INCENTIVES AND SOCIAL CAPITAL: ARE HOMEOWNERS BETTER CITIZENS?

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ABSTRACT

Individuals invest in their local environments by volunteering, getting involved in local government, becoming informed about their political leaders, joining non-professional organizations and even gardening. Homeownership may encourage these investments, both 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 are more likely to invest in social capital, and a simple instrumental variables strategy suggests that the relationship may be causal. While our results are not conclusive, we find evidence that a large portion of the effect of homeownership on these investments may come from lower mobility rates for homeowners. Using the German Socio-Economic Panel, we also find a connection between homeownership and citizenship controlling for individual fixed effects. Finally, across cities and counties, areas with more homeowners have lower government spending, but spend a larger share of their government budget on education and highways.

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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, 1997, Hall and Rabushka, 1995).[1] The rationale for this deduction has often been that homeowners make better citizens. Yet with the prominent exceptions of Green and White (1997) and Rossi and Weber (1996), 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 ratio (LTV) mortgages in order to decrease the size of the downpayment 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 or building community 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

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[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.

[2] Green and White (1997) 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 generates positive externalities. Rossi and Weber (1996) focuses on the connection between homeownership and a variety of outcomes, most of which yield primarily private returns.

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, 1997).

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 (1996), we use the General Social Survey to investigate the basic connection between homeownership and variables that serve as proxies for citizenship. Controlling for age, race, gender, marital status, having children, income, education and city size, we find that homeownership has a strong positive correlation with each of these variables. Homeowners are approximately 10 percent more likely to work to solve local problems or know their U.S. representative by name. They are 13 percent more likely know the identity of their school board head. Homeowners are 16 percent more likely to vote in local elections. On average, they are members of .22 more non-professional organizations than non-owners. Homeowners are 18 percent more likely to garden and 18 percent 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

[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.

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 9% to 87%. 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 in Germany, but the magnitude of the impacts are considerably smaller in Germany. In the GSOEP, between 10 and 27 percent 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 percent), but we still find a significant relationship between owning a home and our social capital variables.

Finally, we examine the connection between homeownership and local public expenditures in the U.S. Controlling for state-specific fixed effects and a battery of local attributes, we find that areas with more homeowners spend less overall. High homeownership areas spend a smaller share of the budget on welfare and a larger share on education and highways.

Overall, our results suggest that homeownership positively influences the formation of social capital, and much of the influence of homeownership

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

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, 1996), 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. Discussion and Theory

This brief theoretical section puts forward a simple model of investment in local public goods that clarifies concepts and generates testable hypotheses.

Investment in Social Capital and Local Public Amenities

Individuals live for 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, individuals either remain in the community and reap the benefits of their investment or they move. 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 the connection to others which enables individuals to benefit from their neighbors' investment in amenities or to cooperate with their neighbors to improve local public goods. While social capital is not a direct input into utility, it improves the ability of neighbors to enjoy each others investments in social capital. 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.[5]

[5]Our definition of social capital differs from that of Loury (1977) 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.

To formalize the concept of social capital, we assume there are 2N+1 houses in this community arranged in a circle and indexed from -N to +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/2 is closer to individual 0 than individual N is to individual 0). All of the houses will be symmetric, so for simplicity, we will deal with the individual who is indexed 0.

Individual 0's utility from individual j's investment in local amenities equals individual j's investment in local amenities A_j times $\delta(j)\Pi_{k=0}^{j} f(S_k)$. The first term in this expression $\delta(j)$ is meant to capture the extent to which physical distance makes it harder to enjoy other people's amenities.[6] The second term captures the role of social capital. The function f(.) is concave and maps the investment of social capital into the degree of connection.

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 effects the ability of individual 0 to coordinate with individual j or to enjoy individual j's investment.

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

(1) $$A_0 + \Sigma_{j=1}^{N} \delta(j)\left(A_j \Pi_{k=0}^{j} f(S_k) + A_{-j} \Pi_{k=0}^{j} f(S_{-k})\right),$$

[6]This general framework also includes the simpler situation with only local amenities, i.e f(S)=1 for all S. In that case, total utility from local amenity investment is $A_0 + \Sigma_{j=1}^{N}\left(\delta(j)A_j + \delta(j)A_{-j}\right)$, which reduces to pure private investment (if δ(j)=0) or a symmetric local public good (if δ(j)=1).

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

The rental value of the house in the second period which will determine both the housing cost to renters and the resale value of the house will be found by making the renter indifferent between this house and his reservation utility $\underline{U}$, which implies:

$$(2) \qquad R = (1-\theta)A_0 + \Sigma_{j=1}^{N} f(0)\left(\Pi_{k=1}^{j} f(S_k)\delta(j)A_j + \Pi_{k=1}^{j} f(S_{-k})\delta(j)A_{-j}\right) - \underline{U}.$$

The parameter θ which lies between zero and one captures the specificity of local amenity investment. When $\theta=1$, the prospective renter does not gain enjoy enjoyment from the original investment in local amenities. When $\theta=0$, investment in local amenities is completely general. A prospective renter or purchaser enters with no social capital. The resale value equals this rental value plus an exogenous salvage value V.

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 $M_R \geq M_O$. These probabilities will be taken as exogenous to the model. 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:

$$(4) \; \Sigma_{j=1}^{N}\left(\Pi_{k=1}^{j}((1-M_k)f(S_k)+M_k f(0))\delta(j)A_j + \Pi_{k=1}^{j}((1-M_{-k})f(S_{-k})+M_{-k}f(0))\delta(j)A_{-j}\right)$$

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

$(1-\theta)A_0 + f(0)G(\hat{A},\hat{S},\hat{M})$. 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 to which their investment 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 one; 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:

$$(3)\ (1-M_0)\left(A_0 + f(S_0)G(\hat{A},\hat{S},\hat{M})\right) + M_0\left((1-\theta)A_0 + f(0)G(\hat{A},\hat{S},\hat{M})\right) - C(A_0) - K(S_0) + V.$$

which yields first order conditions:

$$(4)\qquad C(A_0) = 1-\theta M_0 \text{ and } K'(S_0) = (1-M_0)f'(S_0)G(\hat{A},\hat{S},\hat{M}).$$

The maximization problem faced by a renter will be:

$$(5)\qquad \underline{U} + (1-M_R)\left(\theta A_0 + \left(f(S_0)-f(0)\right)G(\hat{A},\hat{S},\hat{M})\right) - C(A_0) - K(S_0)$$

which yields first order conditions:

$$(6)\qquad C'(A_0) = (1-M_R)\theta \text{ and } K'(S_0) = (1-M_R)f'(S_0)G(\hat{A},\hat{S},\hat{M})$$

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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.

In both cases, investments in both local amenities and social capital will be suboptimal, because there are externalities from both forms of investment.

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 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.

Choice of Local Public Expenditures

A slight variation of the above model assumes that individuals, either renters or owners, are choosing the actions of local government, instead of choosing personal investment in local amenities and social capital; the results are closely related to those of Epple and Romer (1991). We will gloss over the choice of the quantity of public expenditures themselves, which are assumed to be financed by a property tax. Since there is a fixed supply of housing in the model, all increases in the property tax rate would be completely paid by landlords, and renters would want an infinitely high property tax rate. In a more realistic case, incidence would fall jointly on landlord and tenants, but in most cases, there would still be less incentives for owners to raise property

[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 relationships with his neighbors, he will benefit from his neighbors' social connection.

taxes. Thus, we will test whether the overall level of government expenditures falls with the level of homeownership.

We focus on the choice of type of expenditure given an overall quantity of taxes. Again, there will be two periods, and the median voter chooses a policy that will last for both periods. The median voter chooses between a transfer received by all residents of the community (denoted T), a quantity of infrastructure (I) and a quantity of education (denoted E). Transfers yield utility T for recipients in the period when they are spent. A fraction, λ, of infrastructure spending will yield utility $U(\lambda I)$ in the period when it is spent. The remainder of infrastructure spending yields utility in the next period.

Education yields W(E, H) to individuals who have children of schoolgoing age, where H reflects the average homeownership rate in the community and W(E,H) is meant to include all of the future gains for children from having higher education.[9] We assume that $\frac{\partial W(E,H)}{\partial EH} > 0$ so that the marginal benefit of education spending is higher in high homeownership communities, perhaps because of local personal investment in educational amenities and social capital.[10] To capture the possible spillovers from having better educated children (e.g. lower juvenile crime rates, more pleasant interactions with neighbors' children), individuals without children receive (1-z)W(E,H) benefit from education, where $0<z<1$. We assume that the median voter has no children in the first period and will have a child of schoolgoing age with probability π in the second period. The budget constraint is $Y=I+E\bullet N^*+T$, where Y is total spending, and N^* is the average number of children in the area.

The rental price in the first period is prearranged and invariant with respect to the public finance decisions. The rental price in the second period is a

[9]We are assuming that all children attend public school in this model. Nothing in the model changes if some children attend private school, unless those children come disproportionately from homeowning families. In this case, we would expect to see a weaker connection between homeownership and spending on public education.
[10]There also may be a positive effect of average homeownership in the community on the marginal benefit from education because homeownership may be associated with other local area characteristics, such as higher average education levels among adults or higher income levels. These local area characteristics may facilitate the production of education in schools.

function of the willingness of a potential resident to pay for the apartment. With probability γ the potential resident has no children and is willing to pay $R = V(I) + (1-z)W(E,H) + T - \underline{U}$. With probability (1-$\gamma$) the potential resident has children and is willing to pay $R = V(I) + W(E,H) + T - \underline{U}$.

If the median voter is an owner, he will choose I, E, and T to maximize:

$$(7) \qquad V(\lambda I) + T + (1-M_O)\left(V(I) + \pi W(E,\overline{H}) + T\right) + M_O\left(V(I) + (1-\gamma z)W(E,\overline{H}) + T\right) + V$$

where $\overline{H}$ represents the average homeownership level when the median voter is an owner. Maximization of (7) yields first order conditions:

$$(8) \qquad \frac{\lambda V'(\lambda I) + V'(I)}{2} = 1 = \frac{\left((1-M_O)\pi + M_O(1-\gamma z)\right)}{2N^*}\frac{\partial W(E,\overline{H})}{\partial E}.$$

If the median voter is an owner, he will choose I, E, and T to maximize:

$$(9) \quad V(\lambda I) + T - \hat{R} + (1-M_R)((V(I) + \pi W(E,\underline{H}) + T) - (V(I) + (1-\gamma z)W(E,\underline{H}) + T),$$

which implies first order conditions of:

$$(10) \qquad \lambda V'(\lambda I) = 1 = \frac{(1-M_R)(\pi - 1 + \gamma z)}{N^*}\frac{\partial W(E,\underline{H})}{\partial E}.$$

The renter will allocate less money to infrastructure than the owner as long V'(I) is greater than λV'(λI), which we assume. The intuition of this effect is that owners will internalize second period returns that raise the value of their home, while renters know that such returns will just increase their rent.

Owners will spend more on education also as long as:

$$(11) \quad \left[(1-M_O)\pi + M_O(1-\gamma z)\right]\frac{\partial W(E,\overline{H})}{\partial E} > \left[(1-M_R)(\pi - (1-\gamma z))\right]\frac{\partial W(E,\underline{H})}{\partial E}.$$

If homeownership had no direct effect on the productivity of education, equation (11) implies that owners have greater incentives to spend on education than renters as long as prospective renter migrants are not too much more likely to have children than the current median voter. There are two incentive-related reasons why owners are more likely to favor education spending than renters. First, greater education spending does not raise their rents as it raises their utility. Second, greater education spending increases the resale value of their homes to potential buyers. As long as owners spend more on education and infrastructure, they will spend less on transfers.

However, since homeownership may increase the productivity of education directly or through an omitted variable, homeowners may spend more on education because of a channel which has nothing to do with the incentive effects of homeownership. Empirical work may confuse more education spending in high homeownership areas that results from omitted variables with more education spending in high homeownership areas due to the incentives that homeownership provides. Such an effect could also occur for infrastructure spending, if infrastructure was more productive in areas with high homeownership rates because communities with high homeownership rates are less dense and infrastructure costs may rise with density. Total expenditures on infrastructure could be higher in areas with low homeownership because the costs of providing infrastructure could be higher in those areas.

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 cross-section that was administered between 1972 and today (our version ends in 1994), to changing annual samples of approximately 1500 individuals.[11] Our primary independent variable is the question "Do you or your family own your home or apartment?" which was asked over 9 years. As Table 1 shows, 64 percent 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

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

the respondent owned his home. Since all of our questions were asked in different years, the sample sizes for our table of means and regressions will change for different dependent variables.

Following Putnam (1996), we will use the number of non-professional organizations that an individuals is a member of as a measure of the level of social connection among individuals within a community. Non-professional organizations are not necessarily local and may not always reflect any connection between an individual and his or her neighborhood. However, many non-professional organizations have a decidedly local component and even membership in non-local 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 General Social Survey is a member of 1.7 non-professional organizations. Homeowners are members of 1.9 organizations on average. Renters are members of 1.4 organizations.

The 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.[12] Renters are much less likely to know the names of these leaders; 21 percent of renters know their school board head and 23 percent know their U.S. representative. 38 percent of owners know their school board head, and 45 percent 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 percent of owners said that they had voted in local elections, but only 52 percent 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 percent of renters answered yes to this question, and 40 percent of

[12]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.

homeowners answer yes to the question. All of these differences are quite statistically significant and suggest that homeowners are quite different from renters.

The 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 percent of renters gardened. 72 percent of homeowners gardened.

We also considering 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.[13] There is a large difference between the probability of owning a gun between homeowners and renters. 26 percent of renters own guns. 53 percent 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.

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; the category between 40 and 50 is omitted. 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

[13]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, 1997).

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 percent vs. 33 percent). 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 then 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.

Finally, 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. Household's 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 where also asked. As the model suggests, homeowners are much less mobile. 41.2 percent of renters have lived in their communities for 3 years or less. 15.9 percent of owners have lived in their communities for 3 years or less. 19.2 percent of the sample has lived in their communities for their entire lives.

Table II- Regression Results

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:

$$(12) \qquad Outcome = \alpha + \beta * Homeownership + \gamma * Other \;\; Controls + \varepsilon$$

We have also included a time trend for those outcome variables that are asked in more than one year (membership in non-professional organizations, gun ownership and church attendance).

Table 2 shows the results from these regressions. All of the regressions in the first panel are ordinary least squares.[14] The first column in Table 2 shows the results when non-professional organizations is the dependent variable. Homeowners are on average members of .224 more of these organizations than renters, and this difference is statistically significant.

Other variables also effect organization membership. Older individuals are members of more organizations. Men are members of more organizations. Education and income also strongly positively related to this variable. People in smaller towns are also members of more organizations (the urban anonymity hypothesis of Wirth, 1938, also seems to be true). There is no effect of marital status or having children or race on this variable. Between 1972 and 1994, individuals substantially reduce their membership in these organizations (as shown by Putnam, 1996).

Columns two and three give the results for knowing the name of the school board head and U.S. representative respectively. Homeowners are 13 percentage points more likely to know their school board and 11 percentage points more likely to know their representative. In both cases, there is no income effect, but educational attainment is important. People in bigger cities are much less likely to know their leaders. Blacks are more likely to know their school board head. Men are less likely to know their school board head, but men are more likely to know the name of their U.S. representative. Households with children are 17.7 percent more likely to know their school board head. There is little effect of marital status on that variable. Neither marital status nor having children effects knowing your U.S. representative. Knowledge of the school board head peaks for individuals in their 40s.

[14]Running these regressions as probit regressions changes neither the statistical significance nor the magnitude of the results. Our use of linear probability models greatly simplifies our later use of instrumental variables.

Knowing the name of your U.S. representative peaks for individuals in their 50s.

Columns four and five give results for voting in local elections and trying to actively solve local problems. Again, there is a strong homeownership effect of 15.9 percent for voting in local elections and 9.7 percent in working to solve local problems. There is a monotonically positive relationship with age for voting locally. The relationship of solving local problems and age rises with age, but peaks for people between 50 and 60. There is no relationship between these variables and either race or gender. Married individuals are somewhat less likely to vote locally, and people with children are more likely to try to solve local problems. There is no connection between these variables and city size. Both outcomes are much more likely for the well educated.

Column six shows the results for gardening. Homeowners are 17.6 percent more likely to garden than renters. Perhaps, this type of very local public good is the most important effect of homeownership, since it truly and directly generates positive spillovers for those individuals living next to the homeowner. Gardening peaks for individuals in their 50s, but age effects are weak past age 30. Blacks and men are much less likely to garden. There is also a marriage effect. Neither schooling nor income matters to this variable. Unsurprisingly, individuals in large cities are much less likely to garden.

Column seven gives results for gun ownership. Homeowners are 18.4 percent more likely to own guns. Gun ownership has a non-monotonic relationship with age and rises until people are in their 40s, but the overall effect of age is fairly weak. Men are much (13.1 percent) more likely to own guns than women, but even this effect is weaker than the homeownership effect. There is a non-monotonic relationship between education and gun-ownership. High school graduates are 2.7 percentage points more likely to own guns than high school dropouts, but high school graduates are also 16.6 percentage points more likely to own guns than college graduates. Married people are more likely to own guns, and households with children are less likely to own guns. There is a weak negative trend in gun ownership.

The final regression documents that homeowners attend church more regularly. We also find that church attendance rises monotonically with age, is higher for African-Americans and lower for men. Married people and people with children attend church more, as do people in smaller towns. Education substantially increases church attendance as increases of our social capital variables. Church attendance declines slightly with income. Overall these results suggest that homeownership has the effects predicted by the model on both social capital (non-professional organizations and church membership) and local amenity provision (working to solve local problems, gardening).

Table 3-- Instrumental Variables Estimates

One significant problem with these results is that homeownership is not an exogenous variables that is uncorrelated with any other factors that effect citizenship. Since homeownership is correlated with many observable variables, it seems quite possible that homeownership may be correlated with unmeasured variables that effect 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.[15]

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-- 4 quartiles times two races times 50 states).

[15]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.

Homeownership rates should differ across these cells for reasons that should be 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.[16] 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 General Social Survey.[17] 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 General Social Survey is a better predictor of individual homeownership behavior, because individuals in the 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.

The first panel in Table 3 shows results using the General Social Survey Averages.[18] 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.[19] The second panel at the bottom of Table 3 shows results using the Census averages. In almost every 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 percent level.

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[16]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.

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

[18]In all cases, our standard errors have been corrected for intra-group correlation.

[19]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.

We regard these instrumental variables estimates as a check on the robustness of our results from Table 2. 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.

Further Results-- Table 4

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.[20] 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 ten years. The omitted category is having lived in the community all of one's life. The duration coefficient may also effect the dependent variables which are related to knowledge of local conditions (e.g. who's 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 non-professional memberships, gun

[20]As the 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.

ownership and church attendance when we include this variable in our regressions.[21]

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 coefficient on homeownership, when we control for duration and the first set of ordinary least squares coefficient in Table 2. The 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 all but one case, the impact of homeownership decreases substantially when we control for length of community residence. In four cases, more than 40 percent of the effect of homeownership operates through increased tenure in the city. The effect of homeownership on the number of non-professional organizations falls by 70.1 percent when we control for duration in the community, so approximately 30 percent of the effect of homeownership on this variable works directly through incentives, and 70 percent works through decreased mobility. Approximately 55 percent of the effect of homeownership on knowing your school board head operates through longer residence in the community. 43.4 percent of the effect of homeownership on knowing your U.S. representative, 9 percent of the effect on voting locally, 51.6 percent of the effect on working to solve local problems and 16 percent 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]

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

As mentioned earlier, the General Social Survey's definition of community is too geographically coarse to capture a large number of potential moves across communities. In 1986, the General Social Survey asked how long people had lived in their homes. Unfortunately, only two of our citizenship variables were asked in this year: non-professional organizations and church attendance. When we include this housing tenure variable in results not presented here, the connection between homeownership and membership in non-professional organizations actually gets stronger. However, including the housing tenure variable eliminates 86.6 percent of the connection between homeownership and church attendance. Since these findings are so divergent, and we are unsure about whether church attendance or non-professional organizations are better measures of local citizenship, we cannot form a strong conclusion from these results. 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 9 and 81.5 percent 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 several of these regressions, homeownership has less impact on individuals who are at the bottom of the income distribution. Home ownership has no influence on membership in organizations for low income individuals. Homeownership increases the probability of voting locally among low income individuals by 2.2 percentage points. For high income individuals, homeownership increases the probability of voting locally by 27.3 percentage points and increases the probability of working to solve local problems by 16.6 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 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 effect investment in social capital, we find that it effects the local amenity provision (i.e. gardening) more than our social capital variables.[23]

IV. Evidence on Homeownership and Citizenship from Germany

Our second 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.

[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.

Data Description and Table 5

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 percent 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 does "repairing the house, the car or doing yardwork," which we interpret as being roughly equivalent to the question about gardening in the 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 percent of renters doing yardwork and 56.6 percent 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 percent of the sample are involved in local politics and only 11.9 percent volunteer. Again the differences between renters and homeowners is quite strong. Owners are much more likely to be involved in both forms of

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[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 percent of those persons who receive assistance are owner occupiers, see Diamond and Lea, 1992). Owner occupants can deduct expenses, including interest and depreciation, but unlike in the U.S., they pay taxes on imputed rent.

social activity. Our final variable is the answer to the question "Do you ever attend church or visit religious institutions?," which we also interpret captures 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.

The remainder of the table shows patterns that were observed for the U.S. in the GSS. Homeowners are older, more likely to be native Germans, more likely to be married, richer and more likely to have completed the equivalent of high school or college. We also have a full set of controls for building type and find that owners are disproportionately in one-two family detached homes. Homeowners are also much more likely to have resided longer at the current addresses.[27] Again there is enough connection between homeownership and other characteristics that the homeownership-citizenship connection could occur because of the connection between homeownership and these other factors.

Table 6-- Basic Results

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 both region fixed effects and fixed effects for neighborhood type (e.g. industrial, semi-rural).

Regression one shows that homeowners are 11.5 percent more likely to perform repairs or yardwork than renters. There is also an age effect on repairs and yardwork where yardwork peaks for individuals in the 50s. Men are more likely to do repairs and yardwork. Married individuals and individuals with middle level education are most likely to do repairs and yardwork. Income also reduces the tendency to do repairs and yardwork, presumably because income raises the opportunity cost of time. Finally, the

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[26] This question differs substantially from the church question in the 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 GSS which asks only about duration in your community. This definitional differences explains why the levels of mobility in the German data are much higher than the levels of mobility in the U.S. data.

residence type variables also have the expected signs, with individuals in rural homes and one-two family detached homes doing the most yardwork. The omitted residence type is having some other (undescribed) building type.

The second and third regressions indicate that homeowners are 3.3 percent more likely to volunteer and 4.1 percent more likely to be involved in political activities. There appears to little connection between age and these variables, except that the oldest Germans volunteer less and are less involved in politics. Non-Germans invest less in these social variables, perhaps because they are less connected to their communities. Men are more involved in these activities and married persons are more involved in volunteer work and local politics. As in the U.S., there is a positive education effect on both of these social capital variables. Individuals in rural homes and one-two family detached homes volunteer more, but there is little connection between structure type and involvement in local politics.

In the final regression, homeowners are 3 percent more likely to attend church than renters. The oldest Germans are the biggest attendees of church. Married individuals and persons with either low or high education are also more likely to attend church. There is a positive connection between income and church attendance.

Overall, the German coefficients are much smaller than the U.S. coefficients, but they are reliably significant. We are not be 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-- Length of Residence, Random Effects and Fixed Effects

Table 7 includes 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 on homeownership changes by between 10.4 and 27.3 percent. 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 7 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 verse. 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]

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 percent in the case of home repair or yardwork, 75 percent in the case of volunteer activity, 81 percent in the case of political participation and 75 percent 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 homeonwership has an immediate effect since it presumably takes time to invest in social capital. An argument suggesting the second interpretation is that becoming a

[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.

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 effect 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. Evidence on Homeownership and Local Public Expenditure in the U.S.

Our final section tests the implications of the model about local public expenditures in the United States. Using data from the 1992 Census of Governments and demographic information from the 1990 U.S. Census of Population,[29] we consider the impact of homeownership on the logarithm of total expenditures per capita and the shares of expenditure that are going to education, welfare and highways. Following the model, welfare spending is meant to capture transfer spending (which the model following Epple and Romer, 1991, predicts will decline with homeownership), and highway spending is meant to capture infrastructure (which the model predicts will rise with homeownership).[30] Unfortunately, these aggregate level regressions can never fully control for local differences in the costs of government programs or local attributes which might influence demand for these programs and might be correlated with homeownership (such as community heterogeneity). As such, these results are suggestive but not conclusive.

We run regressions using cities and county-level aggregates as the units of observations. Cities have the advantage of being distinct political units. Unfortunately, in some areas cities have responsibility for particular forms of spending (e.g. education) while in other areas other governmental units (e.g. school districts) have the responsibility for this spending. For example, cities are only responsible for 2.4 percent of local spending on schools, 5.8 percent of local spending on public welfare and 62 percent of local spending on

[29]We are extremely grateful to Jordan Rappaport for making this data available to us. Details of this data set are given in Rappaport (1997).

[30]We opted to use highways instead of overall spending to eliminate effects that might come from changing composition of infrastructure spending. On average, highway spending accounts for 67.5 percent of total local direct spending on infrastructure.

highways. We limit the role of different state laws that allocate differential spending authority to cities by including state-specific fixed effects in all of our regressions.

Second, we consider spending across counties. In this case, all of the spending of different government units is aggregated up to the county level, so we lose the advantage of actually examining the decision making governmental unit. However, with county level regressions our measures include all of local government spending.

Table 8-- Government Spending

The first panel of Table 8 shows the results for city level regressions. As Poterba (1996) stresses, demographic controls influence the nature of government spending. We include state-specific fixed effects, controls for age, income, education, ethnicity, population, population density, and population growth and industrial structure. Contrary to the model, as shown in Table 8 homeownership appears to depress city spending on education, but the effect is small. A one-standard deviation increase in homeownership, 12.9 percent, reduces the share of spending on education by .007 percent which is less than one fifteenth of a standard deviation of that variable. This result occurs either because costs of education are higher in areas with less homeownership (such as in large central city school districts) and the price elasticity of demand for schooling is less than one or possibly because cities provide such a small share of overall spending on schooling.

As expected, homeownership lowers welfare spending, raises highway spending and lowers total expenditures. The effect on welfare spending is small but still quite robust and significant. The effect on highway spending is even more significant and more important economically. A one standard deviation increase in homeownership raises spending on highways by .016 percentage points, which is one-fifth of a standard deviation. The effect of homeownership on overall spending is similarly large. A one standard deviation increase in homeownership reduces spending by .176 log points, which is .32 of a standard deviation of the natural logarithm of expenditures.

The results for county level regressions are quite similar, except for the effect of homeownership on expenditures on education. In this case, homeownership raises the education expenditure share significantly. A one standard deviation increase in homeownership (in this case, .075) raises the share of spending on education by .036 which is a full standard deviation. Spending on welfare still declines with homeownership, but now the effect is statistically weaker. The highway connection is smaller as well but still quite significant, and the overall expenditure relationship remains quite similar to the city regressions.

Overall, the public expenditure results support the implications of the model of homeownership and local public spending. Homeowners appear to favor more schools (at least when all sources of local spending are including), less welfare, more highways and less spending overall. Of course, it is also possible that some of these coefficients are driven by a connection between homeownership and other local attributes.

VI. 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 non-professional 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 transfers 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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Table 1:
Descriptive Statistics from the General Social Survey

	Full Sample	Renters	Owners
Owns Home	0.64	0	1
	(0.48)	(0)	(0)
	[11,238]	[4,044]	[7,194]
No. of Non-Prof. Org. Memberships*	1.726	1.434	1.889
	(1.793)	(1.711)	(1.817)
	[5,602]	[2,009]	[3,593]
Knows School Head*	0.318	0.205	0.377
	(0.466)	(0.404)	(0.485)
	[1,437]	[492]	[945]
Knows US Representative*	0.376	0.231	0.453
	(0.485)	(0.422)	(0.498)
	[1,430]	[493]	[937]
Votes in Local Elections*	0.686	0.521	0.772
	(0.464)	(0.5)	(0.42)
	[1,444]	[497]	[947]
Helps Solve Local Problems*	0.341	0.235	0.396
	(0.474)	(0.424)	(0.489)
	[1,456]	[498]	[958]
Gardens*	0.609	0.403	0.715
	(0.488)	(0.491)	(0.452)
	[1,071]	[365]	[706]
Owns a Gun*	0.433	0.262	0.528
	(0.496)	(0.44)	(0.499)
	[6,316]	[2,252]	[4,064]
Church Attendance*	3.921	3.434	4.195
	(2.684)	(2.611)	(2.686)
	[11,128]	[4,008]	[7,120]
Children in Household	0.379	0.361	0.388
	(0.485)	(0.48)	(0.487)
	[11,238]	[4,044]	[7,194]
Age: <30	0.211	0.368	0.123
	(0.408)	(0.482)	(0.329)
	[11,210]	[4,035]	[7,175]
Age: 30<40	0.238	0.266	0.221
	(0.426)	(0.442)	(0.415)
	[11,210]	[4,035]	[7,175]
Age: 50<60	0.125	0.08	0.15
	(0.331)	(0.271)	(0.357)
	[11,210]	[4,035]	[7,175]
Age: >=60	0.248	0.153	0.301
	(0.432)	(0.36)	(0.459)
	[11,210]	[4,035]	[7,175]
Log (City Size x1,000)	3.318	3.897	2.993
	(2.174)	(2.314)	(2.02)
	[11,238]	[4,044]	[7,194]

(table continues on next page)

Table 1:
Descriptive Statistics from the General Social Survey

	Full Sample	Renters	Owners
Black	0.118	0.184	0.081
	(0.323)	(0.388)	(0.273)
	[11,238]	[4,044]	[7,194]
Male	0.432	0.427	0.435
	(0.495)	(0.495)	(0.496)
	[11,238]	[4,044]	[7,194]
Married	0.541	0.33	0.66
	(0.498)	(0.47)	(0.474)
	[11,237]	[4,043]	[7,194]
Education: >=16 Years	0.215	0.194	0.227
	(0.411)	(0.396)	(0.419)
	[11,220]	[4,034]	[7,186]
Education: <12 Years	0.234	0.263	0.218
	(0.423)	(0.44)	(0.413)
	[11,220]	[4,034]	[7,186]
Real Income (thousands of 1987 dollars)	30.45	19.293	36.898
	(26.217)	(17.796)	(28.073)
	[10,190]	[3,732]	[6,458]
Time Trend	17.228	17.214	17.235
	(3.187)	(3.211)	(3.174)
	[11,238]	[4,044]	[7,194]
Length of Residence: < 1 year	0.091	0.18	0.045
	(0.288)	(0.385)	(0.207)
	[1,456]	[499]	[957]
Length of Residence: 1 to 3 years	0.155	0.232	0.114
	(0.362)	(0.423)	(0.318)
	[1,456]	[499]	[957]
Length of Residence: 4 to 9 years	0.177	0.202	0.164
	(0.382)	(0.402)	(0.371)
	[1,456]	[499]	[957]
Length of Residence: >10 years (but less than life)	0.385	0.236	0.463
	(0.487)	(0.425)	(0.499)
	[1,456]	[499]	[957]

Data are from the GSS 1985-1994.
For each variable, the mean value, the standard deviation (in parentheses), and the number of observations [in brackets] are presented.
*Interviewees were asked: (1) how many non-professional organizations they belong to, (2) if they know their local school head, (3) if they know their US 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 (0 is never, 8 is more than once a week).

Table 2:
Impact of Homeownership on Citizenship: Evidence from the General Social Survey

	No. of Non-Prof. Org. Memberships*	Knows School Head*	Knows US Representative*	Votes in Local Elections*	Helps Solve Local Problems*	Gardens*	Owns a Gun*	Church Attendance*
Owns Home	0.224	0.126	0.110	0.159	0.097	0.176	0.184	0.418
	(0.057)	(0.031)	(0.031)	(0.029)	(0.031)	(0.036)	(0.015)	(0.063)
Age: <30	-0.194	-0.116	-0.155	-0.219	-0.180	-0.152	-0.037	-0.144
	(0.078)	(0.042)	(0.043)	(0.04)	(0.042)	(0.047)	(0.02)	(0.085)
Age: 30<40	-0.162	-0.081	-0.052	-0.073	-0.110	-0.036	-0.030	-0.246
	(0.074)	(0.039)	(0.04)	(0.037)	(0.039)	(0.044)	(0.019)	(0.08)
Age: 50<60	0.049	0.041	0.144	0.131	0.067	0.060	-0.033	0.381
	(0.092)	(0.047)	(0.049)	(0.045)	(0.048)	(0.054)	(0.023)	(0.098)
Age: >=60	0.118	-0.002	0.111	0.138	-0.011	0.028	-0.118	1.052
	(0.084)	(0.045)	(0.046)	(0.043)	(0.045)	(0.05)	(0.021)	(0.091)
Black	0.086	0.069	0.041	0.033	0.054	-0.137	-0.009	0.968
	(0.077)	(0.04)	(0.041)	(0.038)	(0.041)	(0.05)	(0.02)	(0.085)
Male	0.110	-0.039	0.063	-0.009	-0.006	-0.115	0.131	-0.674
	(0.048)	(0.025)	(0.026)	(0.024)	(0.026)	(0.03)	(0.012)	(0.052)
Married	-0.050	-0.035	0.025	-0.051	0.024	0.145	0.170	0.450
	(0.055)	(0.029)	(0.03)	(0.028)	(0.03)	(0.034)	(0.014)	(0.059)
Education: >=16 Years	0.985	0.058	0.118	0.148	0.151	0.014	-0.166	0.470
	(0.062)	(0.033)	(0.034)	(0.032)	(0.034)	(0.037)	(0.016)	(0.067)
Education: <12 Years	-0.744	-0.103	-0.151	-0.132	-0.142	-0.040	-0.027	-0.519
	(0.062)	(0.032)	(0.033)	(0.031)	(0.033)	(0.04)	(0.016)	(0.068)
Log (City Size x1,000)	-0.034	-0.032	-0.029	-0.010	0.003	-0.018	-0.044	-0.065
	(0.012)	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.003)	(0.013)
Real Income (thousands of 1987 dollars)	0.0061	-0.0009	0.0002	0.0006	-0.0004	0.0001	0.0003	-0.0029
	(0.0011)	(0.0006)	(0.0006)	(0.006)	(0.0006)	(0.006)	(0.0003)	(0.0012)
Time Trend	-0.044						-0.003	-0.027
	(0.009)						(0.002)	(0.008)
Children in Household	0.051	0.177	0.015	0.030	0.070	0.041	-0.044	0.415
	(0.059)	(0.031)	(0.032)	(0.03)	(0.031)	(0.036)	(0.015)	(0.064)
Constant	2.221	0.384	0.364	0.637	0.301	0.553	0.458	4.001
	(0.183)	(0.052)	(0.053)	(0.049)	(0.052)	(0.056)	(0.04)	(0.176)
R^2	0.140	0.097	0.124	0.157	0.084	0.163	0.185	0.083
Observations	5085	1329	1321	1334	1345	979	5762	10085
Survey Years	1986-1994	1987	1987	1987	1987	1987	1987	1985-1994

Standard errors are in parentheses.
*Interviewees were asked: (1) how many non-professional organizations they belong to, (2) if they know their local school head, (3) if they know their US 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 (0 is never, 8 is more than once a week).

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 Group and Income from the General Social Survey

	No. of Non-Prof. Org. Memberships*	Knows School Head*	Knows US Representative*	Votes in Local Elections*	Helps Solve Local Problems*	Gardens*	Owns a Gun*	Church Attendance*
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 Group and Income from the 1990 PUMS

	No. of Non-Prof. Org. Memberships*	Knows School Head*	Knows US Representative*	Votes in Local Elections*	Helps Solve Local Problems*	Gardens*	Owns a Gun*	Church Attendance*
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

Robust 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.
For each model, the same survey years as Table 2 apply.
*Interviewees were asked: (1) how many non-professional organizations they belong to, (2) if they know their local school head, (3) if they know their US 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 (0 is never, 8 is more than once a week).

Table 4:
Additional Analysis of the Effects of Homeownership Using the General Social Survey

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

	No. of Non-Prof. Org. Memberships*	Knows School Head*	Knows US Representative*	Votes in Local Elections*	Helps Solve Local Problems*	Gardens*	Owns a Gun*	Church Attendance*
Owns Home	0.067	0.058	0.062	0.145	0.047		0.217	0.351
	(0.123)	(0.03)	(0.032)	(0.03)	(0.031)		(0.031)	(0.171)
Length of Residence:	-0.388	-0.386	-0.268	-0.038	-0.234		-0.118	-0.326
< 1 year	(0.203)	(0.049)	(0.052)	(0.049)	(0.051)		(0.052)	(0.281)
Length of Residence:	-0.175	-0.393	-0.198	-0.122	-0.205		-0.093	-0.512
1 to 3 years	(0.17)	(0.042)	(0.044)	(0.041)	(0.043)		(0.043)	(0.236)
Length of Residence:	0.068	-0.32	-0.135	-0.061	-0.115		-0.036	-0.36
4 to 9 years	(0.161)	(0.04)	(0.042)	(0.039)	(0.041)		(0.041)	(0.224)
Length of Residence:	0.043	-0.152	-0.024	-0.001	0.053		-0.046	-0.456
>10 yrs. (but less than life)	(0.139)	(0.034)	(0.036)	(0.034)	(0.035)		(0.035)	(0.192)
R^2	0.147	0.176	0.152	0.166	0.126		0.203	0.089
Observations	1342	1327	1319	1332	1344		1340	1340

Panel 2: Impact of Homeownership on Citizenship, Controlling for Different Income Levels

	No. of Non-Prof. Org. Memberships*	Knows School Head*	Knows US Representative*	Votes in Local Elections*	Helps Solve Local Problems*	Gardens*	Owns a Gun*	Church Attendance*
Owns Home	0.313	0.167	0.122	0.199	0.083	0.181	0.198	0.476
	(0.063)	(0.034)	(0.035)	(0.032)	(0.035)	(0.04)	(0.016)	(0.069)
Top Income	-0.007	-0.038	0.016	0.074	0.083	-0.027	-0.023	-0.034
Quartile*Owns Home	(0.088)	(0.047)	(0.049)	(0.045)	(0.048)	(0.055)	(0.023)	(0.097)
Bottom Income	-0.353	-0.121	-0.05	-0.177	0.007	-0.003	-0.045	-0.225
Quartile*Owns Home	(0.091)	(0.046)	(0.048)	(0.044)	(0.047)	(0.055)	(0.023)	(0.1)
R^2	0.142	0.102	0.125	0.169	0.086	0.163	0.186	0.083
Observations	5085	1329	1321	1334	1345	979	5762	10085

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

	No. of Non-Prof. Org. Memberships*	Knows School Head*	Knows US Representative*	Votes in Local Elections*	Helps Solve Local Problems*	Gardens*	Owns a Gun*	Church Attendance*
Owns Home	0.198	0.148	0.109	0.154	0.082	0.141	0.164	0.428
	(0.062)	(0.033)	(0.034)	(0.032)	(0.034)	(0.039)	(0.016)	(0.068)
Local Homeownership	0.13	-0.109	0.002	0.026	0.078	0.17	0.098	-0.049
	(0.118)	(0.063)	(0.065)	(0.06)	(0.064)	(0.069)	(0.031)	(0.131)
R^2	0.140	0.099	0.124	0.157	0.085	0.168	0.187	0.083
Observations	5085	1329	1321	1334	1345	979	5762	10085

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 GSS only; for each model in Panels 2 and 3, the same survey years as Table 2 apply.

*Interviewees were asked: (1) how many non-professional organizations they belong to, (2) if they know their local school head, (3) if they know their US 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 (0 is never, 8 is more than once a week).

Table 5
Descriptive Statistics from the German Socio-Economic Panel

	Full Sample	Renters	Owners
Owns a home	.381	0	1
	(.486)	(0)	(1)
Home repair or yard work*	.417	.326	.566
	(.493)	(.469)	(.496)
Political participation*	.104	.079	.145
	(.305)	(.27)	(.352)
Volunteer activity*	.119	.091	.165
	(.324)	(.287)	(.371)
Attend church*	.21	.184	.251
	(.407)	(.387)	(.434)
Children	.393	.398	.385
	(.488)	(.489)	(.487)
Age: <30	.501	.551	.42
	(.500)	(.497)	(.494)
Age: 30-40	.165	.152	.188
	(.372)	(.359)	(.391)
Age: 50-60	.100	.087	.121
	(.300)	(.282)	(.326)
Age: 60+	.070	.064	.079
	(.255)	(.244)	(.27)
Non-German	.162	.223	.065
	(.369)	(.416)	(.246)
Male	.482	.474	.494
	(.500)	(.499)	(.5)
Married	.536	.457	.665
	(.499)	(.498)	(.472)
High school dropout equivalent	.084	.104	.052
	(.277)	(.305)	(.221)
College graduate equivalent	.092	.085	.102
	(.288)	(.279)	(.303)
Monthly income (thousands of marks)	1.94	1.85	2.09
	(2.63)	(2.56)	(2.74)
Length of residence: <2	.202	.258	.109
	(.401)	(.438)	(.311)
Length of residence: 2-9	.304	.342	.243
	(.460)	(.474)	(.429)
Length of residence: 10-20	.238	.222	.263
	(.426)	(.416)	(.440)
Length of residence: >20	.240	.160	.370
	(.427)	(.366)	(.483)

(Table continues on the next page)

Table 5 (continued)

	Full Sample	Renters	Owners
Rural home*	.033	.016	.060
	(.178)	(.125)	(.238)
1-2 family detached home*	.282	.133	.524
	(.450)	(.340)	(.499)
1-2 family rowhouse or duplex*	.151	.077	.272
	(.358)	(.266)	(.445)
3-4 unit apartment building*	.116	.153	.055
	(.32)	(.36)	(.228)
5-8 unit apartment building*	.21	.314	.039
	(.407)	(.464)	(.194)
9+ unit apartment buildin (at most 8 floors)*	.162	.242	.032
	(.368)	(.428)	(.176)
Apartment building with 9 or more floors*	.028	.043	.004
	(.166)	(.203)	(.066)
Observations	13031	8070	4961

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

* Interviewees were asked: (1) How often you repair the house, the apartment, the car or do yard work, (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 6:
Impact of Homeownership on Citizenship Evidence from the German Socio-Economic Panel

	Home repair or yard work*	Volunteer activity*	Political participation*	Attend church*
Owns a home	.115	.033	.041	.030
	(.011)	(.007)	(.007)	(.009)
Children	.012	.004	.006	.054
	(.010)	(.007)	(.006)	(.008)
Age: <30	-.108	-.020	-.015	-.107
	(.013)	(.009)	(.008)	(.011)
Age: 30-40	-.008	.013	.019	-.079
	(.014)	(.010)	(.01)	(.012)
Age: 50-60	.042	-.007	-.007	.055
	(.019)	(.011)	(.011)	(.014)
Age: 60+	-.121	-.049	-.035	.079
	(.019)	(.013)	(.012)	(.016)
Non-German	.006	-.067	-.024	.104
	(.013)	(.009)	(.009)	(.011)
Male	.207	.06	.045	-.032
	(.008)	(.006)	(.006)	(.007)
Married	.133	.014	.011	.02
	(.010)	(.007)	(.006)	(.008)
High school dropout equivalent	-.083	-.018	-.024	.042
	(.015)	(.011)	(.01)	(.013)
College graduate equivalent	-.080	.039	.071	.027
	(.014)	(.01)	(.01)	(.012)
Monthly income (thousands of marks)	-.018	.001	.002	.005
	(.002)	(.001)	(.001)	(.001)
Rural house*	.080	.104	-.034	-.026
	(.072)	(.049)	(.046)	(.059)
1-2 family detached home*	.060	.094	-.036	-.123
	(.066)	(.047)	(.044)	(.056)
1-2 family rowhouse or duplex*	.037	.074	-.058	-.172
	(.066)	(.047)	(.044)	(.057)
3-4 unit apartment building*	-.024	.068	-.067	-.161
	(.066)	(.047)	(.044)	(.057)
5-8 unit apartment building*	-.074	.058	-.064	-.175
	(.066)	(.047)	(.044)	(.056)
9+ unit apartment buildin (at most 8 floors)*	-.099	.05	-.069	-.177
	(.066)	(.047)	(.044)	(.057)
Apartment building with 9 or more floors*	-.101	.067	-.054	-.160
	(.070)	(.049)	(.047)	(.060)
R^2	.171	.040	.035	.109
Observations	13031	13031	13031	13031

Regressions include state and neighborhood dummies. Standard Deviations are in parentheses. These statistics reflect data from the 1995 sample of the German Socio-Economic Panel (GSOEP).

* Interviewees were asked: (1) How often you repair the house, the apartment, the car or do yard work, (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*

	Home repair or yard work	Volunteer activity	Political participation	Attend church
Owns a home	.103	.024	.034	.023
	(.011)	(.008)	(.007)	(.009)
Length of residence: < 2	-.047	.001	-.037	-.002
	(.033)	(.024)	(.022)	(.029)
Length of residence: 2-9	-.053	.017	-.028	.038
	(.033)	(.023)	(.022)	(.028)
Length of residence: 10-20	-.022	.049	-.005	.041
	(.033)	(.024)	(.022)	(.029)
Length of residence: > 20	.023	.049	.005	.049
	(.034)	(.024)	(.023)	(.029)
R^2	.174	.043	.037	.110
Observations	13031	13031	13031	13031

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

Panel 2: Individual Random Effects*

	Home repair or yard work	Volunteer activity	Political participation	Attend Church
Owns home	.106	.037	.030	.036
	(.005)	(.004)	(.003)	(.005)
R^2	.129	.032	.037	.078
Observations	121687	77263	77263	47150

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

Panel 3: Individual Random Effects. Without Structure Controls*

	Home repair or yard work	Volunteer activity	Political participation	Attend Church
Owns home	.162	.052	.041	.048
	(.004)	(.003)	(.003)	(.005)
R^2	.119	.030	.035	.074
Observations	121847	77404	77404	47291

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

Panel 4: Individual Fixed Effects, Without Structure Controls*

	Home repair or yard work	Volunteer activity	Political participation	Attend church
Owns home	.096	.013	.008	.012
	(.006)	(.005)	(.004)	(.007)
R^2	.069	.000	.002	.018
Observations	121967	77163	77263	47150

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

* All regressions use data from the German Socio-Economic Panel. Panel 1 uses the 1995 sample. Panel 2, 3 and 4 use the 1985 to 1995 samples. Interviewees were asked: (1) How often you repair the house, the apartment, the car or do yard work, (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 8
The Effect of Homeownership on Local Expenditures

	Dependent Variable*			
	Education share of expenditure	Welfare share of expenditure	Highway share of expenditure	Log total expenditures
City level home ownership	-.057	-.013	.123	-1.37
	(.023)	(.004)	(.023)	(.142)
Adjusted R^2	.689	.233	.259	.450
Observations	2313	2313	2313	2313
County level homeownership	.474	-.012	.058	-1.10
	(.041)	(.009)	(.015)	(.104)
Adjusted R^2	.375	.664	.596	.568
Observations	3056	3056	3056	3056

* Standard errors in parentheses. Regressions include: log population, log population density, percentage of the population that is non-white, percentage of population in various age categories, share of population over the age of 25 with a high school degree, share of the population over the age of 25 with a college degree, log median money household income, share of the county's population that has recently come to that county, population growth (70-90), manufacturing and agricultural industry shares, and state fixed effects.