

Edward M Gramlich: Consumption and the wealth effect: The United States and the United Kingdom

Speech by Mr Edward M. Gramlich, Member of the Board of Governors of the US Federal Reserve System, before the International Bond Congress, London, U.K., 20 February 2002.

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Besides sharing a common history, language, and legal structure, the United States and the United Kingdom have something else in common. In the past few years, both countries have experienced a significant wealth effect--so significant that understanding the wealth effect has become an important aspect of conducting monetary policy.

In the United States, the average ratio of household wealth to disposable income was about 4.5 from 1970 to 1995. Over the next five years, fueled by a modest boom in real estate values and a huge boom in equity values, the wealth-income ratio shot up to more than 6, the highest recorded value in the fifty years for which wealth data are available. Since 2000, equity prices have moderated, but the wealth-income ratio is still above 5. Perhaps because of that, consumption remained strong throughout the downturn of 2001.

The experience has been remarkably similar in the United Kingdom. Here the wealth-income ratio has averaged about 4.75 for the past thirty years, and a moderate boom in housing prices and a huge boom in equity values in the late 1990s took the ratio to 6.5 by mid-2000. Again, the wealth-income ratio has fallen off since that time, but consumption spending was strong throughout 2000-01.

With numbers like this, it makes sense to probe into the wealth effect more deeply. I begin by summarizing the empirical evidence on the wealth effect, in both the United States and the United Kingdom, and then I move on to some theoretical quandaries. Getting into theoretical quandaries sounds like a bad idea for a wrap-up speech, but I will try to persuade you that these quandaries are indeed puzzling--and also fundamental.

Empirical Evidence on Household Wealth and Spending

At the aggregate level, the effect of wealth on consumption has been a mainstay of large-scale econometric models for at least thirty years. The econometric model of the U.S. economy used by the Federal Reserve has included a wealth effect for all this time, one that suggests that an additional dollar of household wealth leads, over time, to a permanent rise in household consumption of about three to five cents.

A basic question is whether households' net worth summarizes all the information about their balance sheets that is useful in predicting their spending. Does a decomposition of net worth into various asset and liability categories improve forecasts of household spending? For a variety of reasons, this question has proved difficult to answer: Some researchers have found that separating liabilities from assets helps to explain variations in consumption over time; others have not.

The current version of the Fed's model uses two categories of wealth: equity wealth and all other wealth, with the latter encompassing housing wealth and also the value of noncorporate businesses and other net financial assets. The estimated marginal propensities to consume out of these two wealth aggregates are virtually indistinguishable. But that has not always been the case. As the model has evolved, the estimated marginal propensity to consume out of non-stock-market wealth has varied substantially relative to the marginal propensity to consume out of stock market wealth.

The Bank of England's model for consumption expenditures also incorporates significant effects of household wealth. According to the Bank's model, a 10 percent increase in real net financial wealth boosts consumer spending 0.7 percent in the long run, and a similar rise in real gross housing wealth boosts spending 0.5 percent in the long run. Converting these to pence and pounds at present levels, the effective net worth coefficient on consumption is about 1.5 pence per pound of net worth increase for housing and about 2 pence per pound for financial wealth.

Unfortunately, relatively little is known about the household behavior underlying the time-series relationships in the aggregate data. Until recently, economists have been able to marshal little formal evidence that the observed relationship between aggregate spending and aggregate wealth could be traced to changes in spending by those households that actually experienced wealth gains. But that gap in our understanding is now being filled, at least for equity wealth in the United States. Several recent papers--including some by economists at the Federal Reserve Board--have documented a microeconomic relationship corresponding to the relationship that we have long observed in aggregate data.

For example, one study that analyzed the response of individual households to changes in stock market wealth found that, over 1983-99, the spending of U.S. households that owned stocks responded to movements in the stock market, whereas the spending of non-holders of stocks had no apparent link to stock prices.¹ A second study estimated that, in the second half of the 1990s, U.S. households in the top income quintile and households that had attained some college education showed larger consumption increases than other households, and also disproportionate increases in consumption compared to disposable income. This is consistent with the fact that these households owned most of the stocks and experienced the largest gains in wealth.² But as yet, microeconomic evidence on the link between housing wealth and consumption is much more limited.

The predicted effect of wealth on consumption has been put to the test in the United States during the past half-decade, and it has passed that test easily. Between early 1995 and early 2000, the Wilshire 5000 stock-price index (a broad measure of equity prices in the United States) tripled, and nearly \$12 trillion was added to the wealth of the U.S. households. Over that same period, saving dropped from 6-1/2 percent of disposable income to roughly 1 percent. The magnitude of this decline is consistent with the run-up in equity prices and the marginal propensity to consume out of equity wealth built into the Fed's model. Since the peak in equity values, the Wilshire 5000 has dropped about one-third, corresponding to a loss in wealth of roughly \$6 trillion. The personal saving rate has not yet turned up substantially, but I would not read much into that fact: Previous stock-market gains probably were still supporting spending through the end of 2000, and the low saving rate could be rationalized by the recession and a surge in motor vehicle sales spurred by generous financing offers.

The U.S. experience in the past few years has not provided an equivalent test of the effect of housing wealth on consumption, because movements in house prices have been more limited than the striking swings in equity prices. Between early 1995 and late last year, the value of residential real estate in the United States increased about 65 percent--a substantial rise. But the gain in house prices was fairly steady, making isolating its effect on household spending difficult. In the first quarter of 1995, housing wealth was equal to roughly 1.4 times after-tax income, and by the third quarter of 2001 that ratio increased to about 1.6 without ever moving outside that fairly narrow range. In contrast, the ratio of equity wealth to after-tax income soared from 1.1 in early 1995 to 2.6 in early 2000 before subsiding to 1.5 in the third quarter of last year.

Developments in the United Kingdom over this same period are consistent with the U.S. experience. British households' equity wealth increased more than €880 billion (thousand million) between 1995 and 2000--a gain in excess of 50 percent--while their housing wealth rose by more than €650 billion. At the same time, household saving fell from 10 percent of income in 1995 to around 4 percent in early 2000.

As in the United States, equity prices in the United Kingdom have fallen sharply since 2000. The FTSE 350 index now stands almost 25 percent below its peak in September 2000, and the techMARK 100 index has fallen around 75 percent since its peak. The saving rate appears not to have increased much over this period, in part because house prices have continued to rise at double-digit annual rates and in part because of lagged effects of past wealth increases. These explanations, if correct, could be similar to those for the United States.

¹ Karen E. Dynan and Dean M. Maki, "Does Stock Market Wealth Matter for Consumption?" Finance and Economics Discussion Series, 2001-23 (Board of Governors of the Federal Reserve System, May 2001).

² Dean M. Maki and Michael G. Palumbo, "Disentangling the Wealth Effect: A Cohort Analysis of Household Saving in the 1990s," Finance and Economics Discussion Series, 2001-21 (Board of Governors of the Federal Reserve System, April 2001).

To be sure, not every analysis of the link between household wealth and spending comes to the same conclusions as in the studies I mentioned. On balance, however, the link between aggregate household wealth and spending has remained one of the sturdier empirical relationships in macroeconomics.

The Link between Stock-Market Wealth and Consumption Given the sturdiness of the empirical relationship, it may be bad form to question its theoretical basis; but let me do so anyway. First, on the equity side, the value of equities can change for two reasons: because market participants adopt a new view of future profits or because market participants apply a different set of discount factors to those expected profits, where the discount factors incorporate both risk-free interest rates and equity premiums. Barry Bosworth, Robert Hall, and others have pointed out that, from a theoretical standpoint, stock-price movements should have different effects on household spending depending on whether they derive from changes in expected profits or from changes in discount rates.

Suppose, for example, that stock prices increase because of a rise in expected profits, say from a spurt in productivity. An individual household that owns stocks will have higher wealth and will want to consume more, just as predicted by the wealth effect. For the economy as a whole, the story is more complicated because the additional aggregate demand is likely to push up interest rates and limit the rise in stock prices. Both the productivity spurt itself and the induced rise in interest rates will then affect desired investment, international capital flows, and the trade balance.

Suppose, instead, that stock prices increase because households are applying a lower discount rate to future profits. Whether an individual household will want to consume more is unclear in this case. Intuitively, households are simply discounting the same stream of profits at a different rate; so it is not obvious that they are truly better off and should increase their consumption. At a more technical level, the increase in wealth might--taken alone--encourage greater consumption, but household spending will also be influenced by the familiar income and substitution effects induced by the change in the discount rate.

This second case is far more complicated than the first when one considers the evolution of the economy as a whole. The discount rate for profits--the sum of the risk-free interest rate and the equity premium--depends on other features of the economy. Hence, if the discount rate has changed, some other aspect of the economy must have changed as well--and that change may have effects on consumption separate from the effect of the change in stock prices. Among the myriad of possibilities in this area, I will mention just two. One is that households and investors may have reassessed the riskiness of future profits. Another is that taxes may have been altered, and the move to a different fiscal policy would have changed the risk-free interest rate.

Implementing these complicated theoretical relationships in an empirical model is challenging. Because the interaction of stock-market wealth and consumption depends on many other features of the economy, we would need to model not only the household sector but all the rest of the economy as well. In addition, households' expectations of future income, profits, and rates of return play critical roles in this analysis, and modeling those expectations is especially difficult.

To summarize the results for equities, there are three main lessons:

At least in theory, changes in stock prices can have very different effects on consumption depending on their origin.

Changes in expected profits and changes in discount rates generally do not occur independently of each other for the economy as a whole although, of course, they may do so for individual firms. Thus, thinking about profits and discount rates as separate influences on stock prices may be misleading when one considers economywide changes.

Capturing the true complexity of the relationship between stock-market wealth and consumption is extremely difficult with existing data and empirical techniques. As in many areas of empirical economics, we currently must be satisfied by models that capture broad patterns in the data.

The Link between Housing Wealth and Consumption

The task gets no easier when we turn to the relationship between housing wealth and consumption. Because houses are assets similar to corporate capital, much of the previous discussion of stock market wealth applies to housing wealth as well. Thus, changes in house prices that occur for different

reasons may also have different effects on consumption. Nonetheless, it makes sense to think about housing specifically.

Suppose that house prices increase relative to the prices of other goods and services because individuals become more patient and reduce the discount rate for future housing services. Those who intend to live in their houses forever would have higher wealth, but they would have no additional resources for increasing their consumption of real housing services or other goods and services. Yet, as I noted earlier, most studies based on aggregate time-series data find that changes in housing wealth do affect real consumption. So what is missing from this simple story?

One factor is that houses sometimes appreciate because the expected housing services from those houses rise. For example, population growth or immigration may push up the value of land close to major cities. We can interpret this increase in housing wealth as reflecting the greater housing services offered by proximity to more populous urban areas. In this scenario, homeowners would truly be better off, and those who live in their houses forever would consume additional real housing services. However, these households would still have no resources to increase their consumption of other goods, unless they could sell their houses or borrow against their housing equity.

This simple example becomes more complicated when we consider that most homeowners do not intend to live in their current houses forever. Instead, many homeowners expect to move to smaller houses, condominiums, or retirement communities as they get older. These so-called "downsizers" are clearly better off when house prices increase relative to other prices, and we can expect them to increase their consumption of nonhousing goods and services. At the same time, however, many individuals who do not currently own homes plan to purchase homes, or many who own small homes plan to trade up to larger homes in the future. These so-called upsizers may respond to an increase in house prices by reducing their consumption of other goods and services.

To evaluate the effect of housing wealth on aggregate consumption, one must then determine the relative magnitude of these opposing responses. Economic theory suggests that downsizers may generally have higher marginal propensities to consume out of housing and other forms of wealth than upsizers, which would give consumption a positive impetus from house-price increases. For example, downsizers tend to be older than upsizers, so they will distribute any change in lifetime consumption across fewer years. Moreover, upsizers may be liquidity constrained. If they would like to consume more but cannot because unsecured borrowing is difficult, then at least modest increases in house prices should not reduce their consumption. At the same time, upsizers who are saving for a downpayment may have a relatively short planning horizon. In the end, determining the relative consumption responses of housing upsizers and downsizers becomes an empirical question.

A third factor linking housing wealth and consumption is the effect of realized capital gains, accrued either by selling one's house or by borrowing through a home equity loan. As Chairman Greenspan has noted, accumulated home equity is not itself a liquid asset. In addition, its value is somewhat uncertain, although general trends in real estate prices can be easily observed. Selling a house, or getting one's house appraised and taking out a home equity loan, converts this illiquid home equity of uncertain value into liquid funds with known value. This conversion could also induce added consumption, especially if consumers are liquidity constrained.

Conclusion

There is little empirical doubt that stock-market wealth and housing wealth influence consumption and the macroeconomy. Nevertheless, our understanding of the empirical relationships and of the theoretical underpinnings of those relationships remains incomplete. Substantial progress has been made, but we should hope that future research will help to untangle the remaining puzzles.

This research agenda is important for the advancement of economic understanding and the conduct of monetary policy. As you know, both the Federal Reserve and the Bank of England have long-run goals of price stability and sustainable growth. To achieve these goals, these central banks take an active interest in all the factors that affect economic performance, including business and consumer confidence, economic growth abroad, the foreign exchange value of the dollar, fiscal policy, and so on. The experience of the past few years--in the United States and the United Kingdom--has emphasized that the effect of wealth on consumption has an important place on that list.