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THE (UN)CHANGING GEOGRAPHICAL DISTRIBUTION OF HOUSING TAX BENEFITS: 1980–2000

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EXECUTIVE SUMMARY

Using tract-level data from the 1980, 1990, and 2000 censuses, we estimate how the income-tax-related benefits to owner-occupiers are distributed spatially across the United States. Even though the top marginal tax rate has fallen substantially since 1979 and the tax code more generally has become less progressive, the tax subsidy per household or owner was almost unchanged between 1979 and 1989 and then rose substantially between 1989 and 1999.

Geographically, gross program benefits have been and remain spatially targeted. At the state level, California's owners have received a disproportionate share of the subsidy flows over the past two decades. Their share of the gross benefits nationally has fluctuated from 19 to 22 percent. Depending on the year, these percentages represent from 1.8 to 2.3 times California's share of the nation's owners. The median ratio of the share of tax benefits to the share of owners has declined over time, from 0.83 in 1979 to 0.76 in 1999.

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Examining the data at the metropolitan-area level finds an even more dramatic spatial targeting and a spatial skewness that is increasing over time. Comparing benefit flows in 1979 in the top 20 areas versus those in the bottom 20 areas finds that owners in the highest subsidy areas received from 2.7 to 8.0 times the subsidy reaped by owners in the bottom group. By 1999, the analogous calculation finds owners in the top 20 areas receiving from 3.4 to 17.1 times more benefits than owners in any of the 20 lowest recipient areas. Despite the increasing skewness, the top subsidy recipient areas tend to persist over time. In particular, the high-benefit-per-owner areas are heavily concentrated in California and the New York City–Boston corridor. While taxes are somewhat higher in these places, it is high and rising house prices that appear most responsible for the large and increasing skewness in the spatial distribution of benefits.

1. INTRODUCTION

It is generally accepted that the favorable tax subsidy to homeownership in the United States stimulates the demand for housing, raising prices and increasing the homeownership rate.[1] The fact that this subsidy comes at a significant cost is also well documented at the national level, with several authors having estimated the tax expenditure associated with the mortgage interest and property tax deductions as well as the untaxed return on housing equity.[2]

Over time, these marginal incentives for homeownership—and the aggregate cost of these subsidies—have changed considerably. For example, Poterba's (1992) analysis of the impacts of the various tax reforms of the 1980s reports a significant increase in the marginal cost of owner-occupied housing between 1980 and 1990 across the entire income distribution and particularly for high-income owners, mostly because of a drop in marginal tax rates for high-income households and an overall reduction in the progressivity of the tax code. Even so, we calculate that the real cost of the tax subsidy to homeownership has risen substantially in the last 20 years, from $198 billion (in 1999 dollars) in 1979, to $284 billion in 1989, and to $420 billion in 1999.

In addition, recent evidence shows that the value of the subsidy to owner-occupied housing varies dramatically over space. In an earlier

[1] See Rosen (1979) for a classic analysis, and see Bruce and Holtz-Eakin (1999); Capozza, Green, and Hendershott (1996); and the report to the Ford Foundation by Green and Reschovsky (2001) for more recent investigations into how the tax code might function in these instances.

[2] For example, see Follain and Ling (1991), Follain, Ling, and McGill (1993) and Follain and Melamed (1998).

study (Gyourko and Sinai, 2003), using 1990 census data, we found that the benefits of the tax subsidy are highly skewed, with just a handful of metropolitan areas reaping most of the net gains from the favored tax treatment of owner-occupiers.

These sets of stylized facts naturally lead one to wonder whether the changes over time in marginal incentives for homeownership and in the aggregate cost of the homeownership subsidy have also affected the geographic distribution of the benefits. Because housing markets are inextricably tied to physical location and are not national in scope, knowing the extent to which the tax benefits vary spatially is important for determining the potential impact of any change in the tax treatment of owner-occupied housing. The nature of the spatial distribution of benefit flows is likely to be important for any consideration of the potential impacts on house prices, the homeownership rate, or the political economy of fundamental tax reform.

In addition, knowing how the geographical distribution of program benefits changes is also useful for analysis of the spatial equity of the tax treatment of owner-occupied housing. Every year, for example, the Tax Foundation (Moody, 2003) calculates each state's ratio of federal spending received to taxes paid and finds substantial variation across states. Our results, that the benefits of the subsidy to owner-occupied housing vary spatially, suggest that this sort of calculation should include implicit tax expenditures and subsidies alongside the observable taxes and spending. Indeed, many of the Tax Foundation's states with the lowest ratios of spending to actual taxes paid are the same states whose homeowners receive the largest housing-related subsidies.

In this paper, we examine how the spatial distribution of the tax subsidy to owner-occupied housing changed over three decades. Using the 1980, 1990, and 2000 censuses, we calculate the value of the tax subsidy to owner-occupied housing as the difference in ordinary state and federal income taxes currently paid by homeowners and the taxes they would pay if the tax code treated them like landlords. In the latter scenario, there is no preference for investing in one's home relative to other assets.

We find that the marginal tax subsidy for homeownership has decreased over the last 20 years on net, but the aggregate value of the tax benefits actually increased. Our analysis indicates that this increase is due to rising house prices and the growth in the number of homeowners more than offsetting the decline in average tax benefit per dollar of house. In particular, the after-tax cost of a dollar of owner-occupied housing rose between 1979 and 1989, before falling slightly by 1999, as the marginal tax rates on housing deductions were reduced and then increased. If all other factors were held constant, one would expect the value of the tax benefit to fall with tax rates. However, this scenario does not occur at the per-owner level, where the benefit remained flat during the 1980s before rising by 20 percent during the 1990s. The fact that the aggregate subsidy rose substantially during the 1980s, from $198 billion in 1979 to $284 billion in 1989, is due at least in part to growth in the number of homeowners.

Regarding the spatial distribution of the subsidy, these tax changes, increases in house prices, and growth in the number of homeowners were not individually neutral. However, they happen to offset each other so that, at the state level, the spatial distribution of the tax benefits changes little over time. At the metropolitan-area level, however, spatial skewness of the subsidy has been increasing. This phenomenon appears to be driven by the relatively large increases in the price of houses experienced in various coastal areas of California and in the Northeast between New York City and Boston. Even so, the top recipients tend to persist; they just receive a larger fraction of the total subsidy over time.

Among states, California always receives the largest gross subsidy flow, but this distribution is not due solely to the fact that it has the most owners. For example, in 2000, it received 18.7 percent of the aggregate subsidy, although it had only 9.4 percent of the nation's owners. That high ratio of benefits to owners applies to only a small number of other states (such as New York, with 9.5 percent of total benefit flow while being home to only 5.3 percent of the nation's owners in 2000), indicating that this program has highly spatially targeted beneficiaries. This pattern of spatial skewness related to the flow of program benefits is even more extreme at the metropolitan-area level. Comparing subsidy flows in 1979 in the top 20 areas versus those in the bottom 20 areas finds that owners in the high recipient areas received from 2.7 to 8.0 times the subsidy reaped per owner in the bottom group. By 1999, the analogous calculation finds the typical owner in the top 20 areas receiving from 3.4 to 17.1 times more benefits than owners in any of the 20 lowest recipient areas.

The precise economic implications of these results depend on whether or not the subsidy is capitalized into land prices. While such an analysis is well beyond the scope of this paper, the broad range of possible outcomes can be readily understood. If the subsidy were fully capitalized, eliminating it would not affect the user cost of owning, but many owners in a few metropolitan areas would experience significant changes in wealth. While the savings associated with eliminating the subsidy would be redistributed back to homeowners, the net wealth effect could still be significant in many areas, regardless of how one thinks the tax benefits are financed. If the tax subsidy is not capitalized into land prices, then the user cost of ownership must reflect it.

The remainder of the paper is organized as follows. In section 2, we describe the tax subsidy to owner-occupied housing and how we measure it. Section 3 reports our results, beginning with an analysis of how benefits flow across states, followed by a description of the distribution across metropolitan areas. Finally, section 4 provides a brief conclusion.

2. MEASURING HOUSING-RELATED TAX BENEFITS

The fact that there is a subsidy to owner-occupied housing can be seen most easily by comparing the current tax treatment of homeowners to how they would be taxed if housing were treated like any other asset. In particular, owner-occupied housing gets favorable tax treatment, but housing owned by a landlord is treated like any other income-producing, depreciable asset. Both homeowners and landlords are allowed to deduct mortgage interest and property taxes as expenses (as long as the homeowner itemizes). But a landlord must pay tax on her rental income, while a homeowner does not. The homeowner implicitly pays herself rent to occupy her house, but because she is both landlord and tenant, that transfer is tax-free. If the parties were distinct, however, the rent would be taxed. On the other hand, landlords can deduct depreciation and maintenance, while homeowners cannot.

It is apparent from this comparison that the tax subsidy to owner-occupancy arises largely from the nontaxation of the implicit rent on the home. It is not so straightforward, however, to compute the amount of the benefit. Implicit rent is unobserved, and the components of landlords' tax bills are often difficult to estimate. Instead, as we show below, it is much more straightforward to calculate the difference between the equilibrium taxes paid by homeowners and landlords. Underlying this approach is the same assumption used in the familiar user-cost-of-owning concept developed in Hendershott and Slemrod (1983) and Poterba (1984): the marginal homeowner invests in owner-occupied housing until the point where the annual cost she incurs exactly equals the rent she would have to pay as a tenant in the same property.

We begin with the equilibrium annual flow cost of owning. That user cost is described in equation (1) and takes into account the fact that implicit rental income is untaxed, while mortgage interest and property taxes are deductible for itemizers:

$$R_H = (1-\tau_{\text{ded}})\alpha i + (1-\tau_{\text{ded}})\tau_p + (1-\tau_{\text{int}})(1-\alpha)r + (1-\tau_{\text{int}})\beta + M + \delta - \Pi^H \quad (1)$$

The left-side variable, R_H, is the annual cost of owner occupancy per dollar of housing value. This cost includes (1) the after-tax cost of mortgage interest, $(1-\tau_{ded})\alpha i$, where α is the loan-to-value ratio on the house, i is the mortgage interest rate, and τ_{ded} is the owner-occupier's marginal tax rate equal to her marginal rate (denoted τ_{int}) if she itemizes and zero otherwise; (2) the after-tax cost of property tax payments, $(1-\tau_{ded})\tau_p$, with τ_p equal to the effective property tax rate; (3) the after-tax opportunity cost of investing equity in the house rather than in some other riskless investment at rate of return, r, given by $(1-\tau_{int})(1-\alpha)r$ and is a cost to all owners, whether they itemize or not;[3] (4) an after-tax risk premium, $(1-\tau_{int})\beta$, to account for the difference in risk between bonds and housing, which applies to the entire long position in the house and thus is unaffected by the choice of leverage;[4] (5) annual maintenance costs per unit of housing, which are given by M; (6) the cost of true economic depreciation per unit of house, which is assumed to occur at rate δ; and (7) any annual appreciation in the house value, Π^H, which reduces the carrying cost.[5]

If the homeowner were treated as a landlord, the residence would be taxed just like any other asset. Neutral tax treatment obviously requires taxing the implicit rental income on the home, but if treated like landlords, owner-occupiers would also be able to deduct maintenance expenses and depreciation, not just the mortgage interest and local property taxes presently allowed. In this case, a different annual cost would result, as described in equation (2):

$$R_{H'} = (1-\tau)\alpha i + (1-\tau)\tau_p + (1-\tau)(1-\alpha)r + (1-\tau)\beta + \tau R_{H'} + (1-\tau)M + (1-\tau)\delta - (1-\tau)\Pi^H \qquad (2)$$

[3] We assume that the opportunity cost of tying up equity in a house is foregoing taxable returns. If the homeowner were to invest in a tax-exempt asset instead, we assume the return would be $(1-\tau)r$ rather than r, yielding the same after-tax return.

[4] In this framework, the homeowner's financial position can be thought of as being long one house and short one bond (the mortgage). This approach allows us to decompose the opportunity cost of being long one house as the riskless rate of return plus a premium that reflects the difference in risk between a bond position and an equivalent-risk alternative to investing in housing. The difference between the mortgage interest rate and the equivalent-duration riskless rate is reflected in the options to default on or prepay the mortgage. These options have value to the owner, so the premium above the riskless rate for borrowing is rolled into the mortgage rate as a cost.

[5] This specification treats capital gains on housing as untaxed and realized every year. Because a $250,000 capital-gains exclusion ($500,000 for married couples filing jointly) can now be applied every other year, this approach is not unrealistic. Even in earlier periods, the assumption of no capital-gains taxation on housing was valid for the vast majority of households.

With perfect competition in the rental housing market, rents must equal the annual cost, so $\tau R_{H'}$ would be the tax due on imputed rent.[6] Grouping the $R_{H'}$ terms and dividing both sides by $(1 - \tau)$ yields the simplified version in equation (3):

$$R_{H'} = \alpha i + \tau_p + (1 - \alpha) r + \beta + M + \delta - \Pi^H \tag{3}$$

One possible strategy for estimating the tax benefits of owner-occupancy is to compute $R_{H'}$ as the sum of the terms on the right side of equation (3), add that value to the homeowner's reported income, and then determine the additional tax that would be paid. This approach has two important drawbacks. One is that we do not have good data on maintenance, depreciation, or expected capital gains, so the estimate is likely to be a noisy one. The other is that simply adding the implicit rent to income does not accurately capture the impact of itemization rates because the tax rates on deductions differ for nonitemizers.

The alternative strategy we pursue in this paper is to compute the difference between $R_{H'}$ and R_H directly by subtracting equation (1) from equation (3):[7]

$$R_{H'} - R_H = \tau_{\text{ded}} \alpha i + \tau_{\text{ded}'} (\tau_p) + \tau_{\text{int}}\left[(1 - \alpha) r + \beta\right] \tag{4}$$

This approach shows the impact of itemization correctly, and the terms we would have the most problems measuring accurately (M, δ, and Π) difference out in the subtraction. Thus, the tax subsidy to owner-occupancy can be computed as the sum of three components: (1) the tax value of home mortgage interest deductions ($\tau_{\text{ded}} \cdot \alpha \cdot i$), (2) the tax value of local property tax deductions ($\tau_{\text{ded}} \cdot \tau_p$), and (3) the tax that would have been

6 This result also assumes accrual taxation of capital gains that, when combined with statutory ordinary income and with capital-gains rates being equal, allows us to focus on program benefits arising from differential tax treatment of ordinary income. As our 2003 paper (Gyourko and Sinai, 2003) shows, in this setting a dollar of house price appreciation has approximately the same value to owner-occupiers and landlords, so there is no differential impact on user costs. The analysis behind this conclusion is fairly complex, and we refer the interested reader to our 2003 paper for the details.

7 Note that we have abstracted throughout from the *amount* of housing dollars on which a homeowning family receives a subsidy. A change in the tax treatment of owner-occupied housing might affect house values, but because we measure the subsidy on a per-dollar basis, we abstract from the possibility that there is a second-order effect through changes in house prices. We follow this approach for two reasons. First, determining precisely how a change in the subsidy would be capitalized into house values is beyond the scope of this paper. Second, any change in house price would only increase the magnitudes of our estimates. For example, if the benefit to owner-occupied housing were reduced, house prices might also fall, further decreasing the subsidy.

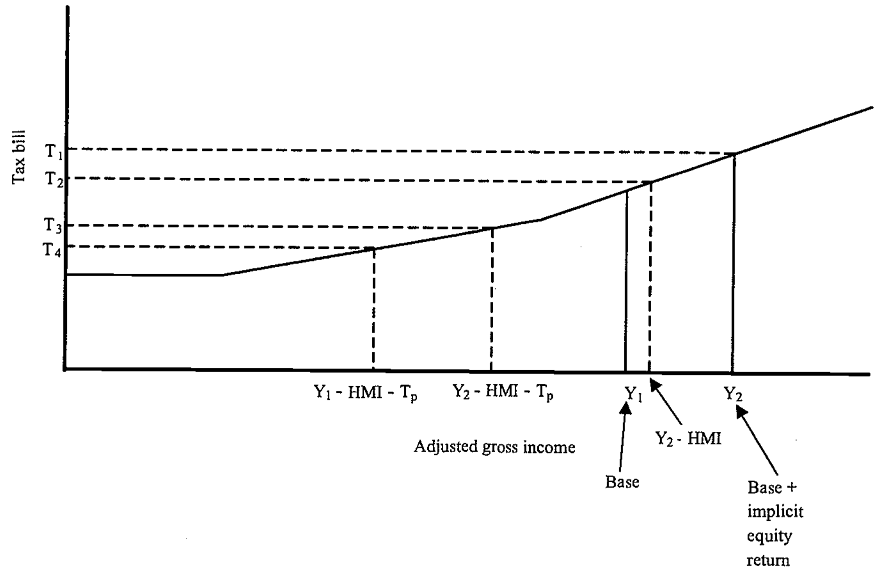

FIGURE 1. ***Calculating the Value of the Tax Subsidy***

paid on the equity invested in the home had it been invested elsewhere $\{\tau_{int} \cdot [(1-\alpha) \cdot r + \beta]\}$.[8] While the sum of these three terms represents total ordinary income tax benefits to owner-occupiers under the current code, we hasten to emphasize that this does not imply that mortgage interest or local property tax deductions themselves are responsible for creating the subsidy. As noted above, the subsidy arises from the nontaxation of imputed rent and merely can be represented algebraically by the three terms on the right side of equation (4). Looking at the deductions alone would underestimate the true subsidy.

2.1 Estimation Strategy and Data

The procedure for estimating the tax-code-related subsidy to owner-occupiers is represented graphically in the tax schedule with three marginal tax brackets shown in Figure 1. A homeowning family with no housing-related deductions would have a taxable income (TI) of Y_1. If they were not owners, however, they may have invested their housing equity in

[8] The depreciation term nets out because we have assumed that landlords can deduct economic depreciation and, after 1986, that assumption is probably not far from the truth. Deloitte and Touche (2000) and Gravelle (2001) conclude that economic lifetimes for rental properties in 1989 (and now) are somewhat shorter than the statutory lifetimes. The statutory depreciable life in 1981 (of 15 years) was shorter than true economic depreciation, so we may overestimate the subsidy to owner-occupiers in 1979.

a vehicle that yielded a taxable return that would raise their TI to Y_2. Thus, Y_2 is the counterfactual TI for a homeowning family if it were to stop being an owner. Starting with that TI, we can compute the tax value of each of the three aforementioned deductions. With a taxable income of Y_2, this hypothetical family would have a tax liability of T_1. Assume that claiming the home mortgage interest (HMI) deduction would lower TI to Y_2 – HMI (presuming for simplicity that all of HMI was above the standard deduction) and the tax liability to T_2. Therefore, the tax savings for this family from the mortgage interest deduction is $T_1 - T_2$.

In this example, the mortgage interest deduction does not move the family into a lower tax bracket, but the property tax deduction does. Beginning with TI equal to Y_2 – HMI, we can compute the tax savings from the property tax deduction as the tax bill with only the mortgage interest deduction, T_2, minus the tax bill with both the mortgage interest and property tax deductions, T_3. In this case, T_2 and T_3 span a kink in the tax schedule, but they still account for the fact that the average tax rate is less than the marginal tax rate at Y_2 – HMI.

Finally, we compute the value of the nontaxation of the return on housing equity. Because the return on housing equity is not included in TI, taxable income is measured at Y_1 instead of the greater amount Y_2. The tax value of not including that income is measured as the change in tax between T_3 (the tax bill corresponding to a TI of Y_2 – HMI – T_p) and T_4 (the tax bill corresponding to a TI of Y_1 – HMI – T_p).

It is apparent from Figure 1 that the order in which the deductions are taken matters when the tax schedule is not linear. For example, $T_1 - T_2 > T_3 - T_4$, even though HMI < $Y_1 - Y_2$. After adding back the implicit return on housing equity, we compute the deductions in the following order: (1) tax savings from the mortgage interest deduction, (2) the tax savings associated with the property tax deduction, and (3) the savings from the return on housing equity not being taxed. We have repeated the estimation using all six possible sequences in which the deductions can be taken. While the relative magnitudes of the categories change, the differences are minor.

We calculate each of the tax liabilities T_1 through T_4 by combining tract level information covering the entire United States from the STF3 files of the 1980, 1990, and 2000 decennial censuses (U.S. Bureau of the Census, 1980, 1990, 2000) with the National Bureau of Economic Research (NBER). TAXSIM program (Feenberg and Coutts, 1993). TAXSIM calculates federal and state tax liabilities from our tax data and allows us to engage in a "what if" calculation to determine what taxes would have been paid had a household not had various housing deductions or had invested in an asset with a taxable income stream. For each year in our data, the TAXSIM program incorporates all relevant federal and state tax law, including housing and property tax deductions.

To construct representative households to pass through the TAXSIM tax calculator, we start by computing the distribution of household income among homeowners at the tract level.[9] For each tract, we divide the household income distribution into deciles and assign the median income for each decile to all the households in that category. Thus, the one-tenth of the households with the lowest-income is assumed to have an income equal to that of the fifth percentile for the tract, the next lowest-income tenth of the households is assigned an income equal to that of the 15th percentile for the tract, and so forth.

We then map tract-level information on the distribution of house values, P_H, to incomes by assigning to households in each decile of the income distribution the value corresponding to the same decile of the house value distribution. For example, we assume that the household in the 5th percentile of the income distribution for the tract also owns the home in the 5th percentile of the housing price distribution for the same tract.[10]

The actual value of the tax benefits depends on certain demographic data that are likely to affect the number of exemptions and the overall amount of deductions. Tract-level data that are available in each census year include the distribution of households according to their description as single, married, or single with children; the percentage of households with children; and the percentage of households with at least one member over 65 years of age. We create a representative household for each possible combination of these characteristics and then compute the weighted average estimated tax, where the weights are the tract-level distributions of the demographic characteristics.

The census data lack information on most non housing categories of potential tax deductions. We compute mortgage interest, state tax, and property tax deductions, but we do not observe medical expenses, charitable

[9] All tax-benefit figures reported in this paper are based on tract-level data that aggregates household income across its various sources.

[10] This matching process presumes that owners and renters in a tract have identical income distributions. Fortunately, our spatial results are robust to assuming an extreme case in which all the owners in a tract have a higher income than any of the renters, and houses are matched to owners so that the highest-income owner owns the highest-value house, the next highest-income owner occupies the next highest-value house, and so forth. In reality, any sorting into houses by income would not be perfect, as is suggested by the data in O'Sullivan, Sexton, and Sheffrin (1995), who match tax returns and property tax assessments in California. Unfortunately, those data are no longer available. For the 1989 data, however, we have tried using the mean income and house value in each tract, rather than the full distribution, and it does not make any qualitative difference to the spatial skewness we observe.

giving, deductible interest (other than for a home mortgage), and several other miscellaneous categories. Two countervailing problems arise from underestimating possible deductions. First, we would be more likely to assume incorrectly that the family does not itemize. This error would cause us to underestimate the tax value of the mortgage interest and property tax deductions because less would be deducted at the margin. On the other hand, omitting deductions for itemizers could increase the tax value we do measure because the remaining deductions are applied against higher marginal tax rates. Consequently, we impute missing tax deductions to our census data based on data from the Department of the Treasury's Statistics of Income (SOI) public-use tax microsample. A modified Heckman-style sample selection model is employed to correct for the selective observing of deductions only by itemizers.[11]

Following the procedure shown in Figure 1, we augment the observed income by an estimate of how much higher the household's income would have been had its members invested in an equivalently risky taxable asset rather than housing. First, we calculate the opportunity cost of the equity in one's home, or P_H* $[(1 - \alpha)^*r + \beta]$, where r is the riskless yield on seven-year Treasuries in the relevant census year: 9.47, 8.57, and 5.79 percent, respectively. Then we compute β: the risk premium for the whole house.[12] The estimates below assume that the expected equivalent-risk opportunity cost of investing in a house is equal to the geometric mean on the value-weighted Standard & Poor's S&P500 return (including dividends) over a certain time period. For simplicity, we assume that the relevant period always runs from the beginning of 1926 to the end of the census year (i.e., 1926–1979, 1926–1989, and 1926–1999), yielding expected

11 The interested reader should see the appendix to Gyourko and Sinai (2003) for a detailed description of the procedure. The imputation results indicate that, without the correction, we would have underestimated deductions and therefore the number of itemizers. This turns out to be important because the underestimation of itemizers was not random across space. In high-house-value and high-income-tax states such as California, not observing nonhousing deductions only infrequently caused us to miscategorize an owner family as a nonitemizer. Home mortgage interest, local property taxes, and state income taxes generally were sufficient to make California residents itemizers. This scenario was not the case in many states with lower house values and lower state taxes. Hence, the imputation has an important effect on the measured spatial distribution of program benefits.

12 The risk adjustment follows from Poterba (1991), with the calculation effectively assuming that the mortgage rate would be the yield on seven-year Treasuries in the absence of the options to prepay or default. Other assumptions regarding the relative risk of owner-occupied housing obviously could be made because no clear agreement exists on this issue. However, we have repeated all the analyses reported in the paper under widely varying assumptions about the relative risk of owner-occupied housing. While the aggregate subsidy certainly does vary with the presumed opportunity cost of equity in the home, the nature of the spatial distribution of the subsidy across states and metropolitan areas is largely unaffected.

returns of 8.79, 10.13, and 11.22 percent, respectively. The risk premium is the difference between this yield and the risk-free yield. Thus, for 1989, we define β to be the 10.13 percent S&P500 return minus the 8.57 percent Treasury yield, for a premium of 1.56 percentage points. The opportunity cost of riskless equity and the risk premium are then added to income.

We estimate the value of the mortgage interest deduction by computing each tract-decile's tax value as the weighted average difference in tax bills with and without it. The mortgage interest deduction itself is defined as $P_H{}^*\alpha^*i$. Leverage ratios, α, vary by age and are computed from household data in the *Survey of Consumer Finances* (SCF) closest in time to the relevant census year. A weighted average leverage for each tract was computed based on the tract's age distribution.[13] The mortgage interest rate, i, was calculated by taking an average across households in the same SCFs. From the 1983 SCF, which is the closest in time to 1979, we calculate the average mortgage rate to be 10.21 percent. For 1989, the analogous rate was 9.56 percent, with a rate of 7.85 percent matched from the 1998 SCF to the 1999 census data.

The tax value of the mortgage interest deduction can differ from mortgage interest paid times the marginal tax rate for three reasons. First, only families that itemize on their tax returns receive any benefit on the margin from the deductibility of mortgage interest. Also, only the excess of the mortgage interest deduction plus other itemized deductions over the standard deduction has value for a taxpayer. Therefore, we would multiply only the portion of mortgage interest in excess of the standard deduction (after itemizing all other non-housing-related deductions first) by the tax rate. Because the tax schedule is nonlinear, taking the mortgage interest deduction may lower the taxpayer's marginal and average tax rates.

The second component involves the value of the deduction of local property taxes. Property tax payments themselves are defined as $P_H{}^*\tau_p$, where τ_p is the average effective property tax rate. We were not able to find reliable estimates for this variable over time. Consequently, we use information for an intermediate year—1990.[14] This variable is allowed to vary by metropolitan area using data provided by Stephen Malpezzi, who

[13] There is considerable heterogeneity in leverage by age in all years. For example, in 1998, loan-to-value ratios by age are as follows: 20- to 24-year-olds: 66.5 percent, 25- to 29-year-olds: 64.2 percent, 30- to 34-year-olds: 62.6 percent, 35- to 39-year-olds: 61.0 percent, 40- to 44-year-olds: 52.3 percent, 45- to 49-year-olds: 44.5 percent, 50- to 54-year-olds: 41.3 percent, 55- to 59-year-olds: 30.9 percent, 60- to 64-year-olds: 21.3 percent, 65- to 69-year-olds: 13.2 percent, 70- to 74-year-olds: 9.6 percent, and 75-year-olds, and older: 4.6 percent. Leverage in previous decades is lower, on average.

[14] Property taxes are such a small component of the total subsidy—about 10 percent—that the noise in this measure probably has little qualitative effect on our conclusions.

has calculated average property tax rates in 1990 for a large number of areas. Census tracts not located within metropolitan areas covered in the Malpezzi data are assigned the average state-level local property tax rate as reported by the Advisory Commission on Intergovernmental Relations (ACIR) (1987).[15] The tax value of the deduction associated with these payments is then computed the same way as for the mortgage interest deduction.

The third term we estimate arises from the fact that the government does not tax as income the return homeowners could have earned on their equity had they not invested in their homes. We calculate the reduction in tax liabilities that occurs when we remove the imputed income that we had added in the first step. This approach accounts for the possibility that a family might move into a higher marginal tax bracket if the return on its housing equity were taxed.

3. RESULTS

3.1 *Summary Statistics for the Nation*

The national aggregate gross value to owners of housing-related ordinary income tax benefits, reported in the second column of Table 1, is quite large and has risen over time—from $198 billion in 1979 to $284 billion in 1989, to $420 billion in 1999 (in constant 1999 dollars).[16] These subsidies are large and are significantly higher than those typically reported by the Treasury or the Joint Committee on Taxation primarily because those government agencies calculate only the traditional tax expenditures—the tax cost of the mortgage interest and property tax deductions—rather than the failure to tax implicit rent. Because houses are leveraged only partially and the expected return on a house is greater than mortgage rates, those deductions measure only a portion of the true tax expenditure.[17] In addition, our figures include state tax subsidies.

15 The ACIR did not report state-by-state breakdowns for 1989, so we use the 1987 data. We have also experimented with assuming a 1 percent and a 1.5 percent national average effective rate. Our findings are not sensitive to these changes.

16 The bulk of the tax-code-related benefits to owners arises from the third of the three components from equation (4). Depending on the census year, from two-thirds to three-quarters of the total benefits are due to not having to pay tax on the return to equity invested in the home plus the difference in expected return on housing versus the cost of the mortgage. Results on the decomposition of the subsidy are available on request.

17 Our estimates of the tax savings from the mortgage interest deduction alone are quite close to, but lower than, what we obtain by looking at actual tax return data. We cannot use the Statistics of Income (SOI) data to compute the full tax expenditure because tax return data do not include information about house values, only itemized deductions. In addition, the SOI data do not report state of residence for taxpayers with adjusted gross income (AGI)

TABLE 1
Aggregate Tax Subsidy, National Level, by Year

Year	Total (billions of $1999)	Per owner ($1999)	Per household ($1999)
1979	$197.9	$4,840	$3,023
1989	284.0	4,818	3,121
1999	420.1	6,024	4,015

The housing subsidy is sizable—and growing—even on a per-owner or per-household basis. While the aggregate real subsidy amount increased 112 percent since 1979, the number of owner-occupied units rose just 70 percent between 1979 and 1999 (from 40.9 million in 1979 to 69.7 million in 1999), so the subsidy per owner-occupied household has been increasing. Gross program benefits per owner-occupied household were $4,840 in 1979, remained constant over the ensuing decade (with the 1989 figure being $4,818), and then rose in the 1990s to $6,024 in 1999. The analogous figures on a per-household basis range from just over $3,000 in 1979 to just over $4,000 in 1999.

While it has long been understood that the subsidy is skewed in aggregate toward those with high incomes and high house values, much less is known about the spatial skewness of this aspect of the tax code. We turn now to this issue. We begin by documenting just how the tax subsidy to owner-occupied housing is skewed, describe how that skewness changes over time, and then investigate the factors driving any changes in the distribution of the subsidy across states and metropolitan areas.

3.2 State-Level Results

While we will focus most of our analysis on the amount of tax benefits per owner, we begin with the most basic measure of the spatial distribution of the benefits: the aggregate benefit flow for each state by year. Not surprisingly, the most populous state, California, stands out in Table 2, with its owners receiving gross benefits of nearly $40 billion in 1979, well over $60 billion in 1989, and almost $80 billion in 1999. No other state approaches these levels, although the benefit flow to New York has risen dramatically over time. A closer examination shows that, as the national aggregate value of the subsidy increases, the additional benefits appear to be distributed in rough proportion to where they were already going.

above a threshold, so our calculations using the SOI are also below the true figure. On the other hand, projected tax expenditure on mortgage interest deductions for 1999 (these do not include state taxes) from the Joint Committee on Taxation's (1998) is slightly lower than what we calculate.

TABLE 2
Aggregate Benefit Flow in Billions of $1999 by State, 1979, 1989, and 1999

State	1979	1989	1999
Alabama	$1.80	$2.25	$4.18
Alaska	$0.38	$0.40	$0.67
Arizona	$2.69	$3.23	$6.55
Arkansas	$0.65	$1.17	$2.09
California	$38.07	$63.73	$78.66
Colorado	$3.37	$3.07	$8.56
Connecticut	$4.29	$8.10	$8.23
Delaware	$0.58	$0.89	$1.20
District of Columbia	$0.99	$1.23	$1.41
Florida	$8.61	$11.83	$19.62
Georgia	$3.63	$5.30	$10.49
Hawaii	$1.81	$2.70	$2.91
Idaho	$0.43	$0.65	$1.55
Illinois	$9.92	$11.87	$19.71
Indiana	$3.01	$3.31	$6.13
Iowa	$1.43	$1.70	$3.07
Kansas	$1.77	$1.94	$2.93
Kentucky	$1.28	$1.89	$3.81
Louisiana	$2.22	$2.04	$3.49
Maine	$0.54	$1.37	$1.59
Maryland	$4.53	$7.42	$9.56
Massachusetts	$5.12	$11.84	$14.03
Michigan	$10.39	$9.92	$17.59
Minnesota	$4.11	$4.14	$7.67
Mississippi	$1.01	$1.11	$2.00
Missouri	$2.61	$3.64	$6.11
Montana	$0.43	$0.49	$1.04
Nebraska	$0.76	$0.85	$1.67
Nevada	$0.82	$0.93	$2.30
New Hampshire	$0.64	$1.60	$1.74
New Jersey	$8.96	$15.01	$17.60
New Mexico	$0.84	$1.12	$2.15
New York	$15.20	$32.99	$39.72
North Carolina	$2.59	$5.03	$10.54
North Dakota	$0.26	$0.27	$0.41
Ohio	$8.09	$7.82	$13.32
Oklahoma	$1.77	$1.72	$2.67
Oregon	$2.87	$2.50	$6.48
Pennsylvania	$8.80	$10.45	$13.82
Rhode Island	$0.80	$1.48	$1.49
South Carolina	$1.48	$2.48	$4.76
South Dakota	$0.23	$0.24	$0.48
Tennessee	$2.26	$2.84	$5.61

Continued

TABLE 2—*Continued*

State	1979	1989	1999
Texas	$9.12	$8.88	$15.60
Utah	$1.22	$1.14	$3.21
Vermont	$0.11	$0.59	$0.72
Virginia	$5.30	$7.82	$10.90
Washington	$4.04	$4.77	$9.52
West Virginia	$0.87	$0.90	$1.40
Wisconsin	$4.90	$5.11	$8.64
Wyoming	$0.31	$0.22	$0.46

That is, while the aggregate benefit to California doubles between 1979 and 1999, so does the subsidy to small beneficiaries such as Georgia, Maryland, and North Carolina. Thus, the states tend to maintain their same relative standing, but the absolute (real) dollar difference between the highest and lowest recipient increases substantially.

Of course, changes in aggregate subsidy flows are heavily affected by population growth. To net out differential increases in the number of homeowners, Figure 2 reports benefits scaled by the number of owners in each state in 1979 and 1999.[18] Even on a per-owner basis, people in only a handful of states, often the most populous states, reap substantially more from tax-code-related housing benefits than the typical owner nationally. For example, while California is no longer the extreme outlier it was in the aggregate data in Table 2, it is still one of only seven states that received at least $6,000 per owner in 1979 and at least $8,000 per owner in 1999. Overall, the per-owner subsidies in the top few states are well over double those received by owners in the vast majority of states. Thus, while the Gini coefficients for the distribution of per-owner benefits across states are relatively low in each decade (0.20 in 1979, 0.32 in 1989, and 0.25 in 1999), it would not be accurate to consider the benefit distribution an especially egalitarian one in spatial terms.

Although the subsidy per owned unit has risen over time, the skewness has persisted at least since 1979. Benefit flows are always concentrated in the hands of owners in just a few states, and the top three states have remained at the top for the last 20 years. The spatial distribution has changed some, however, with owners in northeastern states doing better over time.

Of course, Figure 2 confounds changes in the national level of subsidy with its distribution across space. However, the typical state receives less than the national average benefit per owner, with a few states receiving

[18] Data for all three years—1979, 1989, and 1999—are reported in Appendix Tables A and B, which are available in NBER Working Paper 10322 and at www.nber.org/ data/tpe18.

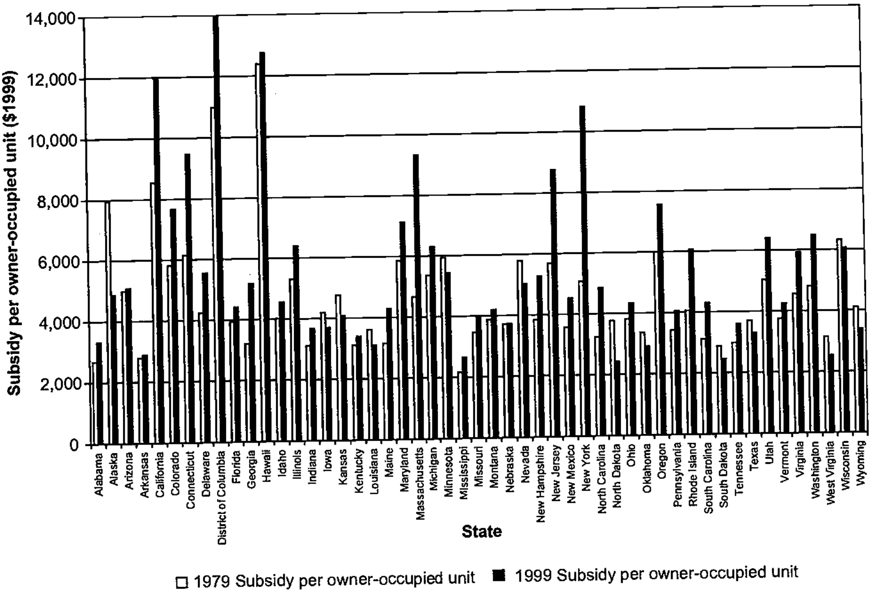

FIGURE 2. ***Average Tax Benefits per Owned Unit, by State, in 1979 and 1999***

about double the average. These disparities rise between 1979 and 1989 but are mitigated somewhat by 1999.[19] To isolate the spatial distribution from the dollar value of the subsidy, we have computed the ratio of each state's share of the subsidy to its share of the nation's owners. For example, the median state has a ratio of subsidy share to owner share of 0.83 in 1979, 0.71 in 1989, and 0.76 in 1999. These ratios are generally less than half of California's numbers, which are 1.77 in 1979, 2.29 in 1989, and 2.00 in 1999.[20]

Figures 3 and 4 provide more detail on the heterogeneity in benefit changes by state over the 1980s and 1990s. Both figures measure each state's changes relative to the national average change. Figure 3 shows that owners in northeastern and mid-Atlantic states did better than average in the 1980s. California and Hawaii are the only exceptions to that statement. There was less heterogeneity in the 1990s, when owners in the

19 While one cannot compute transfers across states without making assumptions regarding how the program is financed, it seems certain that transfers are flowing from a host of states to owners in California and a select few other states. See our 2003 paper (Gyourko and Sinai, 2003) for transfer estimates assuming lump-sum and proportional financing schemes using 1990 data. In both cases, the outcome is the majority of states transferring resources to owners in the smaller number of other states.

20 While ratios for Hawaii and the District of Columbia are higher in each decade, ratios for California are more relevant empirically because of the state's large number of owners.

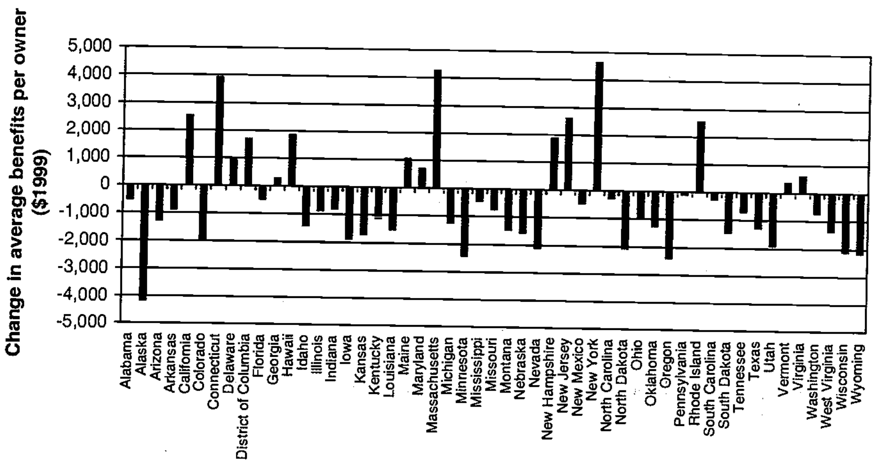

FIGURE 3. *Change in Average Benefits per Owner Relative to National Average, by State, 1979–1989 ($1999)*

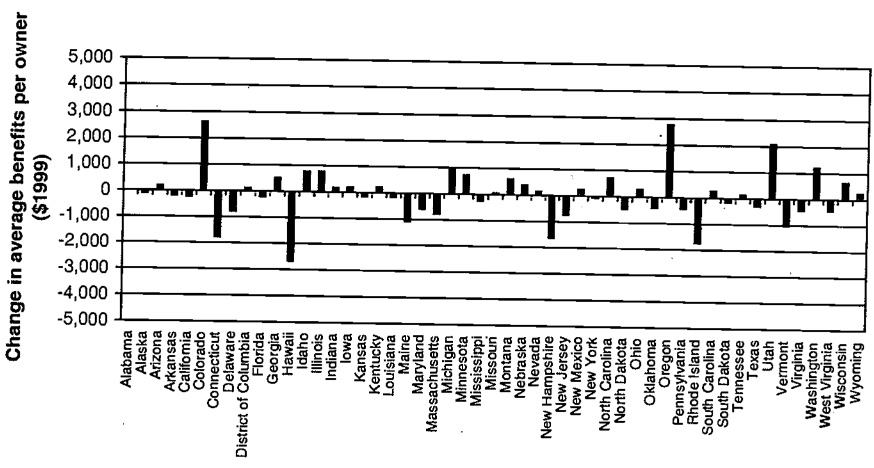

FIGURE 4. *Change in Average Benefits per Owner Relative to National Average, by State, 1989–1999 ($1999)*

less populous western states of Colorado, Oregon, and Utah experienced significantly greater than average increases. Owners in California and Hawaii received smaller than average benefit flow increases that decade.

As suggested in the introduction, many factors have changed over time that could influence the value of the tax benefits associated with owner occupancy. The most obvious is the tax rates themselves. Because owner-occupied housing is a true tax shelter in the sense that one can deduct expenses without declaring any income on the asset, a reduction in tax rates naturally lowers the value of the tax shelter. Figure 5 plots the "average" marginal tax rate (state plus federal) on housing deductions for 1979 and 1999, calculated using the census data and the NBER's TAXSIM program. While marginal rates do differ across states, these differences have declined over time. Overall, marginal rates fell significantly during the 1980s and then rose modestly during the 1990s because of a series of tax reforms at the federal level.[21]

However, aggregate benefits rose and benefits per owner did not decline on average between 1979 and 1989; these facts indicate other factors were changing to counterbalance the negative effect that an increase in the tax price of housing would have on the value of the benefit. In addition, the fact that most of the important tax changes were at the federal level may help explain why the nature of the spatial distribution across states was not affected much.

Of course, other components of the subsidy, house prices in particular, were changing. Figure 6 graphs mean house price by state in 1979, 1989, and 1999. Figure 7 reports the percentage changes over time for each state. Values in many of the coastal states in particular have skyrocketed over the past 20 years. In California, mean real prices rose from just over $200,000 in 1979 to nearly $300,000 in 1999. The change has been even more dramatic in places like Massachusetts, where the average home was worth a little more than $100,000 in 1979. One decade later, mean prices had doubled (in real terms), and prices held firm in Massachusetts during the 1990s. It seems clear that this type of change has allowed the average subsidy per owner in Massachusetts to rise so much over the past two decades. Indeed, a comparison of Figures 3, 4, and 7 suggests that rising real house prices can help account for the dramatic increases in benefits per owner that have occurred in a small number of states, especially northeastern states, in the 1980s.

Of course, other factors, including the rising return in equity markets, which raises the value of the tax shield on home equity in our calculations, are also at work. While a detailed decomposition analysis of changes in the tax benefit over time is beyond the scope of this paper, the data show that the factors that do change did so in a largely offsetting fashion with respect to the spatial distribution across states in the 1980s. The rise in aggregate and per-owner benefits in the 1990s probably reflects

21 Like tax rates, the probability of itemizing declined significantly between 1979 and 1999, reducing the subsidy to owner-occupied housing. Changes in the spatial distribution of itemizers, once one nets out the effect of house prices on the likelihood of itemization, do not seem to determine the changes in the benefits. This result is not surprising because we saw in section 2 that itemization affects the value of only a small portion of the tax subsidy.

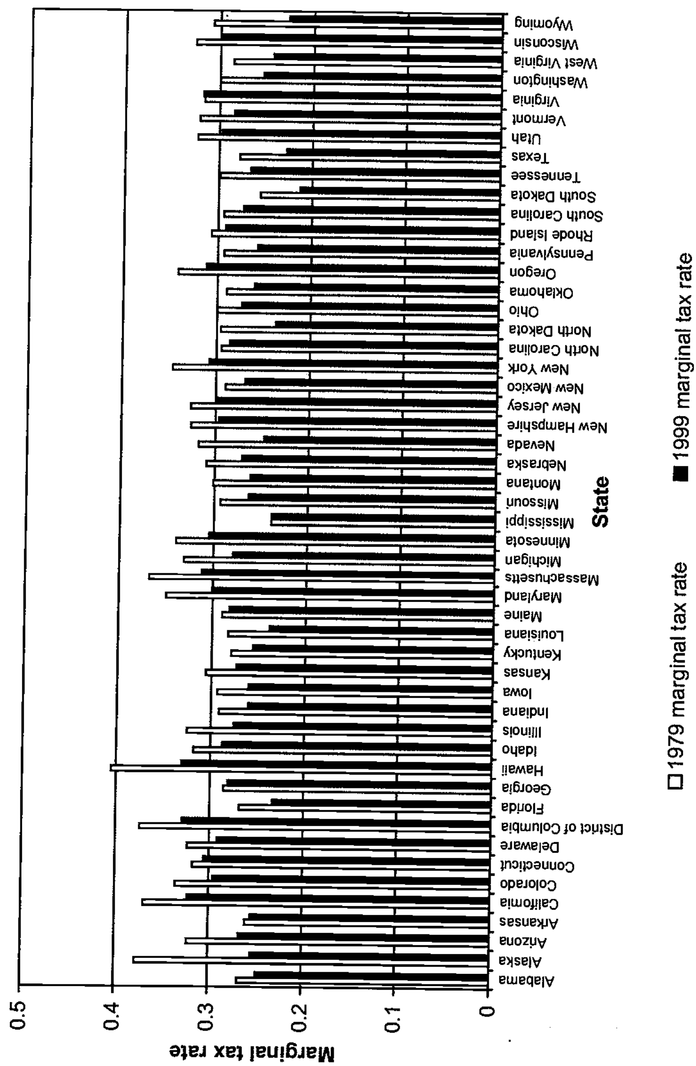

FIGURE 5. *Average Marginal Tax Rates, by State, in 1979 and 1999*

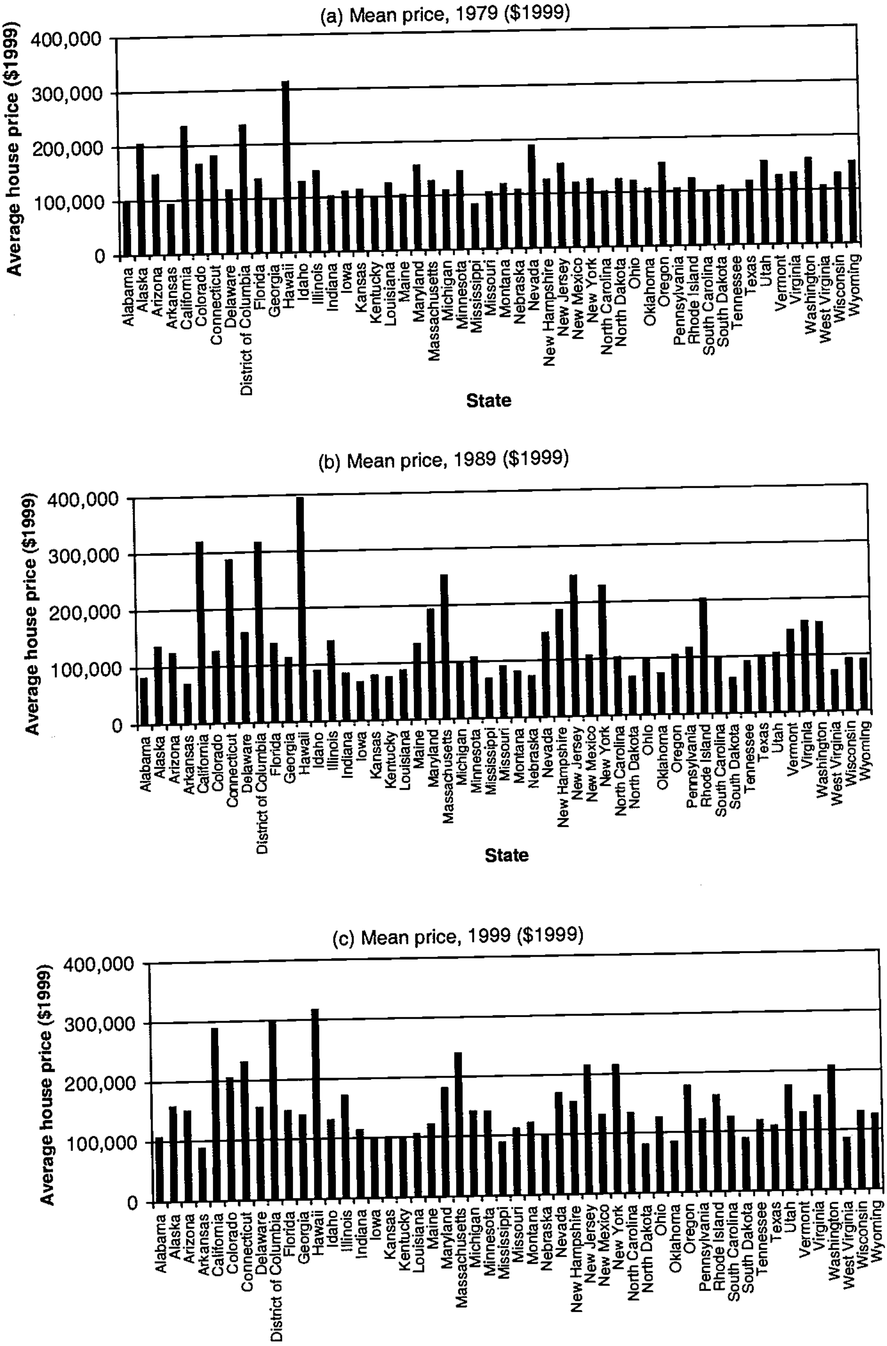

FIGURE 6. *Average House Prices, by State, in 1979, 1989, and 1999*

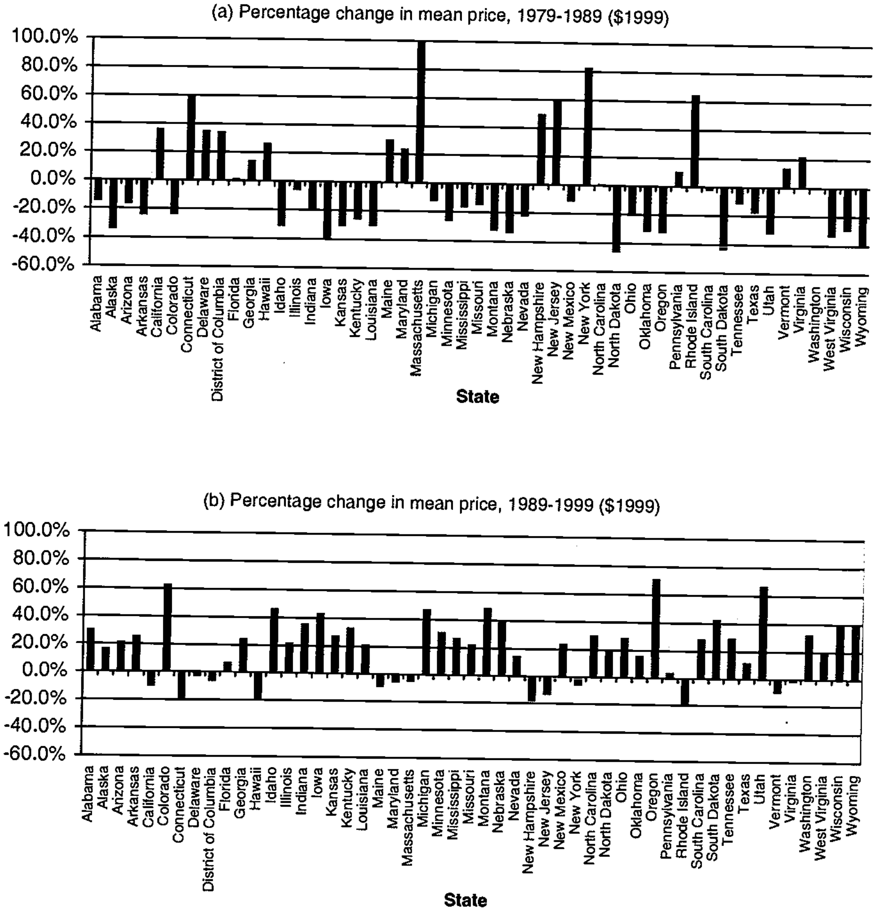

FIGURE 7. ***Percentage Change in Mean House Prices, by State, in 1979–1989 and 1989–1999***

a growing share of households that are owners, rising real house prices, and increasing tax rates. On net, the spatial distribution of benefits across states is fairly skewed in each census year, with few states experiencing significant changes in their relative status. Whether this holds at the metropolitan-area level is the subject of the following subsection.

3.3 Metropolitan Area-Level Results

In this subsection, we disaggregate the data further to examine subsidy flows at the metropolitan-area level and find that the distribution of housing benefits is more skewed than at the state level and that skewness is increasing over time. Results are computed for 380 areas that were identifiable census Core-Based Statistical Areas (CBSAs).[22]

Aggregate benefit flows at the CBSA level, which are reported for selected areas in appendix tables A and B, document how extremely spatially targeted are the overall benefit flows.[23] The vast majority of metropolitan areas receive a relatively modest benefit flow, while a relatively small number of areas receive large aggregate benefit flows.

This form of spatial skewness also has increased over time at the metropolitan-area level. For example, if we focus on the three CBSAs that contain the nation's three largest cities, New York City, Los Angeles, and Chicago, their homeowners received benefit flows equal to $27.3 billion in 1979. While being home to just 10.1 percent of all owners living in designated metropolitan areas in the 1980s, these owners received 14.7 percent of all benefits flowing to metropolitan census tracts. By 1989, the spatial skewness of aggregate tax subsidy flows had become even more extreme. Owners in just these three CBSAs received 17.7 percent of all metropolitan-area benefits while constituting an even smaller share of the nation's owners, at 9.3 percent. The share of owners in these areas had fallen to 8.5 percent by 1999, but their benefit share was 1.72 times higher, at 14.6 percent.

Figure 8 plots benefits scaled by the number of owners in the CBSA. The figure highlights the fact that the subsidy flows disproportionately toward owners in a relatively small number of metropolitan areas and that the skewness is increasing over time. In this figure, CBSAs are ordered by their per-owner subsidy. Thus, the more extreme curvature in the graphs as the decades progress is an indication that spatial skewness, net of population changes, has been on the rise.

This scenario is made even more clear in Tables 3 and 4, which report the top and bottom 20 CBSAs in terms of benefits per owner in 1979 and 1999, respectively. (We limit our consideration to the 179 CBSAs that are

22 Benefit flows to census tracts not located within CBSAs are not included in the figures reported in this section. CBSAs are the new (2003) county-based definition of metropolitan areas from the U.S. Bureau of the Census. We apply the same definition in each of the three census files, knowing that the economic relationship among the counties is weaker, of course, in previous decades. By construction, a CBSA must contain at least one urban area of 10,000 or more population. The county (or counties) "in which at least 50 percent of the population resides within urban areas of 10,000 or more population, or that contain at least 5,000 people residing within a single urban area of 10,000 or more population, is identified as a 'central county'" and is included in the CBSA. Additional "outlying counties" are included in the CBSA if they meet specified requirements of commuting to or from the central counties.

23 Appendix Tables A and B, from NBER Working Paper 10322, can be accessed at www.nber.org/data/tpe.

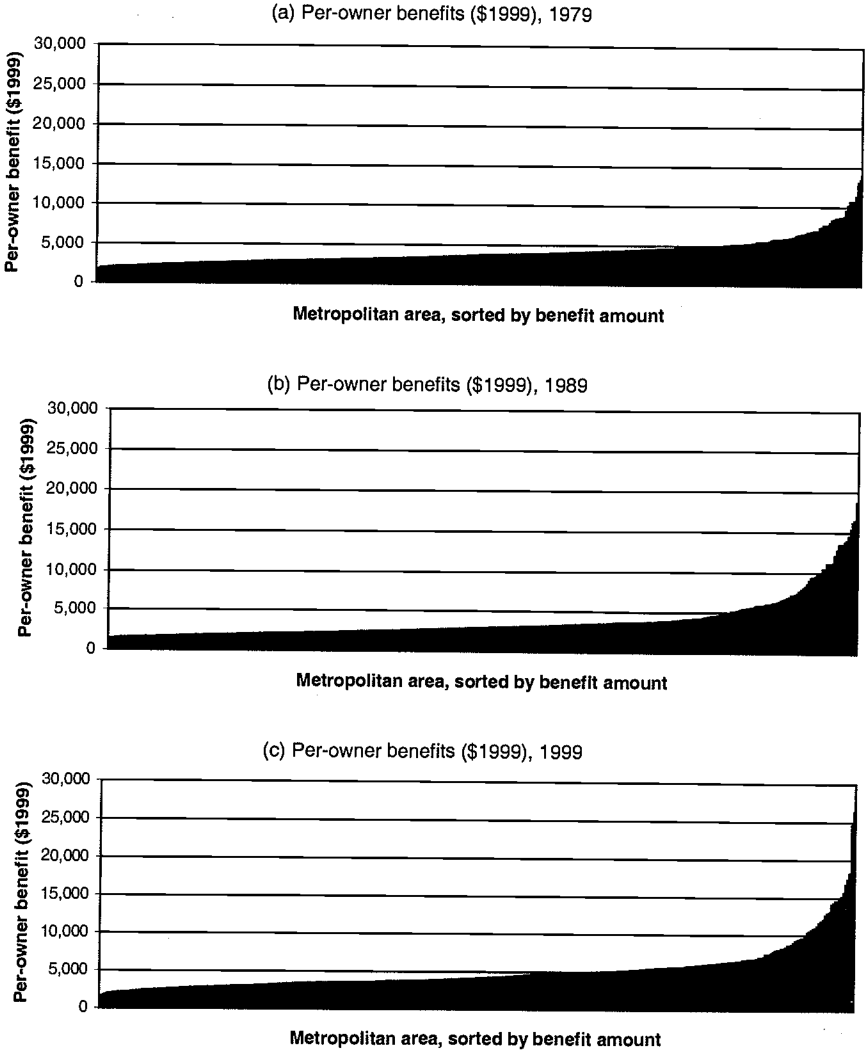

FIGURE 8. *Benefits per Owner, by Metropolitan Area, in 1979, 1989, and 1999*

TABLE 3

Benefits per Owner and per Household, Select CBSAs Above Median Population, 1979, in $1999

CBSA name	Top 20 areas by per-owner subsidy: *Subsidy per owner-occupied unit*	Top 20 areas by per-owner subsidy: *Subsidy per household*
Honolulu, HI Metropolitan Statistical Area	$13,491	$7,132
San Francisco–San Mateo–Redwood City, CA Metropolitan Division	$13,126	$6,156
San Jose–Sunnyvale–Santa Clara, CA Metropolitan Statistical Area	$11,320	$6,830
Santa Barbara–Santa Maria–Goleta, CA Metropolitan Statistical Area	$10,731	$5,615
Santa Ana–Anaheim–Irvine, CA Metropolitan Division	$10,719	$6,430
Bethesda–Frederick–Gaithersburg, MD Metropolitan Division	$10,669	$7,080
Bridgeport–Stamford–Norwalk, CT Metropolitan Statistical Area	$10,189	$6,870
Los Angeles–Long Beach–Glendale, CA Metropolitan Division	$9,585	$4,621
San Diego–Carlsbad–San Marcos, CA Metropolitan Statistical Area	$8,758	$4,813
Lake County–Kenosha County, IL–WI Metropolitan Division	$8,637	$6,236
Anchorage, AK Metropolitan Statistical Area	$8,616	$4,843
Santa Cruz–Watsonville, CA Metropolitan Statistical Area	$8,598	$5,332
Oxnard–Thousand Oaks–Ventura, CA Metropolitan Statistical Area	$8,553	$5,744
Oakland–Fremont–Hayward, CA Metropolitan Division	$8,427	$4,856
Washington–Arlington–Alexandria, DC–VA Metropolitan Division	$8,349	$4,425
Salinas, CA Metropolitan Statistical Area	$8,037	$4,549
Milwaukee–Waukesha–West Allis. WI Metropolitan Statistical Area	$7,738	$4,611
Santa Rosa–Petaluma, CA Metropolitan Statistical Area	$7,677	$4,857
Ann Arbor, MI Metropolitan Statistical Area	$7,483	$4,094
Warren–Farmington Hills–Troy, MI Metropolitan Division	$7,387	$5,689

Continued

TABLE 3—*Continued*

CBSA name	Bottom 20 areas by per-owner subsidy	
	Subsidy per owner-occupied unit	*Subsidy per household*
McAllen–Edinburg–Pharr, TX Metropolitan Statistical Area	$1,687	$1,173
Waco, TX Metropolitan Statistical Area	$2,010	$1,252
Fort Smith, AR–OK Metropolitan Statistical Area	$2,177	$1,490
Lakeland–Winter Haven, FL Metropolitan Statistical Area	$2,180	$1,539
Killeen–Temple–Fort Hood, TX Metropolitan Statistical Area	$2,247	$1,332
Kingsport–Bristol, TN–VA Metropolitan Statistical Area	$2,294	$1,751
Pensacola–Ferry Pass–Brent, FL Metropolitan Statistical Area	$2,303	$1,614
Scranton–Wilkes-Barre, PA Metropolian Statistical Area	$2,307	$1,564
Columbus, GA–AL Metropolitan Statistical Area	$2,418	$1,496
Johnstown, PA Metropolitan Statistical Area	$2,418	$1,740
Jacksonville, FL Metropolitan Statistical Area	$2,564	$1,670
Deltona–Daytona Beach–Ormond Beach, FL Metropolitan Statistical Area	$2,599	$1,848
Chattanooga, TN–GA Metropolitan Statistical Area	$2,602	$1,800
Fayetteville, NC Metropolitan Statistical Area	$2,612	$1,619
Beaumont–Port Arthur, TX Metropolitan Statistical Area	$2,628	$1,885
Hickory–Morganton–Lenoir, NC Metropolitan Statistical Area	$2,652	$2,001
Huntington–Ashland, WV–KY–OH Metropolitan Statistical Area	$2,652	$1,896
Macon, GA Metropolitan Statistical Area	$2,667	$1,666
Augusta–Richmond County, GA–SC Metropolitan Statistical Area	$2,733	$1,855
Springfield, MO Metropolitan Statistical Area	$2,760	$1,851

Note: Median number of households in 1979 among all 380 CBSAs is 56,664.

TABLE 4

Benefits per Owner and per Household, Select CBSAs Above Median Population, 1999, in $1999

	Top 20 areas by per-owner subsidy	
CBSA name	*Subsidy per owner-occupied unit*	*Subsidy per household*
San Francisco–San Mateo–Redwood City, CA Metropolitan Division	$26,385	$13,327
San Jose–Sunnyvale–Santa Clara, CA Metropolitan Statistical Area	$24,629	$14,874
Bridgeport–Stamford–Norwalk, CT Metropolitan Statistical Area	$17,418	$12,075
Santa Barbara–Santa Maria–Goleta, CA Metropolitan Statistical Area	$16,759	$9,593
Suffolk County–Nassau County, NY Metropolitan Division	$15,655	$12,520
Oakland–Fremont–Hayward, CA Metropolitan Division	$15,151	$9,189
New York–Wayne–White Plains, NY–NJ Metropolitan Division	$14,776	$6,123
Santa Ana–Anaheim–Irvine, CA Metropolitan Division	$14,593	$8,953
Salinas, CA Metropolitan Statistical Area	$14,554	$7,994
Honolulu, HI Metropolitan Statistical Area	$14,115	$7,944
Santa Rosa–Petaluma, CA Metropolitan Statistical Area	$13,030	$8,338
Oxnard–Thousand Oaks–Ventura, CA Metropolitan Statistical Area	$12,895	$8,734
Cambridge–Newton–Framingham, MA Metropolitan Division	$12,643	$7,804
Los Angeles–Long Beach–Glendale, CA Metropolitan Division	$12,096	$5,845
Boulder, CO Metropolitan Statistical Area	$11,855	$7,719
San Diego–Carlsbad–San Marcos, CA Metropolitan Statistical Area	$11,641	$6,476
Bethesda–Frederick–Gaithersburg, MD Metropolitan Division	$11,223	$7,894
Boston–Quincy, MA Metropolitan Division	$10,941	$6,389
Newark–Union, NJ–PA Metropolitan Division	$10,870	$6,823
Lake County–Kenosha County, IL–WI Metropolitan Division	$10,700	$8,127

Continued

TABLE 4—*Continued*

CBSA name	Bottom 20 areas by per-owner subsidy	
	Subsidy per owner-occupied unit	*Subsidy per household*
McAllen–Edinburg–Pharr, TX Metropolitan Statistical Area	$1,541	$1,126
Brownsville–Harlingen, TX Metropolitan Statistical Area	$1,696	$1,149
Beaumont–Port Arthur, TX Metropolitan Statistical Area	$2,027	$1,428
El Paso, TX Metropolitan Statistical Area	$2,153	$1,380
Lubbock, TX Metropolitan Statistical Area	$2,326	$1,380
Corpus Christi, TX Metropolitan Statistical Area	$2,341	$1,483
Killeen–Temple–Fort Hood, TX Metropolitan Statistical Area	$2,345	$1,329
Huntington–Ashland, WV–KY–OH Metropolitan Statistical Area	$2,448	$1,765
Ocala, FL Metropolitan Statistical Area	$2,466	$1,969
Lakeland–Winter Haven, FL Metropolitan Satistical Area	$2,528	$1,855
Fort Smith, AR–OK Metropolitan Statistical Area	$2,537	$1,785
Kingsport–Bristol. TN–VA Metropolitan Statistical Area	$2,789	$2,136
Deltona–Daytona Beach–Ormond Beach, FL Metropolitan Statistical Area	$2,866	$2,162
Shreveport–Bossier City, LA Metropolitan Statistical Area	$2,873	$1,901
San Antonio, TX Metropolitan Statistical Area	$2,931	$1,891
Pensacola–Ferry Pass–Brent. FL Metropolitan Statistical Area	$3,000	$2,134
Youngstown–Warren–Boardman, OH–PA Metropolitan Statistical Area	$3,069	$2,275
Charleston, WV Metropolitan Statistical Area	$3,071	$2,272
Mobile, AL Metropolitan Statistical Area	$3,087	$2,158
Scranton–Wilkes-Barre, PA Metropolitan Statistical Area	$3,156	$2,199

Note: Median number of households in 1999 among all 380 CBSAs is 92,249.

above the median in terms of the number of households.[24]) The tables also include per-household values of the subsidy, although the sorting is on a per-owner basis.

These two tables demonstrate the wide disparities in the size of benefit flows across places. For example, Table 3 documents that, in 1979, an owner in one of the top 20 areas received from three to eight times the benefit flow of an owner in one of the bottom 20 areas.[25] The differentials are narrower on a per-household basis, with households in the top 20 areas receiving benefit flows that are from two to four times those in the bottom 20 areas. While differences in ownership rates—which are lower in the top subsidy areas—do account for some of the gap between the top and bottom recipient areas, the disparity is still large, even on a per-household basis.

Based on 1999 data, the figures in Table 4 indicate that the differentials widened considerably over the ensuing two decades. For example, a comparison of the per-owner subsidy in the twentieth highest-ranked area (Lake County–Kenosha County, IL–WI, Metropolitan Division) with the same figure for the twentieth lowest-ranked area (Scranton–Wilkes-Barre, PA, Metropolitan Statistical Area [MSA]) finds a ratio of 3.4 to 1—or 1.3 times the ratio for the analogously ranked areas in 1979. Comparing the benefit-per-owner value in the tenth highest-ranked area (Honolulu, HI, MSA) with that for the tenth lowest-ranked area (Fort Smith, AR–OK, MSA) finds a ratio of 5.6 to 1—which is 1.5 times the ratio for similarly ranked areas in 1979. The disparity widens even further when comparing the top-ranked area (San Francisco–San Mateo–Redwood City, CA, Metropolitan Division) to the bottom-ranked area (McAllen–Edinberg–Pharr, TX, MSA) in terms of benefit per owner, with a ratio of 17.1 to 1 ($26,385 to $1,541). Thus, the top recipient areas were receiving relatively more per area than the bottom-ranked areas in 1999 than in 1979. The benefits flowing to owners in the top areas rose by 50 to 100 percent in real terms, while they were flat or declined slightly in the bottom-ranked areas.

An even clearer face can be put on the skewness depicted in Figure 8 by examining who and where the top and bottom recipient areas are on a per-owner basis. Fourteen of the top 20 areas appear in both 1979 and 1999. They include Honolulu, HI; Bridgeport–Stamford–Norwalk, CT; Bethesda–Frederick–Gaithersburg, MD; Lake County–Kenosha County,

24 The top 20 areas in terms of benefits per owner are almost unchanged by restricting the sample to more populous areas containing more than the median number of households. This situation is not the case among the bottom 20 areas. If the full sample of 380 CBSAs is used, Texas is even more overrepresented because it contains a large number of less populous metropolitan areas.

25 These ranges were determined by computing the ratio of benefit per owner in the top-ranked area versus the bottom-ranked area, from the second- to highest-ranked area versus the second- to lowest-ranked area, and so forth.

IL–WI; and ten areas spanning the length of California's coastline. By 1999, a series of areas, primarily located along the New York City–Boston corridor (Suffolk County–Nassau County, NY; New York–Wayne–White Plains, NY–NJ; Cambridge–Newton–Framingham, MA; Boston–Quincy, MA; and Newark–Union, NJ–PA) joined the top-20 list, replacing midwestern areas such as Ann Arbor, MI; Warren–Farmington Hills–Troy, MI; and Milwaukee–Waukesha–West Allis, WI, along with Anchorage, AK, and Washington–Arlington–Alexandria, DC–VA–MD–WV. Thus, the top recipient areas have become even more dominated by coastal areas, with the Northeast being much more heavily represented in the 1999 rankings.[26] There is less stability among the 20 bottom ranked areas, with 10 present in both 1979 and 1999. This group always has a strong southern representation (especially, but not exclusively, because of Texas), and the metropolitan areas tend not to be situated along the Atlantic or Pacific coasts.

In sum, the spatial skewness of benefit flows per owner has grown over time, with the top areas now receiving large multiples of the subsidy received by the bottom areas. Geographically, this skewness now is a bicoastal phenomenon, with metropolitan areas spanning the state of California and the area between New York and Boston dominating the top 20 benefit-per-owner rankings. Still, strong persistence exists over time in the areas that receive the most benefits, and their share of the total has been rising.

Because the most important tax-code changes tend to have occurred at the federal level, plots of tax rates and tax-rate changes at the metropolitan level are not particularly helpful in increasing our understanding of these results. In contrast, examining house prices over time at the local level is illuminating. For example, the plots in Figure 9 show the distribution of mean house values by metropolitan area over time, and they look strikingly similar to the distributions of benefits per owner in Figure 8. While incomes and tax rates are somewhat higher in coastal metropolitan areas, these differences are not nearly as pronounced as they are for house values. Thus, rising real house prices, especially in key coastal metropolitan areas, augmented by generally higher tax rates in those areas, are increasing the absolute and relative benefits flowing to their owners. Because the method of financing for housing has only a second-order effect (through itemization) on the value of the subsidy, it is not necessary for households to refinance their houses to increase their subsidies. Higher prices reflect higher implicit rental value, so if housing were treated symmetrically, tax revenues would increase with house prices.

[26] The only interior area to join the top-20 list in 1999 was Boulder, CO.

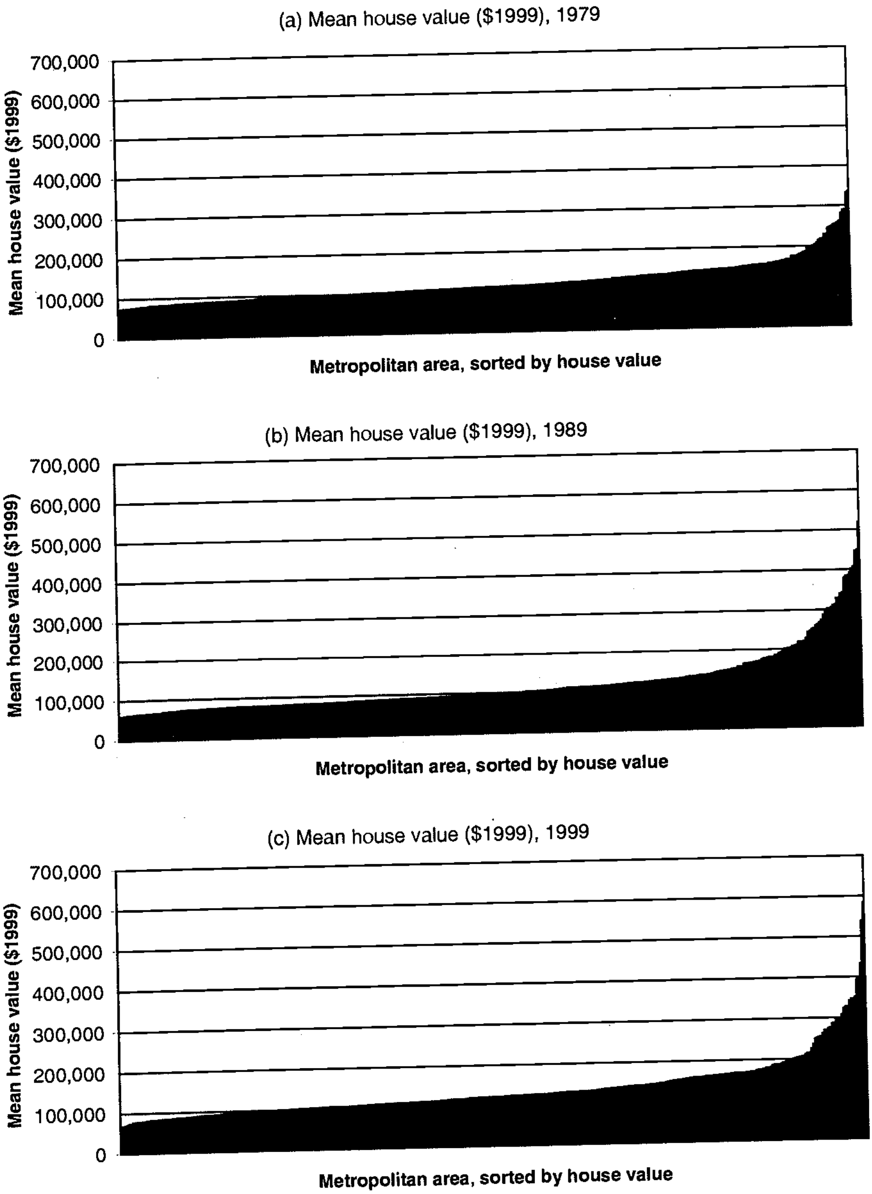

FIGURE 9. *Mean House Value, by Metro Area, in 1979, 1989, and 1999*

4. CONCLUSIONS

Estimating the tax subsidy to homeowners by comparing the taxes they now pay with those they would pay if they faced neutral tax treatment—like landlords in our example—shows a substantial increase in the value of the tax benefit over time. While some of the aggregate increase clearly is due to a rise in the number of homeowners, benefits per owner are about 20 percent higher in 1999 than they were in 1979 at the national level. This development is particularly interesting because it occurs despite marginal and average tax rates falling over the past two decades. The evidence suggests that rising house prices, especially in key coastal areas and in certain regions of the country, can help account for the fact that the value of the subsidy has risen, even though the tax subsidy per dollar of housing has declined.

We demonstrate that the subsidy flows disproportionately to owners in a relatively small number of states—California, especially. Spatial skewness is even more extreme at the metropolitan level, and the data indicate that skewness there has increased over time, though the top recipient areas tend to remain top recipients. Rising house prices in certain coastal metropolitan areas appear to play a large role in explaining this phenomenon.

While the magnitude and skewness of the subsidy are striking, one note of caution is in order when interpreting these results. While it may appear that current homeowners in some parts of the country reap a large tax subsidy, their house prices may be higher. That is, the after-tax annual cost of housing in high-subsidy areas may not differ from low-subsidy areas by the full amount of the tax benefit. In the extreme case, if house prices have fully capitalized the benefit, current homeowners are no better off on a flow basis.

Computing the incidence of the tax subsidy to owner-occupied housing—the degree to which the subsidy shows up in higher house prices rather than as a reduced flow cost of homeownership—is beyond the scope of this paper. In addition, no consensus about the issue exists in the economics literature: estimates range from full capitalization to extremely low capitalization.[27] Where the incidence lies, however, has crucial implications for public policy. For example, it would be easy to jump to the conclusion that, because of the spatial inequity of the tax subsidy to owner-occupied housing, policymakers should restructure the tax benefit. But if a reduction in benefit is capitalized into house prices, current homeowners may experience a loss of wealth. If those homeowners had been

[27] For examples, see Bruce and Holtz-Eakin (1999) and Capozza, Green, and Hendershott (1996)

the beneficiaries of the rise in house prices when the tax subsidy increased, such a reduction in asset value might be equitable. It is quite likely, however, that current homeowners purchased their houses with the tax benefit already capitalized into the price, paying more on the expectation of future subsidies.

The degree of the capitalization of the subsidy into house prices is also unlikely to be spatially neutral. In places where land is in short supply, an increase in demand for housing is likely to show up more in house prices than it would in cities, where it is easy to add more housing stock. That housing demand can be created by local economic factors or the subsidy to owner-occupied housing. Thus, for the same underlying economic reasons, places where the tax benefit is the greatest are places with high land prices and also places where the subsidy is more likely to be capitalized into the house price. While we cannot say how much of any reduction in the tax benefit would show up as lower house prices, it seems likely that a larger fraction (of a larger benefit) would be reflected in house prices in the high-benefit areas.

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