UC Berkeley
Law and Economics Workshop

Title
Inequality and Local Government: Evidence from U.S. Cities and School Districts, 1970-2000.

Permalink
https://escholarship.org/uc/item/0mp0d6sn

Authors
Zolt, Eric M
Boustan, Leah

Publication Date
2010-02-10

eScholarship.org Powered by the California Digital Library
University of California

UC Berkeley Law and Economics Workshop

Draft: February 10, 2010

Inequality and Local Government:

Evidence from U.S. Cities and School Districts, 1970-2000

Leah Boustan, UCLA and NBER

Fernando Ferreira, Wharton and NBER

Hernan Winkler, UCLA

Eric M. Zolt, UCLA School of Law

I. Introduction

Income inequality has increased dramatically over the past thirty years in the United States and many other developed countries (Piketty and Saez, 2003, Smeeding 2004). Scholars have linked income inequality to several negative social outcomes—including high crime rates, low levels of education achievement, and bad health.[1] Yet, little is known about how a widening income distribution may translate into these social ills. One frequently proposed mechanism is that income inequality may weaken the public sector. Some political economy models suggest that heterogeneous societies provide fewer public goods because their residents are unable to compromise on how to spend common resources (Benabou, 1993, 1996; Epple and Romano, 1996). Heterogeneity can also reduce social capital between residents, which may undermine trust, norms of reciprocity, and support for local government activity (Putnam, 1993; Boix and Posner, 1998; Costa and Kahn, 2003). In contrast, societies with greater inequality may have greater needs, leading altruistic voters to support social programs. Models based on the median voter theorem also predict that a widening of the income distribution will encourage greater use of the progressive tax system for redistribution (Meltzer and Richard, 1981; Alesina and Rodrik, 1994; Persson and Tabellini, 1994).

Existing empirical work has not provided definitive support for either set of predictions.[2] Two types of identification problems compound the lack of a consistent empirical relationship between income inequality and public goods provision. Cross-country comparisons suffer from omitted variable bias; that is, countries with high income inequality may also have many distinct

[1] See, *inter alia*, Kawachi, et al., 1997; Kennedy, et al., 1998; and Fajnzylber, Lederman and Loayza, 2002. For an opposing view, see Deaton and Lubotsky, 2002.

[2] In a cross-section of countries, countries with high levels of inequality, like the United States, engage in less public spending (see, for example, Lindert, 1994, 1996; Moene and Wallerstein, 2005; Schwabish, Smeeding, and Osberg, 2006). In contrast, comparisons across US states and within states over time find that rising income inequality is accompanied by higher government expenditures and increasing progressivity in the state tax code (Chernick, 2005; Schwabish, 2008).

characteristics that could negatively impact the provision of public goods. Cross-state comparisons additionally suffer from endogenous household sorting. If high-income families migrate to states with high public expenditures, the positive association observed in the literature between state public expenditures and income inequality may be spurious.

In this paper, we examine the relationship between income inequality and government finances at the local level in the United States from 1970 to 2000. We focus on both municipalities and school districts. These units of local government represent a large segment of the economy; in the 2009 fiscal year, local governments collected an aggregate $1.7 trillion for the provision of such important services as education and public safety. [3] Our study of municipalities and school districts has several advantages over existing empirical work. First, the nearly 3,500 cities and towns and over 12,000 school districts in our sample exhibit much larger variation in income inequality over time than do the small number of countries or states used in previous studies. Second, we develop an instrumental variable strategy to mitigate concerns about the reverse causality stemming from endogenous sorting. Our procedure synthetically advances the income distribution in a locality by matching the *initial* income distribution in a municipality or school district in 1970 to national patterns of income growth over the next decades. By design, our instrument cannot be influenced by mobility into and out of communities; rather, it isolates the component of change in the local income distribution that is driven by broader structural shifts in the economy.

Our empirical estimates provide no evidence that income inequality reduces expenditures on public services in cities or school districts; rather, we find that larger increases in inequality

[3] The site http://www.usgovernmentspending.com/ calculates that state governments accounted for $1.36 billion in expenditures in 2009, while all other local governments (cities, school districts, etc.) accounted for $1.72 billion in that same fiscal year. The federal government spent $3.52 billion in 2009. Beyond cities and school districts, counties and special districts provide local services, though these governmental units represent a relatively small share of the total expenditures.

are associated with larger *increases* in revenue collections and expenditures. Our best causal estimates suggest that a five point increase in the Gini coefficient, roughly the change in the average locality from 1970 to 2000, leads to a $50 increase in municipal expenditures per resident and a $350 increase in school expenditures per pupil.[4] These values imply that the widening of the income distribution from 1970 to 2000 can explain approximately 10 percent of the growth in these local government expenditures over this period. Rising income inequality is associated with increased expenditures on police services, fire protection and road maintenance, among other categories.

We also estimate models that control for racial fractionalization that may be an independent determinant of local fiscal decisions. We find that, as with income inequality, racial fractionalization is associated with larger *increases* in government expenditures across a wide range of expenditure categories. These results cast doubt on Alesina, Baqir and Easterly's (1999) conclusion that more racially fragmented cities spend a smaller share of their budget on public goods (see also Cutler, Elmendorf and Zeckhauser, 1993).

Our findings differ from a series of recent studies showing that, before World War II, unequal communities were less willing to raise local revenue to provide common goods and services (Goldin and Katz, 1999; Ramcharan, 2009; Galor, Moav and Vollrath, 2009; Zolt, 2009). The changing relationship between inequality and the size of government could be driven by substantial shifts in the sources of local revenue over time. Over the past 50 years, reliance on property taxation at the city or school district level has declined precipitously, replaced in large part by more regressive sales taxes or direct fees for services. Furthermore, the increasing reliance on revenues from state and federal transfers has weakened the spatial relationship between those who bear the cost and those who benefit from public services.

[4] The IV estimates reported here can be found in Table 3 for municipalities and Table 4 for school districts.

Our findings are inconsistent with models that predict that heterogeneous societies are unable to compromise on common public goods and services. While our evidence is more supportive of the median voter model, we caution that cities and school districts do not rely on progressive forms of revenue, such as income taxation, and rarely engage in spending that is explicitly redistributive. Given this caveat, we prefer to emphasize our substantive findings rather than to speculate about how to reconcile these patterns with models of local political economy. Overall, our findings provide no support for the hypothesis that income inequality reduces the provision of public goods at the city or school district level.

II. Data on the Income Distribution and Government Activity at the Local Level

II.A. Income Inequality

We collect data on the income distribution and the levels of expenditures and revenues for a large number of cities and school districts. The municipal sample consists of a balanced panel of every Census-defined place (incorporated city or town) with 2,500 or more residents in 1970. We exclude the 903 municipalities that were directly responsible for providing education services, leaving us with a sample of 3,369 cities and towns. The majority of our sample is made up of small towns: sixty-five percent have fewer than 10,000 residents, while an additional 21 percent have fewer than 25,000 residents. The remainder of the sample contains central cities or large suburbs in metropolitan areas. We follow the 12,629 school districts that had 2,500 or more residents in 1970.

We cannot recover the full income distribution at the local level because the Census of Population micro-data does not contain detailed geographic identifiers. Instead, we calculate a modified Gini coefficient from published Census reports that indicate the number of households

in a jurisdiction that fall into one of 15 to 20 income categories in every decade. In particular, we calculate the median income by income bin, decade and Census region from the micro-data and assign this income level to households in the group. We then construct a Gini coefficient for the resulting (approximate) income distribution.[5] To our knowledge, we are the first to exploit the aggregate data on the distribution of household income provided by the Census at such a fine level of geography.

In 1970, the income distribution in the typical municipality was nearly as unequal as the income distribution in the nation as a whole. The average municipality in our sample had a Gini coefficient of 0.32, compared to the national Gini coefficient of 0.39. By 2000, the Gini coefficient in the average municipality increased by six points. However, the average increase in the Gini coefficient hides tremendous variation across municipalities. In one third of the sample, the local Gini coefficient increased by less than one point (or even decreased) from 1970 to 2000, while in another one third of the sample, the Gini coefficient increased by more than five points.

II.B. City Finances

We collect information on municipal revenues and expenditures from the Census (and Surveys) of Governments. The first panel of Table 1 provides summary statistics on the sources of revenue and the categories of current expenditures at the municipality level. All values are reported in year 2000 dollars. In the average municipality, expenditures per resident doubled from $460 in 1970 to $870 by 2000. In 1970, property taxes were the largest source of municipal revenue, accounting for 33 percent of total proceeds. By 2000, the reliance on property taxes

[5] Without a full set of micro data at the municipal level, we are unable to calculate other measures of inequality, such as the 90-10 ratio, with sufficient accuracy.

declined, replaced by increases in inter-governmental transfers and direct charges for services.[6] Sales taxes also increased from a negligible portion of the budget in 1970 to 12 percent of total revenue in 2000.

The incidence of these various sources of revenue are not clear. Both sales and property taxes are often considered regressive because they collect higher tax payments as a share of total income from poor households (Suits, 1977; Phares, 1985).[7] However, specific features of the tax system, including exemptions for food and other items from sales taxes or initial threshold exemptions from property taxes, can affect the incidence of these instruments. The growth of direct charges for services like sewers and sanitation may be, in part, a response to statutory limitations in property taxation that were imposed in many states over this period.[8] It is likely that direct charges are more regressive than property taxation because they are often levied on a per house basis rather than tied to the value of the home. On the other side of the ledger, inter-governmental transfers can be progressive if they are financed through state or federal income taxes. However, the tax burden for these transfers disproportionately falls on households living outside of the locality in question.

Municipalities spend a majority of their budget on the maintenance of local infrastructure and fire and police protection. Spending on infrastructure, including roads, sewers, water and electricity, comprise 44 percent of average municipal budgets and spending on police and fire protection make up another 21 percent. In comparison, direct public welfare and expenditures on health and public hospitals contribute to only five percent of the typical municipal budget.

---

[6] The relative decline in property taxes from 1970 to 2000 was part of a larger decline in the use of local property taxes over the twentieth century (Oates and Schwab, 2002; Sokoloff and Zolt, 2007).

[7] There is significant scholarly debate about the true incidence of the property tax. Aaron (1974) and Musgrave (1974), for example, argue that the property tax is less regressive than commonly believed and may, in fact, be progressive in some cases. See also Mieszkowski (1972) and Hamilton (1976).

[8] The largest categories of direct charges are for sewers (23 percent), hospitals (20 percent), airports (8 percent) and sanitation services (8 percent).

We note that larger government expenditures need not lead to more redistribution or a higher quality or quantity of public services for the average resident. With existing data sets, we cannot observe how municipal services such as police protection and road maintenance are allocated across neighborhoods. Furthermore, the majority of government expenditures go toward the wages and salaries of municipal workers; an increase in public sector wages need not translate into a higher quality of service provision. Finally, we note that local governments may expand certain programs in order to combat new social problems associated with rising income inequality, thereby leaving the level of public services unchanged. For example, inequality has been linked to higher rates of violent crime (Fajnzylber, Lederman and Loayza, 2002). Cities may hire additional police officers to combat the higher crime rates, resulting in more government spending without net improvements in public safety.

II.C. School District Finances

The second panel of Table 1 presents the descriptive statistics for our school district sample. In 1970, the typical district spent $4,140 per pupil. By 2000, this total doubled to $7,868 per pupil. The sources of school district revenue also changed dramatically over this period. While, in 1970, school revenues were evenly split between local property taxes and inter-governmental transfers, by 2000 state and federal transfers made up 70 percent of the average school district budget.

The changing pattern of revenues in our sample reflects the increasing centralization of K-12 funding over time. States began to supplement local revenues to fund education services in the mid-twentieth century. State aid was typically provided as a flat grant per pupil, supplemented with extra funds for poor districts (Hoxby, 2001). In 1965, the federal government

also began providing school funding through the Title I of the Elementary and Secondary School Act (Cascio, et al., 2009). As a result, by 1970, localities only raised 60 percent of school revenues.

More recently, the use of local revenue sources, even as a supplement to state aid, has come into question. Local property taxes allow wealthy districts to raise more revenue than poor districts at the same tax rate, thereby generating an association between a district's income or wealth levels and the quality of education it is able to provide. Starting with the *Serrano v. Priest* decision in California (1971), many state supreme courts have ruled that existing systems of local school finance are unconstitutional. Successful legal challenges have been based either on equity or adequacy grounds.[9]

In response to these legal challenges, states have adopted various school equalization finance schemes (Hoxby, 2001; Metzler 2003). The most common reform changed the state aid formula to directly supplement districts with smaller local property tax capacity. Some states also guarantee that districts will be able to raise a certain level of revenue at a given tax rate; the difference between locally raised revenue and the guaranteed level is then made up by the state. Following this wave of reforms, the locally raised share of school revenues declined from 60 percent in 1970 to 30 percent in 2004 – a pattern that is reflected in our sample.

[9] Differences in school funding on the basis of local property wealth have been found to violate rights to equal protection under some state constitutions (Briffault 2006). Claims under the Federal equal protection clause were denied by the Supreme Court in *San Antonio Independent School District v. Rodriguez*. In other states, local financing violates constitutional provisions requiring that the state provide an adequate elementary and secondary education to all students.

III. Research Design

III.A. Basic Specification for Municipalities

The relationship between income inequality and public finances can be described by the following equation:

$$y_{it} = \beta(Gini)_{it} + \Gamma X_{it} + \varepsilon_{it}\,, \qquad \varepsilon_{it} = \alpha_i + \upsilon_{it} \qquad \textbf{(1)}$$

where i indexes a city or town in Census year t, y is a local public finance outcomes, such as total expenditures, *Gini* is the Gini coefficient, β is the impact of income inequality on local finances, X is a set of time-varying city characteristics that include total population, the share of the population that is black, Hispanic, or over 65 years of age, and median household income, and ε_{it} is the unobserved determinant of local finances, that depend on a permanent component α_i and a transitory component υ_{it}.

Pooling data from 1970 to 2000, we estimate the follow equation in first differences that absorbs the local jurisdiction permanent effect α_i:

$$\Delta y_{it} = \beta(\Delta Gini)_{it} + \Gamma \Delta X_{it} + R_{it} + \Delta\upsilon_{it}\,, \qquad \textbf{(2)}$$

where we added an additional term R_{it} that allows each Census region to have distinct time trends in both patterns of government finances and income inequality. The coefficient of interest (β) indicates the relationship between changes in the Gini coefficient and changes in government revenue or expenditure within a city or town over time, holding constant changes in median

income and basic demographics. For the rest of the paper we refer to equation (2) as the "OLS" specification.

III.B. Instrumental Variable for Income Inequality

Thus far, we have assumed that the causal direction of this relationship runs from changes in the income distribution to changes in government activity via voter preferences, the size of the local tax base or the responsiveness of the state and federal government. However, we could imagine that causality works in the other direction. For example, an increase in local expenditures may attract wealthy households who prefer generous public services even at the expense of higher taxes. If these newcomers disproportionately fill in the top of the municipality's existing income distribution, their arrival could widen the local income distribution.

To mitigate concerns about reverse causality due to Tiebout-style sorting of households into municipalities, we look for an instrumental variable that is correlated with the local Gini coefficient but is not otherwise associated with local revenues or expenditures. Another benefit of using an instrumental variable is that, because we cannot access the full income distribution at the local level, our local Gini coefficients may be measured with substantial error. An instrumental variable will help to correct for measurement error by providing an independent measurement of local inequality.

The instrumental variable used in this study is a "synthetic" version of the local Gini coefficient. Recall that the actual Gini variable is calculated from counts of households in a locality by income bin in every decade from which we recover an approximate version of the local income distribution. Our instrument replaces the decade-specific household tallies with the

initial (1970) distribution of households by income bin in every year. We continue to assign income values to these mock households based on median income in cells defined by income bin, Census region and decade.[10] However, the individual municipalities and school districts in our sample are too small to shape the regional patterns of income growth. Hence, the instrument isolates changes in local income distributions due to broader patterns of economic change. By freezing the household income distribution in its 1970 shape, we do not allow for the possibility that richer or poorer households may move into a town in search of a given bundle of public goods or for the possibility that the composition or level of public goods could influence the earnings potential of a town's residents.

We present the first stage relationship between the actual and synthetic Gini coefficients in graphical form in Figure 1 both in level and in changes. We find a strong positive relationship between the two measures, suggesting that much of the change in local income distributions from 1970 to 2000 was driven by broader regional trends in income growth rather than in- and out-mobility of households from the top or bottom of the income distribution. The F-statistic on the relationship between the actual and synthetic Gini coefficients surpasses the conventional threshold for a strong instrument by more than an order of magnitude.

III.C. Additional Specification for School Districts

Because the nature of school financing has changed so much over time, analyzing the relationship between income inequality and educational revenues and expenditures requires some care. In particular, we are concerned that an increase in income inequality may have different implications in states with and without school financing equalization plans. For example,

[10] To calculate the median income of a 1970 income bin in later decades, we convert the endpoints of each bin, which are denominated in absolute income levels, into percentiles of the income distribution.

districts that experience rising income inequality due to income growth for the rich may be heavily taxed by state equalization plans, whereas districts with inequality driven by falling incomes among the poor may end up being heavily subsidized.

Income inequality may have different effects on school districts according to the state's school finance regime. We allow for this possibility in a more flexible estimating equation:

$$\Delta y_{it} = \theta(SFR)_{it} + \beta_1(\Delta Gini)_{it} + \beta_2(\Delta Gini \cdot SFR)_{it} + + \Gamma \Delta X_{it} + \upsilon_{it} \qquad \textbf{(3)}$$

where *i* indexes school districts and *t* indicates the Census decade. SFR ("school finance reform") is an indicator variable equal to one in states whose school finance system has been deemed unconstitutional by their supreme court by 2000. SFR is equal to zero in all states in 1970.[11] We control for the same set of time-varying district characteristics as in the municipality regressions: population, share black, Hispanic and elderly and median income. We also allow the effect of median income to differ according to a state's school finance regime.

As before, we are interested in the relationship between changes in income inequality and changes in expenditures per pupil within school districts over time. The coefficient β_1 summarizes this association in the average school district, while the coefficient β_2 tests whether this relationship is significantly different in states under court order to reform their system of school finance. We should note that states without a court order might have reformed their school finance systems preemptively in order to avoid the threat of litigation (Metzler, 2003). If the two groups of states were, indeed, identical, we would expect the coefficients on the interaction terms to be indistinguishable from zero.

[11] We rely on Card and Payne's (2002) taxonomy of school finance cases as updated by Baicker and Gordon (2006). By this measure, 14 state systems of school finance were deemed unconstitutional between 1970 and 2000.

IV. Results

IV.A. Impact of Income Inequality on Municipalities

Table 2 presents results from equation 2, which estimates the relationship between changes in income inequality and changes in government revenue or expenditure within a city over time. We report the implied change in government revenues and expenditures per capita for a five point increase in the Gini coefficient (one standard deviation in the 1970 cross section). Our findings suggest that increasing inequality leads to modest *increases* in municipal revenues and expenditures. A five point increase in the Gini coefficient is associated with a $27 increase in expenditures per capita. Police services represent $2.70 of the $27 increase in municipal expenditures. However, the remainder is spent on other services, including fire protection and local roads. Rising income inequality is also positively associated with health and hospitals but not in a statistically significant manner. From these results, we conclude that income inequality does not prevent residents from demanding or paying for a higher level of municipal goods and services.

Table 3 compares the coefficients from the second stage of our instrumental variables analysis with our OLS results. The IV coefficients are still positive, statistically significant and, if anything, are bigger than their OLS counterparts. If our OLS estimates were plagued by reverse causality – for example, because the rich are attracted to towns with generous public services – we would expect our IV coefficients to be smaller than OLS. The fact that the IV estimates are larger than OLS suggests that the instrumental variables procedure may be correcting for measurement error, which can bias estimates towards zero.

According to our IV estimates, a five point increase in the Gini coefficient leads to a $63 increase in expenditures per capita. From 1970-2000, the average municipality experienced a

$410 increase in revenues per capita. It appears that the widening of the income distribution can explain 15 percent of the growth in the size of local governments from 1970-2000 (= 63/410). Rising inequality increases municipal revenue from all major sources, including property and sales tax, inter-governmental transfers and direct charges for services. Additional revenue is used to fund an expansion of fire protection and public welfare; the positive relationships between inequality and expenditures on police and local roads are no longer statistically significant.

IV.B. Impact of Change in Racial Heterogeneity on Municipalities

In the second panel of Table 2, we compare our results for income inequality with the effect of racial heterogeneity on municipal spending and revenues. Alesina, Baqir and Easterly (1999) suggest that, while cities with a racially diverse population spend more per resident, they devote a smaller share of their budget to "'productive' public goods," defined as roads, sewers and trash collection (ABE, p. 1263). To test this hypothesis, we re-estimate equation 1, adding the dissimilarity index as a measure of racial or ethnic fractionalization. Our index is based on four racial/ethnic categories: white, non-Hispanics; black, non-Hispanics; Hispanics; and other races (which include Asians, Pacific Islanders and American Indians).[12] We improve upon the methodology used in ABE by using a panel of cities from 1970-2000, rather than a single cross-section in 1990, and by extending the analysis to municipalities with fewer than 25,000 residents.

Our results replicate the qualitative patterns presented in ABE. In particular, we find that an increase in racial heterogeneity is associated with larger municipal expenditures. While half of the increase is due to higher police spending, we also find large positive effects on fire protection and health and hospital spending. Because spending on roads fails to keep pace with the overall

[12] The dissimilarity index is defined as $1 - \Sigma_i$ (Race/ethnicity$_i$)^2. Separate counts of Asian and Pacific Islanders do not exist at the municipal level in 1970 or 1980.

increase in expenditures, the share of the budget dedicated to roads does fall as ABE emphasize. However, we contend that ABE's results are extremely sensitive to the classification of municipal spending into "productive" or "non-productive" public goods. Spending on fire protection and public hospitals may be equally as productive as spending on roads and, conversely, spending on roads can be equally corrupted for patronage purposes.

On the revenue side, we confirm ABE's results that racial heterogeneity is associated with an increase in inter-governmental transfers. However, we dispute the interpretation that racially diverse cities are unwilling to raise their own revenue and therefore need to be subsidized by the state "to compensate…[for] the difficulties…in directing local resources to the supply of public goods" (ABE, p. 1266). Instead, we find that an increase in racial diversity is also associated with an increase in own-source revenue collection, including both property and sales taxes.

IV.C. Impact of Income Inequality on School Districts

Table 4 presents coefficients from equation 3 relating school district finances to aspects of the local income distribution. We find that court supervision increased the level of state transfers per pupil. By 2000, the average district under court order received $831 additional dollars per pupil of state funding. However, a portion of this state transfer was "undone" through a reduction in local property tax revenue. This pattern is consistent with earlier work by Card and Payne (2002). Overall, we find no difference in total expenditures per pupil in states with and without court-ordered school finance reform.

The first panel of Table 4 estimates a single effect of income inequality on school finances; in the second panel, we allow this relationship to differ in states with and without

court-ordered school finance reform. In both cases, we find that an increase in income inequality among residents of a school district is associated with *rising* expenditures per pupil. Nationwide, a five percentage point increase in the Gini coefficient leads to an additional $348 dollars of expenditure per pupil (panel 1). By this estimate, rising inequality accounts for 9 percent of the total increase in expenditures per pupil from 1970 to 2000 (= $348/3730). These additional expenditures were financed entirely through an increase in property tax revenue.

An increase in income inequality has a similar effect on total school expenditures regardless of whether the district was in a state under court order to equalize school finances. However, the sources of school revenue differ substantially depending on the state's school finance regime (panel 2). In states under court order, the positive relationship between rising inequality and own-source (property tax) revenue is counter-balanced by a negative relationship between inequality and state transfers. Any excess taxing capacity that accompanies rising income inequality is appropriated in states with strong equalization programs. Overall, we find evidence that rising inequality is associated with rising expenditures and no evidence that income inequality reduces educational expenditures under any financing regime.

Table 4 also reports the relationship between educational expenditures and the median income of a school district's residents. Not surprisingly, wealthier districts spend more on education per pupil. On average, a five percent increase in median income is associated with a $103 dollar increase in per-pupil expenditures. The presence of an equalization court order does not change the magnitude of the relationship between local income and school expenditures. However, the source of these additional funds is affected by the system of school finance. In equalization states, a five percent increase in local median income is associated with a $120 increase in property tax revenue, which is partially offset by a $41 decline in state transfers. In

contrast, in states that are not under court order, a five percent increase in local median income increases both property tax revenue and state transfer payments.

V. Conclusion

The income distribution in the United States has widened greatly from 1970 to 2000. We use variation in the growth of income inequality at the local level to examine the potential relationship between inequality and fiscal policy. While several influential articles predict that larger increases in inequality would lead to declines in (or slower growth in) spending on public goods, we find the income inequality is associated with higher public expenditures, higher taxes, and higher inter-government transfers at the municipal and school district levels.

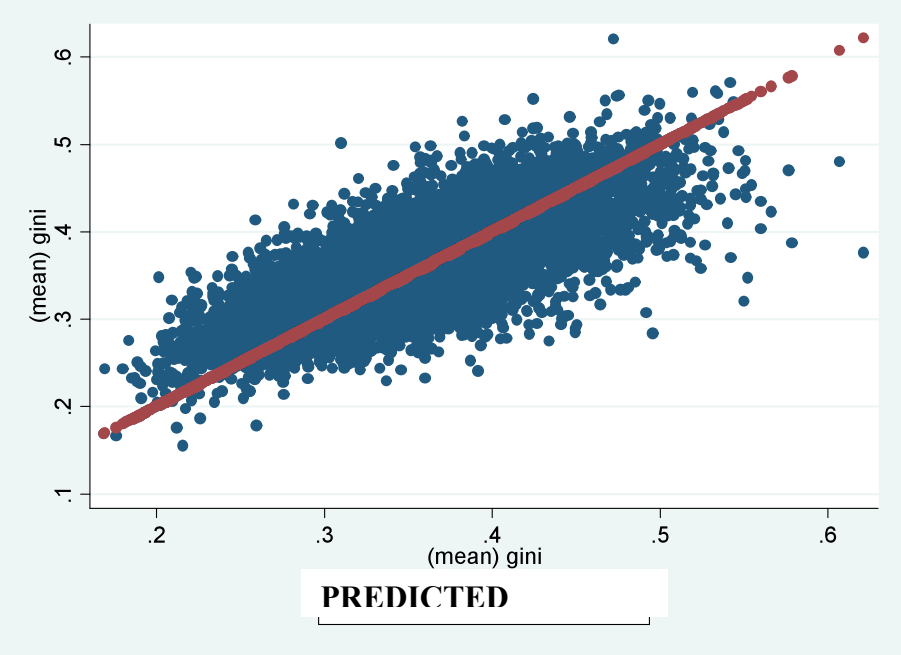
The revenues and expenditures per resident increased in nearly all communities over this period. Our best causal estimates suggest that a five point increase in the Gini coefficient, roughly the change in the average locality from 1970 to 2000, leads to a $50 increase in municipal expenditures per resident for services like police and fire protection and infrastructure maintenance and a $350 increase in school expenditures per pupil.

Our findings are contrary to models that predict that more heterogeneous societies have difficulty reaching agreement on public expenditures. At least for municipalities and school districts in recent decades, income and ethnic diversity are associated with greater, rather than lesser, expenditures on public goods. We are not surprised that our findings differ from historical studies that examine inequality and local public goods – most notably, spending on common schools, high schools, and higher education – prior to World War II. The spatial relationship between those who bear the tax burden and those who enjoy the public spending has changed, as have the typical sources of local revenue.

We conclude by noting that, while we find that income inequality is associated with greater public expenditures, it is not clear that more funds necessarily translates into a larger quantity or higher quality of public goods. Furthermore, the incidence of local taxation and the distribution of local services need not be progressive and likely varies substantially across governmental units. Hence, we stop short of claiming that increases in income inequality are partially compensated by government activity.

Figure 1: First stage regression, Relationship between actual and synthetic Gini coefficients at the municipal level, 1970-2000

A. Levels



B. Changes

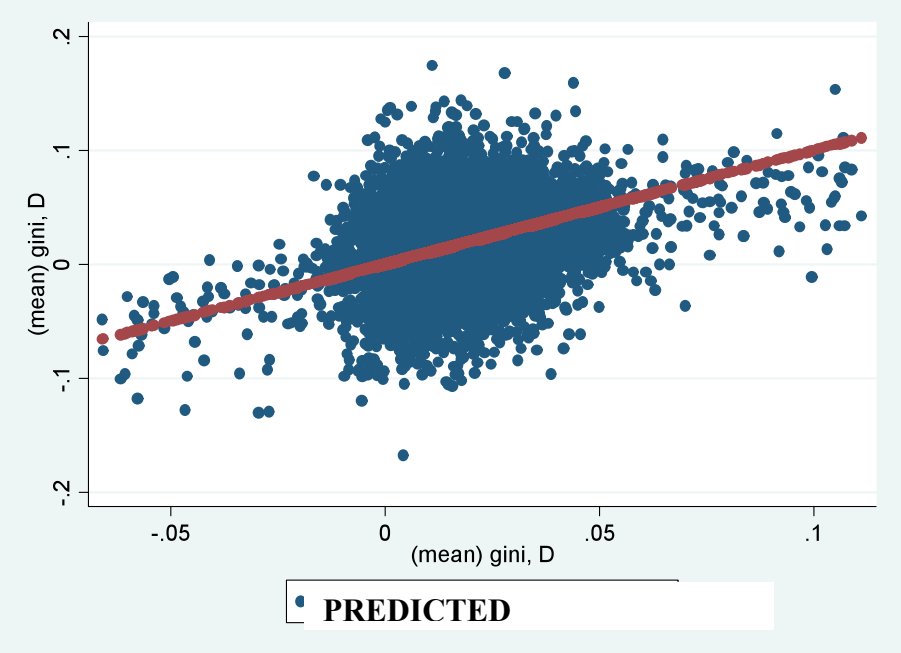


Table 1: Summary statistics, Municipal and school district revenue and expenditures, 1970-2000

	I. Municipalities (per capita)					
	Gini coefficient	General revenue	Property tax	Inter-gov transfers	Direct charges	Sales tax
A. Revenue						
1970 (Mean)	0.320	449.7	149.1	99.4	90.2	3.147
1970 (SD)	(0.054)	(300.7)	(116.9)	(143.2)	(143.5)	(7.086)
Δ 1970-2000	*0.055*	*428.6*	*45.2*	*100.9*	*105.1*	57.470
	General expenditures	Police	Fire	Highways	Public welfare	Health & hospitals
B. Expenditure						
1970 (Mean)	462.2	76.1	31.4	60.7	0.553	20.565
1970 (SD)	(436.5)	(45.1)	(34.4)	(34.7)	7.717	117.459
Δ 1970-2000	*410.0*	*56.6*	*20.0*	*9.8*	1.580	10.392
	II. School districts (per pupil)					
	Gini coefficient	Total revenue	Total expenditure	Property tax	Inter-gov transfers	Direct charges
1970 (Mean)	0.370	4185.9	4138.9	2071.4	1821.0	238.3
1970 (SD)	(0.039)	(1833.9)	(2122.2)	(1597.9)	(1036.1)	(246.5)
Δ 1970-2000	*0.011*	*3794.1*	*3730.3*	*679.8*	*2757.9*	*48.1*

Notes: Revenues and expenditures are reported in $2000. We provide the mean of each variable in 1970, the standard deviation in 1970 in parentheses and the average change from 1970-2000 in italics. We report statistics for the 3,369 municipalities that do not provide education services.

Table 2: Effect of income inequality and ethnic heterogeneity on municipal revenue and expenditures per capita, 1970-2000

A. Income inequality

Coefficients presented as $ change for a five point increase in the Gini coefficient

General revenue	Property tax	Inter-govern transfers	Direct charges	Sales tax	Other tax
23.70	5.965	2.623	14.47	13.12	3.676
[2.265]	[2.768]	[0.617]	[2.404]	[2.179]	[2.774]

General expenditures	Police	Fire	Highways	Public welfare	Health & hospitals
26.81	2.690	3.158	3.420	-0.220	2.107
[2.563]	[2.126]	[3.613]	[3.472]	[-0.0619]	[0.203]

B. Ethnic fractionalization

Coefficients presented as $ change for a ten point increase in the dissimilarity index

General revenue	Property tax	Inter-govern transfers	Direct charges	Sales tax	Other tax
10.87	5.812	5.651	-0.945	1.349	-0.091
[2.075]	[4.028]	[1.828]	[-0.320]	[0.363]	[-0.0693]

General expenditures	Police	Fire	Highways	Public welfare	Health & hospitals
10.30	5.376	2.175	0.517	-5.291	13.98
[1.751]	[4.642]	[3.318]	[0.751]	[-1.670]	[1.673]

Notes: Sample includes municipalities that were not responsible for education services in 1972 (N = 3369). T-statistics in parentheses.

Table 3: Comparing OLS and IV estimates of the relationship between income inequality and municipal revenue and expenditure per capita, 1970-2000

Coefficients presented as $ change for a five point increase in the Gini coefficient

	General revenue	Property tax	Inter-govern transfers	Direct charges	Sales tax
OLS	23.70	5.965	2.623	14.47	13.12
	[2.265]	[2.768]	[0.617]	[2.404]	[2.179]
IV	53.94	31.01	29.81	24.90	32.89
	[1.668]	[3.540]	[3.053]	[2.096]	[1.884]
	General expenditures	Police	Fire	Highways	Public welfare
OLS	26.81	2.690	3.158	3.420	-0.220
	[2.563]	[2.126]	[3.613]	[3.472]	[-0.0619]
IV	63.02	-2.244	6.719	4.651	-5.161
	[1.797]	[-0.280]	[2.050]	[1.234]	[-0.435]

Table 4: Effect of median income and income inequality on school district revenue and expenditures per pupil, 1970-2000

	Panel 1			Panel 2		
	Total spending	$ prop tax	$ state transfers	Total spending	$ prop tax	$ state transfers
=1 if court SFR	78.05	-427.73	831.09	1108.86	-23,82	29,61
	(0.26)	(1.01)	(2.33)	(0.13)	(1.31)	(3.31)
For 5 point Δ in:						
Gini coefficient	348.26	381.28	-177.14	388.85	289.42	-11.66
	(2.47)	(2.52)	(1.35)	(2.93)	(1.80)	(0.08)
Gini · SFR				-170.42	183.69	-459.05
				(0.65)	(0.50)	(1.85)
For 5% Δ in:						
ln(median income)	103.44	20.87	77.43	101.98	19.81	76.59
	(10.34)	(2.35)	(11.91)	(10.07)	(2.29)	(12.59)
ln(median) · SFR				1.29	102.73	-118.04
				(0.04)	(1.37)	(3.27)

Notes: T-statistics in parentheses. First row reports coefficient on indicator variable equal to one if state under court order to equalize school expenditures in 2000. Remaining rows present implied dollar change for five percent change (in median income) or five point change (in Gini coefficient).