

THE GEOGRAPHY OF STOCK MARKET PARTICIPATION: THE INFLUENCE OF COMMUNITIES AND LOCAL FIRMS

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Abstract: This paper is the first to investigate the importance of geography in explaining equity market participation. We provide evidence to support two distinct local area effects. The first is a community ownership effect, that is, individuals are influenced by the investment behavior of members of their community. Specifically, a ten percentage-point increase in equity market participation of the other members of one's community makes it two percentage points more likely that the individual will invest in stocks, conditional on a rich set of controls. We find further evidence that the influence of community members is strongest for less financially sophisticated households and strongest within "peer groups" as defined by age and income categories. The second is that proximity to publicly-traded firms also increases equity market participation. In particular, the presence of publicly-traded firms within 50 miles and the share of U.S. market value headquartered within the community are significantly correlated with equity ownership of individuals. These results are quite robust, holding up in the presence of a wide range of individual and community controls, the inclusion of individual fixed effects, and specification checks to rule out that the relations are driven solely by ownership of the stock of one's employer.

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I. Introduction

What influences a household's decision to participate in the stock market? Only one-half of U.S. households invest in the stock market, and an even smaller fraction, fewer than 30 percent, hold stocks or mutual funds outside of retirement plans.¹ There are many reasons why the determinants of stock market participation are of interest to researchers and policy makers. The most obvious is that portfolio allocation can be an important determinant of wealth and well-being. As a result of the significant equity premium over the past century [Mehra and Prescott 1985, Fama and French 2002], individuals who participated in the stock market, on average, increased their portfolio risk but were able to accumulate significantly more wealth than individuals who did not, holding fixed their level of active saving. As a result, participation in equity markets can have a substantial effect on lifetime consumption patterns. Second, as discussed by Mankiw and Zeldes [1991], Heaton and Lucas [2000], and Brav, Constantinides, and Gezcy [2002], the rate of equity market participation can, in turn, affect the level of the equity premium itself.

The rate of stock market participation is also important for public policy. For example, the fact that a large share of households has no equity market exposure played a role in the recent debate over the distributional effects of lowering the tax rate on capital gains and dividends [Friedman and Greenstein 2003]. Also, proponents of including personal accounts in the Social Security system often suggest that a benefit of doing so is to expand equity ownership to all households. Moreover, the presence of equity market non-participants means that investing Social Security surpluses in private investments can have real effects on the economy [Abel 2001, Diamond and Geanakoplos 2003].

¹ These figures are based on authors' tabulations from the 1998 Survey of Consumer Finances and are consistent with other published estimates using these sources such as Bertaut & Starr-McCluer (2000). Aizcorbe, Kennickell, and Moore (2003) report similar findings based on the 2001 survey.

Simple models of portfolio choice suggest that even extremely risk-averse investors should place at least a small portion of their assets in stocks [e.g., Mas-Colell, Whinston, and Green 1995]. However, there are many cases in which non-participation may be rational. First, given the presence of means-tested social insurance programs, many households may find it optimal not to save at all [Hubbard, Skinner and Zeldes 1995, Scholz, Seshardi, and Khitatrakun 2003]. Second, even among those who save, there may be fixed costs of investing in equity markets that make it rational for many individuals not to participate. For example, Vissing-Jorgensen [1999] finds that a fixed cost of equity market participation as low as \$200 would be sufficient to lead to currently observed rates of non-participation. Some of these fixed costs may be psychological, that is, the need to educate oneself about how markets work, how to invest, and so forth. Studies have documented that equity market participation rates do vary with demographic characteristics. For example, it is known that stock market participation increases with income, age, and wealth, and that men are more likely to participate than women [Poterba and Samwick 1999].

This paper presents the first evidence on the importance of two geographic effects on equity market participation. The first factor, the “community effect,” is that an individual is more likely to participate in the stock market when a higher fraction of individuals in the local community (households residing within 50 miles) are stock market investors. Based on a large, nationally representative panel data set of 88,000 taxpayers over a period of 10 years (for a total of more than 750,000 taxpayer-year observations), we provide a central estimate that a ten percentage-point increase in stock ownership among others in the community increases the probability that an individual participates in the equity market by two percentage points, conditional on a rich set of controls - an increase of more than six percent relative to baseline

ownership rates. We also provide evidence that this effect is stronger for less financially sophisticated households and that households are more affected by the participation decision of neighboring individuals who are “more similar” (in terms of age and income) to themselves.

The second factor, the “local firm effect,” is that an individual’s propensity to buy stocks is positively influenced by the presence of publicly traded firms in the community. For example, the mere presence of at least one publicly traded firm in the community (that is, at least one firm is headquartered within 50 miles) increases the likelihood of participation by one percentage point. Moreover, a five percentage-point larger share of total U.S. market capitalization headquartered in the community (approximately a one standard deviation change) increases the likelihood of participation by an additional percentage point.

Recognizing that the location of a household is not randomly assigned, but chosen by individuals who may have similar characteristics to their neighbors, we subject these findings to a wide range of robustness checks and find that the effects are quite persistent. Short of a controlled randomized experiment in which we relocate households, one cannot completely rule out endogeneity in the sorting of households across communities.² However, we can test if the correlation between community equity ownership and an individual’s own equity market participation is weakened once we include controls for characteristics of the household’s neighborhood. We find evidence of community ownership effects and local firm effects even after including an extremely rich set of individual and zip-code level covariates as well as controlling for individual fixed effects. Further, we find that the inclusion of characteristics of a household’s neighborhood has virtually no effect on the relation between equity market participation of individuals and other residents in their community.

² For a discussion of the identification of community effects see Manski (1993, 1995).

There are many reasons to suspect that the equity market participation rate of one's community may influence one's own decision. Hong, Kubik, and Stein [2004] present a model in which stock market participation may be influenced by social interaction. Such social interaction can serve as a mechanism for information exchange via "word-of-mouth" and/or "observational learning" [Banerjee 1992, Ellison and Fudenberg 1993, 1995]. Put simply, many individuals may find it easier to learn how to open a mutual fund or brokerage account by talking to their friends than through other mechanisms. Second, as also noted by Hong, Kubik, and Stein [2004], individuals may simply enjoy discussing stock market investments with their friends and colleagues and are thus more apt to participate in the stock market if there is a high participation rate among their friends and colleagues. Third, according to Bernheim's [1994] model of conformity, individuals may wish to maintain the same consumption that their social group does. Thus, participation in the stock market by their social group would have a positive influence on their own decision to do so. This effect could also be generated by external habit formation models [Campbell and Cochrane 1999, Shore and White 2003] or the scarcity of local resources that lead investors to care about their relative wealth in the community [DeMarzo, Kaniel and Kremer 2002].

We have not found any direct survey evidence documenting the effect of social interactions on stock ownership. However, a 2002 survey of 957 young adults between the ages of 18 and 29 found that 68 percent cited family and friends as a main source of financial advice and guidance. In contrast, only 27 percent cited financial professionals, 18 percent cited media sources, and only one to two percent cited educators or employers.³ A second question about

³ See *State of America's Financial Education*, prepared for State Farm Insurance, May 2002. The report is available online at http://www.statefarm.com/sflocal/il/safe_report.pdf.

sources of financial literacy yielded similar results. These results are only suggestive, but are consistent with models of peer effects in financial behavior.

There is a significant body of research documenting the empirical relevance of “neighborhood effects,” or “peer effects,” in a wide variety of settings, ranging from outcomes for disadvantaged youth [Case and Katz 1991] to crime [Glaeser, Sacerdote and Scheinkman 1996] to welfare participation [Bertrand, Luttmer and Mullainathan 2000]. In the specific context of financial behavior, Duflo and Saez [2002, 2003] show how the decision by one’s co-workers to participate in tax-deferred savings plans affects one’s own participation decision. Hong, Kubik, and Stein [2004] show that more “social” individuals, namely those who interact frequently with neighbors or attend church, are more likely to participate in equity markets. While Hong, Kubik, and Stein show that the effect of “sociability” on the participation decision is stronger in states with high rates of participation, our paper, to our knowledge, is the first to provide direct empirical evidence on the importance of the equity market participation rate of one’s community on an individual’s own participation decision. Furthermore, our panel data gives us an advantage in that we can use household fixed effects to control for unobservable household characteristics that may spuriously drive such a relation in a cross-sectional setting.

The second effect we report in this paper, namely that a stronger presence of publicly-traded firms in one’s community increases the probability of equity market participation, is motivated by a growing literature on the importance of local firm effects in other financial contexts. Several papers provide evidence that individual investors prefer “familiar,” or local, investments. For example, we know that, around the world, investors exhibit a “home equity bias” [French and Poterba 1991]. Participants in 401(k) plans show a strong tendency to overweight own-company stock in their portfolios [Benartzi 2001, Liang and Weisbenner 2002,

Mitchell and Utkus 2002]. Huberman [2001], Grinblatt and Keloharju [2000], Zhu [2002], and Ivković and Weisbenner [2003] document individual investors' preferences for local stocks. While some of this local preference may simply reflect a behavioral bias for "familiarity," mounting evidence supports the idea that some of this behavior is information-based. For example, Coval and Moskowitz [1999, 2001] demonstrate that professional money managers lean toward local stocks and that their local investments outperform their investments made in more distant firms. At the individual level, Ivković and Weisbenner [2003] show that individual investors at a discount brokerage firm have a strong preference for local investments and that, on average, these investments outperform non-local investments by 3.2 percentage points annually.

This paper provides the first evidence that the presence of local firms also has a quantitatively important influence on the probability of participating in the stock market. There are two classes of reasons why local firm presence may matter. The first is simple familiarity. Firms "make their presence known" in their home community in many ways, either directly (e.g., sponsoring community events) or indirectly (e.g., firm's presence is learned via social interaction with employees of the firm). Second, the presence of local firms likely leads to an increased flow of information such as stories in the local paper or television news about details of a company's business, as well as to more attention being paid to the stock market in general. In either case, familiarity or knowledge about a particular company may make it more likely that an individual will choose to get involved in the stock market, particularly given the possibility that this local knowledge may give an investor the ability to earn returns superior to those they would likely earn from investing in non-local companies [Ivković and Weisbenner 2003].

This paper proceeds as follows. In Section 2 we introduce the data set. Section 3 provides initial results on the "traditional" determinants of equity market participation such as

demographic and financial characteristics. In Section 4, we present our results showing the effect of community stock market participation and local firm presence. Section 5 concludes.

II. The Data

A. The Panel of U.S. Taxpayers

To conduct a nationally representative study of how individual equity market participation decisions are influenced by geographic factors such as community equity market participation and firm presence, it is necessary to have a very large, nationally representative dataset containing many observations for each “community.” To the extent that the “community effect” is based on an individual’s interactions with friends, neighbors, and co-workers, it is important to choose a geographic size large enough to capture most of the individuals in a person’s social group, but not so large as completely to dilute these effects. Most standard micro data sets are not well suited for this task. For example, the Survey of Consumer Finances (SCF), arguably the best available, nationally representative study for examining household financial decision making, is a cross-sectional study with only approximately 5,000 observations. The Health and Retirement Study, which offers the potential advantage of being a panel study, is only slightly larger than the SCF and focuses exclusively on particular cohorts nearing or in retirement.⁴ Similar problems are associated with most other standard household data sets.

⁴ The original HRS survey, fielded in 1992, consisted of approximately 7,500 households with at least one member born between 1931 and 1941. In later waves of the survey, additional cohorts have been added, but in no case does it contain households below 50 years of age.

Our primary source of data is a large panel of tax returns covering the years 1987 to 1996.⁵ The panel is based on the IRS's annual cross-sectional sample of tax returns, which are large samples chosen to represent the population of tax-return filers. The population of tax filers is similar to the population of households, except that a household may comprise more than one tax-filing unit (e.g., dependents may file their own returns), and some households do not file any tax returns.⁶ For example, our data for 1994 represent about 130 million tax returns, while the 1995 SCF (covering the year 1994) represents about 100 million households. Throughout the paper we use the terms individuals, households, and taxpayers interchangeably, but, strictly speaking, the unit of observation for this data set is the taxpayer.

The annual IRS cross-sections are stratified samples, with the probability of inclusion rising steeply with total income.⁷ Variables include most of the values from the 1040 tax form and associated schedules, as well as data from Social Security records, such as the age and gender of each individual represented on the return.⁸ The 1987 cross-section sample of about 88,000 returns is the base year of the panel. The panel was constructed by matching, in each subsequent year, the full population of tax returns for the Social Security numbers of all taxpayers, spouses, and dependents that appeared in the 1987 sample. This method allows individuals to be tracked over time regardless of income changes, changes in marital status, or establishment of a new tax unit by a former dependent.⁹

⁵ The panel was developed as a joint effort between the Treasury Department's Office of Tax Analysis and the IRS's Statistics of Income division. The panel uses confidential records and is not publicly available.

⁶ Low-income households are not required to file returns (but many do so to claim a refund of over-withholding or a refundable tax credit such as the EITC). In 1987, the filing threshold ranged from \$4,400 to \$10,000, depending on age and filing status.

⁷ We use sampling weights, defined as the inverse probability of selection, when reporting all tabulations and descriptive statistics.

⁸ Further details on the construction of the tax data are available in Amromin and Smith [2003].

⁹ As a result of this sampling methodology, our sample is not subject to sample attrition bias that sometimes afflicts panel studies using survey data. However, there is attrition from the *population* of tax filers. It occurs when a filer's income drops below the filing threshold. This source of attrition is non-random – older and lower-income workers

To simplify the analysis, we exclude married couples filing separate returns and restrict the analysis to taxpayers who were primary filers in 1987. This reduces the sample to 767,295 tax returns over the ten-year period. Another important advantage of the tax data is that it contains very precise geographical identifiers (i.e., zip codes) that can be used to create our geographic measures of interest. We are able to match the zip code reported on the tax return with a location (i.e., latitude and longitude) for 753,253 observations covering 85,876 distinct taxpayers. Individuals are in the sample 8.8 years on average, with a median of 10 years.

While tax data has many advantages, its traditional disadvantage for many purposes is that it contains little information about non-financial demographic characteristics, such as race, educational attainment, and occupation. We supplement the tax data with a wide range of Census data merged by zip code. As a result, while we do not know, for example, the race of a particular taxpayer, we do know the racial composition of the zip code in which the taxpayer resides. The same is true of other pertinent nonfinancial characteristics.

B. Measuring Equity Participation

To conduct a study on the determinants of equity market participation, it is necessary to have a good measure of whether an individual owns stock. Because it is not necessary for the IRS to know stock ownership for tax purposes, the tax return does not provide direct information about stock ownership. Nevertheless, we are able to proxy for equity participation using the appearance of dividend income and/or capital gains on the tax return. Given our reliance on tax-return data to infer stock market participation, we will miss people whose only equity investments are held in non-taxable (i.e., retirement) accounts. Thus, when we refer to equity

are more likely to drop out of the filing population than middle-aged, higher-income workers. Using data from the Survey of Consumer Finances, we have found that the fraction of non-filers who own equities in a non-retirement account is only 2-4% over the period 1989-1998.

market participation throughout the paper, we are specifically referring to stock or equity mutual fund ownership in one's taxable account (i.e., outside of retirement plans).

The dividends measure will capture all dividends paid out on corporate stock, including those paid through taxable mutual funds.¹⁰ There are two reasons why this proxy is an imperfect measure of equity participation. First, dividend income as reported on a tax return includes payouts from any mutual fund, even if the fund is exclusively invested in fixed-income assets. Second, while dividends will capture equity ownership for those who invest in dividend-paying firms, it may miss those who invest primarily in non-dividend paying firms, such as technology firms, a sector that became increasingly important during the 1990s. A second measure is realized capital gains. This would capture stockholders who sell shares of a stock or a mutual fund, whether at a gain or a loss. Of course, capital gains will also capture the gains from the sale of other assets, such as investment real estate or collectibles. The third potential measure of stock ownership is to combine the first two, defining someone as a stockowner if they report dividends and/or capital gains.

We test how well our proxies measure equity participation using the Survey of Consumer Finances. The SCF asks directly whether respondents own stocks, as well as asking about taxable dividend and capital-gains income. The results clearly indicate that the income variables are good proxies. Table 1 reports the correlation in the SCF between equity participation outside of retirement plans and the receipt of taxable dividends and capital gains. The correlations are quite high, averaging 0.62 for dividends, 0.47 for capital gains, and 0.63 for the combined measure. There is a slight downward trend in the dividend correlation over time, and a slightly smaller upward trend in the capital-gains correlation. This may be due to the tech-

¹⁰ The dividend variable does not include profits from S-corporations, which are picked up elsewhere on the tax return. In some cases, it may include dividends paid by a C-corp that subsequently converted to an S-corp. However, this is a small share of the total (about \$105 million out of \$234 billion in dividends paid in 2001).

stock boom of the late 1990s, which was characterized by a greater proportion of stocks that did not pay dividends but were more likely to produce capital gains. These changes over time are not large and can be easily controlled for in a regression framework by using year fixed effects.

Table 2 reports the trends in equity participation in our tax panel, as measured by our dividend and capital gains proxies, as well as the equity participation rates reported in the SCF over this period.¹¹ From 1987 to 1996, the fraction of the population reporting dividends and/or capital gains rose from just over one-quarter to just over one-third of the taxpaying population. We see similar trends among dividends and capital gains separately. This is consistent with the trend in SCF equity participation over a similar period: from 1989 to 1998, SCF equity participation rose from 22.2 percent to 30.5 percent. Figure 1 illustrates the growth rates in SCF equity participation as well as the tax-data equity participation proxy. Over the overlapping period (1989 to 1996), our proxy for equity participation increased by 22 percent, comparable to the 20 percent increase in SCF equity participation.

C. Defining “Community”

We define the geographic span of a community as a circle around a household with a 50-mile radius. We choose this distance for several reasons. First, we believe that 50 miles will capture the vast majority of one’s social interactions, including those that are employment based. According to the 1990 Census, 88 percent of the population lives within 25 miles of work (98 percent live within 50 miles). Of course, if two co-workers each live only 25 miles from work, they may live as many as 50 miles from one another. In considering firm locality effects, it is especially important not to choose an area that is too small. In essence, it is important that any

¹¹ We report the SCF equity participation rates among tax filers to facilitate direct comparison across these two sources of data

firms that are likely to be prominent in the local news market and other forms of interaction with the community be included in a measure of firm locality, and 50 miles is a reasonable cut-off to capture this effect.¹²

Table 3 reports summary statistics for our key variables of interest, including equity market participation rates and measures of local firms. As in Table 2, the mean value of equity participation (defined here using the combined dividend and/or capital gains measure) is approximately 30 percent. The second row of Table 3 shows the distribution of equity participation by the 50-mile radius communities for each of our households. Note that for each individual i the 50 mile radius variable is constructed by determining what fraction of households within a 50 mile radius of individual i , but excluding individual i , own stock. At the 10th percentile of the distribution, about one in five community households own stock, whereas this ratio rises to nearly two in five community households at the 90th percentile.

Nearly 92 percent of households have at least one publicly-traded firm headquartered within 50 miles.¹³ However, the share of total U.S. firm market value residing (i.e., headquartered) in that 50-mile radius differs substantially across households. To place this in context, over the period from 1987 to 1996, 0.7 percent of U.S. firm market value was located within 50 miles of Kansas City, MO on average (this is approximately the median of the share of firm market value within 50 miles of a household), 5.6 percent was located within 50 miles of Dallas, TX, 8.3 percent was located within 50 miles of Chicago, and 25.8 percent was located within 50 miles of New York City. At the 10th percentile of the distribution, less than 1/1000th of

¹² We ran our base specifications using a 25-mile radius definition and found similar, significant results.

¹³ Compustat provides the location of a firm's headquarters, allowing us to compute the distance between each individual taxpayer and each firm. Thus, all references to the location of a firm refer to the firm's headquarters, and not the location of its individual factories or plants. We are well aware of this limitation. Unfortunately, to our knowledge, the data that would detail the geographic distribution of employees for each company during the sample period are not available.

one percent of firm value is located within 50 miles. At the 90th percentile, 7.7 percent of total market value is located within 50 miles. The final row of Table 3 reports the distribution of population, which, not surprisingly, is significantly less concentrated than the population of firms.

III. Demographic and Financial Determinants of Stock Market Participation

Before testing our hypotheses of interest, we first examine how equity market participation varies with standard demographic and financial measures. Not only are these measures of potential interest in their own right, but they also serve as a rich source of controls in the specifications in which we test for geographic effects of participation and local firms.

Table 4 reports the coefficients from a simple linear probability model of individual i 's stock market participation on characteristics of the individual taken from the tax return and on characteristics of the household's zip code for variables unavailable on the individual-level because they are not reported on the tax return (e.g., race).¹⁴ We use an extensive set of controls for age and income, including dummy variables for various age and income categories, as well as income, income squared, age, and age squared. As expected, equity ownership is strongly increasing with income and age. It is also increasing with wealth proxies. For example, households who claim a mortgage interest deduction (a proxy for home ownership), receive income from rental real estate, royalties, partnerships or S-corporations (file a schedule E), or make contributions to an IRA and/or a defined contribution plan through work are all more likely to own equity in their non-retirement account. We also find that equity ownership is higher for

¹⁴ Throughout this paper, we report results using a simple linear probability model, so the coefficient estimates can be directly interpreted as marginal effects. An examination of the marginal effects from a non-linear probit model yields very similar results.

the self-employed (file a schedule C) and those subject to the Alternative Minimum Tax. Equity market participation is lower for single households and for those who file as a head of household (generally signifying a single parent family). Families with more dependents are also less likely to own equity, although the effect is not economically large (e.g., four additional children lowers the probability of stock ownership by only one percentage point).

We use averages across a zip code when individual-level data are not available, and these zip-code-level characteristics are also quite significant. Households in more highly educated zip codes are more likely to own stock. Households in zip codes with a higher concentration of African-American, Hispanic, or Asian households are less likely to own stock. The mean house price in the zip code is insignificant. Relative to professionals, we also find lower levels of participation for households in zip codes with a higher proportion of clerical workers, craftsmen, operators, and similar occupations. Finally, we find that a larger concentration of private sector employees is correlated with higher equity ownership, whereas households in zip codes with many local, state, and federal government employees are less likely to own stock.

IV. Testing for Geographic Effects

We test two primary hypotheses. The first is that an individual's equity market participation decision is influenced by the equity market participation of other individuals in the community. The second hypothesis is that this decision is affected by the proximity of publicly-traded firms. We test for both of these effects in a regression specification that conditions on all of the variables discussed in Section 3. We are looking for community effects and local firm effects after conditioning not only on a rich set of individual demographic and financial

characteristics, but also on zip-code-level controls for race, ethnicity, occupation, employment sector, and housing prices.

A. Initial Results for Community Ownership Effects

Table 5 presents the first set of results for community effects. Columns (1) and (2) present results for regressions in which we define equity participation as one if an individual reports dividends and/or capital gains and as zero otherwise. Columns (3) and (4) report results from specifications defining equity participation solely based on dividends, while columns (5) and (6) use the capital gains measure. For each of these three alternative proxies for equity ownership, we first report, in columns (1), (3), and (5), our basic specification that includes all the variables from Table 4 except zip-code controls, year dummies, controls for the population of the community, and the six variables of interest whose coefficients are reported in this table. Because our sample consists of pooled observations across all years in the panel, in all regressions we adjust the standard errors for clustering on the taxpayer ID to account for correlation of the same taxpayer's equity ownership over time.

The coefficient on equity ownership in the rest of the community is highly statistically significant.¹⁵ It is also economically significant, suggesting that a 10 percentage point increase in the fraction of one's community that owns equity (e.g., moving from the 10th percentile to the median or the median to the 90th percentile) increases one's own probability of owning equity by 1.6 to 2.4 percentage points, depending on which equity proxy is used. From a base of 30 percent equity market participation, this is roughly a six percent increase over the baseline.

¹⁵ In all cases, the definition of community equity ownership is based on the same definition as individual ownership. Equity ownership in individual i 's community is computed exclusive of individual i 's own equity ownership.

In Table 5 we follow the standard approach of regressing individual outcomes on community outcomes. Manski (1993, 1995) summarize the econometric issues involved in identifying community effects. The observed correlation between the stock ownership of an individual's community and the individual's own portfolio choice could reflect that the actions of the community directly influence the decisions of the individual. This is what Manski (1993) calls an endogenous social effect. However, such a correlation in behavior could also reflect exogenous social effects (also referred to as contextual social effects) or correlated social effects. For example, there could exist a direct causal relation between the average characteristics in the community and an individual's stock ownership, even after controlling for an individual's own characteristics (i.e., communities with higher average household income are more apt to have more financial planners whose presence increases stock ownership). This would be an example of an exogenous social effect. Another possibility is that individuals behave similarly because they have similar unobserved characteristics (i.e., correlated social effects). The sorting into communities is not a random experiment, raising the possibility that individuals with similar preferences live in the same community.

Short of a controlled randomized experiment in which we relocate households, one cannot completely rule out these endogeneity concerns. However, we can test if the correlation between community equity ownership and an individual's own equity market participation is weakened once we include controls for characteristics of the household's neighborhood. In other words, despite our rich set of individual-level controls for income, wealth and demographic differences, one might still be concerned that the community effect coefficient simply reflects the fact that people prefer to live near people who are like them. Even after controlling for own

characteristics, it might be the case that higher income people like to live near other high-income people and both like to own stock. To test for sensitivity to this critique, in columns (2), (4), and (6) we add as additional covariates a richer set of controls for the individual's zip code, including average income, age, filing status, number of dependents, self-employment status, etc., among households in individual i 's zip code. We find that the inclusion of these additional regressors has virtually no effect on our primary coefficient of interest. Thus, even after controlling for own characteristics and the characteristics of other individuals in the zip code, we still find a significant and robust relation between equity market participation of individuals and other residents in their community.¹⁶

B. Initial Results for Local Firm Effects

Several local firm effects are also significant. First, individuals who have at least one publicly-traded firm headquartered within 50 miles are approximately one percentage point more likely to own equities. Moreover, as the share of the total U.S. market capitalization within an individual's community increases, the probability of owning equities increases further. For example, a five percentage point increase in the share of firm value headquartered within 50 miles, which corresponds approximately to a one standard deviation change, increases the probability of owning stocks by an additional percentage point. To put this increase in perspective, a move from Kansas City, MO (a community with approximately the median share of firm market value within 50 miles of a household) to Dallas, TX would increase the equity ownership of a household's community by five percentage points (and thus would increase the

¹⁶ In Appendix Table 1 we report the coefficients on all of our individual-level and zip-code-level control variables from the regression in column (2) in Table 5. Note that, while the average income across the household's zip code is significant, the estimated effect is fairly small. For example, while having household income between \$50-150k increases the probability of ownership by 8.1 percentage points and having household income over \$150k increases the probability 27.3 percentage points relative to a household with low income, the comparable zip-code level controls have an effect that is only 1/10th as large.

likelihood that the household owns equity by $5 \times 0.2 =$ one percentage point). Similarly, a move from Kansas City to Chicago would increase the equity ownership of a household's community by eight percentage points (and thus would increase the likelihood that the household owns equity by 1.6 percentage points), while a move from Kansas City to New York City would increase community equity ownership by 25 percentage points (and thus would increase the likelihood that the household owns equity by five percentage points). Because the regressions also include controls for the population of the community, the local firm effect is not simply reflecting a big community effect.

The equally weighted average rate of return on local firms is not significant in most specifications. The exceptions are the dividend regressions, in which the local return has a small negative effect. Given that growth stocks (which are less likely to pay dividends) outperformed value stocks (which are more likely to pay dividends) seven of the ten years from 1987–1996, local investment opportunities of the communities whose firms had a higher stock return were more likely to have been comprised of growth firms. If individuals surrounded by growth stocks are more apt to own non-dividend paying growth stocks themselves, there will be a negative correlation between the return of local firms and dividend ownership of individuals in the community.¹⁷

The share of firm value in the community comprised of technology companies is negatively correlated with stock market participation. There are at least two plausible explanations for this negative relation. First, if stock market investors in such areas own primarily technology stocks, the regressions may simply be picking up the fact that, over the sample period, these technology firms were less likely to pay dividends. In addition, because

¹⁷ Data on stock returns of growth and value stocks was obtained from Ken French's web site (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html) plus authors' calculations.

capital gains are recorded only upon sale, our proxies may accurately capture equity ownership in the technology sector only if the individual sells stock over the period. Second, many of the individuals in this area may be employees of these technology companies, which suggests that part of their compensation package may come in the form of stock option grants. If an individual has a large portion of their compensation tied up in stock options, they may rationally choose to keep the rest of their portfolio in safer (i.e., non-equity) investments. Prior research [Heath, Huddart, and Lang 1999] suggests that, upon exercising their employee stock options, most people immediately sell the underlying stock and, as a result, these proceeds would show up as ordinary income. We will address the issue of company stock ownership more generally in later specification checks.

C. Results over Time

Table 6 explores how the relations hold up over time. The community ownership variable and the share of firms within 50 miles coefficients are statistically significant in all years, including years of economic downturns (early 1990s) as well as years of rapid economic growth. There does appear to be a decline in the importance of community effects beginning in 1995, with the coefficient falling by about one-third. One possible explanation is that, to the extent that community effects arise from the exchange of information, the rise of the internet and/or the explosion in financial market news sources (e.g., CNBC) in the mid-1990s could have served as a substitute for word-of-mouth learning.

D. Ruling Out an Alternative Hypothesis: Is it Just Owning Company Stock?

Thus far, we have presented very robust estimates of a strong relation between an individual's equity participation propensity, the equity market participation rate of the individual's community, and the presence of local firms. However, a potential criticism of these results is that they could be driven by the role of company stock. Many companies encourage employees to purchase company stock, even subsidizing the offering through employee stock purchase plans. It is possible that our findings are at least partially contaminated by the tendency that "local" firms encourage employees to buy company stock, and that this is confounding our estimates of both the community effects (e.g., individual i 's neighbors all work for the same company) and firm locality effects (e.g., the local firm is the firm at which individual i works).

Our data allow us to test this alternative hypothesis directly in two ways. The first test, presented in column (1) of Table 7, provides results for the sub-sample of the population that is self-employed,¹⁸ a group that, by definition, will not be affected by the company-stock explanation. Using the combined dividend/capital gains proxy for stock ownership, we find that the effect of equity ownership in the community is still both statistically and economically significant. It suggests that a ten percentage point increase in equity ownership in a community increases a self-employed individual's probability of stock ownership by 1.1 percentage points. This effect is about two-thirds of what it was in Table 5, suggesting that, at most, the company stock explanation accounts for one-third of the correlation. The local firm effects are also significant and, in fact, are larger among the self-employed than among the population as a whole. Assuming the self-employed are more financially sophisticated than the general population, the local firm result could reflect that more financially savvy people are better able to collect value-relevant information about local firms and thus are more apt to act upon this

¹⁸ Our definition of self-employed is that they report schedule C income (positive or negative) and have income from an employer of less than \$10,000.

information (i.e., buy stock of any good local firm(s) they discover). Indeed, the larger the share of firms local to the household, the more likely it is that there will be a local firm worth investing into.

A second test of the company stock hypothesis is to limit the sample to the approximately ten percent of our sample that has *no* firms within 50 miles. Again, we see that there still is a significant correlation between individual and community equity market participation. Naturally, the local firm effects are not identified for this sample. These two sets of results together clearly suggest that our results are not attributable solely to a company stock phenomenon.

E. Differential Effects by Degree of Financial Sophistication

The main result we report in this study is that an individual's decision whether to invest in the stock market is influenced by the participation decision of others in the household's community (see Section 4.1). Depending on the underlying cause of this community influence, the size of the effect may vary with the degree of the individual's financial sophistication. In particular, if the community effect is caused by the sharing of basic investment information among neighbors and co-workers, we might expect a stronger community effect for less financially sophisticated households; i.e., we might expect that those familiar with basic principles of finance already understand the risks and rewards of equity market participation and therefore make decisions to participate independently of what their peers do. If, on the other hand, the community influence is caused by pure social effects such as conformity or external

habit influences, we might expect financial sophistication to be unrelated to the size of the community effect.

Our second result is that equity market participation is influenced by the presence of local firms. Whether this effect should vary by financial sophistication is similarly ambiguous. If the presence of more local firms means that there is more information flowing about these firms, which in turn individual investors seem to have been able to use to generate returns superior to returns from investments into non-local firms [Ivković and Weisbenner, 2003], then one might expect that more financially sophisticated individuals would be *more* influenced by this factor. In other words, as the number of local firms increases, there is a greater chance that a financially savvy individual, able to collect value-relevant information about stocks, will find a local firm in which it is worth investing.¹⁹ On the other hand, if the local firm effect does not provide profitable value-relevant information, but only serves to increase familiarity with the stock market, then one might expect the effect to be declining with financial sophistication.

Because we cannot directly observe financial sophistication, we proxy for it by examining how our effects differ across income groups, the implicit assumption being that higher income individuals, on average, are more financially sophisticated. The top panel of Table 8 shows that the effect of community ownership is indeed much stronger for lower income households, where income is measured in real terms (i.e., current dollars). While this effect is statistically significant for all income groups, the community ownership effect among those earning less than \$150,000 per year is about three times stronger than the effect among those earning \$150,000 or more. The results also suggest that the local firm effect is strongest for

¹⁹ Ivković and Weisbenner (2003) report that approximately one in six households invest only in local stocks, suggesting that the presence of local firms may affect not only the household portfolio composition, but also whether the household owns equity.

high-income individuals, a finding consistent with the notion that a higher concentration of local firms provides information that can be utilized most effectively by higher income individuals.²⁰

An equally plausible proxy for financial sophistication might be education. While our tax data does not allow us to observe the educational attainment of the taxpayer, we do know the distribution of educational attainment in the household's zip code. The bottom panel of Table 8 divides the sample into thirds by the share of households in the zip code that have a college education, where college education is defined as obtaining a bachelor or graduate degree. We find a pattern similar to that of income, namely that the community ownership effect is somewhat stronger in less financially sophisticated areas, while the local firm effect is somewhat stronger in more financially sophisticated areas. Relative to income, the effect is less pronounced, which is to be expected given that our education measure is a zip-code-level, rather than an individual-level variable.

F. Household Fixed Effects

Up to this point, the results have rested upon the critical assumption that individual and zip-code-level controls are sufficient to control for different individual propensities to invest in stocks. However, an individual's location is not randomly assigned. As such, if individuals differ according to some unobservable characteristic Z (e.g., risk aversion, financial sophistication, etc.) and if individuals with similar values of Z tend to live together, then our community ownership effect may simply be picking up the effect of this omitted Z variable.

Given the rich panel structure of our data, we are able to control for household fixed effects in our regressions. Recall, individuals are in the sample nearly nine years on average,

²⁰ In unreported results, we confirm that the finding that the local firm effect is strongest for high income individual holds true even when the high-income sample is restricted to the self-employed.

with a median of ten years. The inclusion of fixed effects means that we are identifying our relations of interest solely from differences over time. As such, any fixed differences across individuals, be they observable (e.g., race or gender) or unobservable (e.g., risk aversion), will be differenced out of the results.

In addition to differencing out individual fixed effects, we continue to control for all the variables from Table 5 and Appendix Table 1 that vary over time. Thus, for our community effect, we are identifying solely from differences in own equity market participation and differences in community equity market participation orthogonal to differences in all other controls. Where does any such variation come from? The most significant source of variation will come from individuals who change residences during the sample period; other variation comes from changes within a given community over time. Thus, one interpretation of these results is what happens to an individual's equity market participation if the individual moves to an area with a different community participation rate.

Results are shown in Table 9. In the full sample (panel A), the effect of community equity ownership is statistically significant and is largely unaffected by the inclusion of firm controls, demographic controls, and zip code controls. Interestingly, when the fixed-effects regressions are ran separately by income group, we find that the effect is concentrated among the individuals earning between \$50,000 and \$150,000 over the entire sample period. Indeed, within this income group, the magnitude of the community ownership effect is comparable to what we initially found in Table 5, that is, a ten percentage point difference in community equity ownership leads to a two percentage point difference in the probability of owning stocks. Given our earlier cross-sectional results, it is not surprising that there is no relation between community equity ownership and an individual's own stock ownership in the high-income sub-sample. One

reason that the community effect is stronger in the middle-income group relative to the low-income group in the fixed-effects framework is that there is more variation in the covariates of interest within this group. For example, comparing points in the distribution of differences in the maximum and minimum equity ownership in an individual's community over the sample period, we find larger differences for the middle income group, suggesting more of the middle income individuals are moving, allowing the community effect to be more easily identified.²¹

Given earlier results in the pooled cross-sections, it is not surprising that changes in the share of firms local to a high-income individual are associated with an increase in the high-income individual's propensity to own stock. The estimated effect from the fixed-effect regression suggests a five percentage point increase in the share of U. S. firms local to the individual boosts the likelihood of stock ownership by a high-income individual by 1.2 percentage points, a figure comparable to results obtained in the cross-sectional analysis.

In Panel B of table 9, we re-run our fixed effects specification focusing on a sample that consists entirely of movers. Specifically, we define a taxpayer as a mover if they spend at least two years in the same zip code, then move to another zip code that is at least 100 miles away, and remain there for at least two years *after* the year of the move. The 100-mile distance was chosen so that there is no overlap between the old and new community definitions.²² In the three columns, we report results for the full sample, still using fixed effects. The magnitude of the coefficients are nearly identical to the full sample results, although the standard errors increase substantially because our mover sample is only four percent of the total population. In the

²¹ For example, the difference in the maximum and minimum equity ownership of an individual's community over the sample is less than five percentage points for one quarter of the individuals in the low-income group. By contrast, only one-tenth of the individuals in the middle-income group have such a small difference in their community's equity ownership over the sample.

²² Based on this definition, we have a sample of 4,382 movers. Because we observe these individuals, on average, for 7.4 years, we have over 32,000 mover-year observations. Conditional on moving more than 100 miles, the mean distance of the move is 848 miles and the median is 713 miles.

remaining columns, we repeat our breakdown of the sample by income group and find patterns quite similar to the full sample fixed effects results, namely, that the effect is concentrated among the households in the middle income group. Thus, when a middle income individual moves from one community to another, a ten percentage point increase in the fraction of the community that owns equities leads to a five percentage point increase in the probability that the mover will subsequently enter the equity market. Importantly, this effect is strongest when we control for changes in demographic characteristics such as income, providing support that the mover effect is not being driven by large changes in income that are concurrent with the move.²³

G. Refining the Community Ownership Hypothesis – Peer Groups Matter

Not all individuals in a 50-mile radius community associate with one another. Individuals tend to associate more frequently with other individuals of similar income, age, or other characteristics. As such, if our community ownership variable is really picking up peer effects, then we ought to find that people are more influenced by similar individuals than by less similar individuals.

To investigate this, we assign each observation in our sample to one of nine groups based on income and age. We then run a regression that allows us to test for within group and across-group community effects. Specifically, we are interested in whether the equity market participation rate of “middle income, middle aged” individuals in a community has a larger

²³ In additional unreported results, we confirm that this finding is not driven solely by large income changes: we further limit the sample to movers for whom the difference between their maximum and minimum income over the period implied an annual change of less than 8 percent. The neighborhood effect is slightly larger and still statistically significant.

effect on other “middle income, middle aged” individuals in the community than it does on other income and age groups in the same community.²⁴

Table 10 reports the results. For seven of the nine groups, the “own group” community ownership effect is larger than the “cross-group” community ownership effect and the results are statistically significant for six of these seven groupings. The bottom row of Table 10 reports a weighted average difference between “own group” effects and “cross group” effects of 6.8 percentage points. This suggests that a 20 percentage point increase in equity market participation by a particular age/income group in a community will raise the likelihood of equity ownership of a household in this group by 1.36 percentage points *more* than the equity ownership likelihood of a household from a different age/income group. The difference is highly significant. These results are very consistent with our overall interpretation that individuals are influenced to participate in the stock market by the actions of their peers.

V. Conclusion

This paper is the first to provide evidence regarding the influence of two geographic effects on equity market participation. The first geographic effect is that individuals are influenced by the investment behavior of members of their community. This is true after controlling for a wide range of individual and zip-code-level financial and demographic characteristics, restricting the sample to self-employed individuals and to individuals with no publicly-traded firms in their community, and controlling for individual fixed effects. We also provide evidence that this effect is strongest for the least financially sophisticated households. Finally, we also show that the influence of community ownership is strongest *within* age and

²⁴ Duflo and Saez (2002) used a similar identification strategy to identify peer effects in retirement plan participation.

income groups. In other words, the equity market participation rate of individuals in the same income and age category has a stronger effect on an individual's own stock market participation relative to the participation rate of households belonging to other age and income groups. This is consistent with the hypothesis that "peers matter."

The second geographic effect is that proximity to publicly-traded firms also increases equity market participation rates. In particular, the presence of publicly-traded firms within 50 miles and the share of U.S. market value located within the community are positively correlated with equity ownership of individuals. In contrast to the community ownership effects, the local firm effects appear to be stronger among higher income individuals. This result is consistent with a hypothesis that proximity to local firms may provide a pool of potentially profitable investments that is easier for more financially sophisticated individuals to discover, which in turn influences their decision to own stock.

References

- Abel, Andrew B., "The Effects of Investing Social Security Funds in the Stock Market When Fixed Costs Prevent Some Households from Holding Stocks," *American Economic Review* XCI (2001), 128-48.
- Aizcorbe, Ana, Arthur Kennickell, and Kevin Moore, "Recent Changes in U.S. Family Finances: Evidence from the 1998 and 2001 Survey of Consumer Finances," *Federal Reserve Bulletin*, IXC (2003), 1-32.
- Amromin, Gene and Paul Smith, "What Explains Early Withdrawals from Retirement Accounts? Evidence from a Panel of Taxpayers," *National Tax Journal*, LVI (2003), 595-612.
- Banerjee, A., "A simple model of herd behavior," *Quarterly Journal of Economics* CVII (1992), 797-817.
- Benartzi, Shlomo, "Excessive extrapolation and the allocation of 401(k) accounts to company stock," *Journal of Finance* LVI (2001), 1747-64.
- Bernheim, B. Douglas, "A Theory of Conformity," *Journal of Political Economy* CII (1994), 841-77.
- Bertaut, Carol and Martha Starr-McCluer, "Household Portfolios in the United States," Finance and Economics Discussion Series, 2000-26, Board of Governors of the Federal Reserve System, 2000.
- Bertrand, M., E. Luttmer, and S. Mullainathan, "Network effects and welfare cultures," *Quarterly Journal of Economics* CXV (2000): 1019-1055.
- Brav, Alon, George M. Constantinides, and Christopher C. Geczy, "Asset Pricing with Heterogeneous Consumers and Limited Participation: Empirical Evidence," *Journal of Political Economy* CX (2002), 793-824.
- Campbell, John Y. and John H. Cochrane, "By Force of Habit: A Consumption-Based Explanation of Aggregate Stock Market Behavior," *Journal of Political Economy* CVII (1999), 205-51.
- Case, A. and L. Katz, "The Company You Keep: The Effect of Family and Neighborhood on Disadvantaged Youths," NBER Working Paper No. 3705, 1991.
- Coval, Joshua D. and Tobias J. Moskowitz, "The Geography of Investment: Informed Trading and Asset Prices," *Journal of Political Economy* CIX (2001), 811-41.
- Coval, Joshua D. and Tobias J. Moskowitz, "Home Bias at Home: Local Equity Preference in Domestic Portfolios," *Journal of Finance* LIV (1999), 2045-73.

- DeMarzo, Peter M., Ron Kaniel, and Ilan Kremer, "Diversification as a Public Good: Community Effects in Portfolio Choice," Stanford University Working Paper, 2002.
- Diamond, Peter, and John Geanakoplos, "Social Security Investment in Equities," *The American Economic Review* XCIII (2003), 1047 - 1074.
- Duflo, Esther, and Emmanuel Saez, "The Role of Information and Social Interactions in Retirement Plan Decisions: Evidence from a Randomized Experiment," *Quarterly Journal of Economics* CXVIII (2003), 815-42.
- Duflo, Esther, and Emmanuel Saez, "Participation and Investment Decisions in a Retirement Plan: The Influence of Colleagues' Choices," *Journal of Public Economics* LXXXV (2002), 121-48.
- Ellison, G., and D. Fudenberg, "Rules of thumb for social learning," *Journal of Political Economy* CI (1993), 93-126.
- Ellison, G., and D. Fudenberg, "Word of mouth communication and social learning," *Quarterly Journal of Economics* CX (1995), 93-125.
- Fama, Eugene F., and Kenneth R. French, "The Equity Premium," *The Journal of Finance* LVII (2002), 637-59.
- French, Kenneth R., and James M. Poterba, "Investor Diversification and International Equity Markets," *American Economic Review* LXXXI (1991), 222-26.
- Friedman, Joel, and Robert Greenstein, "Exempting Corporate Dividends from Individual Income Taxes," Report from the Center for Budget and Policy Priorities, January 23, 2003.
- Glaeser, E. L., B. Sacerdote, and J. Scheinkman, "Crime and social interactions," *Quarterly Journal of Economics* CXIV (1996), 502-548.
- Grinblatt, M. and M. Keloharju, "The investment behavior and performance of various investor-types: A study of Finland's unique data set," *Journal of Financial Economics* LV (2000), 43-67.
- Heath, Chip, Steven Huddart, and Mark Lang, "Psychological Factors and Stock Option Exercise," *Quarterly Journal of Economics*, CXIV (1999),: 601-627.
- Heaton, John, and Deborah Lucas, "Stock Prices and Fundamentals," *NBER Macroeconomics Annual 1999* (Volume 14): Cambridge and London: MIT Press (2000), 213-42.
- Hong, Harrison, Jeffrey D. Kubik, and Jeremy C. Stein, "Social Interaction and Stock-Market Participation," *Journal of Finance*, (2004), forthcoming.
- Hubbard, R. Glenn, Jonathan Skinner, and Stephen P. Zeldes, "Precautionary Saving and Social Insurance," *Journal of Political Economy*, CIII (1995), 360-99.

Huberman, Gur, "Familiarity Breeds Investment," *Review of Financial Studies*, XIV (2001): 659-80.

Ivković, Zoran, and Scott Weisbenner, "Local Does as Local Is: Information Content of the Geography of Individual Investors' Common Stock Investments," Working Paper, August 2003.

Liang, Nellie, and Scott Weisbenner, "Investor Behavior and the Purchase of Company Stock in 401(k) Plans – The Importance of Plan Design," NBER Working Paper: No. 9131, August 2002.

Mankiw, N. Gregory, and Stephen P. Zeldes, "The Consumption of Stockholders and Nonstockholders," *Journal of Financial Economics*, IXXX (1991), 97-112.

Manski, Charles F., "Identification of Exogenous Social Effects: The Reflection Problem," *Review of Economic Studies*, LX (1993), 531-542

Manski, Charles F., *Identification Problems in the Social Sciences*, Harvard University Press, 1995.

Mas-Colell, Andreu, Michael D. Whinston, and Gerry R. Green, *Microeconomic Theory*, Oxford University Press, 1995.

Mehra, Rajnish, and Edward C. Prescott, "The Equity Premium: A Puzzle," *Journal of Monetary Economics* XV (1985), 145-61.

Mitchell, Olivia S., and Stephen P. Utkus, "The Role of Company Stock in Defined Contribution Plans," NBER Working Paper: No. 9250, October 2002.

Poterba, James M., and Andrew Samwick, "Taxation and Household Portfolio Composition: U.S. Evidence from the 1980s and 1990s," NBER Working Paper: No. 7392, October 1999.

Scholz, John Karl, Ananth Seshadri, and Surachai Khitatrakun, "Are Americans Saving Optimally for Retirement?" University of Wisconsin-Madison Working Paper, September 2003.

Shore, Stephen H., and Joshua White, "External Habit Formation and the Home Bias Puzzle," Working Paper, 2003.

Vissing-Jorgensen, Annette, "Limited Stock Market Participation and the Equity Premium Puzzle," University of Chicago Working Paper, 1999.

Zhu, Ning, "The Local Bias of Individual Investors," Yale ICF Working Paper No. 02-30, October 2002.

Table 1
Correlation Between Equity Participation and Participation Proxies,
Conditional on Filing Tax Return, Using Survey of Consumer Finances (SCF) 1989 – 1998

<i>Stock Ownership Proxies</i>	1989	1992	1995	1998	1989 – 1998
Report Dividends	0.66	0.65	0.63	0.57	0.62
Report Capital Gains	0.44	0.46	0.47	0.49	0.47
Report Dividends and/or Capital Gains	0.66	0.63	0.63	0.61	0.63

Table 2
Equity Participation Proxies (in percent), 1987 – 1996 Pooled^a

	<i>Equity Participation (SCF estimates)</i>	<i>Report Dividends and/or Capital Gains</i>	<i>Report Dividends</i>	<i>Report Capital Gains</i>
Full Sample	25.1% 1989-98	29.6%	25.6%	17.9%
<i>By Year</i>				
1987		25.7	21.9	15.2
1988		27.1	23.2	14.7
1989	22.2	28.1	24.2	15.8
1990		28.0	24.2	15.3
1991		28.6	24.7	16.2
1992	22.6	30.1	26.1	18.2
1993		31.4	27.3	20.4
1994		32.5	28.2	21.0
1995	24.6	33.2	28.9	21.9
1996	30.5 in 1998	34.4	30.0	23.7

^aNotes: Sample is all individuals that file tax returns. Statistics are weighted by population weights.

Table 3
Summary Statistics for Equity Participation (in percent) and Presence of Local Firms,
1987-1996 Pooled^a

	Mean (Std. Dev.)	Percentiles					Maximum
		10 th	25 th	50 th	75 th	90 th	
Own Equity?	29.6 (45.7)						
Equity Participation within 50 miles	29.8 (7.5)	20.9	25.5	30.1	34.1	38.3	100.0
Firms within 50 miles?	91.9 (27.3)						
Share of total U.S. firm market value within 50 miles	3.0 (5.9)	0.000	0.005	0.6	3.2	7.7	27.3
Population within 50 miles (in millions)	4.0 (4.6)	0.4	0.8	2.2	5.5	12.9	17.7

^aNotes: Statistics are weighted by population weights.

Table 4
Regression of Equity Participation (in percent), Focus on Income and Demographic
Controls, 1987 – 1996

<i>Income and Age Controls for Household (Income 0 – 50K and Age < 40 omitted)</i>		<i>Race/Ethnicity across Household's Zip Code (White omitted)</i>	
Income negative?	-5.0 ^{***}	Black	-3.5 ^{***}
Maximum (0, Income) in \$000s	0.0002 ^{***}	Indian	-3.1
Maximum (0, Income) squared	-8e-10 ^{***}	Asian	-7.8 ^{***}
Income 50 – 150K	8.5 ^{***}	Other race	-4.0
Income 150K+	28.1 ^{***}	Hispanic	-6.0 ^{***}
Age (in years)	0.65 ^{***}	Mean house price in zip (\$000s)	-0.002
Age squared	0.0002	<i>Occupation in Household's Zip (Executive / Manager omitted)</i>	
Age 40 – 64	1.2 ^{***}	Professional / Specialist	1.6
Age 65+	3.7 ^{***}	Technician	11.9
<i>Filing Status/Deductions taken by HH (Married omitted for Filing Status)</i>		Sales	5.5
Claim mortgage	5.8 ^{***}	Clerical	-21.6 ^{***}
Single filing status – male	-4.5 ^{***}	Private what does this mean?	-32.8 ^{***}
Single filing status – female	-3.9 ^{***}	Protective	4.8
Head of Household – male	-9.4 ^{***}	Service	7.2 [*]
Head of Household – female	-11.0 ^{***}	Farming	4.8
Number of Dependents	-0.27 ^{***}	Crafts	-21.4 ^{***}
Self-employed	3.6 ^{***}	Operators	-26.8 ^{***}
Schedule E	24.6 ^{***}	Transportation / Materials	-43.3 ^{***}
Alternative Minimum Tax	8.1 ^{***}	Laborers	12.0
Contribute to DC Plan	5.0 ^{***}	<i>Sector in Household's Zip Code (For Profit omitted)</i>	
<i>Education across Household's Zip Code (1st – 8th Grade Education omitted)</i>		Not For Profit	8.8 ^{***}
Start high school	-13.6 ^{***}	Local Government	-9.6 ^{**}
Graduate high school	3.7	State Government	-21.4 ^{***}
Some college	-4.9	Federal Government	-21.1 ^{***}
Associate degree	-2.6	Self-Employed	-1.8
Bachelor degree	18.5 ^{***}	Nonpaid	-3.4
Graduate degree	8.2 [*]	R ² = 0.416	# of obs. = 753,103

***, **, * Significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 5
Regression of Equity Participation (in percent, various proxies for participation), 1987 – 1996 Pooled^a

	<i>Dividend income and/or capital gains used as proxy</i>		<i>Dividend income used as proxy</i>		<i>Capital gains used as proxy</i>	
	(1)	(2)	(3)	(4)	(5)	(6)
Equity Ownership within 50 miles	16.2^{***} (1.5)	15.1^{***} (1.5)	24.1^{***} (1.8)	22.9^{***} (1.8)	20.6^{***} (1.7)	20.4^{***} (1.7)
Firms within 50 miles?	1.17 ^{***} (0.45)	1.08 ^{**} (0.45)	1.32 ^{***} (0.50)	1.21 ^{**} (0.50)	1.61 ^{***} (0.41)	1.52 ^{***} (0.41)
Share of total U.S. firm market value within 50 miles	20.5 ^{***} (3.5)	20.0 ^{***} (3.5)	33.7 ^{***} (3.9)	33.5 ^{***} (3.9)	28.6 ^{***} (3.2)	28.0 ^{***} (3.2)
Equally-weighted average return of firms within 50 miles	-0.12 (0.19)	-0.15 (0.19)	-0.37 [*] (0.20)	-0.40 ^{**} (0.20)	0.20 (0.19)	0.16 (0.19)
Share of firm value within 50 miles in technology sector	-1.55 ^{***} (0.62)	-1.45 ^{**} (0.62)	-1.77 ^{***} (0.68)	-1.68 ^{***} (0.67)	-1.46 ^{***} (0.56)	-1.35 ^{**} (0.56)
Firm employees*1,000 / total population within 50 miles	0.59 (1.31)	0.35 (1.31)	-0.07 (1.43)	-0.33 (1.43)	-1.15 (1.17)	-1.54 (1.17)
Year dummy variables?	Yes	Yes	Yes	Yes	Yes	Yes
Demographic controls?	Yes	Yes	Yes	Yes	Yes	Yes
Zip code controls?	No	Yes	No	Yes	No	Yes
R ²	0.417	0.418	0.353	0.353	0.440	0.441
Number of observations	753,103	753,103	753,103	753,103	753,103	753,103

^aNotes: Zip code controls include income controls, age controls, deductions taken (i.e., mortgage interest and number of dependents), income/forms filed (self-employed, Schedule E, Alternative Minimum Tax, defined contribution plan contributions), and filing status of the household's zip code.

***, **, * Significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 6
Regression of Equity Participation (in Percent, Report Dividend Income and/or Capital Gains Used as Proxy),
1987 – 1996 by Year^a

	<i>1987</i>	<i>1988</i>	<i>1989</i>	<i>1990</i>	<i>1991</i>	<i>1992</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>1996</i>
Equity Ownership within 50 miles	17.5^{***} (2.5)	16.7^{***} (2.5)	15.7^{***} (2.6)	20.1^{***} (2.5)	12.8^{***} (2.5)	12.6^{***} (2.5)	14.4^{***} (2.5)	15.5^{***} (2.5)	10.3^{***} (2.4)	9.5^{***} (2.5)
Firms within 50 miles?	1.03 [*] (0.62)	-0.02 (0.64)	1.01 (0.69)	1.71 ^{***} (0.69)	1.10 (0.71)	0.76 (0.73)	1.45 ^{**} (0.70)	0.55 (0.72)	1.09 (0.75)	1.47 ^{**} (0.78)
Share of total U.S. firm market value within 50 miles	15.1 ^{***} (4.5)	9.0 [*] (4.8)	17.2 ^{***} (5.0)	20.6 ^{***} (4.8)	22.9 ^{***} (4.5)	17.9 ^{***} (4.7)	23.1 ^{***} (5.1)	24.1 ^{***} (5.5)	25.4 ^{***} (5.5)	19.2 ^{**} (5.6)
Firm Controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Demographic controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Zip code controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R ²	0.461	0.438	0.432	0.425	0.414	0.411	0.402	0.399	0.393	0.386
Number of observations	84,228	80,969	79,104	77,493	75,702	74,000	72,509	71,119	70,072	67,907

^aNotes: Regressions include local firm controls, demographics controls, and zip-code-level demographic controls. See appendix for details.

Table 7
Robustness Checks of Equity Participation Results to Company Stock Effect
(in percent, report dividend income and/or capital gains used as proxy)

	Self-Employed	NO Publicly-Traded Firm within 50 miles
Equity Ownership within 50 miles	10.9 ^{***} (3.3)	8.8 ^{***} (2.5)
Firms within 50 miles?	1.63 [*] (0.99)	
Share of total U.S. firm value within 50 miles	35.1 ^{***} (8.2)	
Adjusted R ²	0.320	0.379
Number of observations	102,518	47,977

Regressions include local firm controls (excluded in no publicly-traded firm within 50 miles regression), demographic controls, and zip-code-level demographic controls.

***, **, * Significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 8
Equity Participation Regressions by Proxies for Financial Sophistication
(in percent, report dividend income and/or capital gains used as proxy)

	Regression by Income Groups (in \$000s)		
	<i>0 – 50</i>	<i>50 – 150</i>	<i>150+</i>
Equity Ownership within 50 miles	21.3 ^{***} (2.2)	19.8 ^{***} (3.4)	6.6 ^{***} (1.8)
Firms within 50 miles?	0.43 (0.61)	1.25 (0.98)	1.47 ^{***} (0.59)
Share of total U.S. firm value within 50 miles	8.5 (6.2)	16.5 ^{**} (7.9)	32.6 ^{***} (3.5)
Adjusted R ²	0.349	0.204	0.086
Number of observations	276,188	194,482	282,433

	Regression by Percent of Individuals in Taxpayer's Zip Code with College Education		
	<i>College < 16.5%</i>	<i>16.5% < College > 33.8%</i>	<i>College > 33.8%</i>
Equity Ownership within 50 miles	17.5 ^{***} (2.2)	12.7 ^{***} (2.6)	12.7 ^{***} (3.6)
Firms within 50 miles?	0.94 [*] (0.57)	0.05 (0.81)	0.57 (1.69)
Share of total U.S. firm value within 50 miles	8.8 (8.0)	25.5 ^{***} (7.0)	20.4 ^{***} (5.1)
Adjusted R ²	0.383	0.371	0.316
Number of observations	251,105	251,061	250,937

Regressions include local firm controls, demographic controls, and zip-code-level demographic controls. College education is defined as having obtained a bachelor or graduate degree.

***, **, * Significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 9
Regression of Equity Participation with Household Fixed Effects, 1987 – 1996 pooled^a

<i>Panel A: Full Sample</i>									
	Full Sample			Income \$0 – 50K throughout sample		Income \$50 – 150K throughout sample		Income \$150K+ throughout sample	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Equity Ownership within 50 miles	3.3^{***} (1.2)	3.3^{***} (1.2)	3.7^{***} (1.2)	1.5 (2.0)	1.6 (2.0)	20.1^{***} (5.1)	19.0^{***} (2.9)	0.5 (2.2)	1.0 (2.3)
Firms within 50 miles?		0.27 (0.37)	0.20 (0.38)		-0.61 (0.56)		0.60 (1.70)		0.94 (0.79)
Share of total U.S. firm market value within 50 miles		0.4 (4.8)	1.3 (4.9)		-16.2 (10.5)		-24.0 (28.7)		24.8 ^{***} (7.3)
Year dummy variables?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls?	No	Yes	Yes	No	Yes	No	Yes	No	Yes
Demographic controls?	No	No	Yes	No	Yes	No	Yes	No	Yes
Zip code controls?	No	No	Yes	No	Yes	No	Yes	No	Yes
R ²	0.759	0.759	0.762	0.766	0.766	0.615	0.618	0.472	0.475
Number of observations	753,253	753,253	753,103	157,894	157,811	72,076	72,074	168,314	168,301

^aNotes: ^{***}, ^{**}, ^{*} Significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 9: Continued
Regression of Equity Participation with Household Fixed Effects, 1987 – 1996 pooled^a

Panel B: Households that move by at least 100 miles (exclude year of move)

	Full Sample			Income \$0 – 50K throughout sample		Income \$50 – 150K throughout sample		Income \$150K+ throughout sample	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Equity Ownership within 50 miles	3.1 (3.6)	3.1 (3.7)	4.9 (3.8)	6.4 (8.0)	8.2 (8.8)	33.5 [*] (18.8)	50.0 ^{***} (18.1)	4.2 (5.2)	7.7 (5.8)
Firms within 50 miles?		-0.46 (1.24)	-0.93 (1.32)		-3.09 (2.81)		-2.22 (5.38)		2.33 (1.86)
Share of total U.S. firm market value within 50 miles		4.9 (11.0)	6.1 (12.3)		-30.7 (39.6)		58.4 (81.0)		6.0 (16.9)
Year dummy variables?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls?	No	Yes	Yes	No	Yes	No	Yes	No	Yes
Demographic controls?	No	No	Yes	No	Yes	No	Yes	No	Yes
Zip code controls?	No	No	Yes	No	Yes	No	Yes	No	Yes
R ²	0.714	0.714	0.717	0.706	0.711	0.580	0.596	0.412	0.421
Number of observations	32,301	32,301	32,289	4,646	4,642	2,507	2,507	6,081	6,081

^aNotes: ^{***}, ^{**}, ^{*} Significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 10
Importance of Equity Participation of Households in Same Age-Income Group

<i>Age-Income Group</i>	<i>Effect of Average Equity Ownership of this Group Upon Individuals in THIS Group</i>	<i>Effect of Average Equity Ownership of this Group Upon Individuals in OTHER Groups</i>	<i>Difference</i>
Age < 40, Income 0 – 50K	-0.0 (3.3)	2.6 (1.8)	-2.7 (3.6)
Age < 40, Income 50 – 150K	6.5 ^{***} (2.4)	2.7 ^{***} (0.7)	3.8 (2.4)
Age < 40, Income 150K+	14.7 ^{***} (1.0)	0.4 (0.3)	14.3 ^{***} (1.0)
40 ≤ Age < 65, Income 0 – 50K	16.3 ^{***} (2.7)	3.3 ^{***} (1.2)	13.0 ^{***} (2.7)
40 ≤ Age < 65, Income 50 – 150K	5.5 ^{***} (2.1)	1.6 [*] (1.0)	3.9 ^{**} (2.0)
40 ≤ Age < 65, Income 150K+	4.4 ^{***} (0.7)	1.0 [*] (0.5)	3.4 ^{***} (0.8)
Age ≥ 65, Income 0 – 50K	33.0 ^{***} (1.8)	0.7 (0.8)	32.3 ^{***} (1.6)
Age ≥ 65, Income 50 – 150K	16.3 ^{***} (1.3)	-0.5 [*] (0.3)	16.8 ^{***} (1.3)
Age ≥ 65, Income 150K+	-5.0 ^{***} (0.7)	0.4 (0.3)	-5.4 ^{***} (0.8)
Average Effect Across Households	8.4 ^{***} (0.9)	1.6 ^{***} (0.3)	6.8 ^{***} (0.9)

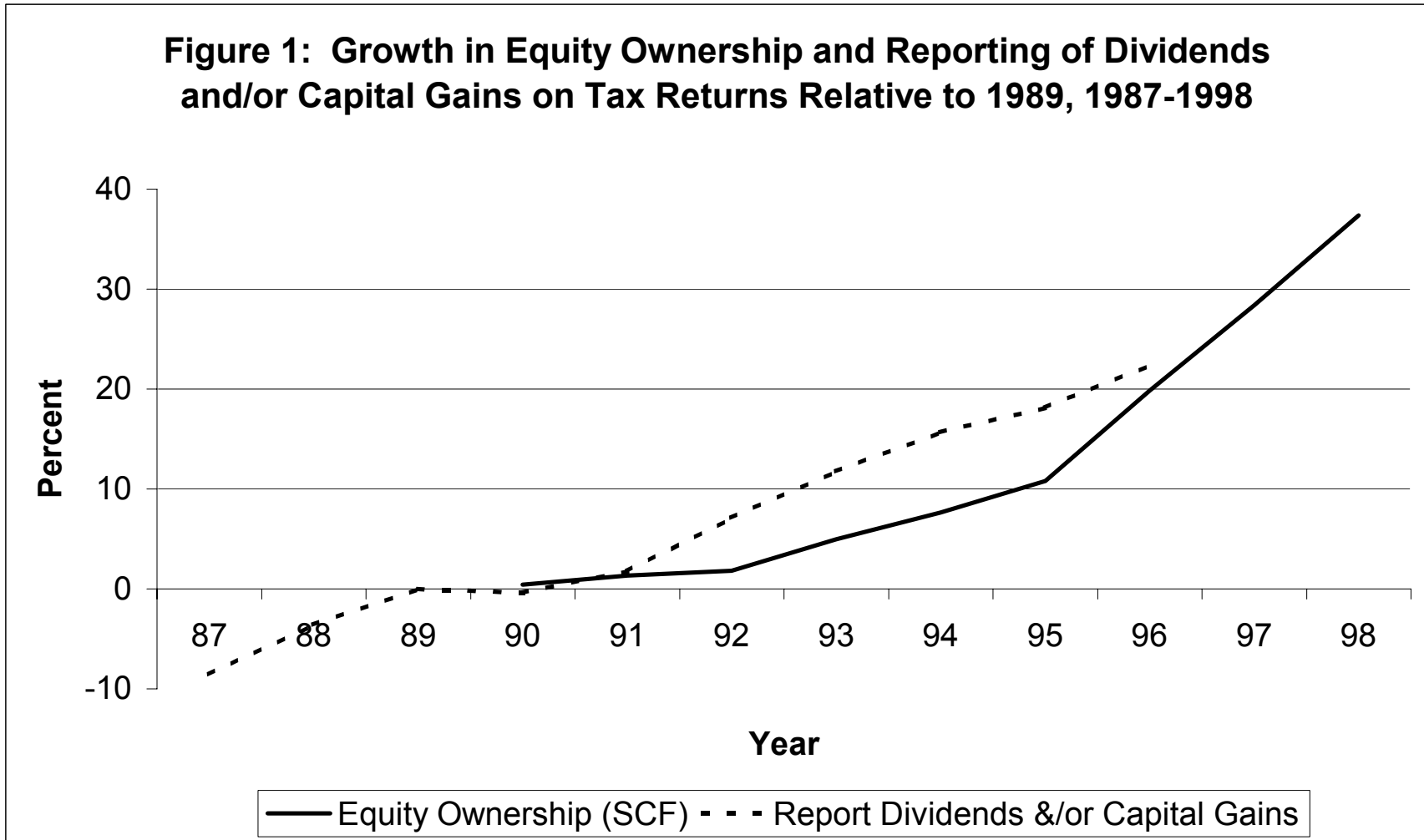
Adjusted R² = 0.429

Number of Observations = 680,317

Regressions also include local firm controls, demographic controls, and zip-code-level demographic controls.

***, **, * Significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Figure 1: Growth in Equity Ownership and Reporting of Dividends and/or Capital Gains on Tax Returns Relative to 1989, 1987-1998



Equity ownership estimates are provided by the SCF for 1989, 1992, 1995, and 1998. Equity ownership estimates for years between surveys are obtained by a linear interpolation.

Appendix Table 1: Regression of Equity Participation (in percent), Focus on Income and Demographic Controls, 1987 – 1996

<i>Income and Age Controls for Household (Income 0 – 50K and Age < 40 omitted)</i>		<i>Race/Ethnicity across Household's Zip Code (White omitted)</i>		<i>Income and Age Controls for HH's ZIP CODE (Income 0 – 50K and Age <40 omitted)</i>	
		Associate degree	-6.2	State Government	-20.0 ***
Income negative?	-5.1 ***	Bachelor degree	12.6 ***	Federal Government	-18.1 ***
Maximum (0, Income) in \$000s	0.0002 ***	Graduate degree	0.9	Self-Employed	0.6
Maximum (0, Income) squared	-7e-10 ***			Nonpaid	-7.1
Income 50 – 150K	8.1 ***	Black / Indian	-2.5 ***		
Income 150K+	27.3 ***	Asian	-6.5 ***	Average zip code income negative?	0.8
Age (in years)	0.69 ***	Other Race	-0.6	Maximum (0, Average Income) in \$000s	0.0013 ***
Age squared	-0.0002	Hispanic	-4.9 ***	Maximum (0, Average Income) squared	-2e-08 ***
Age 40 – 64	1.5 ***	Average House Price in zip (\$000s)	0.001	Income 50 – 150K (share for zip code)	0.9 ***
Age 65+	3.2 ***			Income 150K+ (share for zip code)	2.9 ***
<i>Filing Status and Deductions taken by Household (Married omitted for Filing Status)</i>		<i>Occupation in Household's Zip Code (Executive / Manager omitted)</i>		<i>Filing Status and Deductions taken for HH's ZIP CODE (Married omitted for Filing Status)</i>	
		Professional / Specialist	9.2 **	Average Age (for zip code, in years)	-0.17 ***
Claim mortgage	5.2 ***	Technician	13.4 *	Average Age (for zip code) squared	0.0017 ***
Single filing status – male	-4.5 ***	Sales	7.2	Age 40 – 64 (share for zip code)	-1.3 ***
Single filing status – female	-4.3 ***	Clerical	-17.8 ***	Age 65+ (share for zip code)	1.6 **
Head of Household filing status – male	-9.5 ***	Private	-31.1 ***		
Head of Household filing status – female	-11.1 ***	Protective	4.2	Claim mortgage (share for zip code)	2.2 ***
Number of Dependents	-0.04	Service	3.9	Single filing status – male (share for zip code)	-0.2
Self-employed	3.5 ***	Farming	2.5	Single filing status – female (share for zip code)	0.8 *
Schedule E	24.6 ***	Crafts	-19.7 ***	Head of Household filing status – male (zip)	0.9
Alternative Minimum Tax	7.7 ***	Operators	-22.5 ***	Head of Household filing status – female (zip)	0.6
Contribute to DC Plan	4.4 ***	Transportation / Materials	-36.5 ***	Number of Dependents (average for zip code)	-1.0 ***
<i>Education across Household's Zip Code (1st – 8th Grade Education omitted)</i>		<i>Sector in Household's Zip Code (For Profit omitted)</i>			
		Laborers	7.9	Self-employed (share for zip code)	0.4
Start high school	-13.2 ***			Schedule E (share for zip code)	-0.4
Graduate high school	-1.4	Not For Profit	4.9	Alternative Minimum Tax (share for zip code)	4.1 ***
Some college	-6.5 **	Local Government	-13.0 ***	DC Plan (share for zip code)	2.6 ***

Coefficients from specification (2) of Table 5 reported. ***, **, * Significance at the 1 percent, 5 percent, and 10 percent levels, respectively.