Economic Brief

February 2017, EB17-02

How Couples Approach Portfolio Allocation

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The classical theory of household portfolio allocation finds that the share of household wealth invested in risky assets is independent of the level of household wealth. However, this prediction is at odds with empirical observations. This *Economic Brief* presents findings that reconcile the two. A model in which a household's portfolio allocation reflects the preferences of both spouses, adjusted for the bargaining power of each spouse, predicts that the wealthier a household becomes, the greater the share of its wealth will be invested in risky assets.

How do households make investment decisions? This question is challenging not just for couples, but for economists as well. For decades, researchers have been studying how households make these choices — including how they look at risk and how their decisions depend on household wealth.

The classical theory of household portfolio allocation finds that the share of wealth invested in risky assets is independent of the level of household wealth. In a simple theoretical framework, developed by MIT economists Paul Samuelson and Robert Merton in the late 1960s, households act as a single decision-making unit and decide how much to consume and how much to save out of their wealth so that their lifetime utility is maximized.[1] Savings, in turn, are divided between assets that are riskier and bear higher yields (such as stocks) and those that are safer, such as bonds, with correspondingly lower yields. The fraction of household wealth allocated to risky assets is determined by the household's degree of risk aversion. More risk-averse households will choose to invest a lower share of their wealth in stocks. In addition, the higher the expected return on the stocks and the lower their volatility, the higher the share invested in them. The optimal allocation, however, doesn't depend on household wealth. In other words, given the same level of risk aversion, households with different levels of wealth will choose the same portfolio allocation.[2]

The Merton-Samuelson result follows from an assumption that economists often make about individuals' preferences: people's willingness to tolerate risk grows proportionately with their wealth. In economics jargon, this is described as preferences exhibiting "constant relative risk aversion." The implication of this assumption for individual portfolios is that the dollar amount invested in risky assets will increase with wealth, but the share will remain constant.

This prediction falls short, however, when compared to empirical observations on household investment behavior: wealthier households do tend to hold higher shares of their portfolios in risky assets. To better explain the empirical facts,

more recent models of household investment have suggested alternative specifications of household preferences. They also have incorporated housing, labor income, consumption commitments, and habit formation into their models.[3] But all of these approaches still treat households as single decision-making units when it comes to investment decisions.

Another strand of the literature, however, has explicitly modeled households as consisting of two people, and it has shown that this approach matters for predictions about household financial decisions.[4] For example, because women on average expect to live longer than men, they may prefer to save more of their income when young to finance a potentially longer retirement.[5] Empirical research also shows that spouses differ in their appetite for risk.[6] In addition, each spouse may have a different level of influence, referred to as bargaining power, in making financial decisions.[7] And this bargaining power can be affected by various factors, such as the amount of financial knowledge, education, and earnings of each spouse.[8] Hence, explicitly taking into consideration the preferences of both spouses may be particularly relevant when thinking about saving and investment decisions.

Two of the coauthors of this *Economic Brief* — Lazaryan and Neelakantan, working with Angela Lyons and Carl Nelson of the University of Illinois at Urbana-Champaign — have developed a theoretical framework that takes into account a two-person household model in which spouses have different degrees of risk aversion and bargaining power.[9] This framework corroborates the empirical finding that the share of a household's risky assets does indeed increase with wealth — and that the risk aversion and bargaining power of each partner play important roles in portfolio allocation.

How Two-Headed Households Decide

In the model developed by Neelakantan and her coauthors, a household consists of two spouses with different levels of risk aversion. They bargain over how to allocate their savings between risky and risk-free assets, and their bargaining power is reflected in the relative weight assigned to each spouse's preferences in the solution to the household's problem. This model delivers the key theoretical result that the share of wealth invested in risky assets does indeed increase with the level of household wealth.

In addition, the bargaining power of each spouse plays a role. If one spouse has all the bargaining power, the optimal portfolio allocation ends up coinciding with the result predicted by the classical model. That is, if the decision is being made entirely by one spouse, it will be made independent of household wealth and be determined instead by that spouse's level of risk aversion. And if both spouses have some bargaining power, but one has more than the other, the household's optimal portfolio allocation follows more closely the desired outcome of the spouse with greater influence. Accordingly, as the bargaining power of the less risk-averse spouse increases, so does the share of riskier assets. (See Figure 1.)

Neelakantan and her coauthors discovered that this theoretical insight matches up quite well with their empirical findings. They start with a sample drawn from the U.S. Health and Retirement Study (HRS), which surveys American couples age 50 and older on issues related to health and economic circumstances.[10] This data set contains information on investment portfolios of the households as well as key demographic characteristics of each spouse. It also incorporates a measure of risk aversion developed by Miles Kimball, an economist at the University of Colorado, Claudia Sahm of the Federal Reserve Board of Governors, and Matthew Shapiro of the University of Michigan.[11] Just as in the theoretical model, the researchers group assets into risky and risk-free categories, with the former consisting of stocks and stock-based mutual funds, and the latter containing bonds, savings accounts, CDs, and other relatively safe vehicles. Finally, they construct two alternative measures of bargaining power. One is based on the HRS survey question that asks respondents which spouse has the final say on major life decisions (such as moving or retiring); the other measure gauges respective bargaining power by the relative work experience of each spouse as a proxy for lifetime earnings. As the findings of economists Leora Friedberg of the University of Virginia and Anthony Webb

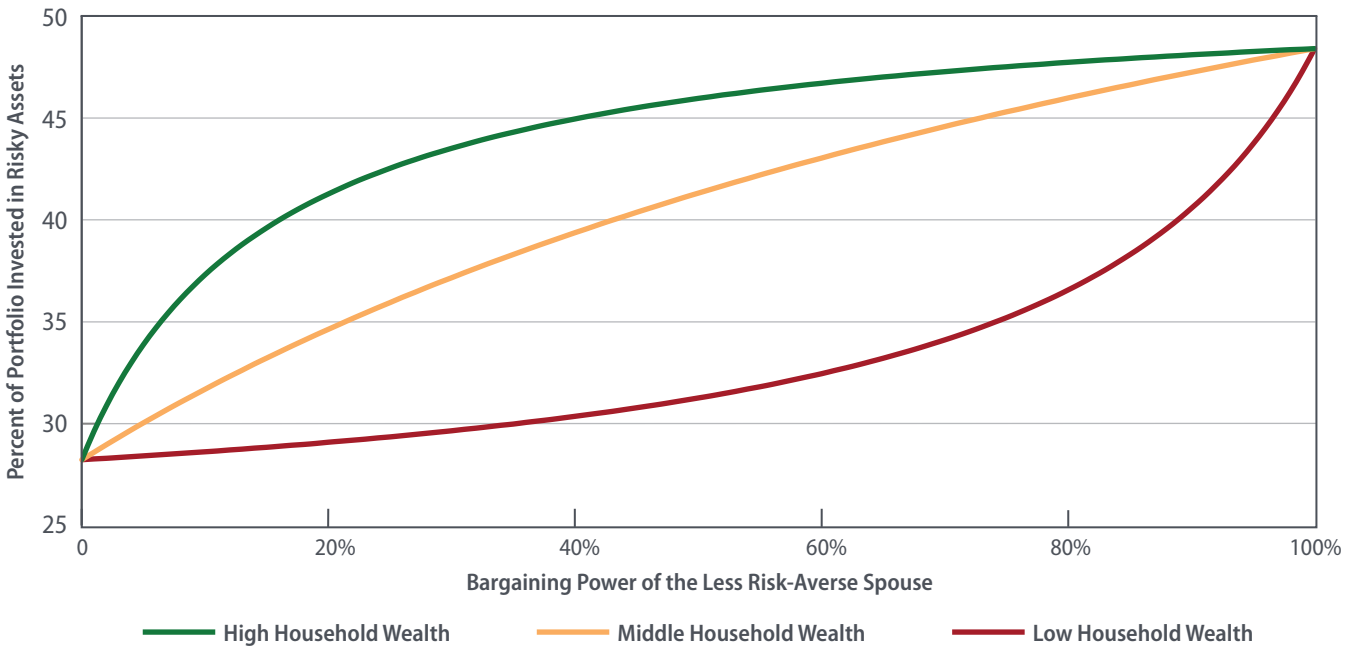
of Boston College have shown, lifetime earnings are important determinants of bargaining power.[12]
The sample used in the analysis of Neelakantan et al. comes from the 2000 wave of the HRS — a year that was chosen because the economy was relatively stable. The sample included 2,372 married couples with differing levels of risk aversion. (Husbands were the less risk-averse partners in 48 percent of the couples in the sample.) In terms of bargaining power, 43 percent of the couples said there was equal influence, 17 percent said the husband had more say, and 2.6 percent said the wife did. (The remaining 37 percent gave conflicting answers.) In about 85 percent of the cases, the husband had more work experience, by 15 years on average, and also earned more, by $8,100 per year on average in 2000 dollars. Finally, the average household wealth was $148,000, and 45 percent of the households owned stock. Among households that owned stock, 26 percent of their portfolios were allocated to stocks on average.

Greater Wealth, Greater Risk

The empirical analysis of Neelakantan and her coauthors supports the theoretical argument that a household's share of risky assets increases with wealth: if the financial wealth of an average household doubles, the share of risky assets increases by 5 percentage points. Moreover, the share of risky assets goes up as the bargaining power of the less risk-averse partner increases. Certain other factors play a role in portfolio allocation as well. For example, the higher the education of each spouse, the greater the share a couple invests in risky assets. But if either spouse is in poor health, the couple invests a smaller share in risky assets.

The authors also note some empirical limitations to their study. One is that it's difficult to provide a clear-cut definition of what "bargaining power" really means. In turn, the measures used in their research may fall short in fully capturing the factors that influence bargaining power within a household. Finally, the HRS data set is confined to older Americans, which means that the findings may not reflect the population as a whole. Despite these limitations, this research contributes to a richer understanding of how wealth, risk aversion, and bargaining power play important roles in how households choose to invest. ■

Figure 1: How Spousal Bargaining Power Affects Household Portfolio Allocation at Different Levels of Wealth



Note: Author simulations based on Urvi Neelakantan, Nika Lazaryan, Angela Lyons, and Carl Nelson, "Portfolio Choice in a Two-Person Household," Manuscript, July 2016.

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Endnotes

[1] See Robert C. Merton, "Lifetime Portfolio Selection under Uncertainty: The Continuous-Time Case," *Review of Economics and Statistics*, August 1969, vol. 51, no. 3, pp. 247–257; and Paul A. Samuelson, "Lifetime Portfolio Selection by Dynamic Stochastic Programming," *Review of Economics and Statistics*, August 1969, vol. 51, no. 3, pp. 239–246.

[2] For a more detailed exposition of the classical theory of household portfolios, see Ravi Jagannathan and Narayana R. Kocherlakota, "Why Should Older People Invest Less in Stocks than Younger People?" Federal Reserve Bank of Minneapolis *Quarterly Review*, Summer 1996, vol. 20, no. 3, pp. 11–23.

[3] See Marjorie Flavin and Takashi Yamashita, "Owner-Occupied Housing and the Composition of the Household Portfolio," *American Economic Review*, March 2002, vol. 92, no. 1, pp. 345–362. A working paper version is available online. Also, see Raj Chetty and Adam Szeidl, "Consumption Commitments and Risk Preferences," *Quarterly Journal of Economics*, May 2007, vol. 122, no. 2, pp. 831–877. A working paper version is available online. Also, see Benjamin Michael Ranish, "Essays on Stock Investing and Investor Behavior," Doctoral dissertation, Harvard University, May 2013.

[4] See Carol C. Bertaut and Martha Starr-McCluer, "Household Portfolios in the United States," in *Household Portfolios*, Luigi Guiso, Michael Haliassos and Tullio Jappelli (eds.), Cambridge: MIT Press, 2002, pp. 181–217. A working paper version is available online.

[5] See Martin Browning, "The Saving Behaviour of a Two-Person Household," *Scandinavian Journal of Economics*, June 2000, vol. 102, no. 2, pp. 235–251. Also, see Maurizio Mazzocco, "Saving, Risk Sharing, and Preferences for Risk," *American Economic Review*, September 2004, vol. 94, no. 43, pp. 1169–1182; and Tensel Yilmazer and Stephen Lich, "Portfolio Choice and Risk Attitudes: A Household Bargaining Approach," *Review of Economics of the Household*, June 2015, vol. 13, no. 2, pp. 219–241.

[6] See Miles S. Kimball, Claudia R. Sahm, and Matthew D. Shapiro, "Imputing Risk Tolerance from Survey Responses," *Journal of the American Statistical Association*, September 2008, vol. 103, no. 483, pp. 1028–1038. A working paper version is available online.

[7] See Shelly Lundberg and Robert A. Pollak, "Bargaining and Distribution in Marriage," *Journal of Economic Perspectives*, Fall 1996, vol. 10, no. 4, pp. 139–158. Also, see Marilyn Manser and Murray Brown, "Marriage and Household Decision-Making: A Bargaining Analysis," *International Economic Review*, February 1980, vol. 21, no. 1, pp. 31–44.

[8] See Leora Friedberg and Anthony Webb, "Determinants and Consequences of Bargaining Power in Households," National Bureau of Economic Research Working Paper No. 12367, July 2006.

[9] Urvi Neelakantan, Nika Lazaryan, Angela Lyons, and Carl Nelson, "Portfolio Choice in a Two-Person Household," Manuscript, July 2016.

[10] The Health and Retirement Study, managed by the University of Michigan and the Social Security Administration, can be found at http://hrsonline.isr.umich.edu/.

[11] See Kimball, Sahm, and Shapiro, 2008.

[12] See Friedberg and Webb, 2006.