Factors Related to the Financial Vulnerability of Small Business Owner-Manager Households

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Abstract

We investigate financial vulnerability of households with small business owner managers, using Survey of Consumer Finances (SCF) datasets from 1992 to 2007. Based on regression analyses of the ratio of business assets to total household assets and the ratio of business income to total household income, we find that both ratios increase with age up to about age 60, then decrease. Black households are less vulnerable (have lower income ratios) than White households. Single female households are less vulnerable than married couple in terms of the business to household asset ratio whereas both single male and female households are more vulnerable than married couples in terms of the business to household income ratio. Those willing to take substantial investment risks have higher asset and income ratios than those unwilling to take any risks.

Keyword: Small Business Households, Financial Vulnerability, Diversification

JEL codes: D14; L25l; L26

Introduction

According to the 2011 Small Business Economy Report (U.S. Small Business Administration, 2011) there were of about 27.3 million small businesses with fewer than 500 employees in 2008, accounting for about 49.6% of U.S. private-sector jobs. Almost all (99.7%) of employer firms having payrolls were small businesses, paying 44% of total U.S. private payroll and creating 65% of net new jobs over the past two decades. During the recent economic downturn, the report shows that small businesses accounted for almost 60% of net job losses. Due to their crucial roles for economic growth, small businesses in the United States have been actively studied by economists, other social scientists, financial professionals, and policy makers over the past several decades. An indicator of the importance of small businesses is the Small Business Jobs Act of 2010 establishing a $30 billion government fund for small businesses, which has helped to expected to create or retain more than 650,000 new jobs (U.S. Senate Committee on Finance, 2010). Since small businesses are generally privately owned and operated, the financial health of business is closely related to the financial, physical, and even mental status of their owners or managers. We believe that investigating the factors affecting the financial vulnerability of households who own and manage small businesses may contribute to research in small business and related policies, suggesting more effective ways to support them. This research focuses on 1) providing insights into the financial vulnerability of small business owner-manager households; 2) examining how the level of financial vulnerability of small business owner-manager households has changed during the period between 1992 and 2007; and 3) determining the relationship between household characteristics and financial vulnerability.

This study extends the research of Gutter and Saleem (2005), which examines the financial vulnerability of small businesses using. the 1998 Survey of Consumer Finances (SCF) dataset. (Gutter and Saleem report that they used the 2001 SCF, but based on their results, we conclude that they used the 1998 SCF.) We add the 2001, 2004, and 2007 SCF datasets in order to increase the sample size of small business owner-manager households, allowing for a more robust assessment of the factors related to their financial vulnerability and testing for time trends in financial vulnerability.

Literature Review

Defining Small Business

As small businesses have received much attention in the economic and finance literature because of their significant influence to the national economy, a variety of definitions of a small business have been used, based on employment size, annual receipts, net worth, etc. (Watson & Everett, 1996) Although there is no uniform definition of a small business, one of the most commonly used criteria is an employee-based size standard that sometimes varies by each industry such as manufacturing, wholesale/retail business, service, construction, etc. The U.S. Small Business Administration (2010b) defines a small business as an independent business having fewer than 500 employees. This study also follows the 500-employee size standard.

Financial Ratio Analysis

Financial ratio analysis has been widely used when analyzing how effectively the financial resources of a firm have been managed to achieve its goals, or whether its current financial situation is sound enough to meet its planned insolvency levels. Using a Delphi approach among

financial experts, Greninger, Hampton, Kitt, and Achacoso (1996) identify the usefulness of financial ratios. The authors claim that financial ratios can be utilized various areas in personal financial planning such as investment, liquidity, savings, asset allocation, inflation protection, tax burden, and insolvency. Assuming that financial ratios are useful and efficient indicators to evaluate financial status of a business, it is expected that two financial ratios, the ratio of business assets to total household assets (referred to below as the asset ratio) and the ratio of business income to total household income (referred to below as the income ratio) would capture the level of diversification, in other words, the level of financial vulnerability of business owner-manager households. For instance, business owner-manager households who have higher ratios would have a great likelihood of being financial vulnerable.

Portfolio Diversification and Measures of Financial Vulnerability of Business Owner-Managers

Standard portfolio theory can provide some insight into tie issue of the financial vulnerability of a small business owner-manager. How many assets are required for a well-diversified portfolio? Although the number of assets in a portfolio might not be the sole determinant of the level of diversification, industry rules-of-thumb on this question often state that 15 to 30 stocks in a portfolio would be adequate (Statman, 1987). These rules-of-thumb are based on modern portfolio theory where diversified portfolios yield a portfolio effect to reduce risk exposure by holding combinations of multiple assets which are not perfectly correlated. In the theory, a financial risk, defined as the probability that the actual return will be different from the expected return, exists when possible return is expected from an investment. Certain financial risks could be mitigated by diversifying financial resources that have different correlation coefficients although all financial risks cannot be completely avoided as systematic risk in the market always

remains. Extending this fundamental concept of portfolio risk, several empirical studies that compare the variance of each stock to the variance of portfolios with more stocks also report how many stocks are required to produce a satisfactory level of risk reduction for an investment portfolio (Domian, Louton, & Racine, 2003; Shawky & Smith, 2005; Domian, Louton, & Racine, 2007). They report that a greater reduction in portfolio risk would be achieved by increasing the number of assets in a portfolio.

Too much reliance on business income and assets can lead to a greater vulnerability of the household to business failure (Gutter and Saleem, 2005). Previous evidence suggests that approximately two third of the underlying causes of small business failures are related to internal factors such as lack of appropriate management skills and inadequate financial resources (Watson and Everett, 1996). This becomes apparent when the economy faces a recession. A study conducted by the U.S. Small Business Administration (2010a) reports that only a quarter of new small businesses last 15 years or more while 30% do not survive for more than two years. Thus, in order to improve their chances of household financial success, small business owner-mangers should consider their business as a component in the overall household portfolio.

The reasons for diversification for small business owner-managers might be different from those for large firms, depending on their conservative operating leverage, ability to prevent further losses, business motivations, and different levels of desire for organizational growth (Lynn & Reinsch, 1990; Everett & Watson, 1998). Thus, different approaches for small businesses should be taken into account. For instance, since diversification is directly related to the preference of

small business owners or managers who relatively lack managerial strategies and resources, it is evident that the level of diversification would be associated with their household characteristics.

Background Risk and its Measures

Under modern portfolio theory, in order to measure the risks associated with financial assets, it is necessary to examine some important variables, including expected rates of return, price volatilities of those assets, and correlations with other assets. It is reasonable to apply the principal of diversification to nonfinancial asset components of a household portfolio. The risks associated with nonfinancial assets, so-called background risks, are not necessarily measurable. A background risk is defined as a nonfinancial market risk that is different from the general financial risk that investors face in financial markets (Heaton & Lucas, 2000; Campbell, 2006). Previous academic studies, for example, Heaton & Lucas (2000), Gollier (2001), Campbell (2006), and Hanna, Wang and Lindamood (2008) discuss background risk and its impact on household portfolios and investment choices. In particular, Statman (1987) and Hanna et al. (2008) suggest that the diversification principles can be applied to risky nonfinancial assets such as small businesses and real estate investments as well as equity investments. Following their assertions, we assume that small business owner-managers can also optimize their household portfolio by diversifying nonfinancial asset investments that have a background risk. However, the SCF datasets do not contain direct measures of a background risk, allowing us to mathematically analyze the levels of diversification. Although the datasets are incomplete and limited, the SCF is still most appropriate dataset that provides rich information about households' asset allocations and their financial characteristics.

Research on Small Business Owner-Managers using the SCF datasets

While there exists an extensive literature on the financial condition of U.S. households, much less research has empirically analyzed financial vulnerability for the subset of households who own and manage businesses. Moreover, recent research focuses mostly on the impact of entrepreneurship on financial portfolio selections or asset allocations, not on the relationship between household characteristics of small business owners-managers and their financial vulnerability. Heaton and Lucas (2000) find that households with substantial business assets or ownership of their employer's stock tend to hold smaller fractions of their liquid financial assets, and households with high and variable business income hold less wealth in stocks than other wealthy households. Gentry and Hubbard (2004) focus more on the saving and investment decisions of entrepreneurs, and conclude that entrepreneurs accumulate more wealth than non-entrepreneurs partly due to a precautionary demand for financing. Their findings stress the importance of interdependence between entrepreneurs' investment and saving decisions. Some studies such as Moskowitz and Vissing-Jørgensen (2002) assert that investment in private equity is extremely concentrated, reporting that households with entrepreneurial equity invest more than 70% of their private equity holdings in a single private company where they have an active management interest. Shum and Faig (2006) also find that the decision to participate in the stock market is negatively correlated with holdings of alternative risky investments such as investments in private businesses. Economic stability or financial decisions of household might differ not only by entrepreneurship but also by their level of risk tolerance. Wang and Hanna (2007) find that business owner-managers are more risk tolerant than non-owners, but less likely to hold stock investments than non-owners. Most findings of previous research suggest that households investing in business should increase their allocation in liquid assets or other

financial assets in order to insure against business risk, without consideration of the unique characteristics of small business owner-managers. Gutter and Saleem (2005) attempt to examine whether households who own small business are more likely to have greater financial vulnerability than non-business owner-manager households. Using financial ratios obtained from the 1998 SCF, they find that due to the lack of diversification in assets and income, business owner-manager households are more likely to be financial vulnerable. However, as mentioned earlier, they used only the 1998 SCF survey whose sample size for business owner-managers is relatively small. Building on the Gutter and Saleem (2005) research that uses the ratios of business income and assets to total household income and assets, this study investigates the factors related to financial vulnerability of households who own and manage a small business for the period 1992-2007.

Conceptual Framework

Household Characteristics & Financial Vulnerability

It is hypothesized that the financial ratios are associated with various demographic factors such as risk tolerance, age, education levels, racial/ethnic difference, homeownership, expectation of inheritance, etc. Previous research shows that many demographic and financial factors are related to a household's risk tolerance level (Sung & Hanna, 1996; Wang & Hanna, 1997; Yao, Gutter, & Hanna, 2005; Wang & Hanna, 2007). Investors having high risk tolerance might have higher financial ratios with less diversified portfolio than those with low risk tolerance due to the willingness to take additional risk for additional marginal reward. In other words, more risk tolerant households are willing to take greater risks and expect to earn higher returns. Assuming that owning and/or managing a small business might have higher risks and higher returns, it is

hypothesized that the financial ratios of business owner-manager households would be positively related to their risk tolerance levels. More risk tolerant business owner-manager households would be more likely to be financially vulnerable. Previous researchers report allocations to risky investment are related to age, although the pattern depends on whether human capital is included in total wealth. (Morin & Suarez, 1983; Schooley & Worden, 1996; Wang & Hanna, 1997). Beyond its effect on risk capacity, it is also expected that age would influence financial vulnerability, and that as households get older, the business income and assets would grow, increasing the ratios, and increasing financial vulnerability. Education might also be another factor reflecting the level of financial vulnerability as the knowledge of business owner-mangers is strongly associated with their business and its financial status.

Methods

Data and Statistical Analysis

In order to obtain more robust estimates, this study combines the cross-sectional datasets for the *Survey of Consumer Finances* (SCF) datasets from 1992 to 2007, with a total of 25,889 households in the combined sample. The SCF includes a representative sample of U.S. households plus a sample that has a higher incidence of higher wealth households, requiring weighting of descriptive analyses to obtain the results that are representative of the U.S. population. For example, while the actual number of households in the SCF combined datasets owning and managing a business with fewer than 500 employees is 6,755, with the sampling weights, the number of small business owner-manager households appears to be 3,159 (12.2% of all households).

In order to handle missing data in the SCF datasets, we use "repeated-imputation inference" (RII) techniques to obtain better estimates of variances for statistical analyses (Kennickell, 2009; Lindamood, Hanna, & Bi, 2007; Montalto & Sung, 1996). Following Lindamood, et al. (2007), we weight descriptive analyses but do not weight multivariate analyses because our goal is hypothesis testing.

This study utilizes the following SCF survey questions: *"Now I would like to ask you about businesses you may own. Do you and your family living here own or share ownership in any privately-held businesses, farms, professional practices, limited partnerships or any other types of partnerships? Do not include corporations with publicly-traded stock or any partnerships that have already been recorded earlier."* and *"Do you or anyone in your family living here have an active management role in any of these businesses?"* We consider households who answered yes to those two questions as business owner-manager households.

Borrowing the methodologies of Gutter and Saleem (2005) and Trussel (2002), we use financial ratios as the dependent variables to measure the financial vulnerability of business owner-manager households. The asset ratio, referring to the percentage of total household assets allocated to business asset, provides a measure of the level of diversification in assets. Households with a higher asset ratio might be more likely to be financially vulnerable than those with a lower asset ratio since households having with multiple sources may rely on alternative assets in the event of a business depletion or in challenging economic times. On the other hand, the income ratio represents the proportion of household income from business income, which may reflect the level of diversification in household income. For instance, if a household earns most of its income from business, then the income ratio will be close to 1, and if the business

income drops substantially, the household may suffer because of the lack of income diversification.

For independent variables used in the regression models, general demographic variables such as respondent's age, respondent's race/ethnicity, respondent's education, marital status, home ownership, whether a child under 19 is in the household, and whether the household expects an inheritance in the future are included. Categorical dummy variables for some of those variables are also created, including the six SCF survey years, four levels of education, four different household types and marital status.

Ordinary Least Squares (OLS) regressions are used for the financial ratios as the dependent variables. We assume that the higher the value of the concentration ratios, the more financially vulnerable is a household, and that those households having lower ratios could withstand temporary or permanent financial crisis.

Results

Descriptive Results

The mean inflation-adjusted income of business owner-manager households has increased since 1992, from $116,225 to $190,914 (Table 1). Mean inflation-adjusted net worth has increased from $977,911 to $2,077,920 mainly due to the substantial increase in business assets ($380,638 in 1992 to $855,205 in 2007). There are a small number of extreme values or outliers in the distribution of the business concentration ratios. Among business owner-manager households, only 3 households have negative business assets while 310 households report negative business

income. For our multivariate analyses, having negative values of the ratios could cause ambiguous results, so, we deleted cases with negative business income for the analyses of the income ratio, and we deleted cases with negative business assets for the analyses of the asset ratio. In the combined SCF datasets, for business owner-manager households for the mean asset ratio is 27.4% and the mean income ratio is 30.0%. The distributions of the two financial ratios are shown in Table 2. Some households have very low values of the asset ratio, perhaps due to low capital needs for the business, and over 25% of households have a zero income ratio, perhaps reflecting losses from the business. Some households have very high ratios, with about 10% having an asset ratio of 0.71 or more, and over 10% having business income ratio of 1.0.

Table 3 shows the mean values of the asset and of the income ratio by categories of independent variables, with significance tests based on RII means tests indicating whether the mean of the ratio for a category is significantly different from the mean for the reference category used in the regression shown in Table 4. (We use age and age squared in the regression, but for illustration we use categories of age in Table 3.) The income ratio increased from 28% in 1992 to 40% in 2007 while the asset ratio has been relatively stable, staying in the 26% to 27% range in the 1995 to 2007 period. Black households have lower mean values of both ratios than white households, and Hispanic households have higher mean values of the asset ratio than white households. Single male households have higher values of the asset ratio than married couple households and also significantly higher than single female households. Single female households have higher values of the income ratio than married couple households and also significantly higher than single male households. Education has a mixed effect on the ratios, but high school dropouts have the highest mean values of the ratios and those with at least a bachelor's degree have the

lowest values. Households unwilling to take substantial investment risk have higher asset ratios than households unwilling to take any risk, and also significantly higher ratios than those willing to take average or above average risk. The pattern for the income ratio is more complicated, with households willing to take substantial investment risk having a mean ratio not significantly different from those unwilling to take any risk, and those in the average and in the above average risk tolerance category having significantly lower income ratios than either the no risk or the substantial risk households.

Multivariate Results

As noted in the Methods section, in order to identify which types of households are most at risk for low diversification in terms of business income and business assets, two dimensions affecting financial vulnerability are considered, the asset ratio and the income ratio. The OLS regression models test the effects of household characteristic variables on these financial ratios. Many of the variables in the OLS regression models for the asset ratio and the income ratio have significant effects (Table 4). The business asset ratio does not vary much across survey years. The income ratio shows more variation, with the ratio in 2007 being higher than 1992, and also significantly higher than the other survey years. (Note that the significance levels shown in Table 4 are only in comparison to the reference categories, which for survey year is 1992, so comparisons to other categories must be based on additional tests not shown in this study.)

Based on the combined effect of age and age squared, the ratio of business income to total household income increases with age up to age 61, then decreases. The ratio of business assets to

total household assets also increases with age up to age 60, then decreases, but the estimates for the asset ratio are not significant. Figure 1 shows the patterns for the two ratios by age, as the mean values of other independent variables. The pattern for the income ratio shows a substantial effect of age, increasing from a predicted mean of 15% at age 20 to about 33% at age 61, whereas the asset ratio has a much smaller effect, increasing from under 24% at age 20 to 28% at age 60. Compared with households with a White respondent, those with a Black respondent have a lower business income ratio, implying that if all other variables are equal, Black households are less likely to have financial vulnerability than White households. Marital status is represented by four dummy variables with the reference group being married households. Single female households have a lower asset ratio than otherwise similar married couple households but a higher income ratio than married couple households. Single male households have higher income ratios than married couple households. Education has a negative effect only on the income ratio, with those with less than a high school diploma having higher income ratios than those with a high school diploma or more. The income ratio of small business owner-mangers with college degrees is 5.75 percent lower than that of those who have education level with less than high school, representing that the higher level of education, the less likely to be financially vulnerable if all other things are equal.

Ashypothesized, those willing to accept substantial risk in investing have significantly higher ratios than households unwilling to take any risk. This result confirms a strong association between risk tolerance and financial vulnerability. Homeowners have lower business ratios than renters, presumably because the home is part of the non-business assets, but higher income ratios than renters. Unlike Wang and Hanna's (1997) finding that the expectation of future inheritance

increases the level of riskiness in a household portfolio, the result of this study shows that in terms of the business asset ratio, small business owner-mangers expecting a future inheritance are less likely to be financially vulnerable than those not expecting one.

Conclusions and Implications

From the foregoing discussion, it can be seen that identifying which households among small business owner-mangers are more financially vulnerable might be beneficial to financial service institutions and policymakers involved in preparing effective polices for small businesses.

As pointed out above, the only one third of all small business startups survive the first two years and less than half make it to four years (U.S. Small Business Administration, 2010a),
It is crucial for small business owner-manager households which are financially vulnerable to have adequate diversification plans that may prevent them from detrimental results such as business failures or financial crisis. Given the findings of this study, business owner-managers willing to take substantial risk tend to diversify less than those unwilling to take any investment risk. In other words, risk-averse business owner-managers tend to diversify their investments well. This would be consistent with the concept that well-diversified investment portfolio can reduce risk by investing in a variety of investment vehicles (Reed & Luffman, 1986). Therefore, financial advisors should suggest proper contingency funding plans or diversification plans to their clients for short-term and long-term financial security of business if the majority of financial resources are derived from their business. In addition, certain types of households among small business owners-mangers such as married couples or risk takers should be first

targeted when developing new financial planning products or services since they are more likely to be financially vulnerable than other groups.

Lenders are always concerned about the likelihood of receiving on-time loan payments, and wish to more accurately evaluate how sustainable borrower's financial status is. In particular, reviewing procedures become stricter if government-funded loans are involved. As mentioned, for instance, the Small Business Jobs Act of 2010 created several programs to help small business, including a $30 billion government grant program that is expected to boost lending to small businesses through community banks. Even though each lending institution or bank has its own underwriting guidelines, this type of special government loan program generally requires underwriters to more thoroughly review loan applications submitted. The findings and methodologies discussed in this study can be used as reference tools when determining whether the applicants satisfy lender's loan requirements such as debt-to-income ratio, credit history, net worth, and other disposable assets.

Future Research Opportunities

Much room still exists for further investigations to move on from this study. More theoretical and empirical research on financial ratios might provide better insights into the determinants of financial vulnerability of small business owners or managers. Financial ratio analysis is an effective and efficient method to evaluate business value and financial strengths or weaknesses. , various types of are designed primarily for larger businesses, not for small businesses. Thus, modified financial ratio analysis aimed primarily at small businesses should be developed for future research. Financial ratios that are carefully adjusted for small businesses would provide

users such as potential buyers, creditors, underwriter, and even investors with more useful information regarding valuation of businesses, financial creditability, or profitability.

As discussed previously, the SCF datasets have limited information about employment income sources and about financial characteristics of household portfolio, especially detailed information about nonfinancial assets such as private businesses and investment real estate assets. Due to this data limitation, although a household owns multiple businesses or has various employment income sources, this study ignores the specific characteristics of each business and each income, but considers all as simply one entity and one source of income instead. However, once adequate datasets that can overcome those limitations are available, the financial status of small business owner-managers can be more precisely calculated and effectively analyzed.

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Table 1. Descriptive Analyses: Selected Characteristics of Business Owner-manager Households by Survey Year

	1992	1995	1998	2001	2004	2007
Age	45	46	47	48	49	48
Total income	116,225	118,910	144,703	176,854	164,771	190,914
Business income	44,359	51,449	60,964	62,631	55,320	77,234
Total asset	977,911	1,089,303	1,323,930	1,755,043	1,814,244	2,077,920
Business asset	380,638	459,490	510,469	662,983	715,062	855,205
Liquid asset	38,532	47,409	45,489	57,193	62,446	61,910
Financial asset	226,673	284,065	413,189	556,073	433,999	526,585
Retirement asset	58,640	73,490	102,226	169,216	127,228	159,290
Total debt	101,930	99,034	120,532	138,488	170,787	207,443
Net worth	875,981	990,058	1,203,391	1,616,554	1,643,457	1,870,477
Sample size(N)†	1,082	1,110	1,088	1,122	1,178	1,175

Table created by authors, using analyses of all five implicates of the 1992-2007 Survey of Consumer Finances.
† All results are weighted except for the actual number of households.

Table 2. Sample Distributions: Vulnerability Ratios

	Business assets/Total household assets	Business income/Total household income
10th Percentile	0.0000	0.0000
25th Percentile	0.0355	0.0000
Median	0.1906	0.0971
75th Percentile	0.4588	0.5691
90th Percentile	0.7112	1.0000
Mean	0.2743	0.3003

Note: Values of the ratios greater than 1.0 were recoded to 1.0, and values less than 0.0 were recoded to 0.0.

Table created by authors, using weighted analyses of all five implicates of the 1992-2007 Survey of Consumer Finances.

Table 3. Means Tests: Vulnerability Ratios by Independent Variables

	Business asset/Total asset		Business income/Total income	
	Mean	**p-value***	**Mean**	**p-value***
Survey year (Year 1992)				
Year 1992	0.2918		0.2812	
Year 1995	0.2739	0.0275	0.2886	0.2640
Year 1998	0.2781	0.0320	0.2930	0.0845
Year 2001	0.2760	0.0086	0.2610	0.0067
Year 2004	0.2674	<.0001	0.2804	0.9993
Year 2007	0.2594	<.0001	0.3989	<.0001
Age of respondent (<30)				
< 30	0.3132	<.0001	0.1992	<.0001
30-39	0.2935	<.0001	0.2777	<.0001
40-49	0.2709	<.0001	0.3200	<.0001
50-59	0.2530	<.0001	0.3180	<.0001
60-69	0.2570	<.0001	0.2933	<.0001
>69	0.2945	<.0001	0.3699	<.0001
Racial/ethnic Status(White)				
White	0.2741		0.3029	
Black	0.2462	<.0001	0.2395	<.0001
Hispanic	0.3252	<.0001	0.3130	0.4498
Other	0.2659	0.0123	0.3066	0.7151
Marital status(Married)				
Married	0.2666		0.2863	
Partner	0.2963	<.0001	0.2355	<.0001
Single(M)	0.3301	<.0001	0.3507	<.0001
Single(F)	0.2493	0.0123	0.3996	<.0001
Respondent's education(<High school)				
<High school degree	0.3159		0.3744	
High school degree	0.3083	0.4332	0.3109	<.0001
Some college	0.2932	0.0466	0.3022	<.0001
Bachelor's Degree and above	0.2385	<.0001	0.2812	<.0001
Subjective risk tolerance(No risk)				
No risk	0.2963		0.3287	
Average	0.2628	<.0001	0.2910	<.0001
Above average	0.2606	<.0001	0.2837	<.0001
Substantial	0.3392	<.0001	0.3332	0.6153

	Business asset/Total asset		Business income/Total income	
	Mean	**p-value***	**Mean**	**p-value***
Homeownership(Non home owners)				
Non home owners	0.3987		0.2785	
Home owners	0.2516	<.0001	0.3043	<.0001
Expect inheritance(Not expect)				
Not expect inheritance	0.2797		0.2944	
Expect inheritance	0.2545	<.0001	0.3223	<.0001

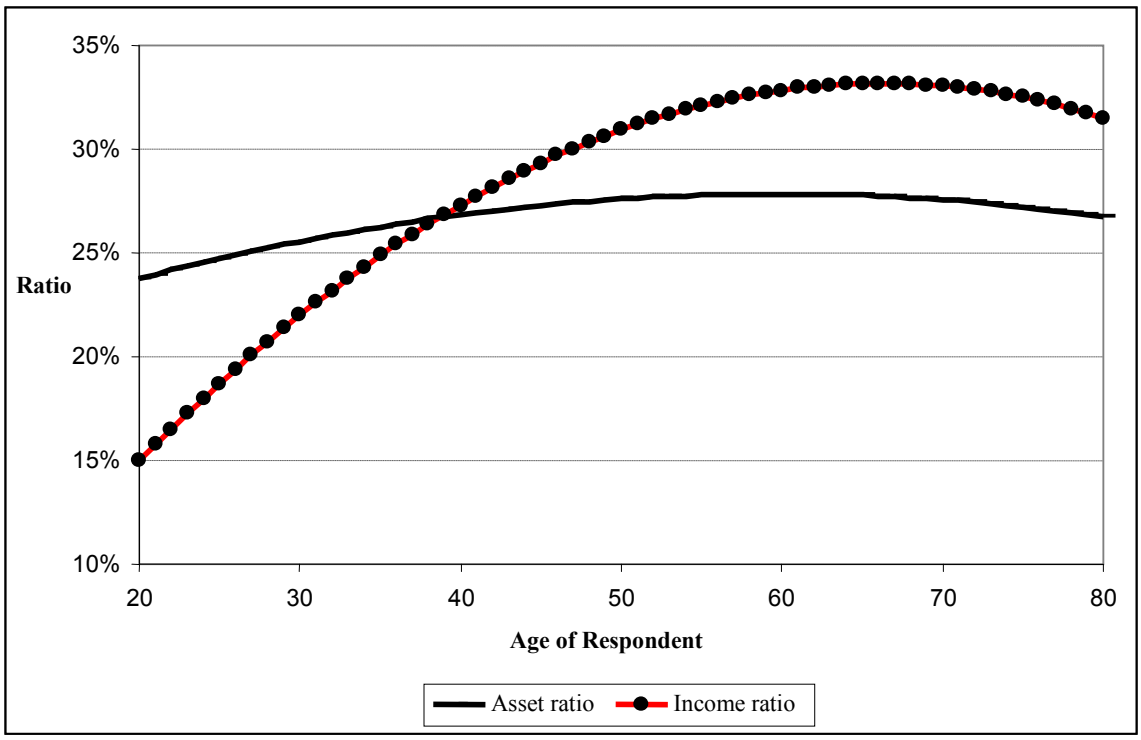
* The reference category used in each means test is indicated in parentheses. Significance test is for mean difference from reference category for each variable. RII procedure used to account for implicates structure of SCF datasets. Analysis by authors of 1992, 1995, 1998, 2001, 2004, and 2007 SCF datasets.

Table 4. OLS Regression Models: Vulnerability Ratios

	Business assets/Total household assets			Business income/Total household income		
	Coefficient	**s.e.**	**p-value***	**Coefficient**	**s.e.**	**p-value***
Intercept	0.3154	0.0538	<.0001	-0.1296	0.0737	0.0787
Survey year(1992)						
Year 1995	0.0115	0.0133	0.3893	-0.0276	0.0175	0.1158
Year 1998	0.0098	0.0127	0.4415	-0.0115	0.0173	0.5085
Year 2001	0.0022	0.0140	0.8774	-0.0397	0.0176	0.0240
Year 2004	0.0081	0.0132	0.5396	0.0023	0.0172	0.8913
Year 2007	-0.0083	0.0131	0.5277	0.0472	0.0173	0.0064
Respondent's age	0.0032	0.0020	0.1110	0.0192	0.0027	<.0001
Respondent's age-squared	-0.00003	0.1868	0.1457	-0.0002	0.2514	<.0001
Racial/ethnic Status(White)						
Black	-0.0410	0.0240	0.0872	-0.1174	0.0336	0.0005
Hispanic	-0.0087	0.0245	0.7233	-0.0349	0.0330	0.2903
Other	-0.0061	0.0196	0.7541	0.0163	0.0255	0.5241
Marital status(Married)						
Partner	-0.0073	0.0196	0.7096	-0.0276	0.0263	0.2950
Single(M)	0.0098	0.0129	0.4498	0.0819	0.0179	<.0001
Single(F)	-0.0492	0.0173	0.0044	0.0586	0.0237	0.0136
Have a child<19	0.0073	0.0085	0.3893	0.0139	0.0117	0.2348
Respondent's education(<High school)						
High school degree	0.0328	0.0194	0.0911	-0.0598	0.0278	0.0317
Some college	0.0136	0.0206	0.5075	-0.0651	0.0287	0.0236
Bachelor's Degree and above	-0.0113	0.0190	0.5530	-0.0575	0.0276	0.0375
Subjective risk tolerance (No risk)						
Average	-0.0025	0.0114	0.8293	-0.0038	0.0164	0.8160
Above average	0.0212	0.0124	0.0877	0.0105	0.0177	0.5554
Substantial	0.0938	0.0160	<.0001	0.0635	0.0229	0.0056
Homeownership	-0.0757	0.0139	<.0001	0.0456	0.0198	0.0214
Expect inheritance	-0.0231	0.0096	0.0159	0.0132	0.0125	0.2915

* The reference category is indicated in parentheses. Significance test is for whether coefficient different from reference category for each variable. Significance level and standard error based on RII technique Analysis by authors of 1992, 1995, 1998, 2001, 2004, and 2007 SCF datasets.

Figure 1. Relationship Between Ratios and Age of Respondent at Mean Values of Other Independent Variable



Created by authors based on regression results in Table 4.