

The demand for disability insurance

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Abstract

Disability insurance is a vital hedge against an unexpected loss in human capital, yet less than half of U.S. households own this type of insurance. This article explores factors that affect demand for disability insurance and investigates the impact of financial sophistication and professional financial advice on insurance ownership. Prior research shows that low financial knowledge, behavioral biases, and other barriers to purchase are related to low demand among households. Using the 2007 Survey of Consumer Finances, we find that demand for disability insurance increases with financial sophistication, the use of a financial advisor, and proxies for group insurance availability. Results indicate that low demand for disability insurance can be attributed to both demand and supply factors. © 2013 Academy of Financial Services. All rights reserved.

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1. Introduction

Human capital, or the present value of expected future earnings, represents a significant proportion of a working household's portfolio. The impact of a stochastic health shock on earning ability can be mitigated by ownership of disability insurance, which provides a buffer against the loss of permanent or transitory income (Angerer and Lam, 2006; Bodie, Merton, and Samuelson, 1992). Because human capital is often the largest asset in the household portfolio (Ibbotson, Milevsky, Chen, and Zhu, 2007; Campbell, 2006; Washer and Nippani, 2004; Lee and Hanna, 1995; Becker, 1985), a sharp, unexpected decline in its value can have a large impact on household welfare. Other potential effects of a disability include

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medical expenses, loss of employee benefits, loss of retirement saving ability, the need for additional child care, and possible nursing home care (Cox, 1991).

The Consumer Disability Awareness (CDA) survey (2010) estimates that three out of 10 American workers entering the market will become disabled before retirement. Given the catastrophic nature of the loss, the nondiversifiable nature of the risk, and the existence of insurance products that protect against a loss from disability, many households should demand disability insurance products. However, like long-term care insurance (Brown and Finkelstein, 2004), disability insurance is less popular than many other property and casualty consumer insurance products (Mooney, 1999). If disability arises and protection is inadequate, many households may be forced to draw on assets or rely on government aid which may not sufficiently meet needs.

Consumers may not realize the importance of disability insurance, which may explain the small percentage of the population who purchase it (Ibbotson et al., 2007). Many advisors and personal finance textbooks primarily focus on financial assets rather than on human capital protection (Washer and Nippani, 2004). In addition, other products such as life insurance may appear more important to many consumers who may be less aware of the likelihood or severity of potential loss from disability versus the risk of premature death (Cox, Gustavson, and Stam, 1991).

The supply side of the insurance market also has an impact on disability insurance ownership rates. Access to inexpensive disability insurance may be dependent on availability through one's employer and these policies typically cover only 60% of earnings (Opiela, 2004). However, insurance companies are adopting a narrower definition of disability and this presents a challenge to consumers by making it more difficult to qualify for benefits (Opiela, 2004). The existence of public insurance and reliance on family members may also constrain demand for private insurance by creating a perception that losses from disability will be less severe (Brown and Finkelstein, 2009). However, the process to obtain social security disability income (SSDI) can be lengthy and overwhelming, with strict qualification criteria (Brown and Finkelstein, 2004a). Even among low-income consumers, out-of-pocket expenditure risk may be significant. The expectation that children will provide support as a result of a disability also presents barrier to purchase (Brown and Finkelstein, 2009).

Many individuals do not possess the ability to understand the severity and probability of risk exposures, and which risks are most appropriately hedged with private insurance (Kunreuther and Pauly, 2006; Cutler and Zeckhauser, 2004). This may stem from a lack of financial literacy and low financial sophistication (Willis, 2008; Cutler and Zeckhauser, 2004; Showers and Shottick, 1994; Hanna, 1989; Machina 1987; Tversky and Kahneman 1987). Research shows that financially illiterate individuals lack sufficient savings for long-term goals such as retirement and they build less wealth by retirement (Lusardi, Mitchell, and Curto, 2009; Skinner, 2007; Mitchell and Utkus, 2003). It is possible that awareness of both the risk exposure of disability and of available insurance products may limit demand among those who are less financially sophisticated.

Demand for insurance can depend on many factors within and beyond the household. This includes expected benefits, the price of insurance, prices of substitutes, and the presence of a bequest motive (Brown and Finkelstein, 2009; Opeila, 2004; Sloan and Norton, 1997). Behavioral economics can also explain insurance decisions that deviate from normative

theory. Individuals are myopic and often rely on heuristics to make financial decisions (Mitchell and Utkus, 2003). People overestimate their personal skills (vs. luck) and they cling to information that is readily available and that they are familiar with (Barberis and Thaler, 2002). The CDA survey cites that women are more likely to become disabled than men, but females perceive the risk to be less than that of their male counterparts (Consumer Disability Awareness Survey, 2010). Although 83% of respondents from the survey admit that disability can occur at any point in time, many feel that they have less of a chance to become disabled than the population at large. Thus, heuristic biases also have some part in demand for insurance.

Individuals also exhibit bounded rationality and may exhibit present-oriented preferences that would limit demand for an insurance product that protects future earnings. Decisions to save, invest, and to protect wealth require sufficient knowledge of current and future financial processes, such as projected lifetime earnings, health status and longevity (Mitchell and Utkus, 2003). Even more, less future-oriented households may value insurance less than normative theory would dictate (Bryant and Zick, 2006). Given these limitations and the existence of alternatives, individuals may not make optimal choices, and therefore fail to demand disability insurance despite a strong normative theoretical benefit from protection.

2. Methodology

2.1. Dataset

This study uses the 2007 Survey of Consumer Finances (SCF) dataset. With 4,418 respondents, the SCF provides a rich source of household demographic and financial characteristics necessary for this study. For the descriptive analyses, the SCF population weights will be used to represent the U.S. population as a whole but not for the multivariate analysis (Rubin, 1987).

2.2. Conceptual framework and measurement of variables

This article seeks to model demand as a function of need for, and awareness of, disability insurance using financial sophistication and the use of a financial advisor as proxies. It is likely that greater need and awareness will have a positive effect on demand for disability insurance. The dependent variable is whether or not the household owns disability insurance, measured as dichotomous variable. The SCF asks the respondent if they “have any type of insurance other than Social Security that would help provide income in the event that they became disabled.” Unfortunately, the SCF does not distinguish between short or long-term disability. The independent variables are discussed in the following sections.

2.3. Financial sophistication and the use of a financial professional

To measure financial sophistication, the following questions are used from the SCF: education (highest level), age (45–60, based on life-cycle stage), understanding of the SCF

Table 1 Factor loadings for financial sophistication (all households)

Variable	Factor loadings
Risk	0.208
Advice	0.053
Acceptable credit	0.058
Borrowing limit	0.230
Education	0.282
Stock	0.323
Save	0.058
Profession	0.046
Middle age	0.038
Understand survey	0.084

survey questions, risk tolerance, whether the respondent has been turned down for credit in the past five years, total credit limit, source of advice for investment and saving decisions, degree of shopping around when making saving and investment decisions, profession, and stock ownership. For the total credit limit, respondents who reported using 25% or less of their available credit limit were coded as not exceeding their credit limit. All the variables are coded as dummy variables, 0 or 1. The selection of these variables is based on human capital theory and prior research on financial sophistication (Smith, 2010; Calvet, Campbell, and Sodini, 2009; Amromin, Huang, and Sialm, 2007; Van Rooij, Lusardi, and Alessie, 2007).

Our other variable of interest involves the use of a financial planner. However, the use of an accountant, banker and broker are included in the model. It is hypothesized that the use of a financial planner will increase the probability of a household's demand for disability insurance. Financial planners are in a key position to determine the adequacy of disability insurance as they analyze other insurance components for clients. Thus, they should be more thorough in identifying deficiencies in coverage and recommending appropriate strategies (Opiela, 2004). Table 1 provides a list of the variables with theoretical justifications.

Financial characteristics

- **Income**—Those with higher income are more likely to demand disability insurance (as those at lower income levels may rely on government aid for disability protection).
- **Net worth**—Using insurance theory, individuals with a higher net worth are less likely to demand disability insurance.
- **Self-insure**—Households with assets exceeding the present value of their human capital are less likely to demand insurance as they can afford to retain disability risk.

Attitude or expectation variables

- **Planned Retirement Age**—Disability benefits cease at retirement age. Households planning to work until average retirement age contrasted with those who plan to stop working below average retirement age, are more likely to own disability insurance as longevity in the workforce induces the need for protection of human capital.
- **Risk aversion**—Households with a higher level of risk aversion are more likely to have disability insurance since more risk-tolerant investors would prefer to self-insure.

- Health–Households who report good or excellent health are more likely to demand insurance, exhibiting a low rate of time preference.
- Smoker–Individuals who smoke are less likely to demand insurance because of the high cost of doing so. However, those who smoke may have a higher time preference and are more likely to demand less insurance (Khwaja, Sloan, and Salm, 2006).

Demographic characteristics

- Profession–Those in more risky professions, with higher volatility in human capital are more likely to own disability insurance.
- Age–Younger workers, with more human capital and less financial capital are more likely to demand disability insurance.
- Education–We should see higher demand for disability insurance among those with more education who have more human capital and are more future-oriented.
- Gender–There should be greater ownership of disability insurance among males than females. Males have less entry and exit from the labor force than females (Bridges, 2008).
- Marital status–Married individuals are more likely to own disability insurance (more future-oriented than single households).
- Pension–Households with pension assets may also have access to group benefits and thus more likely to demand insurance.
- Company size–As company size increases the likelihood of demand for disability insurance should increase.

3. Analysis

A factor analysis is used to create a financial sophistication score for each household using the 10 sophistication variables. The factor loadings for the all household model is found in Table 1. Two binomial regression models are then tested, one includes all households and the other includes only employed households. The model to estimate demand for disability insurance is shown below.

$$\begin{aligned} \log(p_i/1 - p_i) = & \beta_0 + \beta_1 \text{Sophistication}_i + \beta_2 \text{Financial Professional}_i \\ & + \beta_3 \text{Financial Characteristics}_i + \beta_4 (1) \text{Attitude/Expectations}_i \\ & + \beta_5 \text{Demographics}_i + \varepsilon_i \end{aligned}$$

Sophistication represents a vector of independent variables related to the highest level of education, age, understanding of the SCF survey questions, risk tolerance, whether the respondent has been turned down for credit in the past five years, total credit limit, source of information for investment and saving decisions, degree of shopping around when making saving and investment decisions, profession, and stock ownership. The use of a financial professional includes financial planner, banker, accountant, and broker. Financial characteristics include income, net worth and the capacity to self-insure. Attitude or expectation

Table 2 Hypotheses and theoretical justifications (for the demand for disability insurance)

Independent variable	Expected effect	Theory
Financial		
Income	+	Insurance theory
Net worth	–	Insurance theory
Self-insure	–	Insurance theory
Attitude or expectations		
Planned Retirement age	+	Insurance theory
Risk-aversion	+	Insurance theory
Health	+	Time preference
Smoker	–	Time preference
Demographic		
Profession	+	Human capital
Age	+	Human capital
Education	+	Human capital/time preference
Gender	+	Human capital
Marital status	+	Time preference
Pension	+	Insurance theory
Company size	+	Larger companies, with more economies of scale are more likely provide group benefits
Financial planner	+	Time preference

represents a vector of independent variables related to planned retirement age, smoking, health, and risk aversion. Demographic represents a vector of independent variables related to age, sex, marital status, self-employment status, company size, pension ownership, and occupation (Table 2).

4. Results

4.1. Descriptive statistics

Descriptive results are presented in Table 3. The results are censored by ownership of disability insurance. For the 2007 SCF dataset, the total number of households is 4,418 and approximately 42% own disability insurance of all household heads own disability insurance. Among those with disability insurance, 52% hold a college degree and 69% are married. Slightly more single males than single females have insurance (13% and 18%, respectively).

Approximately 76% of households report being risk tolerant as opposed to risk averse. Table 3 also shows that of those owning disability insurance, 5.24% have an income over \$288,350 and 48% have an income between \$35,150 and \$90,800. Among the planned retirement age groups, 29% of those with insurance plan to retire at age 56 to 64. Ownership of insurance increases monotonically as company size increases. Household heads in a professional or managerial position have the highest ownership of disability insurance. Moreover, ownership is the highest among those who use a financial planner.

In Table 4 the sample is divided among all households and employed households. The average age of those who are employed (44 years old) is lower than the sample of all

Table 3 Weighted frequencies of employed household heads by ownership of insurance (in percentage)

Ownership of disability insurance (dependent)	41.59
Financial Planner	14.87
Accountant	2.35
Broker	4.20
Banker	20.78
Less than HS	5.26
HS Grad	22.65
Some College	24.76
College	52.16
Married	69.00
Single Male	12.78
Single Female	18.22
Risk Averse	24.44
Risk Tolerant	75.56
Low Income (<\$35,150)	14.82
Mid-Low Inc. (\$35,150–\$90,800)	48.19
Mid Inc. (\$90,800–\$147,050)	20.59
Mid-high Inc. (\$147,050–\$288,350)	11.16
High Inc. (>\$288,350)	5.24
Self-insure	31.43
Planned Retirement Age (≤ 55 years of age)	22.12
Planned Retirement Age (56–64)	29.23
Planned Retirement Age (65–67)	16.72
Planned Retirement Age (≥ 68)	13.27
Smoker	16.16
Size of company (<20 employees)	13.00
Size of company (20–99 employees)	13.16
Size of company (100–499)	16.63
Size of company (≥ 500)	57.22
Age (≤ 35 years)	24.05
Age (36–40)	13.10
Age (41–45)	13.47
Age (46–50)	16.19
Age (51–55)	14.24
Age (56–60)	10.72
Age (61–65)	5.14
Age (>65 years)	3.09
Self-employed	8.37
Professional/Managerial	48.63
Technical/Sales/Services	25.76
Production/Operators/Farmers	25.61
Health (Excellent, Good)	87.34

Table 4 Mean (and standard deviation) of all household heads and employed households

	All household heads ($N = 4,418$)	Employed household heads ($N = 3,319$)
Net worth	\$558,032 (7,028.63)	\$593,355 (8,707.14)
Age	50 (0.15)	44 (0.12)
Financial Sophistication	1.801 (0.00)	1.882 (0.00)

households (50 years old). The average net worth is higher (\$593,355) among employed household heads than the all households sample (\$558,032). The average financial sophistication score is slightly higher in the employed sample.

Results from the regression analyses, for the all household and employed sample are presented in the Tables 5 and 6. In both regression analyses, financial sophistication and the use of a financial advisor are significant predictors of demand for disability insurance. As financial sophistication increases, employed households are 96% more likely to demand insurance, all else equal. Using a financial advisor or a banker are both significant predictors, with the use of a financial advisor associated with the highest likelihood of demanding insurance. The use of a broker is not significant.

A single female is significantly less likely than a married household to demand disability insurance. Being a single male was not significant. In both models risk aversion was not significant. Demand for insurance increases with income, but those who can afford to self-insure, possessing assets greater than human capital, are significantly less likely to demand disability insurance.

The likelihood of demanding insurance is greatest among households in the highest income bracket and in the 51–55 age group in both models. In the all household model, the odds of demanding disability insurance is 71% higher for those who expect to retire between 65 and 67 years old than those who expect to retire at age 55 or less. In the employed model, those who expect to retire between 65 and 67 years old are 42% more likely to demand insurance than those who expect to retire at age 55 or less. In both models, having a pension (access to group benefits) is a significant predictor. Being a smoker, the proxy for time preference, is a negative predictor of demand.

In the all household model, household heads working in production, operator, or farming occupations are more likely to demand insurance than those who are in professional occupations. However, this variable is not significant in the employed household model. Those who are in the technical or sales occupation category are significantly less likely to demand insurance than those who are in the professional occupations, all else equal. As company size increases, the demand for insurance increases monotonically in both models. Individuals who are self-employed (with a riskier income stream) are more likely to have insurance versus those who are not self-employed.

5. Conclusion and implications

Many consumers do not have disability insurance to protect against a decline in value of many household's most significant asset, human capital. Barriers to purchase include unawareness of need, lack of financial knowledge, availability of affordable policies, and the existence of public insurance. Consumers also use heuristic biases that enable the misperception of this important household risk, resulting in low ownership of disability insurance.

Demand for insurance is primarily influenced by need and awareness. Those who are more financially sophisticated, who seek financial advice from a professional, and possess more education and assets have a higher demand for insurance. Individuals working for a large company may have more access to benefits. The use of financial planner is a significant

Table 5 Regression results predicting disability insurance demand for all households

Variables <i>N</i> = 4,418	Parameter estimate	<i>P</i> -value	Odds ratio
Own disability insurance (dependent)			
Education (<high school)			
High school graduate	−0.07	0.29	0.94
Some college	−0.07	0.19	0.93
College	0.01	0.94	1.01
Marital status (married)			
Single male	−0.04	0.54	0.97
Single female	−0.12	0.04*	0.89
Risk tolerance (risk tolerant)			
Risk averse	0.07	0.21	1.07
Income (<\$35,150)			
\$35,150–\$90,800	0.67	0.00***	1.96
\$90,800–\$147,050	0.60	0.00***	1.83
\$147,050–\$288,350	1.05	0.00***	2.86
>\$288,350	0.88	0.00***	2.40
Self-insure	−0.29	0.00***	0.75
Net worth (log)	−0.01	0.07	0.99
Planned retirement age (≤55 years)			
56–64	0.41	0.00***	1.50
65–67	0.54	0.00***	1.71
>68 years	0.47	0.00***	1.60
Use of professional			
Financial planner	0.24	0.00***	1.28
Banker	0.11	0.01**	1.12
Accountant	0.03	0.70	1.03
Broker	−0.03	0.63	0.97
Health	0.15	0.02*	1.13
Smoker	−0.26	0.00***	0.77
Size of company (<20 employees)			
20–99	1.11	0.00***	3.04
100–499	1.60	0.00***	4.96
≥500	1.97	0.00***	7.14
Age (<35 years)			
36–40	0.23	0.00***	1.25
41–45	0.23	0.00***	1.25
46–50	0.21	0.00***	1.23
51–55	0.32	0.00***	1.38
56–60	−0.01	0.87	0.99
61–65	−0.20	0.02*	0.82
>65 years	−1.04	0.00***	0.36
Pension	0.13	0.05*	1.14
Self-employed	0.34	0.00***	1.40
Occupation (professional or managerial)			
Technical, sales, or services	−0.01	0.91	0.99
Production, operators, or farmers	0.40	0.00***	1.50
Financial sophistication	0.68	0.00***	1.98

Data are from the 2007 Survey of Consumer Finances.

* *P*-value = .05, ** *P*-value = .01, *** *P*-value = .001.

Pseudo R^2 = 0.3922.

Table 6 Regression results predicting disability insurance demand for employed households

Variables <i>N</i> = 3,319	Parameter estimate	<i>P</i> -value	Odds ratio
Own disability insurance (dependent)			
Education (<high school)			
High school graduate	−0.04	0.52	0.96
Some college	−0.04	0.51	0.96
College	−0.06	0.38	0.94
Marital status (married)			
Single male	−0.03	0.63	0.97
Single female	−0.12	0.03*	0.88
Risk tolerance (risk tolerant)			
Risk averse	0.05	0.31	1.06
Income (<\$35,150)			
\$35,150–\$90,800	0.55	0.00***	1.74
\$90,800–\$147,050	0.44	0.00***	1.56
\$147,050–\$288,350	0.83	0.00***	2.29
>\$288,350	0.79	0.00***	2.21
Self-insure	−0.23	0.00***	0.79
Net worth (log)	−0.01	0.46	0.99
Planned retirement age (≤55 years)			
56–64	0.28	0.00***	1.32
65–67	0.35	0.00***	1.42
>68 years	0.25	0.00***	1.28
Use of professional			
Financial planner	0.23	0.00***	1.26
Banker	0.12	0.01**	1.13
Accountant	0.03	0.70	1.03
Broker	−0.03	0.65	0.97
Health	0.03	0.60	1.03
Smoker	−0.25	0.00***	0.78
Size of company (<20 employees)			
20–99	0.56	0.00***	1.74
100–499	0.97	0.00***	2.63
≥500	1.27	0.00***	3.55
Age (≤35 years)			
36–40	0.22	0.00***	1.25
41–45	0.26	0.00***	1.30
46–50	0.25	0.00***	1.28
51–55	0.41	0.00***	1.51
56–60	0.06	0.42	1.06
61–65	−0.03	0.71	0.97
>65 years	−0.69	0.00***	0.50
Pension	0.42	0.00***	1.52
Self-employed	−0.29	0.00***	0.75
Occupation (Professional or managerial)			
Technical, sales, or services	−0.29	0.00***	0.75
Production, operators, or farmers	0.05	0.41	0.99
Financial sophistication	0.67	0.00***	1.05

Data are from the 2007 Survey of Consumer Finances.

* *P*-value = .05, ** *P*-value = .01, *** *P*-value = .001.

Pseudo R^2 = 0.2328.

predictor for demand of disability insurance, indicating the role that a financial professional can play in raising awareness of disability insurance need. However, households who rely on a broker are not more likely to own disability insurance. This may be explained by differences in advice between more comprehensive planners and brokers who are compensated primarily from the sale of investment products. Financial planners can help bridge the gap between ideal and actual behavior among households with lower financial sophistication but adequate wealth. High net worth households who can afford to self-insure may find disability insurance beneficial in light of bequest motives.

Data used in this study do not allow us to investigate whether households own short-term or long-term disability insurance. In addition, it may be valuable to incorporate the availability of substitutes on demand (such as family care and social security disability income benefits) in addition to bequest motives.

The direct costs of disability and the lack of private insurance to the government may increase over time. Lando and Krute (1976) suggest that there may be substantial costs to policymakers as time progresses. They suggest that researchers aim to measure this cost in the form of SSDI and loss of taxes as a result of reduced or no earnings. In addition, the social costs to society may be important, with lower productivity or increased unemployment in the absence of private insurance (Lando and Krute, 1976).

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