Measurement of diversification between asset classes in the Survey of Consumer Finances

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HIGHLIGHTS

- New measures of asset class diversification within the SCF are proposed.
- Measures incorporate the number and concentration of asset classes held.
- Testing illustrates improved interpretations associated with these measures.
- These measures provide a better understanding of household investment decisions.

ARTICLE INFO

ABSTRACT

Using the 2010 and 2013 Survey of Consumer Finances, we propose two new measures of asset class diversification that account for two main dimensions; the number of asset classes held and the degree of concentration of wealth in each asset class.

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1. Introduction

In exploring household investment decisions, previous literature has evaluated how households' make decisions to allocate their wealth between asset classes. The life-cycle hypothesis (LCH) provides a theoretical framework for understanding households' portfolio allocation decisions, indicating that households will need increasingly diversified portfolios as they age and gain wealth (e.g., Cocco et al., 2005). Consistent with the theory, previous empirical literature provides evidence that older and wealthier investors hold relatively more diversified portfolios (Goetzmann and Kumar, 2008). In evaluating asset class diversification, the most commonly used measure has been a simple count of the number of asset classes held (Kramer, 2012; Marsden et al., 2011; Zick and Mayer, 2013). However, an asset class count has limitations, as it fails to account for the concentration of portfolio wealth within each class. For example, a household that holds 90% of its financial assets in equities and only 10% in fixed income securities would be considered equivalent to a household that split its wealth equally between the two. Given this limitation, this study introduces new measures that combine two important dimensions of diversification; the number of assets classes held and the concentration of the household's portfolio in each asset class. By comparing results from multivariate analyses based on simple measures used in previous literature and the measure developed in this study, we aim to show the benefits of the increased sophistication of these mea-

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Table 1
Categorization of asset class.

Asset class	Financial instrument
Broad asset class	
Cash-equivalent	Checking accounts, savings accounts, money market deposit accounts, money market mutual funds, call accounts, certificate of deposits (CDs), cash n.e.c.
Equities	Directly-held stock, stock mutual funds, stocks in IRAs/Keoghs, in other managed asset with equity interest (annuities, trusts, MIAs), in thrift-type retirement accounts, in savings accounts classified as 529 or other accounts, non-public stock
Fixed income securities	Bond mutual funds, savings bonds, directly-held bonds, bonds in IRAs/Keoghs, in other managed asset (annuities, trusts, MIAs), in thrift-type retirement accounts, in savings accounts classified as 529 or other accounts
Other investments	Other mutual funds (hedge funds, REITs), oil/gas/mineral investment, other financial assets
Other claims	Loans from the household to someone else, future proceeds, royalties, futures, deferred compensation, cash value of whole life insurance
Detailed asset class	
Cash-equivalent	Checking accounts, savings accounts, money market deposit accounts, money market mutual funds, call accounts, certificate of deposits (CDs), cash n.e.c.
Equities	Directly-held stock, stock mutual funds, stocks in IRAs/Keoghs, in other managed asset with equity interest (annuities, trusts, MIAs), in thrift-type retirement accounts, in savings accounts classified as 529 or other accounts, non-public stock
Government fixed income	Tax-free bond mutual funds, government bond mutual funds, tax-exempt bonds, US government and government agency bonds and bills
Credit-risk fixed income	Other bond mutual funds, mortgage-backed bonds, corporate and foreign bonds, savings bonds, bonds in IRAs/Keoghs, in other managed asset (annuities, trusts, MIAs), in thrift-type retirement accounts, in savings accounts classified as 529 or other accounts
Alternative investments	Other mutual funds (hedge funds, REITs), futures, oil/gas/mineral investment
Other investments	Directly-held other financial assets, other financial assets in IRAs/Keoghs, in other managed asset (annuities, trusts, MIAs), in thrift-type retirement accounts, in savings accounts classified as 529 or other accounts
Other claims	Loans from the household to someone else, future proceeds, royalties, futures, deferred compensation, cash value of whole life insurance

sures. Importantly, our measures are developed based on publicly available information contained within the Survey of Consumer Finances (SCF). Given the prominence of the SCF in household finance research, the development of these measures provide opportunity for significant improvement in the quality of research done in the area.

2. Method

2.1. Measurement of asset class diversification

Our measures of a household's diversification between asset classes for each household are calculated by using the following equation:

$$Diversifcation = 1 - \sum_{i}^{N} \left(\frac{Dollars\ in\ Asset_i}{Total\ dollars\ in\ financial\ asset} \right)^2 \quad (1)$$

where i denotes asset classes. We construct and evaluate asset class diversification in two ways: broad asset classes and detailed asset classes. Our broad measure is based off five broad financial asset classes, specifically cash-equivalent, equities, fixed income securities, other investment assets, and other claims. The detailed measure categorizes assets into more specific asset classes based on level and type of risk. Specific asset classes in this measure include cash-equivalent, equities, government fixed income securities, credit-risk fixed income securities, alternative investment, other investment assets, and other claims (see Table 1). Following the equation above, if households invest all entire portfolios in equities, the value of the asset class diversification measure is equal to zero. However, as assets are spread between different classes, both in number of assets and percentage of wealth, the value increases.

2.2. Data

This study used a pooled cross-sectional dataset from the 2010 and 2013 Survey of Consumer Finances (SCF) sponsored by the Federal Reserve Board. The SCF dataset has been collected triennially since 1983, and collects detailed information about

Table 2
Descriptive analyses of different measures of diversification, 2010 and 2013 SCF.

	Number of asset classes	Diversification I	Diversification II
Mean[a]	2.0902	0.3251	0.3264
(SD)	(1.1702)	(0.3018)	(0.3027)
25%	1	0	0
50%	3	0.3927	0.3974
75%	3	0.5561	0.5653

[a] Sample weighted.

a household's financial status. In addition, the SCF provides various household demographic and attitudinal characteristics. Our analytic sample includes households with financial assets in the 2010 and 2013 survey ($N = 11,715$). For the multivariate analyses, the repeated-imputation inference (RII) technique is used to adjust for the fact that the SCF creates five replicates of each household to deal with missing values (Montalto and Sung, 1996).

3. Results

We present descriptive statistics of the measures of asset class diversification in Table 2. Column (1) presents results based on the simple count of asset class used in the previous literature, while Column (2) and (3) provide estimates obtained from using our broad and detailed asset class diversification measures, respectively. The mean number of asset classes is two (column (1)). Means indicate an average household invests 80% of their savings in one asset and the remaining 20% in another asset (column (2) and (3)). Similarly, a typical household in the 50th percentile allocates 76% of their portfolio in a single asset class, with the remaining 24% split evenly between a two additional classes. Meanwhile, a household in the 75th percentile allocates 60% in a first asset class, with the remaining 40% split evenly between two additional asset classes.

Table 3 presents results from Ordinary Least Squares (OLS) regression models predicting the extent a household practices asset class diversification. In general, signs and significance of estimated coefficients are similar across measures. As indicated by the LCH, both age and age-squared are significant in all