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Amelia M. Biehl
William H. Hoyt

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The Taxpayer Relief Act of 1997 and Homeownership: Is Smaller Now Better?

Abstract

Prior to 1997, homeowners under 55 were allowed to defer capital gains taxes from a home sale if they bought another house at least as expensive, while those over 55 received a capital gains exclusion regardless of the cost of their new home. The Taxpayer Relief Act of 1997 (*TRA97*) eliminated this differential tax treatment. We exploit the differential treatment before 1997 to uncover *TRA97*'s effects. Comparing homeowners under 55 before and after 1997, we find that those who moved after 1997 are twice as likely as to list "seeking less expensive housing" as a reason for moving, 8 percent less likely to own their residences and 9 percent less likely to live in a single family home.

William H. Hoyt
Department of Economics and
Martin School of Public Policy
Gatton College of Business and Economics
University of Kentucky
Lexington, KY 40506
whoyt@uky.edu

Amelia M. Biehl*
Department of Economics
University of Southern Indiana
Evansville, IN
abiehl@usi.edu

*Corresponding author

Introduction

While there is a lengthy literature on the federal tax-subsidy to owner-occupied housing, less attention has been paid to another aspect of the tax code that provides favorable treatment of housing. Prior to 1997, the U.S. Federal Income Tax Code allowed homeowners aged less than fifty-five to rollover capital gains taxes from the sale of a home if they bought up -- that is, if they purchased another house within two years that was at least as expensive as their previous home. Homeowners age fifty-five and older were treated differently, as they received a one-time capital gains tax exclusion from the sale of an owner-occupied home, up to \$125,000. In 1996, the U.S. Office of Management and Budget (OMBA) estimated tax expenditures of \$5.2 billion from the exclusion of capital gains from taxation for those over age fifty-five and \$14.4 billion from the deferral (rollover) of capital gain taxation for those under age fifty-five. To give some perspective, the tax expenditure associated with the deductibility of state and local property taxes was estimated to be \$15.9 billion and the expenditure from the deductibility of mortgage interest payments was \$47.5 billion in 1997.¹

With the passage of the Taxpayer Relief Act of 1997 (*TR497*), the differential treatment of homeowners over and under the age of fifty-five was eliminated. After 1997, the first \$250,000 (\$500,000) in capital gains from the sale of a single (married) owner-occupier's primary residence is tax exempt, regardless of the homeowner's age and whether they purchase more or less housing following the sale of their residence. For most homeowners, this effectively eliminated capital gains taxation from the sale of a primary residence, as the median home price was less than the exclusion amount. In addition, *TR497* lowered the marginal tax rate applied to long-term capital gains from any assets, including housing.

The incentives created by federal tax code prior to 1997 for households under age fifty-five

¹ *Statistical Abstract of the U.S.*, 1997, Table No. 521, p. 338.

to purchase a more expensive house than their previous one, or “buy up” to defer capital gains taxes have been of particular interest to economists. If, instead, a homeowner bought a less expensive home or “bought down” and had a capital gain, taxes were paid on the difference between the values of two homes up to the maximum of the capital gain. Thus, an incentive to buy more expensive homes as well as to own, not rent, was created.

In addition to the incentive to “buy up”, the differential tax treatment of homeowners under age fifty-five from those older than fifty-five may lead to a “lock-in” effect – the incentive for homeowners under age fifty-five to defer selling their home if they desire a less expensive one or to switch to the rental market. The term “lock-in” often refers to stockholders retaining appreciated stocks in an effort to avoid capital gains taxation. Most recently, Sinai and Gyourko (2004), and Lang and Shackelford (2000) use the changes in capital gains tax rates associated with *TR497* to find capitalization of capital gains taxes in stock prices. Guenther (1999) also studies *TR497* and finds evidence consistent with the idea that shareholders who anticipated capital gains tax reductions delayed selling appreciated stock. This being the case, the pre-*TR497* differential taxation of capital gains should be expected to reduce the mobility of those under the age of fifty-five.

In this study we use data from both before and after the enactment of *TR497* to examine its impact on both household mobility and housing consumption. This is in contrast to studies including Hoyt and Rosenthal (1990, 1992), Burman et al. (1996), Newman and Reschovsky (1987) and Sinai (1998) that use data from well before 1997 to examine the impacts of changes in capital gains taxation on housing consumption or household mobility. Only two other studies of which we are aware, Bier et al. (2000) and Cunningham and Engelhardt (2007), have examined this law using data after *TR497*'s enactment.

We examine the impacts of *TR497* on the likelihood that households affected by *TR497* move by exploiting the difference in treatment of those under and over age fifty-five before *TR497*

to do a difference-in-difference analysis of the impacts of *TR497* on housing decisions. This is similar to what Cunningham and Engelhardt (2007) did using data on households from the *Current Population Survey (CPS)*. While the *CPS* provides information on whether the household has recently moved, it does not provide information about the characteristics of a respondent's housing. Our source of data, the *American Housing Survey (AHS)*, provides much more information about both housing characteristics and the reasons a household had for moving. Unlike Cunningham and Engelhardt, we have what we believe is a good proxy for whether households moved down, their responses to a question about their reason for moving. We, then, can better determine whether *TR497* did, in fact, reduce the "lock-in" of households into larger homes than they desired, providing additional identification of the impact of *TR497* on the "lock-in" effect. We examine the effects of *TR497* both immediately after its passage, in 1998-1999, as well as several years later, 2002-2005, in an effort to uncover whether the effects of *TR497* are purely transitory or whether they have a lasting impact on the housing market.

The information from the *AHS* on housing characteristics, including whether the household owns or lives in a single-family residence, enables us to address the issue examined by Hoyt and Rosenthal (1990, 1992) and Burman et al. (1996) -- how changes in capital gains taxation affected the consumption of housing, an issue not examined by either of the "post *TR497*" studies by Bier et al (2000) and Cunningham and Engelhardt (2007).

As a result of *TR497*, some of the previous homeowners under age fifty-five who purchased more expensive homes prior to 1997 are expected to purchase less expensive homes after 1997, as this legislation eliminated the incentive to purchase more housing to avoid capital gains taxes. Further, households under age fifty-five are expected to be more likely to move and, specifically, to move down. While it is true that homeowners over age fifty-five were affected by *TR497*, as it increased the level of capital gains exempt from taxation and lowered capital gains tax rates, we do

not expect these changes to lead to significant changes in their behavior in housing markets, unlike our expectations for those under age fifty-five. Exploiting the fact that *TRA97* differentially affects those over and under fifty-five allows identification of some of the effects it has had on the housing market. Specifically, this allows us to see if homeowners under age fifty-five, who are no longer locked-in to their current level of housing consumption, moved down after 1997.

Our empirical evidence on mobility, consistent with Cunningham and Engelhardt (2007), suggests that homeowners under age fifty-five are more likely to move. Perhaps more telling of the impacts of *TRA97* is that while households under the age of fifty-five are more likely to move after 1997, the difference appears to be attributable entirely to increases in the likelihood of moving to less expensive residences after 1997. Homeowners under age fifty-five who move after 1997 are about twice as likely as homeowners under the age of fifty-five before 1997 to list “seeking less expensive housing” as a reason for moving, an effect that does not disappear over time.

Further, we find evidence that households affected by *TRA97* are less likely to be locked-in to “mismatched” housing, by which we mean a level of housing consumption that does not reflect their current demand. Specifically, we find that homeowners under age fifty-five affected by *TRA97* are eight percent less likely to own their residences in the two years after *TRA97*'s enactment, an eleven percent decrease in the homeownership rate. In addition, these homeowners are also about nine percent less likely to live in a single family home. However, we find no evidence that households are still mismatched in 2002-2005.

We proceed as follows: in the next section we discuss the effects of capital gains taxation on housing consumption. The third section discusses our data while the fourth section presents our empirical model and the results of our estimation. The fifth section reporting results from our falsification test. Finally, our last section offers some concluding remarks.

The Impacts of Capital Gains Taxation on Housing Markets

In this section we briefly describe the impact that capital gains taxation has on the after-tax price of housing and, through its impacts on the after-tax price of housing as well as wealth, its impacts on housing consumption and mobility. After *TRA97*, with a few exceptions, homeowners do not pay capital gains taxes on the sale of their primary residence.² Prior to 1997, capital gains taxes are due if a homeowner under age fifty-five purchases a less expensive home (moves down). Then, ‘young’ homeowners (those under the age of fifty-five) who bought down pay capital gains taxes in the amount of

$$T = \min[tG, t(V^o - HR_o)] \quad (1)$$

where T is total capital gains taxes paid, t is the marginal income tax rate facing an owner-occupier, G is the capital gains from the sale of the home, V^o is the sales price of the home, H is the stock of housing in the home, and R_o is the rental cost of owner-occupied housing as defined by Rosen (1979).

Because the capital gains taxes paid on the sale of a previous home depends on the household’s current choice of housing, homeowners face different prices of housing depending on the quantity of their new housing consumption relative to their previous consumption. This is illustrated in *Figure 1*, where X represents all other goods, Y is income, P is the price of housing and r is the household’s discount rate. *Segment 1* illustrates the budget constraint for a homeowner who buys a more expensive home and therefore faces the price R_o . *Segment 2* corresponds to a homeowner who moves down but considers a house of value such that they do not pay tax on the full capital gain ($V^o - HR_o < G$). This being the case, increases in housing consumption reduce the amount paid in capital gains taxes and the effective price of housing is $R_o(1-t)$ on this section. Finally, for the homeowner whose capital gain exceeds the difference between the value of their previous home and

²Homeowners are still required to pay capital gains taxes on homes that are not their primary residence and homes that they have not lived in for two of the last five years. In cases where their realized gain is larger than their exclusion amount they owe taxes on the difference.

their current, less expensive home, small changes in housing do not change the amount of capital gains taxes paid making the price R_c . This case is represented by *Segment 3* in the figure.

Some homeowners who, prior to 1997, purchased a home of approximately equal value to their previous home may have chosen to buy a less expensive home than their previous one in the absence of capital gains taxation. An example of this phenomenon is found in *Figure 2*, which contains both the pre-1997 and post-1997 budget constraints for a household under fifty-five with a capital gain from the sale of a home. While this household located at the “kink” under the pre-1997 budget constraint, that is the value of its current and previous houses are the same, under the post-1997 linear budget constraint the household will clearly purchase less housing.

Data

The data for our analysis comes from the American Housing Survey (*AHS*), which contains detailed housing characteristics, demographic information about household heads and their households, and information about recent moves. Metropolitan surveys are available for 1995, 1996, 1998, 2002 and 2004. In these five years, between six and fifteen areas were surveyed annually, with at least 3,200 housing units from each area. While samples are taken from the same metropolitan areas for some of the years, this is not a longitudinal data set -- that is, we do not observe the same households in more than a single year. We also use a subset of the 1995, 1999 and 2003 *AHS* National survey. Including only observations with geographic identifiers from these waves leaves us with data on houses in six of the largest metropolitan areas. In an effort to ensure that our treatment group and comparison group do not have differential trends, we also restrict the sample to those between the ages of forty-five and sixty-five, those reasonably near pre-*TRA97* age cut-off point. Similar to Cunningham and Engelhardt (2007), we exclude householders who are exactly age fifty-five. Therefore, our treatment group includes homeowners age forty-five to fifty-four and our comparison group is made up of homeowners age fifty-six to sixty-five.

Unfortunately, unlike earlier waves of the *AHS*, the waves from the 1990's do not report the value of the household's previous home. Thus, unlike Hoyt and Rosenthal (1990, 1992), we cannot directly determine if homeowners actually moved down. However, we can exploit a number of the questions asked in the *AHS* to indirectly address the issue of whether a household was likely to have purchased a more or less expensive home.

Our primary measure of whether a household moved down is their response to a question regarding the reason why they moved. One of their choices is "a desire for a less expensive home." Here, we treat a household choosing this as reason for moving as a household that did, in fact, move down. While we concede that "a desire for a less expensive home" may not necessarily mean they are living in a less expensive home, we still believe that this response is a good indication that the household is likely to have moved down. Specifically, we find it very unlikely that a household would list this as a reason for having moved if it bought a more expensive home. It is also possible that households that do, in fact, move down may not list "a desire for a less expensive home" as a reason for buying down. To the extent that this is the case, we would be underestimating the number of households that move into less expensive homes following *TRA97*.³ Other reasons for moving, such as changes in employment or financial reasons may also result in buying down. However, since households can list multiple reasons for moving, our concerns about alternative reasons are somewhat reduced.

The *AHS* provides other measures of downward movement and "mismatch" that enable us to address the question of whether a household moved down. The *AHS* includes information about previous and current tenure, which is used to examine changes in the probability that homeowners choose to rent rather than own their primary residence. Homeowners under age fifty-five are expected to be less likely to own their home after 1997, as they can now shift to renting

³ We thank an anonymous referee for bringing this point to our attention.

without paying a capital gains tax. We also explore changes in the probabilities of a homeowner moving to a single family home. In this sample, the average price of a single family home is greater than that of any other owner-occupied housing. Therefore, young previous homeowners are expected to be less likely to own a single family home after *TR497*.

While individually none of these measures is perfectly correlated with buying a less expensive home, we believe that together evidence of changes in the desire to live in a less expensive home, renting rather than owning and purchasing a single-family dwelling provide a good measure of whether households under fifty-five years of age are more likely to buy down after *TR497*.

The variables *TR497*₁ and *TR497*₂ are designed to capture the effects of the Taxpayer Relief Act of 1997. *TR497*₁ is an indicator variable equal to one if a householder is under age fifty-five and the year is 1998 or 1999. This variable is designed to capture the effects of *TR497* on the housing market immediately after its enactment. Similarly, *TR497*₂ is an indicator variable equal to one if a household is under age fifty-five and the year is 2002, 2003, or 2004 and is designed to capture any lasting effects associated with *TR497*. Again, we expect homeowners under age fifty-five to be more likely to move down or move to renting immediately after 1997, as they no longer have a tax incentive to move up. Similarly, homeowners who previously purchased a more expensive house to avoid capital gains taxation are expected to move down immediately after 1997.

In constructing these *TR497* variables homeowners over age fifty-five, those that may have moved down without penalty prior to 1997, serve as the comparison group. Although this tax legislation did, in fact create a “natural experiment,” as homeowners under and over the age of fifty-five went from being treated completely differently by the tax code to exactly the same, we cannot deny the fact that *TR497* also changed the tax treatment of owner-occupied housing for households over age fifty-five as well. The exemption limit amount for all homeowners is \$250,000 or \$500,000 depending on their marital status, an increase from \$125,000 for homeowners over the age of fifty-

five, with the exemption no longer limited to once in a lifetime. In addition, *TR497* eliminated the deferral of taxes with all gains on sales above the exclusion taxed in the year they are sold. Finally, *TR497* lowered the long-term capital gains tax rates from fifteen and twenty-eight percent to ten and twenty percent. While it is not the case that those over the age of fifty-five were unaffected by *TR497*, as their housing decisions may be influenced by it, it is certainly the case that *TR497* has a different impact on the incentives of homeowners over and under the age of fifty-five to move and the amount of housing they purchase. Thus, our results are best interpreted as the impacts of *TR497* on the housing market behavior of homeowners under age fifty-five *relative* to those over age fifty-five.

Observed Differences across Time and the Age of Homeowners

Those who moved in 1997 could use the old or the new capital gains tax rules. Therefore, in an effort to exclude homeowners who moved in 1997 from the sample and to ensure consistency, to be considered a mover the householder had to report moving in the sample (calendar) year.

Table 1 summarizes variable means by homeowner age and the year of the sample. In *Table 1a* we contrast the differences in the characteristics between those age forty-five to fifty-four with those age fifty-five to sixty-five before *TR497* (1995-1996) and shortly after it (1998-1999). *Table 1b* reports the variable means when consider the same sample before *TR497*, but our sample after it is from a later period (2002-2004). By dividing the sample after *TR497* into these two subsamples we are able to discover whether or not the effects of *TR497* on housing markets are transitory.

From *Table 1a* we can see that about three percent of the sample of those under the age of fifty-five before *TR497* reported moving due to a desire for a less expensive home, while almost seven percent of the sample under the age of fifty-five after *TR497* reported moving for a less expensive home. Four percent more recent movers listed this reason for moving immediately after *TR497* than did prior to *TR497*, a difference that is significant at the five percent level. For the

sample of those over the age of fifty-five, as expected, the difference in these percentages was not statistically different before and after *TR497*, consistent with *TR497* not affecting those over age fifty-five. Therefore, as can be seen in the “difference in difference” column, column (g), after 1997 previous homeowners under age fifty five are 5.4 percent more likely to “desiring a less expensive residence” as a reason for moving than those over age fifty-five.

Table 1a also shows the fraction of owner-occupiers and the fraction of previous homeowners living in a single family home. The fraction of owner-occupiers under age fifty-five decreased from 74.6 percent in 1995-1996 to 70.6 percent in 1998-1999, a difference that is significant at the five percent level. Consistent with our expectation, there is no significant difference in the likelihood of owner-occupation for previous homeowners over age fifty-five. The percentage of previous homeowner under age fifty-five living in a single family home also decreased from seventy-two percent before 1997 to sixty-five percent after *TR497*. Again, there is no statistical difference in the likelihood of residing in a single family home before and after 1997 for those over age fifty-five. Nonetheless, changes in this probability will be examined further in the next section, where we control for other aspects that may affect a household’s reason for moving.

As mentioned, *Table 1b* reports the differences in previous homeowners before *TR497* and several years after, specifically between 2002 and 2004. If *TR497* only had a transitory effect on the housing market, then the likelihood of reporting “moving for a less expensive home,” owner-occupation and residing in a single family home should not change between 1995-1996 and 2002-2004. As can be seen in column (c) the probability of a previous homeowners under age fifty-five moving for a less expensive residence increased from about three percent prior to 1997 to about seven percent after *TR497*, a change in likelihood consistent with the effects of *TR497* not being entirely transitory. Again, there is no statistical difference for those over age fifty-five.

Table 1b also shows the fraction of owner-occupiers and the fraction of previous homeowners residing in a single family residence. The rate of owner-occupation for previous homeowners under fifty-five decreased from seventy-five percent to sixty-seven percent from 1995-1996 to 2002-2004. However, there is also some change in the owner-occupation rate of previous homeowners over fifty-five. Therefore, according to column (g), previous homeowners under age fifty-five are about four percent less likely to be owner-occupiers than those over fifty-five, a difference that is significant at the ten percent level. Those under and over age fifty-five are less likely to reside in a single family home, and the difference between the two is not statistically different. However, these too need to be examined with more rigor, as other variables that may affect the reason a household moves need to be controlled for.

The Empirical Model

While our simple difference-in-difference exercise suggests that homeowners under the age of fifty-five are more like to move down after *TR497*, it does not reveal whether the movement downward is simply due to changes in sample composition or if *TR497* is, in fact, responsible for these differences. To examine this question, we estimate a number of probit models that control for important determinants of housing demand that may well differ between the samples before and after *TR497* while exploiting the differential treatment of *TR497* on older and younger homeowners using difference-in-difference estimation.

Summary of Specifications

After *TR497* households are no longer subject to taxation on capital gains less than \$500,000 for a married couple (\$250,000 for single household) even if they purchase less expensive homes. Therefore, we expected them be more mobile. As an initial test of this prediction, we estimate a probit model where the dependent variable equals one if the household moves. Explanatory variables such as age, race, gender, marital status, number of children, education and income are

included. $TRA97$ is accounted for via an indicator variable equal to one if the household head is under fifty-five years of age and therefore has not had a chance to purchase another residence without being subject to capital gains taxation, and the year is after 1997. Again, in an effort to measure both transitory and longer-term effects of $TRA97$, we use data both from immediately after $TRA97$'s enactment (1998-1999) as well as data from several years later (2002-2004). More formally, we estimate a model of the form

$$P(\text{Move} = 1)_{it} = \beta_o + \beta_1 TRA97_{1it} + \beta_2 TRA97_{2it} + \beta_3 A_{it} + \beta_4 D_{it} + Year_t + \varepsilon_{it} \quad (4)$$

where the subscript i and t denote householder i in year t . $TRA97_1$ equals one if the household head is under age fifty-five and it is immediately after the enactment of $TRA97$, either 1998 or 1999.

$TRA97_2$ equals one if the household head is under age fifty-five and it has been at least five years since the enactment of $TRA97$, which includes 2002-2004 in this sample. The term A_{it} represents indicator variables for the age of the primary householder (*Age* 50-54, *Age* 56-59, and *Age* 60+) while the term D_{it} is a set of additional variables describing the household. This set of variables indicates if the primary householder is female, Caucasian, married has completed high school and whether he or she has a Bachelors degree. Also included is the number of children under the age of eighteen in the household. In addition, in some specifications, we include a family-size adjusted measure of income, which is real family income divided by the square-root of household size.⁴ In a number of specifications we include the interaction of these variables with the year of the sample and the age of the householder.

While $TRA97$ should affect the overall likelihood of moving for those under the age of fifty-five, the legislation should only influence households who want to buy down, as those who want to buy up were never locked-in. We consider several ways to examine whether $TRA97$ induced home-

⁴ This square root scale is a version of the Organization on Economic Cooperation and Development (OECD) equivalence scales.

owners to purchase less expensive homes. Using a sample of previous homeowners who moved in the calendar year, we estimate several probit equations using their response to whether they listed wanting to buy down as a reason for moving as proxy for moving down.

In addition to examining the likelihood of moving or moving down as measured by a report of desiring less expensive housing, we also see if homeowners under age fifty-five respond to *TRA97* by making other choices generally consistent with buying down. After 1997, previous homeowners under the age fifty-five are expected to be less likely to choose homeownership, as they can now move to renting without paying a capital gains tax. Again, we estimate this choice with a probit model using only the sample of previous homeowners. In this case, the dependent variable equals one if a previous homeowner chooses to own and zero otherwise.

A similar probit model is utilized to see if young previous homeowners are less likely to make a single family home their primary residence post-*TRA97*. In our sample, the average price of a single family home is greater than that of any other owner-occupied housing. Again, after 1997 most homeowners can move down without a capital gains tax penalty, so they are expected to be less likely to choose a single family home.

Results

Capital Gains Taxation and Mobility

Homeowners affected by *TRA97* are expected to be more mobile after 1997, as those who would like buy down are no longer locked-in by capital gains taxation. As can be seen in column (a) of *Table 2*, neither of the two variables that we use to capture the effects of *TRA97*, *TRA97₁* and *TRA97₂*, are statistically significant. While one would expect *TRA97* to increase the probability of moving by inducing those homeowners who desire less housing to move, the results do not support this prediction for all households between ages forty-five and fifty-four.

If we narrow the sample to those between the ages of fifty-two and fifty-eight, a sample similar to that of Cunningham and Engelhardt (2002), and those living in MSA's with above-average house price indexes⁵ our results are quite different. As homeowners in above-average house price indexes MSA's have larger capital gains, they were more likely to be locked-in prior to *TR497*. The results of this estimation are found in column (b) of *Table 2*.⁶ As can be seen from our estimation of the coefficient for *TR497*, we find that those who were between the ages of fifty and fifty-four prior to 1997 are 2.2 percent more likely to move immediately after *TR497*'s enactment (significant at the five percent level). This represents an eighty-eight percent increase in the probability of moving for this sub-group, an increase comparable to the seventy-three percent change Cunningham and Engelhardt (2007) found in states in the top half of the house price appreciation distribution. However, the coefficient for *TR497*₂ is insignificant for this sample, so there is no indication that *TR497* has a lasting effect-- that is, there is no evidence that it increased mobility in 2002-2004.

Similarly, column (c) of *Table 2* shows a statistically significant impact of *TR497* on mobility, which includes interactions of year and MSA fixed effects. Due to data limitations, the year fixed effects are dummy categories for 1995-1996, 1998-1999 and 2002-2004, instead of a dummy for each year. However, the results are quite similar, suggesting that in the years immediately after *TR497* homeowners were 2.4 percent more likely to move, a ninety-six percent increase in the mobility rate for homeowners age fifty-two to fifty-eight in MSA's with above average house price appreciation.

Capital Gains Taxation and Buying Down

⁵ MSA house price indexes, which measure average price changes in homes purchased or securitized by Fannie Mae or Freddie Mac, were obtained from the Office of Federal Housing Enterprise Oversight, and means were computed for each year in the sample.

⁶*Tables 2-4* do not report all coefficient estimates. However, these are reported in tables in the *Appendix*.

Table 3 reports the results of our estimation of whether previous homeowners who moved in the calendar year reported desiring less expensive housing as a reason for moving. In all five of our specifications, we find a statistically significant impact of *TRA97* on the probability of buying down. Column (a) reports the results of our probit estimation of whether those households who moved reported desiring less expensive housing as a reason for moving. Our results suggest that a homeowner between the ages of forty-five and fifty-four who moved immediately after 1997 was 5.4 percent more likely to list moving for a less expensive residence as a reason for moving than a similar homeowner/mover age fifty-six to sixty-five prior to 1997. Dividing the marginal effect by the sample mean, we find that this represents an eighty-seven percent increase in the probability of choosing this as a reason for moving. We also find evidence that previous homeowners affected by *TRA97* are 4.7 percent more likely to choose wanting a less expensive place as a reason for moving five years after *TRA97*'s enactment, in 2002-2004, suggesting that the effects of *TRA97* are not solely transitory.

In column (b) we interact age categories with demographic variables and find similar results. Those affected by *TRA97* were eight percent more likely to move for a less expensive residence in 1998-1999 and almost six percent more likely to do so in 2002-2004.

Column (c) includes family size adjusted income, which is real family income divided by the square-root of household size. These results are similar, suggesting that previous homeowners affected by *TRA97*, who moved in the calendar year, are approximately eight percent more likely to move for a cheaper place in 1998-1999 and almost six percent more likely to do so in 2002-2004.

Column (d) interacts family size adjusted income with year and age dummies. Again we find that previous homeowners affected by *TRA97* are about eight percent more likely to move for a less expensive place in 1998-1999, an increase of 131 percent. Similar results are found in 2002-2004,

where previous owners are about six percent more likely to move for a cheaper place, an increase of one hundred percent.

Finally, column (e) includes MSA indicators. Consistent with our previous findings, those affected by *TRA97* are about twelve percent more likely to move for a less expensive residence in 1998-1999, representing a 187 percent increase in this likelihood. *TRA97* appears to still have an effect on the housing market several years after its passage, as affected homeowners are seven percent more likely to move for a cheaper place in 2002-2004, a 111 percent increase.

Column (f) of *Table 3* has similar results and includes MSA-year interactions. Data limitations prevent us from using dummies for each year in this specification, so year categories, 1995-1996, 1998-1999 and 2002-2004, are used instead. Our results suggest that homeowners affected by *TRA97* are about seven percent more likely to list wanting a cheaper place as a reason for moving in the two years following *TRA97*'s enactment, an increase of 106 percent. Similarly, affected recent movers are about four percent more likely to list this reason for moving in 2002-2005, a sixty-eight percent increase in the probability of moving to a less expensive residence.

Capital Gains Taxation and Housing Mismatches

In *Table 4* we report the results of our estimation of how *TRA97* affects our other measures of “mismatch” and buying down: the likelihood of renting and the likelihood of residing in a single-family dwelling. Our results are consistent with a reduction in housing consumption for those households affected by *TRA97* in 1998-1999. Based on our probit results reported in column (a), we find that recent movers who owned their previous home and were affected by *TRA97* are eight percent less likely to own a home in 1998-1999, an eleven percent decrease in the homeownership rate for this group. However, we do not find any evidence that these previous homeowners are less likely to be owner-occupiers five years after *TRA97*'s enactment. Similarly, when we include MSA-year interaction terms, as in column (b), affected previous homeowners in the recent mover sample

are about nine percent less likely to be owner-occupiers in 1998-1999, a thirteen percent decrease in the rate of owner-occupation. Again, we find no evidence that *TR497* affects the decision to be an owner-occupier in the years 2002-2004.

In 1998-1999, affected previous homeowners who recently moved are also nine percent less likely to move to a single family home according to the estimated marginal effects associated with column (c), representing a thirteen percent decrease in the likelihood of this group residing in a single family home. Again, we find no evidence that *TR497* is still affecting single family home sales in 2002-2004. When we include MSA-year interactions we obtain similar results. Previous homeowners in the recent mover sample who are affected by *TR497* are eight percent less likely to reside in a single family home in the two years after the enactment of *TR497*, which represents an eleven percent decrease in the probability of living in a single family home. However, we do not find evidence that *TR497* has an impact on the probability of living in a single family home five years after its enactment.

Overall, our results suggest that in 1998 and 1999, previous homeowners affected by *TR497* were more likely move, more likely to list wanting a less expensive residence as a reason for moving, and conditional on being in the recent mover sample, less likely to be owner-occupiers and less likely to live in a single family home. In contrast, we find no evidence that *TR497* increased the likelihood of households moving between 2002 and 2004, nor is there any evidence suggesting that those households affected by *TR497* are less likely to live in either owner-occupied or single-family homes during this period. However, we find evidence that recent movers affected by *TR497* were more likely to move for a cheaper place between 2002 and 2004, offering some indication that *TR497* has a lasting effect on downward mobility.

Falsification Test

To ensure that the age groups used in our analysis do not have differential trends that may be driving our results, we also report the results of falsification tests for each of our specifications. We should not see a differential trend between homeowners under and over age fifty-five in 1995 and 1996, as there was not a policy change that differentially affected them. To test this, we set up a fake treatment group in which homeowners under age fifty-five are “affected” by a fictitious 1996 policy change. The coefficient estimate for homeowners under age fifty-five in 1996 should be insignificant, if, in fact, our comparison groups do not have differential trends. The results of this estimation are reported in *Table 5*. The *false TR497* variable is not statistically significant at any traditionally acceptable level, giving us confidence that homeowners age fifty-six to sixty five are an acceptable comparison group for homeowners age forty-five to fifty-four.

Conclusion

The Taxpayer Relief Act of 1997 drastically changed the tax treatment of capital gains from the sale of a home for those under age fifty-five by effectively eliminating the capital gains tax burden for a homeowner’s primary residence. In contrast, the legislation did not significantly alter the tax treatment of housing for those over fifty-five, allowing for the use of difference in difference estimation to explore the effects of *TR497* on the housing market, specifically on homeowners under age fifty-five.

We find evidence that in the years 1998-1999, *TR497* increased the mobility of homeowners between the ages of fifty and fifty-four, specifically those who we expected to want to move down a priori. Further, consistent with what we would expect as a result of *TR497*, previous homeowners are more likely to move down in 1998-1999. Those affected by *TR497* were more likely to list wanting a less expensive home as a reason for moving, less likely to be owner-occupiers and less likely to reside in a single family home. While the data does not allow us to know with certainty

whether a household moved down, the evidence we find on the impacts of *TR497* suggests that *TR497* has induced homeowners to consume less housing in the two years following its enactment.

Previous homeowners who moved in the past year were also more likely to move to a less expensive home in 2002-2004, suggesting that *TR497* has a lasting effect on downward mobility. However, we find no evidence that *TR497* has a lasting impact on our measures of mismatch, owner-occupation and residing in a single family home.

The passage of *TR497* may well be expected to influence other aspects of the housing market. *TR497* expands the favorable tax treatment of housing, making it an even better investment after 1997. However, our analysis indicates that households under age fifty-five are more likely to spend less on their primary residence than they did previously. Chung (2006) notes that second home sales have increased drastically since 1997, and therefore, it may be that housing investment has increased, but not in the primary residence market, though this conjecture has yet to be explored rigorously.

Bier et al. (2000) notes that capital gains tax code prior to 1997, by encouraging homeowners to move up, also encouraged outward migration, as expensive homes within the city were difficult to find. If his assertion is correct, homeowners post-1997 are expected to move inside city limits, and lot sizes are expected to get smaller.

Finally, we have looked at the impact of *TR497* on mobility and housing purchases in the years immediately following 1997 and several years later. It appears as though homeowners who were locked-in to mismatched housing prior to 1997 readjusted in 1998-1999, increasing the mobility rate. However, *TR497* seems to have a more lasting effect on the decision of a recent mover to move to a less expensive unit.

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Table 1: Summary Statistics

Table 1a: Summary Statistics for 1995-1996 versus 1998-1999

	Age 45 to 54			Age 55 to 65			Difference in Difference
	Before TRA97 (1995-1996)	After TRA97 (1998-1999)	Difference	Before TRA97 (1995-1996)	After TRA97 (1998-1999)	Difference	
	(a) Mean	(b) Mean	(c) (b) - (a)	(d) Mean	(e) Mean	(f) (e) - (d)	
Less expensive residence as reason for moving	0.029	0.069	0.040**	0.081	0.067	-0.014	0.054*
Owner-Occupied	0.746	0.706	-0.040**	0.766	0.774	0.008	-0.048*
Single Family Home	0.715	0.651	-0.064***	0.679	0.645	-0.034	-0.030
White	0.881	0.824	-0.057***	0.894	0.847	-0.047***	-0.010
Female	0.375	0.431	0.056***	0.388	0.431	0.043*	0.013
Married	0.608	0.609	0.001	0.590	0.580	-0.010	0.011
Children (#)	0.609	0.744	0.135***	0.212	0.271	0.059*	0.076
Complete high school	0.925	0.930	0.005	0.841	0.849	0.008	-0.003
Have a bachelors degree	0.386	0.442	0.056***	0.263	0.317	0.054**	0.002
Family-size adjusted income	49642	54887	5245***	44206	47600	3394*	1851
Observations	2232	1196		1118	634		

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 1b: Summary Statistics for 1995-1996 versus 2002-2004

	Age 45 to 54			Age 55 to 65			Difference in Difference
	Before TRA97 (1995-1996)	After TRA97 (2002-2004)	Difference	Before TRA97 (1995-1996)	After TRA97 (2002-2004)	Difference	
	(a) Mean	(b) Mean	(c) (b) - (a)	(d) Mean	(e) Mean	(f) (e) - (d)	
Less expensive residence as reason for moving	0.029	0.067	0.038**	0.081	0.079	-0.002	0.040
Own	0.746	0.671	-0.075***	0.766	0.733	-0.033*	-0.042*
Single Family Home	0.715	0.660	-0.055***	0.679	0.630	-0.049**	-0.006
White	0.881	0.815	-0.066***	0.894	0.852	-0.042***	-0.024
Female	0.375	0.456	0.081***	0.388	0.452	0.064***	0.017
Married	0.608	0.566	-0.042***	0.590	0.579	-0.011	-0.031
Children (#)	0.609	0.670	-0.061**	0.212	0.131	-0.081***	0.020***
Complete high school	0.925	0.917	-0.008	0.841	0.904	0.063***	-0.071***
Have a bachelors degree	0.386	0.403	0.017	0.263	0.378	0.115***	-0.098***
Family-size adjusted income	49642	63564	13922***	44206	58705	14499***	-577
Observations	2232	1797		1118	961		

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 2
The Likelihood of Moving¹

Sample:	(a) Homeowners Age 45-65	(b) Homeowners Age 52-58 Above Average House Price Indexes	(c) ² Homeowners Age 52-58 Above Average House Price Indexes
Affected by <i>TR497</i> (1998-1999)	0.051 (0.79)	0.420** (2.05)	0.360* (1.81)
Marginal Effect		0.021	0.024
Sample Mean		0.025	0.025
Percent Change		84.0%	96.0%
Affected by <i>TR497</i> (2002-2004)	-0.008 (0.13)	0.102 (0.59)	0.071 (0.42)
Year Fixed Effects	Yes	Yes	Yes
x Demographics	Yes	Yes	Yes
x Income	Yes	Yes	Yes
x MSA Fixed Effects	No	No	Yes
Age Fixed Effects	Yes	Yes	Yes
x Demographics	Yes	Yes	Yes
x Income	Yes	Yes	Yes
Demographics	Yes	Yes	Yes
Family Size Adjusted Income	Yes	Yes	Yes
MSA Fixed Effects	Yes	Yes	No
Observations	60457	7165	7376
Log-likelihood value	-7066	-805	-826
Pseudo R-squared	0.0276	0.0592	0.0409

1. All specifications are estimated using probit models. Demographics includes marital status, number of children, educational attainment, race and sex. Absolute value of t-statistics in parentheses.

2. Due to data limitations, year category dummies (1995-1996, 1998-1999, 2002-2004) are used instead of a dummy for each year.

*significant at 10%; ** significant at 5%; *** significant at 1%

Table 3

The Likelihood of Moving to a Less Expensive House

	(a)	(b)	(c)	(d)	(e)	(f) ²
Sample	Recent Movers, Ages 45 - 65 ¹					
Affected by TR-497 (1998-1999)	0.526* (1.66)	0.749** (2.11)	0.745** (2.10)	0.820** (2.23)	1.149*** (2.70)	1.031** (2.39)
Marginal Effect	0.054	0.080	0.079	0.081	0.116	0.066
Sample Mean	0.062	0.062	0.062	0.062	0.062	0.062
Percent Change	87.1%	129.0%	127.4%	130.6%	187.1%	106.5%
Affected by TR-497 (2002-2004)	0.495* (1.75)	0.634** (2.02)	0.634** (2.02)	0.727** (2.25)	0.937** (2.51)	0.910** (2.40)
Marginal Effect	0.047	0.059	0.058	0.062	0.069	0.042
Sample Mean	0.062	0.062	0.062	0.062	0.062	0.062
Percent Change	75.8%	95.2%	93.5%	100.0%	111.3%	67.7%
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
x Demographics	Yes	Yes	Yes	Yes	Yes	Yes
x Income	No	No	No	Yes	Yes	Yes
x MSA fixed effects	No	No	No	No	No	Yes
Age Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
x Demographics	No	Yes	Yes	Yes	Yes	Yes
x Family Size Adjusted Income	No	No	No	Yes	Yes	Yes
Demographics	Yes	Yes	Yes	Yes	Yes	Yes
Family Size Adjusted Income (entered as quadratic)	No	No	Yes	Yes	Yes	Yes
MSA Fixed Effects	No	No	No	No	Yes	No
Observations	1596	1582	1582	1582	1426	1386
Log-likelihood value	-338	-326	-326	-320	-280	-281
Pseudo R-squared	0.1015	0.1316	0.012	0.1467	0.231	0.2178

1. All specifications are estimated using probit models and a sample of previous homeowners, ages forty-five to sixty-five who moved in the sample year. Demographics include marital status, number of children, educational attainment, race and sex. Absolute value of t-statistics in parentheses.

2. Due to data limitations, year category dummies (1995-1996, 1998-1999, 2002-2004) are used instead of a dummy for each year.

*significant at 10%; ** significant at 5%; *** significant at 1%

Table 4
The Effect of TR497 on Housing "Mismatch"

	(a) Owner-Occupied	(b) Owner-Occupied ⁵	(c) Single Family Home	(d) ² Single Family Home
Sample	Previous Homeowners			
Affected by TR497 (1998-1999)	-0.249** (2.23)	-0.258** (2.32)	-0.242** (2.30)	-0.225** (2.15)
Marginal Effect	-0.081	-0.085	-0.087	-0.080
Sample Mean	0.729	0.676	0.676	0.729
Percent Change	-11.1%	12.60%	-12.9%	-11.0%
Affected by TR497 (2002-2004)	-0.088 (1.06)	-0.095 (1.14)	-0.033 (0.41)	-0.030 (0.38)
Year Fixed Effects	Yes	Yes	Yes	Yes
x Demographics	Yes	Yes	Yes	Yes
x Income	Yes	Yes	Yes	Yes
x MSA Fixed Effects	No	Yes	No	Yes
Age Fixed Effects	Yes	Yes	Yes	Yes
x Demographics	Yes	Yes	Yes	Yes
x Family Size Adjusted Income	Yes	Yes	Yes	Yes
Demographics	Yes	Yes	Yes	Yes
Family Size Adjusted Income (entered as quadratic)	Yes	Yes	Yes	Yes
MSA Fixed Effects	Yes	No	Yes	No
Observations	7334	7334	7332	7332
Log-likelihood value	-3591	-3604	-3817	-3836
Pseudo R-squared	0.1615	0.1585	0.1737	0.1694

1. All specifications are estimated using probit models. Demographics include marital status, number of children, educational attainment, race and sex. Absolute value of t-statistics in parentheses.
 2. Due to data limitations, year category dummies (1995-1996, 1998-1999, 2002-2004) are used instead of a dummy for each year.
- *significant at 10%; ** significant at 5%; *** significant at 1%

Table 5: Falsification Tests

	<i>Falsification for Table 3: Likelihood of Moving</i>			<i>Falsification for Table 4: Likelihood of Moving to a Less Expensive House</i>						<i>Falsification for Table 5: Likelihood of Moving to Owner- Occupation or a Single Family Home</i>			
	(a)	(b)	(c)	(a)	(b)	(c)	(d)	(e)	(f)	(a)	(b)	(c)	(d)
TRA97 false	-0.028 (0.30)	-0.085 (0.23)	-0.085 (0.23)	-0.294 (0.64)	0.140 (0.23)	0.117 (0.19)	-0.213 (0.32)	-2.129 (1.56)	-2.129 (1.56)	-0.095 (0.84)	-0.095 (0.84)	-0.064 (0.58)	-0.064 (0.58)
Observations	7819	1902	1902	498	423	423	423	290	290	3339	3339	3347	3347
Log-likelihood value	-2034	-176	-176	0.0998	0.2332	0.2345	0.2673	0.6024	0.6024	-1557	-1557	-1650	-1650
Pseudo R-squared	0.0295	0.0753	0.0753	-81	-66	-66	-63	-30	-30	0.1684	0.1684	0.1891	0.1891

Figure 1: Budget Constraint for Homeowners under age fifty-five prior to 1997.

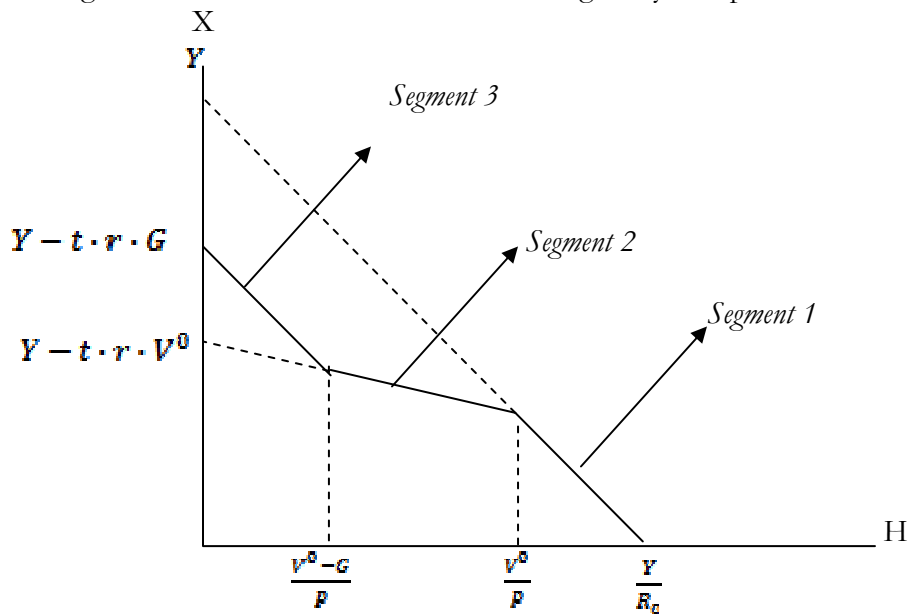
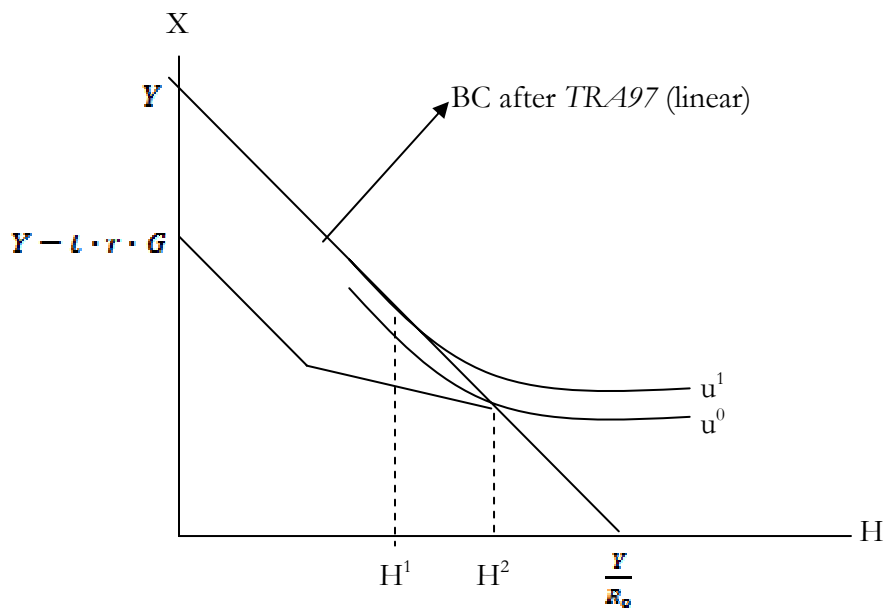


Figure 2: Budget constraint before and after TR497: Homeowners at the kink move down after 1997.



Appendix: Extended Tables

Table 3: Likelihood of Moving ¹

Sample:	(a) Homeowners Age 45-65	(b) Homeowners Age 52-58 Above Average House Price Indexes	(c) ² Homeowners Age 52-58 Above Average House Price Indexes ⁵
Affected by TRA97 1998-1999	0.051 (0.79)	0.420** (2.05)	0.360* (1.81)
Affected by TRA97 2002-2004	-0.008 (0.13)	0.102 (0.59)	0.071 (0.42)
Age 50 to 54	-0.163 (1.31)	0.442 (1.04)	0.464 (1.16)
Age 56 to 60	-0.276** (2.00)		
Age 60 to 65	-0.497*** (3.29)		
Married	-0.150** (1.97)	-0.422 (1.23)	-0.244 (1.36)
# Children	0.025 (0.74)	0.418** (2.52)	0.114 (1.02)
Complete High School	0.172 (1.35)	5.144*** (4.56)	0.624 (1.62)
Bachelors Degree	0.089 (1.28)	0.344 (1.15)	0.128 (0.76)
Female	-0.137* (1.84)	-0.080 (0.24)	0.015 (0.09)
Family-size adjusted real income	0.0000004 (0.42)	0.0000003 (0.64)	0.0000002 (0.08)
White	0.076 (0.76)	0.366 (0.86)	0.384 (1.57)
Observations	60457	7165	7376
Log-likelihood value	-7066	-805	-826
Pseudo R-squared	0.0276	0.0592	0.0409

1. All specifications are estimated using probit models. Demographics includes marital status, number of children, educational attainment, race and sex. Also included, but not reported are year and MSA dummies and interactions of demographic variables with year and age. Absolute value of t-statistics in parentheses.

2. Due to data limitations, year category dummies (1995-1996, 1998-1999, 2002-2004) are used instead of a dummy for each year.

*significant at 10%; ** significant at 5%; *** significant at 1%

Table 3: Likelihood of Moving to a Less Expensive House¹

	(a)	(b)	(c)	(d)	(e)	(f) ²
Affected by TRA97 1998-1999	0.526* (1.66)	0.749** (2.11)	0.745** (2.10)	0.820** (2.23)	1.149*** (2.70)	1.031** (2.39)
Affected by TRA97 2002-2004	0.495* (1.75)	0.634** (2.02)	0.634** (2.02)	0.727** (2.25)	0.937** (2.51)	0.910** (2.40)
Age 50 to 54	0.256* (1.86)	0.943 (1.46)	0.944 (1.46)	0.879 (1.34)	1.108 (1.61)	1.324* (1.90)
Age 56 to 60	0.514** (2.09)	0.786 (1.04)	0.782 (1.04)	0.672 (0.88)	0.802 (0.99)	1.220 (1.51)
Age 61 to 65	0.821*** (3.21)	1.381* (1.81)	1.397* (1.83)	1.094 (1.39)	1.156 (1.35)	1.230 (1.46)
Married	-0.296 (0.89)	-0.761* (1.92)	-0.742* (1.87)	-0.780* (1.83)	-0.989** (2.02)	-0.906** (2.42)
# Children	0.106 (0.63)	0.212 (1.07)	0.204 (1.02)	0.202 (0.96)	0.296 (1.19)	0.225 (1.00)
Completed High School	0.277 (0.54)	0.750 (0.99)	0.762 (1.01)	0.728 (0.94)	0.617 (0.75)	0.566 (0.86)
Bachelors Degree	-0.487 (1.31)	-0.403 (0.96)	-0.392 (0.93)	-0.413 (0.92)	-0.357 (0.68)	0.255 (0.70)
White	-0.167 (0.41)	0.006 (0.01)	0.019 (0.04)	-0.039 (0.08)	-0.219 (0.38)	0.360 (0.73)
Female	-0.327 (0.93)	-0.393 (0.97)	-0.389 (0.96)	-0.506 (1.22)	-0.446 (0.91)	-0.098 (0.28)
Family-size adjusted real income			-0.0000007 (0.29)	-0.0000002 (0.03)	-0.000005 (0.63)	-0.000009 (1.42)
Family-size adjusted real income squared			-0.0000000000007 (0.09)	-0.00000000001 (0.9)	-0.00000000002 (1.26)	-0.00000000002 (1.33)
Observations	1596	1582	1582	1582	1426	1386
Log-likelihood value	-338	-326	-326	-320	-280	-281
Pseudo R-squared	0.1015	0.1316	0.1323	0.1467	0.231	0.2178

1. All specifications are estimated using probit models and a sample of previous homeowners who moved in the sample year. Demographics include marital status, number of children, educational attainment, race and sex. Also included, but not reported are year and MSA dummies and interactions of demographic variables with year and age. Absolute value of t-statistics in parentheses.

2. Due to data limitations, year category dummies (1995-1996, 1998-1999, 2002-2004) are used instead of a dummy for each year.

*significant at 10%; ** significant at 5%; *** significant at 1%

Table 5: Likelihood of Moving to a Less Expensive House¹

	Owner-Occupied	Owner-Occupied ⁵	Single Family Home	Single Family Home ²
Affected by TRA97 1998-1999	-0.249** (2.23)	-0.258** (2.32)	-0.242** (2.30)	-0.225** (2.15)
Affected by TRA97 2002-2004	-0.088 (1.06)	-0.095 (1.14)	-0.033 (0.41)	-0.030 (0.38)
Age 50 to 54	0.343*** (2.58)	0.316** (2.40)	0.062 (0.47)	0.062 (0.47)
Age 56 to 60	0.274* (1.77)	0.251 (1.63)	0.241 (1.58)	0.244 (1.62)
Age 61 to 65	0.372** (2.02)	0.343* (1.88)	0.247 (1.39)	0.249 (1.42)
Married	0.873*** (9.42)	0.822*** (11.32)	0.899*** (10.16)	0.901*** (12.70)
# Children	0.120*** (2.61)	0.136*** (3.49)	0.282*** (5.69)	0.276*** (6.65)
Bachelors Degree	0.138 (1.52)	0.106 (1.49)	0.242*** (2.75)	0.158** (2.25)
White	0.579*** (4.65)	0.473*** (5.09)	0.427*** (3.39)	0.321*** (3.43)
Female	0.216** (2.37)	0.196*** (2.75)	-0.004 (0.05)	0.071 (1.02)
Family-size adjusted real income	0.00001*** (8.18)	0.00001*** (10.39)	0.000007*** (5.20)	0.000008*** (7.38)
Family-size adjusted real income squared	-0.0000000002*** (7.88)	-0.0000000002*** (7.97)	-0.0000000001*** (6.54)	-0.0000000001*** (6.62)
Observations	7334	7334	7332	7332
Log-likelihood value	-3591	-3604	-3817	-3836
Pseudo R-squared	0.1615	0.1585	0.1737	0.1694

1. All specifications are estimated using probit models and a sample of previous homeowners. Demographics include marital status, number of children, educational attainment, race and sex. Also included but not reported are year and MSA dummies and interactions of demographic variables with year and age. Absolute value of t-statistics in parentheses.

2. Due to data limitations, year category dummies (1995-1996, 1998-1999, 2002-2004) are used instead of a dummy for each year.

*significant at 10%; ** significant at 5%; *** significant at 1%

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