogenous shocks to a city's poverty rate generated by a city's initial level of poverty times the growth in national poverty trends, excluding city i, affect local public finances. Whether these synthetic poverty rates are a strong instrument for actual poverty rates is directly testable. Figure 1 illustrates this first-stage relationship.

I find a strong postive relationship between actual and synthetic poverty rates over time. Thus, suggesting that much of the change in local poverty from 1980 to 2010 was driven by trends in poverty growth rather than by households sorting into and out of communities. The coefficient for this first-stage relationship at the city-level is 0.837 (std. error=.020) and is reported in Table 7. The F-statistic on the relationship between the actual and synthetic poverty rates is 1822.63, surpassing the convential threshold for a strong instrument.

5 Results

In the following, I present results from my two empirical strategies. First, I use an OLS specification to model the relationship between poverty rates and a city's local government finaces. Second, I estimate the causal relationship using a 2SLS IV approach. The first-stage captures a city's predicted poverty rate by

regressing the actual poverty rate on synthetic poverty rates as discussed in subsection 4.2. The predicted poverty rate is then regressed on local public finances in the second-stage. Table 4 presents the relationship between the covariates and local general revenue and expenditure from 1980-2010.

Table 4: OLS Estimates, Relationship Between City Characteristics and Revenue/Expenditures per Capita, 1980-2010

	ln(General Revenue)		ln(General Expenditure)	
	(1)	(2)	(3)	(4)
Poverty rate	-0.009*	-0.010**	-0.010*	-0.011**
	(0.00)	(0.00)	(0.01)	(0.01)
Consolidated city-county government	-0.126*	-0.132*	-0.173**	-0.180***
	(0.07)	(0.07)	(0.07)	(0.07)
ln(average weekly wage)	0.395***	0.367***	0.447***	0.408***
	(0.13)	(0.13)	(0.12)	(0.12)
ln(city population)	-0.127***	-0.124***	-0.128***	-0.126***
	(0.04)	(0.04)	(0.04)	(0.04)
Share black		0.002		0.002
		(0.00)		(0.00)
Share 65 years or more		-0.006		-0.009*
		(0.00)		(0.00)
Mean dependent variable (2010 $)	3799.38	3799.38	3768.12	3768.12
City FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
R^2	0.872	0.873	0.861	0.862
N	600	599	600	599

Note: Sample includes all fiscally standardized (FiSC) cities from 1980-2010. Cells report the estimated coefficients from equation (1). Standard errors in parentheses and are clustered by the city. Specifications (2) and (4) include additional demographic controls. Coefficients statistically signifcant at ***1%, **5%, and *10% levels.

Table 4 presents two specifications for each general revenue and general expenditure. Specifications (2) and (4) include additional municipality level demographic characteristics. Using an OLS modeling approach, we see that an increase in a city's poverty rate is associated with decreases in both per capita general revenue and expenditure. Specifically, a one percent increase in the poverty rate is associated with a 1 percent and 1.1 percent decline in per capita general revenue and expenditure, respectively, over a 10-year period, after accounting for inflation. A city operating under unified jurisdiction with the overlying county is significantly related to decreases in both local revenue and expenditure. Specifications (2) and (4) suggest that consolidated city-county governments are associated with reduced general revenue and expenditure of 13.2 percent and 18 percent, respectively, over a 10-year period. As expected, more affluent communities, reflected by higher average weekly wages, increases general revenue and expenditure per capita. Furthermore, as the population grows, per capita revenue and expenditure is decreased. Lastly, I find a marginally significant relationship between the share of the population that is age 65+ and general expenditure. Specifically, increases in the share of the population that is elderly is associated with about a one percent decline in per capita general expenditure over ten years. Table 5 examines the relationship between local poverty and major components of general revenue from 1980 to 2010.

Increased poverty most greatly decreases general revenues through two primary components: city gener-

Table 5: OLS Estimates, Relationship Between Poverty and Components of Municipal Revenue, 1980-2010

	General Revenue	Federal Aid	State Aid	City Revenue	Tax Revenue	Property Tax	Sales Tax[a]	Direct Charges	Misc. General Revnue
	(1)	(3)	(4)	(2)	(5)	(6)	(7)	(8)	(9)
Poverty rate	-0.010**	-0.006	0.008	-0.018***	-0.027***	-0.030***	-5.204	-0.002	-0.007
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(4.68)	(0.01)	(0.01)
Consolidated city-county government	-0.132*	-0.036	0.017	-0.275***	-0.172*	-0.116**	-64.312	-0.457**	-0.194**
	(0.07)	(0.29)	(0.06)	(0.09)	(0.09)	(0.05)	(61.49)	(0.22)	(0.10)
ln(average weekly wage)	0.367***	1.182***	0.239	0.379**	0.324**	0.387***	202.047	0.531	0.610***
	(0.13)	(0.22)	(0.19)	(0.18)	(0.16)	(0.13)	(152.54)	(0.38)	(0.22)
ln(city population)	-0.124***	-0.137	-0.197***	-0.083*	0.062	0.117*	-104.292**	-0.198*	-0.455***
	(0.04)	(0.12)	(0.06)	(0.05)	(0.06)	(0.06)	(44.06)	(0.11)	(0.12)
Mean dependent variable (2010 $)	3799.38	287.52	1182.54	2329.32	1400.94	952.77	281.75	616.90	311.48
City FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.873	0.458	0.727	0.835	0.802	0.736	0.462	0.642	0.437
N	599	599	597	599	599	599	599	599	599

Note: Sample includes all fiscally standardized (FiSC) cities from 1980-2010. Cells report the estimated coefficients from equation (1). Standard errors in parentheses and are clustered by the city. Coefficients statistically significant at ***1%, **5%, and *10% levels.
a: Dependent variable reported in levels due to observations with a value of 0.

ated revenue and tax revenue. A one percent increase in a city's poverty rate is associated with almost a two percent reduction in per capita city generated revenue, over a 10-year period. Likewise, a one percent increase in the poverty rate is associated with almost a three percent reduction in tax revenue, over a 10-year period. This reduction in general tax revenue is primarily driven by a decrease in the per capita propety tax revnue generated within a city. Consolidated city-county governments greatly influence revenues generated at the city level. Specifically, a consolidated-county government is correlated with almost a 28 percent reduction in city generated revenue, relative to cities that operate within their own jurisdiction. Additionally, consolidated city-governments are associated with significant reductions in their current charges for public services. This may suggest that when a city and county jointly operate, they offer fewer public services overall. Next, I explore the relationship between poverty and local government expenditure.

Table 6: OLS Estimates, Relationship Between Poverty and Components of Municipal Expenditure, 1980-2010

	General Expnd.	Police Expnd.	Fire Services	Highway Expnd.	Welfare Expnd.[a]	Hospital Expnd.[a]	Healthcare Expnd.[a]	Misc. Expnd.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Poverty rate	-0.011**	-0.010*	-0.017**	-0.028**	3.334	-6.619	3.646*	-0.018
	(0.01)	(0.01)	(0.01)	(0.01)	(3.75)	(8.45)	(1.95)	(0.01)
Consolidated city-county government	-0.180***	-0.237	-0.178	-0.280***	-66.150**	-196.407**	-90.794***	-1.425***
	(0.07)	(0.20)	(0.14)	(0.05)	(31.56)	(87.89)	(26.50)	(0.43)
ln(average weekly wage)	0.408***	0.313*	0.183	0.398	242.478	17.066	116.330**	0.553
	(0.12)	(0.17)	(0.19)	(0.27)	(196.90)	(189.97)	(58.38)	(0.36)
ln(city population)	-0.126***	-0.006	-0.079	0.011	-67.246	28.865	-76.098***	-0.370**
	(0.04)	(0.07)	(0.06)	(0.10)	(88.48)	(118.91)	(26.58)	(0.17)
Mean dependent variable (2010 $)	3768.12	262.94	145.13	176.65	136.65	179.73	95.82	260.12
City FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.862	0.834	0.726	0.196	0.176	0.059	0.355	0.286
N	599	599	598	599	599	599	599	599

Note: Sample includes all fiscally standardized (FiSC) cities from 1980-2010. Cells report the estimated coefficients from equation (1). Standard errors in parentheses and are clustered by the city. Coefficients statistically significant at ***1%, **5%, and *10% levels.
a: Dependent variable reported in levels due to observations with a value of 0.

Table 6 presents the OLS modeling specification results between local poverty rates and a city's expenditure. Increases in poverty are associated with declines in three major components of expenditure: police expenditure, fire protection services, and highway expenditure. Specifically, a one percent increase in a

city's poverty rate is correlated with declines in per capita police and fire spending of 1.0 percent and 1.7 percent, respectively. Per capita highway expenditure is also greatly reduced as a result of increased local poverty. This may be capturing that road maintenance becomes of less importance in poorer communities. While not statistically significant at convential levels, areas of greater poverty are associated with increases in welfare expenditure; however, healthcare expenditure *is* significantly related to a municipality's poverty rate. Namely, a one percent increase in an area's poverty rate is associated with an increase in per capita healthcare expenditures of $3.65, after accounting for inflation, over a 10-year period. As with city revenue, a consolidated city-county government greatly reduces pubic expenditure. Most noteworthy, consolidated city-county governments are associated with an $196.41 reduction in hospital expenditures over a 10-year period, relative to non-consolidated governments. In the following, I present the results of the IV estimation strategy.

Table 7: IV Estimates, Relationship Between Poverty and Components of Municipal Revenue, 1980-2010

	General Revenue (1)	Federal Aid (2)	State Aid (3)	City Revenue (4)	Tax Revenue (5)	Property Tax (6)	Sales Tax[a] (7)	Direct Charges (8)	Misc. General Revenue (9)
Poverty rate	0.004	0.010	0.085**	-0.038	-0.093***	-0.110***	-51.828*	0.059	-0.025
	(0.02)	(0.06)	(0.03)	(0.02)	(0.03)	(0.03)	(27.92)	(0.07)	(0.05)
Consolidated city-county government	-0.147**	-0.054	-0.072	-0.252**	-0.096	-0.024	-10.829	-0.527**	-0.173
	(0.07)	(0.30)	(0.06)	(0.10)	(0.13)	(0.09)	(80.97)	(0.22)	(0.12)
ln(average weekly wage)	0.458***	1.286***	0.760**	0.248	-0.110	-0.137	-103.840	0.931	0.488
	(0.17)	(0.46)	(0.36)	(0.23)	(0.28)	(0.25)	(255.09)	(0.59)	(0.36)
ln(city population)	-0.127***	-0.141	-0.227***	-0.078*	0.079	0.137*	-92.433*	-0.214*	-0.451***
	(0.04)	(0.12)	(0.08)	(0.05)	(0.07)	(0.07)	(49.73)	(0.13)	(0.11)
Mean dependent variable (2010 $)	3799.38	287.52	1182.54	2329.32	1400.94	952.77	281.75	616.90	311.48
City FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
First-stage estimate	0.837***								
First-stage std. error	(0.02)								
Within R^2	0.868	0.456	0.633	0.828	0.700	0.582	0.212	0.609	0.432
N	599	599	597	599	599	599	599	599	599

Note: Sample includes all fiscally standardized (FiSC) cities from 1980-2010. Cells report the estimated coefficients from equation (2). Standard errors in parentheses and are clustered by the city. Coefficients statistically significant at ***1%, **5%, and *10% levels.
a: Dependent variable reported in levels due to observations with a value of 0.

If my OLS estimates were driven by reverse causality, whereby households are sorting into communities with the desired level of public services, I would expect the IV coefficients to be smaller than OLS. Overall, the effect of increased poverty has an indistinguishable effect from zero; however, when examining its components we see that poverty greatly reduces general tax revenue. That is, a one percent increase in an area's poverty rate reduces tax revenue per capita by almost 10 percent, over a 10-year period. These reductions are composed of decreases in two major sources of tax revenue: the property tax and sales tax. Per capita property tax revenue is reduced by 11 percent as a result of an increase in the poverty rate of one percent. Furthermore, sales tax revenue is reduced by over $50 per person, over a 10-year period. In order to offset these reductions in locally generated revenue, state aid is increased substantially. Specifically, a one percent increase in local poverty rates increases state aid by 8.5 percent over a decade. The fact that many of the IV estimates are larger than their OLS counterparts suggests that the IV procedure may be correcting for measurement error, which can bias estimates toward zero.

Table 8: IV Estimates, Relationship Between Poverty and Components of Municipal Expenditure, 1980-2010

	General Expnd. (1)	Police Expnd. (2)	Fire Services (3)	Highway Expnd. (4)	Welfare Expnd.[a] (5)	Hospital Expnd.[a] (6)	Healthcare Expnd.[a] (7)	Misc. Expnd. (8)
Poverty rate	0.002	-0.013	-0.047*	-0.068	-24.989	13.534	4.753	0.009
	(0.02)	(0.02)	(0.02)	(0.05)	(27.42)	(58.90)	(11.24)	(0.07)
Consolidated city-county government	-0.195***	-0.233	-0.143	-0.234***	-33.660	-219.525**	-92.064***	-1.456***
	(0.06)	(0.20)	(0.15)	(0.08)	(43.38)	(98.32)	(28.58)	(0.44)
ln(average weekly wage)	0.494***	0.291	-0.021	0.136	56.658	149.287	123.595	0.733
	(0.17)	(0.21)	(0.26)	(0.46)	(132.77)	(411.70)	(92.23)	(0.60)
ln(city population)	-0.129***	-0.005	-0.071	0.021	-60.042	23.739	-76.380***	-0.377**
	(0.04)	(0.07)	(0.06)	(0.10)	(88.07)	(127.60)	(25.77)	(0.17)
Mean dependent variable (2010 $)	3768.12	262.94	145.13	176.65	136.65	179.73	95.82	260.12
City FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
First-stage estimate	0.837***							
First-stage std. error	(0.02)							
Within R^2	0.858	0.834	0.704	0.172	0.069	0.043	0.355	0.281
N	599	599	598	599	599	599	599	599

Note: Sample includes all fiscally standardized (FiSC) cities from 1980-2010. Cells report the estimated coefficients from equation (2). Standard errors in parentheses and are clustered by the city. Coefficients statistically significant at ***1%, **5%, and *10% levels.
a: Dependent variable reported in levels due to observations with a value of 0.

Table 8 presents the IV estimation results between poverty and local public expenditure. This relationship is estimated noisely. While many of the IV estimates are larger than their OLS counterparts in absolute value, they are estimated less precisely. Yet, a one percent increase in the poverty rate reduces per capita fire protection services by almost five percent, over a 10-year period. While not significant at convential levels, the fact that per capita welfare expenditure is greatly reduced as a result of increased poverty rates is concerning; however, this is offset by an increase in both per capita hospital and healthcare expenditures. Much of the decline in expenditure shares is driven by consolidated city-county governments: the largest component being a reduction in hospital expenditures of almost $220 per person, relative to non-consolidated city-county governments. Lastly in this section, I explore the relationship between municipality-level demographics and local public finances. Table 9 presents the relationship between increasingly racially-diversified communities and local revenue from 1990 to 2010.

Table 9: OLS Estimates, Relationship Between Demographics and Components of Municipal Revenue, 1990-2010

	General Revenue (1)	Federal Aid (2)	State Aid (3)	City Revenue (4)	Tax Revenue (5)	Property Tax (6)	Sales Tax[a] (7)	Direct Charges (8)	Misc. General Revenue (9)
Share white	0.012**	-0.013	0.028***	0.003	-0.002	-0.011*	3.672	0.003	0.016*
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(3.96)	(0.02)	(0.01)
Share black	0.009	-0.042**	0.027***	-0.001	-0.004	-0.011*	-3.289	0.009	-0.000
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(4.18)	(0.02)	(0.01)
Share Hispanic	-0.007**	0.016*	-0.010	-0.007**	-0.003	-0.000	-6.137***	-0.009	-0.013
	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)	(0.01)	(2.15)	(0.01)	(0.01)
Mean dependent variable (2010 $)	3799.38	287.52	1182.54	2329.32	1400.94	952.77	281.75	616.90	311.48
City FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.777	0.472	0.603	0.621	0.641	0.543	0.361	0.436	0.091
N	450	450	449	450	450	450	450	450	450

Note: Sample includes all fiscally standardized (FiSC) cities from 1990-2010. Cells report the estimated coefficients from a regression of the natural logarithm of the respective column variable on county level demographics. Standard errors in parentheses and are clustered by the city. Coefficients statistically significant at ***1%, **5%, and *10% levels.
a: Dependent variable reported in levels due to observations with a value of 0.

Table 9 examines how demographics, in terms of the share of the population that is white, black, and Hispanic, contribute to local revenue collection. Alesina et al. (1999) hypothesize that cities with a more

racially diverse population spend more per resident. My data do not support this hypothesis. Cities represented by a greater share of white residents are associated with overall increases in general revenue, mostly driven by increased state aid. Specifically, a one percent increase in the share white is associated with 1.2 percent increase in per capita general revenue. As the share of the black population grows, decreases in aid at the federal level are substituted for increases at the state level. Meanwhile, increases in intergovernmental transfers at the federal level are associated with increases in the share of the Hispanic population, though this relationship is only marginally significant at the 10 percent level. Next, I explore how these changing population shares are related to local public expenditure.

Table 10: OLS Estimates, Relationship Between Demographics and Components of Municipal Expenditure, 1990-2010

	General Expnd. (1)	Police Expnd. (2)	Fire Services (3)	Highway Expnd. (4)	Welfare Expnd.[a] (5)	Hospital Expnd.[a] (6)	Healthcare Expnd.[a] (7)	Misc. Expnd. (8)
Share white	0.007	0.001	0.003	0.007	9.849	2.721	-9.081**	0.000
	(0.01)	(0.01)	(0.01)	(0.01)	(8.56)	(11.61)	(3.80)	(0.03)
Share black	0.003	0.003	0.007	-0.021	-13.398	6.595	-10.950**	-0.012
	(0.01)	(0.01)	(0.01)	(0.01)	(13.34)	(11.95)	(4.88)	(0.03)
Share Hispanic	-0.008**	-0.006	0.001	-0.018**	-4.974	4.071	-3.296*	-0.009
	(0.00)	(0.00)	(0.00)	(0.01)	(3.48)	(5.24)	(1.80)	(0.01)
Mean dependent variable (2010 $)	3768.12	262.94	145.13	176.65	136.65	179.73	95.82	260.12
City FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.749	0.751	0.624	0.097	0.130	0.055	0.266	0.254
N	450	450	449	450	450	450	450	450

Note: Sample includes all fiscally standardized (FiSC) cities from 1990-2010. Cells report the estimated coefficients from a regression of the natural logarithm of the respective column variable on county level demographics. Standard errors in parentheses and are clustered by the city. Coefficients statistically significant at ***1%, **5%, and *10% levels.
a: Dependent variable reported in levels due to observations with a value of 0.

Table 10 reports the impact of changing racial heterogeneity on municipal public expenditure. The lack of heterogeneous effects is documented when examining healthcare expenditure. That is, increasing shares of white, black, and Hispanic are all associated with declines in healthcare expenditure. While insignificant at convential levels, shares of municipal population increasing in white and black are associated with increases in general expenditure, where as the share of increasing Hispanic population is associated with a decline in general expendture per capita, from 1990 to 2010. More indepth analysis is required in order to understand the mechanisms as to why these relationships exist.

6 Discussion and Conclusion

Poverty in the U.S. varied greatly from 1980 to 2010. While declining in the mid-nineties, local poverty rates increased by almost three percentage points in the most recent decade. I exlpoit this variation across localities and over time in order to estimate the relationship between U.S. poverty rates and local public finances. Previous research has focused on income inequality and found that areas with a more uneven income distribution have a larger public sector; however, this could be due to a mechanical relationship

between higher incomes and a progressive tax base. Thus, I focus on examining only the left-hand tail of the income distribution–the share in poverty. I hypothesized that areas with greater resident-shares in poverty experienced reduced public expenditure as a result of a decreased revenue base. I used two empirical strategies to test my hypotheses. The first identified a relationship between poverty rates and local public finances using an OLS specification. The second applied exogenous shocks to a locality's poverty rate in order to identify causal impacts of poverty.

My preferred specification indicates that a one percent increase in the municipal poverty rate decreased tax revenue by almost 10 percent over a 10-year period of time. From 2000 to 2010 poverty rates in my sample increased by almost three percentage points. Assuming no population growth from 2000 to 2010, this translates into, a conservative, $171.7 million (in 2010 $) in forgone tax revenue for the average city in my sample, over the last decade. Specifically, $132.1 million in forgone property tax revenue, alone. As the property tax largely contributes to public safety and education, these sectors likely encountered negative spillover effects as a result. Furthermore, in order to offset such dramatic losses in tax revenue, intergovernmental transfers were increased through additional state aid. Increasing local poverty over the last decade resulted in increases from the state government of $143.1 million, for the average city in my sample. While estimated more noisely, increases in poverty ultimately reduced local public expenditure and its components. As poverty has increased in more recent times, it has become a clear concern for policymakers.

To alleviate the financial constraints on the public sector induced by greater shares in poverty, policy should be targeted at moving people out of poverty. One such mechanism may be to simply increase awareness of programs that are focused on enhancing welfare. For instance, the Earned Income Tax Credit (EITC), documented in Bastian and Michelmore (2016), has been shown to not only affect those currently in poverty, but reduce the likelihood that future generations end up in poverty. The EITC provides cash transfers to low-income working families as part of the tax system. Families who receive this credit are more likely to be employed, while children of these familes are more likely to complete higher levels of education. Furthermore, it has been shown that these effects persist for many years into the future. Programs that are more likely to lift individuals out of poverty long-term have the greatest potential to increase the productivity of local economies, and the overall aggregate value of the U.S. economy.

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