Homeownership and Child Welfare [1]

David Barker and Eric Miller[2]

University of Chicago and University of Rochester

May 13, 2005

[1]The authors thank Mark Obrinsky, Jack Goodman, and other participants at the Research Forum of the National Multi-Housing Council for many helpful comments.

[2]Email: fdbarker@gsb.uchicago.edu

Abstract

Recent studies have concluded that homeownership is beneficial to children. This result is important because it is used to justify large government subsidies that encourage homeownership. We reexamine the results of Green and White (1997) and Haurin, Parcel and Haurin (2002) using the Panel Study of Income Dynamics (PSID), Public Use Microsample (PUMS), and National Longitudinal Survey of Youth (NLSY) data. We extend this research by controlling for residential mobility, wealth, dwelling type, vehicle ownership and interviewer bias, as well as by using a "differences in differences" methodology to deal with possible treatment effects bias. We find that the beneficial effects of homeownership previously measured are substantially reduced or eliminated by controlling for these factors. We also find that vehicle ownership appears to be at least as important as homeownership. We confirm these results using data from the Early Childhood Longitudinal Study (ECLS).

1. Introduction

The relative merits of rented versus owned housing have long been debated. Owner-occupied housing has been praised for promoting independence, stability and other virtues. Rental housing also has advantages, including flexibility and low cost. Among policymakers in the United States, however, there is an overwhelming consensus in favor of homeownership. Largely as a result of tax benefits and other subsidies, which exceed $100 billion annually, homeownership in the United States reached a record level of 69% in 2004.

Beliefs in the virtues of homeownership have their roots at least as distant as the publication of *Two Treatises of Government* by John Locke in 1689 (Locke 1967). Locke argued that land ownership was justified by the efforts of individual farmers clearing uninhabited land. Other philosophers such as Montesquieu, Rousseau and Hobbes were less enthusiastic about private ownership of land, but Locke was much more influential in American political thought. Thomas Jefferson moved the debate in the United States from justification to celebration of land ownership. In 1785 he wrote to James Madison (Jefferson 1984):

> It is not too soon to provide by every possible means that as few as possible shall be without a little portion of land. The small landholders are the most precious part of a state.

The importance of ownership, as opposed to leaseholding, to Americans was illustrated in the "anti-rent wars" in New York State during the 1840s. Large landowners, with titles dating to the 17th century, leased land to small farmers. A substantial political movement that included rent boycotts and legal challenges weakened and ultimately destroyed the old estate system; it also refined the ideology of individual ownership, helping to bring about the Homestead Act of 1862, which made individual ownership

of small plots of land possible for millions of people (Huston 2000). By 1880, the U.S. Census reported that 74% of all farms in the U.S. were cultivated by their owners.

These developments took place in rural areas, where the vast majority of Americans lived. Urban property ownership remained much more concentrated throughout the 19th century. In 1850, only 19% of adult men in Chicago owned any real estate; in 1870 the percentage was 22% (Einhorn 1991 p. 249). A national survey of urban workers in 1889 showed 17.6% owning homes (Haines and Goodman 1992). In 1889, labor unions, rural advocacy groups and groups advocating the 'single tax' on land were concerned that homeownership rates were falling and levels of debt were increasing; they petitioned Congress to collect data on the ownership of farms and homes, and this data has continued to be collected since the 1890 census. Debate on whether to collect the data centered on the cost of collection and the nature of mortgage debt, but the value of homeownership was not questioned. One Senator said (U.S. Congress 1890):

> Up to within a very short period it was the glory and the safety of the people of the United States that every single male adult who was honest, who was industrious, who was careful in the management of his affairs, was the owner of the shelter which covered him from the storm. I am led to believe that this condition has changed.

The 1890 census showed 23% of families living in cities with populations over 100,000 and 37% of the entire non-farm population owning their homes. The national non-farm ownership rate increased slowly to 41% in 1920, and then increased more rapidly to 46% in 1930. By the late 1920s, however, apartment construction was booming, and many observers saw a decline in homeownership, even before the Great Depression. Movement from rural to urban areas contributed to this trend, as did the greater availability of new kitchen appliances and better plumbing, electrical and heating systems in rental property

than was affordable by many homeowners (Wehrwein and Woodbury 1931). The Great Depression accelerated the decline in the homeownerhip rate, and in 1940 the national non-farm rate was 41%, only 4 percentage points higher than the rate in 1890, fifty years earlier.

Homeownership, and urban homeownership in particular, was increasingly idealized during this period. Russell Conwell, the founder of Temple University and a nationally popular lecturer, said (Conwell 1915):

> A man is not really a true man unless he owns his own home, and they that own their houses are made more honorable and honest and pure and true and economical and careful by owning the house.

Concern about the growth of urban rental housing led to attempts to increase the rate of urban homeownership (Ely 1926). There is little evidence, however, that homeownership was better for urban families than rental housing. Thernstrom (1964) examined the effects of homeownership on children in 19th century Newburyport, Massachusetts. He found that homeownership was associated with lower upward occupational mobility for the sons of laborers, presumably because saving enough to buy a house required reductions in other expenditures such as education. A similar study of Boston found no discernable effect of homeownership on mobility independent of other factors (Thernstrom 1973).

Homeownership rates increased rapidly during the 1940s and 1950s, from 41% in 1940 to 61% in 1960. This trend, along with other social changes, led some sociologists to criticize homeownership as leading to "privatism." Homeowners were held to be interested in domestic life to the exclusion of social concerns (Saunders 1990). The most common view, however, was that the policies that had led to such a large increase in homeownership were a success, despite the lack of evidence of positive effects

of homeownership.[1]

In 1994 the U.S. homeownership rate was 62%, barely above what it had been in 1960. Since 1995, however, the homeownership rate has increased to 69%, the first period of rapid increase in homeownership since the 1950s. This change appears to have been primarily due to lower lending standards on the part of government-sponsored enterprises such as Fannie Mae and Freddie Mac, and partly due to government programs (Miwa, Garriga and Schlagenhauf 2005). The rise in homeownership rates and the popularity of policies promoting homeownership have stimulated research into the relative benefits of owning and renting. Oswald (1996, 1999) has suggested that homeownership might increase the natural rate of unemployment, since homeowners are less mobile than renters. The majority of subsequent research, however, has not supported Oswald's hypothesis.[2] Rohe, Van Zandt, and McCarthy (2001) provide an excellent summary of recent research on the social effects of homeownership. The evidence they review suggests that homeowners are more satisfied with their homes than renters, homeowners are more politically active, and homeowners move less often than renters. They also find, however, that there are other psychological costs of owning that might offset the increased home satisfaction that some find, and that decreased mobility has costs as well as benefits. They also find that evidence of other benefits is weak.

The two most prominent papers that find benefits to homeowning families are Green and White (1997) and Haurin, Parcel and Haurin (2002). Green and White (1997) examine high school dropout rates for families that rent and that own their homes. Families with a 17 year-old member are selected from the data, and a probit analysis is run, with the dependent variable indicating whether the 17 year-old is still in school. Independent

[1]Some research was conducted on the effects of dwelling type on child welfare (Ineichen and Hooper 1974), but not specifically on the effects of ownership itself.

[2]Flatau, Forbes, and Hendershott (2003) find evidence against the Oswald hypothesis for men, but women who own homes appear to have longer periods of unemployment. Munch, Rosholm, and Svarer (2003) find that homeowners are more likely to find local jobs, but are less able to move to find non-local employment.

variables include income, family structure, educational background of parents, employment, and race. A dummy variable indicating whether the family owns or rents is found to be statistically significant using both Panel Study of Income Dynamics (PSID) data and U.S. Census Public Use Micro Sample (PUMS) data. The analysis using the PUMS data also includes an independent variable measuring length of residence at the family's current location. Haurin, Parcel and Haurin (2002) use the National Longitudinal Survey of Youth (NLSY) panel data, which contains the results of surveys taken regularly from 1979 to 2002. They find that, even after correcting for possible treatment effect bias, homeownership improves children's test scores, behavior, and home environment.

In this paper, we again examine PSID, PUMS, and NLSY data, looking for effects of homeownership on child outcomes. We use a different technique to deal with treatment effects bias, and we examine the robustness of the homeownership result to different model specifications. We confirm our results using data from the Early Childhood Longitudinal Study (ECLS).

2. PSID Data

Green and White (1997) find a strong homeownership effect using the PSID data. Their results imply that, at average income levels, children of homeowners are 3-4% more likely than children of renters to be in school at age 17. At the lowest income level, the difference is 9%. The homeownership effect is statistically significant at the 1% level. Our attempt to replicate these results is reported in column 1 of Table 1, and we are able to obtain results that are similar to those of Green and White (1997).[3] The homeowner variable is statistically significant at a 3.7% level of confidence, and the parameter estimate of 0.31 implies that children of homeowners are 3.7% more likely

[3]Green and White (1997) report probit estimation results while we report logistic regression results. Probit results using our model specification are very similar to the logistic regression results.

than children of renters to be in school at age 17, which is very similar to the result of Green and White (1997). Column 2 of Table 1 shows that controlling for whether or not a family lives in a single-family house does not materially change this parameter estimate.[4]

Table 1: PSID Logit Results, 17 Year-Old in School.
(p-values in parentheses)

Variable	1	2	3	4	5
Intercept	0.22855	0.1987	0.77243	0.61186	0.48917
	(0.43364)	(0.5004)	(0.0178)	(0.07139)	(0.17354)
Homeowner	0.31352	0.28871	0.1303	0.07719	-0.01468
	(0.03699)	(0.06165)	(0.41208)	(0.63497)	(0.93306)
Single-family house		0.09706	0.06194	0.06246	0.04932
		(0.48447)	(0.65729)	(0.65506)	(0.74043)
Moved within 2 years			-0.32552	-0.32188	-0.30897
			(0.03297)	(0.03514)	(0.05797)
Moved within 10 years			-0.53307	-0.5333	-0.52048
			(0.00299)	(0.00299)	(0.00663)
Owns vehicle				0.30397	0.43074
				(0.08962)	(0.02213)

Continued on next page

[4]We also allow the homeownership effect to differ between families living in single-family homes and multi-family structures. The effect remains strong for occupants of single-family homes, but statistically insignificant for occupants of multi-family structures. If it is homeownership and not some other variable that causes 17 year-olds to stay in school, it should not matter what type of dwelling the family lives in. The type of dwelling itself, however, appears to have no effect on high school dropout rates. If the homeownership effect is real, then this finding has implications for housing policy, since current programs designed to increase homeownership are increasing the number of condominium purchases and conversions. The ownership rate for single-family dwellings is now nearly 90%, so it is unlikely that government programs will significantly increase this percentage. If the effect of homeownership promotion programs is to turn apartment renters into condominium owners, these results do not support the hypothesis that the programs will improve high school dropout rates.

Table 1 – continued from previous page

Variable	1	2	3	4	5
Net worth					0.00404
					(0.00922)
Black	0.30568	0.30848	0.23825	0.28989	0.39535
	(0.04119)	(0.03947)	(0.11427)	(0.06143)	(0.01777)
Young parent	-0.5754	-0.57425	-0.47367	-0.47883	-0.44492
	(0.00314)	(0.00319)	(0.01568)	(0.01483)	(0.03703)
Family income	0.01886	0.01867	0.01779	0.0168	0.01096
	(0.00075)	(0.00087)	(0.00158)	(0.00267)	(0.07096)
Parent HS graduate	0.86306	0.86107	0.82669	0.82702	0.8422
	(0)	(0)	(0)	(0)	(0)
Parent some college	1.04801	1.03973	1.05097	1.06203	1.03837
	(0.00003)	(0.00004)	(0.00003)	(0.00003)	(0.00012)
Parent college graduate	1.24058	1.23893	1.25884	1.28508	1.20822
	(0.00093)	(0.00095)	(0.0008)	(0.00063)	(0.00251)
Female head	-0.05179	-0.05354	-0.04299	0.01458	0.05832
	(0.77393)	(0.7665)	(0.81195)	(0.93718)	(0.76698)
Parents divorced	0.05166	0.05138	0.09204	0.07064	0.03852
	(0.80532)	(0.80638)	(0.66237)	(0.7386)	(0.863)
Family size	0.09311	0.09089	0.09946	0.09758	0.11993
	(0.01896)	(0.02224)	(0.01324)	(0.01517)	(0.00628)
Parent worked in last year	0.28379	0.28358	0.33126	0.26671	0.23294
	(0.10099)	(0.1012)	(0.05769)	(0.1367)	(0.22394)
N	2420	2420	2420	2420	2252

Continued on next page

Table 1 – continued from previous page

Variable	1	2	3	4	5
% Concordant	71.0	71.1	72.3	72.5	74.2

The results of Green and White (1997) were modified by Aaronson (2000), who found that adding variables related to mobility reduce, but do not eliminate, the effects of homeownership. Aaronson (2000) used geocodes from the PSID data to identify the number of moves during a child's life between the ages of 7 and 16. Other independent variables are also averages over the child's life. The dependent variable measures whether the child had graduated from high school by age 19. We mimic Green and White's model specification as much as possible and add information from the PSID database about whether the child's family had moved within 2 years and within 10 years. Column 3 of Table 1 displays the results of adding these variables to the model. A move within the past 2 or 10 years was found to have a negative effect on high school enrollment and the magnitude of the homeownership effect is reduced by nearly 60% and becomes statistically insignificant.

Aaronson (2000) also investigates the possibility that homeownership and mobility are endogenous, in other words, that homeownership itself decreases mobility, and that this in turn reduces the high school dropout rate. He uses an instrumental variables approach to investigate this possibility, but does not obtain statistically significant results. It seems difficult to believe that restricting the mobility of families would be beneficial. Even if evidence was found that high school dropout rates were reduced, it seems likely that reduced ability to look for distant work following the loss of a job, or to change schools if a student and a school are not well matched, would cause other problems that might be at least as great.

Column 4 shows the results of controlling for vehicle ownership. The magnitude of

the homeownership effect is further reduced, and the coefficient on vehicle ownership is nearly 4 times as large as the coefficient on homeownership. Column 5 adds the net worth of the family. The effect of net worth is statistically significant at a very high level of confidence, and the homeownership effect is estimated to be negative. In other words, controlling for net worth, homeownership appears to increase the probability that children will drop out of high school, although the magnitude of the effect is very small and is statistically insignificant.[5]

3. PUMS Data

Green and White (1997) also examine the Public Use Microsample (PUMS) data from the United States Census. They use the one-in-one-thousand sample from the 1980 Census, while we use the one-in-twenty sample from the 2000 Census. Green and White (1997) have 3,249 families with 17 year-olds in their sample, while we have 189,024. Green and White (1997) find that the homeownership effect is statistically significant even after including a variable for length of tenure. They state that the effects of homeownership and tenure length interact, so that the homeownership effect is mitigated for longer tenures, but they do not report these results. In Table 2, column 1 shows the results for a model similar to that reported in Green and White (1997). Our results are similar, but the larger sample size increases the statistical significance of the results. We find the homeownership effect to be statistically significant for apartments as well as single-family houses, although the size of the effect is much smaller for apartments.

In columns 3 and 4 of Table 2, vehicle ownership is added to the model. The difference in high school dropout rates between owning no vehicles and owning 2 is greater

[5]We also performed the estimation including a variable for whether the family lived in public housing. Living in public housing appears to increase the high school drop-out rate and including the variable further lowers the estimate of the homeownership effect.

than that between owning a residence and renting. The homeowner effect is reduced somewhat, though it remains statistically significant. The policy implications of this result are interesting to contemplate. If subsidies to homeowners are paid in part by higher taxes for renters, then it will be more difficult for renters to afford a vehicle, and the net effect of homeowner subsidies could be to raise high school dropout rates. This result is consistent with other research that finds that ownership of assets other than homes, such as financial assets, may be important to the welfare of children. Zhan and Sherraden (2003) find that for poor women in the National Survey of Families and Households, after controlling for the level of financial assets, homeownership is not a statistically significant determinant of high school dropout rates. They find that homeownership is associated with improved high school grades, but that this effect is only barely statistically significant after controlling for parental expectations.[6]

Table 2: PUMS Logit Results, 17 Year Old in School.
(p-values in parentheses)

Variable	1	2	3	4
Intercept	1.0557	1.127	0.8754	0.957
	(0.082)	(0.0822)	(0.0833)	(0.0835)
Own Home	0.7219		0.5873	
	(0.0198)		(0.0205)	
Own House		0.8401		0.7007
		(0.0215)		(0.0223)
Own Att.		0.4077		0.4323
		(0.0717)		(0.0561)
Own Apt.		0.4044		0.3719

Continued on next page

[6]See also Haveman and Wolfe (1995) on the effects of financial assets and mobility.

Table 2 – continued from previous page

Variable	1	2	3	4
		(0.0323)		(0.0719)
Own Mob.		0.484		0.27
		(0.0559)		(0.0328)
Black	0.4955	0.4975	0.5989	59820
	(0.0262)	(0.0262)	(0.0266)	(2660.)
Young Parent	-0.6517	-0.6482	-0.633	-0.6303
	(0.0361)	(0.0361)	(0.0364)	(0.0364)
Female	0.186	0.1859	0.188	0.1876
	(0.017)	(0.017)	(0.017)	(0.0171)
Fam. Inc.	0.791	0.761	0.62	-0.599
	(0.0303)	(0.0301)	(0.0296)	(-0.0294)
Max. Educ.	-0.00566	-0.007	-0.00944	-0.0105
	(0.0052)	(0.0052)	(0.0052)	(0.0052)
Female Head	0.4516	0.4477	0.5161	0.5108
	(0.0291)	(0.0291)	(0.0294)	(0.0294)
Single Parent	-0.4653	-0.4532	-0.4137	-0.405
	(0.0275)	(0.0276)	(0.0277)	(0.0277)
Fam. Size	-0.0429	-0.0428	-0.0407	-0.0409
	(0.0048)	(0.0048)	(0.0048)	(0.0048)
Quality	0.5	0.5	0.5	0.4
	(0.0213)	(0.0216)	(0.0211)	(0.0213)
Tenure Length	0.0279	0.0252	0.027	0.0245
	(0.0013)	(0.0013)	(0.0013)	(0.0013)

Continued on next page

Table 2 – continued from previous page

Variable	1	2	3	4
No Car			0.2348	0.2507
			(0.0323)	(0.0323)
Num. Cars			0.1885	0.1804
			(0.0099)	(0.0099)
N	202,103	202,103	202,103	202,103
% Concordant	71.2	71.4	71.8	71.9

In Table 3, we show the result of interacting homeownership with tenure length. For families who have lived at their current address for 10 years or less, homeownership appears to decrease high school dropout rates; there is no clear effect, however, for families at their current address for 11 to 20 years, and for families living at their current address for more than 20 years, homeownership appears to increase high school dropout rates. Figure 1 shows these coefficients for different dwelling types and tenure lengths.

A possible explanation for the strength of the homeownership effect for families that have recently moved is that moving can be the result of positive or negative family events. For example, a family might move because a parent has found a better job or inherited money, or because a single parent has married. In these cases, the family is likely to purchase a house or apartment. In contrast, if a family moves because a parent has lost a job or gotten divorced, they are likely to move into rental housing. To the extent that these events are not fully reflected in the other dependent variables, the homeowner variable will pick them up and appear to be statistically significant when other variables are actually responsible. The lack of benefit of homeownership for families that have not recently moved suggests that homeownership by itself might not be an important

factor in high school dropout rates.

Table 3: Homeownership Coefficient by Mobility, Type.
(p-values in parentheses)

Years Since Move	House	Att. House	Apartment	Mobile Home	R.V.
1	0.7238	0.5207	0.2972	0.159	-0.7497
	(0.0446)	(0.1393)	(0.1573)	(0.0652)	(0.5875)
2-5	0.7656	0.6384	0.5479	0.2763	-0.5698
	(0.0301)	(0.1032)	(0.1302)	(0.0483)	(0.5555)
6-10	0.6906	0.262	0.2606	0.3028	8.6673
	(0.0354)	(0.1203)	(0.1589)	(0.0691)	(83.1807)
11-20	0.257	0.226	-0.0572	-0.1726	-0.8683
	(0.0508)	(0.1423)	(0.1807)	(0.0819)	(1.0962)
21-30	-0.6645	-1.1833	-0.9328	-0.7311	0
	(0.0847)	(0.1802)	(0.259)	(0.1664)	.
31+	-1.3975	-1.952	-1.5733	-1.7105	6.7343
	(0.1056)	(0.2008)	(0.2987)	(0.2728)	(110.3)

Unfortunately, the PUMS data do not include information on family net worth. The PSID results above demonstrate the potential importance of wealth, and our inability to control for wealth in these regressions means that the results must be considered to be inconclusive. Even without wealth data, however, these results cast doubt on the importance and nature of the effect of homeownership on high school dropout rates.

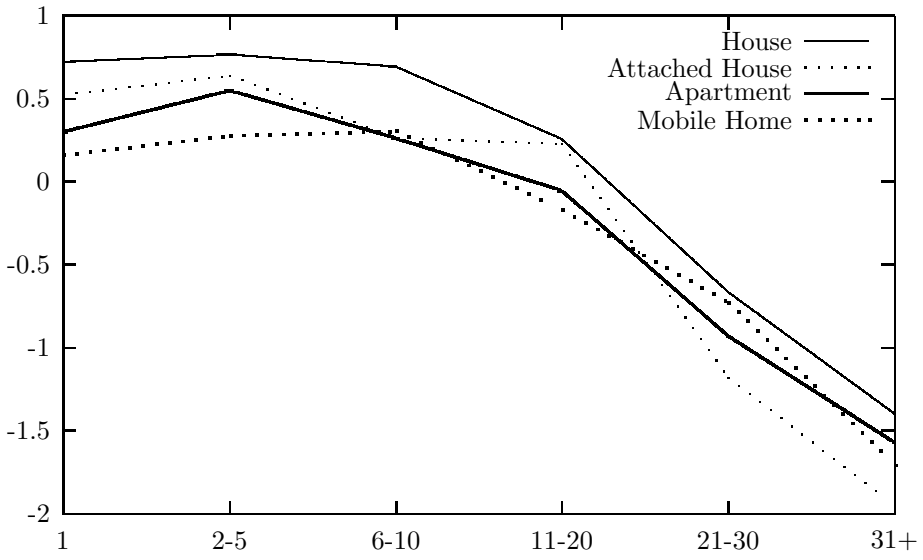

Figure 1: Logistic regression coefficients, effects of homeownership on 17-year old school attendance for different dwelling types and number of years since last move.

4. NLSY79 Data

Haurin, Parcel and Haurin (2002) use data from the National Longitudinal Survey of Youth to investigate the effects of homeownership on home environment, cognitive ability and behavioral problems. They find that homeownership has a statistically significant effect on these measures, but acknowledge that the results may be biased by what is known as "treatment effects" or the possibility that unobserved factors are correlated with both homeownership and child welfare, and might be causes of both, leading to the incorrect conclusion that homeownership improves child welfare. To deal with this problem, Haurin, Parcel and Haurin (2002) use an instrument for homeownership. Using this approach, they find the direct homeownership effect to be statistically significant (p-value=0.045) for math and reading scores, but not for behavioral problems (p-value=0.21). They also find the indirect homeownership effect, the effect of homeownership on mobility, and then of mobility on child welfare measures, to be much lower than the direct effects. They find stronger results using duration of homeownership, but

these results are questionable because they do not control for the length of time that renters have lived at their current location.

Another approach to the treatment effects problem is the "differences in differences" method, also known as the "natural experiment approach" (Ashenfelter 1978, Ashenfelter and Card 1985, Buckley and Shang 2003). The NLSY data consist of repeated surveys of the same families over time. Our dependent variable is the change over time in a measure of child welfare. There are two homeowner variables; the first is equal to 1 if the family began the period as a homeowner and switched to being a renter and 0 otherwise, while the second is equal to 1 if the family began the period as a renter and switched to being a homeowner and 0 otherwise. An advantage of the approach is that if unobserved variables do not change over the period, then omitting them from the regression will not affect the results. Other independent variables include the change in income over the period, change in employment status, change in marital status, change in disability of the child, and change between urban and rural areas, as well as the starting values of these variables and the starting values of the measures of child welfare.

Variables were also included to control for possible interviewer bias. The NLSY data include information on the race, gender and educational attainment of interviewers, as well as whether the interviewer was terminated by the National Opinion Research Center. The variables used to control for possible bias indicate any change in these interviewer characteristics. It is possible that some interviewers might have had preconceived ideas about rental or owner-occupied housing, with these ideas possibly influencing how they asked questions or interpreted answers. Interviewer bias appeared to have the greatest impact on the index of home environment. Averaging over 2- and 4-year time horizons and over the two measures of home environment, controlling for interviewer bias reduced the measured homeownership effect by 15%. The possibility of interviewer bias in the NLSY data has been studied by other researchers (Huang 2002).

Table 4 shows the coefficients of the homeowner variables using 2-year and 4-year time horizons. Only 3 of the 24 coefficients are statistically significant at the 5% level, and of these only one has the sign that would be expected if ownership improved child welfare. The signs of 13 of the 24 coefficients indicate that ownership improves child welfare. Overall, the results do not show any clear evidence of an effect of homeownership on these measures of child welfare. Variables related to mobility, income and wealth, however, appear to have a large impact on these measures.[7]

Table 4: Regression Results, Change in Child Welfare.
(p values in parentheses)

Variable	Behavior	Math	Reading Recog.	Reading Comp.	Emotional Home Env.	Cognitive Home Env.
Over 2 years						
Own to rent	29.534	-0.0915	1.5215	1.1457	-14.111	-10.539
	(0.038)	(0.9421)	(0.1827)	(0.4245)	(0.075)	(0.21)
Rent to own	1.571	1.1147	1.7185	-0.8126	-1.631	0.052
	(0.877)	(0.2165)	(0.0358)	(0.4305)	(0.772)	(0.993)
N	8,440	7,684	7,596	6,034	11,421	10,466
R^2	.2474	.2108	.1123	.1798	.1097	.1123
Over 4 years						
Own to rent	72.458	2.4536	0.8089	1.2937	-26.401	-25.906
	(0.007)	(0.2672)	(0.6967)	(0.6246)	(0.099)	(0.126)
Rent to own	23.417	-1.1725	1.0195	-1.1389	4.918	10.364
	(0.158)	(0.3889)	(0.4255)	(0.468)	(0.62)	(0.329)
N	2,978	2,699	2,660	1,952	4,438	4,106

Continued on next page

[7]Complete regression results are available from the authors upon request.

Table 4 – continued from previous page

Variable	Behavior	Math	Reading R	Reading C	EHome Env.	CHome Env.
R^2	.3908	.2394	.1280	.2042	.2380	.2509

5. ECLS Data

Fryer and Levitt (2004) use data from the Early Childhood Longitudinal Study (ECLS) to examine the gap in average test scores between black and white children. Many past studies have found that the gap persists even after controlling for a wide variety of factors, but Fryer and Levitt (2004) find that the gap disappears after controlling for a small number of factors. We find that the gap in test scores between children of homeowners and renters also disappears after controlling for these same factors.

Data from the ESLS has only recently been made available. The study was conducted by the U.S. Department of Education and includes information from surveys of parents and teachers of over 20,000 children. Data are currently available on these children from their entry into school up to third grade. Information on housing ownership is available at the time the children were in first grade and third grade.

Table 5 shows the mean reading and math test scores for first graders and third graders whose parents are renters and owners. Table 6 shows the mean increase in scores between first grade and third grade for children who were in owner-occupied housing at both times, rental housing at both times, rental housing in first grade and owner-occupied housing in third grade, and owner-occupied housing in first grade and rental housing in third grade. "Other" includes families that exchange services for housing, do not pay for their housing, live in temporary housing, or have other arrangements. Of the first graders, 77.4% lived in owner-occupied housing and 18.9% lived in rental housing.

Of the third graders, 80.8% lived in owner-occupied housing and 17.1% lived in rental housing.

Table 5: Means of test scores by homeownership.

	First Grade		Third Grade		
	Reading	Math	Reading	Math	Science
Owner	72.95	59.21	113.35	89.61	37.34
Renter	62.80	51.72	100.97	79.93	31.35
Other	65.31	52.63	102.14	81.06	31.84
Scale	16-142	8-108	42-149	30-121	10-59
Total st. dev	21.20	15.80	20.81	17.36	9.75

Table 6: Means of improvement in test scores from first to third grade by homeownership.

	Reading	Math
Owned both times	40.58	30.56
Rented both times	38.63	28.58
Owned, then rented	36.16	29.20
Rented, then owned	41.05	29.49
Other	36.91	29.32
Total st. dev.	16.87	11.64

Table 7: Regression results, test scores. (p values in parentheses)

	First Grade		Third Grade		
	Reading	Math	Reading	Math	Science
Owner	0.254	0.268	1.12	0.72	0.47
	(0.737)	(0.638)	(0.137)	(0.258)	(0.173)
N	5,031	5,031	4,998	4,998	4,998
R^2	.200	.186	.253	.233	.272

Children of homeowners consistently score higher than children of renters, and children who move from rental to owner-occupied housing improve more than children who move in the other direction.

Table 7 shows the results of regressing the level of test scores on a dummy variable indicating homeownership.[8] Table 8 shows the results of regressing the improvement in

[8]We also control for parent's educational level and socioeconomic status, the age of the mother at

Table 8: Regression results, improvement in test scores. (p values in parentheses)

	Reading	Math
Owned, first grade	0.239	-0.234
	(0.761)	(0.664)
Owned, then rented	-2.848	0.165
	(0.082)	(0.883)
Rented, then owned	1.804	-0.242
	(0.158)	(0.783)
N	4,973	4,973
R^2	.0294	.0384

test scores on dummy variables indicating whether the family lived in owner-occupied housing when the child was in first grade, whether they moved from owner-occupied to rental housing, and whether they moved from rental to owner-occupied housing. The ownership effect on the level of scores is not statistically significant in any of the regressions, and the parameter estimates are small. The largest measured effect, for third grade reading scores, indicates that children of homeowners score 0.05 standard deviations higher than the children of renters. Ownership when the child is in first grade has a negative effect on math score improvement and a positive effect on reading score improvement, but these results are also statistically insignificant. For reading scores, moving from owning to renting has a negative effect and moving from renting to owning has a positive effect, but the opposites are the case for math scores. Again, the coefficients are small and statistically insignificant.

6. Conclusion

Tax incentives and subsidies to promote homeownership amount to over $100 billion per year in the U.S. This level of subsidy can be justified if homeownership produces positive

the time her first child was born, the child's birthweight, whether the family speaks English at home, whether the child is adopted, whether the child's parents attend PTA meetings, the number of books in the child's home, race, and other factors. Complete regression results are available from the authors on request.

externalities, such as higher levels of welfare for children.[9] Our findings indicate that the evidence of well-defined benefits of homeownership is weaker than previous researchers have found.

Using the PSID data, we find that after controlling for residential mobility and wealth, there is no evidence of an effect of homeownership on high school dropout rates. Using the PUMS data, we find that the homeownership effect is weaker for apartments and mobile homes than for houses, calling into question the idea that it is ownership itself that has an effect. We also find that for long tenure lengths, homeownership increases high school dropout rates. Using the NLSY79 data, we find that, controlling for treatment effects, the evidence of a homeownership effect is very weak. We also find that, with very limited information about interviewers, controlling for interviewer bias weakens the measured homeownership effect on the home environment. Finally we find that the effect of vehicle ownership is as large or larger than the homeownership effect.

Finally, we look at the effect of homeownership on reading and math test scores using the ECLS data. We do not find evidence that homeownership improves test scores.

References

Aaronson, Daniel. 2000. A Note on the Benefits of Homeownership. *Journal of Urban Economics*, 47, 356–369.

Ashenfelter, Orley. 1978. Estimating the Effect of Training Programs on Earnings. *Review of Economics and Statistics*, 60, 47–57.

Ashenfelter, Orley, & Card, David. 1985. Using Longitudinal Structure of Earnings to

[9] On the other hand, homeowner subsidies might be the result of a political system that simply shifts resources to groups, like homeowners, with political influence. If this is the case, then the findings of social scientists will be less relevant in setting policy.

Estimate the Effect of Training Programs. *Review of Economics and Statistics*, 67, 648–660.

Buckley, Jack, & Shang, Yi. 2003. Estimating policy and program effects with observational data: the differences-in-differences estimator. *Practical Assessment, Research and Evaluation*, 8. Retrieved February 28, 2005 from http://PAREonline.net/getvn.asp?v=8& n=24.

Conwell, Russell H. 1915. *Acres of Diamonds*. New York: Harper and Brothers, 1915.

Einhorn, Robin. 1991. *Property Rules: Political Economy in Chicago, 1833-1872*. Chicago: University of Chicago Press, 1991.

Elsinga, Marja, & Hoekstra, Joris. 2004. Homeownership and Housing Satisfaction: A Study of the Literature and and Analysis of the European Community Household Panel. *Working Paper, Cambridge University*. Retrieved February 28, 2005 from http://www.enhr2004.org/files/papers/Elsinga,%20M.%20-%20Home%20ownership%20and%20housing%20satisfaction.pdf.

Ely, Richard T. 1926. The City Housing Corporation and Sunnyside. *Land Economics*, 2, 181–.

Flatau, Paul, Matt Forbes, & Hendershott, Patric. 2003. Homeownership and Unemployment: The Roles of Leverage and Public Housing. *NBER Working Paper number 10021*.

Fryer, Ronald, & Levitt, Steven. 2004. Understanding the Black-White Test Score Gap in the First Two Years of School. *The Review of Economics and Statistics*, 86, 447–464.

Green, Richard, & Hendershott, Patric. 2001. Home-ownership and Unemployment in the US. *Urban Studies*, 38, 1509–1520.

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

Haines, Michael, & Goodman, Allen. 1992. Housing Demand in the United States in the Late Nineteenth Century: Evidence from the Commissioner of Labor Survey, 1889/1890. *J. Urban Econ.*, 31, 99–122.

Haurin, Donald, Toby L. Parcel, & Haurin, R. Jean. 2002. Does Homeownership Affect Child Outcomes? *Real Estate Economics*, 30, 635–666.

Haveman, Robert, & Wolfe, Barbara. 1984. *Succeeding Generations: On the Effects of Investments in Children*. New York: Russell Sage Foundation, 1995.

Huston, Reeve. 2000. *Land and Freedom*. Oxford: Oxford University Press, 2000.

Ineichen, B., & Hooper, D. 1974. *Mental Health and The Built Environment*. London: Taylor and Francis, 1974.

Jefferson, Thomas. 1984. *Thomas Jefferson: Writings*. New York: Library of America, 1984.

Locke, John, & (Editor), Peter Laslett. 1967. *Locke: Two Treatises of Government*. Cambridge: Cambridge University Press, 1967.

Miwa, Yoshiro, Matthew Chambers Carlos Garriga, & Schlagenhauf, Don E. 2004. Accounting for Changes in the Homeownership Rate. *Working Paper No CIRJE-F-312, CIRJE F-Series from CIRJE, Faculty of Economics, University of Tokyo*.

Munch, Jakob, Michael Rosholm, & Svarer, Michael. 2003. Are Home Owners Really More Unemployed? *Working Paper, Department of Economics, University of Aarhus*, number 2003–15.

Oswald, Andrew. The housing market and Europes unemployment: a non-technical paper. *(unpublished).*

Rohe, William, Shannon Van Zandt, & McCarthy, George. Oct. 2001. The Social Benefits and Costs of Homeownership: A Critical Assessment of the Research. *Joint Center for Housing Studies LIHO-01.12.*

Saunders, Peter. 1990. *A Nation of Home Owners.* London: Unwin Hyman, 1990.

Thernstrom, Stephan. 1964. *Poverty and Progress: Social Mobility in a Nineteenth Century City.* New York: Atheneum, 1964.

Thernstrom, Stephan. 1971. *The Other Bostonians: Poverty and Progress in the American Metropolis, 1880-1970.* Cambridge: Harvard University Press, 1971.

United States Congress, Senate. 1890. *Congressional Record.* v. 21 part 1 p. 764. Senator George of Mississippi, 51st Congress, 1st Session, January 22.

Wehrwein, George, & Woodbury, Coleman. 1931. Tenancy Versus Ownership as a Problem in Urban Land Utilization. *Annals of the American Academy of Political and Social Science*, 148, 184–198.

Zhan, Min, & Sherraden, Michael. 2003. Assets, Expectations, and Childrens Educational Achievement in Female-Headed Households. *Social Service Review*, 77, 191–211.