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PUBLIC GOODS AND ETHNIC  
DIVISIONS

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### ABSTRACT

We present a model that links heterogeneity of preferences across ethnic groups in a city to the amount and type of public good the city supplies. We test the implications of the model with three related datasets: US cities, US metropolitan areas, and US urban counties.

Results show that productive public goods -- education, roads, libraries, sewers and trash pickup -- in US cities (metro areas/urban counties) are inversely related to the city's (metro area's/county's) ethnic fragmentation, even after controlling for other socioeconomic and demographic determinants. Ethnic fragmentation is negatively related to the share of local spending on welfare. The results are mainly driven by observations in which majority whites are reacting to varying sizes of minority groups. We conclude that ethnic conflict is an important determinant of local public finances.

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*"Many white Americans have turned against a strategy that emphasizes programs they perceive as benefiting only racial minorities ... Public services became identified mainly with blacks, private services mainly with whites ... white tax payers saw themselves as being forced, through taxes, to pay for medical and legal services that many of them could not afford..." (page 193 and page 202) from Wilson (1996).*

## **Introduction**

When individuals have different preferences they want to pull fewer resources together for public projects. This paper argues that productive public goods -- education, roads, libraries, sewers -- supplied by US cities are inversely related to ethnic fragmentation in those cities. In cities where ethnic groups are polarized, and where politicians have ethnic constituencies, the provision of public goods is low and inefficient. Representatives of interest groups with an ethnic base are likely to value only the benefits of public goods that accrue to their groups, and discount the benefits for other groups. Undervaluing public goods provision, political actors choose to divert more public resources to private patronage.

The finding of this paper is *not* that when a particular ethnic group becomes a majority in a particular locality it lowers the provision of public goods. (It will turn out that our results are mainly driven by how white majority cities react to varying minority group sizes.) The finding is that voters choose lower public goods when a significant fraction of tax revenues collected on one ethnic group are used to provide public goods shared with other ethnic groups.

Here is an anecdote. Prince George's (PG) County, a Maryland county next to Washington DC, used to have a large white majority. After the influx of a large black middle class made the county much more diverse (although whites were still in the majority), PG voters passed a law called TRIM in 1978. TRIM puts a legal ceiling on the property tax rate, a binding constraint on the main source of revenue for school financing and other public services. Observers

conventionally cite TRIM as one reason for poor schools and other poor public services in PG County.

The county next door to PG County is Montgomery County, also a DC suburb. Montgomery is regionally (and even nationally) famous for the quality of its public services. Montgomery has a much larger white majority and so is less ethnically diverse than PG. Montgomery voters have decisively rejected tax limitation laws on several occasions. While Montgomery residents are 47% richer than PG residents, on average, the disparity in public services appears to be greater than can be explained by this income difference. For example, Montgomery County collects 2.4 times more local education revenue per pupil than does PG County.

It is hardly a new insight to argue that urban problems in America have something to do with racial tension. Conventional wisdom particularly points to racial tension in public education. This paper, however, goes beyond these generalities and documents specifically how ethnic fragmentation influences local public goods, as reflected in the size and composition of spending and the budget balance.<sup>1</sup>

The paper is organized as follows. Section I reviews some of the most relevant literature for our question. Section II develops a simple model which illustrates the relationship between polarization of preferences and public good provision. Section III presents empirical evidence drawn from cities, metropolitan areas, and urban counties. The last section concludes and indicates possibilities for further research.

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<sup>1</sup> The problem of ethnic polarization is not limited to blacks versus whites. As Wilson (1996) points out “antagonism toward inner city blacks is frequently expressed in the Latino neighborhoods that border the new poverty areas.” The same author emphasizes also the Korean versus inner city blacks tensions which exploded in incidents in New York and Los Angeles.

## I. Previous literature

Our paper crosses the boundaries of several branches of the literature. First, we have a small literature that seeks to explain formation of borders of political jurisdictions, as a function of diversity of individual preferences and economies of scale in the financing and of public goods. In particular, the model of the present paper is related to the one by Alesina and Spolaore (1995)

On the empirical side, Easterly and Levine (1996) report a strong negative correlation across countries between ethnic diversity (as measured by language) and indicators of public goods, such as numbers of telephones, percentage of roads paved, efficiency of the electricity network, and years of schooling. They conclude that ethnic diversity has something to do with Africa's poor economic growth.<sup>2</sup>

Second, a burgeoning literature on income inequality describes how neighborhood segregation by class (which has a strong ethnic dimension, although this is not emphasized by this literature) can play havoc with the public provision of education. Durlauf (1996) and Benabou (1996a) develop related models which show how city-suburb polarization is inefficient for human capital accumulation with local school financing. However, attempts to equalize spending in a polarized society only weaken support for spending on schooling.<sup>3</sup>

Three recent empirical papers on topics related to ours that feature US city data are those by Glaeser, Scheinkman, and Shleifer (1995), Cutler and Glaeser (1995), and Poterba (1996). The former authors find that one measure of city health -- population growth -- is worse in cities with a higher percentage nonwhite population (although this effect weakens with unemployment and

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<sup>2</sup> They also find that financial repression is more severe and black market premia are higher in ethnically diverse countries. (As an aside, popular discussion often compare troubled American cities to Third World countries. The American international aid agency, USAID, even gave advice to Baltimore about one kind of public goods supply -- childhood immunization).

<sup>3</sup> Borjas (1995) finds that there are "ethnic capital" effects even after controlling for neighborhood effects. This may create incentives for segregation along ethnic as well as class lines, although Borjas does not explore this particular implication.

schooling controls). Cutler and Glaeser (1995) find that blacks have worse outcomes on education, income, and other social dimensions in more segregated metropolitan areas. We speculate here that poor public goods outcomes might contribute to explaining these adverse outcomes in racially polarized cities. Poterba (1996) finds that a larger fraction of elderly in a jurisdiction leads to lower public spending on education. Interestingly, and in accordance with the argument of this paper, he also finds that “this reduction is particularly large when the elderly residents and the school age population are from different racial groups.” Cutler, Elmendorf, and Zeckhauser (1993) find support for their hypothesis that people have “discriminatory community preferences” where they only “care about the welfare of others within their {ethnic} community”. (P. 180).

Third, a large local public finance literature inspired by Tiebout’s model bears on our topic, and focuses on the problem that heterogeneity of citizens creates for public good provision (Rubinfeld (1987)). Tiebout’s (1956) resolution of the heterogeneity problem was that people can sort themselves into communities that provide the public goods they want. However, subsequent literature has pointed out numerous problems with Tiebout sorting, such as the restricted number of communities, the multidimensional nature of public goods, limitations to mobility, and economies of scale in public goods provision (Rubinfeld 1987, Atkinson and Stiglitz 1980). The social externalities raised by the inequality literature, as discussed above, also complicate the predictions of the Tiebout model. Finally there are legal constraints to extreme segregation by ethnic group, even if these constraints are only very partially effective.<sup>4</sup> Thus, despite the possibility of sorting, heterogeneous preferences within a community will not disappear in practice. This is all we need for our model.

By the way, the empirical local public finance literature has one finding which may be relevant to our study. Many studies of individual preferences find that blacks are *more* supportive

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<sup>4</sup> Examples are fair housing laws, housing discrimination lawsuits, and recent court battles over locating subsidized public housing (mainly occupied by blacks) in wealthy white communities.

of spending on public education than whites.<sup>5</sup> This is interesting because it suggests that any association of increased ethnic diversity (which often means more blacks in the US data) with lower public education is *not* due to the fact that blacks themselves have a lower demand for public education.

Fourth, the sociological literature has also noticed ethnic divisions as a problem for public goods provision. Lieberman (1993) gets right to this paper's hypothesis when he writes that: "Ethnic groups must reach an accommodation on various issues. As the accommodations become more distasteful to one or more groups, the disaffected parties become more supportive of alternatives to public education." (p.171) The implication of this fact is a vicious circle, emphasized most vocally by Wilson (1987, 1996). Poor minorities in highly segregated cities need good public schools to improve their skills, but public schools provision is low because of ethnic conflict. The relative skill levels of minorities in ghettos does not improve and their poverty level increases, making problems of central cities' unemployment and decay even worse -- and ethnic conflicts even more acute.

## II. Theory

We first present the basic model and then consider some extensions.

### II.1. The basic model

Consider a political jurisdiction in which the population size is normalized at 1, with no loss of generality. There is no mobility in or out of the jurisdiction, an assumption which is briefly discussed below. The members of the jurisdiction have to decide, by majority rule, on a public good, both on its size and type. Public goods can be of different types, and different individuals have different preferences over them. The generic individual  $i$ 's utility function is given by:

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<sup>5</sup> Bergstrom and Goodman (1973), Neufeld (1977), Inman (1979), Bergstrom et al. (1982), Rubinfeld et al. (1987). For a dissenting finding see Denzau (1975).

$$u_i = g^\alpha(1 - l_i) + c \quad (1)$$

$$0 < \alpha < 1.$$

where  $g$  is the public good, which can be located anywhere on an ideological line capturing different individuals' preferences;  $l_i$  is the preference distance between individual  $i$  most preferred type of public good and the actual public good;  $c$  is private consumption. For the moment we assume that income is exogenous and equal for everybody. Private consumption is equal to disposable income:

$$c = y - t \quad (2)$$

where  $y$  is the exogenous pre-tax income and  $t$  is the lump-sum tax which, by assumption, is identical for everyone. This is natural, since everybody has the same pre-tax income, and a standard assumption in public finance is that taxes cannot be a function of individual preferences.<sup>6</sup> Note that since the population size is normalized at 1, per capita and aggregate variables are identical, so, for instance,  $g$  represents the size of the public good both in the aggregate and per capita terms. Then, the public budget constraint implies:

$$g = t \quad (3)$$

Using (1), (2) and (3) we can rewrite individual preferences as follows:

$$U_i = g^\alpha(1 - l_i) + y - g \quad (4)$$

This political jurisdiction has to decide, by majority rule, on the size and the type of the public good. We make the following assumption on the voting process:

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<sup>6</sup>There is a connection here with the literature on revelation mechanisms which we do not explore.



*Individuals vote first on the amount of taxation (thus on the size of the public good), and then on the type of the public good.*

This assumption is made for tractability, in order to avoid issues of multidimensional voting, which is not our focus. Also, note that this order of voting resembles common budget procedures in which the size of the budget is decided before its composition. In fact, in many real world situations the budget procedures require first a vote on the aggregate level of spending, and then a vote on the allocation of this total to different programs.<sup>7</sup>

We now solve the model backward, starting with the following result, which derives from a straightforward application of the median voter theorem, and is a slight generalization of a result by Alesina and Spolaore (1995).

**Proposition 1:** *For any positive amount of public good,  $g$ , the type chosen is the one most preferred by the median voter.*

Let us now consider the choice of the size of the public good,  $g$ . Individual  $i$ 's preferred size is given by the result of the following problem:

$$\underset{g}{\text{Max}} U_i = g^\alpha (1 - \hat{l}_i) + y - g \quad (5)$$

where  $\hat{l}_i$  is the distance of the individual  $i$  from the ideal type of the median voter. This formulation incorporates the fact that the voters know that, after a decision is reached on the size of  $g$ , the type chosen is the one most preferred by the median voter. The solution of (5) ( $g_i^*$ ) is:

$$g_i^* = \left[ \alpha (1 - \hat{l}_i) \right]^{\frac{1}{1-\alpha}} \quad (6)$$

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<sup>7</sup> For a recent discussion of budget procedures see Alesina and Perotti (1996) and a survey of the literature.

Define  $\hat{l}_i^m$  the median distance from the type most preferred by the median voter, in short the “median distance from the median.” A straightforward application of the median voter theorem implies the following result:

**Proposition 2:** *The amount of public good provided in equilibrium is given by:*

$$g^* = \left[ \alpha(1 - \hat{l}_i^m) \right]^{\frac{1}{\alpha}} \quad (7)$$

From Proposition 2, it follows that:

**Corollary:** *The equilibrium amount of public good is decreasing in  $\hat{l}_i^m$ , the “median distance from the median.”*

The “median distance from the median” can be considered an indicator of polarization of preferences, as illustrated in Figure 1. Panel (a) shows a case of low “median distance from the median,” panel (b) shows a case of a larger “median distance from the median.” The picture of panel (b) could be an example of a racially polarized society, with two separate groups with relatively homogenous preferences within the group, but very distant preferences across groups.

In summary, if  $\hat{l}_i^m$  is high, a large fraction of the population have preferences which are very far from the chosen type of public good, therefore they would prefer to keep taxes low and devote more resources to private consumption rather than public consumption. A jurisdiction with two (or more) polarized groups (like panel b of figure 1) is a prime example of high “median distance from the median.”

## II.2 Discussion

We now discuss how migration, productive public goods, patronage, and income inequality might affect the predictions of the model. We also relate the polarization described in the model to ethnic divisions.

*II.2.i. Geographical Mobility.* Thus far we have imposed no geographical mobility, a restrictive assumption, in light of the results on sorting and stratification derived from the Tiebout model. In reality, complete stratification does not exist: cities and communities are ethnically diverse.<sup>8</sup>

Mobility with exogenous costs of moving could be added to the model without destroying the results. The costs of moving would prevent complete stratification and would imply that one can observe ethnic fragmentation in equilibrium. Note however, that the possibility of moving (at a cost) would influence the voting equilibrium, since forward looking voters would take into account the effects of their decisions on population flows in and out of their community.<sup>9</sup> The possibility of mobility would impose an upper limit on the “median distance from the median.” In fact, beyond a certain point of dissatisfaction, some individuals would move out of the community.

*II.2.ii. Productive public goods.* Consider now the case in which the public good is also productive, in addition to providing utility directly. Namely, assume that, for every individual  $i$ :

$$\begin{aligned} y_i &= \delta + \beta g \\ 0 < \beta < 1. \end{aligned} \tag{8}$$

where  $\delta$  is an exogenous constant. Individuals’ utility function is still given by (1). For simplicity we are assuming that any type of public good has the same effect on everybody’s income. A good example of a public good with these features would be public schools. Different individuals may have different preferences on the type of school, but public schools may, in general, be income increasing.

By repeating exactly the same procedure as before, we find that the equilibrium amount of  $g$ , is now given by:

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<sup>8</sup> Note also that Cutler, Glaser and Vigdor (1996) show that segregation within metropolitan areas has been declining since the late sixties.

<sup>9</sup> See Epple and Romer (1991) on this point.

$$g^* = \left[ \frac{\alpha(1 - \hat{i}_t^m)}{1 - \beta} \right]^{\frac{1}{1-\alpha}} \quad (9)$$

Not surprisingly, the equilibrium amount of public good is increasing in  $\beta$ , its marginal effect on individual income. Using (8) and (9) one can show that average income ( $\bar{y}$ ), is decreasing in the “median distance from the median”:

$$\bar{y} = \delta + \beta \left[ \frac{\alpha(1 - \hat{i}_t^m)}{1 - \beta} \right]^{\frac{1}{1-\alpha}} \quad (10)$$

One could also extend the model to a case in which public spending on education may influence the lifetime income of different individuals in different degrees. For instance, a poor minority might be totally dependent on public spending on education at the primary level to grow out of poverty. Ethnic fragmentation may have adverse income effects particularly on that fraction of the population which more heavily depends on publicly provided services to enhance their income potential.

*II.2.iii Preference polarization and ethnicity.* In our theoretical model, the preference polarization that fuels interest group conflict is not necessarily related to ethnicity or race. In the empirical work which follows in the next section, we use ethnic composition (which is easily observable) to capture conflicts amongst groups. Much scholarly and general writing suggests that preferences about public policy and ethnic origins are strongly correlated, and political conflicts over public policies are more and more often fought along ethnic dividing lines. Wilson (1996), Page (1996), Bell (1992), Hacker (1995), Kozol (1991), Huckfeldt and Kohfeld (1989), amongst numerous others, argue that conflicts over public policy in general and public goods provisions in particular, are more and more determined by racial cleavages not class cleavages. Their titles are sufficiently

eloquent: “*Two Nations: Black and White, Separate, Hostile, and Unequal*” (Hacker) and “*Race and the Decline of Class in American Politics*” (Huckfeldt and Kohfeld).<sup>10</sup>

For illustrative examples of polarized preferences over public goods, consider first language instruction in public schools. Without commenting on what is desirable public policy, let’s describe the actual reaction of different ethnic groups to language instruction in, say, Oakland California. Language is an issue for blacks in Oakland, as witness the recent furor over the proposal by the Oakland School Board that black English be recognized as a separate language (“Ebonics”). Although far from consensus on the Ebonics extreme, many blacks feel that inner-city black children speaking non-standard English have a right to programs that meet their needs. Many Hispanic parents complain of insufficient public resources for their children to get English as a Second Language classes or bilingual education. Many Hispanics reacted hostilely to the ill-fated Ebonics proposal as “a thinly veiled effort to grab bilingual funds.” Black parents responded that bilingual education has diverted resources away from addressing the special needs of *their* children. Asian parents in turn complain that Hispanic children get more bilingual resources than do *their* children. For their part, many whites have objected to the diversion of *any* resources to *any* non-standard-English instruction.<sup>11</sup> If *all* ethnic groups are dissatisfied, this may be a good indication of polarized groups who have wound up at an unhappy position in the middle. The result, according to our theoretical model, is that Oakland spends less on education than they would have in the absence of such polarization.

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<sup>10</sup> Huckfeldt and Kohfeld (1989) present several case studies of city politics with race cleavages which are consistent with the spirit of our paper. An excellent example is their discussion of St. Louis in the early to mid eighties (pages 18-22). As another polarization anecdote, they note that all-white precincts in the 1985 St. Louis mayoral election of a white against a black candidate voted for the white candidate by a margin of 40 to 1. Many such examples exist: only 23 percent of white (usually Democratic) New Yorkers voted for the black Democratic mayoral incumbent David Dinkins; only 12 percent of (usually Democratic) Chicago whites voted for the black Democratic mayoral candidate in 1983 (Hacker 1995, p. 231).

<sup>11</sup> The “thinly veiled” quote is from Los Angeles Times, January 19, 1997, Part A, Page 1. This section is based largely on a series of articles by the LA Times during the “Ebonics” controversy.

Other public goods bring out similar divisions. Public libraries have to choose the language, authorship, and subject matter of their books: different ethnic groups do not have identical preferences for language, authorship, and subject matter. Ethnic groups can have polarized preferences even over a seemingly neutral public good like highways. When ethnic groups are segregated within a city, these groups will have different travel patterns within the city. Then these groups will have different preferences for the location of major road arteries: each group wants the road arteries to be convenient to their own travel patterns. At the same time, no ethnic neighborhood itself wants to be bisected or isolated by an expressway. Kozol (1991, p. 180) argues that the Dan Ryan Expressway in Southside Chicago (built several decades ago) had a destructive effect on the Wentworth Avenue black neighborhood that was cut off from the rest of the city by the Expressway.

*II.2.iv. Interest group politics, patronage and composition of spending.* In societies with polarized groups, such as in panel (b) of Figure 1, interest group politics may become predominant, so that “groups” (and their representatives) become key political actors. Interest groups representatives may undervalue “true” public goods that benefit the community as a whole and favor spending programs and patronage targeted to their respective groups.

*II.2.v. Group conflicts and fiscal discipline.* A related issue is redistributive conflicts in highly polarized societies, i.e. with a high dispersion of preferences. Alesina and Drazen (1991) use a *war of attrition* model to how the conflict between different groups can *delay* the adoption of necessary measures to stop the increase in public debt. The reason for the delay is that the polarized groups cannot agree on the type and distribution of costs of the fiscal adjustment. Therefore, fiscal adjustments are postponed and deficits accumulate until a political agreement is reached between the conflicting groups or one (or more) group accept to pay a disproportionate

share of the fiscal adjustment. Therefore, more polarization of preferences should lead to less fiscal discipline, larger and more prolonged deficits, and higher public debt.<sup>12</sup>

*II.2.vi. Income inequality.* In our model income is the same for everyone. Differences in income have two important implications. First of all, income rather than (or in addition to) ethnicity may determine preferences. Empirically, we address this problem by controlling for both the level and the distribution of income. In a sense, our empirical analysis is a test of the proposition that ethnicity *in addition* to income is a determinant of preferences for public policy and local public finances.

Second, work by Romer (1975) and Meltzer and Richards (1981) showed that more income inequality leads to larger redistributive spending. The critical measure of inequality that determines the size of taxation and redistributions is the level of income of the median voter relative to the average voter. To the extent that localities are involved in redistributive spending, higher inequality, which may be related to ethnic composition, influences the amount of redistribution chosen at the local level.

*II.2.vii. Summing up.* The implications of the above theoretical discussion are as follows: 1) the composition of public spending is a function of the ethnic fragmentation: public good provision is lower in more ethnically fragmented localities; 2) fiscal discipline is more problematic in ethnically fragmented localities; 3) the sign of the correlation between the size of total government spending and ethnic fragmentation is not determined a priori, since transfers and patronage spending are positively related to ethnic fragmentation and public goods negatively related to the same variable.

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<sup>12</sup> For more discussion of this point, including a review of the empirical evidence, see Alesina and Perotti (1995). For related theoretical work, see Velasco (1994).

### III. The Empirical Evidence

We test our hypotheses with three cross-section samples of public goods spending in US urban localities: cities, metropolitan areas, and counties.

#### III.1 Data and Sources

We use the ethnic fractionalization (ETHNIC) index as a measure of ethnic fragmentation. ETHNIC measures the probability that two randomly drawn people from a city, county or metropolitan area belong to different ethnic groups.<sup>13</sup> Specifically, we consider the population distribution by race and we construct ETHNIC as follows:

$$ETHNIC = 1 - \sum_i (Race_i)^2 \quad (13)$$

where  $Race_i$  denotes the share of population self-identified as of race  $i$  and

$$i \in \{White, Black, Asian\ and\ Pacific\ Islander, American\ Indian, Other\}$$

We follow the racial classification used by the US Census. These classifications are somewhat arbitrary but they also reflect which ethnic groupings are politically salient. Note that “Hispanic” is not a mutually exclusive category with these racial classifications in the Census. Hispanic is reported separately as the answer to a different question on “origin”. However, there is a high correlation (0.9) between Hispanic and “Other” in the above classification. Many Hispanics apparently respond “other” because they do not feel accurately represented in the multiple racial choice provided by the Census.<sup>14</sup> For practical purpose, then, the category “other” is essentially “Hispanic.”

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<sup>13</sup> This is the same measure used for linguistic groups in nations by Canning and Fay (1993), Mauro (1995), Easterly and Levine (1996), and many others.

<sup>14</sup> Data is available from some states on the matching between Hispanic and Other. In California in 1990, 49.5 percent of Hispanics chose one of the existing racial categories and 50.5 percent chose “Other.” 92 percent of Hispanics who chose a racial category in California chose “White”. (Hacker 1995, p. 6, 253). When “Hispanics” respond to the race question with “white” or “black” rather than “other”, it may suggest they identify more with that ethnic category than with being “Hispanic” -- which is what is relevant for our purposes.



We made an effort to collect data at different levels of aggregation --- cities, metropolitan areas and counties -- for three reasons. First, there is going to be far more Tiebout sorting between city and suburb of one metropolitan area than between different metropolitan areas. Comparing the results at different levels of aggregation will give us some idea of the possible biases introduced by Tiebout sorting (although we also use instruments for possibly endogenous right hand side variables). Second, none of the datasets has an exact match between the unit of observation and the relevant jurisdiction for voting on the public good for all types of public goods. Different types of public goods have different jurisdictions, and the jurisdictions themselves are politically determined. Testing all of our results at different levels of jurisdiction will give us some idea whether the results are affected by these problems. Third, and most prosaically, some variables have data at one jurisdictional level but not at others.

Our county, metropolitan, and city data come from the County and City Data Book, 1994 (CCD) published by the Bureau of Census.<sup>15</sup> This publication provides data on a variety of subjects for a cross-section of U.S. counties, metropolitan areas, cities, and places. "Cities" in the source are incorporated places which had a 1990 population of 25,000 or more. Expenditures are assigned to the governmental level that executes them, regardless of whether they are financed by transfers from higher levels of government.<sup>16</sup> Nearly all the data in this publication comes from the Bureau of the Census and other federal agencies. Most of our data refers to the year 1990, unless otherwise stated, and uses the city and county data files.

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<sup>15</sup> Electronically we obtained the data from their CD-ROM version.

<sup>16</sup> See the data appendix for more details. We got these definitions from the statistical publications mentioned below and from a long, albeit nearly incomprehensible, document called the Government Finance and Employment Classification Manual (Census Bureau (1992)).

Especially for metropolitan and county data, we have supplemented CCD with data from the publication *City and County Plus (CCP)*.<sup>17</sup> For city data, we also included public library statistics from the *Public Library Survey*.

Our city sample, which includes places with 25,000 population and above, is 1076 observations. As described in the Appendix, we systematically checked each dataset by sorting each variable and examining extreme values. Our metro areas sample consists of around 300 observations. The county sample is about 1400 observations. Because we are focusing on urban public goods, we have excluded sparsely populated rural counties; we chose a county population cutoff of 25,000 to match the CCD's cutoff for cities.<sup>18</sup>

Less systematically, we looked whether the data made sense based on our (admittedly superficial) knowledge of US cities. We anecdotally note, for example, that the top seven cities for share of the population with a college degree are all college towns;<sup>19</sup> the two cities with the highest income inequality are Beverly Hills CA and Miami Beach FL; Beverly Hills is also the richest city with an income that is ten times that of the poorest -- Pharr TX; the top recipient of intergovernmental transfers is Washington DC, and this city has also the largest deficit before transfers (New York City is close behind Washington DC in these categories).

Table 1 reports the names and definitions of all the variables used in this paper. Table 2 reports summary statistics for the city sample. Analogous tables for the other samples are reported in the Appendix. In the city sample, our measure of ethnic fragmentation, ETHNIC, ranges from

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<sup>17</sup> Available from Slater Hall Information Products in both hard copy and CD-ROM. We obtain data from earlier years from *City and County Compendium (CCC)*, distributed on CD-ROM by Slater Hall Information Products.

<sup>18</sup> Note that there are counties with as few as 52 inhabitants! We omitted a small number of observations in each sample that a priori made no sense -- such as zero city government spending in a couple of cities - - as described in the data appendix. In any case, our results are robust to simply using the full available sample without removing any data anomalies (although we think it is better to remove observations that don't make sense). Results obtained using all the observations are available and are virtually identical to those presented in the text.

<sup>19</sup> In decreasing ranking order, East Lansing MI, Chapel Hill NC, West Lafayette IN, State College PA, Palo Alto CA, Ann Arbor MI, Davis CA.

.014 (for Gloucester MA) to .73 (for Carson CA).<sup>20</sup> For the sample of metropolitan areas, ETHNIC ranges from .024 (Dubuque IA) to .61 (Los Angeles – Long Beach CA) with a median of .247. For the County sample ETHNIC ranges from .007 (Wayne County WV) to .677 (Bronx County NY).

### **III.2. Results**

We discuss the controls we will use, presents results of different local fiscal variables regressed on ETHNIC and controls, and then discuss some sensitivity checks.

#### *III.2.i. Control variables.*

We are interested in the effect of ethnic fractionalization (ETHNIC) on various fiscal variables. For each regression, in addition to ETHNIC, we will successively include control variables. Our first control variable is income per capita, since more developed, richer cities may have more public goods. Our second control is city size, for which we use the log of 1990 population. The relationship between public goods and ethnic fragmentation may be driven by city size--with big cities being more fragmented and having “ghettos.” Also there are important scale factors in public goods. Educational attainment might be another possible omitted variable from our model, with more educated cities choosing better city policies, demanding more education for their children, and/or monitoring the provision of their public goods. For educational attainment we use BAGRAD, which is the fraction of population aged 25 or over which has completed college or a higher degree.

The next control is income inequality. One may argue that polarization of preferences is a function of polarization of income levels, rather than race. Therefore, income inequality, not ethnic fragmentation, might explain the pattern of provision of public goods. Our measure of income inequality is the ratio of the mean household income to the median household income in a

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<sup>20</sup> Since we have 5 ethnic groups, the maximum that ETHNIC could theoretically reach in our framework is .8, which would occur if each of the 5 groups accounted for 20 percent of the population.

jurisdiction. Note that this is the theoretically appropriate measure of income inequality in any model based upon the median voter theorem applied to fiscal decisions. Although we will later add the poverty rate as a robustness check, the mean to median measure is most consistent with the spirit of our theory.

We also control for the age structure, measured as the percentage of population which is 65 or older. The empirical local public good literature, briefly reviewed above, has emphasized the role of age structure as determinant of preferences for public goods, most obviously for education.

Table 3 illustrates our approach with the example of a regression for the city's share of spending on roads. The share of city spending on roads decreases with higher ethnic diversity: in all the regressions the coefficient on ETHNIC is highly significant with t-statistic ranging from -4.7 to -8.7. The magnitude of the coefficient has a nice shorthand interpretation in this and in all the other regressions -- it is the amount by which the dependent variable (in this case fraction of city spending on roads) would change going from complete ethnic homogeneity (ETHNIC=0) to complete heterogeneity (ETHNIC=1).<sup>21</sup> Hence, a move from complete homogeneity to heterogeneity would lower the roads spending share by around .09 (nine percentage points). In terms of our sample variation, a one standard deviation change in ETHNIC would change the share of spending on roads by one-quarter of a standard deviation.

ETHNIC remains significant after including control variables. Roads spending is inversely related to population size, to income inequality, and to age structure (although none of these results on the non-ETHNIC RHS variables turn out to be robust in the metro area and county samples on roads spending). We now present all our results organized by groups of related variables.

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<sup>21</sup> Although again remember that complete heterogeneity is not possible in our data because we have only 5 ethnic groups -- constraining ETHNIC to a maximum of .8 -- we mention this interpretation only because of its heuristic ease.

### III.2.ii. Expenditure shares.

Table 4 (like all the others which will follow) is organized in this way: the first column identifies the dependent variable. The following six columns report the coefficients and the t-statistics of the variable ETHNIC in six different regressions which are identical to those reported in full in Table 3.<sup>22</sup> We report in Table 4 our results for all three samples: cities, metropolitan areas, and counties. The control variables are the same in all three samples. The only difference is that for metropolitan areas and counties we present results using two stages least squares. We instrument for both ETHNIC and Income per capita, using the values of ETHNIC and Income per capita in 1979-80. (Results using OLS are similar and are available upon request. We did not have the earlier data to use as instruments for the city sample.) When a dependent variable does not appear in all three samples it is because of data availability. The pattern of results on the other control variables is reasonable.<sup>23</sup>

The results on ETHNIC are quite striking. ETHNIC is negatively associated with the share in the budget of three “productive” public goods: education, roads, and sewerage and trash pickup.

The roads result for cities we have already featured in Table 3. We now see that this roads result is robust across all three samples. As a robustness check we also estimate the effect of

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<sup>22</sup> For the sake of completeness we also report in this table the regressions on the expenditure share on roads, which are, of course, identical to those of Table 3.

<sup>23</sup> To anticipate the most robust effects of the other control variables across all our regressions: income has a positive effect on the share of spending on police, road spending per capita, local education revenue collected per student, taxes and spending per capita, and all indicators of library use and availability. Local income has a negative effect on federal and state education revenue per pupil. Population size has a positive effect on education spending per pupil, taxes per capita, federal, state, and local revenue per pupil, and a negative effect on share of health spending. The fraction with a college degree has a negative effect on intergovernmental transfers, and a positive effect on education revenue collected per student. Inequality has a negative effect on education spending per pupil. The percent of the population 65-and-up has a positive effect on education spending per pupil (oddly enough) but a negative effect on the *share* of spending going to education. Complete results are available upon request.

ETHNIC on roads spending *per capita* rather than as a share of the budget; this effect is significant in all three samples.

The share of spending for welfare is also negatively associated with ETHNIC, even though in the metro area sample a few of the coefficients are only marginally significant at conventional levels. A one standard deviation increase in ETHNIC is associated with a fifth of a standard deviation decrease in the share of welfare spending. We speculate that ethnic groups dislike redistributive programs that favor other groups.<sup>24</sup>

The share of expenditure on police increases with ETHNIC, in all three samples. Police spending obviously has something to do with crime, and indeed the size and significance of this coefficient would be reduced if we controlled for crime. The correlation across cities between ETHNIC and violent crimes per capita is .48. We do not control for crime in these regressions because we regard crime as endogenous to public goods quantity, income, income distribution, and ethnic diversity, and so is one of the channels through which these other variables influence public choices. Moreover, crime is not the only channel for ETHNIC, since adding a crime variable in all these regressions does not destroy the significance of ETHNIC as an explanatory variable.<sup>25</sup>

Spending on health and hospitals strongly increases with ETHNIC in the metro and county samples (this item does not usually show up in city budgets and so is not in the city sample). We are not sure why this item, which includes a mixture of public goods provision and transfers in the form of subsidized health services, is positively related to ETHNIC.

Of course, if most shares are going down with ETHNIC, some other shares must be going up. The categories of spending that Table 4 includes account for, on average, 73 percent of the budget in the county sample, 67 percent of the budget in metro areas, and 51 percent of the budget

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<sup>24</sup> Page (1996, p. 247) cites a 1986 poll in which 17 percent of whites supported increased spending on programs that primarily assisted blacks, compared to 74 percent of blacks.

<sup>25</sup> Results in this and in all the other regressions which follow on this point are available.

in cities. The residual includes interest payments on debt and various discretionary programs. This “other” unidentified spending could include “patronage,” although we have no direct evidence that this is so. We find in the city and county results -- although not in the metro sample -- that this residual share is positively, significantly, and robustly related to ETHNIC.

### *III.2.iii Public education and its financing.*

Table 5 (organized exactly as Table 4) reports regressions on the public school spending per pupil at the county and metro levels and the financing of this spending at the county level.<sup>26</sup>

Local spending per student (including that financed by intergovernmental transfers) is negatively associated with ETHNIC. In the simple correlation, local government spending per pupil would be \$1662 lower in a fully heterogeneous metro area compared to a fully homogeneous area; a move of one standard deviation in ETHNIC would move spending per pupil one-quarter of a standard deviation. In the county sample the effect of ETHNIC on local government spending per pupil is also strongly significant, although smaller in magnitude.

For the county level we have interesting data on the breakdown of the sources for financing public schools (Table 5 again). Federal revenue provided per pupil is strongly positively correlated with ETHNIC, state level revenues per pupil are also positively associated with ETHNIC (although with much lower t-statistics), while local revenues per students are strongly *negatively* associated with ETHNIC. One possible interpretation of this pattern is that ethnically diverse counties cannot rely as much on local sources of revenues because different ethnic communities do not want to contribute to public education, so these communities need to rely more heavily on higher levels of governments.<sup>27</sup>

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<sup>26</sup>City level data is not useful, since education most of the time is executed by a non-city agency like the county.

<sup>27</sup>We also examined absolute figures on school enrollment. However we had difficulty finding a proper age-adjusted base for these enrollment figures and finding data to control for the problem of grade repeaters. Perhaps as a consequence, a crude measure of total (public and private) school enrollment divided by population aged 5 to 17 performed counterintuitively. It was *negatively* related to income.

### *III.2.iv Libraries.*

Table 6 presents some results on another public good: the availability and use of public libraries. Use may reflect the underlying quality of the public library. The use of public libraries may also capture some notion of “social cohesion.” Many (though not all) of the coefficients on the availability and use of libraries are negative and significant, indicating lower availability and/or use of public libraries in ethnically fragmented cities. The strongest results are on library circulation per capita. Note that this result holds even when we control for income and educational attainment.<sup>28</sup>

### *III.2.vi Fiscal Aggregates.*

Table 7 reports results on aggregate fiscal variables: intergovernmental transfers, deficits and debt, total spending, and total revenues. ETHNIC is positively associated with more intergovernmental transfers in the city and county samples. Namely, more ethnically fragmented localities receive more transfers per capita from higher levels of government, even after controlling for the level of income and its distribution.

There is some evidence that the fiscal balance before intergovernmental transfers tends to be worse in more ethnically fragmented localities, although this result is not robust across samples. The only robust result on this point comes from the city sample. More ethnically fragmented cities have a larger deficit (or smaller surplus) even *after* intergovernmental transfers, even though the latter are positively associated with fragmentation. Although the deficit result was not robust in metropolitan areas and countries, those samples feature a related robust result that accumulated local debt is positively associated with ETHNIC.

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which is not conventional wisdom (it was positively related to ETHNIC). This may be because the variation in repeater rates dominates other sources of variation in the sample. We also could not detect a pattern of “white flight” in looking at public vs. private school enrollment, which may also reflect the poor quality of gross enrollment figures as well as the lack of data on parochial vs. nonparochial private schools.

<sup>28</sup> Data on libraries are not available for metropolitan areas and countries.



Total spending is significantly and positively associated with ETHNIC in all three samples. For example, in the city sample, a one standard deviation increase in ETHNIC is associated with one-seventh of a standard deviation increase in spending per capita. A move from zero to complete heterogeneity would imply an increase in spending per capita of 400-500 dollars.

We found some evidence that ethnic fragmentation is associated with more public employees per capita (results not shown, but available on request). The simple correlation is strong. Going from complete homogeneity to heterogeneity would imply about 4 more city employees per 1,000 inhabitants at the city level (a 40% increase over the median value). Controlling for income the result remains, but it is not robust to population and other controls.

We had difficulty exploring this result further, because data at the metro and county levels does not break out local government employment separately from state employment. For whatever it's worth, the aggregate of state and local employment per capita is robustly and positively associated with ethnic. Going from homogeneity to complete heterogeneity is associated with 10 more city, county, and state government employees per 1000 at the county level (a 20% increase over the median value). Federal government employment within the local area also increases strongly with ETHNIC, although this result must have a different political economy interpretation than the one on local government employment. Patronage is a possible explanation for increased local public employment with higher ethnic fragmentation, but we can do nothing more than speculate given the inclusion of state employment in this data.

The results on local tax revenues are not consistent. Taxes are positively associated with ETHNIC in cities (although the magnitude of the tax increase with ETHNIC is less than half of the spending increase with ETHNIC). Taxes are *negatively* associated with ETHNIC in metro areas and counties (although the negative association is far from consistently significant).

The strong results on fiscal aggregates are on deficits or debt, and total spending. These results suggest the following summary pattern. Total spending tends to go up with higher ETHNIC. Yet local taxes go up much less with ETHNIC, or may even go down. So the higher local spending with higher ETHNIC is financed by a combination of higher debt and deficits, and more intergovernmental transfers.

*III.2.vii Some sensitivity analysis.*

The consistency of our pattern of results across different levels of aggregation gives us some reassurance that the results were not badly contaminated by endogenous migration, even if our use of instrumental variables did not fully resolve such endogeneity. One would expect migration responses to be much stronger between cities and suburbs rather than between metro areas; our results, however, do not change between the city and metro area levels of aggregation.

We also examine what aspects of ethnic divisions may be captured by the summary variable ETHNIC. The largest minority in American localities is, of course, blacks. Not surprisingly the share of blacks (BLACK) is correlated with ETHNIC.<sup>29</sup> Therefore one may wonder whether ETHNIC is practically equivalent to BLACK, which may imply different interpretations of the empirical results presented thus far. The difference between ETHNIC and BLACK lies in whether all ethnic groups are treated symmetrically: (1) ETHNIC captures divisions between five ethnic groups while BLACK captures only black vs. non-blacks. (2) ETHNIC treats as equivalent two observations with (a) 70% whites and 30% blacks and (b) 30% whites and 70% blacks, whereas BLACK implies the two are very different. If, for whatever reason, BLACK was the “true” variable affecting local fiscal behavior then the coefficients on ETHNIC should go to zero when BLACK was included in the regressions.

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<sup>29</sup> BLACK and ETHNIC have a positive simple correlation equal to 0.579 in the city data, 0.715 in the metro data, and 0.794 in the urban county data.

This is not the case. Our results survive in that ETHNIC retains, by and large, the effects described above. In some cases the t-statistics on ETHNIC are reduced, but remain well above standard level of significance.<sup>30</sup>

Another closely related question: do our results on ETHNIC come about because government fiscal outcomes are different depending on whether whites or blacks are in charge (i.e. whether the median voter is black or white)? The travails of black majority cities such as Washington DC are well-known. Moreover, it *is* true that black majority cities have much higher ETHNIC (.46) than do white majority cities (.27), because white majorities are usually larger than black majorities. So ETHNIC could just be proxying for black majorities vs. white majorities.

This turns out not to be true. We test the idea by restricting the sample to localities with a white majority. If the effect of ETHNIC on our fiscal policy variable was due to the difference between black-majority and white-majority cities, then the coefficients on ETHNIC should go to zero in the solely white-majority sample. In fact, when we rerun all our regressions on the sample of localities with a white majority our results are almost entirely unchanged. This result is unsurprising once we realize that the vast majority of the sample consists of white-majority localities (92% in cities, 100% in metro areas, and 98% in counties). Our results are more consistent with the idea that white majorities vote to reduce the supply of productive public goods as the share of blacks and other minorities increases.<sup>31</sup>

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<sup>30</sup> The results on ETHNIC are robust to the inclusion of BLACK for education spending (shares and per pupil), education financing by source, roads spending (shares and per pupil), sewerage spending shares, library availability and use, police spending shares, city government surpluses after transfers, expenditure per capita (metro and county samples), and debt per capita. The exception to robustness to BLACK is share of local spending on welfare. The ethnic asymmetry between BLACK and other groups regarding welfare is an interesting subject for further research.

<sup>31</sup> A serious statistical analysis of localities with a black majority is almost impossible. The samples are too small. In the city or county sample, there are between 21 and 40 observations (14 - 33 degrees of freedom). There are no black majority metropolitan areas. In the black majority cities, ETHNIC will increase as the share of blacks decreases and as the share of whites increases (a check of the sample shows that the variation in ETHNIC in the black majority cities is driven mainly by black vs. white). In the black majority city sample with 36 observations, just for the record, the only statistically significant result is that the share of police spending still goes up with ETHNIC.

Finally, to check further that income distribution is not accounting for our results on ETHNIC, we have added one additional control for income differences as a determinant of fiscal policy. In addition to income level, and the ratio of median to mean household income, we have added the poverty rate as a control. Our results on ETHNIC are robust in all three samples to this additional control.<sup>32</sup>

#### IV. Conclusions

More ethnically diverse jurisdictions in the United States have higher spending and higher deficits/debt per capita, and yet devote lower shares of spending and less per capita spending to core public goods like education and roads. The higher spending in more ethnically diverse jurisdictions is financed in part by higher federal transfers rather than by local taxes. This pattern is consistent with political economy theories in which heterogeneous and polarized societies will value public goods less and will be collectively careless about fiscal discipline.

These results point to some interesting future research questions. The issue of ethnic fragmentation is obviously related to the problem of racial segregation, since ethnically fragmented jurisdictions are often segregated. An important question which we want to pursue in further research is how the negative effects of ethnic fragmentation on public goods, which we have documented in this paper, relate to segregation. First of all, as we mentioned above, if ethnic fragmentation with segregation leads to a low supply of public goods (particularly education), then the segregated disadvantaged ethnic group may fall further behind perpetuating a vicious circle.<sup>33</sup>

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<sup>32</sup> The regressions run here were the reduced form including only ETHNIC, per capita income, the mean to median income ratio, and the poverty rate. The three latter variables are so collinear we felt we could not stretch the data by using the full set of control variables. All the regressions discussed in this section on sensitivity are available upon request.

<sup>33</sup> Note that public school is *not* the only example of this. Wilson (1996) for instance notes that poor public transportation systems from inner city ghettos to the location of job opportunities, increases the costs of finding and keeping jobs for inner city minorities. In Washington DC, by way of anecdote, the segments of the metro that served poor black neighborhoods were the last (by many years) to be completed -- some are still not completed today.

Second, since ethnic fragmentation is associated with public goods problems documented in the present paper, policymakers may be tempted to choose segregation and decentralization in order to enforce relatively homogenous communities. Benabou (1996b) presents a model in this spirit, where stratification by income is more efficient in the short run to deal with heterogeneity in the production process. However, there is a second dynamic effect: stratification increases heterogeneity and therefore, in the long run decreases economic efficiency. We think there are analogous questions to be pursued for stratification by ethnic group. While separation of ethnic groups may have some short term benefits, it may have devastating long run costs. Short termist policymakers might be tempted to opt for increased segregation and decentralization to handle ethnic polarization. However, this would then only increase ethnic polarization, making the problem worse. A longer run policy perspective, in a Benabou-type model, calls for increasing the incentives for mixing and desegregation.<sup>34</sup>

In summary, our results contribute to explaining why the problem of urban public goods in America appears so intractable. The public goods problem is linked to another problem that also appears intractable: ethnic divisions.

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<sup>34</sup> Segregation has decreased in the last twenty years, as noted by Cutler, Glaser and Vigdor (1996). It would be interesting to investigate what effect this has had on urban public goods. One currently popular story worth testing is that the most successful blacks are moving to the suburbs; those left in the inner city are perceived as more and more different from the white majority living in the suburbs; the public goods problem gets even worse.

## References

- Alesina, A. and A. Drazen (1991) "Why are Stabilizations Delayed?" *American Economic Review*, 81: 1170-88.
- Alesina, A. and R. Perotti (1995). "The Political Economy of Budget Deficits" *IMF Staff Papers*, p 1-31.
- (1996). "Budget Deficits and Budget Institutions," NBER Working Paper No. 5556.
- Alesina, A. and E. Spolaore (1995). "On the Number and Size of Nations." NBER Working Paper No. 5050.
- Atkinson, A.B., and J. Stiglitz (1980) *Lectures on Public Economics*, McGraw-Hill Book Company, New York.
- Bell, Derrick (1992). *Faces at the Bottom of the Well: The Permanence of Racism*. New York. Basic Books.
- Benabou, R. (1996a) "Equity and Efficiency in Human Capital Investment: The Local Connection," *The Review of Economic Studies*, 63: 237-264.
- (1996b) "Heterogeneity, Stratification, and Growth: Macroeconomic Implications of Community Structure and School Finance," *American Economic Review*, 86, 3: 584-609.
- (1993). "Workings of a City: Location, Education and Production," *Quarterly Journal of Economics*, Volume CVIII, Issue 3, 619-652.
- Bergstrom, T., D. Rubinfeld, and P. Shapiro (1982) "Micro-based Estimates of Demand Functions for Local Schools Expenditures," *Econometrica*, 50: 1183-1205.
- Borjas, G. (1992). "Ethnic Capital and Intergenerational Mobility," *Quarterly Journal of Economics*, 107, 123-50.
- (1995). "Ethnicity, Neighborhoods and Human Capital Externalities," *American Economic Review*, 85, 365-90.
- Canning, D. and M. Fay (1993). "The Contribution of Infrastructures to Economic Growth," unpublished.
- Crane, J. (1991). "The Epidemic Theory of Ghettos and Neighborhood Effects on Dropping Out and Teenage Childbearing," *American Journal of Sociology* 96.
- Cutler, D., D. Elmendorf, and R. Zeckhauser (1993). "Demographic Characteristics and the Public Bundle," *Public Finance*, 48: 178-198.
- Cutler, D. and E. Glaser (1995). "Are Ghettos Good or Bad?" NBER Working Paper No. 5163.

- Cutler, D., E. Glaser and J. Vigdor (1996). "The Rise and Decline of the American Ghetto." unpublished.
- Denzau, A. (1975) "An Empirical Survey of Studies on Public School Spending," *National Tax Journal*, 28: 241-249.
- Durlauf, S. (1996) "A Theory of Persistent Income Inequality," *Journal of Economic Growth*, 1: 75-93.
- Easterly, W. and R. Levine (1996), "Africa's Growth Tragedy: Policies and Ethnic Divisions." World Bank, mimeo.
- Epple, D. and T. Romer (1991). "Mobility and Redistribution," *Journal of Political Economy*, 99: 828-58.
- Glaser, E., J. Scheinkman, and A. Shleifer (1995) "Economic Growth in a Cross-section of Cities," *Journal of Monetary Economics*, 36: 117-43.
- Glazer, N. and D. Moynihan (1963). *Beyond the Melting Pot*, Cambridge: MIT Press.
- Hacker, Andrew (1995). *Two Nations: Black and White, Separate, Hostile and Unequal*. New York, Scribner's.
- Huckfeld, R. and C.W. Kohfeld (1989). *Race and the Decline of Class in American Politics*, University of Illinois Press: Urbana.
- Inman, R. (1979) "The Fiscal Performance of Local Governments: An Interpretive Review," in P. Mieszkowski and M. Straszheim, eds., *Current Issues in Urban Economics*, The John Hopkins Press: Baltimore, 270-321.
- Jaffe, H. and T. Sherwood (1994) *Dream City: Race, Power, and the Decline of Washington, D.C.*, Simon and Schuster.
- Kain, J. (1968). "Housing, Segregation, Negro Employment, and Metropolitan Decentralization," *Quarterly Journal of Economics*, 82: 175-197
- Kozol, J. (1991) *Savage Inequalities: Children in America's Schools*, Crown Publishers Inc.: New York.
- Lieberman, M. (1993) *Public Education: An Autopsy*, Harvard University Press.
- Meltzer, A. and S. Richard (1981). "A Rational Theory of the Size of Government," *Journal of Political Economy*, 89: 314-27.
- Mauro, P. (1995). "Corruption and Growth," *Quarterly Journal of Economics*, 110: 681-712.
- Neufeld, J. (1977) "Taxrate Referenda and the Property Taxpayers' Revolt," *National Tax Journal*, December: 441-456.

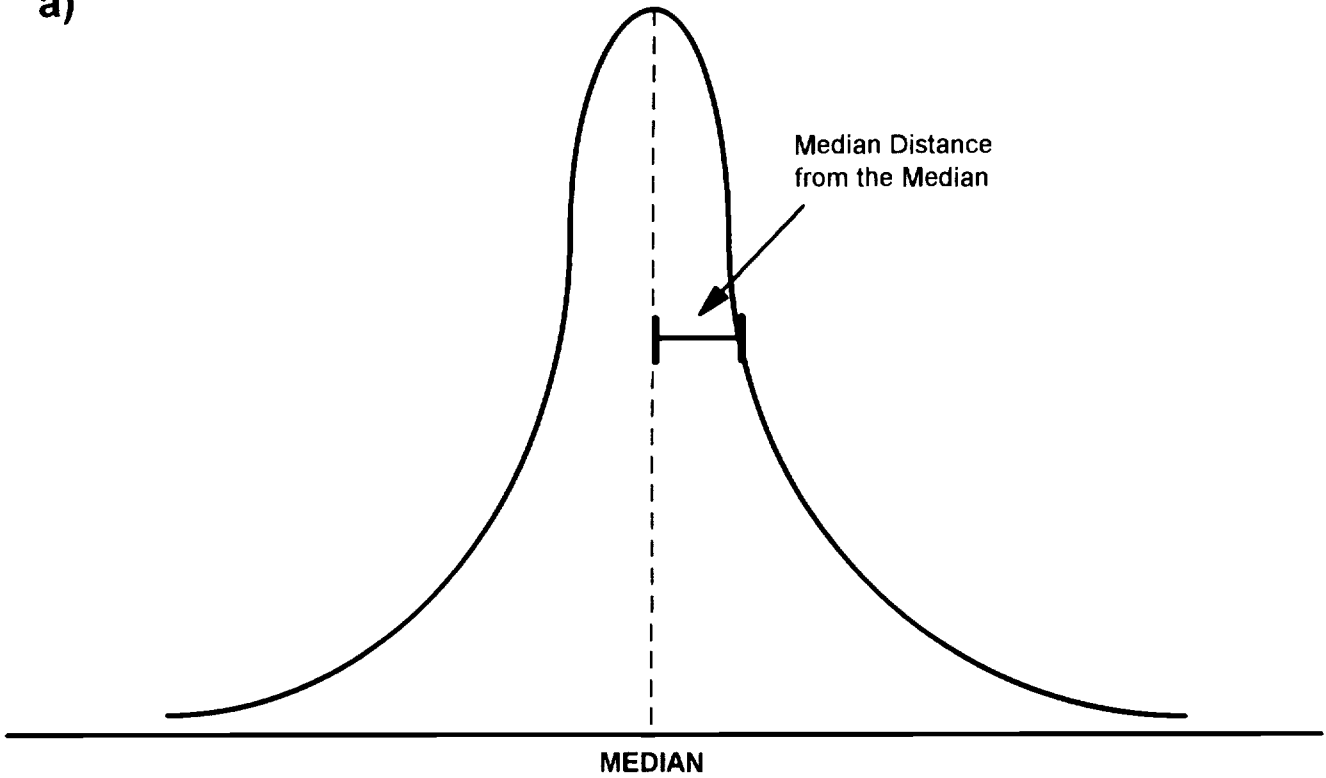
- Page, C. (1996) *Showing My Color: Impolite Essays on Race and Identity*, HarperCollins.
- Perotti, R. (1996). "Growth, Income Distribution and Democracy: What the Data Say," *Journal of Economic Growth*, 7: 149-88.
- Rubinfeld, D. (1987) "The Economics of the Local Public Sector," in A.J. Auerback and M. Feldstein, eds., *Handbook of Public Economics*, Vol. II: 571-645, North Holland.
- Rubinfeld, D. P. Shapiro, and J. Roberts (1987) "Tiebout Bias and the Demand for Local Public Schooling," *Review of Economics and Statistics*, 426-437.
- Tiebout, C. (1958). "A Pure Theory of Local Expenditures." *Journal of Political Economy*, 64: 416-424.
- Velasco, Andres. 1994, "A Model of Endogenous Fiscal Deficits and Delayed Fiscal Reforms." CV Starr Center Report 93-4, New York University.
- Wilson, W. (1987). *The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy*, Chicago: University of Chicago Press.
- Wilson, W. (1996) *When Work Disappears: the World of the New Urban Poor*. New York : Knopf (distributed by Random House, Inc.).



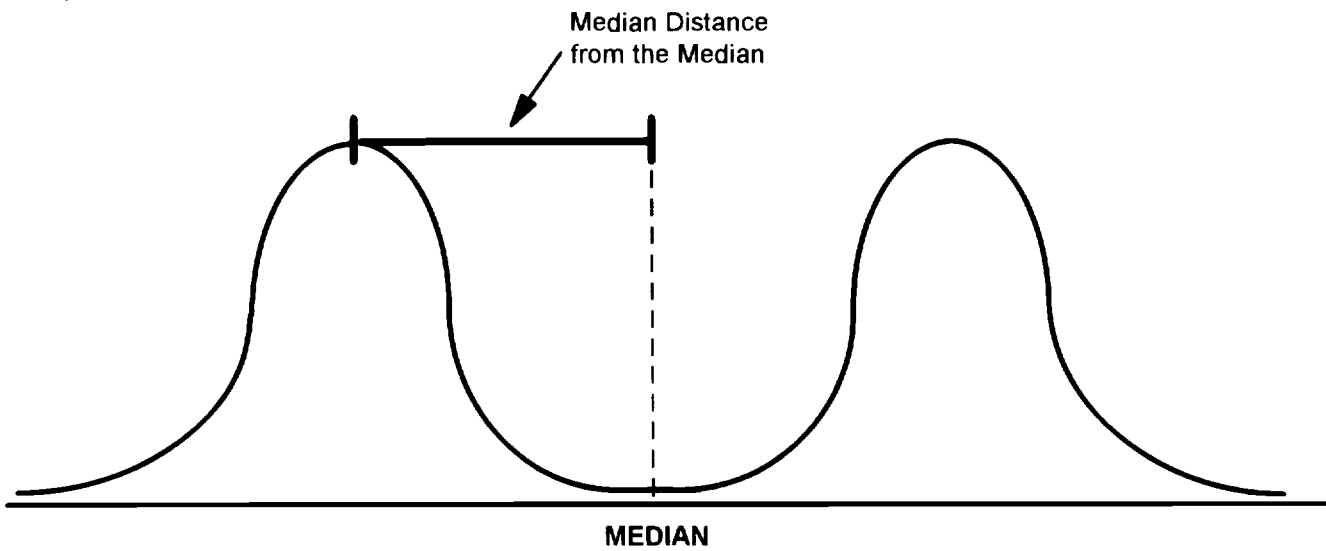
# FIGURE 1

## Examples of Different "Median Distances from the Median"

a)



b)



**Table 1: Variable Definitions**

Observations are for 1990 unless otherwise noted.

<b>Ethnicity</b>	
Ethnic Fractionalization	Measures the probability that two persons drawn randomly from the population will belong to different self-identified ethnic groups (white, black, American Indian, Asian, and other), hence ranges from 0 (complete homogeneity) to 1 (complete heterogeneity).
Ethnic Fractionaliz. 1980	Ethnic Fractionalization Index in 1980.
Black	Black, fraction of total population.
American Indian	American Indian, Eskimo, or Aluet. (fraction of total population.)
Asian	Asian or Pacific Islander. Total (fraction of total population.)
Other race	Not Black, Aindian, Asian, or White (fraction of total population); proxy for Hispanic.
White	White, fraction of total population

<b>Education</b>	
Local spending per Student	Local government expenditure for education 1992 per student (metro and county datasets only)
Fed. Revenue per Student	Education Revenue Per Student From Federal Sources (county dataset only)
Local Revenue per Student	Education Revenue Per Student From State Sources (county dataset only)
State Revenue per Student	Education Revenue Per Student From Local Sources (county dataset only)
Percentage BA Graduates	Persons 25 years and over, fraction with Bachelor's degree or higher.

<b>Government</b>	
Intergovt Revenue per capita	Revenue from transfers from higher levels of government, per capita, 1990-91.
Taxes per capita	Total local government taxes per capita, 1990-91.
Surplus per capita	Per capita Local government surplus.
Surplus per capita before transfers	Per capita local government surplus excluding intergovernmental transfers from revenue.
Debt per capita	Per capita local government debt outstanding.
Expenditure per capita	General local government expenditure per capita, 1990-91.
Share of spending on health	Fraction of General local government expenditure for health and hospitals.
Share of spending on education	Fraction of General local government expenditure for education.
Share of spending on police	Percent of General local government expenditure for police protection.
Share of spending on fire protection	Fraction of General local government expenditure for fire protection. (Available for cities only).

Share of spending on roads	Fraction of General local government expenditure for highways.
Share of spending on welfare	Fraction of Local government direct general expenditures for public welfare. (Metro and county only).
Share of spending on sewerage and trash pickup	Fraction of General local government expenditure for sewerage and trash pickup. (Available for cities only).
Spending on roads per capita	Per capita expenditure on highways.

<b>Income and Population</b>	
Number of households	Number of households.
Fraction of population >65	Fraction of population that is 65 years or older.
Log of Population	Log of Population.
Median household income	Median household money income, 1989.
Income per capita	Per capita money income, 1989.
Income per capita, 1979	Per capita money income, 1979
Mean to median income ratio	Ratio of mean to median household income. constructed from above variables

<b>Libraries</b>	
Librarians per capita	Total number of Full Time Equivalent (FTE) employees holding the title of librarian per capita.
Books per capita	Number of books and serial volumes per capita.
Audiotapes per capita	Number of audio materials per capita.
Videos per capita	Number of video materials per capita
Annual circulation per capita	Total annual circulation transactions per capita.

**Table 2: Summary Statistics on City Data**

<i>Variable Name</i>	<i>Mean</i>	<i>Median</i>	<i>Min.</i>	<i>Max.</i>	<i>Std. Dev.</i>	<i>No. of Obs.</i>	<i>Unit</i>
American Indian	0.01	0.00	0.00	0.14	0.01	1076	Fraction
Asian	0.04	0.02	0.00	0.84	0.08	1076	Fraction
Percentage BA Graduates	0.23	0.20	0.02	0.71	0.12	1076	Fraction
Black	0.12	0.04	0.00	0.98	0.16	1076	Fraction
Annual circulation per capita	6.20	5.43	0.28	34.31	3.61	717	Transactions per capita
Audiotapes per capita	0.09	0.06	0.00	0.65	0.08	700	Units per capita
Books per capita	2.49	2.22	0.37	14.42	1.28	715	Units per capita
Videos per capita	0.02	0.01	0.00	0.33	0.02	666	Units per capita
Ethnic Fractionalization	0.29	0.28	0.01	0.73	0.17	1076	Fraction
Expenditure per capita	876	710	161	7154	561	1020	\$ per capita
Share of spending on police	0.16	0.15	0.00	0.48	0.07	1020	Fraction
Share of spending on fire protection	0.09	0.09	0.00	0.25	0.05	1020	Fraction
Share of spending on roads	0.11	0.10	0.01	0.43	0.07	1020	Fraction
Share of spending on sewerage and trash pickup	0.13	0.12	0.00	0.67	0.09	1020	Fraction
Spending on roads per capita	81	68	2	371	51	1020	\$ per capita
Librarians per capita	1.4	1.2	0.0	7.6	0.9	706	Librarians/ 10,000 population
Mean to median income ratio	1.26	1.24	1.03	2.25	0.14	1076	Ratio
Income per capita	14,861	13,682	5,561	55,463	5,002	1076	\$ per capita
Other race	0.05	0.01	0.00	0.67	0.08	1076	Fraction
Fraction of population >65	0.12	0.12	0.02	0.49	0.05	1076	Fraction
Log of Population	10.97	10.76	10.13	15.81	0.77	1076	Log of # People
Intergovt Revenue per capita	209	123	1	2456	245	1020	\$ per capita
Surplus (after transfers) per capita	-21	-6	-1866	677	142	1020	\$ per capita
Surplus (before transfers) per capita	-230	-149	-2321	411	286	1020	\$ per capita
Taxes per capita	373	296	38	3978	276	1020	\$ per capita
White	0.79	0.84	0.02	0.99	0.18	1076	Fraction

**Table 3: Dependent Variable is Expenditure Share on Roads, City Sample**

RHS Var.	1	2	3	4	5	6
CONSTANT	0.14 (31.44)	0.12 (14.07)	0.18 (7.35)	0.18 (7.40)	0.29 (9.33)	0.28 (9.22)
Ethnic Fractionalization	-0.098 (-8.69)	-0.090 (-7.68)	-0.080 (-6.39)	-0.079 (-6.34)	-0.060 (-4.72)	-0.083 (-6.38)
Income per capita		1.11E-06 (2.52)	1.14E-06 (2.56)	7.00E-07 (1.30)	-1.47E-07 (-0.26)	9.34E-07 (1.70)
Log of Population			-0.006 (-2.66)	-0.006 (-2.72)	-0.006 (-2.62)	-0.006 (-2.86)
Percentage BA Graduates				0.028 (1.25)	0.085 (3.42)	0.007 (0.26)
Mean to median income ratio					-0.096 (-6.03)	-0.047 (-2.86)
Fraction of population >65						-0.253 (-6.25)
No. of Obs.	1020	1020	1020	1020	1020	1020
Adj. R-sqr	0.065	0.070	0.074	0.074	0.105	0.129

Heteroskedasticity-corrected t-statistics are in parentheses.

table 4

**Table 4: Coefficients on ETHNIC in Six Regressions for Expenditure Shares**

Dependent Variable:	Regressions						#obs	Adj. R <sup>2</sup>
	1	2	3	4	5	6		
<i>City</i>								
Share of spending on roads	-0.098 (-8.69)	-0.090 (-7.68)	-0.080 (-6.39)	-0.079 (-6.34)	-0.060 (-4.72)	-0.083 (-6.38)	1020	0.13
Share of spending on sewerage and trash pickup	-0.047 (-2.97)	-0.077 (-4.85)	-0.066 (-3.72)	-0.063 (-3.59)	-0.089 (-5.04)	-0.079 (-4.34)	1020	0.09
Share of spending on police	0.057 (4.58)	0.071 (5.78)	0.096 (7.29)	0.093 (7.15)	0.105 (7.86)	0.099 (7.37)	1020	0.10
Share of spending on fire protection	-0.002 (-0.18)	-0.009 (-0.97)	-0.005 (-0.49)	-0.006 (-0.57)	-0.018 (-1.69)	-0.004 (-0.40)	1020	0.05
Spending on roads per capita	-36.4 (-4.30)	-18.6 (-2.12)	-30.6 (-3.30)	-29.8 (-3.23)	-27.5 (-2.86)	-37.0 (-3.59)	1020	0.08
<i>Metro</i>								
Share of spending on roads	-0.076 (-9.14)	-0.075 (-9.06)	-0.064 (-7.34)	-0.063 (-7.25)	-0.059 (-6.17)	-0.058 (-4.84)	304	0.22
Share of spending on police	0.024 (4.26)	0.025 (4.73)	0.028 (4.47)	0.028 (4.44)	0.018 (2.74)	0.020 (2.39)	304	0.18
Share of spending on education	-0.145 (-4.21)	-0.151 (-4.88)	-0.156 (-4.52)	-0.153 (-4.46)	-0.140 (-3.50)	-0.174 (-3.62)	304	0.17
Share of spending on health	0.219 (5.46)	0.216 (5.47)	0.241 (5.34)	0.242 (5.43)	0.260 (5.04)	0.269 (4.03)	304	0.10
Share of spending on welfare	-0.030 (-1.73)	-0.029 (-1.71)	-0.038 (-2.14)	-0.036 (-2.00)	-0.033 (-1.79)	-0.047 (-2.62)	304	0.01
Spending on roads per capita	-137 (-7.19)	-134 (-7.21)	-115 (-5.57)	-112 (-5.36)	-100 (-4.64)	-111 (-4.44)	304	0.15
<i>County</i>								
Share of spending on roads	-0.076 (-15.72)	-0.078 (-16.26)	-0.064 (-12.40)	-0.065 (-12.34)	-0.062 (-10.94)	-0.055 (-9.26)	1386	0.21
Share of spending on police	0.031 (10.96)	0.036 (13.10)	0.035 (10.75)	0.035 (10.67)	0.034 (9.69)	0.038 (10.44)	1386	0.20
Share of spending on education	-0.109 (-5.27)	-0.137 (-7.20)	-0.116 (-5.45)	-0.113 (-5.21)	-0.076 (-3.26)	-0.103 (-4.18)	1386	0.13
Share of spending on health	0.138 (6.78)	0.126 (6.30)	0.157 (7.26)	0.157 (7.19)	0.140 (5.94)	0.125 (5.02)	1386	0.07
Share of spending on welfare	-0.043 (-6.41)	-0.040 (-5.83)	-0.059 (-8.07)	-0.058 (-7.68)	-0.056 (-7.68)	-0.051 (-7.03)	1386	0.05
Spending on roads per capita	-139 (-13.29)	-133 (-12.34)	-110 (-8.97)	-111 (-8.62)	-109 (-8.07)	-96 (-7.20)	1386	0.11

Regressions 1 through 6 include the set of control variables that are in regressions 1 through 6 in Table 3.  
Heteroskedasticity-corrected t-statistics are in parentheses.

table 5

**Table 5: Coefficients on ETHNIC in Six Regressions for Education Spending and Financing**

Dependent Variable:	Regressions						#obs	Adj. R <sup>2</sup>
	1	2	3	4	5	6		
<i>Education Spending</i>								
<i>Metro</i>								
Local spending per student	-1662 (-4.14)	-1659 (-5.05)	-2189 (-5.61)	-2193 (-5.51)	-1873 (-4.54)	-1121 (-2.23)	292	0.31
<i>County</i>								
Local spending per student	-892 (-5.19)	-533 (-3.52)	-1102 (-5.94)	-1208 (-6.12)	-1103 (-5.89)	-630 (-3.36)	1373	0.28
<i>Education revenue per student by source</i>								
<i>County</i>								
Fed. Revenue per Student	347 (11.06)	316 (11.09)	280 (9.51)	267 (9.11)	228 (7.22)	214 (6.61)	1393	0.22
State Revenue per Student	459 (3.84)	382 (3.03)	157 (1.01)	175 (1.05)	350 (2.26)	429 (2.88)	1393	0.01
Local Revenue per Student	-1557 (-10.06)	-1035 (-8.06)	-1265 (-8.66)	-1340 (-8.83)	-1403 (-9.56)	-1054 (-6.98)	1393	0.49

Regressions 1 through 6 include the set of control variables that are in regressions 1 through 6 in Table 3. Heteroskedasticity-corrected t-statistics are in parentheses.

table 6

**Table 6: Coefficients on ETHNIC in Six Regressions for Libraries**

Dependent Variable:	Regressions						#obs	Adj. R <sup>2</sup>
	1	2	3	4	5	6		
<i>City</i>								
Librarians per capita.	-0.897 (-4.56)	-0.420 (-2.26)	-0.433 (-2.02)	-0.427 (-2.00)	-0.464 (-2.18)	-0.350 (-1.52)	706	0.25
Books per capita.	-0.683 (-2.22)	-0.259 (-0.84)	-0.326 (-1.06)	-0.325 (-1.05)	-0.385 (-1.14)	-0.059 (-0.17)	715	0.09
Audiotapes per capita	-0.063 (-3.42)	-0.034 (-1.94)	-0.045 (-2.63)	-0.045 (-2.58)	-0.050 (-2.67)	-0.031 (-1.56)	700	0.11
Videos per capita	-0.025 (-4.43)	-0.018 (-4.05)	-0.013 (-2.91)	-0.013 (-2.94)	-0.015 (-3.19)	-0.017 (-3.30)	666	0.11
Annual circulation per capita	-7.4 (-9.48)	-5.5 (-8.00)	-5.4 (-7.17)	-5.3 (-7.41)	-4.9 (-6.55)	-4.4 (-5.64)	717	0.34

Regressions 1 through 6 include the set of control variables that are in regressions 1 through 6 in Table 3.  
Heteroskedasticity-corrected t-statistics are in parentheses.



table 7

**Table 7: Coefficients on ETHNIC in Six Regressions for Fiscal Aggregates**

Dependent Variable:	Regressions						#obs	Adj. R <sup>2</sup>
	1	2	3	4	5	6		
<i>Government Balances</i>								
<i>City</i>								
Intergovt Revenue per capita	174.7 (3.45)	160.4 (3.01)	41.3 (0.95)	35.6 (0.82)	14.7 (0.33)	64.1 (1.39)	1020	0.07
Surplus (after transfers) per capita	-39.8 (-1.69)	-58.9 (-2.38)	-74.9 (-2.98)	-72.8 (-2.89)	-80.1 (-2.97)	-78.3 (-2.77)	1020	0.01
Surplus (before transfers) per capita	-214.5 (-3.81)	-219.3 (-3.75)	-116.2 (-2.25)	-108.4 (-2.10)	-94.8 (-1.76)	-142.3 (-2.55)	1020	0.05
<i>Metro</i>								
Intergovt Revenue per capita	269 (2.11)	271 (2.13)	260 (1.98)	296 (2.21)	299 (2.08)	24 (0.15)	304	0.08
Surplus (after transfers) per capita	96 (1.79)	96 (1.80)	81 (1.27)	86 (1.34)	15 (0.21)	6 (0.07)	304	0.02
Surplus (before transfers) per capita	-173 (-1.35)	-175 (-1.36)	-180 (-1.31)	-209 (-1.50)	-285 (-1.97)	-18 (-0.12)	304	0.06
Debt per capita	1438 (2.95)	1504 (3.28)	799 (1.67)	716 (1.51)	781 (1.54)	1117 (1.83)	303	0.17
<i>County</i>								
Intergovt Revenue per capita	293 (5.54)	280 (4.95)	229 (3.24)	264 (3.53)	212 (3.05)	166 (2.60)	1385	0.05
Surplus (after transfers) per capita	44 (1.15)	40 (1.03)	52 (1.10)	61 (1.24)	23 (0.47)	23 (0.48)	1385	0.003
Surplus (before transfers) per capita	-115 (-2.65)	-103 (-2.26)	-52 (-0.76)	-76 (-1.03)	-53 (-0.78)	-50 (-0.80)	1396	0.01
Debt per capita	837 (1.88)	1295 (3.18)	1187 (3.07)	1269 (3.21)	1131 (2.37)	1079 (2.24)	1386	0.01

table 7

**Table 7 (contd): Coefficients on ETHNIC in Six Regressions for Fiscal Aggregates**

Dependent Variable:	Regressions						#obs	Adj. R <sup>2</sup>
	1	2	3	4	5	6		
<i>Taxes, spending</i>								
<i>City</i>								
Taxes per capita	184.1 (3.25)	310.8 (5.09)	167.3 (3.13)	161.8 (3.05)	102.2 (2.00)	150.0 (2.73)	1020	0.17
Expenditure per capita	506.0 (4.44)	648.0 (5.29)	348.7 (3.33)	342.1 (3.27)	221.4 (2.15)	317.9 (2.96)	1020	0.12
<i>Metro</i>								
Taxes per capita	-140 (-1.27)	-106 (-1.49)	-228 (-2.61)	-227 (-2.54)	-253 (-2.62)	-173 (-1.61)	304	0.53
Expenditure per capita	497 (2.11)	541 (2.60)	555 (2.27)	594 (2.41)	628 (2.39)	420 (1.33)	304	0.21
<i>County</i>								
Taxes per capita	-172 (-2.80)	-3 (-0.05)	-63 (-1.19)	-69 (-1.24)	-108 (-2.20)	-47 (-0.97)	1386	0.45
Expenditure per capita	365 (3.16)	571 (5.38)	512 (4.18)	548 (4.33)	387 (3.18)	400 (3.35)	1386	0.15

Regressions 1 through 6 include the set of control variables that are in regressions 1 through 6 in Table 3.  
Heteroskedasticity-corrected t-statistics are in parentheses.

## Appendix: Description of the Data

Definitions of variables are the same in all datasets so details on variables are given in the city section and not repeated in the metro and county sections.

### I. City Data

The city data (except for the library data, see below) are all downloaded electronically from the CD-ROM version of the 1994 *County and City Databook (CCD)*, published by the Bureau of the Census.

Our most comprehensive city sample consists of 1083 observations. It includes the 1070 incorporated places of population 25,000 or more counted in the 1990 Census, 8 Census Designated Areas of Hawaii (since Hawaii has no incorporated places recognized by the Bureau of Census) and the five boroughs of New York city.<sup>1</sup> For consistency we treat New York City as one entity and don't use the observations on the five boroughs since for some of our measures the data are not provided on a breakdown by borough basis.

We checked the data for anomalous values by sorting each variable and examining the extreme high and low observations. This procedure led us to exclude two anomalous observations: Streamwood IL, which has 0 for local government expenditure, and Superior WI, which has 0 for local government taxes. We discuss the handling of other data anomalies below.

#### *1. City government spending*

The CCD data on city government spending are collected from the 1992 Census of Governments. Expenditure includes capital outlay and interest on debt.

As described in the *Government Finance and Employment Classification Manual*, June 1992, expenditure includes anything executed in the city budget, regardless of whether it is partly or wholly financed by a higher level of government.

Expenditure categories given in the *County and City Databook* are Education, Health and Hospitals, Police Protection, Fire Protection, Public Welfare, Highways, and Sewerage and Solid Waste Management. These categories are not exhaustive, as noted in the text of the paper.

Education includes local government operated elementary and secondary schools, and any universities, colleges, junior and/ or community colleges operated by the local government.

Health and Hospitals includes treatment and immunization clinics, environmental health services, ambulance services, support for private hospitals, and construction, maintenance and operation of public hospitals.

Police includes patrols, communications, custody of persons awaiting trial, and vehicular inspection.

Waste Management includes sanitary and storm sewers, sewage disposal, street cleaning, pickup and disposal of garbage.

Some functions are usually executed by other levels of government and so appear with zero spending in many cities. Education spending, for example, has 866 zeroes out of 1020 observations (the New England states and Virginia account for almost all of positive education spending by cities). Education is usually

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<sup>1</sup> In all our regressions we exclude two cities that have unexplained zeroes for some variables on the CD-ROM, as explained in the data appendix: Streamwood IL and Superior WI.

executed by counties or special school districts, and so does not pass through the city budget. Likewise, health and hospitals has 306 zeroes out of 1020, and welfare has 750 zeroes out of 1020. We did not run regressions for expenditure variables with a majority of zeroes.

Even spending on seemingly unavoidable city government functions is sometimes not assigned to cities. To take a random example -- Bowie, Maryland, a suburb of Washington DC, shows zero spending on police. Bowie does not have its own city police force; crime victims in Bowie summon the Prince Georges County police instead.<sup>2</sup> (This problem is not that serious for police spending -- there is only one other zero police observation in the sample.) Fire and waste management also have some zeroes (65 and 77, respectively, out of 1020 observations).

The (hopefully random) way in which different kinds of expenditures are assigned or not assigned to different levels in different cities will introduce some noise into the other public spending share dependent variables. As we discuss in the text, we use datasets at different levels of aggregation in part to make sure that the results do not depend on arbitrary expenditure assignment between levels.

The electronic data for expenditure and taxes *per capita* on the CD ROM did not match the printed version in the CCD, and included some absurdly high values. When we recalculated the per capita figures from aggregate spending and population data, the calculated values came close to reproducing the printed values in the CCD and stayed within a plausible range.

Intergovernmental revenue per capita includes amounts received from other governments as fiscal aid in the form of shared revenues and grants-in-aid, as reimbursements for performance of general government activities and for specific services for paying government (e.g. care of prisoners or contractual research) or in lieu of taxes. Excludes amounts received from other governments for sale of property, commodities, and utility services.

## *2. Ethnic classification data*

1990 Census data are reported according to how people identify themselves on a list that includes Black, American Indian, Asian, White, and Other. Hispanic is not a mutually exclusive category with the other ethnic classifications, since Hispanics can be of any race. "Other" in the above list seems to proxy for Hispanic, as the two have a correlation of 0.91.

## *3. Educational attainment*

Educational attainment (BAGRAD) is from a sample of persons 25 years and over performed in the 1990 census.

## *4. Income data*

Data on income in 1989 were collected during the 1990 census from a sample of persons 15 years old and over. Money income includes wage or salary income, self-employment income, interest dividends, social security benefits, welfare income, and retirement income. The definition of Household is all persons who occupy a housing unit, defined as a house, apartment, mobile home, or a single room occupied as separate living quarters.

## *5. Library Data*

1990 data from the Public Library Survey on nearly 9,000 local public libraries in 49 states (Hawaii is omitted for some reason) and the District of Columbia are collected through the Federal State Cooperative System for public library data. The data were submitted by state library offices. We obtained the data

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<sup>2</sup> This anecdote was helpfully supplied by Luann Bindschadler.

electronically from the National Data Resource Center (NDRC), Alexandria VA. The NDRC was established by the US Department of Education's National Center for Education Statistics to provide free access to education-related data.

## II. Metro areas

The metro data are downloaded from the 1994 CD ROMs called the *City and County Compendium* (CCC) and *City and County Plus* (CCP), which are an expanded electronic version of the publication *City and County Extra*, by Slater Hall Information Products.

The metro sample includes all Metropolitan Statistical Areas (MSA's) and Primary Metropolitan Statistical Areas (PMSA's) from the *City and County Extra* of Slater Hall Information Products, Inc.. The minimum size for metropolitan area is 50,000. The metro data aggregates all levels of local government in the metro area, including county, school district, other local district, and city.

PMSA's are MSA's that form part of a larger Consolidated Metropolitan Statistical Area (CMSA). Baltimore and Washington PMSAs together make up the Baltimore-Washington CMSA, for example. We decided that PMSA's are likely to be closer than CMSA's to the concept of regional political economy that we wished to capture.

The definition of MSA includes a generous definition of the urban hinterland. The Washington DC PMSA, for example, includes Montgomery, Prince Georges, Frederick, Charles, and Calvert Counties in Maryland, Alexandria, Arlington, Fairfax, Loudon, Prince William, Stafford, Clarke, Warren, Fauquier, Culpeper, Spotsylvania, and King George Counties in Virginia, and Berkeley and Jefferson Counties in West Virginia. This makes the metro data in general more aggregated than the county data.

We checked the data for anomalous observations by sorting each variable and examining the high and low values. This procedure leads us to exclude Honolulu, which strangely has a zero value for education spending, and New York City, which has extreme values for expenditure and taxes per capita (3.5 and 3.3 times larger than the second largest observations, respectively). Although many might believe that taxes and spending are extreme in the Big Apple, we found the population base implicit in this extreme figure in the data diverged from the reported population by a factor of 3.

We excluded the local debt per capita observation for RICHLAND-KENNEWICK-PASCO, WA (MSA), because it is larger by a factor of 4 than the second largest observation. We have the vague memory that there is a public utility nuclear plant hoondoggle going on here, but we have not checked it out further.

The expenditure share data includes classification for spending in the following categories: education, health and hospitals, police, welfare, and roads. The only one of these categories with some zero observations was welfare (18 zeroes out of 307 observations). As in the other datasets, these categories are not exhaustive.

### III. County Data

The county data are also downloaded from the 1994 CD ROMs called the *City and County Compendium* (CCC) and *City and County Plus* (CCP) by Slater Hall Information Products. The county data aggregates all levels of government located in the county -- city, school district, county, and any other.

These data cover the full 3,140 counties in the US. Some of the counties are thinly populated-- the minimum in the sample for population in 1990 is 52. As explained in the text we decided to focus on "urban" counties because of our focus on urban public goods. We therefore chose counties with populations above 25,000, the same population minimum the CCD uses for cities. This reduced the sample to 1,462 counties.

As with the other data sets, we checked for anomalies by sorting each variable and examining extreme values. We noticed systematic problems with sample observations in Virginia -- many have zero spending on core local government functions like roads and education. We concluded that Virginians are illiterate and have no roads.

No, just kidding -- further investigation revealed that Virginia (alone among the 50 states) has independent cities listed separately, which messes up data reporting. For example, both Fairfax City and Fairfax County are listed with their own data for all concepts. If -- for example -- the Fairfax county road authority handles the roads for both city and county, and the Fairfax city school board handles the education for both city and county -- then there will be a zero entry for road spending in Fairfax city and for education spending in Fairfax county. Not knowing how to resolve this problem, we wound up omitting all data for Virginia.

Counties in Hawaii were anomalously zero or near zero for education spending, just as Honolulu's education spending was strangely zero in the metro data. We omitted counties in Hawaii from the dataset.

The other data anomaly that we noticed and corrected was that federal expenditure per capita were listed as zero for four counties in New York City -- New York County itself, the Bronx, Queens, and Richmond. This would imply there were no federal judges or welfare recipients in New York City, which contradicts conventional wisdom. A check of the published source revealed that these data were not reported because of problem of assigning expenditure between these counties within New York City. We substituted NA's for the zeroes.

The county data, like the metro data, includes classification for spending in the following categories: education, health and hospitals, police, welfare, and roads. In the sample that we used, two of these categories still showed some zero entries, probably reflecting assignment of these functions to higher levels of government. There were 207 zeroes out of a sample of 1386 observations in welfare and 13 zeroes out of 1386 for health and hospitals.

**Appendix Table 1: Descriptive Statistics: Metro Sample**

<i>Variable</i>	<i>Mean</i>	<i>Median</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Std. Dev.</i>	<i>Observations</i>	<i>Unit</i>
American Indian	0.008	0.003	0.001	0.278	0.018	311	Fraction
Asian	0.018	0.010	0.002	0.206	0.024	311	Fraction
Percentage BA Graduates	0.197	0.187	0.095	0.440	0.062	311	Fraction
Black	0.104	0.069	0.001	0.458	0.102	311	Fraction
Debt per capita	1945	1664	196	8492	1187	306	\$ per capita
Local spending per student	4528	4406	2617	7704	1001	294	\$ per capita
Ethnic fractionalization	0.257	0.247	0.024	0.610	0.142	311	Fraction
Ethnic fractionalization, 1980	0.228	0.218	0.014	0.522	0.137	308	Fraction
Share of spending on education	0.458	0.464	0.248	0.722	0.082	307	Fraction
Share of spending on health	0.081	0.048	0.001	0.514	0.095	307	Fraction
Expenditure per capita	2023	1976	1120	3945	509	307	\$ per capita
Share of spending on police	0.050	0.049	0.008	0.100	0.014	307	Fraction
Share of spending on welfare	0.035	0.019	0.000	0.174	0.040	307	Fraction
Spending on roads per capita	100	95	9	301	46	307	\$ per capita
Share of spending on roads	0.050	0.048	0.008	0.141	0.022	307	Fraction
Mean to median income ratio	1.269	1.260	1.143	1.688	0.065	309	Fraction
Income per capita	13456	13122	6630	22049	2471	311	\$ per capita
Income per capita, 1979	7061	7038	3980	11339	1006	308	\$ per capita
Other race	0.031	0.008	0.001	0.291	0.051	311	Fraction
Fraction of population >65	0.124	0.120	0.037	0.338	0.035	311	Fraction
Log of Population	12.678	12.469	10.946	15.997	1.026	311	Log of # People
Intergovt Revenue per capita	781	704	295	1939	287	307	\$ per capita
Surplus per capita before transfers	-782	-713	-1924	-169	297	307	\$ per capita
Surplus per capita after transfers	-1	3	-654	512	122	307	\$ per capita
Taxes per capita	735	691	219	2197	276	307	\$ per capita
White	0.840	0.862	0.533	0.988	0.106	311	Fraction

**Appendix Table 2: Descriptive Statistics: County Sample**

<i>Variable</i>	<i>Mean</i>	<i>Median</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Std. Dev.</i>	<i>Observations</i>	<i>Unit</i>
Percentage BA Graduates	0.159	0.139	0.046	0.499	0.072	1400	Fraction
Debt per capita	1656	1119	15	79983	3066	1386	\$ per capita
Local spending per student	4295	4091	2081	11290	1110	1373	\$ per capita
Spending on roads per capita	108	96	3	507	66	1386	\$ per capita
Expenditure per capita	1850	1735	476	7558	601	1386	\$ per capita
Ethnic fractionalization	0.196	0.143	0.007	0.677	0.161	1400	Fraction
Ethnic fractionalization, 1980	0.178	0.120	0.005	0.659	0.157	1400	Fraction
Share of spending on education	0.504	0.507	0.168	0.875	0.112	1386	Fraction
Share of spending on health	0.089	0.037	0.000	0.583	0.110	1386	Fraction
Share of spending on police	0.044	0.043	0.005	0.119	0.016	1386	Fraction
Share of spending on welfare	0.029	0.011	0.000	0.205	0.038	1386	Fraction
Share of spending on roads	0.059	0.054	0.003	0.181	0.030	1386	Fraction
Mean to median income ratio	1.258	1.246	1.073	1.793	0.089	1400	Ratio of mean to median
Income per capita	12311	11825	4152	28381	2836	1400	\$ per capita
Income per capita, 1979	6515	6422	2668	12421	1180	1400	\$ per capita
Fraction of population >65	0.131	0.131	0.033	0.338	0.036	1400	Fraction
Log of Population	11.275	11.000	10.127	15.997	0.989	1400	Log of # people
Intergovt Revenue per capita	754	688	128	3677	303	1385	\$ per capita
Fed. Revenue per Student	200	177	0	2316	139	1393	\$ per capita
State Revenue per Student	1584	1365	0	7618	1069	1393	\$ per capita
Local Revenue per Student	2194	2081	0	6239	741	1393	\$ per capita
Surplus per capita before transfers	-535	-494	-5768	3021	312	1396	\$ per capita
Surplus per capita after transfers	9	9	-1532	2359	201	1385	\$ per capita
Taxes per capita	648	580	113	4112	325	1386	\$ per capita

(Excludes counties below 25,000 population, Virginia, and Hawaii as explained in Data Appendix)