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Using data from the 1995 Survey of Consumer Finances, this study found that family business owners are more risk tolerant than nonowners. Among family business owners, age, race, net worth, and the number of employees in the business affect risk-taking attitudes and behavior. In addition, the following factors are associated with risk-taking behaviors: number of years of ownership, gross sales, who started the business, and sole proprietorship. Education influences risk-taking attitudes.

Approximately 11 percent of all U.S. families owned privately held business interests in the 1990s (Kennickell, Starr-McCluer, and Surette 2000). Using a broad definition of family business, these family businesses contribute nearly 50 percent of the gross domestic product, 59 percent of the workforce, and 78 percent of new jobs in the economy (Shaker and Astrachan 1996). Risky decisions made by these family business owners have a profound impact on the goods and services consumed by business-owning families and consumers who are employed or not employed by these businesses. Business-owning families are unique because their family and business resources are often intermingled, and the family often has a substantial financial capital investment in a relatively risky venture, a family business (Haynes and Avery 1997). Therefore, the risk that family business owners could tolerate is a critical factor in financial planning for the business and family.

Risk tolerance is one of the key concepts in economics and finance.

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This concept is usually measured by the attitude toward risk or risk-taking behavior. Previous studies have examined factors associated with an individual's risk tolerance (Sung and Hanna 1996; Schooley and Worden 1996; Jianakoplos and Bernasek 1998; Grable and Lytton 1998); however, no study has addressed the risk tolerance of family business managers. Second, previous researchers either openly state or imply that both entrepreneurs and managers of family businesses are risk takers compared to the general population (Masters and Meirer 1988), but no study has directly compared the two groups. Finally, most previous studies have focused on either risk-tolerance attitudes or behaviors but not on both attitudes and behavior. An exception is a study by Schooley and Worden (1996) that focused on risk tolerance behaviors and included the risk-taking attitude as one of the independent variables. In an effort to fill these research gaps, this study has three objectives: (1) to compare family business owners and nonowners in terms of risk-taking attitudes and behavior, (2) to explore family and business characteristics associated with risk-taking attitudes and behavior of family business owners, and (3) to examine the consistency between risk-taking attitudes and behavior among family business owners.

Examining risk-taking attitudes and behavior among family business owners will increase the understanding of risk tolerance in general and add to the literature on this topic. Studying family business owners allows the researchers to examine unique variables that are only available from family business owners but have been ignored by previous studies. In addition, this study is the first attempt to study consumer behavior in the specific context of families in business. This approach, therefore, will lay a foundation for further development of theoretical and empirical models to study the interactions between the family and its economic environment. The findings can be used by researchers, practitioners, and educators in family and business economics and finance. This paper will review previous risk-tolerance literature, develop hypotheses based on the economic theory and previous studies, formulate data analysis strategies, and discuss the results and implications of this study.

LITERATURE REVIEW

Risk Tolerance

The identification of a person's risk tolerance is one of the essential components of the effective management of investment in both corporate

and personal settings. Other components are the investment horizon, financial stability, and clear and specific goals (Garman and Forgue 1997; Sharpe, Alexander, and Bailey 1995). An ethical financial planning professional would select investment options based on her or his clients' investment objectives, financial capacity to absorb a loss, and psychological propensity for risk taking (Evensky 1998; Roszkowski 1993). Friend and Blume (1975) have developed a framework to measure risk tolerance that has been used in many empirical studies. The Friend and Blume framework focuses on the relationship between risk tolerance and wealth. The effects of other individual and family characteristics are not addressed (Jianakoplos and Bernasek 1998).

Hanna and Chen (1997) have done a simulation study to explore the relationship between risk tolerance, planning horizon, and wealth. They used the expected utility model and historical investment return data to conduct simulations under several alternative assumptions in terms of the investment horizon, financial asset share, and relative risk aversion. Hanna and Chen concluded that even investors with very low subjective risk tolerance levels should have aggressive portfolios if their planning horizons are twenty years or longer. Their findings provide useful prescriptive guidelines for personal financial planning. To understand the actual behavior of risk tolerance, however, empirical studies based on survey data are needed.

Recently, four empirical studies have investigated the factors associated with people's risk tolerance. Two studies focused on risk-tolerance attitudes (Sung and Hanna 1996; Grable and Lytton 1998). The third study examined determinants of risk-tolerance behavior (Jianakoplos and Bernasek 1998), and the fourth explored the relationships between risk-tolerance attitudes and behavior (Schooley and Worden 1996). Using data from the 1992 Survey of Consumer Finance, Sung and Hanna (1996) estimated the effects of both financial and demographic variables on risk-tolerance attitudes. Their empirical results showed a positive relationship between risk tolerance and variables including non-investment income, years to retirement, education, and self-employment status. Female and non-Caucasian headed households were less risk tolerant than households headed by males and Caucasians.

Also using the 1992 Survey of Consumer Finances, Grable and Lytton (1998) employed multiple discriminant analyses to separate and classify individuals into risk tolerance categories against respondents' demographic characteristics. They found that the educational level of respondents was the most significant variable in differentiating and classifying

the levels of risk-tolerance attitudes. Other significant variables were gender, self-employment status, marital status, race, and income.

Using data from the 1989 Survey of Consumer Finances, Jianakoplos and Bernasek (1998) defined risk-tolerance behavior by the share of risky assets in total assets and examined the factors associated with it. They found that single women are relatively more risk averse than single men. Household wealth raised the level of risk tolerance, and education, age, race, and household size affected the level of risk tolerance.

Schooley and Worden (1996) used data from the 1989 Survey of Consumer Finances to study the relationship between risk-tolerance attitudes and behavior and found that the higher the level of risk-tolerance attitudes, the larger the share of risky assets. They used a truncated sample that excluded families with wealth greater than $1 million. Their F-test results indicated that there was a consistency between tolerance attitudes and behavior. Schooley and Worden also found that family heads willing to take substantial financial risks were more likely to have a larger share of risky financial assets compared to those willing to take no risk. Other factors related to risky financial behavior included wealth, nonemployment status, retirement status, desire to leave an estate, and expectations about the adequacy of retirement income.

Neither of the previous studies focused on family business owners. Nor did they compare individuals who owned family businesses with those who did not own family businesses in terms of risk tolerance.

Risky Decisions in Family Businesses

The previous studies analyzed risk-tolerance patterns of people in general. For family business owners, additional considerations should be taken from the business perspective. One of the new trends in family business is that strategic management is becoming important (Aronoff 1998). Family businesses face many risky decisions: should the family members provide loans to their business? Should the business grow vertically in terms of more sophistication in technology and operations or horizontally in terms of expanding in size? Should the business be managed by nonfamily members? The level of risk tolerance, along with financial capacities and long-term goals of family business owners, directly influence decisions made on these issues.

Haynes and Avery (1997) have investigated a risky decision faced by many family business owners: whether or not to intermingle family finances and business finances. Their findings have suggested that house-

holds engaging in small business ownership have substantially higher debts and a higher probability of borrowing from commercial banks and family members than those households not engaged in small business ownership. This finding suggests that finances of the business and family may be intertwined with family members making direct loans or grants to the business, borrowing money from the business, pledging personal assets as collateral for business loans and in numerous other ways. In a recent study using the National Family Business Survey data, Haynes, Walker, Rowe, and Hong (1999) examined the intermingling of family and business financial resources. Their results suggested that female business owners are more likely to intermingle financial resources than are their male counterparts. Although the intermingling between family and business finances is relevant to risk tolerance of family business owners, these studies did not address the issue directly.

The intermingling between family and business finances is one of many risky decisions faced by family business owners. These risky decisions are affected by the level of risk tolerance, among many other factors. To better understand how family business owners make risky financial decisions for the family and/or business, factors associated with the levels of their risk tolerance should be examined.

HYPOTHESES

This section states the hypotheses and discusses the rationale underlying each hypothesis. The hypotheses are categorized by three themes: comparison between family business owners and nonowners, determinants of risk tolerance among family business owners, and the consistency between risk-tolerance attitudes and behaviors.

Comparison between Family Business Owners and Nonowners

Based on the previous studies, risk tolerance is measured by the attitude toward risk and risk-taking behavior. The following two hypotheses are proposed.

Hypothesis 1-1: People who own a family business would be more willing to take financial risk than those who do not own a family business.

Hypothesis 1-2: People who own a family business would be more likely to take risks in their financial portfolios than those who do not own a family business.

The rationale behind the two hypotheses can be explained as follows: First, the success rate of small businesses has historically been very low, and many family businesses are typically small businesses. Family business owners, therefore, are tempted to take an above-average financial risk to maximize their potential success. Second, business-owning families usually have more financial resources that allow them to afford taking above-average risks. This hypothesis has been supported by previous studies which showed that self-employment, which is the case for many family businesses, has positive associations with risk-taking attitudes (Sung and Hanna 1996; Grable and Lytton 1998).

Determinants of Risk Tolerance among Family Business Owners

As mentioned before, risk tolerance is measured by either the attitude toward risk or risk-taking attitudes in this study. For simplicity, risk tolerance in Hypotheses 2 through 5 refers to either of the two variables. In other words, each of the hypotheses is a condensed form of the two parallel hypotheses. Relevant empirical studies are cited to support these hypotheses. Note that most previous studies focused on only the risk-taking attitude or behavior.

Hypothesis 2: *Family income, net worth, home ownership, and education of the family business owner would be positively related to risk tolerance.* Risk-taking behavior was found to be positively related to family wealth in studies by Schooley and Worden (1996) and Jianakoplos and Bernasek (1998), which were based on the framework developed by Friend and Blume (1975). A related postulate can be stated such that variables that may help increase family wealth, such as family income, education, and home ownership, could increase the level of risk tolerance. Previous studies indicated that non-investment income (Sung and Hanna 1996) or total income (Grable and Lytton 1998) were positively related to the risk-taking attitude. It should be noted that although Jianakoplos and Bernasek (1998) found a negative relationship between home ownership and risk-taking behavior, this relationship is expected to be positive due to the hypothesized connection between home ownership and family wealth in this study.

Hypothesis 3: *Household size or number of children in the family and the age of the family business owner would be negatively related to risk tolerance.* Previous studies showed that the number of young dependents in a household has negatively affected the proportion of risky

assets held by married couples (Jianakoplos and Bernasek 1998). Sung and Hanna (1996) confirmed that people generally are more willing to take risks at a younger age, and Jianakoplos and Bernasek (1998) found that age effects on risk-taking behavior have a reverse-U-shape.

Hypothesis 4: *Being Caucasian would be positively related to risk tolerance.* The effect of race has been inconsistent throughout the previous studies. Caucasians are found to be more willing to take risks than non-Caucasians (Sung and Hanna 1996). One study found that Caucasians are more likely than non-Caucasians to have risky assets among married couples (Jianakoplos and Bernasek 1998), but another study had an opposite result using a sample that included both married and single headed families (Schooley and Worden 1996). Because cultural factors may affect the risk tolerance, Caucasians are expected to show a higher level of risk tolerance than non-Caucasians in this study.

Hypothesis 5: *The number of businesses, number of years in business, gross sales, number of employees, having started the business, and sole proprietorship would be positively related to risk tolerance.* Because research on the risk tolerance of family business owners is limited, the above hypothesis is based on two factors, economic and psychological. The variables, such as the number of employees, number of years in business, and gross sales, indicating levels of financial resources, should have positive effects on the level of risk tolerance. Several business characteristics, such as the number of businesses owned, having started a business, and sole proprietorship, may reflect a person's psychological traits that positively relate to the level of risk tolerance.

Consistence between the Attitude and Behavior

Hypothesis 6: *Risk taking attitudes would be positively related to risk taking behaviors among the family business owners.* It is expected that people will be consistent in what they say or believe and what they actually do. For instance, those who say they believe in taking risks are expected to exhibit a higher level of risky behavior in their actual management.

METHODS

Data and Sample

The data used in this study were from the 1995 Survey of Consumer

Finances (SCF), which was sponsored by the Federal Reserve Board. The SCF contains comprehensive and detailed information about finances and demographic characteristics of a representative sample of families in the U. S. In the original data set, 2,780 families were from a standard multi-stage-area-probability sample and 1,519 higher-income families from the tax record list (Kennickell, Starr-McCluer, and Sundén 1997).

Following the definition of *family* used in the 1997 National Family Business Study (Winter, Fitzgerald, Heck, Haynes, and Danes 1998),[1] this study included married and cohabiting respondents only. This approach resulted in 2,894 family heads. Among them, 996 either owned or shared ownership in any privately held business and had an active role in the management of that business at the time of the survey. The remaining 1,898 family heads were included for comparison purposes.[2]

Variables

The two dependent variables examined were the risk-taking attitude and behavior of family business owners. The risk-taking attitude was measured by a categorical variable with four levels. In the 1995 SCF, respondents were asked the following question: "Which of the statements on this page comes closest to the amount of financial risk that you and your (spouse/partner) are willing to take when you save or make an investment? (1) Take *substantial* financial risks expecting to earn substantial returns; (2) Take *above average* financial risks expecting to earn above average returns; (3) Take *average* financial risks expecting to earn average returns; (4) *Not willing* to take any financial risks." Previous studies treated this variable in various ways. Sung and Hanna (1996) used two levels by combining level (1) to (3); Grable and Lytton (1998) used three levels by combining level (1) and (2); while Schooley and Worden (1996) used all four levels of the variable in their analyses. To detect possible differences between these measures, this study used all three definitions in the analyses.

The risk-taking behavior in this study was measured by the share of risky assets in total assets. The total assets included dollar amount of all financial and property assets. Following Jianakoplos and Bernasek (1998), the risky assets included dollar balances in risky financial assets (i.e., bonds, stocks, mutual funds in private savings, IRA or Keogh plans in bonds, stocks, and mutual funds, and defined contribution pension plans), real estate investments excluding primary residence, business interests, and other nonfinancial assets excluding vehicles.[3]

The independent variables were grouped into family and business characteristics. Family characteristics also included family business owner's characteristics. Family characteristics were home ownership status, household size, family income, and net worth. The characteristics of family business owners included age, education, and race. Previous studies used gender as one of the independent variables, but this study did not use it because of data limitations. The majority of the sample was male, accounting for 99 percent of both business owner and nonowner groups. This skewed distribution of gender is mainly because of the data structure of the SCF. As indicated in the codebook of the 1995 Survey of Consumer Finance (SCF), *head* was coded as male in a mixed-sex couple or the older individual in a same-sex couple (Federal Reserve Board 1997).

Business characteristics included the number of employees, number of years in business, gross sales in dollars, number of businesses owned, having started the business, and sole proprietorship status. Larger and older businesses are more well established and should be less risky. Multiple business owners have extensive experience in owning and operating a business; hence, owners of this type of business should have a lower probability of failing. Individuals who have started the business are compared with those who have purchased or inherited a business. Involving others (either using a partnership or corporate organization) in a business venture reduces the financial risk to the owner. However, most small- and medium-sized corporations must pledge personal collateral against business debts; hence, their financial risk is not impacted significantly by forming a partnership or incorporating. About 75 percent of the businesses identified in the SCF have twenty-five employees or less (Winter et al. 1998).

Both bivariate and multivariate analyses were conducted to answer the research questions, and the details of the analyses are presented in the next section. The significance level of 5 percent was used to report findings. The weight variable provided by the Federal Reserve Board was used in all analyses so that the findings can be generalized to families owning a business in the U. S.

FINDINGS AND DISCUSSION

Descriptive Characteristics

Table 1 summarizes the characteristics of families that owned or did not own a business. The average age of the business owners was forty-seven years old, and they had an average of fourteen years of education.

Table 1
Descriptive Statistics of Families Who Own or Do Not Own Business, Weighted Sample

Variable	Owned Family Business (N = 966)	Did Not Own Business (N = 1,989)
Weighted percentage	16%	84%
Family Characteristics		
Head's age (year)		
mean	47	48
standard deviation	9	19
Head's education (year)		
mean	14	13
standard deviation	2	3
Head's race (%)		
Non-Caucasian	10	21
Caucasian	90	79
Household size (person)		
mean	3.3	3.1
standard deviation	.9	1.5
Home owner (%)		
no	13	27
yes	87	73
Family income ($)		
median	54,000	38,000
mean	96,463	51,365
standard deviation	191,084	204,646
Net worth ($)		
median	206,309	67,070
mean	843,704	177,318
standard deviation	2,417,968	806,579
Business Characteristics		
Number of employees (person)		
mean	15	
standard deviation	102	
Years in business		
mean	11	
standard deviation	7	
Gross sale ($)		
median	30,000	
mean	9,967,404	
standard deviation	1.8233E8	
Number of businesses (%)		
one	79	
two	17	
three or more	4	
How to acquire the business (%)		
other	29	
started	71	
Business type (%)		
other type	43	
sole proprietorship	57	

Most business owners were Caucasian (90%) and home owners (87%). They had a median annual family income of $54,000 and a median value of $206,309 in net worth. A comparison between family business owners and nonowners showed that family business owners were slightly younger and better educated than nonowners. More family business owners than nonowners were Caucasian and home owners and had a slightly larger family size. Family business owners also had much higher levels of income and net worth than nonowners.

The family businesses in this study had an average of fifteen employees. These businesses were in operation for an average of eleven years with a median annual gross sale of $30,000. Slightly over one-fifth of the respondents owned more than one business, 71 percent started their own businesses, and 57 percent were sole proprietors.

Risk Tolerance: Comparing Family Business Owners to Nonowners

Chi-square tests were conducted to compare the risk-taking attitude and behavior. As shown in Panel 1 of Table 2, family business owners tended to have a higher level of risk tolerance than nonowners. Twenty-seven percent of family business owners and 43 percent of nonowners reported that they are not willing to take any risks. In addition, higher proportions of family business owners were willing to take average risks (48% versus 40%) or above average risks (22% versus 14%) than nonowners. However, the percentages of those willing to take substantial risks were the same for both groups.

The second panel of Table 2 presents findings of risk taking behavior. Only 2 percent of family business owners had no risky assets while the percentage was much higher for nonowners (34%). Forty-five percent of family business owners had a relatively risky portfolio (share of risky assets was 51% or higher) and only 14 percent of nonowners had this type of risky portfolio.

Because the results of Chi-square tests only revealed the association between two variables, a multilevel logistic analysis was conducted to examine whether or not business ownership is associated with risk-tolerance attitude and risk-taking behavior. The following demographic characteristics were used as control variables: age, education, race, household size, home ownership, family income, and net worth. The results indicated that family business owners were more likely to take risks than nonowners, even after controlling for demographic variables (Table 3 estimate 1).

Table 2
Risk-Tolerance Level and Risk-Taking Behavior of Those Who Owned and Did Not Own Family Business

Variable	Owned Family Business (N = 966)	Did Not Own Business (N = 1,989)
(1) Willing to take (%)		
no risk	27	43
average risk	48	40
above average risk	22	14
substantial risk	3	3
	$\chi^2 = 48$	p = .001
(2) Share of risky assets (%)		
no risky assets	2	34
0-25%	27	36
26-50%	26	16
51-75%	24	10
76-100%	21	4
	$\chi^2 = 395$	p = .001

Note: Numbers in the table are percentages that add down.

In addition, a tobit regression model was employed with the risky asset share variable used as the dependent variable and the same set of independent variables used in the logistic regression model. A tobit model was used because 18 percent of the sample reported zero values for the risk-taking behavior variable. A tobit model is more appropriate than the linear regression model to treat this censored sample. The evidence generated by the tobit model suggests that family business owners tend to tolerate higher levels of risk and actually take greater risks in establishing their asset portfolios compared to those who do not own family businesses (Table 3, estimate 2).

Risk Tolerance Attitudes of Family Business Owners

Three alternative definitions of risk-tolerance attitudes as dependent variables were used in multilevel logistic models, and the results were very similar. Only the results from the model using the four-level risk attitude as the dependent variable are presented (Table 4). As hypothesized, several family characteristics showed positive effects on the risk-taking attitudes, including education, ethnicity (Caucasian), and net worth. Age showed a negative effect on the risk-tolerance attitudes, suggesting older family business owners are less likely to take risks than younger owners.

Table 3
Risk-Tolerance Attitudes and Behavior by Family Business Ownership

	Risk Attitudes		*Risk Behavior*	
Dependent Variable =	Estimate 1	p value	Estimate 2	p value
Independent variable	Logistic results		Tobit results	
Intercept	-8.8376	*0.0001*	-0.9902	*0.0001*
Business Owner	**0.2701**	***0.0070***	**0.2454**	***0.0001***
Age	-0.0303	*0.0001*	0.0005	*0.2654*
Education	0.1515	*0.0001*	0.0197	*0.0001*
Caucasian	0.2761	*0.0067*	0.0599	*0.0001*
Household size	-0.1231	*0.0001*	-0.0086	*0.0658*
Home owner	0.0290	*0.7846*	-0.2253	*0.0001*
Log income	0.3482	*0.0001*	0.0335	*0.0001*
Log net worth	0.0766	*0.0001*	0.0601	*0.0001*
Intercept 2	2.1229			
Intercept 3	4.3373			
Scale			0.2732	
Log Likelihood	-2937		-834	

This finding is consistent with the hypotheses and previous studies. Household size and income did not have significant effects on risk-taking attitude, which is inconsistent with previous studies. In terms of business characteristics, only the number of employees in the business had a positive effect on the risk-taking attitude.

Risk-Taking Behavior of Family Business Owners

Multiple regression analyses were conducted to examine the factors associated with the risk-taking behavior measured by the ratio of risky assets to total assets (Table 5, estimate 1). Unlike risk-taking attitudes, age showed a positive effect on risk-taking behavior; older business owners had larger shares of risky assets in their asset portfolios. Compared to owners of other ethnicities, Caucasian business owners were likely to have larger shares of risky assets in their portfolios. Home ownership had a negative effect on the share of risky assets, while net worth had a positive effect. These results were consistent with previous studies. Education, household size, and income did not affect the risk-taking behavior. All business characteristics, except for the number of businesses owned, had significant effects on risk-taking behavior. As predicted, years of ownership of the business, gross sales, and the number of employees had positive effects on risk-taking behavior. However, having started a business and sole proprietorship had negative effects on risk-

Table 4
Logistic Results of Risk-Tolerance Attitudes of Family Business Owners

	Risk Attitude	
Dependent Variable =	Estimate	*p value*
Independent variable		
Intercept	–7.1297	*0.0001*
Age	–0.0347	*0.0001*
Education	0.1948	*0.0001*
Caucasian	0.6526	*0.0029*
Household size	–0.0171	*0.7417*
Home owner	–0.0757	*0.7134*
Log income	0.0496	*0.2511*
Log net worth	0.0767	*0.0209*
Number of businesses	–0.0001	*0.8140*
Years owning the business	–0.0020	*0.7891*
Log gross sales	0.0318	*0.0570*
Number of employees	0.2067	*0.0088*
Having started the business	–0.1708	*0.2349*
Sole proprietorship	0.0363	*0.7878*
Intercept 2	2.4191	
Intercept 3	4.8233	
Log likelihood	–1056	

Note: Three risk attitude variables were used as the dependent variable alternatively. The first one has four levels (1—substantial risk, 2—above average risk, 3—average risk, 4—no risk), the second one has three levels (combining level 1 and 2), and the third one has two levels (combining level 1 to 3). Because the results were similar, Table 5 presents the results using the risk attitude variable with four levels. The results using the other alternative risk attitude variables are available from the authors upon request.

taking behavior, which was contrary to the hypotheses. One potential explanation is that business owners who started their businesses or had sole proprietorship may have lower levels of financial resources, resulting in smaller shares of risky assets in their asset portfolios. In this case, the financial factors may outweigh the psychological factors.

Consistency between Risk-Tolerance Attitudes and Risk-Taking Behavior

Table 6 shows the relationship between the family business owners' willingness to take risks and their actual risk-tolerance behavior. The findings indicated some consistency between the risk-tolerance attitude and behavior. Generally, the share of risky assets held by family business owners increased as the level of risk tolerance increased. For example, 36 percent of business owners willing to take substantial risks actually had

Table 5
Regression Results of Risk-Tolerance Behavior of Family Business Owners

	Estimate (1)	p value	Estimate (2)	p value
Independent variables				
Intercept	–0.0480	*0.5292*	–0.0362	*0.6363*
Take substantial risk			0.1005	*0.0166*
Above average risk			0.0076	*0.7284*
Average risk			0.0086	*0.6326*
Age	0.0021	*0.0054*	0.0020	*0.0068*
Education	-0.0012	*0.6713*	–0.0019	*0.5106*
Caucasian	0.0996	*0.0001*	0.1026	*0.0001*
Household size	0.0018	*0.7569*	0.0012	*0.8348*
Home owner	–0.3090	*0.0001*	–0.3106	*0.0001*
Log income	–0.0074	*0.1116*	–0.0075	*0.1086*
Log net worth	0.0492	*0.0001*	0.0486	*0.0001*
Number of businesses	–0.00004	*0.3991*	–0.00004	*0.3830*
Years owning the business	0.0021	*0.0108*	0.0022	*0.0073*
Log gross sales	0.0134	*0.0001*	0.0133	*0.0001*
Number of employees	0.0296	*0.0012*	0.0283	*0.0020*
Having started the business	–0.0892	*0.0001*	–0.0877	*0.0001*
Sole proprietorship	–0.0491	*0.0016*	–0.0502	*0.0013*
R^2	0.3841		0.3875	
F	47.11		36.43	
p	0.0001		0.0001	

the most risky asset portfolio (76% to 100% were in risky assets). This pattern was also clearly shown in the second highest risky portfolio (51% to 75% were in risky assets). When the attitude toward risk tolerance and other family and business characteristics' variables were regressed on the variable of risk-tolerance behavior (share of risky assets), business owners who were willing to take substantial risks had a larger share of risky assets than those who were willing to take no risks (Table 5, estimate 2). No differences were found between two groups of family business owners, those who were willing to take above average risks or average risks, and those who were willing to take no risks, in the multiple regression analyses.

CONCLUSION AND IMPLICATIONS

Limitations

Before discussing the conclusions and implications, two limitations of this study must be acknowledged. First, the economic framework is used

Table 6
Risk-Tolerance Behavior by Risk-Tolerance Attitudes of Family Business Owners

	Share of risky assets			
	0-25%	26-50%	51-75%	76-100%
Willing to take				
No risk	24	41	19	16
Average risk	31	20	25	24
Above average risk	32	23	26	20
Substantial risk	22	1	41	36
			$\chi^2 = 43.485$	$p = .001$

Note: The numbers in the table are percentages that add across.

to examine the risk tolerance of family business owners, where risk tolerance is measured by two indicators, risk-taking attitudes and behaviors. The relationship between risk-taking attitudes and behavior could be in any of three ways: attitude affects behavior, behavior affects attitude, or they interact with each other simultaneously. An empirical model to test these alternatives was not formally developed in this study. However, the findings generated by it could lay important foundations for future research employing simultaneous equations' models to study the relationship between risk-taking attitudes and behaviors. Second, the financial assets were categorized into only two broadly defined groups. In reality, numerous financial products are offered by financial institutions, and these products have various risk levels. Further research is needed to measure the risk levels of different assets and to further refine risky and non-risky asset classifications.

Conclusions

This study has examined the risk tolerance of family business owners using data from the 1995 Survey of Consumer Finances. The findings can be summarized as follows: family business owners are more willing to take financial risks and have a larger share of financial assets in risky assets compared to people who do not own a family business; among family business owners, age, race, net worth, and number of employees affect both risk-taking attitudes and behaviors; the number of years owning the business, gross sales, having started the business, and sole proprietorship affect risk-taking behaviors, while education affects risk-taking attitudes.

Implications

This study is the first to attempt to study the risk tolerance of family business owners. The findings indicate that several business-related variables affect the risk tolerance of family business owners, which have not been examined by previous studies. The findings of this study have laid a foundation for future research to further explain the decision-making behavior of business-owning families.

The findings of this study have several implications for practitioners in financial planning services. First, financial service professionals working with business-owning families should understand that this special type of client would be more risk tolerant than other types of clients and provide appropriate guidance to meet her or his needs and achieve financial goals based on her or his financial ability. Some relatively risky financial instruments may appear to be moderate financial risks to family business owners who assume high financial risks with the capital invested in the business because small businesses typically have a high risk of failure. Small family business owners may be willing to invest in riskier ventures than others; hence, they would likely prefer high growth stocks to certificates of deposit. On the other hand, small family business owners preferring several risky ventures in a portfolio may need other lower-risk investments to reduce their overall risk. Second, family and business characteristics differentiate risk tolerance attitudes and behavior among family business owners. When financial planners work with family business owners, these factors should be taken into account. Because of the unique status of family business owners, financial service professionals should consider both family and business characteristics in making psychologically comfortable and financially sound plans for them. Third, there is some mixed evidence that risk tolerance attitudes and behavior are consistent among family business owners. Professionals working with business owning families should be cautious and careful to understand the risk tolerance level claimed by their clients who may not mean what they say.

In addition, these findings have implications for family business owners and educators. This study is the first that has examined risk tolerance among family business owners and compared family business owners and nonowners in terms of risk tolerance. The information generated from the study provides baseline information for family business owners. The findings of this study will help these family business owners better understand themselves by comparing their own risk-tolerance attitude and behavior with other family business owners. This knowledge

will be helpful for them to make investment and business decisions more effectively. Information generated from this study also can be easily incorporated into curricula of family and business economics and finance courses to enrich courses that teach risk tolerance, financial planning, work and family, and families in business.

ENDNOTES

1. Heck and Trent (1999) provide detailed discussion on how to define family business. The definition used in this study is the same as the one they used except that they excluded businesses that started within the past year.

2. The weighted percentage for business owners is 16 percent and 84 percent for nonowners, which is comparable with the prevalence rate of family business based on another data set, the National Family Business Survey (Heck and Trent 1999). In the Heck and Trent study, the prevalence rate of family business is 10 percent. Note that their definition does not include new businesses that lasted less than one year.

3. As a reviewer pointed out, the definition of a risky asset has limitations. First, defined contribution retirement plans may be out of the control of the respondents surveyed. Second, even the respondents have a choice in their defined contribution retirement plans, as the risk levels between various investment options vary. The limitations are acknowledged, but the use of the definition in this study has two reasons. First, this is the definition used by a published study (Jianakoplos and Bernasek 1998), and the use of the same definition allows direct comparisons with that study. Second, this is the first study on this topic among family business owners, and future research on this topic could provide more refined asset categories that reflect more risk levels. Following the suggestion from the same reviewer, additional analyses were conducted by deleting the defined contribution retirement plans from the risky assets, and the results were similar. The results are available from the authors on request.

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