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## Household Asset Portfolios and the Reform of the Housing Finance Market

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*When individuals or families make retirement planning decisions, including asset allocation choices, it is important for them to consider how all of the assets they own fit together to form an overall portfolio of household wealth. Surprisingly often, one of the most important household assets is left out of retirement planning discussions completely: the family home.*

*This issue of Research Dialogues examines in detail the central role that residential housing plays in household asset portfolios in the United States. Currently, families don't have much choice regarding the amount of wealth they must "allocate" to their home: either they own their residence or they do not. This stark choice generally leaves homeowners overexposed to significant*

*financial risks that most would prefer not to take. The authors of this article describe financial innovations that, if developed and adopted, would provide families far greater choice regarding how much to invest in a home. The authors show that this greater flexibility could lead to as much as 20% greater wealth at retirement through better diversification of the wealth that homeowners currently must hold in the form of housing.*

*This article was prepared for Research Dialogues by Andrew Caplin, professor, New York University Department of Economics; Sewin Chan, assistant professor, Rutgers University Department of Economics; Charles Freeman, vice president, Chase Manhattan Mortgage Company; and Joseph Tracy, senior economist, Federal Reserve Bank of New York. It summarizes many of the themes that are discussed in detail in their recent book, *Housing Partnerships* (1997).*

### Introduction

The basic idea of modern portfolio theory is that a household should not put all its eggs in one basket. Rather, it should develop a balanced holding of various stocks, bonds, and other assets in order to gain diversification benefits. Since this concept is now so widely accepted, one might expect household asset portfolios to be highly diversified across asset categories. But they aren't. There are two very risky assets that dominate the portfolio. One is the present value of the household's current and expected future labor income (its human capital). The other is owner-occupied housing.

The dominant role of housing in the asset portfolio results in a great deal of fi-

nancial risk, since there is at present no effective method of diversification. Professor William Fischel of Dartmouth College highlights the dilemma in his review (Fischel 1998) of our book, *Housing Partnerships* (Caplin, Chan, Freeman, and Tracy 1997):

*Suppose your investment advisor proposed the following deal. You put almost all of your personal savings in the stock of a single company. The company makes one product and has one plant. The supposed company is involved in an industry that is favored by federal tax laws and that has generally grown more rapidly than average. But the industry is subject to large swings in value caused both by the national economy and by local and idiosyncratic conditions.*

*You would probably decline to take such a risky investment. Yet most people make just such a risky investment when they purchase a home. . . . Homeowners . . . can insure the house against damage from fires and floods, but they cannot insure against market meltdown or regional economic swings. [Page 69]*

While diversification options in the current market are limited, the situation may be about to change. There are a number of housing market reform proposals on the table that would radically increase options for diversification.

The central goal of these reform proposals is not diversification per se, but rather to reduce the costs of homeownership. Owning a home is an important

part of the American Dream, and policy makers are constantly searching for measures that expand the opportunities for ownership. In *Housing Partnerships*, we outline a set of market reforms designed to accomplish this goal, as noted by Louis Uchitelle in the *New York Times Book Review* of 12 October 1997:

*This book . . . explains why home ownership in America is at another of those historic moments requiring innovative change. Whatever the political hurdles, the new direction appears to be toward some system of home ownership for people who do not pay the full price of the home.*

Although the primary goal of our proposals is to reduce the costs of owning a home, the natural concomitant of this change would be to reduce the dominant role that owner-occupied housing plays in household asset portfolios. After all, it is the high cost of buying and holding a home that leaves middle-class households with little opportunity to diversify their asset holdings. By making ownership less expensive, our proposals would allow many households to better diversify their asset portfolios.

In this research report, we document the central role of owner-occupied housing in household asset portfolios. We also explain how this is related to the high cost of buying a home in the current system of housing finance. We then outline our proposals for market reform and explain the new financial options for households that would become available under our scheme.

We present detailed results of a series of simulation exercises, which show that our proposals could enable households to achieve significantly higher levels of retirement wealth with broader diversification. Finally, we indicate our reasons for believing that some variant of our reform proposals will be adopted in the near future. We also pinpoint some of the barriers that may slow down market development—many of which are of a political nature.

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### Housing and the Portfolio of Assets and Debts

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Roughly two-thirds of all households in America own the homes in which they live. In Figure 1, we use data from the 1990 U.S. census to illustrate the proportion of households that own rather than rent homes, according to the age of the head of household and household income. As the figure shows, the rate of homeownership is relatively low for younger households across all income categories.

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*By making ownership less expensive, our proposals would allow many households to better diversify their asset portfolios.*

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Ownership rates rise gradually with age to a peak at ages 60–64. The figure also shows that ownership rates are uniformly higher for higher-income households.

So how much of the typical household asset portfolio is represented by the home? Unfortunately, the data on this question are not nearly as reliable as those for homeownership rates. We use data from the 1995 Survey of Consumer Finances (SCF). The SCF is a nationally representative data set that seeks to provide an accurate representation of household balance sheets. It is generally considered to provide the highest-quality data available for examining household wealth. An over-sampling of very high income individuals ensures more precise estimates of the highly skewed components of household wealth.<sup>1</sup>

Figure 2 presents powerful evidence of the dominant role of housing in household asset portfolios. The figure shows that on average the home represents between 65% and 70% of nonpension assets for households headed by individuals age 50 and below. The percentage declines only slightly for older households, and it remains above 55% across all age brackets.

Including assets in pension or retirement accounts does little to change the flavor of these results.<sup>2</sup> The 1995 SCF reveals that only 55% of homeowners have such assets. Among those homeowners who do have retirement accounts or defined contribution pensions, total nonhousing assets

typically remain far below the value of the house. In fact, for more than 50% of those households, the value of assets in pension and retirement accounts amounts to less than 20% of the value of the house. Consequently, adding pension and retirement account assets to nonpension assets does little to change the picture of the dominant role of housing in the overall portfolio.

In some ways the averages in Figure 2 understate the importance of housing in

the asset portfolio. The underlying distribution of nonhousing assets is highly skewed, as many households have few assets other than the home, while a small number have very high levels of other assets. To illustrate this high level of inequality, it is useful to look at the overall distribution of housing assets rather than just the averages in Figure 2. Figure 3 is a histogram showing the distribution of house values as a proportion of the total nonpension asset portfolio for the entire population of homeowners. The figure shows that for more than 30% of the population, their home accounts for 80% or more of their total nonpension assets. For roughly 50% of households, their home represents 70% or more of the total nonpension portfolio.

To summarize, for the majority of homeownership households, the home represents more than 60% of their overall asset portfolio. This is a far cry from the idealized picture of portfolio diversification. It is therefore critically important to understand house price risk if we are to get a glimpse of the nature of household portfolio risk.

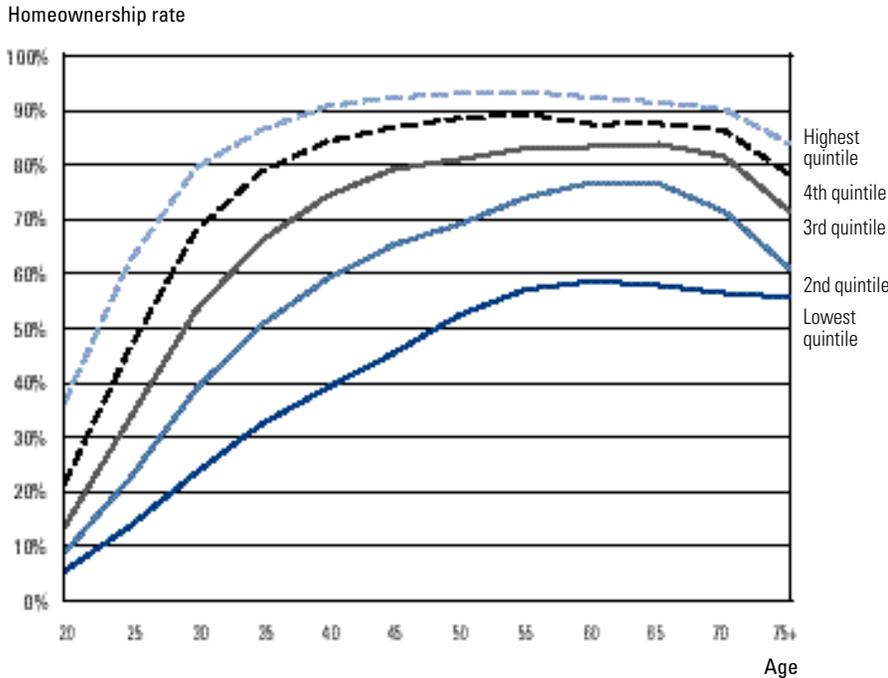
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### The Risks Involved in Homeownership

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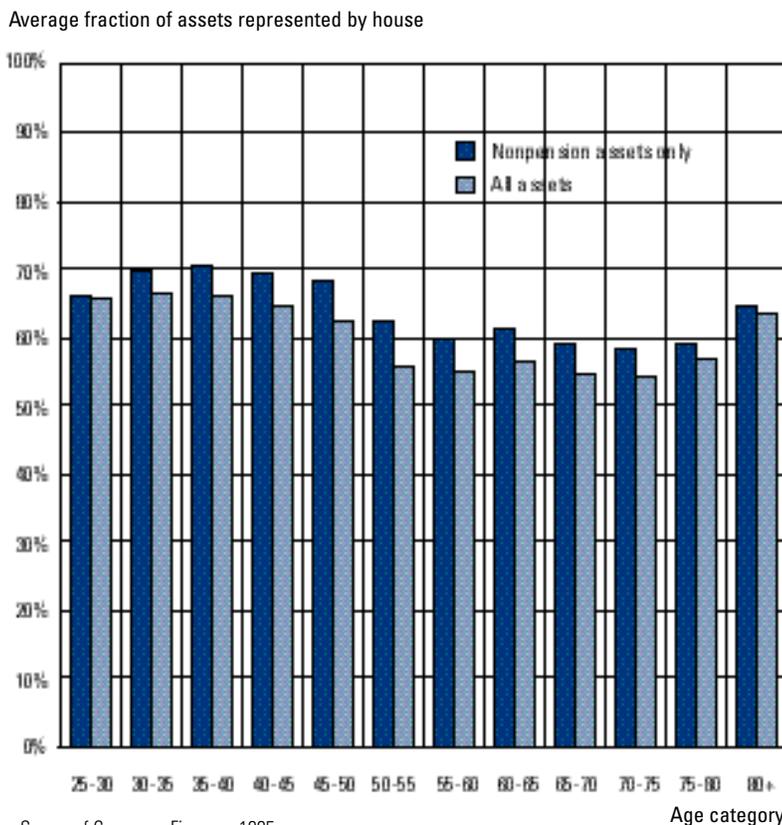
Just how risky an asset is a home? Data on this issue are sketchy, and we produce a few numbers simply to indicate the order of magnitude involved. We measure house

**Figure 1**  
Homeownership Rates, by Age of Household Head  
and Household Income Quintile



Source: 1990 U.S. Census

**Figure 2**  
Average House Value/Total Assets for Homeowners,  
by Age of Head of Household



Source: Survey of Consumer Finances 1995

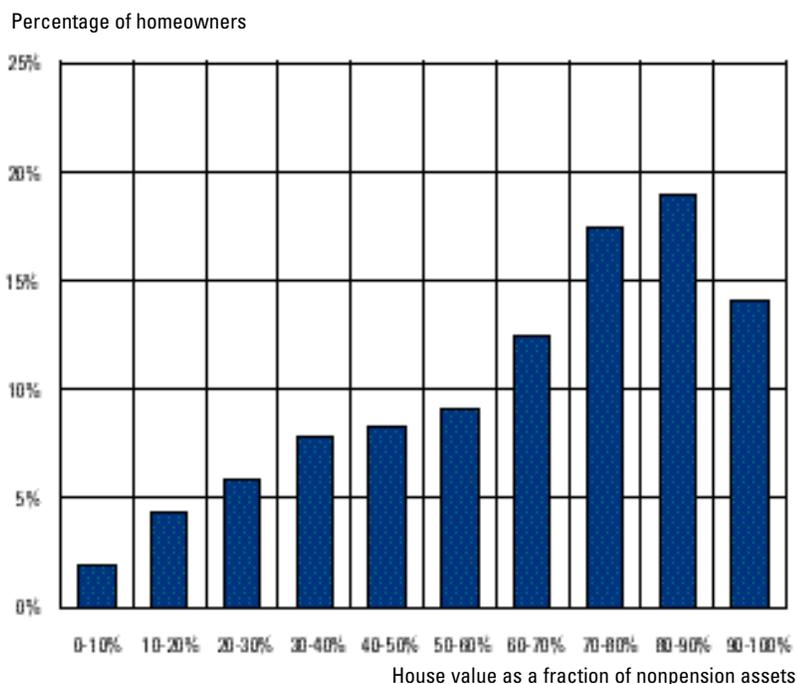
prices over the period 1975–1994 using a standard U.S. residential house price index, the Federal Home Loan Mortgage Corporation (Freddie Mac) repeat-sale price index. This index is published for forty-two large standard metropolitan statistical areas (SMSAs). We compute “pay-offs” (i.e., the gains or losses that would have been realized, given the changes in the price index) for all five-year holding periods in these SMSAs during the period 1975–1994. Figure 4 depicts a smoothed empirical distribution of these returns.

To understand the risk of loss implicit in these five-year returns, keep in mind that the average turnover cost for buying and selling a house is around 10% of the house value. For the distribution shown in Figure 4, 5% of the five-year nominal holding period returns were negative, and 20% were below the 10% turnover cost. Thus, even if a household intends to remain in a house for five years, the owners still incur a significant chance of financial loss.

The distribution of SMSA-level returns significantly understates the true level of risk at the level of the individual home. An SMSA is hardly a homogeneous area. To take an extreme example, the Upper East Side of Manhattan has an entirely different price dynamic from that of the Lower East Side of Manhattan, let alone Brooklyn, the Bronx, or Newark, New Jersey. Getting even more local, construction of new roads and the location of new facilities can change the structure of a neighborhood in profound ways, both for better and for worse. Finally, problems such as substandard construction, flood damage, or Radon gas can affect home value on a house-by-house basis, and not all of these risks can be insured against. It is the combination of risks, at individual, local, and national levels, that makes homeownership analogous to putting almost all of your money into a single company in a volatile industry.

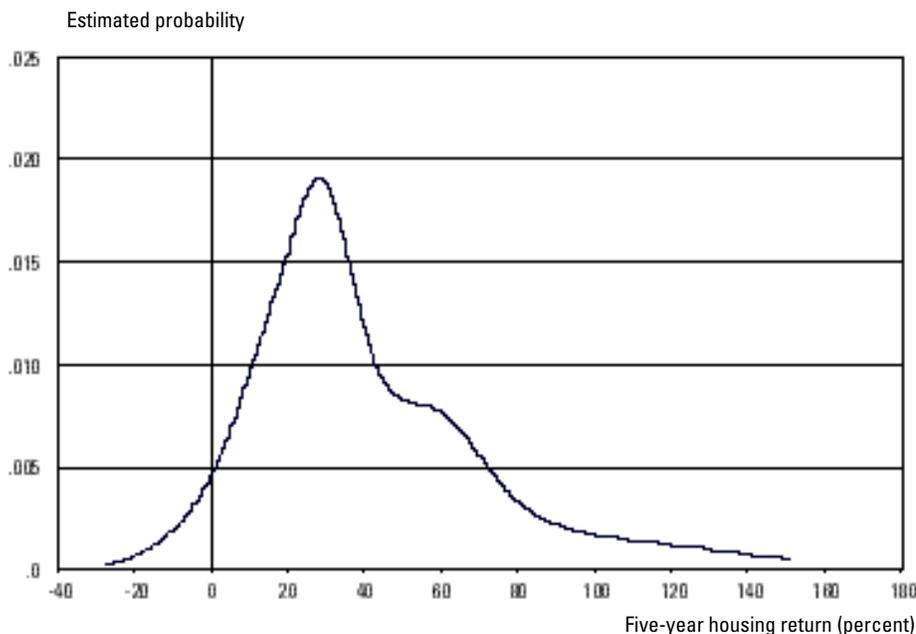
Karl Case and Robert Shiller (1987) have developed a statistical model for estimating the price risk specific to an individual house. Their procedure can be used to calculate the percentage of the total individual house price risk

**Figure 3**  
**Distribution of House Value/Total Nonpension Assets**  
**for Homeowners**



Source: Survey of Consumer Finances 1995

**Figure 4**  
**Smoothed Distribution**  
**of Five-Year Housing Returns, 1975-1994**



Source: Freddie Mac repeat-sale house price indices, 1975-1994

accounted for by the SMSA-level price indices. They apply this statistical model to repeat-sale house price data from four SMSAs. The resulting percentages range from a low of 16% for Atlanta to a high of 50% for San Francisco (Dallas, 36%, and Chicago, 27%). In other words, in Atlanta, for example, 16% of the variability in an individual house price can be attributed to the overall variability in house prices throughout the Atlanta area. The other 84% of price variability is not related to area-wide factors, and results from other risks. Such results suggest multiplying the market risk by roughly a factor of three or four to approximate an individual homeowner's risk.

Combining the high proportion of wealth in owner-occupied housing with the volatility of house prices makes the risks involved in the current market structure quite clear. When house prices do fall, the impaired collateral may make households unable to refinance the mortgage on their home (see Caplin, Freeman, and Tracy 1997) and unable to move to a healthier labor market (Chan 1998). In extreme cases, the household may have to default on its mortgage and seek bankruptcy protection.

#### **The Mortgage Market and Housing Affordability**

In many ways the U.S. housing and housing finance markets are profoundly successful. According to the U.S. Department of Housing and Urban Development, the homeownership rate for the third quarter of 1998 hit a new all-time high of 66.8%. The home mortgage is by far the cheapest form of finance open to households. The efficiency of the mortgage market has been helped by the extremely deep and sophisticated secondary mortgage market that has developed. While individual mortgages are far too small to be of interest as financial assets to the broader community, pools of high-quality mortgages define a significant new category of asset that has found a ready place in asset portfolios.

If the market is so successful, why is there pressure to improve its functioning?

As Figure 5 shows, in recent years the homeownership rate has decreased for younger households. Gyourko and Linneman (1993) shed light on why this has happened. They find that real house prices have appreciated across the quality spectrum over the past fifteen years. However, real wages have fallen for younger and less-educated households. This suggests the decline in ownership by these households reflects a worsening affordability situation. They conclude that many households in the baby boom generation will only be able to afford homes later in the life cycle than was true for previous generations, and that a significant portion may never be able to afford to own a house.

The affordability issue casts its shadow over households for many years. When people are finally able to move in, there are very high expenses. This gives rise to the too-familiar sight of young families moving into houses that they can barely afford,

and living in Spartan conditions in the early years—the so-called house poor. These younger households are buying homes and hanging on for dear life. And in fact the high financial pressure of homeownership seems to continue well into the life cycle. Figure 6 shows that a significant portion of homeowners experience difficulties paying off their debts right up through their mid-50s.

The high costs of homeownership are important not only for individual households but also for their impact on broader social problems. Inability to afford owning a home can further intensify the sense of exclusion of those who have been left out, whether it be for purely economic reasons, or for more complex reasons relating to race and socioeconomic class. Indeed, it is widely believed that low levels of ownership can contribute significantly to neighborhood decline and to diminished fiscal capacity of neighborhoods. As a result, there is ever-increasing

political pressure for reform of the housing market.

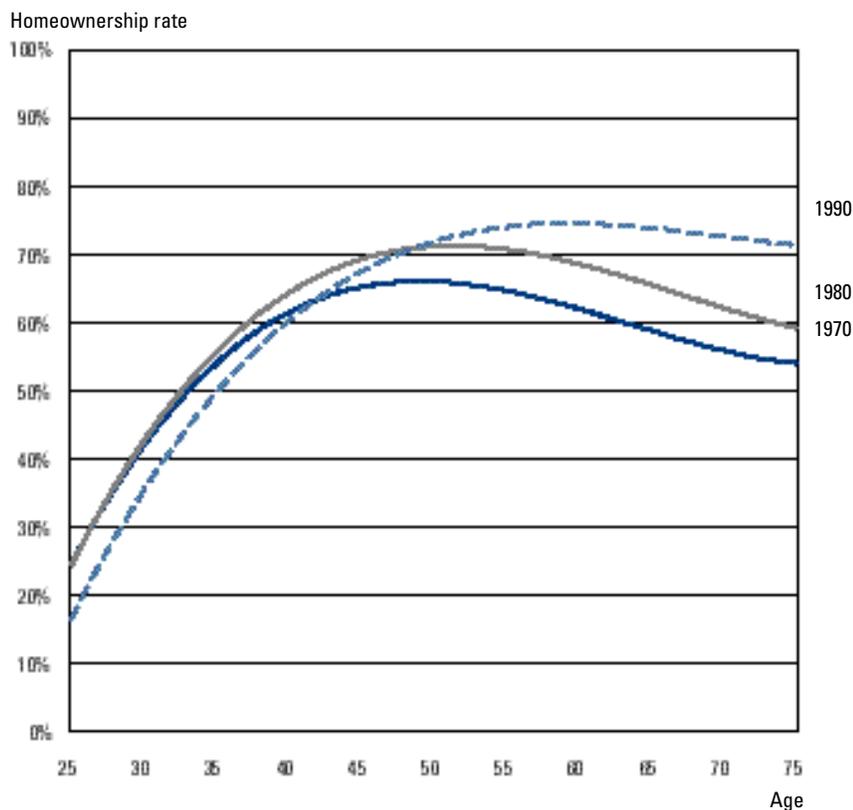
### The Illiquidity of Housing in Owners' Later Years

The affordability issue makes it obvious why young homeowners have very unbalanced portfolios, but the reason is less obvious for older owners. There would seem to be quite a few options for these households. Many financial products have been developed over the years to enable homeowners to convert their home equity into current income, including second and reverse mortgages. Of course owners can also sell their house and buy a smaller house, or rent as a cheaper alternative.

Rather than borrow against their home or move to a smaller one, the vast majority of older homeowners apparently choose to stay in their current home, borrow nothing, and live off their other sources of income, including their pensions. According to SCF data, for fully 40% of homeowners age 60 and above, the housing asset represents more than 80% of nonpension assets. In addition, older homeowners have extremely low levels of debt. Almost 50% have no debt at all, and two-thirds have debt of \$5,000 or less. These facts indicate that many elderly homeowners remain in their homes with few nonpension assets and minimal debt and simply consume very close to their current income. What makes this especially disturbing is the very low income level of many of these households: Roughly 50% have less than \$20,000 in income per year.

Just how much more consumption would be possible if these households were willing to borrow against their homes? A simple way to understand the potential significance of increased liquidity of the housing asset is to calculate the ratio of the value of the house to the household's total annual income. SCF data reveal that the average older household lives in a home that is worth as much as the household would receive in cumulative income over a five-year period (assuming annual income is constant). For more than 10% of households, the home is worth more than

Figure 5  
Smoothed Trends in Homeownership Rates,  
by Age of Household Head



Source: 1970, 1980, and 1990 U.S. Census

the household would receive in cumulative income over a ten-year period.

The pattern of portfolio holdings of older homeowners is not yet well understood. The challenge is to understand why these households are not taking advantage of the mortgage market to consume more or to diversify their asset holdings.

One possibility is that older owners believe their home to be an attractive investment opportunity, perhaps as a hedge against catastrophic medical conditions. But this is not likely to be the whole story. If self-insurance were the goal, it would seem to be an altogether superior option to borrow against the home and invest in a broadly diversified set of assets. This would reduce exposure to the specific risk of owning a particular home. It would also be a remarkable coincidence if so many older owners found their particular housing asset (and all the particular risks that go with it) so close to ideal that they would hold very few other assets and borrow nothing.

As noted, the options currently available to those who would like to convert

some of their home equity into cash in order to increase consumption are to sell and move into a smaller house, or to take out a second or reverse mortgage. However, moving is unattractive to many who have occupied the same house for many years. The mortgage alternatives also may not be attractive because they involve new debt, which may be perceived as unnecessarily risky. Older households may simply be uncomfortable taking on “unnecessary” debt for any reason. If so, the current mortgage market does not present an attractive mechanism for them to translate housing wealth into consumption. A real solution will have to address this aversion to debt. Just such a solution, based on the new markets that we propose, is outlined below.

### An Introduction to Housing Partnerships

We have written a comprehensive proposal for the reform of the housing finance market (Caplin, Chan, Freeman, and Tracy 1997). In our view, the underlying

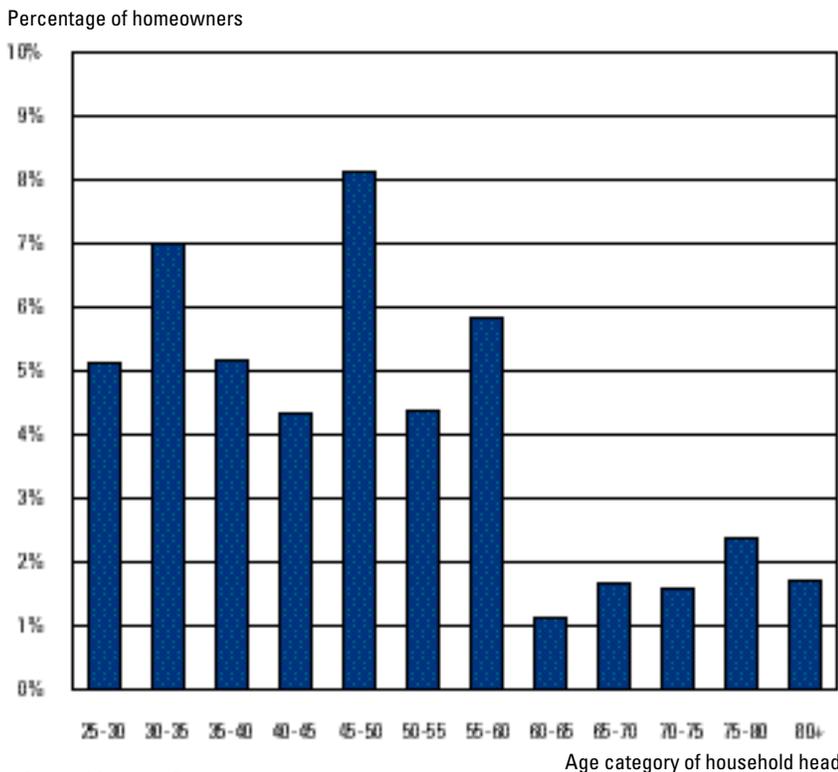
cause of undiversified asset portfolios, affordability problems for the young, and low nonhousing consumption for older homeowners is the basic buy-or-rent decision itself. This “all-or-nothing” constraint on homeownership forces households to make a stark choice between the disadvantages of rental accommodations or the harsh financial realities of homeownership.

The simple buy-or-rent dichotomy is so familiar that we fail to see just how crude it really is. A household that occupies and owns a house is holding and maintaining the whole of an extremely expensive and valuable asset. Why can't the household take part ownership of the home, and sell off an equity stake to a financial institution? A large corporation has a far wider range of options when considering how to finance capital investment. Why is the asset market that is the most important to U.S. households—the housing market—the only asset market in which there is no way to sell any part of the uncertain return stream to other investors?

To rectify the asymmetry between corporate capital markets and household capital markets, we propose the development of sophisticated markets, called *partnership markets*, in housing equity. We propose that housing be financed not only with a mortgage but also with an institutional investor that provides equity capital for the house in exchange for a proportion of the ultimate sale price. We refer to the household that takes occupancy of the house as the *managing partner* and to the financial institution that initially co-owns the asset as the *limited partner*. Our proposal is developed at length in *Housing Partnerships*.

In the simplest of partnership contracts, the basic financial transaction involves the limited partner's supplying funds up front in exchange for a fixed proportion of the house's ultimate sale price, with no other monetary payments made between the parties. The contract leaves the managing partner in control of the property, with an incentive to protect the limited partner's interests. In

**Figure 6**  
Proportion of Homeowners Who Are Behind on Payments for Two Months or More within the Past Two Years



Source: Survey of Consumer Finances 1995

return, the managing partner has several responsibilities, such as maintaining the home in good condition, and paying all operating expenses.

In our book we outline a complete partnership contract. The contract is structured to reduce the extent of any possible conflicts of interest between the managing partner and the limited part-

ner. Among the most important clauses are those relating to maintenance incentives, to home improvements, to the purchase process, and to the sales process. There are also clauses concerning breach of contract and default on the underlying mortgage. These contractual clauses are fairly run-of-the-mill for the financial community, and leave the household in complete control of such key decisions as what additions to make to the home and when to sell it.

The best way to understand the forces underlying the need for the partnership market is to focus on the potential for gains from trade. The homeowner has a profound desire to diversify investment away from the individual housing asset. The asset defined by the second half of the house is therefore not worth much to the current owner, since it is perfectly correlated with the first half of the house and provides no diversification benefit.

In contrast, a single house is a minute proportion of the total portfolio of the broader financial community. The difference between the value of this asset to the homeowner and its value to the broad financial community defines the potential gains from trade. And it is these gains from trade that underlie our claim that “the second half of your house may be the worst investment you will ever make.”<sup>sm</sup>

Apart from the benefits of portfolio diversification, there are other potential gains from trade. For example, a partnership arrangement may be particularly appealing to cash-needy home buyers (the

“house poor”) who would prefer to spend available resources rather than tie them up in a home. Because of their pressing desire for current consumption, the value of the “second half” of a home is lower to these households than it would be to someone who can be more patient. The institutions that would provide funds for limited partnerships generally have long investment horizons; they are investing on behalf of households less interested in current consumption than in future consumption (e.g., retirement). The difference in value that these two groups (households that want to spend and households that want to save) place on the asset represented by the second half of a house provides the basis for gains from trade that can benefit both.

#### **Proposal for a National Secondary Market in Limited Partnerships**

To ensure that limited partnership assets are as widely held as possible, we propose the development of an active secondary market in limited partnership assets. The current U.S. secondary mortgage market provides the institutional model for the secondary partnership market that we have proposed in *Housing Partnerships*. In short, we envision a specialist buying partnership contracts, holding them in portfolio, and issuing shares on the underlying baskets. The specialist could choose to split up the portfolio into geographic baskets (such as region, state, or zip code) or along a variety of other dimensions. The composition of such baskets would depend on the desires of the institutional holders of the fund shares and on any pertinent guidelines provided by government policy makers.

Demand for these assets would stem from the diversification benefits of holding residential real estate. As Goetzmann and Ibbotson (1990) show, the diversifi-

cation benefits of residential real estate come from its historically low correlation with other asset returns:

*This low correlation means that real estate, both residential and commercial, is an effective hedge against fluctuations in the financial markets. Thus, even if real estate returns were expected to be relatively low, and the standard deviation were expected to be relatively high, it would still occupy a significant percentage of an optimal investor portfolio.*  
[Page 74]

For a brief insight into the diversification benefits of residential real estate, we add returns measured by the Freddie Mac standard house price index to the returns on the “usual suspects” in household portfolios: U.S. stocks, long-term government bonds, and U.S. Treasury bills. Table 1 records the historical variance-covariance structure among these assets over the period 1976–1994, as well as their correlation with inflation. The table shows that real estate has historically been a good hedge against inflation. In addition, it has been a good hedge against stock exchange risk. Over the period 1976–1994, returns on residential real estate and returns on stocks were almost entirely uncorrelated. This need to hedge stock exchange risk is likely to be even more pressing in the next decade, in light of the widely perceived increase in stock exchange risk.

The development of a national secondary market in limited partnerships would also have exciting side benefits. In the first place, it would allow for regional diversification of real estate asset holdings. This is very important in light of the low correlation between real estate returns in different housing markets.<sup>3</sup>

The secondary market also offers the possibility of an intriguing set of new investment vehicles that have the potential to appeal not only to institutional investors but also to firms and households interested in hedging their bets in the housing market and/or saving for an upcoming move to a larger house. There are many parties in the housing market

**Table 1**  
Correlations of Residential Real Estate with Other Assets and Inflation: 1976 to 1994

	Residential Real Estate	Inflation	Standard & Poor's-500 Index	Long-Term Government Bonds	U.S. Treasury Bills
Residential real estate	1.000				
Inflation	0.596	1.000			
Standard & Poor's 500 Index	-0.091	-0.278	1.000		
Long-term government bonds	-0.082	-0.149	0.166	1.000	
U.S. Treasury bills	0.300	0.713	-0.161	0.255	1.000

Source: Real estate returns from Freddie Mac; other asset returns and inflation from Ibbotson Associates, Inc.

who anticipate changing their exposure to the housing market at some future date. Some examples: a home buyer and/or builder who have contracted to purchase/sell in six months, a manufacturer of household appliances who has a considerable investment in factories, and a municipality that is issuing construction bonds backed by municipal taxes to build a school. These parties all desire the ability to hedge that risk, and we believe that the natural evolution of options on partnership fund shares would allow such hedging to occur.

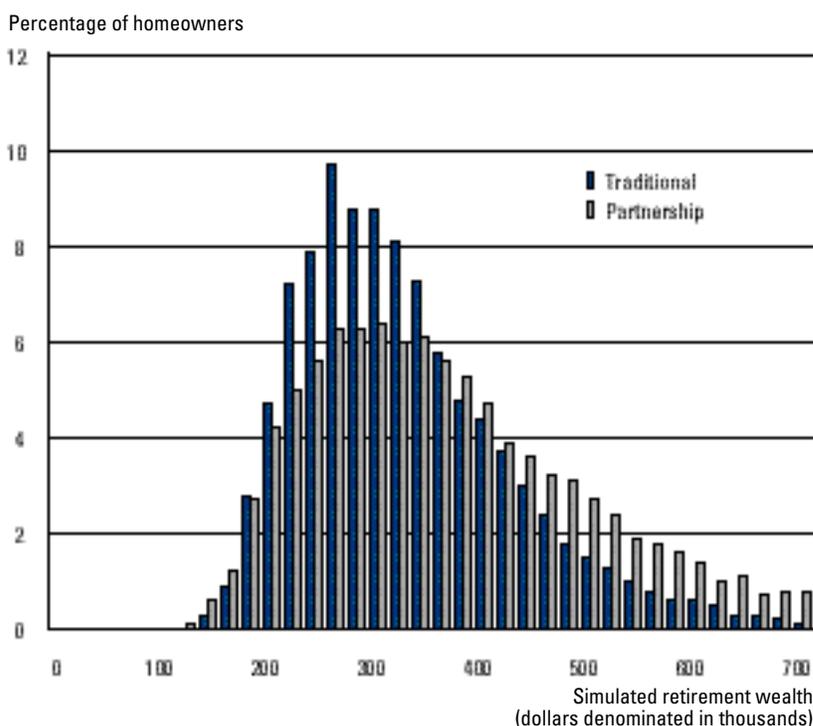
#### Partnerships and the Life Cycle

It would cost far less to buy a home with a limited partner than in the current market. The reduced costs create many new options for buyers. Households can make use of these new options in different ways over the course of the life cycle. When young, households will care most about (a) speeding up the transition from the rental market to homeownership and (b) freeing up more resources for consumption. For those in their middle years, risk reduction may be more important, as they look for a portfolio that is less dominated by the home. For older households, the partnership offers the ability to consume more without giving up residence in their home, and without incurring debt.

#### The Potential Effect of Partnerships on Retirement Portfolios

We present some simple portfolio calculations to illustrate the value of the partnership market in improving a household's

**Figure 7**  
Comparison of Simulated Distributions of Total Retirement Wealth after Ten Years: Traditional vs. Partnership Homeownership with a \$120,000 House



Percentile	Traditional	Partnership
90	\$455,584	\$577,456
75	371,352	450,166
50	297,789	338,584
25	242,233	257,955
10	203,949	205,036
Mean	318,000	372,000
Standard deviation	107,862	160,929

wealth portfolio at retirement. We consider a household with homeowners at age 55, with net worth of \$200,000, initially held as cash (we assume they have just sold their prior home). We first assume that the household is moving to a new home that costs \$120,000, and that the owners are planning to retire at age 65. We contrast the optimal portfolio of retirement assets they might have in the current “traditional” market, in which they buy the home outright, with the optimal portfolio they might have if they could buy their home with a limited partner.<sup>4</sup> (The lim-

ited partner pays 50% of the up-front cost of the house in return for a 50% share in the final sale price of the house.) In all of our simulations, we assume that the household creates its retirement portfolio by optimally combining U.S. equities, U.S. long-term government bonds, and U.S. Treasury bills. [See the box on page 10 for details of the simulation procedure.]

The main difference between the traditional market and the partnership market lies in the less-restricted portfolio position in the partnership market. In our example, the household in the traditional

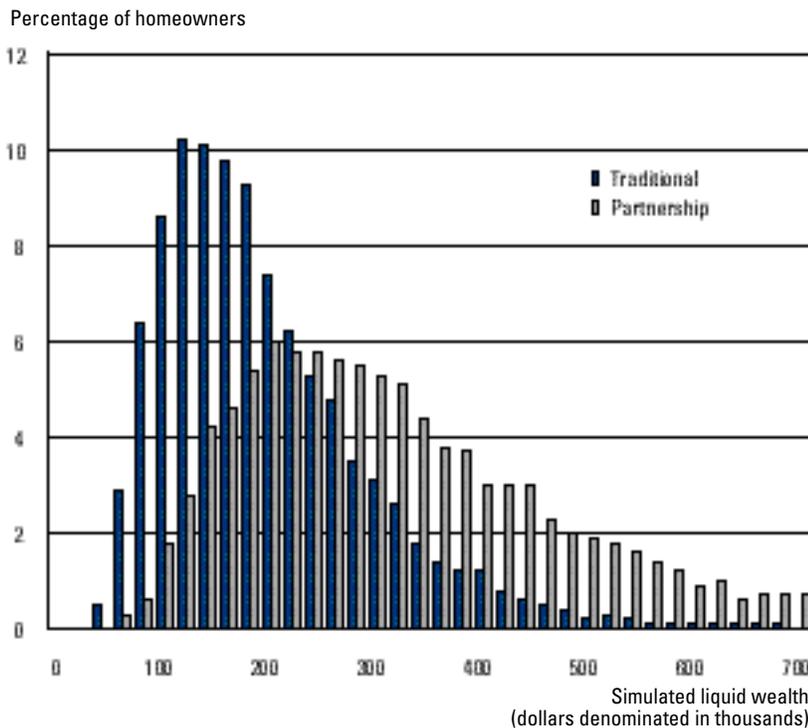
market has \$80,000 to divide among the nonhousing assets, while in the partnership market it has \$140,000 to divide among these assets. This difference in initial investment opportunities gives rise to a radical difference between the retirement portfolios of the two households. Use of the partnership market results in a significant improvement in their wealth distribution.

Figure 7 compares the distribution of retirement wealth for the households in the traditional market and in the partnership market, based on our simulation results. The attached table provides summary statistics for the wealth distributions, and shows that the partnership market results in a 20% or more increase in the expected level of retirement wealth. On average, the household in the traditional market expects to retire with total assets of \$318,000, while the household in the partnership market expects to have \$372,000 at retirement.

The difference between the two retirement portfolios is even more dramatic if we focus only on nonhousing wealth. As we have seen, households are often reluctant to dip into their housing wealth, even in old age. For this reason, the most liquid portion of the household’s portfolio is its nonhousing assets. Figure 8 illustrates the difference between the liquid asset portfolios in the traditional market and the partnership market. The attached table shows that the level of expected nonhousing wealth for the household in the partnership market is roughly 65% higher than for the one in the traditional market, averaging more than \$305,000 as opposed to \$185,000.

As we have seen, there are many households for whom the housing asset represents more than 80% of the non-pension asset portfolio (see Figure 3). Therefore, in the last set of simulations, we assume that the household is planning to move to a new home that costs \$160,000 rather than \$120,000. (There are no other changes to the example; the household head is still assumed at the outset to be age 55, and the household is assumed to have total initial assets of \$200,000.)

**Figure 8**  
**Comparison of Simulated Distributions of Liquid Wealth**  
**after Ten Years: Traditional vs. Partnership Homeownership**  
**with a \$120,000 House**



Percentile	Traditional	Partnership
90	\$314,245	\$508,628
75	233,392	381,202
50	163,029	271,319
25	112,676	192,449
10	80,440	142,148
Mean	185,489	305,448
Standard deviation	101,489	158,712

Figure 9 and the attached table show the radical improvement in the wealth distribution in the partnership market: Expected retirement wealth increases from \$270,000 to \$366,000. The improvement in the liquid asset portfolio is even more dramatic, as illustrated in Figure 10. The household in the partnership market expects to retire with liquid assets of about \$297,000, versus only \$133,000 in the traditional market.

While these calculations are based on some very simple assumptions, the big picture is clear. There are more free resources and a great improvement in the retirement portfolio with partnership markets as opposed to the traditional market.

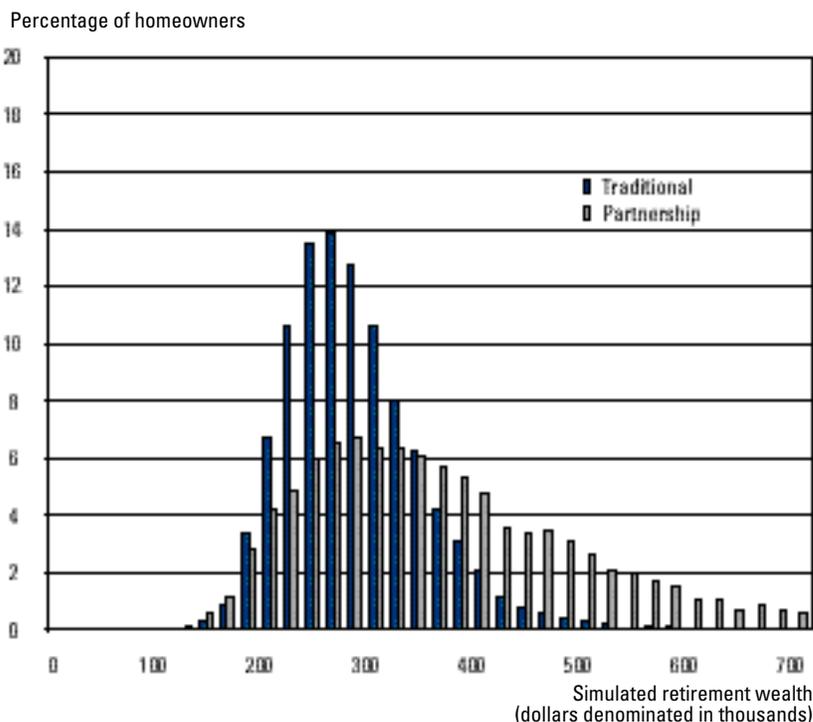
### Prospects for Market Development

In recent history, the costs of market development have fallen precipitously. As a result, more and more markets have opened to allow people to take advantage of previously unrealized trading opportunities.

There are few more compelling examples of unrealized gains from trade than those that are present in the housing market, when a single individual ends up sole owner of a risky housing asset. The current owner of a house would like to off-load some of the risk specific to owning that home to the broader community of asset holders who can pool such risks together. Twenty years from now, markets will have arisen allowing homeowners to do just that.

While we are convinced that the markets will eventually develop, we have also gained a deeper appreciation for some of the obstacles to market development. The current tax environment is a case in point. One of the key subsidies that the federal government uses to support owner-occupied housing is the mortgage interest deduction. There are few clear rulings on how this form of subsidy would be maintained or extended to the case of partnership finance. The few relevant rulings are very narrow, and market development would be given a great boost if IRS policy were to be clarified.<sup>5</sup> This in turn points to the importance of some form of political involvement in the issue of market reform. Whether or not the political

Figure 9  
Comparison of Simulated Distributions of Retirement Wealth after Ten Years: Traditional vs. Partnership Homeownership with a \$160,000 House



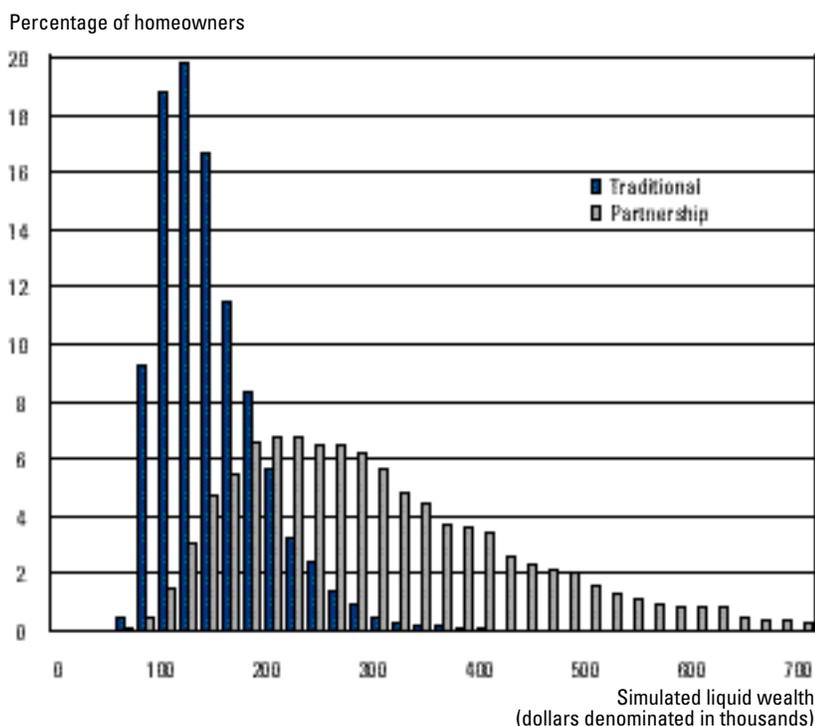
Percentile	Traditional	Partnership
90	\$354,986	\$565,155
75	305,526	442,000
50	260,896	334,535
25	224,617	255,918
10	196,803	204,053
Mean	270,000	366,000
Standard deviation	64,591	155,354

#### Methodology for Simulations

In order to carry out the calculations, we first estimate the ten-year pattern of real joint returns on all of the assets.<sup>6</sup> We then take a sequence of draws from this joint distribution and compound it to get the ten-year pattern of asset returns. We repeat the sampling procedure ten thousand times to generate the distribution of joint returns. With this distribution in place, we then determine the household's optimal choice among all possible initial asset portfolios, assuming no subsequent adjustments to the portfolio.

We make the standard assumption that the household has a constant relative risk-aversion utility function,  $U(w) = \frac{w^{(1-\gamma)}}{(1-\gamma)}$  where  $w$  is the wealth level, and  $\gamma$  is a measure of the household's risk aversion, with higher values representing more risk-averse households. In all of the simulations we restrict attention to an individual with risk-aversion parameter  $\gamma = 4$ . To compute the expected utility to a household of a given initial asset portfolio, we substitute the resultant final wealth into the utility function and compute the average across simulations. The optimal portfolio for the household is the one that maximizes this expected utility.

**Figure 10**  
**Comparison of Simulated Distributions of Total Liquid Wealth**  
**after Ten Years: Traditional vs. Partnership Homeownership**  
**with a \$160,000 House**



Percentile	Traditional	Partnership
90	\$197,307	\$491,182
75	156,810	369,975
50	121,571	264,487
25	96,358	188,993
10	80,220	140,662
Mean	132,528	297,264
Standard deviation	50,828	152,150

forces are aligned to favor large-scale reform of a market in which so many have vested interests is an open question.

Two other adjustment issues involve both financial market participants and households. Participants in the financial markets need to have a thorough understanding of the new instruments that are being proposed and of the potential for real estate assets to earn returns adequate to justify a significant place in asset portfolios. We also think it will take a little time to educate households on the (slightly) increased level of responsibility involved in the partnership market.

Despite these obstacles, the new markets may develop sooner rather than later as a series of niche markets that will gradually evolve into a unified national market. One of the most important market niches is the market for affordable housing for younger and less well-off households.

The connection of our proposals with the affordable housing movement may well help to overcome political inertia. It will be difficult to argue for a restrictive interpretation of the rules on mortgage interest deductibility once it becomes clear that these rules prevent less well-

off households from getting tax benefits that are given hand over fist to wealthy households.

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### Endnotes

<sup>1</sup>The SCF produces more-conservative estimates of the role of housing in the asset portfolio than does the consumer expenditure survey (CEX) that was the data source for the comparable figures in Caplin, Chan, Freeman, and Tracy (1997). This may be because the CEX topcodes many dollar-denominated variables at \$100,000. As a result, the CEX is unable to accurately capture the asset holdings of the wealthiest households.

<sup>2</sup>We restrict attention to defined contribution pensions and any other quasiliquid retirement assets, such as IRAs, Keogh accounts, and 401(k) plans. This means that the implicit values of defined benefit pensions and Social Security are omitted.

<sup>3</sup>In their study of four distinct housing markets (Atlanta, Chicago, Dallas, and San Francisco), Goetzmann and Ibbotson found that the highest correlation was the 0.25 correlation between the Atlanta and San Francisco markets.

<sup>4</sup>See *Research Dialogues*, no. 56, "Investing for a Distant Goal: Optimal Asset Allocation and Attitudes toward Risk" (July 1998), for further discussion of the economic theory that underlies models of optimal portfolio selection.

<sup>5</sup>One IRS ruling on shared appreciation mortgages appears to suggest that the agency will not be sympathetic to the tax position of either the home buyer or the lender as long as the lender is willing to share the risk of losses with the homeowner. Such a ruling seems to transform the mortgage interest deduction into an incentive to get households to take risks, rather than reinforce its role as a subsidy aimed at increasing homeownership.

<sup>6</sup>We use the Ibbotson data and the combined FHA/Freddie Mac index for U.S. house prices to compute annual real returns on all assets. These real returns are assumed to be jointly normally distributed, and the parameters of the distribution are estimated from data covering the period 1951–1994. We adjust the FHA/Freddie Mac annual housing return series to account for the higher level of risk at the individual home level rather than at the national level. We make a very conservative adjustment in which the individual house price is assumed to have a variance that is

only four times as high as that of the national price index.

## References

- Bull, Diana, and Elaine St. James. 1990. *The Equity Sharing Book: How to Buy a Home Even if You Can't Afford the Down Payment*. New York: Penguin Books.
- Caplin, Andrew, Sewin Chan, Charles Freeman, and Joseph Tracy. 1997. *Housing Partnerships: A New Approach to a Market at a Crossroads*. Cambridge, Mass.: MIT Press.
- Caplin, Andrew, Charles Freeman, and Joseph Tracy. 1997. Collateral damage: refinancing constraints and regional recessions. *Journal of Money, Credit and Banking* 29: 496–516.
- Case, Karl, and Robert Shiller. 1987. Prices of single family homes since 1970: new indexes for four cities. *New England Economic Review* (September/October): 45–56.
- Case, Karl, Robert Shiller, and Allan Weiss. 1993. Index-based futures and options markets in real estate. *Journal of Portfolio Management* 19, no. 2: 83–92.
- Chan, Sewin. 1998. *Spatial Lock-in: Do Falling House Prices Constrain Residential Mobility?* Rutgers University Department of Economics Working Paper 9816.
- Fischel, William. 1998. Another man's castle. *Regulation* 21: 69–70.
- Goetzmann, William, and Roger Ibbotson. 1990. The performance of real estate as an asset class. *Journal of Applied Corporate Finance* 3, no. 1 (Spring): 65–76.
- Gyourko, Joseph, and Peter Linneman. 1993. The affordability of the American dream: an examination of the last thirty years. *Journal of Housing Research* 4, no. 1: 39–79.
- Uchitelle, Louis. 1997. The high cost of owning. *New York Times Book Review*, 12 October, 29.

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