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## Risk Tolerance and Liquidity Preferences of the Self-employed

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Abstract

Households who report higher income, greater liquidity, and accept more risk when investing have a greater likelihood to be self-employed. Some of the evidence suggests that households with a shorter planning horizon for saving and spending decisions tend to be self-employed but additional research in this area is needed. The study uses the 2004 Survey of Consumer Finances and logistic regression to determine preferences for liquidity, risk tolerance, and planning horizons in self-employed households. Additionally, the logistic regression indicates income, age, marital status, home ownership, race and education are variables associated with the likelihood of self-employment.

Key words: self-employment, risk tolerance, liquidity, planning horizon, Survey of Consumer Finances

There exists a truism that self-employed households must be more risk tolerant than other households because self-employment is more risky. The relationship between self-employment and risk tolerance was described as far back as 1890 in Alfred Marshall's book *Principles of Economics*. Contemporary research has continued to find a link between self-employment and levels of risk tolerance. Xiao, Alhabeeb, Hong and Haynes (2001) find that business owning families are more risk tolerant than nonowners. Self-employed households bear the risk of business failure but also can enjoy additional rewards from success. According to the 2004 Survey of Consumer Finance, approximately 20% of all households in the United States have at least one self-employed person in the home. Some financial planners may be tempted to use heuristics to assume self-employed households are more risk tolerant. Sung and Hanna (1996) suggest various demographic factors such as age, education, homeownership, and occupation are related to a household's risk tolerance. However, Grable and Lytton (1998) caution against the use of demographic variables as the primary basis for risk tolerance. Dalton, Dalton, Cangelosi, Guttery, and Wasserman (2007) suggest planners determine risk tolerance of their clients by issuing a questionnaire or gain an understanding of a client's investment history.

Additional factors exist in self-employed households that financial planners should consider when working with these clients. Liquidity needs to buffer against the variability of income during economic cycles might be greater for these households. The life cycle hypothesis (Ando & Modigliani, 1963) states a household will maximize utility over a lifetime by smoothing consumption. Therefore, a self-employed household may rationally hold more liquid assets to have the ability to smooth their consumption during periods of income volatility. Finally, self-employed households may have a different planning horizon than other households. Does the pressure of self-employment create a shift in the household planning horizon utilized in

financial decision making? This paper seeks to analyze the relationship between these variables by utilizing the information in the 2004 Survey of Consumer Finances.

The Survey of Consumer Finances (SCF) is a triennial survey conducted by the Board of Governors of the Federal Reserve System. The survey oversamples the wealthiest households in the United States. The survey collects detailed information about employment status, risk aversion, liquidity, and planning horizon as well as information on asset ownership, income, consumption, debts, spending, and expectations. The information makes this survey the appropriate instrument to evaluate this research question. The research question for this paper is: Do households with greater preferences for liquidity, higher risk tolerance, and a longer planning horizon have a greater likelihood of being self-employed? A logistic regression analysis was done on the 2004 SCF data to determine statistical significance of the variables of interest while controlling for other factors.

#### Literature Review

Sung and Hanna (1996) found the variables of education, income, health, occupation, homeownership, financial assets, liquidity, self-employment status, years until retirement and marital status were all significant to risk tolerance. Yao, Hanna & Lindamood (2004) demonstrated that risk tolerance tends to be relatively constant over time. Gilliam, Goetz & Hampton (2008) note that demographic factors alone do not determine risk tolerance. Grable (2000) suggest that a combination of socioeconomic and personality characteristics determine a person's risk tolerance. Wang & Hanna (2007) found business owners were more risk tolerant than non-business owners. However, Wang & Hanna (2007) used risk tolerance as a dependent variable in their logistic regression. Using risk tolerance as a dependent variable seems to

suggest that you are a business owner because you have higher risk tolerance; in this paper risk tolerance will be evaluated as an independent variable.

Evans and Jovanovic (1989) find liquidity constraints to be a barrier to self-employment. They find wealthier households are more likely to be business owners and conclude access to sufficient capital precludes people to becoming self-employed. Kan and Tsai (2006) used data from the Panel Study of Income Dynamics (PSID) to reach a similar conclusion that wealthier households are more likely to be business owners even when controlling for risk aversion and conclude there are liquidity constraints associated with becoming a business owner. Haynes and Avery (1997) found self-employed households have higher levels of debt and higher likelihoods of borrowing from banks and family members than households who are not self-employed. The intermingling of business and household finances may create a preference for liquidity in self-employed households.

Self-employed households may be concerned with short-term business decisions especially if they are liquidity constrained, and thus might have a propensity for a short planning horizon. On the other hand, such households may realize that it takes years for many small businesses to become profitable and may have a long-term planning horizon. This paper will be the first to evaluate the planning horizon variables in the SCF with liquidity and self-employment to determine if planning horizon preferences exist among self-employed households. Planning horizon has been used in studies involving risk tolerance and wealth (Hanna & Chen, 1997), but there is no literature that incorporates planning horizon with self-employment status.

Building upon the work of Sung and Hanna (1996) and Wang and Hanna (2007), this paper seeks to further the research understanding of self-employed households. A variable that is noticeably absent from the previous research is planning horizon. According to expected utility

theory, future oriented households should be those with a longer planning horizon. In addition, none of the previous literature looks at liquidity and risk tolerance as independent variables to determine if these factors might be different for self-employed households. The purpose of this paper is to compare self-employed households to other households on three variables of interest: risk tolerance, liquidity, and planning horizon; while controlling for other variables that might influence these relationships. The controlling variables are: age, income, education, race, home ownership, and non-liquid assets. This paper will fill this gap in the research and provide a better understanding of self-employed households' likelihood for higher risk tolerance, liquidity, and planning horizons.

### Theoretical Model

The precautionary savings theory (Leland, 1968 and Sandmo, 1970) indicates people tend to save more when future income is uncertain. Self-employed households would be more likely to have greater variability and thus uncertainty in income, therefore it is reasonable to expect self-employed households might hold greater amounts of liquid assets. Risk tolerance is the ability to accept variation in levels of future consumption. A self-employed household is more likely to experience variation in future income; therefore, it is possible that self-employed households could have a greater risk tolerance. Kimball (1990) links risk aversion with the precautionary savings motive; therefore, households with lower risk tolerance may hold additional liquidity.

A household would logically prefer to delay consumption only when delaying consumption would increase the expected future utility of that consumption. Therefore, the planning horizon variable could have a significant influence on the households saving and consumption decisions. The point a person is in their life cycle, or age, should also have an

influence on saving and consumption decisions. It is hypothesized that older households may desire the greater flexibility of self-employment when they are older, and this flexibility allows for a working schedule that might provide additional utility. Liquidity is a necessary component if a household is to smooth consumption over time, therefore, it is hypothesized that self-employed households will desire a greater amount of liquidity for consumption smoothing during the ups and downs of normal business cycles. It is hypothesized that self-employed households will have longer planning horizons due to the length of time required for business growth and profitability.

Using self-employment status as the dependent variable, and risk tolerance, liquidity, and planning horizon as independent variables, it is hypothesized that households who report higher levels of risk tolerance, liquidity, and have longer planning horizons would have a greater likelihood of being self-employed.

Other independent variables were selected to control for because of the possibility they would have an influence on expected utility or life cycle. One variable was race; there is evidence to suggest that different races may not have access to the capital required for self-employment. There also may be other barriers to self-employment due to race. Similarly, marital status might be a barrier to entry for self-employment as single people might require benefits provided by an employer, such as medical benefits, that might be difficult to obtain or unaffordable as a self-employed person. Likewise, home ownership might be a barrier to entry as lending institutions often require a personal guarantee on the part of the self-employed person prior to lending money for the business. Assets, should be able to be accumulated more readily because the self-employed get to keep the results of the business success. As such, it is hypothesized that non-financial assets would be higher for self-employed households. Education

attainment could be a barrier to entry for self-employment status; therefore, it is hypothesized that households with higher education will more likely be self-employed than less educated persons. Also, the presence of children in the home may influence the household to pursue self-employment status for the additional flexibility of work schedules it provides. This flexibility could generate additional utility when raising children. Therefore, it is hypothesized that households with children will more likely be self-employed.

### Method

The Survey of Consumer Finances 2004 was utilized because it samples both self-employed and non-self-employed households and captures information about the variables of interest. Only the first implicate of five was used for this research. There are 4519 participants in the 2004 survey. The sample was limited to households with positive income, and who are currently working; this reduced the sample size to a total of 3,426 households. The dependent variable for the study was self-employment status. The 2004 SCF had a question that asks if the respondent or spouse/partner works for someone else, or is self-employed. The SCF dataset also includes partnerships in which a household member has an interest in the self-employed category in the public dataset. There were 1,285 (38%) households in which at least one member of the household was self-employed and 2,141 (66%) working for someone else households in the sample.

### *Independent Variables of Interest*

The independent variables of interest are: risk tolerance, liquidity, and planning horizon. The 2004 SCF had a question that asked respondents when saving or investing for the future how much risk are you willing to take? The responses to this question serve as the risk tolerance independent variable. Liquidity was measured using all liquid assets from the net worth code



and dividing that figure by income to get a percentage of annual income held in liquid assets.

This figure was then coded into a dummy variable for those households who had three or more months of income in liquid assets. Financial planners often recommend that households have at least three months of income in the form of liquid assets to buffer against economic shocks.

Liquidity in high net worth households could cause the sample to be non-normal so it was coded into a dichotomous variable to limit this impact. The last variable of interest is planning horizon.

The 2004 SCF had a question that asked respondents “when planning your family’s saving and spending which of the following time periods is most important to you: next few months, next year, next few years, next five to ten years, longer than ten years.” The responses to this question serve as the planning horizon variable.

#### *Controlling Variables*

Because of the theoretical possibility interactions with the dependent variable and the independent variables of interest the following variables were controlled for: age, income, assets, race, marital status, educational attainment, children, and homeownership. Age was measured as a categorical variable with the age of the respondent used to determine which category the household was placed in. Due to the kurtosis of income data, this variable was converted to a more normal distribution by taking the natural log of income divided by \$1,000. Assets will be measured by subtracting liquidity from net worth. In addition, to help mitigate the kurtosis of this data it was coded as a dummy variable for households who have greater than six months worth of income in non-liquid assets. Race was coded as a categorical variable of the respondent. Marital status was coded as a categorical variable to include couples, single men, and single females. Educational attainment was converted into a categorical variable with four levels: less than high school, high school graduate or GED, some college, and college graduate. Only

educational level of the respondent was utilized for each household. The children variable was classified as a dichotomous variable if the household had children or not. Home ownership was coded as a dichotomous variable if the household owned a home with or without a mortgage.

### Results

All data analyses were conducted using SAS, version 9.1.3 for Windows. Since the dependent variable, self-employment status, was binary, a logit regression was performed to determine if the hypothesized variables of interest are significantly correlated while controlling for the other variables that include potential barriers to entry. The descriptive statistics for the sample are included in Table 1. The results of the logit regression are included in Table 2. The pseudo  $r^2$  for this model is .35. The results indicate that those households who answered they were willing to take substantial risks when saving and investing are 2.6 times more likely to be self-employed households compared to households who were not willing to take any risks. The results also show self-employed households are 1.8 times more likely to have greater than three months worth of liquidity. Self-employed households are 1.4 times more likely to have a 12 month planning horizon compared to households with a 5-10 year planning horizon. The risk tolerance, and liquidity variables are significant at the  $p < .01$  level or lower, while only one planning horizon variable is significant at the  $p < .05$  level. Other controlling variables that are significant at the  $p < .01$  level or lower include: income, race (black only), single women, age 45-54, age over 55, homeownership and less than high school education.

### Discussion

As hypothesized, self-employed households are more likely to report higher levels of risk tolerance and a high preference for liquidity. All of the risk tolerance variables were significant in the logistic regression. Self-employed households are 2.6 times more likely to report a

willingness to take substantial risks to receive substantial returns on saving and investing. The next option of above average risk for above average returns indicated that self-employed households were 1.5 times more likely to select this response. The next option of average risk to earn average returns on saving and investment indicated that self-employed households were 1.4 times more likely to select this response. All of the responses were significant at the  $p < .01$  level or better. Self-employed households are more likely to hold higher levels of liquidity. The results support the notion that self-employed households are more willing to accept fluctuations in consumption than households who work for someone else. This higher risk tolerance may also partially explain the mean and median values of non-investment income of self-employed households. The self-employed household is 1.8 times more likely to have at least 3 months worth of income in the form of liquid assets than non self-employed households. This is consistent with the smoothing of consumption the life cycle hypothesis suggests. It is likely that self-employment income would vary during business cycles and thus self-employed households may have a stronger preference for liquidity than other households to serve as a buffer during times of low income.

Contrary to the original hypothesis, self-employed households are more likely to report shorter planning horizons. Households who report a 12 month planning horizon are 1.4 times more likely to be self-employed. This could be the result of rapid economic business cycle changes or the constant need to focus on short-term business issues or perceived insecurity with self-employment. Additional research needs to be done to examine the characteristics of short planning horizon households to determine if there is a pervasive tendency for self-employment. Finally, the likelihood of self-employment among blacks and single females is only half that as

other households. Thus, there could be barriers to entry into self-employment for blacks and single female households.

*Limitations of the study*

This research only selected self-employed households with positive income; therefore, the study could be overestimating the positive effects of self-employment. The author did run some descriptive statistics on a sample that did include all working households regardless of income and found the difference in mean income to be minor, approximately \$3,000 lower. It is impossible to tell if the current self-employment was the first attempt or if there have been several attempts at self-employment. It is possible that self-employed people have fewer benefits provided and thus the income from self-employment might be overstated when compared to income from working for someone else that provides significant benefits that are not included in income.

The SCF data does not provide a good measure for a household's charitable intent. It is possible that a household delay consumption in the current period to provide for a legacy or charitable intent. The utility derived from such activities was not accounted for in the model. Only a sample of the U.S. population is included in the 2004 SCF, the results could be improved if a larger sample was obtained. Additionally, if the same people were measured in a longitudinal study it would be possible to determine how self-employment, planning horizons and risk tolerance vary with age. Finally, other variables that have a theoretical base in expected utility theory should be sought out and added into future research in this area.

*Implications of the study*

This paper is the first attempt to study the liquidity preferences and planning horizons of self-employed households. Financial planners should consider the greater liquidity preferences of

self-employed households. When working with clients who are self-employed, financial planners can offer additional suggestions and options for these households to increase interest payments while at the same time providing liquidity and safety. For example, the use of cash sweeps or interest bearing checking accounts may be of interest to these clients. There is some evidence that self-employed households may have a shorter planning horizon. Planners may want to investigate planning horizons with their clients to ensure proper alignment in goals and evaluations metrics. As has been demonstrated in previous research, self-employed households tend to have a greater risk tolerance. Therefore, financial planners will want to ensure that the investment portfolio reflects the clients risk tolerance.

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Table 1  
Distribution of Self Employment Status by Variables of Interest and Barriers to Entry

| Variables                                  | Self Employed | Works for Someone |
|--|---------------|-------------------|
| Entire Sample (%)                          | 20            | 80                |
| Risk Tolerance                             |               |                   |
| Not will to take Risk                      | 25            | 38                |
| Average Risk                               | 48            | 40                |
| Above Average Risk                         | 21            | 19                |
| Substantial Risk                           | 5             | 3                 |
| Liquid assets >3 months of income          | 30            | 16                |
| Planning Horizon                           |               |                   |
| A Few Months                               | 14            | 18                |
| A Year                                     | 13            | 14                |
| A Few Years                                | 26            | 26                |
| Five to Ten Years                          | 30            | 27                |
| Ten Years or More                          | 17            | 15                |
| Age  |               |                   |
| Under 25 years old                         | 2             | 8                 |
| 25 - 34 years old                          | 12            | 23                |
| 35 - 44 years old                          | 22            | 27                |
| 45 - 54 years old                          | 32            | 23                |
| 55 years old and older                     | 31            | 19                |
| Education                                  |               |                   |
| Less than High School                      | 10            | 10                |
| High School Graduate or GED                | 27            | 30                |
| Some College                               | 16            | 20                |
| College Graduate                           | 47            | 40                |
| Race                                       |               |                   |
| White                                      | 83            | 71                |
| Black                                      | 6             | 14                |
| Hispanic                                   | 7             | 11                |
| All Other                                  | 3             | 4                 |
| Marital Status                             |               |                   |
| Couple                                     | 77            | 60                |
| Single Woman                               | 9             | 25                |
| Single Man                                 | 13            | 15                |
| Non-liquid fin. assets >6 months of income | 48            | 37                |
| Non-investment income (mean \$1000's)      | 137           | 69                |
| Non-investment income (median \$1000's)    | 69            | 48                |
| Homeownership                              | 81            | 66                |
| Have Children                              | 50            | 53                |
|  |               |                   |
| Weighted using X42001                      |               |                   |



Table 2  
Logit Analysis on Self Employment Status

| Variables                                  | Point Estimate | Coefficient | sig level |
|--|----------------|-------------|-----------|
| Risk Tolerance (vs. no risk)               |                |             |           |
| Average Risk                               | 1.37           | .32         | .007**    |
| Above Average Risk                         | 1.52           | .42         | .002**    |
| Substantial Risk                           | 2.57           | .95         | .000***   |
| Liquid assets >3 months of income          | 1.83           | .61         | .000***   |
| Planning Horizon (vs. 5-10 years)          |                |             |           |
| A Few Months                               | 1.32           | .27         | .060      |
| A Year                                     | 1.37           | .31         | .038*     |
| A Few Years                                | 1.17           | .15         | .175      |
| Ten Years or More                          | .99            | -.01        | .942      |
| Age (vs. under 25)                         |                |             |           |
| 25 - 34 years old                          | 1.58           | .45         | .229      |
| 35 - 44 years old                          | 2.54           | .93         | .011*     |
| 45 - 54 years old                          | 3.91           | 1.36        | .000***   |
| 55 years old and older                     | 5.01           | 1.61        | .000***   |
| Education (vs. college graduate)           |                |             |           |
| Less than High School                      | 1.86           | .62         | .002**    |
| High School Graduate or GED                | 1.07           | .07         | .564      |
| Some College                               | .97            | -.03        | .808      |
| Race (vs. white)                           |                |             |           |
| Black                                      | .55            | -.60        | .002**    |
| Hispanic                                   | .75            | -.28        | .121      |
| All Other                                  | 1.02           | .02         | .931      |
| Marital Status (vs. couple)                |                |             |           |
| Single Woman                               | .42            | -.86        | .000***   |
| Single Man                                 | .96            | -.04        | .752      |
| Non-liquid fin. assets >6 months of income | .90            | -.10        | .325      |
| Income (ln of \$1000's)                    | 1.56           | .447        | .000***   |
| Homeownership                              | 1.40           | .34         | .008**    |
| Children                                   | 1.07           | .07         | .490      |
| Constant                                   |                | -4.57       | .000***   |
| Pseudo R <sup>2</sup> = .35                |                |             |           |
| Number of observations 3,426               |                |             |           |
| *p<.05, **p<.01, ***p<.001                 |                |             |           |