Journal of Urban Economics **45**, 354–384 (1999)
Article ID juec.1998.2098, available online at http://www.idealibrary.com on IDEAL®

Incentives and Social Capital: Are Homeowners Better Citizens?

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Received December 11, 1997; revised March 11, 1998

Homeownership may encourage investment in local amenities and social capital, because homeownership gives individuals an incentive to improve their community and because homeownership creates barriers to mobility. Using the U.S. General Social Survey, we document that homeowners invest more in social capital; a simple instrumental variables strategy suggests that the relationship may be causal. We also find evidence that a large portion of the effect of homeownership on these investments comes from lower mobility rates for homeowners. Using the German Socio-Economic Panel, we find a connection between homeownership and citizenship controlling for individual fixed effects. © 1999 Academic Press

I. INTRODUCTION

The home mortgage interest deduction is among the most important features of the U.S. Tax Code. Critics of the deduction have argued that it incurs large social costs, at least relative to a consumption or flat tax (Jorgenson and Wilcoxen [6], Hall and Rabushka [5]).[1] The rationale for

* Justin Funches, Joseph Geraci, Spencer Glendon, Jacob Vigdor, and Chris Woodard provided invaluable research assistance. We are grateful to the National Science Foundation, the Sloan Foundation, and the Joint Center for Housing for Financial Support. Helpful comments were provided by John Meyer and workshop participants at Harvard, the University of Illinois, and Indiana University.

[1] One of the primary issues involved in economists judging the social costs of the deduction is the relevant benchmark. Few economists would argue that the current system with the deduction is superior to a consumption tax, but it is much less clear whether we would be better off without the deduction which at least partially exempts home-related savings from taxation.

0094-1190/99 $30.00

this deduction has often been that homeowners make better citizens. Yet with the prominent exceptions of Green and White [4] and Rossi and Weber [13], we are generally without any evidence documenting the externalities created by homeownership.[2]

Encouraging homeownership among the disadvantaged has also been a focus of housing policy. The Federal Housing Administration has long provided insurance on high loan-to-value (LTV) ratio mortgages in order to decrease the size of the down payment for lower-income households. In recent years, there have been efforts to sell off public housing to encourage ownership among long-term residents. In several cities around the country, local officials have promoted homeownership through Nehemiah programs. In these programs, subsidies from a variety of sources make it possible for low-income households to purchase newly constructed or rehabilitated homes for a fraction of construction costs (in some cases, as little as one-third). The relationship between homeownership and citizenship is often cited as a rationale for these efforts, but there is little evidence to date documenting any such relationship.

In this paper, we attempt to measure the effects of homeownership on citizenship and community. Homeownership should create incentives for households to improve the quality of their communities since community quality is capitalized into the value of their homes. In addition, because of the high transaction costs associated with homeownership, homeowners tend to be considerably less mobile than renters. Increased length of tenure in a community should also encourage investments in community, since homeowners will consume the benefits of community over a longer time period. Of course, while barriers to mobility may improve the incentives to invest in one's community, these barriers may also impose costs; homeowners may be less able to move in response to economic shocks (see, in particular, Oswald [9]).

We present a model where citizens invest in both social capital (which is defined as the social links among citizens) and local amenities. The incentives that individuals face determine the investments that they make in local amenities and social capital. The theory predicts that homeownership will increase investment in both social capital and local amenities and that this increase will be Pareto improving.

Like Rossi and Weber [13], we use the U.S. General Social Survey to investigate the basic connection between homeownership and externality-

[2] Green and White [4] document a connection between homeownership and the success of children raised in owned homes. As successful children are less likely to partake in a variety of socially destructive behaviors, this represents a finding that homeownership possibly generates positive externalities. Rossi and Weber [13] focuses on the connection between homeownership and a variety of outcomes, most of which yield primarily private returns.

creating variables, some of which serve as proxies for citizenship. Controlling for age, race, gender, martial status, children, income, education, residential structure type (e.g., detached home), and city size, we find that homeownership has a strong positive correlation with each of these variables. Homeowners are approximately 10% more likely to know their U.S. representative by name. They are 9% more likely to know the identity of their school board head. Homeowners are 15% more likely to vote in local electrons and 6% more likely to work to solve local problems. On average, they are members of 0.25 more nonprofessional organizations than nonowners. Homeowners are 12% more likely to garden and 10% more likely to own guns.[3] Homeowners attend church more frequently than renters.

Homeownership is an endogenous variable that is correlated with other individual characteristics that may determine good citizenship. To address this problem, we generate an instrument to capture influences of the local housing market that might encourage homeownership but might not be a product of these other influences. We use the average homeownership rate of the individual's income quartile for each race in each individual's state. The instrument increases the effect of homeownership on our measures of citizenship. While this instrument is far from perfect, our results suggest that there may be a causal link between homeownership and social capital.[4]

We then attempt to decompose the effects of homeownership into the effects that come through the incentives of ownership and the effects that come through a lower propensity to move. Our estimates of the portion of the homeownership effect that works through duration in the community range from 4 to 92% (in one-half of the cases, more than 50% of the homeownership effect operates through increased tenure). While the measures of community tenure in the GSS are flawed and our estimates vary widely, the evidence we do have suggests that the impact of homeownership on our citizenship variables is working substantially through community tenure. In addition, the effect of homeownership appears to be stronger for individuals in the top income quartile than for individuals in the bottom income quartile.

To further investigate these issues, we use the German Socio-Economic Panel (GSOEP). This data set confirms that the basic relationship between homeownership and citizenship holds, but the magnitude of the impacts

[3] Perhaps homeowners are more likely to own guns in order to protect their property. Of course, increasing gun ownership may not be seen as a positive effect of homeownership.

[4] A particular concern is that this local homeownership rate may be correlated with other local characteristics that influence citizenship.

are considerably smaller in Germany. In the GSOEP, between 10 and 27% of the homeownership effect is due to duration. When we control for individual fixed effects, the size of the coefficients on homeownership drop considerably (often by 75%), but we still find a significant relationship between owning a home and our social capital variables.

Overall, our results suggest that homeownership positively influences the formation of social capital, and much of the influence of homeownership occurs because homeownership increases community tenure. Despite the strong desire of many to reverse the seeming pattern of disappearing citizenship in America (as argued by Putnam [11]), our results should not be interpreted as wholesale support for policies that promote homeownership. A large fraction of the effect of homeownership occurs because homeowners are different in many ways from renters. We provide little evidence on the magnitude of the benefits to society of increasing homeownership and no evidence on the costs of homeownership policies (such as reduced mobility), either in absolute terms or relative to other programs that might promote citizenship.

II. A MODEL OF SOCIAL CAPITAL, LOCAL AMENITIES, AND HOMEOWNERSHIP

This theoretical section presents a simple model of investment in local public goods that clarifies concepts and generates testable hypotheses. This model has two periods. In the first period, individual "i" invests in local amenities (denoted A_i) and social capital (denoted S_i). In the second period, this individual learns whether or not he receives an exogenous mobility shock forcing him to leave the community. If the individual is a homeowner and moves, the sales price of his home will reflect the investment in local amenities. If the individual is a renter and stays (or leaves), the rental price of his home will reflect any local investment.

We divide local investments into local amenity provision and social capital to capture the conceptual difference between taking actions which directly improve the quality of the neighborhood (local amenity provision) and actions which improve one's connection to one's neighbors (social capital). This distinction matters because strangers who buy or rent the house will reap some of the benefits of local amenities but they will not immediately acquire social capital. Local amenities are direct inputs into utility for both the individual and possibly the entire neighborhood. Investments in local amenities might include gardening and voting in local elections.

We define social capital as a connection to others which enables individuals to benefit from their neighbors' local amenity investment or to

cooperate with their neighbors to improve local public goods.[5] While social capital is not a direct input into utility, it improves the ability of neighbors to enjoy each other's investments in local amenities. For example, social capital might include membership in a social organization that could then lead to more enjoyment of other members gardens or to better coordination on political actions.[6]

In the model, we assume there are $2N + 1$ houses in this community arranged in a circle. Each house is indexed from $-N$ to $+N$, so the individual $-N$ lives next to individual $+N$. These index numbers are meant to capture the distance, which may be either spatial or social, between two members of the community (i.e., individual $N - 1$ is closer to individual 0 than individual N is to individual 0). As all of the houses are intrinsically identical, for simplicity, we will deal with the individual who has index number 0.

Individual 0's utility from individual j's investment in local amenities equals individual j's investment in local amenities A_j times $\Pi_{k=0}^{j} f(S_k)$, where S_k is the social capital of individual k. The function $f(S)$ is concave and maps the investment of social capital into the degree of connection. We assume that $f(0) > 0$ so that the presence of one individual with no social capital will not mean that no one receives any benefit from anyone else's amenity provision. Utility is multiplicative in these $f(.)$ functions to capture the role of social networks. We are assuming that individual 0 is not connected to individual j directly but rather only through households 1 to $j - 1$. Of course, individual 0 and individual j could form a direct linkage, but we believe the idea that relationships work through networks captures much of the reality of social capital. For example, forming a friendship enables both friends to connect with the other's circle of acquaintances. As a result of this multiplicative function, the social capital investment of all of these neighbors affects the ability of individual 0 to coordinate with individual j or to enjoy individual j's investment.

[5] There are two possible views of this connection. First, social capital can be seen as developing a common language with your neighbors so that communication is easier. Second, social capital can be seen as posting a bond (in the form of shared activities) so that neighbors will trust each other more.

[6] Our definition of social capital differs from that of Loury [7] who pioneered the use of the concept of social capital. Loury's definition of social capital would include both local amenities and social connection. Indeed, it is often difficult in practice to draw a distinction between the two forces. For example, the actions taken to improve schooling while in Parent Teacher Associations would be considered a local amenity because they yield direct benefits, while the relationship-building aspect of membership is social capital.

Thus, the total utility from local amenities and social capital that is received by individual 0 will equal

$$A_0 + \sum_{j=1}^{N} \left[A_j \prod_{k=0}^{j} f(S_k) + A_{-j} \prod_{k=0}^{j} f(S_{-k}) \right]. \quad (1)$$

If individuals stay in their community during the second period, they will receive this level of utility minus their housing costs.

The renter value of the house in the second period will determine both the housing cost to renters and the resale value of the house. This rental value is found by making the renter indifferent between this house and his reservation utility **U**, which implies

$$R = (1 - \theta) A_0 + \sum_{j=1}^{N} f(0) \left[\prod_{k=1}^{j} f(S_k) A_j + \prod_{k=1}^{j} f(S_{-k}) A_{-j} \right] - \mathbf{U}. \quad (2)$$

This expression contains three terms. First, $(1 - \theta)A_0$ captures the extent to which a potential renter enjoys the local amenities chosen by the first occupant of the house. As the investments may often be somewhat specific to the investor, we introduce the parameter θ which lies between zero and one and captures the specificity of local amenity investment. As θ increases from zero, investments become more specific and less likely to be valued by potential purchasers. Second, $\sum_{j=1}^{N} f(0)[\prod_{k=1}^{j} f(S_k)A_j + \prod_{k=1}^{j} f(S_k)A_{-j}]$ represents the enjoyment from the overall level of social capital and local amenities in the neighborhood (the renter has $S = 0$). Third, **U** is the reservation utility which is subtracted because the rental rate makes potential renters indifferent between utility in this location and their reservation utility.

When individuals own their homes, they have a probability of moving after the first period of M_O, and if they rent, they have a probability of moving of M_R, where $M_R > M_O$ by assumption. These probabilities will be taken as exogenous to the model, and we will not explicitly model the extra moving costs that induce homeowners to move less than renters. When individuals move, their social capital disappears but not their amenities. Since individuals will be investing in the first period not knowing who will move and who will not, the expected level of utility from the social capital and local amenities of others will be

$$\sum_{j=1}^{N} \left\{ \prod_{k=1}^{j} \left[(1 - M_k) f(S_k) + M_k f(0) \right] A_j + \prod_{k=1}^{j} \left[(1 - M_{-k}) f(S_{-k}) + M_{-k} f(0) \right] A_{-j} \right\}, \quad (3)$$

where M_k can take on a value of either M_R or M_O. This formula is the expected value as of the first period of the value of equation (1) in the second period. M_k are meant to capture the possibility that individuals will move between those periods. We denote this entire expression as $G(\hat{A}, \hat{S}, \hat{M})$, where $\hat{A}$, $\hat{S}$, and $\hat{M}$ are meant to reflect the average level of amenities, social capital, and mobility in the communities. The function $G(\hat{A}, \hat{S}, \hat{M})$ is rising in local amenities and social capital and falling in mobility. The expected rental value of the housing is $(1 - \theta)A_0 + f(0)G(\hat{A}, \hat{S}, \hat{M}) - \mathbf{U}$. This expected value to a prospective buyer thus capitalizes the investments in local amenities made during the first period.[7]

To revisit the time structure, in the first period both renters and owners invest in social capital and local amenities. In the second period, individuals may receive an exogenous shock and leave the community. When renters leave, they gain no benefits from any of their investments. When owners leave, they benefit from their investments to the extent that their investments raise the resale price of the house. If owners do not leave, they receive the full value of their investment. If renters do not leave, their housing costs will rise to reflect the added value created by their investment. Therefore, a renters' investments will accrue in part to the landlord. The discount factor is 1; the cost of investing in social capital is $K(S)$, and the local amenity is $C(A)$. The homeowner's maximization problem in the first period is

$$(1 - M_0)\left[A_0 + f(S_0)G(\hat{A}, \hat{S}, \hat{M})\right] + M_0\left[(1 - \theta)A_0 + f(0)G(\hat{A}, \hat{S}, \hat{M})\right] - C(A_0) - K(S_0). \quad (4)$$

This equation includes the probability of not moving times the expected benefit condition upon staying in the house plus the probability of moving times the return from selling the house minus the costs of the two types of investment. Differentiation of equation (4) yields first order conditions

$$C'(A_0) = 1 - \theta M_0 \qquad \text{and} \qquad K'(S_0) = (1 - M_0)f'(S_0)G(\hat{A}, \hat{S}, \hat{M}). \quad (5)$$

[7] In principle, we could follow the hedonic price literature and empirically examine property values to determine past investments in local amenities within a community. However, homeownership and housing prices are both market outcomes, so it is difficult to sort out causality. Our attempts to use the standard hedonic method of using housing prices to assess the extent that individuals are willing to pay to be among homeowners could not get past the problem that homeownership is such a direct function of housing prices.

The maximization problem faced by a renter will be

$$\mathbf{U} + (1 - M_R)\left\{\theta A_0 + [f(S_0) - f(0)]G(\hat{A}, \hat{S}, \hat{M})\right\} - C(A_0) - K(S_0). \tag{6}$$

This quantity comes from adding the base utility level which is earned regardless of moving (**U**) plus the quasi-rents earned by the renter if he invests. These quasi-rents occur because local amenities and social capital are somewhat individual specific investment. Alternative renters would not value them as much as the current renter. Differentiation of equation (6) yields the first order conditions

$$C'(A_0) = (1 - M_R)\theta \quad \text{and} \quad K'(S_0) = (1 - M_R)f'(S_0)G(\hat{A}, \hat{S}, \hat{M}). \tag{7}$$

In both cases, investments in both local amenities and social capital will be suboptimal, because there are externalities from both forms of investment. Higher levels of expected tenure will increase investment for both the homeowners and the renters.

For both forms of investment, homeowners will invest more than renters. In the case of local amenities, the difference is coming both from the differential mobility rate and from the fact that the resale value of homeowners' property rises with their investment in local amenities. While an owners' investment in social capital does not raise his resale value, his social capital investment raises his neighbors' resale value, and his neighbors' investment raises his resale value.[8] Renters only receive benefits from their investments when they stay in their communities and when their investments are specific to them.

This model predicts that investment in social capital will be higher when neighbors also invest in social capital or local amenities. This investment will be greater still when neighbors are less likely to move, and the community builds a common stock of social relationships. Since homeowners are less mobile, a higher community average level of homeownership should raise individual investment in social capital (but not local amenities), even controlling for the individual's own homeownership status.

III. EVIDENCE ON HOMEOWNERSHIP AND CITIZENSHIP IN THE U.S.

Our first empirical results come from the National Opinion Research Center's General Social Survey (the GSS). This survey is a repeated

[8] The intuition of this point is that a new homeowner does not gain from the friendships made by his predecessor in the home, but if that homeowner builds a relationship with his neighbors, he will benefit from his neighbors' social connections.

cross-section that was administered between 1972 and today (our version ends in 1994), to changing annual samples of approximately 1500 individuals.[9] Our primary independent variable is the question ''Do you or your family own your home or apartment?'' which was asked over nine years. As Table 1 shows, 64% of our sample owned a home.

We consider seven outcome variables. Of these outcome variables, only two were asked for more than one of the nine years when we also know whether the respondent owned his home. Since all of our questions were

[9] In a few sample years, the GSS includes an oversample of African Americans which we did not include in our analysis.

TABLE 1
Descriptive Statistics from the U.S. General Social Survey

	Full sample	Renters	Owners
Owns Home	0.64	0	1
	(0.48)	(0)	(0)
	[11,238]	[4044]	[7194]
No. of Nonprof.	1.726	1.434	1.889
Org. Memberships[a]	(1.793)	(1.711)	(1.817)
	[5602]	[2009]	[3593]
Knows School Head[a]	0.318	0.205	0.377
	(0.466)	(0.404)	(0.485)
	[1437]	[492]	[945]
Knows U.S. Representative[a]	0.376	0.231	0.453
	(0.485)	(0.422)	(0.498)
	[1430]	[493]	[937]
Votes in	0.686	0.521	0.772
Local Elections[a]	(0.464)	(0.5)	(0.42)
	[1444]	[497]	[947]
Helps Solve	0.341	0.235	0.396
Local Problems[a]	(0.474)	(0.424)	(0.489)
	[1456]	[498]	[958]
Gardens[a]	0.609	0.403	0.715
	(0.488)	(0.491)	(0.452)
	[1071]	[365]	[706]
Owns a Gun[a]	0.433	0.262	0.528
	(0.496)	(0.44)	(0.499)
	[6316]	[2252]	[4064]
Church Attendance[a]	3.921	3.434	4.195
	(2.684)	(2.611)	(2.686)
	[11,128]	[4008]	[7120]
Children in	0.379	0.361	0.388
Household	(0.485)	(0.48)	(0.487)
	[11,238]	[4044]	[7194]

TABLE 1—*Continued*

	Full sample	Renters	Owners
Age: < 30	0.211	0.368	0.123
	(0.408)	(0.482)	(0.329)
	[11,210]	[4035]	[7175]
Age: 30 < 40	0.238	0.266	0.221
	(0.426)	(0.442)	(0.415)
	[11,210]	[4035]	[7175]
Age: 40 < 50	0.179	0.133	0.204
	(0.383)	(0.339)	(0.403)
	[11,210]	[4035]	[7175]
Age: 50 < 60	0.125	0.08	0.15
	(0.331)	(0.271)	(0.357)
	[11,210]	[4035]	[7175]
Age: > = 60	0.248	0.153	0.301
	(0.432)	(0.36)	(0.459)
	[11,210]	[4035]	[7175]
Log (City Size ×1000)	3.318	3.897	2.993
	(2.174)	(2.314)	(2.02)
	[11,238]	[4044]	[7194]
Black	0.118	0.184	0.081
	(0.323)	(0.388)	(0.273)
	[11,238]	[4044]	[7194]
Male	0.432	0.427	0.435
	(0.495)	(0.495)	(0.496)
	[11,238]	[4044]	[7194]
Married	0.541	0.33	0.66
	(0.498)	(0.47)	(0.474)
	[11,237]	[4043]	[7194]
Education: > = 16 Years	0.215	0.194	0.227
	(0.411)	(0.396)	(0.419)
	[11,220]	[4034]	[7186]
Education: < 12 Years	0.234	0.263	0.218
	(0.423)	(0.44)	(0.413)
	[11,220]	[4034]	[7186]
Real Income (Thousands of 1987 Dollars)	30.45	19.293	36.898
	(26.217)	(17.796)	(28.073)
	[10,190]	[3732]	[6458]
Length of Residence: < 1 year	0.091	0.18	0.045
	(0.288)	(0.385)	(0.207)
	[1456]	[499]	[957]
Length of Residence: 1 to 3 years	0.155	0.232	0.114
	(0.362)	(0.423)	(0.318)
	[1456]	[499]	[957]

TABLE 1—*Continued*

	Full sample	Renters	Owners
Length of Residence:	0.177	0.202	0.164
4 to 9 years	(0.382)	(0.402)	(0.371)
	[1456]	[499]	[957]
Length of Residence:	0.385	0.236	0.463
> 10 years (but less than life)	(0.487)	(0.425)	(0.499)
	[1456]	[499]	[957]
Structure Type:	0.634	0.279	0.834
Detached House	(0.482)	(0.448)	(0.372)
	[11,109]	[3998]	[7111]
Structure Type:	0.083	0.17	0.034
Attached, Two–Four Units	(0.276)	(0.376)	(0.182)
	[11,109]	[3998]	[7111]
Structure Type:	0.045	0.078	0.027
Rowhouse	(0.208)	(0.268)	(0.163)
	[11,109]	[3998]	[7111]
Structure Type:	0.156	0.401	0.019
Apartment Building	(0.363)	(0.49)	(0.135)
	[11,109]	[3998]	[7111]
Structure Type:	0.081	0.073	0.086
Other	(0.274)	(0.26)	(0.281)
	[11,109]	[3998]	[7111]

Note: Data are from the U.S. GSS 1985–1994. For each variable, the mean value, the standard deviation (in parentheses), and the number of observations [in brackets] are presented.

[a] Interviewees were asked: (1) how many nonprofessional organizations they belong to, (2) if they know their local school head, (3) if they know their U.S. Representative, (4) if they vote in local elections, (5) if they help solve local problems, (6) if they garden, (7) if they own a gun, and (8) frequency of church attendance (zero is never, eight is more than once a week).

asked in different years, the sample sizes for our table of means and regressions will change for different dependent variables.

Following Putnam [11], we will use the number of nonprofessional organizations that an individual is a member of as a measure of the level of social connection among individuals within a community. Nonprofessional organizations are not necessarily local and may not always reflect any connection between an individual and his or her neighborhood. However, many nonprofessional organizations have a decidedly local component and even membership in nonlocal organizations often reflects a local relationship (i.e., one person joins Amnesty International because his friend down the street encourages him). The average individual in the U.S. General Social Survey is a member of 1.7 nonprofessional organizations.

Homeowners are members of 1.9 organizations on average. Renters are members of 1.4 organizations.

The U.S. General Social Survey has several measures of local political involvement, where local political involvement combines elements of both social capital and local amenity investment in our framework. Two measures of interest involve questions about knowing the names of political leaders: the head of your local school board and the local U.S. representative.[10] Renters are much less likely to know the names of these leaders; 21% of renters know their school board head and 23% know their U.S. representative. 38% of owners know their school board head, and 45% of owners know their U.S. representative.

Voting in local elections is another example of local amenity provision which may also contain elements of social capital investment as well. 77% of owners said that they had voted in local elections, but only 52% of renters said they had participated in such elections. Respondents were also asked if they had ever actively participated in trying to solve local problems: 24% of renters answered yes to this question, and 40% of homeowners answered yes to the question. All of these differences are quite statistically significant and suggest that homeowners are quite different from renters.

The U.S. General Social Survey had a module of questions on leisure activities. One of the leisure activities questions asked is whether the individual gardens. Since gardening often represents a local amenity that creates positive spillovers to neighbors or passersby who enjoy observing the garden, this is an activity that also generates local spillovers. 40% of renters gardened. 72% of homeowners gardened.

We also consider gun ownership not because gun ownership is a form of local amenity provision, but rather because the incentives to own a gun could rise with the amount of property that an individual has to protect, and homeowners may have more property.[11] There is a large difference in the probability of owning a gun between homeowners and renters. 26% of renters own guns. 53% of homeowners own guns.

Our final variable is church attendance, which represents (among other things) a form of social capital investment. Attendance is a categorical variable ranging from zero (never attends church) to eight (attends church more than once per week). Homeowners attend church more regularly than renters.

[10] The General Social Survey not only asks individuals if they know who these leaders are but then asks for the names and checks them against the true U.S. representative and school board head.

[11] Owning a gun certainly may not necessarily yield positive externalities for neighbors, although it is possible that the increased probability that guns are being owned in the neighborhood will dissuade potential burglars (see Lott and Mustard [8]).

Table 1 also lists a variety of variables that will be used as controls in our regressions. These controls include a battery of age dummies. Homeowners are generally older than renters. A second relevant control variable is race, which is a one–zero variable taking on a value of one if the respondent is black. Minority status may influence investment in social capital either positively, perhaps because minorities have an interest in creating strong social institutions to preserve ethnic connections, or negatively, perhaps because discrimination excludes minorities from white social groups. Renters are more than twice as likely to be black as homeowners. There is almost no difference between homeowners and renters in gender. Homeowners are much more likely to be married than renters (66% vs. 33%). We will also control for the logarithm of city size, and we find that homeowners are more likely to live in small cities than renters.

Our education controls will be dummy variables for whether the individual is a high school dropout (i.e., has less than 12 years of schooling) or whether the individual has completed 16 years of schooling. Homeowners are better educated than renters. We have an income variable, which is based on the midpoints of 12 income categories and is corrected for price changes over time. Homeowners have considerably more income on average than renters.

We also present descriptive statistics on the question ''how long have you lived in your community?'' This variable is not a control; rather, it is a means of testing whether the effect of homeownership works primarily through property-related incentive effects or through a longer connection with one's area. For this variable, community is defined as local government jurisdiction (e.g., the city of Chicago) which is a broad definition of community. Households could certainly change community without changing city. Unfortunately, this variable is the only one available for the year when most of the social capital questions were also asked. As the model suggests, homeowners are much less mobile. 41.2% of renters have lived in their communities for three years or less. 15.9% of owners have lived in their communities for three years or less. 19.2% of the sample has lived in their communities for their entire lives.

Finally, we control for type of structure. Homeowners disproportionately live in detached houses (83% vs. 28% for renters). Certainly, the physical attributes of the house should be important in explaining variables like gardening, but physical structure of the house may also influence the incentives to be involved in local activities. For example, people in detached houses may care more about the attractiveness of their block because the structure is physically lower to the ground and occupants are more likely to see local amenities.

Since it is clear that homeowners are different along a variety of different characteristics, the connection of homeownership with the citizenship variables may well be spurious. The greater rate of citizenship for homeowners may be the result of omitted income and education variables, not the result of homeownership. Therefore, our first step is to run regressions of the form

$$\text{Outcome} = \alpha + \beta * \text{Homeownership} + \gamma * \text{Other Controls} + \varepsilon. \quad (8)$$

We have also included a time trend for those outcome variables that are asked in more than one year (membership in nonprofessional organizations, gun ownership, and church attendance). Throughout the paper, we are using a linear probability model even when the dependent variable is dichotomous. This choice was made because the linear model allows us to handle our instrumental variables estimates with standard two stage least-squares procedures which makes it easier to estimate standard errors, especially since we cannot assume that error terms are independent across individuals. Our noninstrumented ordinary least-squares results are quite similar to unreported results found using a probit model.

Table 2 shows the results from these regressions. All of the regressions in the first panel are ordinary least squares.[12] The first column in Table 2 shows the results when nonprofessional organizations is the dependent variable. Homeowners on average are members of 0.253 more of these organizations than renters, and this difference is statistically significant.

Other variables also affect organization membership. Older individuals are members of more organizations. Men are members of more organizations. Education and income are also strongly positively related to this variable. People in smaller towns are also members of more organizations (the urban anonymity hypothesis of Wirth [14], also seems to be true). There is no effect of marital status, having children, or race on this variable. Between 1972 and 1994, individuals substantially reduce their membership in these organizations (as shown by Putnam [11]).

Columns two and three give the results for knowing the name of the school board head and U.S. representative, respectively. Homeowners are 9.4 percentage points more likely to know their school board and 10.3 percentage points more likely to know their representative. There is a strong homeownership effect of 15.3% for voting in local elections. However, homeowners are only 6% more likely to work to solve local problems.

[12] When we run these regressions as probit regressions, the marginal effects of homeownership are within one percentage in all cases of the ordinary least-squares results (except for gun ownership). In all cases (including gun ownership), the effects were larger when estimated with probit regressions.

Column six shows the results for gardening. Homeowners are 11.6% more likely to garden than renters. Column seven gives results for gun ownership. Homeowners are 10.1% more likely to own guns. The final regression documents that homeowners attend church more regularly.

Despite the fact that we have controlled for a large number of variables, many of which have significant effects on the outcome variables, we consistently find significant effects of homeownership. Overall, our results suggest that homeownership has the effects predicted by the model on both social capital (nonprofessional organizations and church membership) and local amenity provision (working to solve local problems, gardening).

One significant problem with these results is that homeownership is not an exogenous variable that is uncorrelated with other factors that affect citizenship. Since homeownership is correlated with many observable variables, it seems quite possible that homeownership may be correlated with unmeasured variables that affect citizenship and are not included in Table 2. While we would ideally handle this problem with an exogenous variable that determined homeownership and nothing else, the only option provided by our data is to use a group average homeownership rate (excluding the individual himself) as an instrument.[13]

Housing markets are inherently local in nature, and we expect to have regional variation in homeownership that is driven largely by differences in housing costs, state income, and local property tax rates. Different income groups and races often have differential access to housing markets. As a result, housing costs may affect the homeownership rates of these groups in different ways.

We form the average homeownership rate within an income quartile, race, and state cell (each state has eight cells, and thus, we have 400 different groups within the sample—four quartiles times two races times 50 states). Homeownership rates should differ across these cells for reasons that should not be a function of citizenship (once income and race have been controlled for) and should be basically uncorrelated with other features that cause citizenship. If these assumptions are correct, then these state-income race group averages are a valid instrument for homeownership.[14]

The primary problem with this instrument is that other omitted variables could potentially affect both homeownership and citizenship within these

[13] In particular, any instrument that is based on location too precisely will be quite problematic, since location is also endogenous. Furthermore, we do not know location below the metropolitan area level.

[14] A particular worry is that other citizenship-related attributes might be related to these local averages. To check for this possibility, we also generated the average schooling level for each group of the population and added that as a regressor. This added control made no difference to the results.

TABLE 2

Impact of Homeownership on Citizenship: Evidence from the U.S. General Social Survey

	No. of Nonprof. Org. Memberships[a]	Knows School Head[a]	Knows U.S. Representative[a]	Votes in Local Elections[a]	Helps Solve Local Problems[a]	Gardens[a]	Owns a Gun[a]	Church Attendance[a]
Owns Home	0.253	0.094	0.103	0.153	0.06	0.116	0.101	0.359
	(0.068)	(0.036)	(0.037)	(0.034)	(0.036)	(0.042)	(0.017)	(0.074)
Age: < 30	−0.192	−0.107	−0.157	−0.212	−0.174	−0.141	−0.034	−0.131
	(0.079)	(0.042)	(0.043)	(0.04)	(0.043)	(0.047)	(0.02)	(0.085)
Age: 30 < 40	−0.151	−0.081	−0.054	−0.072	−0.111	−0.033	−0.029	−0.245
	(0.074)	(0.039)	(0.04)	(0.037)	(0.04)	(0.044)	(0.019)	(0.08)
Age: 50 < 60	0.048	0.041	0.149	0.128	0.067	0.065	−0.038	0.372
	(0.092)	(0.048)	(0.049)	(0.045)	(0.048)	(0.054)	(0.023)	(0.098)
Age: > = 60	0.119	−0.008	0.108	0.133	−0.014	0.032	−0.12	1.038
	(0.085)	(0.045)	(0.046)	(0.043)	(0.046)	(0.05)	(0.021)	(0.091)
Black	0.085	0.085	0.035	0.015	0.058	−0.125	−0.01	0.967
	(0.078)	(0.04)	(0.041)	(0.039)	(0.041)	(0.05)	(0.02)	(0.086)
Male	0.12	−0.041	0.063	−0.007	−0.012	−0.114	0.129	−0.673
	(0.048)	(0.025)	(0.026)	(0.024)	(0.026)	(0.03)	(0.012)	(0.053)
Married	−0.053	−0.034	0.024	−0.05	0.023	0.139	0.165	0.44
	(0.055)	(0.029)	(0.03)	(0.028)	(0.03)	(0.034)	(0.014)	(0.06)
Education:	0.971	0.066	0.117	0.147	0.157	0.019	−0.164	0.453
> = 16 Years	(0.062)	(0.034)	(0.035)	(0.032)	(0.034)	(0.037)	(0.016)	(0.068)
Education:	−0.723	−0.104	−0.15	−0.126	−0.14	−0.045	−0.028	−0.498
< 12 Years	(0.063)	(0.033)	(0.034)	(0.031)	(0.033)	(0.04)	(0.016)	(0.068)
Log (City Size	−0.04	−0.029	−0.029	−0.009	0.006	−0.014	−0.037	−0.065
×1000)	(0.012)	(0.006)	(0.006)	(0.006)	(0.006)	(0.008)	(0.003)	(0.013)
Real Income	0.0058	−0.001	0.0002	0.0005	−0.0005	0.00002	0.0001	−0.0034
(Thousands of 1987 Dollars)	(0.0011)	(0.0006)	(0.0006)	(0.0006)	(0.0006)	(0.0006)	(0.0003)	(0.0012)

TABLE 2—*Continued*

	No. of Nonprof. Org. Memberships[a]	Knows School Head[a]	Knows U.S. Representative[a]	Votes in Local Elections[a]	Helps Solve Local Problems[a]	Gardens[a]	Owns a Gun[a]	Church Attendance[a]
Time Trend	−0.043						−0.002	−0.026
	(0.009)						(0.002)	(0.008)
Children in Household	0.059	0.169	0.016	0.024	0.063	0.032	−0.056	0.394
	(0.06)	(0.031)	(0.032)	(0.03)	(0.032)	(0.036)	(0.015)	(0.065)
Structure Type: Detached House	0.227	0.01	0.043	0.112	0.007	0.042	0.053	0.498
	(0.09)	(0.048)	(0.049)	(0.046)	(0.049)	(0.055)	(0.022)	(0.098)
Structure Type: Attached, Two–Four Units	0.153	−0.028	0.0003	0.14	−0.086	0.019	−0.118	0.308
	(0.121)	(0.064)	(0.065)	(0.061)	(0.065)	(0.079)	(0.03)	(0.132)
Structure Type: Rowhouse	0.199	−0.015	0.065	0.216	0.006	−0.018	−0.138	0.297
	(0.142)	(0.077)	(0.079)	(0.073)	(0.078)	(0.087)	(0.036)	(0.154)
Structure Type: Apartment Building	0.325	−0.095	0.039	0.057	−0.076	−0.119	−0.104	0.363
	(0.115)	(0.063)	(0.064)	(0.06)	(0.064)	(0.069)	(0.028)	(0.123)
Constant	1.987	0.409	0.338	0.538	0.337	0.574	0.498	3.626
	(0.202)	(0.068)	(0.07)	(0.065)	(0.069)	(0.071)	(0.045)	(0.197)
R^2	0.140	0.102	0.125	0.162	0.087	0.171	0.199	0.085
Observations	5037	1317	1309	1322	1334	979	5698	9974
Survey Years	1986–1994	1987	1987	1987	1987	1987	1987	1985–1994

Note: Standard errors are in parentheses.

[a] Interviewees were asked: (1) how many nonprofessional organizations they belong to, (2) if they know their local school head, (3) if they know their U.S. Representative, (4) if they vote in local elections, (5) if they help solve local problems, (6) if they garden, (7) if they own a gun, and (8) frequency of church attendance (zero is never, eight is more than once a week).

groups. For example, a particular income quartile in a particular state could be filled with workers with lower education or more transient workers. We have attempted to check for this possibility by including controls for other characteristics of the state-income group, and none of our results were sensitive to including these other variables. Nonetheless, we accept that there are certainly remaining issues with this instrument. While this instrument is hardly perfect, we believe that instrumental variables results using these averages are a needed check on the robustness of the results found using ordinary least squares.

We form these averages in two ways. Our first method is to take the homeownership averages from the U.S. General Social Survey.[15] Our second method is to take the homeownership rates from the 1990 census. We have reported both sets of results. The instrument formed using the U.S. General Social Survey is a better predictor of individual homeownership behavior, because individuals in the U.S. General Social Survey are selected from similar areas within states. The instrument formed using the census is probably less likely to be correlated with other variables.

Because we view our instrument as a proxy for local housing market conditions, we will not include residential structure controls in Table 3. The correlation between structure type and homeownership is already extremely high, and structure type also closely reflects local housing market conditions. As a result, controlling for structure type lessens the independent predictive power of our instrument (i.e., its strength) considerably and we have opted to present regressions without these control variables (all subsequent regressions return to including residential structure controls).[16]

The first panel in Table 3 shows results using the U.S. General Social Survey averages.[17] In this panel, as in all subsequent panels, all of the basic controls in Table 2 are included in the regression. In every case, instrumenting causes the coefficient on homeownership to rise, and in almost every case, our results remain significant.[18] The second panel at the bottom of Table 3 shows results using the Census averages. In almost every

[15] We ran our regressions eliminating cells with less than 10 members to deal with potential problems from small samples. This change made little difference.

[16] Including residential structure controls in the instrumental variables regressions does not change the qualitative conclusions of our results, and in most cases the effect of homeownership remains statistically significant. However, controlling for structure type causes the coefficients on homeownership to reach implausibly high levels in many cases, which is a typical effect of weak instruments.

[17] In all cases, our standard errors have been corrected for intragroup correlation.

[18] The sharply rising coefficients could be coming from the fact that our instrument may be correlated with community level homeownership which our model predicts should also increase investment in local amenities and social capital.

TABLE 3

Instrumental Variables Estimates of the Impact of Homeownership on Citizenship

Panel 1: Instrument Using the Homeownership Rate in Respondent's State Within the Same Race and Income Group from the U.S. General Social Survey

	No. of Nonprof. Org. Memberships[a]	Knows School Head[a]	Knows U.S. Representative[a]	Votes in Local Elections[a]	Helps Solve Local Problems[a]	Gardens[a]	Owns a Gun[a]	Church Attendance[a]
Owns Home	0.587	0.456	0.197	0.284	0.189	0.344	0.555	1.867
	(0.233)	(0.149)	(0.128)	(0.128)	(0.123)	(0.182)	(0.063)	(0.295)
Observations	5085	1329	1321	1334	1345	979	5762	10085

Panel 2: Instrument Using the Homeownership Rate in Respondent's State Within the Same Race and Income Group from the 1990 PUMS

	No. of Nonprof. Org. Memberships[a]	Knows School Head[a]	Knows U.S. Representative[a]	Votes in Local Elections[a]	Helps Solve Local Problems[a]	Gardens[a]	Owns a Gun[a]	Church Attendance[a]
Owns Home	1.683	0.995	0.245	0.561	0.076	0.191	0.782	2.982
	(0.28)	(0.249)	(0.193)	(0.147)	(0.16)	(0.176)	(0.085)	(0.425)
Observations	5084	1329	1321	1334	1345	979	5762	10084

Note: Robust standard errors are in parentheses. These regressions contain the same controls as Table 2, excluding the structure controls. For space consideration, the coefficients on these controls are not reported. For each model, the same survey years as Table 2 apply.

[a] Interviewees were asked: (1) how many nonprofessional organizations they belong to, (2) if they know their local school head, (3) if they know their U.S. Representative, (4) if they vote in local elections, (5) if they help solve local problems, (6) if they garden, (7) if they own a gun, and (8) frequency of church attendance (zero is never, eight is more than once a week).

case, the coefficients on homeownership rise relative to the ordinary least-squares estimates, and in five of the regressions, the results are significant at the 10% level.

We regard these instrumental variables estimates as a check on the robustness of our results from Table 2. Even without structure controls, in several cases instrumenting causes the coefficient on homeownership to rise to implausibly large levels. We interpret these levels as the result of the upward bias that is known to be associated with imperfect instruments such as ours. Therefore, we believe that the ordinary least-squares coefficient estimates are more likely to be accurate.

We next ask whether the effect of homeownership works primarily through the incentive mechanism or through an increased likelihood of staying in one place. We do not actually know the expected duration of future residence in a place, but we can control for past residence which should be a predictor of future mobility as well.[19] Our duration measure is the individual's categorical answer to the question ''how long have you been living in your community?'' Categories include less than one year, between one and three years, between four and nine years, and more than 10 years. The omitted category is having lived in the community all of one's life. The duration coefficient may also affect the dependent variables which are related to knowledge of local conditions (e.g., who is your U.S. representative) because individuals who have lived in one location longer are more likely to have picked up particular pieces of local information.

The first panel in Table 4 shows how the homeownership effect changes, holding fixed the length of residence in your community, where community is defined by local government unit (e.g., ''how long have you lived in the city of Chicago?'') Obviously, this definition of community is not ideal, since people can change communities drastically while still remaining within a single city, such as Chicago. This variable is only available in 1987, so our sample sizes fall considerably for nonprofessional memberships, gun ownership, and church attendance when we include this variable in our regressions.[20]

Since most of the questions are retrospective, this effect of duration will tell us if individuals who did end up staying longer in one place were more likely to invest in location specific social capital. Our goal is to compare the set of coefficients on homeownership, when we control for duration with the first set of ordinary least-squares coefficients in Table 2. The

[19] As the U.S. GSS should be sampling individuals in the middle of their housing tenure spells, the expected time until the next move should equal, on average, the expected time since the last move.

[20] There are no results for gardening because the gardening question was not asked in 1987.

differences between these two sets of estimates measures the extent to which homeownership works through ownership incentives and the extent to which homeownership works by lowering the probability of moving. The Table 2 estimates should be viewed as the total effect of homeownership, including the connection of homeownership and duration. The coefficients on homeownership, when we control for duration, should be viewed as the partial effect of homeownership holding length of residence in the community constant.

In five cases, the impact of homeownership decreases substantially when we control for length of community residence.[21] In four cases, more than 50% of the effect of homeownership operates through increased tenure in the city. The effect of homeownership on the number of nonprofessional organizations falls by 91.7% when we control for duration in the community, so approximately 8% of the effect of homeownership on this variable works directly through incentives, and 92% works through decreased mobility. Approximately 60% of the effect of homeownership on knowing your schoolboard head operates through long residence in the community. 39% of the effect of homeownership on knowing your U.S. representative, 4% of the effect on voting locally, 63% of the effect on working to solve local problems, and 12% of the effect on church attendance disappears when we control for duration of residence. The connection between gun ownership and home ownership actually rises when we control for residence duration.[22]

As mentioned earlier, the U.S. General Social Survey's definition of community is too geographically coarse to capture a large number of potential moves across communities. In 1986, the U.S. General Social Survey asked how long people had lived in their homes. Unfortunately, only two of our citizenship variables were asked in this year: nonprofessional organizations and church attendance. When we include this housing tenure variable in results not presented here, the connection between homeownership and membership in nonprofessional organizations actually gets stronger. However, including the housing tenure variable eliminates 86.6% of the connection between homeownership and church attendance. Since these findings are so divergent, and we are unsure about whether church attendance or nonprofessional organizations are better measures of local citizenship, we cannot form a strong conclusion from these results.

[21] One way of interpreting our results is that long-term renters resemble homeowners. This result mirrors the findings of Green and White (1996).

[22] We also included duration in two stage least-squares regressions similar to those in Table 3. Including duration reduced the coefficients in almost all cases (by between 6 and 86% relative to the Table 3 coefficients) but left them positive (except for two cases). In general, our precision declines substantially but our results look qualitatively close to the ordinary least-squares results.

TABLE 4

Additional Analysis of the Effects of Homeownership Using the U.S. General Social Survey

Panel 1: Impact of Homeownership on Citizenship, Controlling for Length of Residence

	No. of Nonprof. Org. Memberships[a]	Knows School Head[a]	Knows U.S. Representative[a]	Votes in Local Elections[a]	Helps Solve Local Problems[a]	Gardens[a]	Owns a Gun[a]	Church Attendance[a]
Owns Home	0.021	0.038	0.063	0.147	0.022		0.137	0.317
	(0.142)	(0.035)	(0.037)	(0.034)	(0.036)		(0.036)	(0.197)
Length of Residence:	−0.391	−0.39	−0.265	−0.019	−0.238		−0.114	−0.272
< 1 year	(0.205)	(0.05)	(0.053)	(0.05)	(0.052)		(0.052)	(0.283)
Length of Residence:	−0.14	−0.394	−0.194	−0.114	−0.206		−0.075	−0.465
1 to 3 years	(0.172)	(0.042)	(0.044)	(0.042)	(0.044)		(0.043)	(0.238)
Length of Residence:	0.078	−0.324	−0.132	−0.046	−0.118		−0.026	−0.304
4 to 9 years	(0.163)	(0.04)	(0.042)	(0.039)	(0.041)		(0.041)	(0.226)
Length of Residence:	0.058	−0.153	−0.02	0.011	0.053		−0.054	−0.407
> 10 years (but less than life)	(0.14)	(0.034)	(0.036)	(0.034)	(0.035)		(0.035)	(0.193)
R^2	0.149	0.180	0.151	0.171	0.128		0.221	0.091
Observations	1331	1316	1308	1321	1333		1329	1329

TABLE 4—*Continued*

Panel 2: Impact of Homeownership on Citizenship, Interactions with Income

	No. of Nonprof. Org. Memberships	Knows School Head[a]	Knows U.S. Representative[a]	Votes in Local Elections[a]	Helps Solve Local Problems[a]	Gardens[a]	Owns a Gun[a]	Church Attendance[a]
Owns Home	0.301	0.12	0.078	0.168	0.066	0.14	0.089	0.372
	(0.082)	(0.044)	(0.045)	(0.042)	(0.045)	(0.053)	(0.021)	(0.09)
Top Income Quartile ×	−0.074	−0.055	0.167	0.123	0.073	−0.168	−0.025	−0.053
Owns Home	(0.151)	(0.08)	(0.082)	(0.075)	(0.08)	(0.109)	(0.039)	(0.167)
Bottom Income Quartile ×	−0.231	−0.074	−0.0006	−0.125	−0.049	−0.014	0.026	−0.095
Owns Home	(0.118)	(0.062)	(0.064)	(0.059)	(0.063)	(0.073)	(0.03)	(0.13)
R^2	0.143	0.109	0.129	0.173	0.090	0.174	0.202	0.086
Observations	5037	1317	1309	1322	1334	979	5698	9974

Panel 3: Impact of Homeownership on Citizenship, Controlling for Local Homeownership

	No. of Nonprof. Org. Memberships[a]	Knows School Head[a]	Knows U.S. Representative[a]	Votes in Local Elections[a]	Helps Solve Local Problems[a]	Gardens[a]	Owns a Gun[a]	Church Attendance[a]
Owns Home	0.231	0.114	0.103	0.15	0.053	0.106	0.097	0.37
	(0.069)	(0.036)	(0.038)	(0.035)	(0.037)	(0.043)	(0.018)	(0.076)
Local Homeownership	0.193	−0.167	0.0002	0.019	0.059	0.116	0.031	−0.091
	(0.125)	(0.066)	(0.068)	(0.063)	(0.067)	(0.074)	(0.032)	(0.137)
R^2	0.141	0.106	0.125	0.162	0.087	0.173	0.199	0.085
Observations	5037	1317	1309	1322	1334	979	5698	9974

Note: Standard errors are in parentheses. These regressions contain the same controls as Table 2. For space consideration, the coefficients on these controls are not reported. Panel 1 is based on the 1987 U.S. GSS only; for each model in Panels 2 and 3, the same survey years as Table 2 apply.

[a] Interviewees were asked: (1) how many nonprofessional organizations they belong to, (2) if they know their local school head, (3) if they know their U.S. Representative, (4) if they vote in local elections, (5) if they help solve local problems, (6) if they garden, (7) if they own a gun, and (8) frequency of church attendance (zero is never, eight is more than once a week).

Nonetheless, the striking effect of controlling for house tenure on church attendance certainly suggests that the most important effect of homeownership may be its role in increasing community tenure.

The results confirm that homeownership works both directly and indirectly through lowering the probability of changing residence. Between 4 and 92% of the effect of homeownership on citizenship is operating primarily because homeownership is associated with lower mobility rates. This finding suggests that policies that act to limit mobility would end up having similar effects to homeownership-enhancing policies on increasing the level of investment by individuals in local amenities and social capital.

The second panel of Table 4 examines whether homeownership has a greater or lesser effect for individuals at different places in the income distribution. In this panel, we interact homeownership with whether the individual is in the top or bottom income quartiles. Again, all of the basic controls are included in the regressions.

In all of these regressions, homeownership has less impact on individuals who are at the bottom of the income distribution, but the differential effect of homeownership is insignificant in all but two cases. Homeownership has little influence on membership in organizations for low income individuals. Homeownership increases the probability of voting locally among low income individuals by 4.3 percentage points. For high income individuals, homeownership increases the probability of voting locally by 29.1 percentage points and increases the probability of working to solve local problems by 13.9 percentage points.

The final panel examines whether there is any effect on citizenship of living around homeowners. We do not actually know the city or place where individuals live in the U.S. General Social Survey, but we do know the city size and the state. Quite often, city size is a unique identifier of a city within a state. We generate an estimate of the local homeownership rate by calculating the average homeownership rate in each city-size category in each state. This measure is an imperfect proxy for the actual local homeownership rate, but it is the only measure available in the data. This pseudo-local homeownership rate positively effects six of our eight outcome variables but is rarely significant. While our model predicts that local homeownership rates will only affect investment in social capital, we find that it affects the local amenity provision (i.e., gardening) more than our social capital variables.[23]

[23] This fact would easily be explained by the model if neighbors monitor each others provision of local amenities and provide incentives through peer pressure. A greater local homeownership rate provides a greater incentive for neighbors to monitor.

IV. EVIDENCE ON HOMEOWNERSHIP AND CITIZENSHIP FROM GERMANY

Our second data source on homeownership comes from the German Socio-Economic Panel (GSOEP). This data set offers us a unique combination of some citizenship variables (far fewer than the GSS) and a panel data set which enables us to observe the same individuals over time, and thereby control for individual fixed effects. Fixed effects are important because they help us control for omitted individual characteristics that might be correlated with homeownership.

The German Socio-Economic panel has been administered to a random sample of approximately 13,000 West Germans since 1984.[24] The data set has a panel structure so that essentially the same individuals are sampled over time, although there is some replacement and addition of individuals. With reunification, an East German sample was also included. Table 5 gives the means of the German variables for 1995. Our primary independent variable is again homeownership, which has a mean of 38.1% in this sample. This mean is significantly below the U.S. mean reflecting, among other things, the substantially different government policies towards homeownership followed in Germany and the U.S.[25]

We have a much more restricted set of dependent variables in the German sample and will examine whether the individual ''repairs the house, the car, or does yardwork,'' which we interpret as being roughly equivalent to the question about gardening in the U.S. GSS. Table 5 shows that in our samples a lower percentage of the Germans do repairs or yardwork than Americans garden. There is a large connection between homeownership and yardwork in Germany, with only 32.6% of renters doing yardwork and 56.6% of owners doing yardwork. This difference between owners and renters is close to the difference we see in the U.S. means in Table 1.

Our two best local amenity or social capital variables are the answers to the questions ''Do you ever volunteer in associations, civic groups, or other social services?'' and ''Do you ever participate in political parties, local politics, or citizens groups?'' In both cases, the means of these variables are quite small. Only 10.4% of the sample are involved in local politics and only 11.9% volunteer. Again the differences between renters and home-

[24] The survey oversamples immigrant groups, but we did not use this oversample.

[25] While Germany does have explicit housing policies, such as the Comprehensive Housing Allowance which replaced construction subsidies and social housing construction in the 1970s, these policies are much less oriented towards homeownership itself (only 10% of those persons who receive assistance are owner occupiers, see Diamond and Lea [1]). Owner occupants can deduct expenses, including interest and depreciation, but unlike in the U.S., they pay taxes on imputed rent.

TABLE 5
Descriptive Statistics form the German Socio-Economic Panel

	Full Sample	Renters	Owners
Owns a Home	0.381	0	1
	(0.486)	(0)	(1)
Home Repair or Yardwork[a]	0.417	0.326	0.566
	(0.493)	(0.469)	(0.496)
Political Participation[a]	0.104	0.079	0.145
	(0.305)	(0.27)	(0.352)
Volunteer Activity[a]	0.119	0.091	0.165
	(0.324)	(0.287)	(0.371)
Attend Church[a]	0.21	0.184	0.251
	(0.407)	(0.387)	(0.434)
Length of Residence $<$ 2 years	0.202	0.258	0.109
	(0.401)	(0.438)	(0.311)
Length of Residence: 2−9 years	0.304	0.342	0.243
	(0.460)	(0.474)	(0.429)
Length of Residence:	0.238	0.222	0.263
10−20 years	(0.426)	(0.416)	(0.440)
Length of Residence: $>$ 20 years	0.240	0.160	0.370
	(0.427)	(0.366)	(0.483)
Observations	13,031	8070	4961

Note: Standard deviations are in parentheses. These statistics reflect data from the 1995 sample of the German Socio-Economic Panel (GSOEP).

[a] Interviewees were asked: (1) How often do you repair the house, the apartment, the car, or do yardwork, (2) how often do you participate in political parties, local politics, or citizen's groups, (3) how often do you volunteer in civic association, civic groups, or other social services, (4) how often do you attend church or visit religious institutions, and (5) what type of house do you live in.

owners is quite strong. Owners are much more likely to be involved in both forms of social activity. Our final variable is the answer to the question ''Do you ever attend church or visit religious institutions?,'' which we also interpret as capturing a form of social capital.[26] While the level of religious attendance is much lower than in the U.S., just as in the U.S., we find that the mean of this variable is higher for homeowners than for renters in Germany.

Table 5 shows that German homeowners are also much more likely to have resided longer at the current addresses.[27] In the working paper

[26] This question differs substantially from the church question in the U.S. GSS, and as such, the results on this variable are not directly comparable to the church results in Table 2.

[27] The GSOEP provides us with a much stricter definition of locational tenure than the U.S. GSS which asks only about duration in your community. This definitional difference explains why the levels of mobility in the German data are much higher than the levels of mobility in the U.S. data.

version of this paper, we document that the means of other variables also differ between homeowners and renters, so again it is possible that the homeownership–citizenship connection could occur because of the connection between homeownership and these other factors.

Table 6 shows our basic ordinary least-squares results following the same procedure as Table 2 for a single year (1995) of the GSOEP panel. All regressions include standard controls for region fixed effects, fixed effects for neighborhood type (e.g., industrial, semirural), and fixed effects for structure type (e.g., one- to two-family detached, nine or more unit apartment building).

Regression one shows that homeowners are 11.5% more likely to perform repairs or yardwork than renters. The second and third regressions indicate that homeowners are 3.3% more likely to volunteer and 4.1% more likely to be involved in political activities. In the final regression, homeowners are 3% more likely to attend church than renters.

Overall, the German coefficients are much smaller than the U.S. coefficients, but they are reliably significant. We are not surprised by the smaller coefficients given that the mean level of these variables are generally much smaller in the German data. These results support the general connection between homeownership and both local amenity provision and social capital investment but suggest that this connection is small in Germany.

Table 7 adds length of residence in the community into the Table 6 regressions. In all cases, when we include length of residence, the effects of homeownership decline, but these drops are small and the coefficient

TABLE 6

Impact of Homeownership on Citizenship
Evidence from the German Socio-Economic Panel

	Home Repair or Yardwork[a]	Volunteer Activity[a]	Political Participation[a]	Attend Church[a]
Owns a Home	0.115	0.033	0.041	0.030
	(0.011)	(0.007)	(0.007)	(0.009)
R^2	0.171	0.040	0.035	0.109
Observations	13,031	13,031	13,031	13,031

Note: Standard deviations are in parentheses. These statistics reflect data from the 1995 sample of the German Socio-Economic Panel (GSOEP). All regressions include controls for the presence of children, the age of the respondent, immigrant status, sex, marital status, education level, income, building structure, region, and neighborhood.

[a] Interviewees were asked: (1) How often do you repair the house, the apartment, the car or do yardwork, (2) how often do you participate in political parties, local politics, or citizen's groups, (3) how often do you volunteer in civic association, civic groups, or other social services, (4) how often do you attend church or visit religious institutions, and (5) what type of house do you live in.

TABLE 7

Further Evidence on the Impact of Homeownership from the German Socio-Economic Panel

Panel 1: The Role of Duration[a]

	Home Repair or Yardwork	Volunteer Activity	Political Participation	Attend Church
Owns a Home	0.103	0.024	0.034	0.023
	(0.011)	(0.008)	(0.007)	(0.009)
Length of Residence:	−0.047	0.001	−0.037	−0.002
< 2 years	(0.033)	(0.024)	(0.022)	(0.029)
Length of Residence:	−0.053	0.017	−0.028	0.038
2−9 years	(0.033)	(0.023)	(0.022)	(0.028)
Length of Residence:	−0.022	0.049	−0.005	0.041
10−20 years	(0.033)	(0.024)	(0.022)	(0.029)
Length of Residence:	0.023	0.049	0.005	0.049
> 20 years	(0.034)	(0.024)	(0.023)	(0.029)
R^2	0.174	0.043	0.037	0.110
Observations	13,031	13,031	13,031	13,031

Note: Regressions include all previous control variables including state and neighborhood dummies.

Panel 2: Individual Random Effects[a]

	Home Repair or Yardwork	Volunteer Activity	Political Participation	Attend Church
Owns a Home	0.106	0.037	0.030	0.036
	(0.005)	(0.004)	(0.003)	(0.005)
R^2	0.129	0.032	0.037	0.078
Observations	121,687	77,263	77,263	47,150

Note: These regressions include state and neighborhood dummies and were run with individual random effects, as well as all previous control variables.

Panel 3: Individual Random Effects, Without Structure Controls[a]

	Home Repair or Yardwork	Volunteer Activity	Political Participation	Attend Church
Owns a Home	0.162	0.052	0.041	0.048
	(0.004)	(0.003)	(0.003)	(0.005)
R^2	0.119	0.030	0.035	0.074
Observations	121,847	77,404	77,404	47,291

Note: These regressions include state and neighborhood dummies and were run with individual random effects, as well as all previous control variables (excluding structure dummies).

TABLE 7—*Continued*

Panel 4: Individual Fixed Effects, Without Structure Controls[a]

	Home Repair or Yardwork	Volunteer Activity	Political Participation	Attend Church
Owns a Home	0.096	0.013	0.008	0.012
	(0.006)	(0.005)	(0.004)	(0.007)
R^2	0.069	0.000	0.002	0.018
Observations	121,967	77,163	77,263	47,150

Note: Regressions include state and neighborhood dummies and were run with individual fixed effects, as well as all previous control variables (excluding structure dummies).

[a] Interviewees were asked: (1) How often do you repair the house, the apartment, the car, or do yardwork, (2) how often do you participate in political parties, local politics, or citizen's groups, (3) how often do you volunteer in civic association, civic groups, or other social services, (4) how often do you attend church or visit religious institutions, and (5) what type of house do you live in.

on homeownership changes by between 10.4 and 27.3%. It appears that relative to the U.S. results, a smaller percentage of the effect of homeownership in the German data works through the connection between homeownership and community tenure.

The second panel in Table 6 gives results for the full panel between 1984 and 1995. In all cases, we have allowed for individual random effects, and the effects of homeownership are quite similar to those estimated in Table 6. This table confirms that the effect of homeownership on citizenship is not simply the result of one year in the German data. The third panel in Table 7 reproduces these results without structure controls. We have omitted structure controls in these panel for easy comparison with the fourth panel of Table 7.

The fourth panel of Table 7 estimates the regressions with individual fixed effects. In this case, identification comes exclusively from individuals who switch ownership status, i.e., move from being renters to homeowners and vice versa. Because we are gaining identification of the homeownership effect exclusively from individuals who change ownership status, it seems to be asking too much of the data to separately identify homeownership and structure effects. Therefore, we exclude structure controls from this regression.[28]

[28] If we run this regression including structure characteristics, the coefficients all remain positive but are only significant in the case of repairs and yardwork and volunteering.

The effect of homeownership on repairs and yardwork, volunteering, and political involvement becomes smaller but remain statistically significant. Comparing Panels 3 and 4 shows that controlling for individual fixed effects lowers the effect of homeownership by 41% in the case of home repair or yardwork, 75% in the case of volunteer activity, 81% in the case of political participation, and 75% in the case of church attendance. These results can be viewed in two ways: (1) homeownership does matter, even allowing for individual fixed effects and (2) the bulk of the effect of homeownership disappears when we control for the fact that homeowners and renters are very different types of people. One argument suggesting the first interpretation is that we would be surprised if homeownership has an immediate effect since it presumably takes time to invest in social capital. An argument suggesting the second interpretation is that becoming a homeowner is likely to be correlated with other variables that might also influence behavior. Our view is that these results continue to confirm the basic economic intuition that incentives affect investment in social capital, but at the same time, these results imply that naive estimates of the effects of homeownership may significantly overstate the actual magnitude of the incentives that homeownership creates.

V. CONCLUSION

Both in the U.S. and in Germany, homeownership is strongly correlated with variables that attempt to measure good citizenship, such as membership in nonprofessional organizations and involvement in local politics. This relationship survives controlling for other individual attributes. Using group average homeownership rates as instruments, we still find a relationship between homeownership and the social capital variables. However, our instruments are imperfect so causal interpretation may be inappropriate. In the U.S., it appears that a significant fraction of the effect of homeownership occurs because homeownership is associated with longer community tenure.

In the German data, we find a statistically significant, but smaller effect of homeownership on our social capital variables. Also, a smaller fraction of the effect of homeownership seems to be attributable to community tenure effects. The German data enables us to control for individual-specific fixed effects. When we include these fixed effects, the bulk of the connection between homeownership and citizenship disappears. However, a statistically significant relationship does remain even with these fixed effects.

The primary conclusion of this paper is that it appears that standard economic incentives (both the effects of ownership and tenure) influence investment in social capital, just as surely as they influence investment in physical or human capital. Several further ingredients are needed before

this work translates into any sort of a policy recommendation. While it is likely that homeownership generates positive externalities, we have no measure of the size of these externalities and therefore cannot recommend appropriate levels of subsidy. Promoting homeownership also limits mobility which may impose costs that far exceed any benefits from better citizenship.

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