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THE WEALTH EFFECT WITH  
RESPECT TO HOUSING

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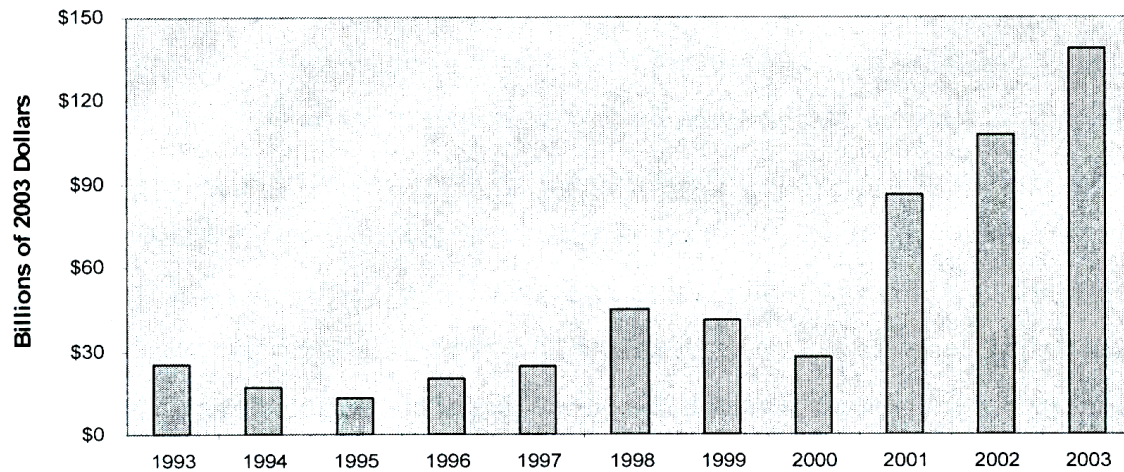
# The Wealth Effect With Respect to Housing

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## **The Wealth Effect With Respect to Housing**

For decades, researchers and economists have looked at the link between wealth and consumption, known as the wealth effect. A renewal in the literature began in the 1990s due to increases in stock values and economic expansions. Researchers wanted to know how wealth (housing wealth versus financial wealth) affects consumption (Dynan and Maki 2001). For this study, I will first summarize a portion of the literature on the topic and then, using data from the Federal Reserve System's Flow of Funds Account, manipulate various regressions of the consumption function.

First, Belsky and Prakken (2004) claim that wealth is built directly in housing both through the appreciation of the home value and forced savings in the form of mortgage payments that pay down principal. Home equity is an asset that owners borrow against at favorable rates, allowing them to finance other consumption and investment expenditures. This study found that borrowing through cash-out refinances soared to new highs in 2003. The authors suggest that strong home price appreciation and particularly low mortgage rates encouraged homeowners to extract the equity from their homes more so than ever before. The graph below shows the amount of cash-out refinances that took place between 1993-2003. It is easy to see that the dollar amount has increased drastically in the last three years.

**Chart 8: Cash-Out Refinances Have Skyrocketed**

Source: Freddie Mac.

Allison Floam (2005) did a similar study at the University of Pennsylvania. In her study, she found that while both wealth effects are positive, the magnitude of the housing effect is much greater than that of the wealth effect due to financial assets. Case *et al.* (2005) performed a study over a panel of 14 countries and all US states. They looked at the significance of the housing effect versus the significance of financial wealth. In almost all instances, housing wealth outweighs financial wealth in the magnitude of its effect. Case *et al.* used the aggregate value of owner-occupied housing, the value of financial assets and a measure of aggregate consumption for each of the geographic units over time. Findings show that housing wealth has a large effect on household consumption—larger in almost every instance when compared to stock market wealth. The following is a report of the regressions done in this study for the international and US data. Note that the coefficients for housing wealth are always larger than that for stock market wealth.



**Table 3**  
**Ordinary Least Squares**  
**Consumption Models in First Differences**  
**Country/State Fixed Effects**

All variables are real (deflated by GDP deflator) and measured per capita in logarithms  
(t ratios in parentheses)

Dependent variable: Consumption per capita

	International Data			U.S. State Data		
	I	II	III	I	II	III
Income	0.266 (4.06)	0.239 (3.49)	0.254 (3.34)	0.332 (14.12)	0.325 (13.73)	0.274 (11.15)
Stock Market Wealth	-0.008 (-1.37)	-0.010 (-1.67)	-0.007 (-0.97)	0.001 (0.23)	0.002 (0.36)	0.003 (0.50)
Housing Market Wealth	0.128 (6.21)	0.147 (6.56)	0.141 (6.37)	0.034 (3.58)	0.030 (3.11)	0.038 (3.94)
Country/State Specific Time Trends	No	Yes	No	No	Yes	No
Year/Quarter Fixed Effects	No	No	Yes	No	No	Yes
Regression R <sup>2</sup>	0.3943	0.4346	0.4807	0.0729	0.0813	0.1458
Durbin-Watson	1.718	1.847	1.705	2.424	2.445	2.484
t-Ratio	6.341	6.725	6.518	2.876	2.437	3.097
p-value for H <sub>0</sub>	0.000	0.000	0.000	0.004	0.015	0.002
p-value for H <sub>1</sub>	1.000	1.000	1.000	0.998	0.993	0.999

Note: H<sub>0</sub> is a test of the hypothesis that the coefficient on housing market wealth is equal to that of stock market wealth.  
H<sub>1</sub> is a test of the hypothesis that the coefficient on housing market wealth exceeds that of stock market wealth.

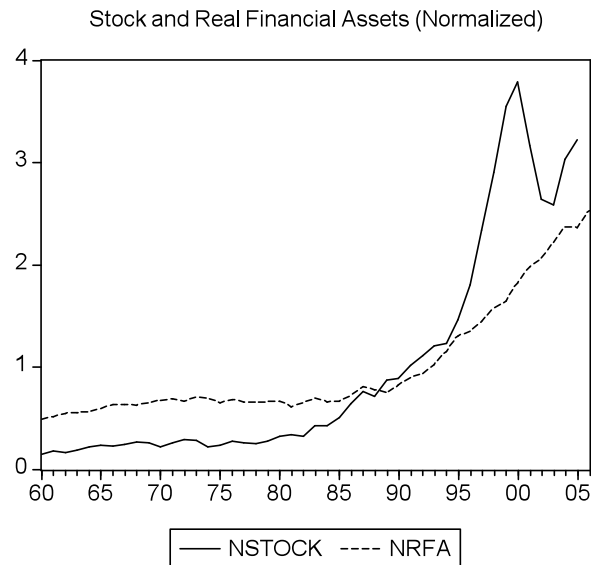
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Finally, Sierminska and Takhtamanova (2007) studied the differences in housing and financial wealth for different age groups in Canada, Italy and Finland. Their findings show that the wealth effect from housing is stronger than the wealth effect from financial wealth. They speculated that housing wealth may have a greater wealth effect because it serves as a proxy for permanent income, an important determinant of household consumption. Sierminksa and Takhtamanova (2007) used socio-demographic characteristics to control for permanent income and still found housing wealth to have a high impact on personal consumption in households. They also stated that there is a difference in the wealth effect for different countries and age groups within their findings. For example, a change in housing wealth may impact a younger couple much more heavily than it would impact an older couple or family.

When estimating the consumption function, I used real interest rate, the inflation rate, income and a stock variable from the holdings from the S&P 500 index. I converted the data into annual terms; the resulting equation is in Column I of the Appendix.

The coefficient of the stock variable may be interpreted to mean that for a single-unit increase in the S&P 500 index, there is a \$178 million increase in consumption. Since I was interested in financial wealth for households and not holdings of a particular stock, I decided to replace the stock variable above with net financial assets from the Federal Reserve System's Flow of Funds Z.1 files. After converting the financial assets into real terms, I ran the regression presented in Column II of the table.

Unlike the stock variable, the coefficient of real financial assets is 0.049, meaning that for every \$1 increase in wealth from financial assets, households will spend an estimated 5 cents through consumption purchases in this quarter. This regression, which has a small increase in the adjusted  $R^2$ , has shown that the coefficient of the stock variable has decreased. Although the magnitude of the coefficient has gone down, we do observe a greater t-statistic, indicating that "Real Financial Assets" is a stronger variable for our regression than the stock variable. The correlation between these two variables is shown in the following graph.

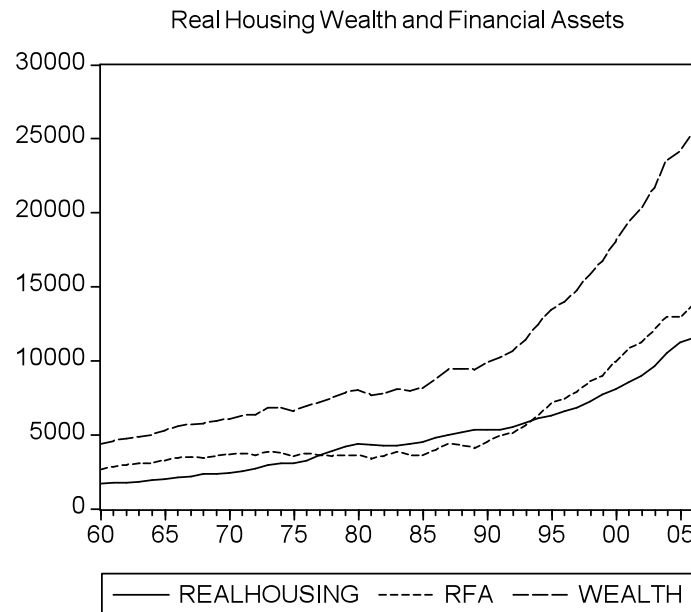


This graph shows that the two variables are relatively well correlated. As expected, financial assets are a more stable indicator of wealth because they include a range of stocks and bonds and exhibit lower volatility. While the stock variable has its peaks and troughs (e.g. the burst of the stock market bubble in March 2000), real financial assets seem to have been on a steady incline since the late 1980s. Thus, real financial assets are a more comprehensive measure of wealth as predicted by the regression above.

I then entered the housing data, which I retrieved from the Federal Reserve's Flow of Funds Z.1 files. Looking at the net worth of residential housing, I converted the variable into real terms (as above) and added it to the existing regression with real financial assets. This new regression is in Column III of the table in the Appendix.

At first glance, the coefficient on real financial assets appears to have decreased, and the same holds true for the coefficients of the other three variables. The errors have decreased and the t-statistics have increased for both real interest rate and inflation. While

the t-statistic for income did not increase like the others, one explanation of this could be the high correlation between housing and income, which is 0.983. If wealth is defined as the sum of housing wealth and financial wealth, it helps to look at the periods of time in which people tended to invest in particular assets, which is represented below.



Based on this graph, people appear to invest more in stocks than home equity except from the 1980s until the mid-1990s. If that is the case, what are some explanations for why people might spend more from housing wealth than from financial wealth, as indicated by the regression?

Working within the framework of Milton Friedman's permanent income hypothesis, gains from investment in financial assets can be explained as temporary income because the stock market is volatile and such gains may be short-lived (Friedman 1957). Again, an example of this is the stock market bubble in 2000. That said, individuals may see such appreciation as permanent income because appreciation in

home equity is less volatile. Homeowners might feel more comfortable adjusting consumption based on housing appreciation than on capital gains from financial assets.

Another reason that gains from housing wealth may dominate consumption is that stocks and bonds may take years for owners to see equity gains. Examples of this are 401K accounts and other long-term stocks and bonds. In comparison, housing wealth is seen as being more liquid. People can refinance and substitute a larger new mortgage for the smaller current mortgage or borrow against it at favorable rates. They can also receive returns on their home equity without increasing their debt by selling a home and buying another one using only a portion of the equity from the previous home. Between 2000 and 2003, all three of these forms of home equity extraction reached record levels (Belsky and Prakken 2004).

The broader implications of this study for policymakers is that it is important to track the developments of the housing market because it has more of an impact on consumption compared to the financial markets. Since the housing wealth effect dominates the financial wealth effect, especially in particular countries, the impact of a softening housing market could have a more dramatic effect than the historic stock market declines that began in 2000 (Sierminska and Takhtamanova 2007).

## Appendix

	<b>I</b>	<b>II</b>	<b>III</b>
<b>Constant</b>	14.18963	-88.95537***	-7.987516
	(0.512695)	(-3.919588)	(-0.253586)
<b>Real Interest Rate</b>	-28.73934***	-14.11946***	-18.41394***
	(-7.304170)	(-3.509960)	(-4.816472)
<b>Inflation Rate</b>	-21.39480***	-15.50815***	-20.94085***
	(-5.276934)	(-4.835764)	(-6.354404)
<b>Disposable Personal Income</b>	0.926898***	0.891113***	0.847420***
	(90.07757)	(89.14760)	(53.73295)
<b>Stock Variable</b>	0.177968***	---	---
	(3.610014)		
<b>Real Financial Assets</b>	---	0.049283***	0.027733***
		(7.700455)	(3.226702)
<b>Real Housing</b>	---	---	0.055229***
			(3.365696)
<b>R<sup>2</sup></b>	0.999424	0.999670	0.999741
<b>Adjusted-R<sup>2</sup></b>	0.999368	0.999638	0.999710
<b>Durbin-Watson Statistic</b>	1.013257	1.531064	1.639682

Note: T-statistics are represented in parentheses. \* indicates 10% level of significance, \*\* indicates 5% level of significance, and \*\*\* indicates 1% level of significance.

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