

Optimal House Tenure and Portfolio Choices With Housing As A Hedging Asset

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Abstract

This paper explores the impact of comovements of labor income, house price, and rent on a household's house tenure choice and portfolio choice over the life cycle. I show that the two hedging functions of homeownership, which are to hedge against labor income risk and rent risk, significantly affect the household's decision to rent or own a house and her portfolio choice over the life cycle. A household whose labor income is less correlated with house price is more likely to be an owner, to invest less in stocks, and to hold more bonds. In the areas where rents are volatile, a household finds homeownership attractive and therefore has more wealth invested in home equity, less in stocks and more in bonds.

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Housing is a special good; it has the dual-role of providing a flow of consumption services and being an investment. Clearly, housing serves as a major source of utility to all households. The housing flows coming from a dwelling are equally important as other consumptions such as foods or luxury goods. Housing is also the largest investment of most households in the US. The 2001 Survey of Consumer Finances shows that on average home value accounts for 55% of a homeowner's total assets. In contrast, stock investments account for only 12% of household assets. Considering the magnitude of housing investment, we should incorporate homeownership in a portfolio choice model and investigate its impacts over the life cycle.

In this paper, I investigate the optimal dynamic consumption, housing investment, and portfolio choice for households who face stochastic labor income, house price, and rent. This is the first paper to combine the two hedging functions of homeownership in a portfolio choice model. The first function is to hedge risk from rents that all households effectively have to pay. The second hedging function of homeownership is to offset adverse shocks to labor income. The downside of investing in housing is that the investment is usually highly leveraged and illiquid. Therefore, the tradeoff between being exposed to volatile house appreciations and enjoying the two hedging functions has a big impact on the decision to rent or own a house and the portfolio choice over the life cycle.

In addition, my paper explores the implications on house tenure choice and portfolio choices across local housing markets. Housing investment is different than other financial investments in that unlike the stock markets, which can be accessed nationally by all investors, housing markets are more local. For people who live in different Metropolitan Statistical Areas (MSAs), their house tenure and portfolio choice will differ due to the differences in house prices and rents in those areas, holding other things equal. Even within the same MSA, the decisions will still be different since households' labor incomes have different comovements with the local house prices and rents.

Recently there have been some papers exploring the implications of housing on optimal life-cycle portfolio choices for households. Yao and Zhang (2005) examines the optimal dynamic portfolio decision for investors who endogenously choose to rent or own a house. However, they set rents be a constant fraction of house price and assume away rent risk.

Cocco (2005) look at the life-cycle optimization problem of homeowners only. He shows that house price risk crowds out stock holdings. But Cocco does not consider the effects of the renting-versus-owning decision. This strand of literature assumes a constant house-price-to-rent ratio and follow the traditional view towards housing that the investment is risky due to the unpredictability house price fluctuations and illiquidity in the investment.

However, Sinai and Souleles (2005) proposes a different view of homeownership and argue that owning a house is not as risky as people have thought. They point out that the conventional wisdom ignores the fact that the alternative to homeownership, renting, is also risky. Sinai and Souleles argue that all households are in effect born “short” housing services since they have to live somewhere. Households that do not own must rent, purchasing their housing services on a spot market, and thus subjecting themselves to annual fluctuations in rent. Homeownership can hedge households from rent risks. So there is a tradeoff between rent risks and house price risks. At long investment horizons, the rent risks are dominant, while house price risks dominate rent risks in short horizons. Sinai and Souleles find empirically that the longer people expect to stay in their houses or the higher the local rent fluctuations, the higher the probability of homeownership.

In addition, it is interesting to explore how homeownership is a hedge against labor income risks. People are born with the natural endowment of human capital which they can neither sell off nor contract on. Implicitly they face the risks coming from the fluctuations in their labor incomes. The fluctuations in house price may help some households hedge against their labor income risk. Davidoff (2006) develops a one-period model in which households may hedge against their labor income risks by purchasing houses today and selling off tomorrow. In his model, the capital gains from housing investment and labor income are the only two sources of incomes to all households. He finds the comovement of house price growth and labor income growth has a negative impact on both the probability of homeownership and the size of housing investment. Homeownership is not attractive to households who are likely to experience negative shocks to labor income and house price at the same time Davidoff concludes that households enter financial markets with a greater exposure to risk than is typically modelled.

This paper addresses a question that arises naturally: how can homeownership be used

to hedge labor income risks and rent risks simultaneously and dynamically? Besides bonds and stocks, there are three assets in my model: 1) human capital: everyone is born with a long position and has no way to sell it; 2) dwelling asset in which everyone is in a short position and has to pay rents to live; and 3) house which is like a floating-rate bond whose coupons are rents (that is, homeowners collect rents from themselves). Given the fixed long position in human capital, what are the optimal shares of the dwelling asset, housing investment, bonds, and stocks in the portfolio? I explicitly break a fixed link between house price and rent price and allow a time-varying house-price-to-rent ratio. The hedge-against-rent-risk function makes homeownership a safe investment, while the covariance of labor income growth and house price growth makes housing risky. With the interactions of house price, rent, and labor income in mind, the household optimally chooses her house tenure, consumption, housing investment, and other financial investments over the life cycle.

I show that the two hedging functions of homeownership encourage ownership and increase optimal housing investments. The less correlated the house appreciation with labor income growth, or the more volatile rents, the higher ownership rates. Conditional on being an owner, households invest less in stocks, confirming the substitution effect. Due to the high leverage and illiquidity in housing investments, the homeowners hold more bonds for liquidity concerns. I find empirical evidence for the above two channels. Of the two hedging functions, the hedge-against-rent-risk function dominates the hedge-against-labor-income-risk function.