

**HOUSING WEALTH, FINANCIAL WEALTH, AND CONSUMPTION:
NEW EVIDENCE FROM MICRO DATA ¹**

by

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Abstract

Fluctuations in the stock market and in house values over the course of recent years have led to renewed economic policy debate as regards the effects of financial and housing wealth in the determination of household consumption patterns. This research assembles a unique matched sample of household data from the Survey of Consumer Finance and the Consumer Expenditure Survey to estimate the consumption effects of both financial and housing wealth. The micro-data permit numerous innovations in the assessment of wealth effects, including an analysis of the impact of wealth on both durable and non-durable consumption and a comparison of wealth effects as derive from gross versus after-debt measures of financial and housing wealth. Further, the research seeks to assess robustness of those estimates to deviations from trend and volatility in financial and housing wealth and among credit constrained and non-credit constrained households.

Overall, research findings indicate relatively large housing wealth effects. Among homeowners, the housing wealth elasticities are estimated in the range of .06 over the 1989 - 2001 period. In marked contrast, the estimated elasticities of consumption spending with respect to financial wealth are smaller in magnitude and are in the range of .02. Further, the estimated wealth elasticities appear robust to deviations from trend and volatility in the wealth measures. Research findings support the hypothesized behavioral distinction in household consumption spending across durable versus non-durable categories. Consumption propensities also diverge sharply across the credit constrained and non-credit constrained households. Finally, there is little difference in wealth elasticities derived from measures of home equity versus house values. Overall, research findings indicate that financial and real estate wealth accounted for 1-1/2 and 12-1/4 percent, respectively, of the growth in personal consumption expenditures over the 2001:Q1 – 2005:Q3 period. Accordingly, the research points to the sustaining influence of housing wealth on U.S. economic activity during a period of financial market weakness and suggests sizable economy-wide risks as could arise from some moderate retrenchment in house values.

I. Introduction

Recent years have witnessed widespread media attention and economic policy debate regarding the consumption effects of fluctuations in household financial and housing wealth. As is well-appreciated, stock prices have shown pronounced volatility over the course of the past decade, running up by 450 percent during 1990-2000 before falling back by a full one-third in the subsequent two years. The stock market collapse in 2000 and 2001 destroyed more than \$8 trillion in paper wealth and was arguably a cause of the 2001 recession. In contrast to the weakness in equity markets, house prices have moved up markedly in recent years. U.S. house values approximately doubled over the decade of the 1990s. In many metropolitan areas, house values doubled again during 2000-2005; last year, those gains were widespread as 25 U.S. states recorded double-digit house price increases. Indeed, home equity grew by about \$9.6 trillion during 2001-2004 to comprise more than one-half of the wealth of the typical U.S. household [Belsky & Prakken, 2004].² In a recent paper, Greenspan and Kennedy [2005] estimated that home equity extraction totaled \$383 billion in 2001 and \$552 billion in 2002, of which \$174 and \$214 billion, respectively, consisted of gross cash out refinance activity. According to Greenspan and Kennedy [2005], homeowners extracted an additional \$300 billion in home equity through cash-out refinancings in 2003. Those estimates have led analysts at the Federal Reserve and elsewhere to ascribe a critical role to housing wealth in the support of recent consumption activity.³ Notably, the refinance boom of recent years was supported by generational lows in mortgage interest rates and innovations in financial and mortgage markets that enabled

² By 2003, the value of home equity on household balance sheets exceeded the value of stocks directly owned by households by \$2.6 trillion (Belsky and Prakken (2004)). According to the 1998 Survey of Consumer Finances, financial wealth is concentrated in restricted accounts. In that regard, 84 percent of total stock market wealth is held by the top income quintile in the U.S.

³ In a speech to the Mortgage Bankers Association in 1999, Chairman Greenspan suggested that “One might expect that a significant portion of the unencumbered cash received by house sellers and refinancers was used to purchase goods and services...”. Greenspan further articulated the role of home equity extraction in support of U.S. economy activity in subsequent statements.

households to access their wealth in cheaper, faster ways.⁴ These dramatic trends spurred widespread interest in the effect of stock market and housing wealth on household consumption.

A well developed literature in finance has established a link between consumption and wealth shocks (e.g., Poterba and Samwick [1996], Juster et al [1999]). These models predict that unexpected wealth shocks change the permanent income of households and thereby affect the life-cycle pattern of savings and consumption (Lettau and Ludvigson [2004]). A companion literature has argued that shocks to different forms of wealth can elicit varying consumption responses (Lettau and Ludvigson [2004]; Case, Schiller, and Quigley [2005] and empirical studies have generally borne this out (Case, Schiller, and Quigley [2005]; Benjamin, et al., [2002]).

This research assembles a unique matched data sample from the Survey of Consumer Finance and the Consumer Expenditure Survey to estimate the consumption effects associated with real estate and financial wealth. The highly-detailed micro data enable us to shed new light on household consumption behavior in several important ways. Specifically, we assess household responses for different types of consumption spending (durable versus non-durable) and to different types of wealth shocks (financial versus primary housing versus other real estate). Further, the analysis compares estimated household consumption responses to changes in the market value of their asset holdings, as is customary in the literature, and to changes in wealth net of debt, which is consistent with theory. Finally, the analysis examines household responses over time so as to assess in the robustness of the estimated elasticities to the marked fluctuations in stock market and real estate valuations evidenced over the 1989 – 2001 period.

Overall, research findings indicate relatively large housing wealth effects. Among homeowners, the house value elasticities are estimated in the range of .06 over the course of the 1989 – 2001 study period and are highly significant throughout. In marked contrast, the

⁴ See Bostic and Surette (2001) for a discussion of some of these financial and mortgage market innovations.

estimated elasticities of consumption spending with respect to financial wealth, while highly significant throughout, are smaller in magnitude and are in the range of .02. Results from a sample of data pooled over the 1989 – 2001 study period indicate that the estimated financial and housing wealth elasticity estimates are robust to controls for deviation from trend and volatility in household financial and housing wealth.

Research findings further support the hypothesized behavioral distinction in household consumption spending across durable versus non-durable categories. In our cross-sectional analysis, house value is the most significant covariate with nondurable consumption, while the value of financial holdings is found to be most strongly associated with the level of durable good consumption. Also, the pooled regressions reveal significant support for durable goods consumption during periods of high volatility in financial wealth. Those results are consistent with the notion that durables serve to diversify the household's portfolio during periods of substantial (financial) wealth volatility; further, spending on durable goods may be predicated in part on unanticipated wealth increases, as suggested by the significant financial wealth volatility term. In the cross-sectional analyses, the estimated elasticity of non-durable goods spending with respect to house value fluctuations was close to .055, highly significant, and relatively stable across all other estimation years. The relative importance of housing wealth to non-durable consumption may be due to the fact that increases in house values are thought to be more permanent, leading households may change their routine non-durable purchasing patterns in response to such changes.

Consumption propensities also diverge sharply across the credit constrained and non-credit constrained households. Among credit constrained households, neither the financial wealth nor the housing value coefficients enter the model with a high level of statistical significance. Among non-credit constrained households, variations in financial wealth are typically significant in the determination of both durable and non-durable goods spending; in marked contrast, fluctuations in house values appear to be significant in the determination of non-durable goods

consumption. In the latter case, the house value elasticities appear to trend up a bit over time, from an estimated .050 in 1989 to .062 in 2001.

Finally, there is little difference between the estimates using home equity and those using house values. Indeed, in 2001, the estimated elasticity of non-durable consumption with respect to home equity is .044 in 2001, compared with an analogous house value coefficient of .055. This may imply that for most households a change in house value is roughly equivalent to a change in home equity. Results then do support the notion that homeowners are highly sensitive to the debt side of their positions and accordingly adjust consumption decisions to the net value of their housing assets.

The estimated consumption elasticity associated with housing wealth, when taken together with the marked run-up in housing wealth over the course of recent years, suggest sizable impacts of the housing sector on consumer spending and GDP growth. Data from the Federal Reserve Board's Flow of Funds accounts indicate that household financial and real estate wealth accounted for 1-1/2 and 12-1/4 percent, respectively, of the growth in personal consumption expenditures over the 2001:Q1 – 2005:Q3 period. Alternatively, those same household finance and real estate wealth effects comprised about 1 and 9 percent of U.S. GDP growth over that same period. Accordingly, the study indicates the substantial support to the U.S. macroeconomy provided by household ownership of real estate over the recent boom period.

The remainder of the paper proceeds as follows. The next section provides some background and a review of relevant literature. The data sources and construction of the dataset using a special matching algorithm are described in Section III. Section IV presents the statistical results, and Section V provides a brief conclusion.

II. Background and Literature Review

Recent literature has sought to further nuance our understanding of the link between consumer behavior and shocks to household wealth. In a recent paper, Lettau and Ludvigson

[2004] stress that unexpected wealth shocks must be perceived as permanent to affect consumption spending; the authors then present convincing evidence that households do not respond to transitory shocks by adjusting consumption patterns.⁵ The literature has also posited that consumption responses can vary depending both on the type of wealth and the type of wealth that sees the shock. There are several possible explanations for this. First, households may view some forms of wealth as temporary or more uncertain (Lettau and Ludvigson [2004]; Case, Shiller, Quigley [2005]). Second, households may find it more difficult to measure or liquefy certain types of wealth. Further, households with significant debts or other credit constraints may be differentially affected by shocks to different types of wealth. For example, Iacoviello [2004] suggests that house prices should enter a correctly specified Euler equation for consumption if household borrowing capacities are tied to the value of their houses. Finally, a number of authors (e.g., Piazzesi et al. [2004], Lustig and Van Nieuwerburgh [2005]) suggest that housing may provide consumption insurance, and therefore affect consumption patterns differently than does financial wealth.

While not all previous work has used these theoretical justifications as their basis for inquiry, a number of studies have investigated the potentially independent roles of both financial and housing wealth on consumption. In general, analyses of the role of housing wealth in the determination of consumption spending have used one of three types of information: aggregate time-series data at the state or national level, micro-data at the household level, and data based on refinance activity. The literature is summarized in Table 1.

Elliot [1980] conducted an early study on the impact of non-financial and financial wealth on consumption spending using aggregate data, and concluded that non-financial wealth had no impact on consumption. In stark contrast to Elliott [1980], a more recent study by Case, Quigley,

⁵ There is not complete unanimity regarding this view, however, as some research suggests that households do not always behave in the way predicted by these standard models. Work by Choi et al (2004) suggests in a study of 401k contributions that households can respond to a positive wealth shock by saving more to take advantage of higher rates of return, and can respond to a negative shock by consuming more now.

and Shiller [2005] uses both state level U.S. data and international country level data in their analysis, and finds positive marginal propensities to consume out of housing wealth that actually exceed those for financial wealth. Dvornak and Kohler [2003] apply the same methodology to the Australian economy and find larger effects for financial wealth, but smaller effects for housing wealth. Benjamin, Chinloy, and Jud [2003] use state-level data similar to that used in Case, Shiller, and Quigley [2005] and find wealth effects of similar magnitudes. Finally, Case [1992] linked the real estate price boom in the late 1980's in New England to a substantial increase in consumption for the region.

A number of other studies have used the Panel Study of Income Dynamics (PSID), a household-level survey, to investigate the relationship between housing wealth and household consumption spending. Owing to data limitations in the PSID, these studies are constrained to use non-durable or food measures of consumption spending. Further, only the limited information in the period wealth supplements of the PSID is available to measure financial and housing wealth. Skinner [1996] found that increases in housing wealth resulted in increased consumption spending by younger households, but not by older households, who tend to be more cautious in spending those gains.⁶ Engelhardt [1996] identifies the marginal propensity to consume out of housing wealth to be about .03, but finds this effect to be asymmetric and significantly associated only with declines in house values (i.e., house value declines reduced consumption spending). Lehnert [2003] finds an overall marginal propensity to consume of similar magnitude, but also observed variation in estimated results across the age distribution. He finds the largest effects for the youngest households and for those households on the verge of retirement, who may be downsizing their housing needs. A final micro-data study that estimates a model including both the housing and financial components of wealth is Levin [1998], which used the Retirement History Survey to estimate the models. The analysis here found no effect of

⁶ Skinner (1996) also found an asymmetry in effects in that households under 45 who realized declines in housing wealth increased saving by 10 cents per dollar of decline, whereas those than realized gains decreased savings by 0.4 cents per dollar of increase.

housing wealth on consumption.

In a study of mortgage re-finance activity, Canner et al. [2002] apply Survey of Consumer Finance data to estimate the magnitudes of housing wealth extraction and related consumption effects during 2001-2002. They find that the median household extracted approximately \$20,000 in housing equity during that period, and that 60% of the extracted wealth went towards new consumption, whereas the remainder was used to pay off debt. The Canner et al. [2002] analysis estimates that this magnitude of home equity extraction led to a total of \$67 billion in new consumption spending. Without a behavioral model and lacking nuanced measures of consumption, the study concludes that it is difficult to estimate a direct wealth effect. In addition, the amount of equity extracted does not signify a net addition to wealth for households. While households usually refinance when interest rates fall, and falling interest rates associated with the refinancing does increase wealth for those who refinance, a large portion of the \$67 billion in new consumption simply represents new debt.

While the above studies provide important insights as regards the role of financial and housing wealth in the determination of consumption spending, past assessments have been constrained as regards data resources and methodology. Studies relying on aggregate data lack a clear behavioral link between fluctuations in wealth and household spending. That is, it is not possible to identify whether increases in consumption expenditures are incurred by those households that experienced an increase in wealth. The macro datasets also typically do not control for household demographic and economic characteristics. While studies using the longitudinal PSID address concerns regarding the direct behavioral link between consumption spending and wealth changes (e.g., consumption and wealth changes are tracked by individuals and households), the PSID lacks important indices of both consumption and wealth and thus does not permit more nuanced analyses that may be of interest to researchers. For example, studies relying on the PSID have difficulty distinguishing between effects on durable and non-durable consumption or in evaluating responses associated with changes in either gross or net-of-debt

measures of household wealth. Further, the PSID data lacks detailed information of household asset holdings across financial, homeownership, and other real estate classifications.

This study addresses these shortcomings directly. By combining highly-detailed micro data on household wealth from the Survey of Consumer Finances (SCF) with household consumption and demographic information from the Consumer Expenditure Survey (CEX), we develop a unique micro data set that permits a careful and nuanced investigation of the relationship between consumer spending and the various wealth measures. In contrast to prior research, we are able to disaggregate consumption spending into durable and non-durable goods categories and test for differential wealth estimates across those categories. Previous research has focused on total consumption or food purchases, and the purchase of consumer durables may be more or less affected by changes in wealth. If spending on durable goods is predicated in part on unanticipated wealth increases or is viewed as enhancing to diversification of the household portfolio, then durable consumption may have a greater elasticity with respect to wealth than non-durable consumption. Alternatively, if durables are treated as long term purchases by households, they may be less affected by short-run fluctuations in wealth.

Another innovation is our use of household balance sheet information from the SCF to estimate wealth effects across financial, housing and other forms of wealth. The SCF information on household wealth is sufficiently detailed so as to permit the separation of holdings of owner-occupied real estate from other forms of real estate and to estimate related wealth effects. While very few households hold other forms of real estate, asset values in these markets are more volatile than those of owner-occupied housing, and therefore may have a different impact on consumer spending.

Further, we test whether households base their consumption decisions on the market value of their asset holdings or on those wealth measures net of debt. To our knowledge, only one prior study of consumption spending (Dvornak and Kohler [2003]) has used a measure of net wealth – in this case, home equity – to assess housing wealth effects. That analysis, however, was

confined to aggregate data. Other relevant studies all examine the relationship between consumption and asset market values. The estimated relationship is then taken to represent wealth effects. However, this equivalence need not hold. For example, if households view changes in asset value and wealth in different “mental accounts” (Thayer [1990]), then households may respond differently to changes in the market value of assets than in their net positions in financial or housing wealth.

Finally, we establish whether wealth shocks have induced variability in household consumption responses over time. To do so, we estimate the financial wealth and housing wealth elasticities cross-sectionally for the 1989, 1992, 1995, 1998 and 2001 survey years. We then pool data from the 1989 – 2001 survey years so as to evaluate the robustness of the estimated financial and housing wealth elasticities to deviation from trend and volatility in the household financial and housing wealth measures. Such an analysis, which has not previously been done, helps to shed light on the stability of household behavioral responses to wealth shocks and also provides insights as to the importance of the housing cycle and other economic considerations for household consumption decisions.

III. Data and Model

As noted above, our research relies on a dataset that was expressly developed so as to allow appropriately nuanced specification of the wealth-related hypotheses. That dataset links detailed individual-level consumption information with similar quality wealth data and accordingly is substantially better suited to the questions at hand than the data used in prior studies. The data are drawn from two surveys. The U.S. Bureau of Labor Statistics’ *Consumer Expenditure Survey* (CEX) has since 1980 collected detailed information about U.S. household expenditures. The CEX consists of two surveys. In the Diary survey, respondents track expenses on frequently purchased items such as food over a two-week period. In the Interview survey, which is conducted quarterly, respondents report on regular expenses, such as monthly bills, and major

expenses of large items.

We use information obtained from both CEX surveys to calculate a household's consumption-related expenses for a calendar year. For our purposes, we track total expenses, as well as expenses on nondurable goods, durable goods, and food. Our CEX sample also includes collected demographic information about the households, such as the age, race, and level of education of the household head. Unfortunately, the wealth data in the CEX is somewhat limited in terms of scope and precision, and thus the CEX alone is not sufficient for our purposes.⁷

We therefore turn to a different survey that specializes in household wealth and income, the Federal Reserve Board's *Survey of Consumer Finances (SCF)*. The SCF is a triennial survey of U.S. households that provides highly detailed information on U.S. families' assets and liabilities, use of financial services, income, and housing and demographic characteristics. Importantly, the SCF oversamples relatively wealthy households to ensure strong coverage of households with significant financial holdings.⁸ This survey provides far more information about a household's balance sheet and financial position than any other survey of households. It thus is an ideal instrument to address our question of how consumption varies with the market value of a household's assets as well as with the net wealth position of those households.

The particular variables of interest are the asset value and net wealth variables. Our analysis includes each household's financial assets, the value of the household's home if they own it, and the value of any other real estate the household might own.⁹ We also use SCF information on consumer debt, mortgage debt, and mortgage debt associated with the other real estate in the household's portfolio to calculate the household's net wealth position. The SCF data also include demographic variables such as age, years of education, marital status, and geographic region that

⁷ See Dynan and Maki (2001).

⁸ The SCF is sponsored by the Board of Governors of the Federal Reserve System in cooperation with the U.S. Department of the Treasury, and conducted by the Survey Research Center at the University of Michigan. For more on the sampling technique used in the SCF, see Kennickell (2000).

⁹ Financial assets in the SCF are calculated as the sum of liquid assets, certificates of deposit, mutual funds, stocks, bonds, other managed assets, cash life insurance, and quasi-liquid retirement savings.

are important for the match procedure.

Although both the CEX and SCF began in the early 1980s, because the SCF question frame changed prior to the 1989 survey, comparisons across years are only appropriate for surveys implemented from 1989 to the present. The analysis therefore examines the 1989 to 2001 time period, and uses responses associated with the 1989, 1992, 1995, 1998, and 2001 SCF and CEX surveys. The study further includes information on the performance of stock and housing markets over the 1989 – 2001 study period. That information is utilized to assess the robustness of the estimated financial and housing wealth elasticities to deviations from trend and volatility in the performance of housing and stock markets. To create an ideal dataset, we match observations across the SCF and CEX, a process that is described in the following section.

The Matching Procedure

Because the CEX and SCF do not survey the same households, linking the consumption data in the CEX with the detailed wealth data in the SCF requires a matching algorithm. We use a nonparametric procedure suggested by Goel and Ramalingam [1980] that first partitions both samples into cells based on individual characteristics known to be highly-correlated with variation in consumption, such as age, marital status, and education. For example, if we established 3 age groupings, 2 marital status groups, and 3 education categories, there would be 18 distinct cells that an observation could fall into.¹⁰ As a precaution, the dimensionality of these characteristics was restricted to increase the likelihood that cells were not empty for either sample.

Matching within a cell proceeded as follows. CEX observations were rank ordered by income. SCF observations were likewise ranked by income, with each SCF observation included four times to ensure that each CEX observation had a match. From this “quadrupled” SCF sample, a random sample was drawn of a size equal to the number of CEX observations. The two

¹⁰ In this example, the age groupings might be less than 35, 35 to 54, and older than 60; the marital status groups could be married and unmarried; and the education categories might be at most high school, at most college, and any graduate study.

sets of rank ordered samples – the CEX sample and the randomly-drawn SCF sample – were then matched one-to-one. That is, the CEX observation with the highest income was matched to the SCF observation with the highest income, the second highest CEX income to the second highest SCF income, and so on.¹¹

For this paper, we present the results for the case where the match was established using cell defined along four dimensions:

- Marital status – Married or not;
- Race – white, black, or other;
- Level of schooling – Less than high school, high school graduate, some college, college degree or more; and
- Age – 25-35, 36-50, and 51-65;

We thus partitioned the sample into 72 cells, within which the CEX and SCF observations were matched. The sample was restricted to households whose heads were between 25 and 65 to eliminate issues regarding heterogeneous consumption during college-age years and retirement. The match process yielded a dataset with 4097 observations in 2001.

Each observation in the matched sample includes a measure of income from both the SCF and CEX. As a check of the quality of the match procedure, we compared the correlations between the two measures of income and between the income measures and variables that appear exclusively in only one of the surveys (Table 2). The correlation between the two income measures is extremely high, which provides an initial hint that the procedure yielded reasonable matches. The correlations between the SCF income variable and the CEX consumption variables are stronger than the within CEX correlations, and the rank ordering and their relative magnitudes remain intact, which offers an additional degree of confidence about the match's quality. This relationship is also observed regarding the SCF wealth variables, where the CEX income

¹¹ In most cases, this type of matching procedure will be comparable to other more sophisticated statistical matching techniques. For more, see Goel and Ramalingam (1980).

correlations are weaker than the SCF income correlations. The rank orderings in this case are not as consistent and the relative magnitudes vary more widely, but the significantly positive results are cause for some optimism.

The matching procedure could be quite sensitive to the particular matches that the algorithm produces. In addition, the statistical properties of this type of matching procedure are not yet known. Therefore, to guard against the possibility that an idiosyncratic match might drive the results, and to obtain a measure of confidence regarding the robustness of parameter estimates, we implemented a bootstrap procedure. All regressions (described below) were estimated 100 times, each associated with a different draw from the matching procedure. The parameters reported in the results section represent the average parameter values and average standard errors over the 100 runs.

The Empirical Specification

The standard approach in the literature has been to establish a relationship between the market value of assets and consumption, controlling for income. A logarithmic transformation is needed to linearize consumption, income, and wealth, and so the standard specification has been

$$(1) \log C = f(\log Y, \log V, Z),$$

where C is consumption, Y is income, V is asset value, and Z is a vector of controls. Using the method of Goodman and Kawai [1982], permanent income is the predicted value of a regression of household income on a set of demographic and human capital characteristics.

Our approach expands the standard methodology in two ways. First, it disaggregates asset value and evaluates the relationship between consumption and the various components of asset value. In the context of the standard methodology, this modifies equation (1), but only slightly, as the components of asset value also need to be linearized using the log transformation:

$$(2) \log C = f(\log Y, \log V_f, \log V_h, \log V_r, Z),$$

where V_f is the value of the individual's financial holdings, V_h is the value of the individual's primary residence, and V_r is the value of the other real estate assets an individual holds.

The second innovation – the introduction of debt considerations – complicates matters a bit more. The existence of negative values, which can arise if debts exceed asset value, means that our more comprehensive characterization of an individual’s overall financial position can not be transformed using the log function. Fortunately, the difference of two log-normal variables is normal. Thus, if debts are distributed comparably to asset values, the difference between the asset values and debt is normally distributed and can be estimated untransformed in a standard regression framework.¹² For this portion of the analysis, we therefore estimate

$$(3) \log C = f(\log Y, V_f - D, V_h - M, V_r - M_r, Z)$$

where D represents non-real estate debt, M is the value of the mortgage on the individual’s primary residence, and M_r is the total value of mortgages associated with the other real estate assets held by the individual.

In the empirical analysis to follow, equations (2) and (3) are estimated cross-sectionally using micro data from the 1989, 1992, 1995, 1998, and 2001 survey periods. Those equations allow for estimation and assessment of drift in the estimated wealth elasticities over the study period. We also estimate the above models by pooling data over the survey years. The pooled models enable the introduction of interactive terms to explicitly assess the robustness of the estimated wealth elasticities to deviations from trend and volatility in measures of stock market and housing wealth. The pooled models further include year-specific fixed effects. The pooled models are specified as follows:

$$(4) C = f(\log Y, \log V_f, \log V_h, \log V_r, \log V_f * devWil5000, \log V_f * volWil5000, \log V_h * devOFHEO, \log V_h * volOFHEO, \text{year fixed effects}, Z),$$

where the year-specific household financial and housing wealth terms are interacted with deviations from trend and computed volatility over the prior three years in the Wilshire 5000 and the regional OFHEO repeat sales quality-adjusted house price indexes, respectively.¹³ To the

¹² We thank Detlof von Winterfeldt for his verifying this point.

¹³ The pooled models are estimated for the gross wealth specifications alone, owing to limitations in data

extent that households view the computed drift and volatility in household financial and housing wealth as transitory, one would anticipate little effect of those terms on consumption spending. As suggested above, we also stratify equations (2) – (4) above across durable and non-durable consumption. If spending on durable goods is predicated in part on unanticipated changes in wealth or is viewed as enhancing the diversification of the household portfolio, then it is possible that durable consumption may have a greater elasticity with respect to wealth than non-durable consumption. Alternatively, if durables are treated as long term purchases by households, they may be less affected by short-run fluctuations in wealth.

As a supplemental analysis, we also investigated the role of (a) borrower credit quality and (b) quantity constraints on credit extensions on household consumption spending. As regards the latter, the theoretical literature suggests that household borrowing capacity, which can be influenced both by a household's credit rating and its existing level of outstanding debt, should play a large role in shaping how changes in different forms of wealth affect consumption (Iacoviello [2004]; Piazzesi et al [2004]). We test this by grouping households in the sample according to their creditworthiness and their ability to borrow. Regarding borrower credit quality, households were grouped according to whether or not they were credit-constrained based on a definition of such from the SCF that has been used in previous research (Gabriel and Rosenthal [2005]). Specifically, households are coded as credit constrained if they responded in the survey that they were turned down for a loan, partially turned down for a loan, or failed to apply for a loan owing to fears that the application would be rejected. Given these definitions, models (2) and (3) were re-run limiting the sample to either credit constrained or non-credit constrained households. Regarding household ability to borrow, we included a variable measuring a household's ability to borrow out of home equity. We classified households as credit "quantity-constrained" if the loan-to-value ratio (LTV) of their house was more than 90%. This

pertaining to changes over time in household debt that would enable computation of deviations from trend and volatility in measures of household net wealth.

variable was included along with an interaction term on housing wealth to see if these households exhibit different behavior than do households that were unconstrained.

IV. Results

The estimated income, financial wealth, and housing wealth elasticities as derive from the cross-sectional models (equation 2) are displayed in Tables 3 – 6 (below). As suggested above, that specification estimates consumption elasticities associated with the market value of real estate and financial assets. Table 7 contains similar estimates for equation 3, which specifies the estimating equations in terms of net wealth measures (e.g., asset values net of mortgage or other debt). The estimates are computed for each of the 1989, 1992, 1995, 1998, and 2001 SCF survey years, so as to facilitate assessment of variability in consumption wealth elasticities over a period of substantial structural change in U.S. housing capital markets. For the sake of parsimony, the tables display only the estimated elasticities for the income, housing wealth and financial wealth terms. Further, the tables indicate the robustness of results across alternative samples. As suggested above, the analysis seeks to assess variability of results across various credit-constrained and non credit-constrained household samples. Also, each of the tables displays the estimated elasticities for the total consumption, durable goods consumption, and non-durable goods consumption categories. Finally, tables 8 and 9 display results of estimation of models which pool the data over the 1989 – 2001 survey years (equation 4). As suggested above, those models also include controls for the deviation from trend and volatility in household financial and housing asset values over the sample period as well as year-specific fixed effects. While the primary coefficients of interest are displayed in tables 8 and 9, full regression results are contained in appendix tables F and G.

As a starting point, research findings suggest substantial variability in estimated coefficients across the all households and homeowner only samples (tables 3 and 8 versus 4 and 9,

respectively).¹⁴ In both year-specific and pooled models, our results generally conform with those of the earlier literature in that total consumption is observed to be positively related to measures of financial and housing asset values. Not surprisingly, the estimated sensitivity of consumption to house values is considerably lower when households that do not own a home are included in the sample. Moreover, the sensitivity of total consumption to an asset's value is larger for housing than for basic financial holdings in the homeowners only samples. Among homeowners, the house value elasticity estimates range from .063 in 1989 to .057 in 2001 and are highly significant throughout. In marked contrast, the estimated elasticities of consumption spending with respect to financial wealth, while highly significant throughout, are smaller in magnitude and trend down modestly over the period of analysis from .021 in 1989 to .015 in 2001, suggesting a modest decline in the importance of financial wealth to consumption spending over the course of the past decade. In the pooled homeowners sample, the estimated elasticities of consumption with respect to house values and financial wealth are about .06 and .02, respectively. Except for Tables 3 and 9, we restrict the sample to homeowners so as to include only those households for which a consideration of home equity is likely to enter into the decision-making process.

Research findings further supported the hypothesized behavioral distinction in household consumption spending across durable versus non-durable categories. In our cross-sectional analysis, house value was the most significant covariate with nondurable consumption, while the value of financial holdings is found to be most strongly associated with the level of durable good consumption.¹⁵ Further, in the year-specific regressions, the elasticity of durable goods consumption with respect to changes in financial assets was estimated to be somewhat larger than that associated with total consumption. Further, the pooled regressions revealed significant

¹⁴ As would be expected, sample sizes for the all households sample are somewhat larger, ranging from 3209 in 1989 to 4097 in 2001, compared with 2252 in 1989 and 2755 in 2001 for the all homeowners samples.

¹⁵ In addition to greater sensitivity to financial wealth, durable goods consumption is much more sensitive to changes in our permanent income measure.

support for durable goods consumption during periods of high volatility in financial wealth. Those results are consistent with the notion that durables serve to diversify the household's portfolio during periods of substantial (financial) wealth volatility; further, spending on durable goods may be predicated in part on unanticipated wealth increases, as suggested by the significant financial wealth volatility term. In the cross-sectional analyses, the estimated elasticities of non-durable goods spending with respect to house value fluctuations were close to .055, highly significant, and relatively stable across all other estimation years. The relative importance of housing wealth to non-durable consumption may be due to the fact that increases in house values are thought to be more permanent, leading households may change their routine non-durable purchasing patterns in response to such changes.

Tables 5 and 6 display results for the credit-constrained and non credit-constrained year-specific homeowner samples, respectively, where households were assigned to the credit-constrained and non credit-constrained categories as described above. Estimated findings diverge sharply across the credit-constrained and non credit-constrained samples; as indicated in Table 5, neither the financial wealth nor the housing value coefficients enter the model with a high level of statistical significance in the credit constrained sample. Among credit-constrained households, however, the estimated income elasticities associated with durable goods consumption are highly significant across all estimation years and approximately double in value those associated with either the nondurable goods or for homeowners overall. In short, estimation findings suggest the primary importance of permanent income (relative to any form of wealth) in determination of the consumption spending of credit-constrained households.

In marked contrast, variability in permanent income, housing, and financial wealth all appear important to the consumption spending of non credit-constrained households (Table 6). The coefficient on household permanent income in the durable goods model, at about .32 in 2001, is highly significant and about half the value estimated among credit-constrained households. Among non-credit constrained households, variations in financial wealth are typically significant

in the determination of both durable and non durable goods spending; as evidenced in Table 6, however, the estimated elasticities in the case of durable goods spending are often two to three times larger than those for nondurable goods consumption (e.g., in 2001, the estimated financial wealth elasticities range from about .05 in the case of durable goods to about .015 in the case of nondurable goods.) In marked contrast, among non credit-constrained households, fluctuations in house values appear to be significant only in the determination of total and non-durable goods consumption. In the latter case, the house value elasticities appear to trend up a bit over time, from an estimated .05 in 1989 to .06 in 2001. As would be expected, the house value elasticities estimated for non credit-constrained households are somewhat larger than those computed for the unified homeowners sample; in the latter case, the estimated coefficient for the durable goods model comes in at .054 in 2001, compared with .062 in that same year for the non credit-constrained sample.

We next present our estimates of equation 3, in which we introduce debt and characterize a household's position in terms of net wealth. The value of financial assets is computed as net assets, in that house value becomes home equity, and the value of other real estate becomes other real estate equity. Table 7 shows the results of this exercise for our year-specific homeowner-only samples. Results here do indicate the importance of home equity for total and nondurable goods consumption. The estimated home equity elasticities are sizable and significant for all survey years. Indeed, the estimated elasticity of non-durable consumption with respect to home equity is .044 in 2001, only slightly less than the analogous house value coefficient of .055 estimated for that same year. Results then do support the notion that homeowners are highly sensitive to the debt side of their positions and accordingly adjust consumption decisions to the net value of their housing assets.

Full year-specific regression results are displayed in the Appendix tables B – E, while variable definitions are shown in Appendix A. Of control variables, in the year-specific analyses we observe a monotonic relationship between the level of education and consumption for all

types of consumption. In addition, overall consumption is greatest for married households and for middle aged (36-50) households, and durable consumption (Appendix C), in particular, is much larger for these groups. This could reflect the fact that such households are more likely to be entering into homeownership and childrearing, both of which involve significant outlays. In support of this, note that the coefficient on family size is also positive and statistically significant.

As suggested above, the theoretical literature suggests that household borrowing capacity, which can be influenced both by a household's credit rating and its existing level of outstanding debt, should play a large role in shaping how changes in different forms of wealth affect consumption. In results not shown, we tested the responsiveness of consumption for households with high loan-to-value ratios in their homes. If borrowing capacity (Iacoviello [2004]) affects the ability of households to consume out of increases in asset values, then we would expect households with high LTV's to be more sensitive to a relaxing of the constraint on of their borrowing capacity. To evaluate this possibility, we included two additional variables in equation (2): a categorical variable which is equal to one if a household has an LTV over 90 % and an interaction term between this categorical variable and the house price variable. Despite evidence in Iacoviello [2004] that these issues are important, both variables proved insignificant in our models.

Finally, the estimated housing wealth elasticity together with the recent run-up in housing wealth suggest a substantial impact of the housing sector on consumer spending and related GDP growth. Data from the Federal Reserve Board's Flow of Funds accounts indicate that household financial wealth trended down from \$33 billion in 2000:Q4 to about \$29 trillion in 2003:Q1 before rebounding to \$38 trillion in 2005:Q3. In marked contrast, the value of real estate owned by households recorded appreciable gains throughout the entirety of the recent period, from about \$11.4 billion in 2000:Q4 to \$19.1 billion in 2005:Q3. Given average values of financial and real estate assets owned by households of \$32.6 and \$14.9 billion, respectively, over the 2001:Q1 – 2005:Q3 period, the estimated financial and housing wealth elasticities of 0.02 and 0.06,

respectively imply that financial and real estate wealth accounted for 1-1/2 and 12-1/4 percent of growth in personal consumption expenditures, respectively, over that period. Alternatively, those same household finance and real estate wealth effects comprised about 1 and 9 percent of U.S. GDP growth over the 2001:Q1 – 2005:Q3 period. Accordingly, the study indicates the substantial support to the U.S. macroeconomy provided by household ownership of real estate over the recent boom period.

V. Conclusion

This research assembled a unique matched data set from individual files of the Survey of Consumer Finances and the Consumer Expenditure Survey to estimate the consumption effects associated with housing and financial wealth. The application of more detailed consumption and wealth data enabled us to conduct a more nuanced analysis of the impact of wealth effects on consumption, including the estimation of financial, housing and other real estate asset effects on both durable and non-durable spending. Additionally, we sought to assess variability in estimated income and wealth elasticities across credit constrained and non credit-constrained households. Estimates are provided for all survey years of the Survey of Consumer Finances from 1989 – 2001, so as to assess any significant drift in estimated elasticities as might derive from the larger business cycle, evolution in mortgage finance and the like. Further, year-specific data from those survey years is pooled so as to test the robustness of the estimated wealth elasticities to deviations from trend and volatility in household financial and housing asset values. Finally, using detailed household debt information contained in the SCF, we are able to compare consumption effects associated with changes in the market value of household assets, as is customary in the literature, to those associated with the net asset position of households.

Overall, research findings indicate relatively large housing wealth effects. Among homeowners, the house value elasticity are estimated in the range of .06 over the course of the 1989 – 2001 study period and are highly significant throughout. In marked contrast, the

estimated elasticities of consumption spending with respect to financial wealth, while highly significant throughout, are smaller in magnitude and are in the range of .02. Results from a sample of data pooled over the 1989 – 2001 study period indicate that the estimated financial and housing wealth elasticity estimates are largely robust to controls for deviation from trend and volatility in household financial and housing wealth.

Research findings further support the hypothesized behavioral distinction in household consumption spending across durable versus non-durable categories. In our cross-sectional analysis, house value was the most significant covariate with nondurable consumption, while the value of financial holdings is found to be most strongly associated with the level of durable good consumption. Further, the pooled regressions revealed significant support for durable goods consumption during periods of high volatility in financial wealth. Those results are consistent with the notion that durables serve to diversify the household's portfolio during periods of substantial (financial) wealth volatility; further, spending on durable goods may be predicated in part on unanticipated wealth increases, as suggested by the significant financial wealth volatility term. In contrast, the relative importance of housing wealth to non-durable consumption may be due to the fact that increases in house values are thought to be more permanent, leading households to change their routine non-durable purchasing patterns in response to such changes.

Consumption propensities also diverge sharply across the credit constrained and non-credit constrained households. Among credit constrained households, neither the financial wealth nor the housing value coefficients enter the model with a high level of statistical significance. Among non-credit constrained households, variations in financial wealth are typically significant in the determination of both durable and non-durable goods spending; in marked contrast, fluctuations in house values appear to be significant in the determination of non-durable goods consumption. Finally, there is little difference between the estimates using home equity and those using house values, suggesting that homeowners are highly sensitive to the debt side of their positions and accordingly adjust consumption decisions to the net value of their housing assets.

The sizable consumption elasticity associated with housing wealth, together with the marked run-up in housing wealth over the course of recent years, suggest important impacts of housing on consumer spending and GDP growth. Data from the Federal Reserve Board's Flow of Funds accounts indicate that household financial and real estate wealth accounted for 1-1/2 and 12-1/4 percent, respectively, of the growth in personal consumption expenditures over the 2001:Q1 – 2005:Q3 period. Alternatively, those same household finance and real estate wealth effects comprised about 1 and 9 percent of U.S. GDP growth over that same period. Accordingly, the study points not only to the sustaining influence of housing wealth on U.S. economy activity during the recent period of financial market weakness, but suggests as well sizable negative wealth effects as could arise from some moderate retrenchment in house values.

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Table 1. Selected studies on wealth effects on consumption

	Data	Measure of housing/financial wealth	Housing wealth effect	Financial wealth effect
<i>Studies using aggregate data</i>				
Case, Quigley, and Shiller (2005)	Panel of countries and panel of U.S. states	Aggregate housing and financial wealth	.11-.17 (Int'l), .05-.09 (States)	0 (Int'l), .02 (States)
Benjamin, Chinloy, and Jud (2002)	U.S. national time series of states	Aggregate housing and financial wealth net of debt outstanding	.08	.02
Dvornak and Kohler (2003)	Panel of Australian states	Aggregate housing and financial wealth net of debt outstanding	.03	.06-.09
Bhatia (1987)	U.S. Census, National accounts	Self-reported home values, no financial	.32-.53	---
<i>Studies using household surveys</i>				
Lehnert (2003)	Panel Survey of Income Dynamics (PSID)	Self-reported home values, no financial	.04-.05, varies with age	---
Engelhardt (1996)	PSID	Self-reported home values less improvement value, no financial	.14, .03 for median household	---
Skinner (1996)	PSID	Self-reported home values, no financial		---
Levin (1998)	Retirement History Survey	Housing equity (net of debt), financial wealth	.06, .05 for liquidity constrained	Less than .02
<i>Studies using refinance activity</i>				
Canner, Dynan, and Passmore (2002)	Survey of U.S. households	Cash extracted via mortgage refinancing, no financial	.60 of refinance dollars	---

NOTE: Wealth effects reflect increase in consumption spending associated with a 1 unit increase in wealth or net wealth.

Table 2. Comparison of correlation coefficients for variables across the surveys

	CEX log(income)	SCF log(income)
CEX log(income)	1.0000***	0.7686***
SCF log(income)	0.7686***	1.0000***
<i>CEX consumption variables</i>		
Total consumption	0.5434***	0.5345***
Nondurable consumption	0.3732***	0.3590***
Durable consumption	0.5532***	0.5468***
Food consumption	0.3451***	0.3462***
<i>SCF wealth variables</i>		
Financial	0.5902***	0.6352***
House value	0.4258***	0.4671***
Other real estate	0.3169***	0.4299***
Total net worth	0.4816***	0.5550***

+ Correlation results are from one matched sample from the 2001 CEX and SCF.

*** p<0.001

Table 3. All Households: Market value regression results

	1989	1992	1995	1998	2001
Total Consumption					
log (income)	0.22346*** (0.01040)	0.22736*** (0.01086)	0.20761*** (0.01020)	0.21706*** (0.00193)	0.20108*** (0.00982)
log (financial wealth)	0.02238*** (0.00339)	0.02504*** (0.00326)	0.02325*** (0.00327)	0.02020*** (0.00376)	0.01803*** (0.00330)
log (house value)	0.00486* (0.00192)	0.00440* (0.00182)	0.00361 (0.00193)	0.00296 (0.00220)	0.00437* (0.00180)
N	3209	3132	3041	3241	4097
R-squared	0.4813	0.4949	0.4665	0.4138	0.4319
Durable Goods					
log (income)	0.58802*** (0.03955)	0.43778*** (0.03801)	0.3917*** (0.03479)	0.4593*** (0.03536)	0.33068*** (0.03009)
log (financial wealth)	0.04761*** (0.01289)	0.04439*** (0.01143)	0.04148*** (0.01114)	0.03603*** (0.01114)	0.05164*** (0.01010)
log (house value)	0.01093 (0.00737)	0.00709 (0.00645)	0.01193 (0.00662)	0.00384 (0.00650)	0.00174 (0.00550)
N	3209	3132	3041	3241	4097
R-squared	0.2758	0.2897	0.2441	0.2637	0.2492
Nondurable Goods					
log (income)	0.19180*** (0.00916)	0.21648*** (0.00996)	0.18688*** (0.00906)	0.19928*** (0.01095)	0.18941*** (0.00883)
log (financial wealth)	0.02031*** (0.00298)	0.02241*** (0.00299)	0.02036*** (0.00290)	0.01816*** (0.00345)	0.01464*** (0.00297)
log (house value)	0.00374* (0.00170)	0.00343* (0.00170)	0.00326 (0.00171)	0.00216 (0.00200)	0.00400* (0.00160)
N	3209	3132	3041	3241	4097
R-squared	0.4750	0.4785	0.4644	0.4060	0.4350

Note: Standard errors are in parenthesis. * p<0.05; ** p<0.01; *** p<0.001

Table 4. Homeowners : Market value regression results

	1989	1992	1995	1998	2001
Total Consumption					
log (income)	0.19546*** (0.01313)	0.20577*** (0.01339)	0.22053*** (0.01331)	0.26438*** (0.01911)	0.23453*** (0.01409)
log (financial wealth)	0.02159*** (0.00475)	0.02881*** (0.00457)	0.02191*** (0.00454)	0.01586** (0.00609)	0.01467** (0.00491)
log (house value)	0.06301*** (0.01062)	0.04881*** (0.01215)	0.06419*** (0.01204)	0.05126*** (0.01444)	0.05712*** (0.01116)
N	2252	2061	2100	2118	2755
R-squared	0.4427	0.4718	0.4586	0.3681	0.4128
Durable Goods					
log (income)	0.46642*** (0.04480)	0.35181*** (0.03990)	0.36738*** (0.04113)	0.48112*** (0.04621)	0.36401*** (0.03926)
log (financial wealth)	0.04385** (0.01622)	0.04310** (0.01360)	0.03351* (0.01404)	0.01808 (0.01471)	0.04291** (0.01368)
log (house value)	0.10754** (0.03622)	0.03911 (0.03621)	0.09206* (0.03719)	0.03465 (0.03491)	0.04406 (0.03109)
N	2252	2061	2100	2118	2755
R-squared	0.2391	0.2754	0.2121	0.2434	0.2181
Nondurable Goods					
log (income)	0.17029*** (0.01168)	0.19665*** (0.01247)	0.20678*** (0.01183)	0.24413*** (0.01779)	0.21967*** (0.01276)
log (financial wealth)	0.02163*** (0.00423)	0.02515*** (0.00425)	0.01924*** (0.00404)	0.01586** (0.00567)	0.01247** (0.00445)
log (house value)	0.00564*** (0.00944)	0.05022*** (0.01131)	0.05813*** (0.01069)	0.05138*** (0.01345)	0.05469*** (0.01010)
N	2252	2061	2100	2118	2755
R-squared	0.4441	0.4553	0.4712	0.3656	0.4265

Note: Standard errors are in parenthesis. * p<0.05; ** p<0.01; *** p<0.001

Table 5. Credit-Constrained Homeowners : Market value regression results

	1989	1992	1995	1998	2001
Total Consumption					
log (income)	0.15460*** (0.02615)	0.13163*** (0.02374)	0.28567*** (0.03246)	0.17649*** (0.03080)	0.30822*** (0.03516)
log (financial wealth)	0.01821 (0.00952)	0.04441*** (0.00827)	0.00389 (0.00820)	0.02376* (0.01026)	0.00397 (0.00973)
log (house value)	0.07978** (0.02453)	0.04055 (0.02376)	0.05281* (0.02596)	0.04668 (0.02439)	0.04873* (0.02104)
N	433	491	480	509	570
R-squared	0.4430	0.4662	0.4558	0.3660	0.4170
Durable Goods					
log (income)	0.48836*** (0.09629)	0.27906*** (0.07548)	0.55733*** (0.11046)	0.33059*** (0.09208)	0.60245*** (0.10381)
log (financial wealth)	0.02778 (0.03507)	0.06298* (0.02627)	0.00902 (0.02787)	0.04885 (0.03068)	0.01771 (0.02877)
log (house value)	0.11830 (0.09037)	0.06734 (0.07543)	0.07289 (0.08821)	0.06135 (0.07290)	0.04096 (0.06218)
N	433	491	480	509	570
R-squared	0.2573	0.2970	0.2311	0.2109	0.2748
Nondurable Goods					
log (income)	0.10972*** (0.02319)	0.11641*** (0.02215)	0.24291*** (0.02864)	0.15150*** (0.02750)	0.26883*** (0.03125)
log (financial wealth)	0.01931* (0.00844)	0.03897*** (0.00771)	0.00559 (0.00724)	0.02293* (0.00915)	0.00393 (0.00865)
log (house value)	0.07051** (0.02175)	0.03548 (0.02214)	0.05129* (0.02291)	0.03884 (0.02178)	0.04311* (0.01868)
N	433	491	480	509	570
R-squared	0.4254	0.44087	0.4566	0.3678	0.4099

Note: Standard errors are in parenthesis. * p<0.05; ** p<0.01; *** p<0.001

Table 6. Non Credit-Constrained Homeowners : Market value regression results

	1989	1992	1995	1998	2001
Total Consumption					
log (income)	0.21583*** (0.01545)	0.24932*** (0.01665)	0.20664*** (0.01471)	0.30491*** (0.02382)	0.21881*** (0.01552)
log (financial wealth)	0.02274*** (0.00562)	0.01971*** (0.00569)	0.02848*** (0.00557)	0.01149 (0.00751)	0.01767** (0.00584)
log (house value)	0.05749*** (0.01195)	0.05206*** (0.01443)	0.06344*** (0.01375)	0.05039** (0.01765)	0.06234*** (0.01333)
N	1818	1570	1620	1610	2186
R-squared	0.4458	0.4827	0.4593	0.3732	0.4179
Durable Goods					
log (income)	0.46893*** (0.05159)	0.39940*** (0.04852)	0.32905*** (0.04421)	0.55922*** (0.05417)	0.31818*** (0.04268)
log (financial wealth)	0.05318** (0.01873)	0.03247 (0.01658)	0.04032* (0.01673)	0.00606 (0.01708)	0.04978** (0.01601)
log (house value)	0.11059** (0.03987)	0.02264 (0.04203)	0.09250* (0.04130)	0.01932 (0.04013)	0.04817 (0.03664)
N	1818	1570	1620	1610	2186
R-squared	0.2422	0.2796	0.2102	0.2364	0.2090
Nondurable Goods					
log (income)	0.19783*** (0.01373)	0.24214*** (0.01547)	0.19895*** (0.01311)	0.28454*** (0.02235)	0.20770*** (0.014413)
log (financial wealth)	0.02208*** (0.00498)	0.01697** (0.00528)	0.02433*** (0.00496)	0.01127 (0.00705)	0.01468** (0.00532)
log (house value)	0.05021*** (0.01062)	0.05643*** (0.01340)	0.05705*** (0.01225)	0.05363** (0.01656)	0.06178*** (0.01214)
N	1818	1570	1620	1610	2186
R-squared	0.4545	0.4718	0.4743	0.3705	0.4365

Note: Standard errors are in parenthesis. * p<0.05; ** p<0.01; *** p<0.001

Table 7. Homeowners: Net wealth regression results

	1989	1992	1995	1998	2001
Total Consumption					
log (income)	0.25301*** (0.00178)	0.25901*** (0.01246)	0.26473*** (0.01241)	0.31357*** (0.01645)	0.28433*** (0.01219)
net financial wealth (\$ million)	0.00379 (0.00408)	0.00936*** (0.00280)	0.00420* (0.00189)	0.00078 (0.00136)	0.00061 (0.00092)
home equity (\$ million)	0.09819** (0.03029)	0.08366*** (0.02344)	0.05620** (0.01989)	0.04337* (0.02117)	0.04792*** (0.01304)
N	2252	2061	2100	2118	2755
R-squared	0.4204	0.4479	0.4411	0.3606	0.4017
Durable Goods					
log (income)	0.57041*** (0.03966)	0.42570*** (0.03652)	0.43869*** (0.03792)	0.53072*** (0.03959)	0.45345*** (0.03378)
net financial wealth (\$ million)	-0.00350 (0.01374)	0.00499 (0.00817)	0.00293 (0.00575)	-0.00094 (0.00327)	-0.00068 (0.00257)
home equity (\$ million)	0.03136 (0.10192)	0.06377 (0.06867)	0.03656 (0.06074)	0.02183 (0.05095)	0.03164 (0.03615)
N	2252	2061	2100	2118	2755
R-squared	0.2304	0.2677	0.2046	0.2461	0.2126
Nondurable Goods					
log (income)	0.22325*** (0.01049)	0.24462*** (0.01157)	0.24554*** (0.01102)	0.29217*** (0.01533)	0.26557*** (0.01105)
net financial wealth (\$ million)	0.00537 (0.00364)	0.01037*** (0.00259)	0.00456** (0.00167)	0.00126 (0.00123)	0.00097 (0.00084)
home equity (\$ million)	0.11238*** (0.02696)	0.07825*** (0.02177)	0.05016** (0.01765)	0.04642* (0.01973)	0.04452*** (0.01183)
N	2252	2061	2100	2118	2755
R-squared	0.42130	0.1330	0.4552	0.3576	0.4146

Note: Standard errors are in parenthesis. * p<0.05; ** p<0.01; *** p<0.001

Table 8. Pooled Estimation All Households “Market Value” Regression Results

All Households		Total Consumption	Durable Goods	Non Durable Goods
log(income)	c_loginc	0.215*** (0.005)	0.433*** (0.016)	0.197*** (0.004)
log (financial wealth)	lfinancial	0.021*** (0.002)	0.031*** (0.008)	0.019*** (0.002)
log (house value)	lhouse	0.005*** (0.001)	0.005 (0.004)	0.004*** (0.001)
log(other real estate)	lrealest	0.008*** (0.001)	0.003 (0.003)	0.008*** (0.001)
log (deviations in financial wealth)	lfinfdevin	0.011 (0.006)	0.045** (0.019)	0.007 (0.005)
log (volatility in financial wealth)	lfinfvolin	0.014 (0.017)	0.188*** (0.058)	0.001 (0.016)
log (deviations in house value)	lhsehdevin	-0.006 (0.014)	0.045 (0.045)	-0.010 (0.012)
log (volatility in house value)	lhsehvolin	-0.060 (0.039)	0.083 (0.130)	-0.059 (0.035)
Year 1989	dum89	-0.303*** (0.031)	-0.746*** (0.102)	-0.266*** (0.028)
Year 1992	dum92	-0.194*** (0.022)	-0.379*** (0.074)	-0.169*** (0.020)
Year 1995	dum95	-0.171*** (0.028)	-0.318*** (0.094)	-0.148*** (0.026)
Year 1998	dum98	-0.121*** (0.026)	-0.220** (0.087)	-0.100*** (0.024)
N		16720	16720	16720
Average R-squared		0.467	0.264	0.463

p<0.05; ** p<0.01; *** p<0.001

Table 9. Pooled Estimation Owners “Market Value” Regression Results

OWNERS		Total Consumption	Durable Goods	Non Durable Goods
log(income)	c_loginc	0.222*** (0.006)	0.403*** (0.019)	0.206*** (0.006)
log (financial wealth)	lfinancial	0.022*** (0.003)	0.020* (0.010)	0.022*** (0.003)
log (house value)	lhouse	0.060*** (0.005)	0.065*** (0.016)	0.056*** (0.005)
log(other real estate)	lrealest	0.005*** (0.001)	0.002 (0.003)	0.005*** (0.001)
log (deviations in financial wealth)	lfinfdevin	0.012 (0.008)	0.029 (0.024)	0.008 (0.008)
log (volatility in financial wealth)	lfinvolin	-0.007 (0.025)	0.213** (0.073)	-0.022 (0.023)
log (deviations in house value)	lhsehdevin	-0.015 (0.015)	0.037 (0.043)	-0.015 (0.013)
log (volatility in house value)	lhsehvolin	-0.109** (0.046)	-0.047 (0.135)	-0.089* (0.042)
Year 1989	dum89	-0.232*** (0.049)	-0.656*** (0.144)	-0.192*** (0.045)
Year 1992	dum92	-0.154*** (0.035)	-0.254** (0.102)	-0.130*** (0.032)
Year 1995	dum95	-0.165*** (0.045)	-0.200 (0.132)	-0.139*** (0.041)
Year 1998	dum98	-0.129** (0.042)	-0.129 (0.122)	-0.105** (0.038)
N		11314	11314	11314
Average R-squared		0.442	0.236	0.445

p<0.05; ** p<0.01; *** p<0.001

Appendix A. Variable Definitions

Variable	Definition
<p><i>CEX Consumption Variables</i> total consumption durable goods nondurable goods</p>	<p>total annual spending on all goods and services annual spending on durable goods+ annual spending on nondurable goods</p>
<p><i>SCF Wealth Variables</i> <i>Market Value</i> Financial wealth house value other real estate value <i>Net Wealth</i> net wealth home equity other real estate equity</p>	<p>liquid and quasi-liquid financial assets including retirement and pensions estimated value of primary residence estimated value of all real estate other than primary residence liquid and non-liquid financial assets minus financial debt house value minus mortgages and home equity loans real estate value net of mortgages and equity loans</p>
<p><i>Interactive SCF Wealth Variables</i> <i>Market Value</i> lfinfdev lfinfvol lhsehdev lhsehvol <i>Net Wealth</i> Nfinfdev Nfinfvol Heqhdev Heqhvol</p>	<p>interaction of log household financial wealth and current year deviation from average of prior 3 years in Wilshire 5000 index interaction of log household financial wealth and volatility of Wilshire 5000 (as measured by standard deviation of Wilshire 5000 index over prior three years) interaction of log household house value and current year deviation from average of prior 3 years in regional OFHEO house price repeat sales index interaction of log household house value and volatility of regional OFHEO repeat sales house price index (as measured by standard deviation of OFHEO index over the prior three years) interaction of net financial wealth and current year deviation from average of prior 3 years in Wilshire 5000 index interaction of net financial wealth and volatility of Wilshire 5000 (as measured by standard deviation of Wilshire 5000 index over the prior three years) interaction of home equity and current year deviation from average of prior 3 years in regional OFHEO house price repeat sales index interaction of home equity and volatility of regional OFHEO repeat sale house price index (as measured by standard deviation of OFHEO index over the prior three years)</p>
<p><i>Categorical Matching Variables</i> race age marital status education</p>	<p>white, black, other race age 25-35, age36-50, age 51-65 married, not married less than high school, high school, some college, college degree</p>

<i>Control Variables</i>	
dum89	=1 if Year 1989
dum92	=1 if Year 1992
dum95	=1 if Year 1995
dum98	=1 if Year 1998
less than high school	=1 if HOH's highest education is less than high school diploma
some college	=1 if HOH's highest education is some college
college graduate	=1 if HOH's highest education is 4-year college degree
family size	number of family members living in household
age 25-35	=1 if HOH's age is 25-35
age 51-65	=1 if HOH's age is 51-65
white	=1 if HOH identifies race as white
Black	=1 if HOH identifies race as black
northeast	=1 if household in is in the Northeast
south	=1 if household in is in the South
west	=1 if household in is in the West
married	=1 if household is married
divorced	=1 if household is divorced
separated	=1 if household is separated
widow	=1 if household is widow

+ Durable goods are defined based on the U.S. Census Bureau's Manufacturing, Mining, & Construction Statistics available at: <http://www.census.gov/indicator/www/m3>.

Appendix B. Homeowners: Market value regressions full results

	1989	1992	1995	1998	2001
Total Consumption					
log (income)	0.19546*** (0.01313)	0.20577*** (0.01339)	0.22053*** (0.01331)	0.26438*** (0.01911)	0.23453*** (0.01409)
log (financial wealth)	0.02159*** (0.00475)	0.02881*** (0.00457)	0.02191*** (0.00454)	0.01586** (0.00609)	0.01467** (0.00491)
log (house value)	0.06301*** (0.01062)	0.04881*** (0.01215)	0.06419*** (0.01204)	0.05126*** (0.01444)	0.05712*** (0.01116)
log (other real estate value)	0.00563** (0.00201)	0.0644** (0.00203)	0.00461* (0.00202)	0.00290 (0.00239)	0.00494* (0.00198)
less than high school	-0.09195** (0.03221)	-0.06157 (0.03548)	-0.12985*** (0.04581)	-0.14014** (0.04581)	-0.06306 (0.03760)
some college	0.05524* (0.02652)	0.08449** (0.02776)	0.09584*** (0.02741)	0.06231 (0.03228)	0.12295*** (0.02599)
college graduate	0.15556*** (0.02788)	0.16384*** (0.02739)	0.18564*** (0.02733)	0.15229*** (0.03412)	0.20538*** (0.02763)
family size	0.05494*** (0.00759)	0.04907*** (0.00791)	0.05421*** (0.00783)	0.04301*** (0.00988)	0.05645*** (0.00767)
age 25-35	-0.05776*** (0.02513)	-0.02192 (0.02656)	0.02061 (0.02766)	-0.02634 (0.03403)	0.00562 (0.02756)
age 51-65	-0.11174* (0.02506)	-0.14111*** (0.02602)	-0.08879*** (0.02584)	-0.09394** (0.03045)	-0.09848*** (0.02374)
white	0.15821*** (0.03631)	0.08414* (0.03922)	0.02294 (0.03717)	0.11842** (0.04130)	0.07175* (0.03262)
Black	0.04026*** (0.05230)	-0.02440 (0.05192)	-0.00379 (0.05145)	0.06244 (0.06216)	-0.01735 (0.04622)
northeast	0.03309 (0.02785)	0.06512* (0.02850)	0.07512** (0.02887)	0.06385 (0.03755)	0.02044 (0.03031)
south	0.01712 (0.02613)	0.05816* (0.02657)	0.03708 (0.02599)	-0.04063 (0.03245)	-0.03183 (0.02626)
west	0.11423*** (0.02727)	0.11960*** (0.02803)	0.06108* (0.02764)	0.10537** (0.03466)	0.04009 (0.27414)
married	0.34326*** (0.03978)	0.27182*** (0.04422)	0.19852*** (0.03966)	0.24661*** (0.05040)	0.23712*** (0.03668)
divorced	0.15781*** (0.04668)	0.10144* (0.04991)	0.00509 (0.04582)	0.10481 (0.05630)	0.02063 (0.04171)
separated	0.26695*** (0.07060)	0.06058 (0.07166)	-0.05639 (0.08049)	0.05918 (0.09554)	0.08317 (0.07594)
widow	0.21707*** (0.05969)	0.19006** (0.07217)	0.11034 (0.06214)	0.08558 (0.08605)	0.19872** (0.06428)
N	2252	2061	2100	2118	2755
R-squared	0.4427	0.4718	0.4586	0.3681	0.4128

* p<0.05; ** p<0.01; *** p<0.001

Appendix C. Homeowners: Market value regressions full results

	1989	1992	1995	1998	2001
Durable Goods					
log (income)	0.4664*** (0.04480)	0.35181*** (0.03990)	0.36738*** (0.04113)	0.48112*** (0.04621)	0.36401*** (0.03926)
log (financial wealth)	0.04385** (0.01622)	0.04310** (0.01360)	0.03351* (0.01404)	0.01808 (0.01471)	0.04291** (0.01368)
log (house value)	0.10754** (0.03622)	0.03911 (0.03621)	0.09206* (0.03719)	0.03465 (0.03491)	0.04406 (0.03109)
log (other real estate value)	-0.00151 (0.00688)	0.00714 (0.00606)	0.00201 (0.00626)	0.00041 (0.00577)	0.00063 (0.00550)
less than high school	-0.19665 (0.10990)	-0.39706*** (0.10569)	-0.48326*** (0.11132)	-0.37243*** (0.11076)	-0.30597** (0.10478)
some college	0.17720 (0.09049)	0.10636 (0.08274)	0.22883** (0.08469)	0.11544 (0.07803)	0.15665* (0.07243)
college graduate	0.26415** (0.09510)	0.26297** (0.08159)	0.28657*** (0.08443)	0.21386** (0.08249)	0.22889** (0.07702)
family size	0.09585*** (0.02589)	0.07365** (0.02356)	0.07038** (0.02417)	0.05828* (0.02389)	0.09707*** (0.02140)
age 25-35	-0.06029 (0.08573)	0.01851 (0.07914)	-0.05221 (0.08545)	-0.13499 (0.08226)	-0.00007 (0.07684)
age 51-65	-0.18125* (0.08548)	-0.21100** (0.07751)	-0.06625 (0.07984)	-0.15388* (0.07361)	-0.15443* (0.06616)
white	0.78289*** (0.12387)	0.33550** (0.11685)	0.12878 (0.11484)	0.33384*** (0.09987)	0.32487*** (0.09094)
Black	0.06502 (0.17840)	-0.12152 (0.15467)	-0.18665 (0.15895)	0.16922 (0.15029)	-0.02645 (0.12882)
northeast	-0.31453** (0.09501)	-0.06017 (0.08491)	-0.03989 (0.08918)	-0.11841 (0.09078)	-0.18486* (0.08448)
south	-0.12265 (0.08917)	0.10208 (0.07916)	0.02819 (0.08030)	-0.03528 (0.07844)	-0.15415* (0.07320)
west	0.07013 (0.09302)	0.12299 (0.08351)	-0.00947 (0.08538)	0.08270 (0.08381)	-0.08092 (0.07643)
married	0.71459*** (0.13573)	0.93168*** (0.13174)	0.59302*** (0.12255)	0.93762*** (0.12187)	0.81895*** (0.10224)
divorced	0.38183* (0.15923)	0.38216* (0.14868)	0.17129 (0.14158)	0.48107*** (0.13613)	0.44893*** (0.11625)
separated	0.20814 (0.24085)	-0.07589 (0.21346)	-0.20160 (0.24864)	0.04646 (0.23106)	-0.01792 (0.21166)
widow	0.48128* (0.20362)	0.24353 (0.21498)	0.64111*** (0.19196)	0.53626** (0.20800)	0.91603*** (0.17916)
N	2252	3061	2100	2118	2755
R-squared	0.2391	0.2754	0.2121	0.2434	0.2181

* p<0.05; ** p<0.01; *** p<0.001

Appendix D. Homeowners: Market value regressions full results

	1989	1992	1995	1998	2001
Nondurable Goods					
log (income)	0.17029*** (0.01168)	0.19665*** (0.01247)	0.20678*** (0.01183)	0.24413*** (0.01779)	0.21967*** (0.01276)
log (financial wealth)	0.02163*** (0.00423)	0.02515*** (0.00425)	0.01924*** (0.00404)	0.01586** (0.00567)	0.01247** (0.00445)
log (house value)	0.00564*** (0.00944)	0.05022*** (0.01131)	0.05813*** (0.01069)	0.05138*** (0.01345)	0.05469*** (0.01010)
log (other real estate value)	0.00587** (0.00180)	0.00591** (0.00189)	0.00486** (0.00180)	0.00348 (0.00221)	0.00638*** (0.10101)
less than high school	-0.06225* (0.02866)	-0.04706 (0.03302)	-0.10269** (0.03201)	-0.12578** (0.04266)	-0.03471 (0.03405)
some college	0.04566 (0.02360)	0.05906* (0.02585)	0.08625*** (0.02436)	0.06282* (0.03005)	0.12095*** (0.02354)
college graduate	0.13909*** (0.02481)	0.13193*** (0.02550)	0.17656*** (0.02481)	0.15434*** (0.03177)	0.21428*** (0.02504)
family size	0.05064*** (0.00675)	0.04703*** (0.00736)	0.05801*** (0.00695)	0.05274*** (0.00920)	0.04887*** (0.00695)
age 25-35	-0.06637** (0.02236)	-0.04479 (0.02472)	0.00610 (0.02457)	-0.01028 (0.03168)	0.00054 (0.02498)
age 51-65	-0.10005*** (0.02230)	-0.10333*** (0.02422)	-0.08299*** (0.00296)	-0.06030* (0.02835)	-0.09094*** (0.02150)
white	0.07586* (0.03230)	0.08562* (0.03651)	0.02840 (0.03302)	0.12725*** (0.03846)	0.06084* (0.02955)
Black	0.00513** (0.04653)	-0.01545** (0.04833)	0.00780 (0.04571)	0.06962 (0.05788)	0.03490 (0.04187)
northeast	0.08147 (0.02478)	0.06869* (0.02653)	0.05695* (0.02565)	0.05962 (0.03496)	0.04148 (0.02745)
south	0.03225 (0.02326)	0.05592 (0.02473)	0.01420 (0.02310)	-0.02840 (0.03020)	-0.02927 (0.02379)
west	0.11378*** (0.02426)	0.10262*** (0.02609)	0.03210 (0.02456)	0.08600** (0.03228)	0.04229 (0.02483)
married	0.28200*** (0.03540)	0.17566*** (0.04116)	0.12164*** (0.03524)	0.14278** (0.04694)	0.18441*** (0.03323)
divorced	0.12843** (0.04152)	0.04822 (0.04646)	-0.02446 (0.04071)	0.05067 (0.05243)	-0.00974 (0.03777)
separated	0.26150*** (0.06281)	0.03814 (0.06670)	-0.00824 (0.07151)	0.05261 (0.08897)	0.07554 (0.06880)
widow	0.13192* (0.05310)	0.10481 (0.06718)	0.02193 (0.05520)	0.08363 (0.08013)	0.09746 (0.05822)
N	2252	2061	2100	2118	2755
R-squared	0.4441	0.4553	0.4712	0.3656	0.4265

* p<0.05; ** p<0.01; *** p<0.001

Appendix E. Homeowners: Net wealth regressions full results

	1989	1992	1995	1998	2001
Total Consumption					
log (income)	0.25301*** (0.00178)	0.25901*** (0.01246)	0.26473*** (0.01241)	0.31357*** (0.01645)	0.28433*** (0.01219)
net financial wealth (million \$)	0.00379 (0.00408)	0.00936*** (0.00280)	0.00420* (0.00189)	0.00078 (0.00136)	0.00061 (0.00092)
home equity (million \$)	0.09819** (0.03029)	0.08366*** (0.02344)	0.05620** (0.01989)	0.04337* (0.02117)	0.04792*** (0.01304)
other real estate equity (million\$)	0.00681 (0.00377)	0.00871 (0.00437)	0.01563* (0.00613)	0.00814 (0.00969)	0.00101 (0.00364)
less than high school	-0.13572*** (0.03254)	-0.11861*** (0.03582)	-0.19824*** (0.03566)	-0.16590*** (0.04568)	-0.08605* (0.03766)
some college	0.08024** (0.02689)	0.11799** (0.02816)	0.12845*** (0.02758)	0.09089** (0.03200)	0.14416*** (0.02609)
college graduate	0.24682*** (0.02666)	0.24800*** (0.02656)	0.26251*** (0.02629)	0.20830*** (0.03251)	0.27611*** (0.02612)
family size	0.05412*** (0.00774)	0.04905*** (0.00808)	0.05416*** (0.00795)	0.04379*** (0.00994)	0.05794*** (0.00775)
age 25-35	-0.10259*** (0.02511)	-0.06870*** (0.02673)	-0.04488 (0.02714)	-0.06730* (0.03333)	-0.03401 (0.02718)
age 51-65	-0.07722** (0.02517)	-0.08196** (0.02569)	-0.04654 (0.02560)	-0.05896* (0.02969)	-0.06239** (0.02334)
white	0.19399*** (0.03640)	0.11240*** (0.03979)	0.03409 (0.03763)	0.13606*** (0.04117)	0.10171** (0.03230)
Black	0.01352 (0.05322)	-0.04572 (0.05286)	-0.05850 (0.05175)	0.05109 (0.06245)	-0.03761 (0.04646)
northeast	0.03494 (0.02840)	0.07628** (0.02912)	0.07535* (0.02933)	0.06772 (0.03777)	0.02506 (0.03059)
south	0.02459 (0.02664)	0.06137* (0.02717)	0.03713 (0.02641)	-0.04269 (0.03264)	-0.03217 (0.02652)
west	0.12627*** (0.02777)	0.12710*** (0.02865)	0.06551* (0.02807)	0.10794 (0.03489)	0.04288 (0.02768)
married	0.37126*** (0.04044)	0.30783*** (0.04507)	0.24087*** (0.04010)	0.27452*** (0.05042)	0.24828*** (0.03700)
divorced	0.16348*** (0.04755)	0.09146 (0.05099)	-0.00012 (0.04653)	0.10864 (0.05662)	0.02217 (0.04210)
separated	0.26243*** (0.07198)	0.06667 (0.07322)	-0.06732 (0.08167)	0.05864 (0.09611)	0.08018 (0.07665)
widow	0.20840*** (0.06083)	0.20014** (0.07379)	0.09027 (0.06300)	0.08960** (0.08649)	0.20505** (0.06487)
N	2252	2061	2100	2118	2755
R-squared	0.4204	0.4479	0.4411	0.3606	0.4017

• p<0.05; ** p<0.01; *** p<0.001

Appendix F: Pooled Estimation Full Regression Results “Market Value” for All Households

TOTAL POPULATION		Total Consumption	Durable Goods	Non Durable Goods
log(income)	c_loginc	0.215*** (0.005)	0.433*** (0.016)	0.197*** (0.004)
log (financial wealth)	lfinancial	0.021*** (0.002)	0.031*** (0.008)	0.019*** (0.002)
log (house value)	lhouse	0.005*** (0.001)	0.005 (0.004)	0.004*** (0.001)
log(other real estate)	lrealest	0.008*** (0.001)	0.003 (0.003)	0.008*** (0.001)
log (deviations in financial wealth)	lfinfdevin	0.011 (0.006)	0.045** (0.019)	0.007 (0.005)
log (volatility in financial wealth)	lfinfvolin	0.014 (0.017)	0.188*** (0.058)	0.001 (0.016)
log (deviations in house value)	lhsehdevin	-0.006 (0.014)	0.045 (0.045)	-0.010 (0.012)
log (volatility in house value)	lhsehvolin	-0.060 (0.039)	0.083 (0.130)	-0.059 (0.035)
Year 1989	dum89	-0.303*** (0.031)	-0.746*** (0.102)	-0.266*** (0.028)
Year 1992	dum92	-0.194*** (0.022)	-0.379*** (0.074)	-0.169*** (0.020)
Year 1995	dum95	-0.171*** (0.028)	-0.318*** (0.094)	-0.148*** (0.026)
Year 1998	dum98	-0.121*** (0.026)	-0.220** (0.087)	-0.100*** (0.024)
less than high school	nodip	-0.125*** (0.013)	-0.432*** (0.043)	-0.092*** (0.012)
some college	somecoll	0.097*** (0.010)	0.194*** (0.034)	0.092*** (0.009)
college graduate	badegree	0.224*** (0.011)	0.327*** (0.035)	0.216*** (0.010)
family size	famsize	0.059*** (0.003)	0.090*** (0.010)	0.058*** (0.003)
age 25-35	age2535	-0.024** (0.010)	-0.101** (0.032)	-0.019* (0.009)
age 51-65	age5065	-0.092*** (0.010)	-0.137*** (0.034)	-0.075*** (0.009)
white	white	0.078*** (0.013)	0.371*** (0.042)	0.066*** (0.011)
black	black	-0.005631 (0.017)	-0.124* (0.055)	0.015 (0.015)
northeast	northeast	0.066*** (0.012)	-0.209*** (0.039)	0.082*** (0.011)
south	south	0.001 (0.010)	-0.038 (0.034)	0.003 (0.009)
west	west	0.094***	-0.003	0.088***

		(0.012)	(0.040)	(0.011)
married	married	0.255***	0.862***	0.173***
		(0.013)	(0.044)	(0.012)
divorced	divorced	0.061***	0.352***	0.026*
		(0.015)	(0.048)	(0.013)
separated	separated	0.087***	-0.001	0.083***
		(0.022)	(0.074)	(0.020)
widow	widow	0.131***	0.647***	0.050**
		(0.022)	(0.074)	(0.020)
N		16720	16720	16720
Average R-squared		0.467	0.264	0.463

Appendix G: Pooled Estimation Full Regression Results “Market Value” for Homeowners

OWNERS		Total Consumption	Durable Goods	Non Durable Goods
log(income)	c_loginc	0.222*** (0.006)	0.403*** (0.019)	0.206*** (0.006)
log (financial wealth)	lfinancial	0.022*** (0.003)	0.020* (0.010)	0.022*** (0.003)
log (house value)	lhouse	0.060*** (0.005)	0.065*** (0.016)	0.056*** (0.005)
log(other real estate)	lrealst	0.005*** (0.001)	0.002 (0.003)	0.005*** (0.001)
log (deviations in financial wealth)	lfinfdevin	0.012 (0.008)	0.029 (0.024)	0.008 (0.008)
log (volatility in financial wealth)	lfinfvolin	-0.007 (0.025)	0.213** (0.073)	-0.022 (0.023)
log (deviations in house value)	lhsehdevin	-0.015 (0.015)	0.037 (0.043)	-0.015 (0.013)
log (volatility in house value)	lhsehvolin	-0.109** (0.046)	-0.047 (0.135)	-0.089* (0.042)
Year 1989	dum89	-0.232*** (0.049)	-0.656*** (0.144)	-0.192*** (0.045)
Year 1992	dum92	-0.154*** (0.035)	-0.254** (0.102)	-0.130*** (0.032)
Year 1995	dum95	-0.165*** (0.045)	-0.200 (0.132)	-0.139*** (0.041)
Year 1998	dum98	-0.129** (0.042)	-0.129 (0.122)	-0.105** (0.038)
less than high school	nodip	-0.098*** (0.017)	-0.353*** (0.048)	-0.074*** (0.015)
some college	somecoll	0.086*** (0.012)	0.157*** (0.036)	0.078*** (0.011)
college graduate	badegree	0.177*** (0.013)	0.254*** (0.037)	0.169*** (0.012)
family size	famsize	0.052*** (0.004)	0.079*** (0.011)	0.051*** (0.003)
age 25-35	age2535	-0.016 (0.013)	-0.038 (0.036)	-0.023* (0.011)
age 51-65	age5065	-0.106*** (0.012)	-0.161*** (0.034)	-0.087*** (0.011)
white	white	0.085*** (0.016)	0.361*** (0.048)	0.073*** (0.015)
black	black	0.008 (0.023)	-0.039 (0.068)	0.024 (0.021)
northeast	northeast	0.062*** (0.015)	-0.143*** (0.042)	0.071*** (0.013)
south	south	-0.002 (0.012)	-0.054 (0.036)	0.000 (0.011)
west	west	0.103*** (0.016)	0.024 (0.046)	0.089*** (0.014)

married	married	0.259***	0.795***	0.184***
		(0.019)	(0.054)	(0.017)
divorced	divorced	0.070***	0.374***	0.033
		(0.021)	(0.062)	(0.019)
separated	separated	0.083**	0.004	0.083**
		(0.035)	(0.102)	(0.032)
widow	widow	0.159***	0.584***	0.081**
		(0.030)	(0.088)	(0.028)
N		11314	11314	11314
Average R-squared		0.442	0.236	0.445