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Author: Edward L. Glaeser, Jesse M. Shapiro

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THE BENEFITS OF THE HOME MORTGAGE INTEREST DEDUCTION

Edward L. Glaeser
Harvard University and NBER

Jesse M. Shapiro
Harvard University

EXECUTIVE SUMMARY

The home mortgage interest deduction creates incentives to buy more housing and to become a homeowner, and the case for the deduction rests on social benefits from housing consumption and homeownership. There is little evidence suggesting large externalities from the level of housing consumption, but there appear to be externalities from homeownership. Externalities from living around homeowners are far too small to justify the deduction. Externalities from home ownership are larger, but the home mortgage interest deduction is a particularly poor instrument for encouraging homeownership because it is targeted at the wealthy, who are almost always homeowners. The irrelevance of the deduction is supported by the time series, which shows that the ownership subsidy moves with inflation and has changed significantly between 1965 and today, but the homeownership rate has been essentially constant.

1. INTRODUCTION

The American subsidy of homeownership is among the most prominent features of our tax code. In 1999, $773 billion was deducted by 40 million

homeowners using the home mortgage interest deduction. After state taxes, it is the most common deduction, and it stands as one of the most striking and one of the most debated features of the U.S. tax code.

To its detractors, the home mortgage interest deduction is a boondoggle that robs the U.S. Treasury and subsidizes America's wealthiest home-owners, the construction industry, and quite possibly politically active banks and entities like Fannie Mae and Freddie Mac. To these critics, the deduction stands as glaring evidence for Director's Law—redistribution ultimately goes to the median voter. The critics of the deduction argue that it distorts behavior and induces Americans to spend too much on housing. Some analysts, such as Voith (1999), even blame the plight of the inner cities on the housing subsidy.

To its supporters, the home mortgage interest deduction is a corner-stone of American society. Homeownership gives people a stake in soci-ety and induces them to care about their neighborhoods and towns. By subsidizing property ownership, the deduction induces people to invest and then to have a stake in our democracy. Ownership makes people vote for long-run investments instead of short-run transfers. Home ownership, and perhaps housing consumption itself, seems to be good for the out-comes of children. The deduction may favor the rich, but after all, much of the tax code is progressive and the home mortgage interest deduction levels the playing field a little.

We believe that there is truth to both views. The home mortgage interest deduction, like almost all deductions, disproportionately favors the wealthy. In 2001, more than 50 percent of taxes saved by deductions were saved by the richest decile in America. Furthermore, a rich body of eco-nomic research shows how the deduction increases, and possibly distorts, housing consumption.

However, there appear to be externalities both from homeownership and from housing consumption itself. Causal inference is tricky, but homeownership is strongly correlated with political activism and social connection. Homeownership appears to increase home maintenance and gardening. Most tellingly, people seem to be willing to pay more to live around homeowners. Controlling for metropolitan area and for the ob-servable human capital of neighbors, we find that a 10 percent increase in the local homeownership rate increases local housing prices by 1.5 per-cent. While omitted unobservable variables might explain this correlation, the overall body of research seems to confirm positive externalities from homeownership.

The evidence suggests externalities that might be worth subsidizing, but the home mortgage interest deduction does not appear to be an effec-

FIGURE 1. *Homeownership and Inflation, 1965–2000**
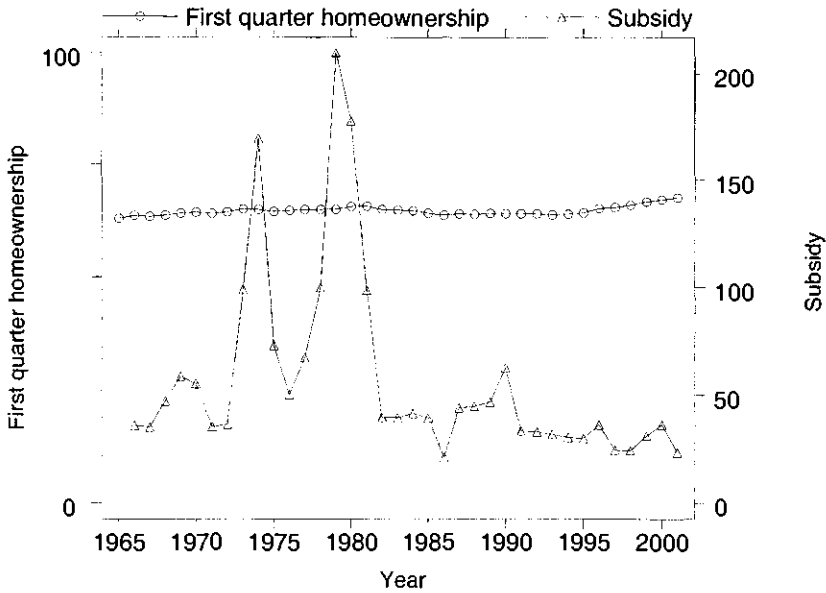
* Subsidy series shows the effect of federal taxes on the price of owner-occupied housing, based on the twelve-month CPI inflation rate prior to the first quarter of each year. Data from www.freelunch.com. See section 3 for a discussion of the calculation of the subsidy. Homeownership rate is the estimated rate for the first quarter of each year. Data from www.census.gov.

tive means of subsidizing ownership.[1] While the deduction appears to increase the amount spent on housing, it also appears to have almost no effect on the homeownership rate. The best evidence for this claim is the simple time series shown in Figure 1. Since 1965, the inflation rate has soared and collapsed, causing the subsidy to homeownership similarly to rise and fall [our formula for the subsidy is based on Poterba (1992)]. As Figure 2 also shows, changes in the tax code have caused itemization rates to rise and fall. If the tax code affected homeownership powerfully, we might expect a relationship between itemization rates and homeownership, but as Figure 2 shows, there is no such relationship. Since the 1960s, the homeownership rate has barely budged, staying within a fixed band between 63 and 68 percent. The changes in the itemization rate that have occurred seem more related to the suburbanization of the economy than to the subsidy created by the deduction.

[1] When we speak of the home mortgage interest deduction as a subsidy, we mean to compare it to a benchmark of our current tax system absent the deduction, rather than to alternative tax policies such as a consumption tax.

FIGURE 2. *Trends in Itemization, 1965–2000*
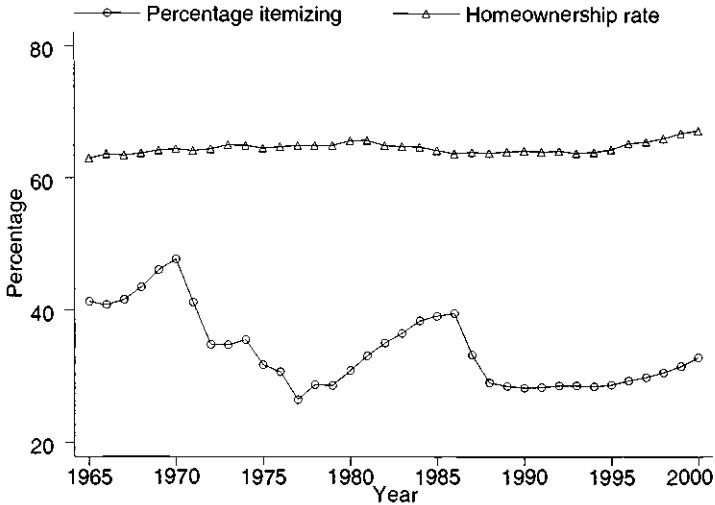
* Series is percentage of all federal tax returns itemizing deductions. Data from www.irs.gov.

This relative invariance of the homeownership rate shouldn't surprise us. Homeownership is almost perfectly linked with the type of housing structure. People living in single-family detached units usually own and people who live in multifamily units rent. Because this stock of housing is relatively fixed in the short run, we shouldn't expect much of a response in the homeownership rate to any short-run fluctuations. In the long run though, the power of the home mortgage interest deduction to affect homeownership is also likely to be small. The groups that are really on the homeownership margin (the poor and the young) rarely use the deduction, even when they are owners. Thus, the deduction is unlikely to influence the homeownership rate. The limited impact of the deduction on homeownership means that there is little distortion of the ownership margin due to the home mortgage interest deduction and, as such, the deduction serves mainly to increase housing consumption and to change the progressiveness of the tax code.[2]

1.1 Plan of the Paper

In section 2 of this paper, we review basic facts about itemization, the home mortgage interest deduction, and homeownership. First, we review

[2] While some authors attack the deduction because it makes the income tax code less progressive, it is not obvious to us that making the tax code more progressive is a beneficial goal.

the distribution of itemization throughout the population. Even among homeowners, itemization is extremely rare in the bottom deciles of the population. As a result, the home mortgage interest deduction creates tax savings overwhelmingly for the top deciles of the income distribution.

Second, we review the correlates of homeownership. Homeownership is particularly correlated with housing structure. People who live in multifamily dwellings rent—people who live in single-family detached houses own. We believe that this situation stems from agency problems related to home maintenance. Housing structure itself is very highly correlated with age and position in the life cycle. An overwhelmingly large share of nonpoor Americans who are married live in single-family houses. Together, these facts mean that the home mortgage interest deduction affects a subset of the population that almost never rents.

In section 3 of the paper, we review the economics of the home mortgage interest deduction. This deduction creates an incentive both to consume more housing and to own. In section 4, we consider evidence on possible externalities from housing consumption and home quality, rather than homeownership itself. In section 5, we turn to the theory behind the social benefits of homeownership. There are three ways that homeownership might create externalities. First, homeowners might take better care of their property, which might create externalities. Second, because they own an asset whose value is tied to the quality of their community, homeowners might work harder to make their community pleasant. Third, homeowners face higher mobility costs, which might induce them to invest more in their community. We find evidence for all of these channels.

In section 6, we look at homeownership and neighborhood externalities. First, and most obviously, is maintenance/gardening. While it sounds trivial, there is little doubt that owners spend more time maintaining their houses and gardens, and panel evidence suggests that this characteristic is not just the result of different people being homeowners—people take better care of their houses when they own. This effect appears to create at least 50 percent of any spillovers from homeownership. There is also evidence suggesting that homeowners are more involved in local social groups and are more likely to work to solve local problems. In section 6, we also consider the consequences of homeownership for local politics. DiPasquale and Glaeser (1999) showed that homeowners are more likely to vote locally. DiPasquale and Glaeser (1998) and Monroe (2001) showed that municipalities with homeowners are particularly likely to spend more on schools and streets and less on social welfare and hospitals. Theory predicts that homeowners favor policies

that increase property values in their areas, while renters tend to favor immediate handouts. As a result, homeowners seem to favor longer-term local investments and, through the political process, homeownership may indeed create positive externalities.

The homeowners' desire to keep property values up has a dark side, however. Homeowners, not renters, have been more aggressive in fighting racial integration, especially in the 1960s and 1970s. More recently, homeowners have spearheaded the movement to limit new housing supply, which has artificially inflated housing throughout the United States. Essentially, as owners have organized, they have started to act like local cartels, restricting new entry into the market: the downside to having individuals who have incentives to keep price up.

Section 7 examines three other possible externalities from home-ownership. Homeowners are more likely to vote in national elections and they are more likely to vote Republican. We remain undecided about whether that creates externalities. Green and White (1997) have shown that the children of homeowners are more successful than the children of renters. The mechanism through which homeownership operates in this instance is not clear, but if society places an extra value on the well-being of children, then it may make sense to subsidize homeownership for that reason. Finally, Oswald (1999) argues that there is a homeownership–unemployment link. We find little evidence for this link within the United States, but we agree that slowing mobility may create problems with the functioning of the labor market. In section 7, we also attempt to quantify numerically, the externalities from increasing housing consumption and homeownership. Our primary approach is to compare the prices of houses that are surrounded by rental and owner-occupied properties. We control for a wide array of housing and neighborhood characteristics and find that prices rise both with neighborhood homeownership and with the quality of the housing stock in the local area.

In section 8, we estimate the impact of the home mortgage interest deduction on the homeownership rate. From time series information on the inflation rate, we conclude that this effect is probably small. Cross-state evidence also suggests that there is little connection between the size of the subsidy and the level of homeownership. This finding implies that the efficiency gains from the interest deduction's impact on homeownership are likely to be small. Even if the externalities from homeownership are large, the impact of the deduction seems likely to be small enough that the main consequence of the deduction is redistribution, not changing behavior. Section 9 concludes the paper.

2. BASIC FACTS ABOUT ITEMIZATION AND HOUSING

Figure 2 shows the path of itemization over time in the United States since 1965. In 1950, only 19.4 percent of Americans itemized. Over the 1950's, this share doubled to 41.1 percent and hit a peak of 47.6 percent in 1970. Responding, presumably, to the Tax Reform Act of 1969, the share of returns that included itemization fell to 34.8 percent by 1972. Between 1972 and 1986, the share of returns that included itemization rose again, to a peak of 39.1 percent in 1986. Since the 1986 Tax Reform Act, the share of returns with itemization has been steady: around 30 percent.

The 30 percent of the population who itemize are distributed disproportionately among the upper income brackets. Table 1 shows the share of itemizers (and the share of total itemized income) by income decile based on information from the 1998 Survey of Consumer Finances. Slightly over one-half of the itemizers are in the top two income deciles. More than 50 percent of the overall itemized income is in the top decile alone. The poorest 40 percent of the population contains only 5 percent of the itemizers, and they are responsible for 3.5 percent of the total itemized income.

Table 1 also shows itemization rates for homeowners and renters by income bracket. The table makes clear that, among the poorest Americans, itemization is very rare for either owners or renters. On average, 12.9 percent of homeowners in the bottom 40 percent of the income distribution itemize. On the other hand, almost 50 percent of people in the top decile itemize, whether they are owners or not. These facts are not surprising, but they illustrate the extent to which the home mortgage interest deduction is targeted toward wealthier Americans.

But homeownership is high even among the rich who don't itemize. In the top income decile, the share of homeownership among nonitemizers is still over 75 percent. In Table 2, we look at the relationship between income and homeownership again using the Survey of Consumer Finances. In regression (1), we find that the marginal effect of the log of income on the probability of being a homeowner is .19. In regression (2), this coefficient falls to .13 when we control for itemization. Income still strongly determines homeownership. Because itemization is itself a function of homeownership, controlling for itemization is problematic, so these results are merely descriptive. In regression (3), we control for building structure and find that the coefficient on income remains at .13.

As the results in column (3) of Table 2 illustrate, homeownership depends to a considerable degree on taste for structure. To explore this issue further, we split structure type into four categories: single-family

TABLE 1
Itemizing, Income, and Homeownership*

Decile	Percentage of itemizers	Percentage of itemized income	Percentage itemizing			Percentage owning residence
			Renters	Homeowners	Total	
1	0.28	0.18	0.36	11.59	3.39	28.76
2	0.69	0.43	0.41	7.85	3.61	42.83
3	1.68	1.03	3.22	14.15	7.71	49.67
4	2.71	1.71	5.05	17.86	12.47	55.47
5	4.21	2.77	7.92	24.48	18.79	64.03
6	6.70	4.07	6.09	34.79	24.14	67.70
7	11.28	7.16	11.30	43.01	33.65	71.55
8	16.71	11.73	14.70	52.77	46.24	83.55
9	24.20	19.64	19.23	70.66	63.89	87.58
10	31.54	51.28	48.22	78.12	75.16	92.61
Total	100	100	5.77	42.65	28.51	64.44

* Data are from authors' calculations based on the Survey of Consumer Finances, 1998. Decile is by household income. Survey weights used in constructing means and deciles.

TABLE 2
*Homeownership and Income**

	(1)	(2)	(3)
Log(income)	0.1917	0.1317	0.1316
	(0.0027)	(0.0029)	(0.0036)
Itemizer		0.2711	0.1900
		(0.0068)	(0.0083)
			0.1229
Single-family detached home			(0.0217)
			−0.4019
Home in multi-unit structure			(0.0239)
			0.0948
Mobile home			(0.0252)
Observations	20,215	20,215	18,525

* Regressions are from authors' calculations based on the Survey of Consumer Finances, 1998. Coefficients are marginal effects from probit models. All coefficients are significant at the 1 percent level.

detached, which represents 59 percent of the housing stock of the United States; single-unit attached, which represents 6 percent of the housing stock; multiunit attached, which represents 30 percent; and mobile homes, which represent 5 percent of the housing stock. Eighty-five and one-half percent of people living in single family detached homes are owners, and 85.9 percent of people living in multifamily units are renters. People living in mobile homes generally also own (79.6 percent). The only category that is clearly mixed is single-family attached homes, where 53.2 percent own.

Another way of thinking about this relationship is that the correlation between living in a single-family detached home (or mobile home) and owning is 58 percent. At the city level (among cities with more than 25,000 inhabitants in 1990), the correlation is even higher—73 percent. Figure 3 shows the relationship between owning and living in single-family detached houses across cities in the United States with more than 25,000 inhabitants. There are few facts in urban economics as reliable as the fact that people in multifamily units overwhelmingly rent and people in single-family units overwhelmingly own.

The most convincing theory to explain this fact is that the agency problems with home maintenance lead to having exactly one owner for each building, as suggested by Henderson and Ioannides (1983) and Kanemoto (1990). The literature on home maintenance (DiPasquale and Glaeser, 1999; Shilling, Sirmans, and Dombrow, 1991; and Galster, 1983) documents that in single-family units, renters take worse care of their homes than do owners, and that rental homes depreciate faster. This finding is unsurprising. Owners face strong incentives to maintain their property; renters

FIGURE 3. *Homeownership and Structure**
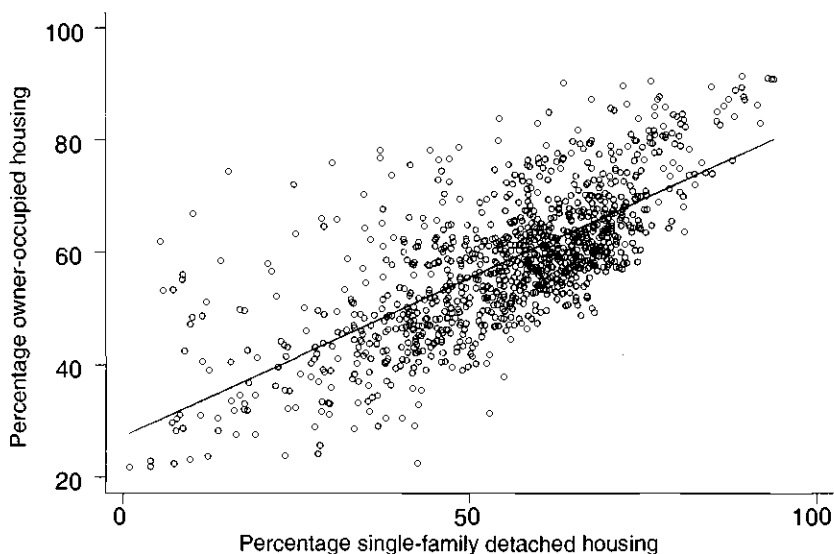
* Graph shows percentage of housing that is owner-occupied and percentage of housing that is single-family detached in 1990 for places containing 25,000 people or more. Data from the *City and County Data Book*, 1994.

face much weaker incentives. The agency problems involved with renting single-family detached homes (or mobile homes) make it natural for these structures generally to be owner-occupied.

However, the major maintenance problems in multi-unit dwellings are all building-, not unit-, specific. A large structure has one boiler, one roof, and one electrical system. These featers are best maintained by a single owner. Several owners jointly responsible for maintaining these common building attributes, creates a huge free-rider problem. As a result, it makes sense for multi-unit dwellings to be rental units with a single owner. There is no concrete evidence on the management costs involved in cooperative apartment buildings, but anecdotal evidence suggests that the agency problems are immense.[3] Large amounts of tenant time are frequently spent trying to manage these large structures, and generally this type of management rarely seems to be efficient. The maintenance problems appear to be building specific, so agency theory would suggest the

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[3] One treasurer of a New York City cooperative apartment building describes two primary sources of waste. First, cooperative apartment owners lack the specialized expertise needed for large-scale technical problems and complex legal issues. Second, board meetings often devolve into lengthy debates over unclear property rights and get mired in interpersonal conflict.

simple rule—one building, one owner—and this is what we generally see in the United States.[4]

This strong relationship between building structure and ownership means that viewing homeownership solely as a portfolio decision is invalid. The homeownership decision generally involves a simultaneous decision about structure. Subsidizing homeownership will have only modest short-term effects because the building structure is relatively fixed. We think that the connection between ownership and structure type also suggests that subsidizing homeownership may have only modest long-term effects as well because, in many cases, it would require a very large subsidy to prompt a well-to-do family of five to live in a multi-unit building. By the same token, multi-unit areas are unlikely to become filled with homeowners. Indeed, the massive distortions of rent control only managed to increase the homeownership rate of New York City—which is filled with multifamily dwellings—to 30 percent. To us, this situation implies that the ability to shift multifamily units to cooperative or condominium status has limits.

3. TAXES AND HOUSING

The tax treatment of homes potentially changes behavior along two margins: the decision to own or rent and the decision of how much housing to consume. The home mortgage interest deduction both induces individuals to consume more housing and to own the housing that they do consume. In this discussion, we focus on the impact of that deduction, but other aspects of the tax code (and government policy more broadly) also affect the homeownership decision.

For example, much literature emphasizes the pro-renter aspects of some areas of the tax code (see, for example, Gordon, Hines, and Summers, 1987). In particular, the accelerated depreciation schedule for landlords tends to support the construction of structures relative to other forms of capital. This feature of the tax code tends to increase the consumption of rental housing (just like the home mortgage interest deduction). Unlike the home mortgage interest deduction, it is not as targeted to wealthier Americans because accelerated depreciation applies to almost all rental units. This paper will not focus on these issues and will pay more attention instead to the home mortgage interest deduction alone.

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[4] There are substantial cross-national differences in ownership patterns that might lead one to doubt the universal applicability of that rule. Proper analysis of these differences lies beyond the scope of this paper, but we certainly accept the point that large enough policy differences toward housing can indeed turn apartment dwellers into owners or people in single-family houses into renters.

Because there are two distinct margins that are affected by the home mortgage interest deduction, it makes sense to separate discussion of tax reform into two separate questions. First, should the tax system continue to subsidize the level of housing consumption? (Are there social benefits from building bigger homes?) Second, should the tax system continue to subsidize owning relative to renting? (Do we want to encourage Americans to own property?)

The efficiency arguments for subsidizing either the level of housing consumption or homeownership rely on the existence of externalities. The case against the subsidy focuses on the distortions created by the tax code. Of course, there may also be desirable or undesirable distribution consequences of transferring from renters to owners and transferring from people who consume little housing to people who consume more expensive housing. It is also possible that there are negative externalities associated with either ownership or the level of housing consumption.

The literature on the home mortgage interest deduction is oddly bifurcated. The authors who focus on the costs of the deduction focus entirely on the amount of housing consumed. Aaron (1972), Rosen (1979, 1985), Poterba (1984, 1992), and Mills (1987) are but a small sample of the authors who have looked at the social costs of overconsuming housing due to the home mortgage interest deduction. The authors who look at the possible benefits of the deduction look only at the benefits of ownership. This much smaller group includes DiPasquale and Glaeser (1999), Green and White (1997), and Rossi and Weber (1996). None of their papers even mentions the possible costs of overconsuming housing.

We begin with a brief formal analysis, following Poterba (1992), on the home mortgage interest deduction and the housing capital gains exemption on the price of housing. To permit this analysis, we look at the impact of tax policy on the steady-state cost of housing, and we assume (as does Poterba) that the price of housing is rising deterministically with the level of inflation. We let π denote the inflation rate, $\bar{i}$ denote the real interest rate, τ denote the federal income tax rate, and τ_P denote the local (deductible) property tax rate. The quantity of housing is denoted as H, and the price per unit of housing is P_H. We assume that the standard deduction is D.

Our one substantive difference from Poterba's model is that we assume the depreciation and maintenance costs differ for renters and owners. This assumption is meant to capture the agency costs involved in renting, or the problems involved in coordinating multiple owners of a multi-unit dwelling. We denote the total maintenance and depreciation costs as d_R for renters and d_O for owners. Following our previous discussion, we assume that d_R is greater than d_O for single-unit dwellings and that d_O is greater than d_R for multi-unit dwellings.

Free entry of landlords (that is, a zero profit condition) implies that the free-market rent for a unit of housing equals $(\bar{i} + \tau_P + d_R)P_H$, in after-tax dollars. For owners who itemize, the per unit cost of housing equals $(\bar{i} + \tau_P)(1 - \tau) + d_O - \tau\pi)P_H$. For owners who don't itemize, the per unit cost of housing equals $(\bar{i} + \tau_P + d_O - \tau\theta(\bar{i} + \pi))P_H$, where θ refers to the fraction of the house that is financed with the owners' capital (as opposed to debt). Nonitemizers (as opposed to itemizers) face tax-created incentives to put everything into their home because the capital gains in that asset are not taxed. The home mortgage thus provides an incentive for owners who don't itemize to invest more in housing (at least relative to renters). This incentive is much higher for individuals who itemize and higher too for individuals who face high tax rates.

One way to think about this incentive that we will use later is the percentage decrease in the price of housing created by the tax code relative to a nondurable good with a price of 1. The percentage reduction in the price of owned housing created by the federal tax code equals

$$\frac{\tau(\bar{i} + \pi + \tau_P)}{(\bar{i} + \tau_P)(1 - \tau) + d_O - \tau\pi}$$

If we assume that the real interest rate is 2 percent, the nominal interest rate is 6 percent, the local property tax rate is 1 percent, the depreciation and maintenance cost is 3 percent ($3,000 per year on a $100,000 home), and the federal tax rate is 25 percent, then this number equals 41 percent. If depreciation and maintenance are as high as 5 percent, then this number would fall to 28 percent, which is still quite sizable. For nonitemizers, we have financed 80 percent of their house with their own equity, and the subsidy equals 7 percent of the cost of the home if maintenance is 3 percent of total costs.

The benefit from owning (as opposed to renting) a house of fixed size equals $(\bar{i} + \pi + \tau_P)\tau + d_R - d_O)$ per dollar spent on housing if the individual itemizes when he or she is both an owner and a renter. If the individual itemizes only when he or she owns, the incentive to own (again per dollar spent on housing) equals $(\bar{i} + \pi + \tau_P)\tau + d_R - d_O - \tau D/P_H H$. If the individual doesn't itemize in either case, then the incentive to own relative to the cost of housing equals $\tau\theta(\bar{i} + \pi) + d_R - d_O$.

Table 3 shows the magnitude of these three tax-related subsidy values for different parameter values. The tax-related subsidies exclude the depreciation elements from each expression, and they equal $(\bar{i} + \pi + \tau_P)\tau$, $(\bar{i} + \pi + \tau_P)\tau - \tau D/P_H H$, and $\tau\theta(\bar{i} + \pi)$ for the three always owners, sometimes owners, and never owner, respectively. Poterba (1984) empha-

TABLE 3
Subsidy per Dollar for Itemizers

Real interest, i	Inflation, π	Property tax, τ_P	Federal tax, τ	Subsidy to homeownership, when itemizing		
				Always	When own	Never
2%	4%	1%	25%	2%	1%	0.30%
1	4	1	25	2	0	0.25
3	4	1	25	2	1	0.35
2	4	1	25	2	1	0.30
2	3	1	25	2	0	0.25
2	5	1	25	2	1	0.35

sized the powerful effect that inflation has on the incentive to consume more housing—but the incentive that inflation creates to own homes is just as strong. As the table shows, when the inflation rate rises, the subsidy (at least for the itemizers) rises significantly. For individuals who don't itemize in either case, the subsidy tends to be small. For example, as the table shows, a less wealthy individual who has financed 80 percent of the value of the house with debt and who faces a marginal federal tax of 25 percent and a nominal interest rate of 7 percent, the value of $\tau\theta(\bar{i} + \pi)$ equals .35 percent.

It certainly wouldn't surprise us if the difference between d_R and d_O is 2 percent (positive for single-family dwellings and negative for multi-unit homes). In this case, the depreciation-related incentive to own (or rent) will swamp the tax-related benefits of owning for individuals who don't itemize in either case. This situation may explain why changes in the tax subsidy do not seem to change the homeownership rate.

The tax code creates incentives both to consume more housing and for people to own their homes. These incentives are focused on wealthier people who are likely to itemize. Among nonitemizers, the incentive to own increases only for those buyers who pay for a significant fraction of their own homes. We will return to the impact of changes in the incentive to own on the homeownership rate, but first we will discuss the incentive to overconsume, which has received a much larger share of academic attention.

4. SUBSIDIZING HOUSING CONSUMPTION

The case for subsidizing housing consumption is based on a desire either to redistribute income to people who buy a lot of housing or to encourage

people to consume more housing. We have little to say about the benefit of redistributing to those who consume a lot of housing, so we will focus on the benefits and costs of inducing greater consumption of housing. The usual justification for a subsidy to something like housing is based on claims about externalities, i.e., social benefits from housing that are not internalized by the individuals themselves. By this reasoning, people generally buy too little housing, and the home mortgage interest deduction induces them to step up to the plate and consume the size of houses that they should consume if they internalized all the benefits that more expensive housing creates for society.

Three main externalities might come from housing consumption. First, sufficiently poor housing could spread disease and fire. Indeed, throughout most of history, government intervention in the housing market has been motivated mainly by a desire to impose minimum standards on housing to stem the flow of infectious diseases and to reduce the threat of widespread urban fires. Second, better housing might create aesthetic amenities that bring pleasure to neighbors and passersby. Third, housing might benefit children. If the government, in general, cares more about children relative to parents, and parents care about children relative to themselves, then there is a case for subsidizing commodities that specifically benefit children.

The first externality is probably at best minimally relevant in twenty-first-century America, at least outside the poorest areas. Most people are living in well-ventilated, relatively fire-resistant homes. Outside the bottom quartile of society, Americans live in good homes. Fire and safety codes, which are often fairly draconian, appear to be much more effective in limiting the dangers from fire than a blanket home mortgage interest deduction.

Given that health and fire externalities are very rare except among the poorest Americans, the home mortgage interest deduction is poorly designed to correct those externalities. The American Housing Survey (AHS) also illustrates that wealthier Americans, i.e., Americans in the top half of the income distribution, are unlikely to live in either crowded or dangerous housing. For example, 95 percent of the top 70 percent of the income distribution live in homes with more than 228 square feet per capita. This number may seem small relative to the newer McMansions, but it is higher than the median square footage per capita in London, Paris, or Rome, and it certainly is not crowded by any standard. The AHS also tells us that home problems, such as leaks and rats, are very rare among any but the poorest Americans. Indeed, in the entire AHS, more than 40 percent of the housing problems occur in the poorest 25 percent of the population and less than 15 percent of this population itemizes,

even if they own. The home mortgage interest deduction doesn't provide incentives for the population groups that are really at risk of consuming substandard housing.

A second externality is aesthetic—perhaps people enjoy looking at fancier homes and, as a result, people should be induced to consume big houses. In principle, the externality from fancy homes might be either positive or negative. Living around nicer homes might provide a positive experience. On the other hand, particularly fancy homes might incite envy and actually create negative utility. Thus the externality from home quality is theoretically, at least, ambiguous.

One could easily argue that aesthetic externalities are not really a fit subject for federal government policy. After all, aesthetic tastes are quite heterogeneous, and it makes little sense to try to influence these tastes with federal tax policy. Indeed, zoning and land-use controls appear to be much more appropriate instruments for internalizing visual externalities. Localities appear to be quite effective (perhaps too much so) at regulating the appearance of their homes.

It seems sensible, however, to test whether there is evidence for externalities from housing consumption. If the evidence suggests large externalities, particularly among the rich, then there may be a case for subsidizing the housing consumption of this group through the home mortgage interest deduction.

The standard approach to quantifying these forms of externalities is to see whether people pay more for homes in places where other homes are nicer, i.e., the hedonic approach. In this approach, for each house we estimate

$$\log(\text{price}) = a \times \text{attributes} + b \times \text{neighboring housing quality} \quad (1)$$
$$+ \ c \times \text{other controls}$$

There are several standard problems with hedonic regressions of this form. Measured neighborhood home quality is likely to be correlated with unobserved attributes of the house and neighborhood that also affect the value of the house. This correlation is likely to bias our estimates upward. The standard criticisms of hedonic estimation (Epple, 1987) also apply. Nonetheless, in Table 4, we proceed with a hedonic estimate of the spillovers from living around nicer homes. We use the 1993 neighborhood survey from the American Housing Survey. This survey is a variant of the standard housing survey with detailed information on housing quality. The advantage of this neighborhood survey is that the AHS gathers information on the 10 closest neighbors. We have information on the char-

acteristics of the neighbors' housing (and their own demographics). This information can, in principle at least, help us to identify the magnitude of some spillovers.

Housing prices are self-reported and this feature may create biases. However, Goodman and Ittner (1992) find that self-reported housing values generally overstate true values, but that this overstatement is fairly orthogonal to other features of the house. The bias from self-reported as opposed to market values is thus not likely to confound our results too much.

In all of our regressions, we include a large array of standard house characteristics that are standard in the literature. We are not focused on the value of the coefficients on these attributes, but rather we see them as a control. We also include the average education in the 10-house cluster. This control is meant to control for the average human capital level of community. The estimates in regressions (1)–(3) of Table 4 seem quite sensible and suggest that housing prices increase by slightly more than 3 percent with each year of schooling in the neighborhood.

In regression (1), we include three measures of average neighborhood housing quality: mean lot size, mean unit size, and mean number of housing problems. These averages are based on the housing characteristics of the other 9 units in the 10-unit cluster. We use a value of 0 for the lot size of apartments. The housing problems measure is the AHS index measure for capturing the presence of substandard housing. At the house level, each new problem is associated with a 9 percent lower housing value.

Both the neighborhood lot size and the unit size coefficients go in the wrong direction—being around bigger homes reduces housing values. We interpret these coefficients as showing the omitted variables problems in these regressions. Presumably, people buy bigger lots in areas that are cheaper, and so we shouldn't be surprised to see the negative coefficient. Only the mean number of problems coefficient goes in the expected direction, and it does suggest that houses are cheaper, holding their characteristics constant, if their neighbors have more housing problems. Still, the omitted variables problems continue to make interpretation of this coefficient difficult.

In regression (2), we include a composite housing quality measure by using the hedonic parameters estimating a basic housing hedonic. To make averaging sensible, we regress the housing price itself (not its logarithm) on housing characteristics. We use these estimated coefficients to create a predicted housing value for each apartment. We take the average of the predicted house value for the other nine houses in the cluster and log that average value to get an elasticity. These results are robust to alternative averaging procedures (i.e., taking the average of a log estimate).

TABLE 4
House Value and Neighborhood Characteristics (Dependent Variable: Log House Price)*

	(1)	(2)	(3)	(4)	(5)
Mean years of schooling	0.0315	0.0379	0.0351	−0.0017	−0.0014
	(0.0047)	(0.0043)	(0.0044)	(0.0020)	(0.0020)
Mean lot size	−0.0083				
	(0.0032)				
Mean unit size	−0.0820				
	(0.0205)				
Mean number of problems	−0.2948				
	(0.0781)				
Log mean predicted price		0.0860			
		(0.0350)			
Spline of log mean predicted price:					
Bottom third			−0.0102		
			(0.0444)		
Middle third			0.2677		
			(0.1181)		
Top third			0.4004		
			(0.1199)		
Log mean price				0.8906	
				(0.0202)	
Spline of log mean price:					
Bottom third					0.9826
					(0.0317)
Middle third					0.8052
					(0.0402)
Top third					0.8762
					(0.0358)
Observations	3,625	4,208	4,208	4,216	4,216

Garage/carport	0.1562	0.1003	0.1265	0.1417	0.0680	0.0663
	(0.0294)	(0.0280)	(0.0276)	(0.0279)	(0.0170)	(0.0172)
Basement	0.1403	0.0664	0.1286	0.1295	0.0297	0.0264
	(0.0300)	(0.0294)	(0.0288)	(0.0287)	(0.0119)	(0.0119)
Central air-conditioning	0.1069	0.0512	0.0758	0.0875	0.0431	0.0428
	(0.0250)	(0.0253)	(0.0234)	(0.0235)	(0.0141)	(0.0142)
Located in central city	−0.0868	−0.0468	−0.0694	−0.0713	−0.0210	−0.0208
	(0.0361)	(0.0361)	(0.0343)	(0.0338)	(0.0113)	(0.0112)
Age of structure (years)	−0.0041	−0.0029	−0.0035	−0.0034	−0.0010	−0.0010
	(0.0007)	(0.0008)	(0.0007)	(0.0007)	(0.0004)	(0.0004)
Number of bathrooms	0.2700	0.1757	0.2196	0.2376	0.0848	0.0879
	(0.0227)	(0.0234)	(0.0234)	(0.0259)	(0.0114)	(0.0116)
Number of bedrooms	0.0380	0.0280	0.0309	0.0350	0.0362	0.0365
	(0.0129)	(0.0124)	(0.0122)	(0.0122)	(0.0084)	(0.0084)
Number of other rooms	0.0761	0.0467	0.0624	0.0690	0.0296	0.0300
	(0.0093)	(0.0097)	(0.0091)	(0.0095)	(0.0057)	(0.0058)
Steam heat	0.2395	0.1982	0.2351	0.2526	0.0567	0.0623
	(0.0488)	(0.0472)	(0.0481)	(0.0489)	(0.0203)	(0.0202)
Electric heat	0.0559	0.0517	0.0573	0.0628	0.0005	0.0027
	(0.0412)	(0.0334)	(0.0366)	(0.0354)	(0.0238)	(0.0237)
Other heating type	−0.1368	−0.0285	−0.0645	−0.0649	−0.0750	−0.0675
	(0.0388)	(0.0375)	(0.0384)	(0.0383)	(0.0231)	(0.0231)
Number of problems	−0.0909	−0.0551	−0.0697	−0.0722	−0.0272	−0.0257
	(0.0263)	(0.0256)	(0.0253)	(0.0254)	(0.0195)	(0.0192)
Constant	10.6092	10.5399	10.2175	10.3055	0.7582	−0.2472
	(0.0674)	(0.0847)	(0.1152)	(0.1148)	(0.2234)	(0.3462)
Observations	4,227	3,625	4,208	4,208	4,216	4,216

* Source is authors' calculations based on the American Housing Survey, 1993 neighborhood cluster sample. All regressions include fixed effects for metropolitan statistical areas (MSAs). Standard errors in parentheses clustered by neighborhood.

We find an overall coefficient of .086, which means that a 1 percent increase in average housing quality in the neighborhood is associated with an 8.6 percent increase in the value of the house. This coefficient would imply an optimal subsidy of 8.6 percent to the price of housing (which is much less than the subsidy that actually exists for itemizers).

In regression (3), we estimate a spline in this average predicted value parameter. This estimate enables us to check whether the impact of the average value is different for poorer neighborhoods or for richer neighborhoods. We estimate the impact of average predicted housing values with two breaks, corresponding to the thirty-third and sixty-sixth percentile of the average home price distribution. Surprisingly, the strongest coefficient occurs for the top third of the housing price distribution. There is no effect of housing quality in the bottom third. The coefficient for the middle third is .27, and the coefficient for the top third is .4. In principle, these estimates could justify exactly the subsidy that we see in practice: a generous housing consumption subsidy oriented toward the top of the income distribution. Still, we believe that these results are sufficiently riddled with omitted variables problems that we would be loath to accept them without more proof.

Finally, in regression (4), we use the actual prices of one's neighbors to estimate the average housing quality in the neighborhood. This variable has the advantage of capturing unobserved housing attributes. In other words, if the American Housing Survey does not adequately measure some housing attributes (say, the aesthetic qualities of the house), then these attributes will still be included in the price. However, this variable has the disadvantage of incorporating omitted, neighborhood level characteristics, which would induce a spurious correlation between the dependent housing price and the housing prices of the neighboring houses.

Overall, we find a large effect from the average housing price of the neighbors. The estimated coefficient is .89. In regression (5), we perform the same spline as in regression (4), but here we use actual housing prices instead of predicted housing prices. As in the previous regression, we find that the impact of neighborhood housing price is the same at all housing quality levels. We are particularly suspicious about these results because unobserved factors that make houses expensive are likely to affect the entire neighborhood.

Overall, these results suggest that there may well be externalities involved in consuming more housing. Still, the home mortgage interest deduction subsidizes housing consumption beyond the level that would be justified by our preferred estimates in regression (2).

Finally, it is possible that there is an intergenerational externality related to housing consumption. In principle, larger, more comfortable

homes may benefit children. If the government cares more about children (relative to parents) than parents do, then it may make sense to subsidize homeownership.[5] We don't know of any evidence that documents the impact of extra space on the outcomes (or happiness) of children, but we do know that housing consumption and children are clearly complements. On average, the amount of interior space rises by 48 square feet per additional child in the American Housing Survey. This complementarity makes it possible at least that subsidizing housing may yield benefits for children. Of course, in most cases the disadvantaged children that we are most concerned about helping will not be affected by the home mortgage interest deduction.

The complementarity between housing consumption and children means that the mortgage interest deduction may also have an impact on fertility. If larger homes make big families possible, then subsidizing housing will be desirable if the government desires to subsidize fertility. Indeed, elsewhere we have shown that there is at least some relationship between fertility and floor area per capita across countries. While this correlation can be due to reverse causality or omitted variables, it is still suggestive and at least raises the possibility that the U.S. government's pro-housing policies may play some role in supporting high American fertility. Of course, this impact on fertility is only desirable if we want to subsidize fertility to begin with, a goal that is far from obvious.

4.1 Negative Effects of Subsidizing Housing Consumption

Numerous papers have talked about the welfare losses from subsidizing housing consumption in the absence of externalities. These papers have taken the straightforward economic view that distorting consumption creates welfare losses relative to an outcome where prices reflect social costs. However, these losses will increase if there are negative, not positive, externalities from certain types of housing consumption. Here, we mention briefly the possible negative externalities related to subsidizing housing consumption through the home mortgage interest deduction.

Voith (1999) has argued that subsidizing housing consumption may indeed be hurting our inner cities. His argument is that, by encouraging more housing consumption, the home mortgage interest deduction encourages people to leave small city apartments to consume larger places on the fringe of the city. This flight from the city might itself impose negative social costs on the people who remain in the city.

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[5] If a parent values his or her child's utility almost as much as his or her own, but the government values both equally (even if it doesn't care much about either one of them), then the government should act to create incentives for transfers from parent to child.

More generally, the home mortgage interest deduction may create negative effects by disproportionately encouraging spending on housing among the wealthy, and not among the poor. To the extent to which spending is limited to structure, this unequal incentive seems unlikely to cause social problems. However, a significant amount of spending in the expensive areas of the country is on land, or community amenities, not on structure (see Glaeser and Gyourko, 2002). Thus, the home mortgage interest deduction encourages the rich to spend more on community attributes.

Again, this situation is not necessarily problematic if community attributes are innate items like access to the seacoast, but it is a problem if the primary community attribute is the average income, or human capital level, of the community. If we encourage the rich to buy more, then we encourage the rich to live in particularly high-income communities. In essence then, the home mortgage interest deduction acts to increase segregation by income. By creating incentives for the rich to spend more on housing, the home mortgage interest deduction creates incentives for the rich to live in better neighborhoods, which means that the rich will tend to segregate more.

To make this concrete, consider the following simple algebraic example. Consider a world with N rich people and N poor people living in two communities, each of size N. All houses are identical, except that people get utility from the percentage of rich people in the community equal to $a \times r$, where r is the percentage of the community that is rich and a is an individual specific parameter that is districted on the interval: $[\alpha_R - \varepsilon, \alpha_R + \varepsilon]$ for the rich and $[\alpha_P - \varepsilon, \alpha_P + \varepsilon]$ and for the poor, where $\alpha_R > \alpha_P$. The equilibrium condition for this model is that the difference in housing prices between the two neighborhoods must offset exactly the utility gains from being in a neighborhood with more rich people. In the absence of subsidized housing, there will be one rich community with a proportion of rich residents equal to

$$.5 + \frac{\alpha_R - \alpha_P}{4\varepsilon}$$

and a poor community with a proportion of its residents that are rich equal to

$$.5 - \frac{\alpha_R - \alpha_P}{4\varepsilon}$$

If the tax code subsidizes housing consumption for the rich (and not the poor) so that they pay only $1 - s$ of any housing costs, then in the new

equilibrium, the rich community will have a proportion of rich residents equal to

$$.5 + \frac{\alpha_R - (1 - s)\alpha_P}{2(2 - s)\varepsilon}$$

and the poor community will have a proportion of rich residents equal to

$$.5 - \frac{\alpha_R - (1 - s)\alpha_P}{2(2 - s)\varepsilon}$$

The degree of segregation (i.e., the share of the rich who live in the rich community) rises with the degree of subsidization. Any policy that makes it cheaper for the rich (relative to the poor) to live in the more expensive neighborhood will tend to increase the degree of segregation in society. Conversely, a policy that disproportionately subsidizes the housing consumption of the poor (perhaps Section 8 vouchers) would act to decrease income segregation.[6]

Cutler and Glaeser (1997) argue that black–white segregation is quite harmful to African-Americans. If subsidizing housing consumption abets this segregation, then it will create negative externalities for African-Americans. Because we do not have meaningful estimates of the impact of the subsidy on the level of segregation, it is impossible at this time to calculate the welfare costs from this aspect of housing subsidy. Still, we highlight this potential negative impact of the home mortgage interest deduction as a topic for future research.

5. THE EXTERNALITIES FROM OWNERSHIP

We now switch from considering the housing consumption margin to considering the ownership margin. The bulk of the discussion about the benefits of the home mortgage interest deduction has focused on this margin and the externalities from homeownership. At this point, we address first the issue of whether there are externalities from homeownership, and if so, how important they are. Then we turn to the issue of whether the home mortgage interest deduction does a good job of promoting homeownership.

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[6] Indeed, Katz, Kling, and Liebman (2001) find that voucher recipients tend to use their vouchers to move to low-poverty neighborhoods, even when there is nothing explicit about the voucher that subsidizes nonpoor neighborhoods.

The economics literature points to three reasons why homeownership might create externalities. First, homeowners own an asset whose value is tied to the strength of their community. Thus, they have an incentive to act (and vote) for policies and practices that will make their community more attractive. This civic participation may take the form of community activism or contributions to public goods. Of course, free-rider problems still exist, but the property stake in the community creates at least a small incentive to keep the community strong.

This scenario becomes particularly clear in the case of elections. Homeowners tend to prefer government actions that promote the value of their property. In many cases, these actions may be long-term investments that raise the long-term prospects of the community. Because housing is a long-lived asset, it will incorporate expectations about the results of government investment, and owners will reap benefits from long-term government incentives.

Conversely, renters have no financial stake in strengthening the community and they can even lose from investments that strengthen the community because rents are not fixed. If these investments are sufficiently attractive to outsiders, then they will raise rents more than they raise the utility of the renters directly and the renters may lose. Thus, renters are likely to prefer direct government handouts that come to them, while owners will be more likely to trade off such handouts for investments in the community. (The algebra of this argument is given in DiPasquale and Glaeser, 1999.)

The political interest of homeowners has a dark side. Owners face incentives to raise house prices by any means possible. In some cases, improving the community is a natural means of raising prices. In other cases, stopping a new supply of housing is a more effective means of raising prices. Thus, homeowners are likely to act like local monopolists and try to cut off new supply.

The second reason why homeownership creates externalities is that it creates barriers to mobility. There are few economic assets with transaction costs that are big as those involved in home sales. Real estate agents who typically charge between 3 and 6 percent of the value of the house are not uncommon, and both sellers and buyers bear other costs as well. These costs mean that homeowners move much less often than renters do. Indeed, the 2000 Current Population Survey tells us that 32.5 percent of renters changed homes in the previous year, while only 9.1 percent of owners changed houses over the same period.

These costs become exacerbated in down markets, where the leverage created by mortgages means that owners have frequently lost most of their equity. As a result, they may have lost their ability to make a down

payment elsewhere and they find themselves fixed. (This argument is made by Stein, 1995.) As we will discuss later, this permanence, particularly in declining areas, may be harmful because people become trapped in high unemployment areas. Still, there may also be benefits from permanence.

The incentive to invest in a community and in social connections depends on one's time horizon. Individuals who expect to live in an area for only a few months are unlikely both to make friends and to join local organizations. People who are fixed have much more to gain from connecting with others. Likewise, long time horizons will increase the returns to becoming informed about local issues. They will reap the returns from these investments over time. If investment in social connections yields externalities, then this permanence will create positive externalities.

The third possible way in which homeownership might generate externalities is through home maintenance and gardening. Homeowners face incentives to take better care of their homes than do renters. If some of this care creates aesthetic externalities, then homeownership may yield benefits through greater care. Of course, for this externality to be important, landlords must take worse care of their homes than homeowners.

There are two approaches to measuring the externalities from homeownership. The first, and most direct way, is to examine an activity that is believed to yield externalities, for example, gardening or joining clubs, and see whether homeowners do more of this activity than renters. In other words, to run a regression of the form:

$$\text{outcome} = a + b \times \text{homeownership} + c \times \text{other controls} \qquad (2)$$

This approach is taken by Rossi and Weber (1996), Green and White (1997), and DiPasquale and Glaeser (1999). In some cases, it may make sense to examine community level aggregates of this activity and to see if it is correlated with the community level homeownership rate:

$$\text{average outcome} = a + b \times \text{homeownership rate}$$
$$+ c \times \text{other controls} \qquad (3)$$

The biggest problem with this approach is that homeowners differ from renters along different dimensions. Indeed, as section 2 emphasized, homeowners are likely to be older and richer. Of course, multivariate regressions can control for observable characteristics that are correlated with homeownership. More problematic are the characteristics (e.g., responsibility or patience) that are likely both to generate homeownership

and to influence socially beneficial activities. The biases created by omitted variables are likely to be severe and make almost all estimation of this type somewhat dubious.

There are two common approaches to this type of problem. In some cases, it may be possible to use longitudinal data and look at how people change their behavior when they become homeowners. This approach eliminates at least any time-invariant individual characteristics that are likely to be correlated with homeownership. However, this approach cannot deal with time-varying individual heterogeneity, and this form of heterogeneity is likely to be important. If we see someone become more responsible when he or she buys a home, is it the result of the home, or has the individual just matured a little? Still, we believe that longitudinal data is ultimately the best approach to this problem. However, the only use of longitudinal data in this area was done on German data by DiPasquale and Glaeser (1999) and yielded, at best, mixed results.

The reason why longitudinal data is so desirable is that the alternative identification strategy, the instrumental variables approach, seems unlikely to yield convincing results. The instrumental variables approach relies on some natural experiment that increased the homeownership rate and didn't have any other correlation with the relevant outcome. Past attempts at instrumental variables approaches include Green and White's (1997) use of the ratio between rental prices and housing costs. While this attempt is certainly valiant, this ratio is not exogenous and seems likely to be both correlated with and potentially caused by a large number of area level characteristics that are likely to be correlated with outcomes of interest. Likewise, DiPasquale and Glaeser (1999) use statewide variation in the homeownership rate for different demographic subgroups. Again, this attempt suggests more courage than wisdom because these aggregate rates are unlikely to satisfy the relevant orthogonality condition.

There are several reasons why successful instrumental variables strategies have been elusive. Location-level attributes that influence homeownership, such as the housing stock, are likely to have a direct impact on the many outcomes. The share of the housing stock that is detached explains most of the variation in the homeownership rate across cities. Because this housing stock variable is highly correlated with the entire spatial structure of the city, it is very likely to have a direct effect on most outcomes of interest.

Second, if an exogenous attribute makes homeownership cheaper, then it will attract people who are inclined toward homeownership. This migration effect is potentially quite serious. Consider two locales: one subsidizes homeownership and the other doesn't. In principle, this subsidy should be a clean experiment showing the effect of homeownership. How-

ever, people who are prone to own homes will move into one locale and rent-prone individuals will move into the other. The differences across the communities are quite likely to be caused by omitted individual characteristics of the people.

If there is a change in policy, and we believe that this change moves the homeownership rate faster than it influences migration, then in principle we might be able to use the changes in the locale's outcome as a test of the effect of homeownership. Monroe (2001) represents this work best. Monroe looked at branch banking at the state level and found that, when states allowed branch banking, their homeownership rate increased. Unfortunately, the changes in the state homeownership level tended to be too small to identify the impact of homeownership with any precision.

Ideally, there would be some sort of government policy that is specific to the individual, not the locale. By comparing individuals who had access to the policy with identical individuals who didn't, we might be able to test for the impact of homeownership. Of course, such a policy would need to be free of other effects, and in particular free of an independent income effect. In practice, most pro-homeownership policies have tended also to transfer large amounts of wealth to treatment groups. As a result, any effects represent the combined impact of homeownership and greater wealth.

The second approach to measuring the externalities from homeownership is indirect. Instead of seeing whether homeowners differ from renters, we test the impact of living around homeownership on housing prices. In other words, we estimate a variant of regression (1):

$$\log(\text{price}) = a \times \text{house attributes} + b$$
$$\times \text{neighborhood homeownership rate} \qquad (4)$$
$$+ c \times \text{other controls}$$

This approach tries to determine whether housing prices are higher in neighborhoods where other people own homes, and it is obviously also problematic. The neighborhood homeownership rate is likely to be correlated with other neighborhood attributes, such as low housing costs (which would bias the estimate of b downward) or attractive neighborhood amenities (which would bias the estimate of b upward).

Still, in principle, we can try to control for location-specific amenities. The primary advantage of this approach is that it gives us an actual dollar estimate for the value of homeownership. We believe that this approach makes more sense at the local level, where patterns of homeownership may be somewhat random, than at the city level, where high levels of homeownership are almost completely determined by the housing stock,

which is itself so important in driving prices. We will turn to this approach later when we try to put a dollar value on the externalities from homeownership.

6. EVIDENCE ON THE EXTERNALITIES FROM HOMEOWNERSHIP

We now discuss the evidence on homeownership and several potentially externality-creating activities. First, we discuss the connection between homeownership and home maintenance/gardening. While this connection is in a sense the most mundane, it is also the strongest. Next, we discuss the connection between homeownership and social connections. We then turn to the connection between homeownership and political behavior. We end this section by discussing other externalities potentially related to homeownership.

6.1 Homeownership and Maintenance/Gardening

Home maintenance and gardening are likely to lead to a more pleasant neighborhood and generate externalities. In section 4, we found that neighborhood home values rise with housing quality. The attention that homeowners' groups pay to enforcing local rules for housing and garden maintenance also provides anecdotal information that supports the existence of externalities from these activities.

A rich body of evidence supports the connection between homeownership and home maintenance. Authors like Galster (1983) and DiPasquale and Glaeser (1999) have shown that homeowners are more likely to engage in home maintenance and gardening. DiPasquale and Glaeser (1999) find that the homeownership effect on housing repairs even survives in longitudinal data with individual fixed effects. Shilling, Sirmans, and Dombrow (1991) show that the rate at which property depreciates is a function of homeownership. If we believe the above estimates, which suggest that the value of a home is a function of the average quality of homes in the neighborhood, then these home maintenance effects will increase the value of homes in the area.

The raw correlation between homeownership and gardening or home maintenance is quite large. If we consider only people who live in single-family detached homes, 73.4 percent of owners garden and 49.5 percent of renters garden in the General Social Survey. DiPasquale and Glaeser (1999) report in their German sample that 33 percent of renters report doing home repair or yard work and 57 percent of owners report doing the same activities. This difference in the German data drops in half with

individual fixed effects, which means that there is still a 10 percent difference in the rate at which people maintain their homes.

The net effect of these maintenance differentials is that homeowners live in considerably less dilapidated surroundings than renters. Among the set of owner-occupied, single-family detached homes in the American Housing Survey, 3.1 percent have open cracks or holes in the wall or ceiling. The comparable number for rented single-family detached homes is 10.2 percent. Likewise, 2.8 percent of owner-occupied homes have broken plaster or peeling paint, and 1.7 percent have signs of rats or mice. The comparable numbers for rented units are 7.5 percent and 5.4 percent, respectively. It is hard to know the extent to which these differences reflect intrinsic differences in the units or between the residents that are unrelated to homeownership. Still, the gaps are striking enough that they add some credibility to the view that homeowners take better care of their property. When we turn to the hedonic estimates, we will be able to control for housing quality, and we will thus have an estimate of the extent to which the externalities from homeownership work through better home maintenance.

6.2 Homeownership and Social Capital

The evidence for social groups and homeowners likewise consists primarily of large correlations without any strong evidence for causality. Table 5 shows the membership patterns of owners and renters in the General Social Survey. Owners are more likely than renters to join in every form of group membership. At the bottom of the table, we see two aggregate measures: the types of organizations to which the individual belongs and the frequency with which the individual socializes with his or her neighbors. For both of these variables, homeowners are also more social.

The third column shows the marginal effect estimated in a probit regression where we control for age, age^2, education level, income level (and a dummy variable for cases where income is missing), marital status, gender, race, and living in a single-family detached home. Many of these differences become insignificant once we control for other individual attributes, but all but two remain positive. The variable that aggregates group membership remains quite significant, but the socialization variable does not.

The endogeneity of homeownership remains worrisome, and it is certainly possible that the correlation between homeownership and group membership stems mainly from unobserved variables that make people more likely to be homeowners and make them more likely to join groups. One possible approach is to use an instrument that increases homeownership and does not have a direct impact on group members. In Table 6, we use the share of the population in a metropolitan area

TABLE 5

Homeownership and Social Capital*

Type of membership organization	Percentage of renters who are members	Percentage of owners who are members	Probit marginal effect
Fraternal†	5.69	11.34	0.0128
Service†	7.59	12.39	0.0207‡
Veterans†	4.77	7.82	0.0022
Union†	9.95	13.20	0.0160
Athletic	19.96	20.13	0.0053
Youth†	8.68	10.42	0.0077
School service†	11.00	15.85	0.0214§
Hobby†	7.23	11.48	0.0239‡
School fraternity	5.32	5.56	−0.0015
Nationality	3.46	3.75	0.0090
Farm†	2.09	4.30	0.0049
Literary	8.78	9.09	−0.0027
Professional†	13.64	17.11	0.0097
Church-affiliated†	9.44	12.97	0.0339§
Continuous variables (in units of standard deviations from mean)			
How often social evening is spent with neighbors†	0.05	−0.12	−0.0214
Total number of membership organizations†	−0.15	0.11	0.0943‡

* Based on authors' calculations from General Social Survey. Details on the survey are available at www.icpsr.umich.edu. Probit regressions include controls for income, a dummy for missing income, age, age², educational attainment, a dummy for single-family detached house, gender, race, and marital status.
† Indicates that difference in membership rates by homeownership is significant at 5 percent level.
‡ Indicates that probit coefficient is significant at 5 percent level.
§ Indicates that probit coefficient is significant at 10 percent level.

that lives in single-family detached housing in 1980 as an instrument for homeownership. As we discussed above, this variable is strongly correlated with homeownership. This element of the housing stock is reasonably exogenous. The main problem with it as an instrument is that people may select across metropolitan areas and as such there may be a correlation, through this migration, between the variable and unobserved individual heterogeneity. Nevertheless, we proceed using this variable as an instrument for homeownership in the organizations regression. We find that, after controlling for observable characteristics, the coefficient on homeownership remains large (indeed, it grows) but becomes statistically insignificant. Overall, we find these results provocative but far from compelling. There is clearly a correlation between homeownership and group membership, but at this stage we cannot be sure of a large, causal link.

TABLE 6

Homeownership and Membership (Dependent Variable: Number of Membership Organizations [Standardized])

	(1) OLS	(2) OLS	(3) IV	(4) IV
Own home	0.2607	0.0943	0.6888	0.3165
	(0.0268)	(0.0331)	(0.3137)	(0.2253)
White		0.0479		−0.0213
		(0.0317)		(0.0405)
Male		0.0364		0.0377
		(0.0251)		(0.0214)
Married		−0.0183		−0.0585
		(0.0279)		(0.0372)
College graduate		0.5745		0.5617
		(0.0324)		(0.0403)
High school dropout		−0.3657		−0.2918
		(0.0321)		(0.0332)
Log(income)		0.0980		0.0814
		(0.0164)		(0.0281)
Income missing		0.8704		0.6651
		(0.1656)		(0.2937)
Single-family detached house		0.0763		−0.0548
		(0.0310)		(0.1098)
Age		0.0035		−0.0019
		(0.0043)		(0.0056)
Age^2/1,000		−0.0107		0.0288
		(0.0430)		(0.0502)
Constant	−0.1482	−1.2588	−0.4229	−0.9722
	(0.0212)	(0.1721)	(0.1920)	(0.3224)
Observations	5951	5870	5751	5640
R^2	0.0156	0.1427	0.0016	0.1258

* Based on authors' calculations from General Social Survey. Details on the survey are available at www.icpsr.umich.edu. Column IV indicates the percentage of single-family detached housing in metropolitan area in 1980 used in a probit model to produce a predicted probability of being a homeowner. Standard errors in column IV regressions adjusted for clustering on metropolitan area.

6.3 Politics and Homeownership

A second channel through which homeownership might create externalities is the political process. Homeownership should give people more incentive to be involved politically. It may also get them to make political choices that favor the long-run health of their community (which will create higher housing prices). Conversely, as DiPasquale and Glaeser (1999) show, renters have an incentive to favor policies that bring immediate benefits relative to long-run gains.

In Table 7, we use data from the General Social Survey to show the connection between homeownership and several political variables. The first two

TABLE 7
Homeownership and Politics*

Percentage who . . .	Renters	Owners	Probit marginal effect
Know name of local school board head†	22.2	36.8	0.0905‡
Know name of U.S. representative†	22.1	43.2	0.1044‡
Vote in local elections†	52.4	76.5	0.1075‡
Worked to solve local problems†	24.6	39.0	0.0732‡

* Based on authors' calculations from General Social Survey. Details on the survey are available at www.icpsr.umich.edu. Probit regressions include controls for income, a dummy for missing income, age, age^2, squared, educational attainment, a dummy for single-family detached house, gender, race, and marital status.
† Indicates that difference in rates by homeownership is significant at 5 percent level.
‡ Indicates that probit coefficient is significant at 5 percent level.

rows show that homeowners are more likely to be informed about political figures. The first row shows that 36.8 percent of homeowners know the name of the local school board head and that 22.2 percent of renters have the same knowledge. This effect isn't just the result of homeowners having children. When we control for a wide array of background characteristics, the gap between owners and renters remains large and significant.

In the second row, we show that 22.1 percent of renters know the name of their U.S. representative and 43.2 percent of owners know the same information. This gap drops in half when we control for other characteristics, but the difference remains significant. There does appear to be a significant difference in political knowledge associated with homeowning.

The third row of the table shows that 52.4 percent of renters and 76.5 percent of homeowners report that they have voted in local elections. When we include our other controls, this difference drops to 10.75 percent, which is still quite significant. DiPasquale and Glaeser (1999) found that this effect does not decline when they control for years of residence in the community. As usual, we cannot be sure that homeownership isn't proxying for other omitted characteristics. Still, there appears to be significant evidence for the hypothesis that homeowners are more politically involved in local affairs.

We also look at the connection between homeownership and people saying that they have worked to solve local problems. This variable is self-reported and hard to interpret. Still, the difference between homeowners and renters is striking: 39 percent of owners say that they have worked to solve local problems; 24.6 percent of renters make the same claim. This gap falls to 9.3 percent once we control for other attributes. Certainly, this finding presents some evidence supporting the view that homeownership creates incentives to improve the neighborhood.

Another approach to this issue is to look at the association between local government spending patterns and homeownership. While we do not have actual voting records across communities, we do have local public finance variables from the *City and County Data Book*. These variables are difficult to interpret because they represent only spending by the locality itself. Thus, if the locality is in a state that generally takes responsibility for a larger share of certain types of spending, this fact will influence our variables. We try to correct for this problem by including state fixed effects. We also control for income, age, education, and population density in the locality. With these controls, we find the following two results for data in 1990:

$$\log(\text{per capita expenditures}) = -.026 \times \text{homeownership rate} \quad (5)$$

and

$$\log(\text{percent of spending on welfare}) = -0.019$$
$$\times \text{homeownership rate} \quad (6)$$

The standard error on the homeownership coefficient in the first regression is .005, and the standard error in the second regression is .004. The number of observations in both regressions is 1,076. We also found that homeownership reduces the share of spending on health and hospitals and increases spending on highways.

While these results are certainly open to debate, they suggest that homeownership is associated with lower per capita spending and less spending on transfers. The interpretation of this finding is that homeowners may work harder to keep taxes down and to avoid transfers, which do not build long-run property values. While these effects of homeownership are not unambiguously positive, they do support the hypothesis that homeownership alters political behavior.

Homeowners face incentives to invest in their communities; they also face incentives to restrict the supply of new housing to raise prices. Through zoning and other land-use controls, economics predicts that homeowners will work hard to ensure that no substitutes for their houses are brought on the market. This attempt to restrict supply will impose costs on people who want to live in the area and should be seen as a negative consequence of homeownership.

To show the impact of homeownership on the desire for zoning, we looked at all local voting measures submitted as referenda in California in 2000. A typical measure was a San Francisco referendum on the following question:

Shall the rules that govern converting rental housing to condominiums also apply to converting rental housing to certain forms of joint ownership with exclusive rights of occupancy, and shall the annual 200-unit cap on such conversions be made permanent?

Other measures similarly restricted new owner-occupied housing or made it easier for communities to do so. The relationship across voting units between homeownership and support for the measures is shown in Figure 4. The underlying regression is:

$$\text{percentage pro-zoning} = 19.2 + .5 \times \text{homeownership}, N = 30, R^2 = .197 \quad (7)$$
$$(.12)(.2)$$

Standard errors are in parentheses. The positive effects of homeownership on local quality should be weighed against its negative effect on restricting the supply of new construction.

FIGURE 4. *Homeownership and Support for Zoning**
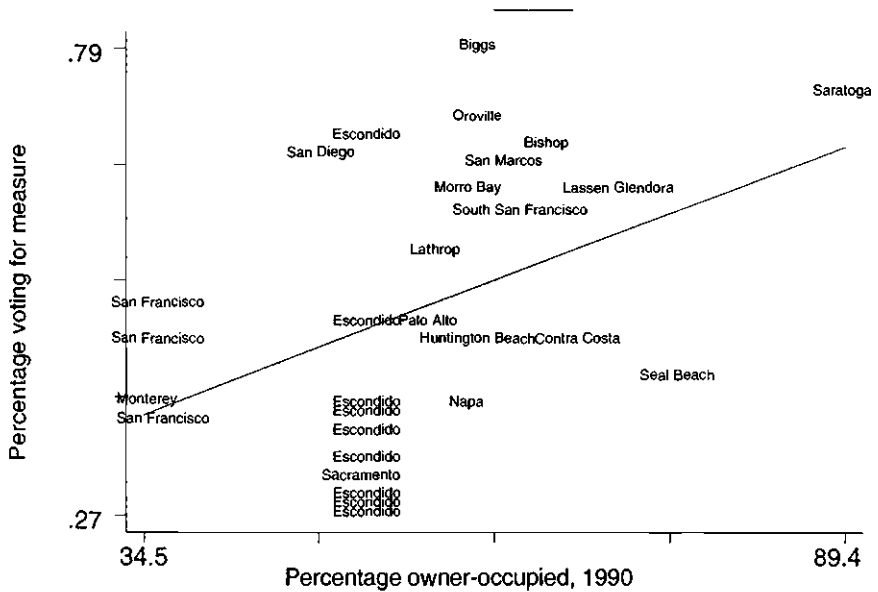
* Percentage owner-occupied is based on U.S. counties, 1998, and *City and County Data Book*, 1994, as appropriate for the jurisdiction. Percentage voting for measure refers to the percentage of voters supporting the year 2000 zoning measure proposed in the California jurisdiction. Data on voting on local measures taken from the California Local Elections Data Archive, 2000, available at http://www.csus.edu/isr/isr3.html.

6.4 *Other Externalities: Voting, Children, and Unemployment*

Another possible externality that may be related to homeownership is investment in children. Research by Green and White (1997) showed that children of homeowners are about 25 percent less likely to drop out of school than children of comparable renters. This effect is strikingly large in magnitude and quite robust across specifications and across data sets. Green and White (1997) showed that this effect holds in the Panel Study of Income Dynamics, the High School and Beyond Survey, and the Current Population Survey.

Of course, as discussed above, the natural objection to this research is that homeownership is endogenous and likely to be correlated with other parental characteristics that may well create good outcomes for children. For example, more future-oriented parents may be more likely both to save to buy homes and to invest in their children. This effect may well be the result of spurious correlation, just as the results of DiPasquale and Glaeser, (1999) might be. Also, the theoretical grounds for believing in this connection are not obvious. Perhaps the permanence and community investment created by homeowners helps children, but it isn't clear why.

Green and White (1997) were well aware of this problem and tried to address it using a measure of relative housing cost, which reflects the ratio of housing prices to local rents. Using this measure as an instrument, they still found significant effects of homeownership on the dropout rate. Of course, one could also argue that these variables are themselves also likely to be correlated with omitted characteristics related to the outcomes of children. Still, the fact is striking and certainly worthy of more research.

As we discussed above, an externality related to the raising of children exists if the government cares more about the children relative to parents, and if parents care about children relative to themselves. The positive effects of homeownership on children may be the best argument for subsidizing homeownership, if indeed these effects are found to be causal. Given the importance and ambiguities surrounding Green and White's results, it seems clear that this question needs additional research.

A final set of externalities connected to homeownership might work through the unemployment rate. In some very highly publicized research, Oswald (1999) argued that high homeownership rates lead to high levels of unemployment. He showed across regions in Europe that homeownership and unemployment tended to go together. His argument is that homeownership creates barriers to mobility and that these barriers stop workers from moving in response to labor market shock. In areas with

renters, people can move quickly in response to a shock. In areas with homeowners, the workers are less mobile.

We think that three issues are in line with this research. First, Glaeser and Gyourko (2001) argued that durable housing means that the overall housing stock is fixed, even if the residents are renters. Population levels tend to decline only very slowly in response to negative labor supply shocks, even when the population is made up of renters. In a world of renters, adjustment to a local downturn is not easy. Renting makes it easy only for one group of residents to flee and be replaced by another group of residents. Glaeser and Gyourko (2001) claimed that this fixed nature of houses helps us to understand why low human capital people sort into declining cities. If there are huge welfare gains from this sorting, then renting is beneficial, but there needs to be gains from sorting, not just gains from emigration.

Second, the case for a homeownership–unemployment connection in the United States seems empirically quite weak. For example, across U.S. cities, the correlation between homeownership and unemployment is −42 percent. This negative relationship remains when we control for per capita income and human capital variables. Far from increasing unemployment, homeownership appears to be correlated negatively with unemployment. We certainly wouldn't interpret this relationship to be causal, and we certainly believe that omitted variables are likely to explain it. Still, the negative relationship does push us away from believing the Oswald hypothesis.

Third, the negative effect of homeownership on mobility is not itself evidence of any sort of externalities, even if it leads to unemployment. Housing economists have long emphasized the fixed costs involved in buying a house and that homeownership increases mobility costs. In general, these higher costs are internalized by the homeowner. Only if externalities are related to unemployment, perhaps through the tax structure and unemployment benefits, does a correlation between unemployment and homeownership create a case for taxing (as opposed to subsidizing) homeownership.

7. HEDONIC ESTIMATES OF THE EXTERNALITIES FROM HOMEOWNERSHIP

There is substantial evidence suggesting that homeowners take better care of their homes and that they are also more likely to join social groups. Does any of this matter? Do these activities increase the willingness of neighbors to pay for proximity to homeowners? To answer these questions, we turn again to the neighborhood module from the American Housing Survey. As discussed above, we use the average homeownership rate in the neighborhood as our key variable and we control for (1) the average level of neighborhood human capital, (2) the average predicted

housing value of neighboring houses described aboved and (3) the usual collection of individual house characteristics.

We report our basic results in regression (1) of Table 8. We find that a 10 percent increase in the local homeownership rate is associated with a 2.5 percent increase in housing values. This result echoes the much more sophisticated findings of Coulson, Hwang, and Imai (2001), who also use this sample to document positive spillovers from homeownership. However, they, use a selection model that actually attempts to deal with sorting across communities.

In regression (2), we test the hypothesis that the effect of homeownership is mainly due to home maintenance by controlling for the average number of housing problems in the neighborhood. When we include this control, the coefficient on homeownership falls by half and becomes only marginally significant. One natural interpretation of this regression is that most of the benefits from local homeownership comes from better housing maintenance.

Finally, in regression (3), we include a control for the share of houses that are single-family detached dwellings. This variable has a negative impact on housing prices presumably because people are more likely to build multi-unit dwellings in areas where land costs are high. When we control for this variable, we find that the coefficient on the average homeownership rate doubles. Now a 10 percent increase in the neighborhood homeownership rate is associated with a 4.7 percent increase in housing values.

In regressions (4)–(6), we repeat regressions (1)–(3) but we include metropolitan area fixed effects to account for any cross-city heterogeneity. The results are smaller and less precisely estimated, but they are generally still significant.

A final piece of evidence on the impact of homeowners on localities is their impact on local growth. In past work (e.g., Glaeser et al., 1995), one of us has used city growth regressions as a means of testing whether a particular attribute is good for a city. Thus, the generally strong positive relationship between local schooling levels and local growth has been interpreted as evidence that local human capital is an engine of local innovation and growth. Thus, it makes sense to check whether homeownership is positively related to local growth.

In Figure 5, we show the positive relationship between homeownership and population growth at the city level between 1990 and 2000 for cities with more than 50,000 inhabitants. The underlying regression is:

$$\text{population growth} = -.024 + .22$$
$$\phantom{\text{population growth} = } (.03) \quad (.05) \tag{8}$$
$$\times \text{ homeownership rate}, \ N = 503, \ R^2 = .03$$

TABLE 8

House Value and Neighborhood Homeownership Dependent Variable: Log Value of Unit*

	(1)	(2)	(3)	(4)	(5)	(6)
Percentage homeowners	0.2630	0.1827	0.4736	0.1512	0.0834	0.1756
	(0.0882)	(0.0911)	(0.1128)	(0.0793)	(0.0805)	(0.0977)
Mean years of schooling	0.0395	0.0369	0.0377	0.0398	0.0381	0.0384
	(0.0046)	(0.0047)	(0.0046)	(0.0041)	(0.0042)	(0.0042)
Mean number of problems		-0.2794	-0.2438		-0.2467	-0.2422
		(0.0839)	(0.0836)		(0.0732)	(0.0726)
Share single-family detached			-0.4154			-0.1530
			(0.0960)			(0.0863)
Garage/carport	0.0860	0.0852	0.0879	0.1154	0.1089	0.1113
	(0.0176)	(0.0175)	(0.0175)	(0.0269)	(0.0270)	(0.0270)
Basement	0.0356	0.0320	0.0196	0.1205	0.1143	0.1075
	(0.0215)	(0.0215)	(0.0217)	(0.0285)	(0.0285)	(0.0282)
Central air-conditioning	0.0419	0.0415	0.0425	0.0693	0.0655	0.0655
	(0.0172)	(0.0172)	(0.0172)	(0.0230)	(0.0231)	(0.0231)
Located in central city	-0.0506	-0.0416	-0.0559	-0.0689	-0.0658	-0.0678
	(0.0426)	(0.0425)	(0.0423)	(0.0338)	(0.0336)	(0.0336)
Age of structure (years)	-0.0014	-0.0014	-0.0016	-0.0033	-0.0031	-0.0033
	(0.0005)	(0.0005)	(0.0005)	(0.0008)	(0.0008)	(0.0008)
Number of bathrooms	0.1519	0.1518	0.1515	0.1996	0.2006	0.1988
	(0.0121)	(0.0120)	(0.0120)	(0.0216)	(0.0220)	(0.0219)

Number of bedrooms	0.0423 (0.0084)	0.0418 (0.0084)	0.0421 (0.0084)	0.0293 (0.0121)	0.0278 (0.0121)	0.0278 (0.0121)
Number of other rooms	0.0461 (0.0064)	0.0461 (0.0064)	0.0457 (0.0064)	0.0577 (0.0090)	0.0580 (0.0090)	0.0571 (0.0090)
Steam heat	0.1133 (0.0254)	0.1104 (0.0254)	0.0998 (0.0255)	0.2217 (0.0460)	0.2154 (0.0456)	0.2095 (0.0462)
Electric heat	0.0023 (0.0262)	0.0020 (0.0262)	0.0025 (0.0261)	0.0588 (0.0371)	0.0605 (0.0369)	0.0595 (0.0369)
Other heating type	−0.0650 (0.0250)	−0.0598 (0.0250)	−0.0543 (0.0250)	−0.0611 (0.0388)	−0.0447 (0.0384)	−0.0419 (0.0384)
Number of problems	−0.0293 (0.0156)	−0.0575 (0.0178)	−0.0528 (0.0178)	−0.0662 (0.0250)	−0.0590 (0.0244)	−0.0592 (0.0242)
Constant	10.2984 (0.0870)	10.4288 (0.0953)	10.5606 (0.0996)	10.3071 (0.0966)	10.4142 (0.1032)	10.4874 (0.1063)
Specification	RE	RE	RE	FE	FE	FE
Observations	4,225	4,225	4,225	4,225	4,225	4,225
Number of neighborhoods	626	626	626	626	626	626
R^2				0.6317	0.6349	0.6357

* Authors' calculations based on the American Housing Survey, 1993 neighborhood cluster sample. Columns (1) through (3) report results from specification with neighborhood random effects. Columns (4) through (6) report results from specification with fixed effects for metropolitan statistical areas (MSAs) and standard errors clustered by neighborhood.

FIGURE 5. *Homeownership and City Growth**
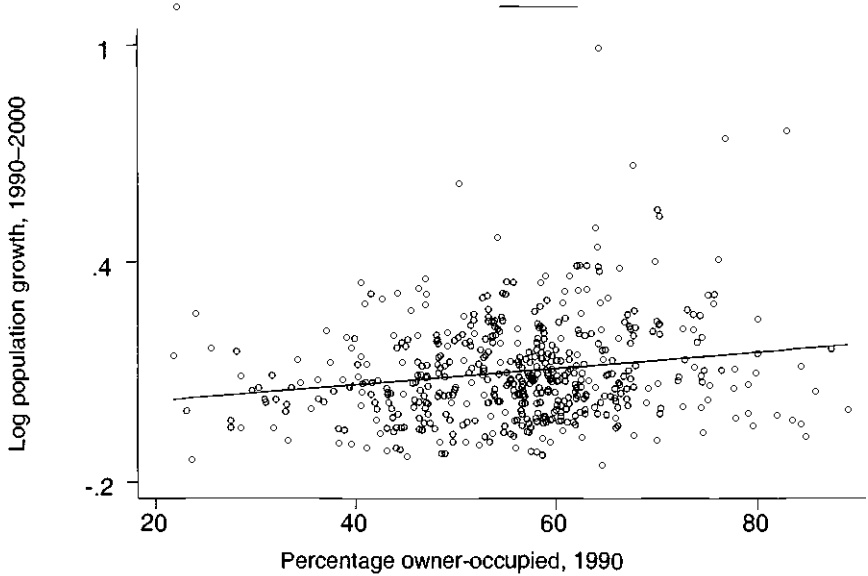
* Percentage owner-occupied in 1990 and 1990 population are taken from the *City and County Data Book*, 1994. Sample includes all cities with 50,000 people or more in 1990. Population in 2000 is from Census 2000 data, available at www.census.gov. See Glaeser and Shapiro (2003) for more details about growth data.

Standard errors are in parentheses. The relationship is certainly not overwhelming, but it does indicate that cities with more homeownership have done well at attracting additional residents over the past decade. Certainly, none of this evidence shows conclusively that there are positive jurisdictional spillovers from homeownership, but it does, at least, leave the matter open.

8. DOES THE HOME MORTGAGE INTEREST DEDUCTION PROMOTE HOMEOWNERSHIP?

In the previous three sections, we have discussed the evidence on the presence of externalities from homeownership. We believe that this evidence is weak but suggestive. However, any evaluation of the home mortgage interest deduction and homeownership should also ask the following question: does the deduction have any impact at all on homeownership? Because homeownership is tied so closely to structure type and because the groups that appear most likely to be on the margin between renting and owning don't itemize in either case, it seems reasonably likely that the

home mortgage interest deduction has a very small impact on the overall homeownership rate. In this section, we marshal some evidence on the connection between the deduction and the homeownership rate.

Our first pieces of evidence use the time series over the past 40 years. We know from section 3 that the ownership subsidy created by the tax code is $(\bar{i} + \pi + \tau_P)\tau$ per dollar spent on housing if the individual itemizes when she or he is both an owner and a renter, $(\bar{i} + \pi + \tau_P)\tau - \tau D / P_H H$ if she or he itemizes only when she or he owns, and $\tau\theta(\bar{i} + \pi)$ if she or he doesn't itemize in either case. In all cases, the subsidy is roughly proportional to the nominal interest. Thus, a doubling of the nominal interest rate will cause the subsidy roughly to double (because the nominal interest rate is several times as large as the property tax rate).

Of course, the nominal interest rate also causes the price of housing to rise. A better test of the importance of the subsidy is to see whether changes in inflation cause the homeownership rate to rise. In a world without the deduction, changes in inflation should not really affect the level of homeownership. After all, as Poterba (1984) documents, the real cost of funds is relatively independent of inflation. The one clear impact of the level of inflation is that it increases the tax-created subsidy for owning a home.

A second time series test of the importance of the homeownership rate is the role of itemization. Clearly, as the level of itemization increases (for reasons other than homeownership), the subsidy to homeownership should go up. Likewise, if the government increases the standard deduction in an attempt to simplify the tax code and reduce itemization, then homeownership should fall, if the tax subsidy is at all important. Thus, our second time series test of the importance of the home mortgage interest deduction is to see whether changes in the degree of itemization cause the level of homeownership to increase. Of course, there is a natural spurious positive correlation that occurs because homeowners are more likely to itemize than renters; thus, the coefficient will tend to be an overestimate of the true coefficient.

Table 9 shows our results. Using quarterly data since 1971, regression (1) shows the relationship between the subsidy rate and the level of homeownership. Increases in subsidy cause the homeownership rate to increase, but the effect is slight and insignificant. A 1 percent increase in the subsidy rate causes homeownership to rise by .0009 percent. In regression (2), we show that this result remains unchanged when we control for the conventional mortgage interest rate (which has its predicted negative sign). Regression (3) includes demographic controls, following Rosen and Rosen (1980).

In regression (4), we look at itemization. In this case, there is a significant negative relationship, which goes in the wrong direction. This coefficient becomes insignificant when we control for the conventional mortgage interest rate. The basic story of these regressions is shown by

TABLE 9
Homeownership and the Subsidy (Dependent Variable: Homeownership Rate [Percentage])

	(1)	(2)	(3)	(4)	(5)	(6)
Subsidy (%)	0.0009	0.0011	0.0007			
	(0.0017)	(0.0017)	(0.0009)			
Conventional mortgage interest rate (%)		-0.0777	0.1433		-0.0261	0.2029
		(0.0365)	(0.0353)		(0.0336)	(0.0370)
Real per capita disposable income ($1,000)			0.2815			0.3405
			(0.1821)			(0.1733)
Share itemizing (%)				-0.0554	-0.0174	-0.0558
				(0.0130)	(0.0230)	(0.0162)
People per household			5.2133			7.1825
			(1.3418)			(1.3934)
Percentage urban			-1.1951			-1.0455
			(0.4116)			(0.3923)
Percentage age 25+ with at least some college			0.3075			0.2671
			(0.0654)			(0.0631)
Constant	64.6495	65.5902	119.7559	66.4704	65.5786	104.8634
	(0.1013)	(0.3627)	(26.3851)	(0.4488)	(0.7122)	(25.4132)
Observations	148	123	111	144	119	111
R^2	0.0019	0.0366	0.3407	0.1128	0.0144	0.4050

*Quarterly homeownership data, 1965–2001, from www.census.gov. Columns (1), (2), and (3) use quarterly data on the consumer price index (CPI) beginning in 1965 to calculate subsidy as in section 3. CPI data taken from www.freelunch.com. Columns (2), (3), (5), and (6) use quarterly data on the conventional mortgage interest rate beginning in 1971. Interest rate data taken from www.freelunch.com. Columns (4), (5), and (6) use annual data on percentage itemizing beginning in 1965 and quarter 1 homeownership rate. Data on itemizing taken from www.irs.gov. Columns (3) and (6) use annual data on real (chain-weighted) per capita disposable income and population per household. Data from www.freelunch.com. Columns (3) and (6) use data on percentage of Americans living in urban areas and percentage of adults with at least some college, both taken from www.census.gov and interpolated between decennial census years where appropriate.

Figures 1 and 2. Over the past 40 years, the inflation rate and the share of people who itemize both have had major ups and downs. The home-ownership rate has been extraordinarily flat, and the immobility of the homeownership rate serves as evidence for the weak connection between the home mortgage interest deduction and the level of homeownership.

To explore this relationship further, we look at cross-state data within the United States. From the TAXSIM database from the National Bureau of Economic Research (Feenberg and Coutts, 1993), we extract a measure at the extent to which the mortgage interest subsidy differs by state. This subsidy represents the marginal subsidy to mortgage interest raced by an average taxpayer in the state. Figure 6 shows the cross-state variation in the degree of mortgage subsidy and its relationship to the homeownership rate. States with a larger subsidy tend to have slightly lower homeownership rates, but there is essentially no relationship. Figure 7 shows the relationship between changes in the degree of mortgage subsidy and changes in the homeown-

FIGURE 6. *Homeownership and the Mortgage Subsidy**
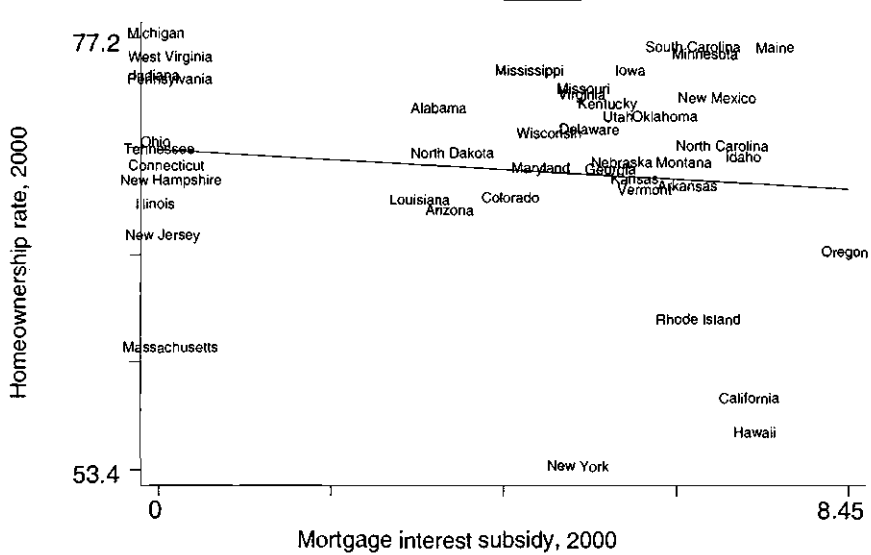
* Homeownership rate is percentage of housing owner-occupied in 2000. Data from www.census.gov. Mortgage interest subsidy is marginal subsidy to mortgage interest of average taxpayer by state from 1990 to 2000. Income distribution held fixed. Data from www.nber.org/taxsim. See Feenberg and Coutts (1993) for details on the TAXSIM model. In particular, the mortgage interest subsidy is calculated as follows: nationally representative data on income in 1995 is deflated as appropriate for each year and used to calculate the state income tax liabilities owed by each person in the state-year cell. Then mortgage interest is increased by 1 percent for each taxpayer, the state tax is recalculated, and a marginal tax is calculated as the ratio of additional tax to additional mortgage interest. More details are available at http://www.nber.org/taxsim/state-avr-rates/index.html.

FIGURE 7. *Homeownership and Changes in the Mortgage Subsidy**

Change in mortgage interest subsidy, 1990–2000
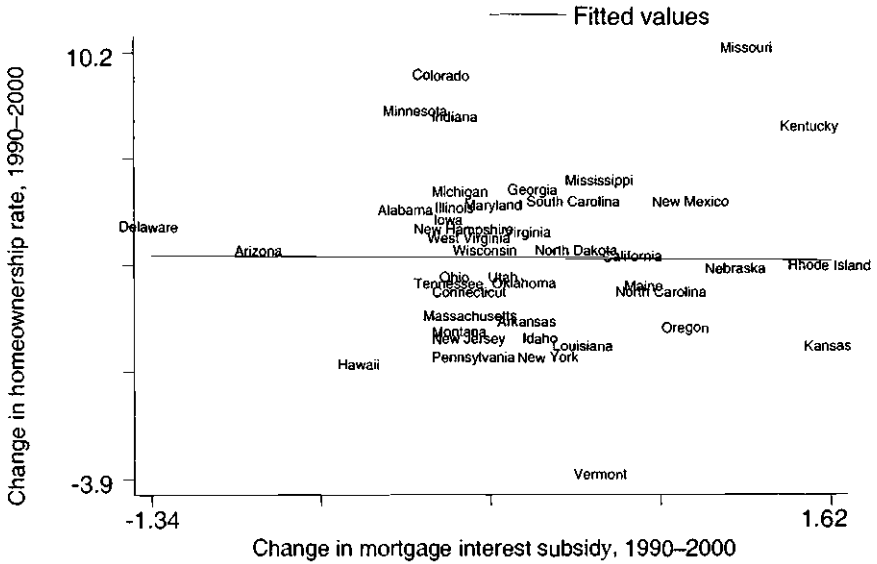
* Change in homeownership rate is change in percentage of housing owner-occupied from 1990 to 2000. Data from www.census.gov. Change in mortgage interest subsidy is change in marginal subsidy to mortgage interest of average taxpayer by state from 1990 to 2000. Income distribution held fixed. Data from www.nber.org/taxsim. See Feenberg and Coutts (1993) for details on the Taxsim model. In particular, the mortgage interest subsidy is calculated as follows: nationally representative data on income in 1995 is deflated as appropriate for each year and used to calculate the state income tax liabilities owed by each person in the state-year cell. Then mortgage interest is increased by 1 percent for each taxpayer, the state tax is recalculated, and a marginal tax is calculated as the ratio of additional tax to additional mortgage interest. More details are available at http://www.nber.org/~taxsim/state-avr-rates/index.html.

ership rate between 1990 and 2000. Again, there is essentially no relationship. This data further confirms our basic point: the home mortgage interest deduction doesn't have much to do with the homeownership rate.

9. CONCLUSION

We have argued that there is a limited body of evidence suggesting that homeownership creates positive spillovers for nearby neighbors. Homeowners do appear to be more active citizens: they vote more; they take better care of their homes. Houses that are surrounded by homeowners are worth a little more than houses that are surrounded by renters. There are also negative aspects to homeownership. Homeowners respond more slowly to labor market shocks, and they vote to constrict the new housing supply. Still, there is enough evidence to support the view that pro-homeownership policies are at least possibly beneficial.

However, the home mortgage interest deduction is really not a pro-homeownership policy in any meaningful sense. It subsidizes housing consumption, but its impact on the homeownership rate appears to be minimal. This finding seems to occur because homeownership is strongly determined by choice of structure type, i.e., living in a single-family detached home, and because the poorer people who are on the home-ownership margin generally don't itemize, even if they own. Our best evidence on the irrelevance of the deduction compared to the homeownership rate is that, over the past 40 years, as the deduction's implicit subsidy has soared and crashed, the rate of homeownership has barely budged.

The home mortgage interest deduction needs to be judged on other grounds. Is it desirable as a means of making the income tax schedule less progressive? Is it desirable as a subsidy to housing consumption? The home mortgage interest deduction may or may not make sense, but it does not have a major impact on the homeownership rate, and the externalities from homeownership (if they exist) cannot be used as a justification for the deduction. Instead, other government policies, particularly those that reduce the down-payment levels for poorer Americans, are a much more effective means of influencing the level of homeownership.

REFERENCES

Aaron, Henry J (1972). *Shelter and Subsidies: Who Benefits from Federal Housing Policies?* Washington, D.C.: Brookings Institution.

Coulson, N. Edward, Seok-Joon Hwang, and Susumu Imai (2001). "The Value of Owner-Occupation in Neighborhoods." Penn State University Working Paper, September.

Cutler, David, and Edward L. Glaeser (1997). "Are Ghettos Good or Bad?" *Quarterly Journal of Economics* 112(3):827–872.

DiPasquale, Denise, and Edward L. Glaeser (1998). "Incentives and Social Capital: Are Homeowners Better Citizens?" National Bureau of Economic Research Working Paper No. w6363. January 1998.

DiPasquale, Denise, and Edward L. Glaeser (1999). "Incentives and Social Capital: Are Homeowners Better Citizens?" *Journal of Urban Economics* 45:354–384.

Epple, Dennis (1987). "Hedonic Prices and Implicit Markets: Estimating Demand and Supply Functions for Differentiated Products." *Journal of Political Economy* 95(1):59–80.

Feenberg, Daniel, and Elisabeth Coutts (1993). "An Introduction to the TAXSIM Model." *Journal of Policy Analysis and Management* 12(1):189–194.

Galster, George (1983). "Empirical Evidence on Cross-Tenure Differences in House Maintenance and Conditions." *Land Economics* 59:107–113.

Glaeser, Edward L., and Joseph Gyourko (2001). "Urban Decline and Durable Housing." National Bureau of Economic Research Working Paper no. w8598. November.

Glaeser, Edward L., and Joseph Gyourko (2002). "The Impact of Zoning on Housing Affordability." National Bureau of Economic Research Working Paper no. w8835. March.

Glaeser, Edward L., Jose A. Scheinkman, and Andrei Shleifer (1995). "Economic Growth in a Cross-Section of Cities." *Journal of Monetary Economics* 36(1):117–143.

Glaeser, Edward L, and Jesse M. Shapiro (2003). "Urban Growth in the 1990: Is City Living Back?" *Journal of Regional Science* 43(1):139–165, forthcoming.

Goodman, John L, Jr., and John B. Ittner (1992). "The accuracy of Homeowners' Estimates of House Value." *Journal of Housing Economics* 2(4):339–357.

Gordon, Roger H., James R. Hines, Jr., and Lawrence H. Summers (1987). "Notes on the Tax Treatment of Structures." In *The Effects of Taxation on Capital Accumulation*, Martin Feldstein (ed.). Chicago, Ill.: University of Chicago Press.

Green, Richard, and Michelle White (1997). "Measuring the Benefits of Homeowning: Effects on Children." *Journal of Urban Economics* 41(3):441–461.

Henderson, J. Vernon, and Yannis Ioannides (1983). "A Model of Housing Tenure Choice." *American Economic Review* 73:98–113.

Kanemoto, Yoshitsugu (1990). "Contract Types in the Property Market." *Regional Science and Urban Economics* 20(1):5–22.

Katz, Lawrence F., Jeffrey R. Kling, and Jeffrey B. Liebman (2001). "Moving to Opportunity in Boston: Early Results of a Randomized Mobility Experiment." *Quarterly Journal of Economics* 116(2):607–654.

Mills, Edwin S (1987). "Dividing up the Investment Pie: Have We Overinvested in Housing?" *Federal Reserve Bank of Philadelphia Business Review*. March 1987 pp. 13–23.

Monroe, Albert (2001). "The Effects of Homeownership on Communities." Harvard University Dissertation. May 2001.

Oswald, Andrew J (1999). "The Housing Market and Europe's Unemployment: A Non-Technical Paper." University of Warwick Working Paper.

Poterba, James (1984). "Tax Subsidies to Owner-Occupied Housing: An Asset-Market Approach." *Quarterly Journal of Economics* 99(4):729–752.

Poterba, James (1992). "Taxation and Housing: Old Questions, New Answers." *American Economic Review* 82:237–242.

Rosen, Harvey S. (1979). "Housing Decisions and the U.S. Income Tax: An Econometric Analysis." *Journal of Public Economics* 11(1):1–23.

Rosen, Harvey S. (1985). "Housing Behavior and the Experimental Housing Allowance Program: What Have We Learned?" National Bureau of Economic Research Working Paper no. w0657. May 1985.

Rosen, Harvey S., and Kenneth T. Rosen (1980). "Federal Taxes and Home Ownership: Evidence from Time Series." *Journal of Political Economy* 88(1):59–75.

Rossi, Peter, and Eleanor Weber (1996). "The Social Benefits of Homeownership: Empirical Evidence from the National Surveys." *Housing Policy Debate* 7:37–81.

Shilling, James, C. F. Sirmans, and Jonathan Dombrow (1991). "Measuring Depreciation in Single-Family Rental and Owner-Occupied Housing." *Journal of Housing Economics* 1:368–383.

Stein, Jeremy C. (1995). "Prices and Trading Volume in the Housing Market: A Model with Down-Payment Effects." *Quarterly Journal of Economics* 110(2):379–406.

Voith, Richard (1999). "Does the Federal Tax Treatment of Housing Affect the Pattern of Metropolitan Development?" *Federal Reserve Bank of Philadelphia Business Review* 3–16.