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The specific study of the way individuals make risky decisions has gained importance over the past two decades as consumers, investment advisers, researchers, and policy makers have come to face new and ever increasingly complex changes in the economic landscape. This is especially true in relation to the consumer finance field's examination and understanding of the role *financial risk tolerance* plays in shaping individual financial behaviors. In general, risk tolerance can be conceptualized as the willingness of an individual to engage in a behavior where there is a desirable goal but attainment of the goal is uncertain and accompanied by the possibility of loss (Kogan & Wallach, 1964; Okun, 1976). Risk tolerance is the inverse of risk aversion, which is an economic term that depicts a person's hesitancy to accept a choice that has an uncertain payoff when an alternative choice with a more certain outcome is available. Weber, Blais, and Betz (2002) stated that risk tolerance is "a person's standing on the continuum from risk aversion to risk seeking" (p. 264). Within the domain of financial decision making, financial risk tolerance is generally defined as the maximum amount of uncertainty someone is willing to accept when making a financial decision (Grable & Joo, 2004)

or the willingness to engage in a financial behavior in which the outcomes are uncertain with the possibility of an identifiable loss (Irwin, 1993).

Risk tolerance is an important factor that influences a wide range of personal financial decisions (Snelbecker, Roszkowski, & Cutler, 1990). Risk tolerance is an underlying factor within financial planning models, investment suitability analyses, and consumer decision frameworks. The debt versus savings decision individuals regularly make, the type of mortgage selected, and the use and management of credit cards are examples of situations where a person's financial risk tolerance can influence behavior (Campbell, 2006). Financial risk tolerance also affects the way people invest their resources for short- and long-term goals, such as saving for a significant purchase and retirement. It is reasonable to expect that people with varying levels of risk tolerance should act differently when making investment decisions, with those having a high risk tolerance (i.e., low aversion to risk) investing more aggressively.

Much of the early theoretical and empirical research conducted on the topic of risk tolerance involved testing and assessing individuals' perceptions and susceptibility to health, environmental, and physical risks (MacCrimmon & Wehrung, 1986; Slovic, 2004) as evaluated through experimental economics methodologies (e.g., Bateman & Munro, 2005; Kahneman & Tversky, 1979). Outside of economics, the study of risk tolerance has been diverse. The earliest

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work on the recognition of risk and the willingness to engage in risky activities was concentrated in the area of consumer behavior (MacCrimmon & Wehrung, 1984). Researchers in the fields of finance (e.g., Cohn, Lewellen, Lease, & Schlarbaum, 1975; Markowitz, 1952; Siegel & Hoban, 1982), business (e.g., Fitzpatrick, 1983), natural hazards (e.g., Kunreuther, 1979), and natural and man-made disasters (e.g., Newman, 1972; Slovic, Fischhoff, & Lichtenstein, 1978) have also given attention to measuring risky situations and surveying propensities of individuals to take risks. Over the past quarter century there has been a growing movement to better understand risk tolerance from a household financial and consumer psychological perspective (e.g., Dixon, Hayes, Rehfeldt, & Ebbs, 1998; Gilliam, Chatterjee, & Grable, 2010; Guillemette & Finke, 2014; Yao & Curl, 2011).

Researchers and theorists have attempted to explain risk tolerance, the likelihood of taking risks, and outcomes from risky actions through normative and descriptive models. Normative models describe how people ought to make decisions, whereas descriptive models attempt to explain how and why individuals actually make risk evaluations. The primary normative model is Expected Utility Theory (EUT). Descriptive models, on the other hand, tend to be based on varied behavioral and/or psychosocial perspectives. EUT and a sampling of descriptive frameworks are reviewed below.

The Expected Utility Theory Framework

EUT models form the primary basis in which researchers attempt to describe how risk tolerance is theoretically linked with risk-taking behaviors. The concept of EUT was advanced by Von Neumann and Morgenstern (1947). They argued that consumers should select choices with the highest expected outcomes. A consumer's utility function is typically assumed to resemble a constant relative risk aversion utility function (Hanna, Gutter, & Fan, 2001). "In the expected utility framework, risk preference is operational-

ized as risk attitudes that are descriptive labels for the shape of the utility function presumed to underlie a person's choices. Choice of a sure amount of money over a lottery with equal expected value would classify a person as risk averse" (Weber & Milliman, 1997, p. 124). Constant relative risk aversion is generally represented graphically so that as wealth increases, marginal utility slowly increases but at an ever slowing rate. In its most basic form, EUT assumes that consumers are rational and that risk preferences remain constant. As such, a consumer should make the same choice (trade-off) in terms of riskiness regardless of the situation or event.

Modern Portfolio Theory (MPT) was originally conceptualized by Markowitz (1952) as an extension of EUT to facilitate the analysis of investment portfolios. According to Mayo (2003), "The Markowitz model is premised on a risk-averse individual constructing a diversified portfolio that maximizes the individual's satisfaction (generally referred to as utility by economists) by maximizing portfolio returns for a given level of risk" (p. 170). Within MPT, investors develop risk and return trade-offs. Economists depict these trade-offs with indifference curves where investors prefer high returns with low risks. Trading off risks for returns is one way investors maximize utility. In general, MPT predicts that investors should only be willing to take additional risk if the return associated with the risk is high.

The shape of the utility function used within EUT and MPT frameworks is generally measured using a person's response to a series of hypothetical income gambles. For example, Hanna and Lindamood (2004) asked a progression of questions similar to the following:

"Suppose that you are about to retire, and have two choices for a pension:

Pension A gives you an income equal to your pre-retirement income.

Pension B has a 50 % chance your income will be double your pre-retirement income, and a 50 % chance that your income will be 20 % less than your pre-retirement income.

You will have no other source of income during retirement, no chance of employment, and no other family income ever in the future.

All incomes are after tax.

Which pension would you choose?" (p. 37)

Using their approach, additional questions ask respondents to choose among different percentage changes in income. The result allows for the calculation of a person's relative risk aversion. Risk aversion, or the theoretical opposite—risk tolerance—can then be used to help explain household portfolio allocations. In its most basic form, risk tolerance is important within the context of EUT because only measures of risk tolerance based on hypothetical gambles have been directly linked to the theory. For example, Hanna and Chen (1997) showed that risk aversion has little impact for consumers investing for the long run, but does make a significant difference for those investing with shorter time horizons. The normative implication of this result is substantial. The long-run riskiness of stocks turns out to be less than commonly thought. Further, because wealth accumulation is positively associated with high return investments (e.g., equities and derivatives), it is important for everyone, even those with low risk tolerance, to invest a portion of investment assets in equities and other high volatility assets.

Behavioral Finance and Psychosocial Descriptive Frameworks

Even though EUT has traditionally been a favorite method for conceptualizing risk tolerance and risk-taking behaviors among economists, groups of researchers, primarily those housed in departments of psychology, behavioral sciences, and financial planning have pointed out discrepancies within EUT that have called into question many of the assumptions related to risk tolerance and traditional economic utility frameworks (Olson, 2006). There is a growing body of evidence to suggest the assumption that “risk is an immutable attribute of a decision alternative that is perceived the same way by different decision makers” (Weber & Millman, 1997, p. 129) may be incorrect. The conflict between what consumers should do and what they actually do has been widely studied. Friedman and Savage (1948) were the first to challenge the standard utility

function assumption by showing that few people have a constant risk aversion throughout the entire domain of wealth. They noted a paradox among consumers who purchase insurance but also gamble. Others have documented similar inconsistencies of behavior linked to differences in risk tolerance. One of the first to note such a paradox was Allais (1953). He asked individuals to choose a preference in each of two circumstances. The first choice was between a sure payoff and a payoff with three probabilities that left the individual with a zero return or a gain. The second choice required a selection between two options with varying probabilities of success. When offered the choice in his experiment, nearly all individuals chose the sure gain in the first choice scenario; however, in the second situation most people chose the low probability payoff. In effect, participants in the experiment exhibited a violation of the relative risk aversion assumption within EUT (Schoemaker, 1980). Similar evidence showing a conflict between normative theory and actual behavior has been noted by other researchers (e.g., Bell, 1982; Coombs, 1975; Ellsberg, 1961; Kahneman & Tversky, 1979; Loomes & Sugden, 1982; Payne, Laughhunn, & Crum, 1984; Shefrin & Statman, 1985, 1993; Tversky, 1969; Tversky & Kahneman, 1981). This growing body of empirical evidence led to the development of a new sub-discipline within economics and finance—behavioral economics/finance (Kahneman & Tversky, 1979).

Kahneman and Tversky (1979) noted that “the magnitudes of potential loss and gain amounts, their chances of occurrence, and the exposure to potential loss contribute to the degree of threat (versus opportunity) in a risky situation” (p. 266). This observation led them to conclude that people are consistently more willing to take risks when certain losses are anticipated and to settle for sure gains when absolute rewards are expected. This insight is the fundamental tenet of Prospect Theory, which has since become the primary behavioral finance framework used to study risk attitudes and behaviors (Statman, 1995; Tversky & Kahneman, 1981).

Prospect Theory

Although there have been a number of conceptual frameworks based on behavioral observations (e.g., Regret Theory, Ellsberg's Paradox, Satisficing Theory), Prospect Theory (Kahneman & Tversky, 1979) continues to be the primary descriptive alternative to EUT. Within the Prospect Theory framework, value, rather than utility, is used to describe gains and losses. A value function, similar to a utility function, can be derived; however, "the value function for losses (the curve lying below the horizontal axis) is convex and relatively steep. In contrast, the value function for gains (above the horizontal axis) is concave and not quite so steep" (Plous, 1993, p. 95). One of the primary outcomes associated with Prospect Theory is that a person's risk tolerance will depend on how a situation or event is framed. Essentially, consumers demonstrate risk-averse behavior when asked to make a choice in which the outcome is framed as a gain, while the same consumer will often choose the risk-seeking alternative when the choice is framed as a loss (DellaVigna, 2009).

Risk-as-Feelings Hypothesis

One argument critical of EUT, Prospect Theory, and behavioral frameworks is that each is consequential in nature. A unifying and underlying assumption within these frameworks is that individuals make decisions based on an ordered assessment of consequences. A relatively new way of conceptualizing risk tolerance and risk taking suggests that this assumption may not be entirely correct. According to Loewenstein, Weber, Hsee, and Welch (2001), existing frameworks "posit that risky choice can be predicted by assuming that people assess the severity and likelihood of the possible outcomes of choice alternatives, albeit subjectively and possibly with bias or error, and integrate this information through some type of expectations-based calculus to arrive at a decision. Feelings triggered by the decision situation and imminent risky choice are seen as epiphenomenal—that

is, not integral to the decision-making process" (p. 267). In response, Loewenstein and his associates proposed a "risk-as-feelings" theoretical perspective.

The risk-as-feelings hypothesis puts forward the notion that emotional reactions to risky situations often diverge from reasoned assessments. When this happens, emotional reactions directly influence behavior. Within the framework, emotional responses, such as worry, fear, dread, and anxiety influence judgments and choices. For example, people in good moods tend to view risky situations with less threat than individuals in a bad mood (Loewenstein et al., 2001; Olson, 2006). The risk-as-feelings framework is unique in terms of acknowledging the influences of cognitive and emotional factors on risk tolerance and risk-taking behaviors. The risk-as-feelings hypothesis offers a fresh approach to understanding both risk tolerance and risk-taking behaviors.

Risk-Tolerance Measurement Issues

The formal assessment of risk tolerance can take on many forms (Roszkowski & Grable, 2005). In practice, risk tolerance tends to be measured and assessed using one of six methods: (a) personal or professional judgment, (b) heuristics, (c) objectively, (d) single item questions, (e) risk scales, or (f) mixed measures.

Those who rely on personal or professional judgments have a tendency to use one of three methods to assess the risk tolerance of other people. A judgment can be made based on the assumption that others have the same risk tolerance as the judge. It is also possible to perceive others as less risk tolerant. This is known as risk-as-value, where the judge perceives his or her own risk perception as being more desirable. An alternative is to predict that others have only slight differences in risk tolerance compared to the judge. The final approach involves relying on stereotypes to arrive at a judgment. Unfortunately, the literature on personal and professional judgment has shown that the use of stereotypes is not particularly accurate (Roszkowski & Grable, 2005).

The use of heuristics is another way that some attempt to assess risk tolerance. A heuristic is a simplified rule that results in a mental shortcut to solve a problem. Imagine, for example, that a snake was sunning itself on a busy sidewalk. Most people would not stop and evaluate the situation and then make a reasoned choice to either move forward or alter direction. Instead, the average person would quickly fall back on preformed notions of snakes and alter direction quickly. In terms of risk attitude assessment, for instance, some people believe that, holding all other factors constant, occupational choice can be used as a substitute measure of a person's risk-taking preferences. In fact, this risk-tolerance heuristic is only weakly predictive of financial behavior. While there is some evidence to suggest that people are relatively consistent in their willingness to take risks across domains (Grable & Rabbani, 2014), the preponderance of research on the topic of heuristic validity indicates that the majority of risk-tolerance heuristics can lead to potentially serious miscalculations and incorrect categorizations of individuals into risk-tolerance groups (Grable, 2000; Grable & Lytton, 1998, 1999a).

Another technique that is sometimes used to describe a person's risk attitude involves objectively assessing an individual's current investment approach and inferring risk tolerance from the observation. Using this method, someone who holds the majority of their investment assets in equities would be assumed to have a relatively high risk tolerance. Researchers and investment professionals who use this approach measure relative risk tolerance by looking at the ratio of risky assets to wealth (Riley & Chow, 1992). The validity of this assessment method has been questioned (Campbell, 2006; Cordell, 2001). Unless sufficient information is known prior to the judgment, this type of objective measure cannot account for the effect of outside influences, such as allocations based on the recommendations of advisers or friends and emotional biases at the time the portfolio allocation decision was made. Actual stock market results obtained by investors, compared to average market returns, suggest that objective measures are a weak sub-

stitute to more valid measures. When compared to the markets, investors tend to underperform indices in both up and down markets (Barber & Odean, 2001; Odean, 1998). This implies that investors do not always actually make investment decisions that align perfectly with their underlying tolerance for risk.

Another approach often used to assess risk tolerance involves the use of a valid and reliable scale. In some situations, however, a scale is either not available or requires too much time to administer. In these cases, single item questions are sometimes used to assess risk tolerance. One risk-tolerance question is widely used among those interested in consumer finance issues—the Survey of Consumer Finances (SCF) risk-tolerance item. The question is simple to use and evaluate, as shown below:

Which of the following statements on this page comes closest to the amount of financial risk that you are willing to take when you save or make investments?

1. Take substantial financial risk 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.

This question is popular among researchers because it is one of the only direct measures of risk-tolerance attitudes asked in national surveys of consumers. This allows responses to the item to be compared to national averages. The downside associated with the use of this, or any other single item, is that it may not be a “good proxy for people's true risk aversion” (Chen & Finke, 1996, p. 94). Historical response patterns indicate that a large percent of those answering the question have no risk tolerance (Hanna & Lindamood, 2004). This skewed response pattern toward maximum risk aversion conflicts with actual risk-taking behaviors observed in everyday financial situations. Grable and Lytton (2001) also noted that the question does not fully represent the spectrum of financial risk tolerance.

Instead, the item is most closely linked with investment choice attitudes. The reliability of the item has also been examined. Grable and Schumm (2010) estimated the item's reliability (i.e., Cronbach's alpha) as falling between 0.52 and 0.59, which indicates a relatively high degree of random error should be associated with the item's use (Gilliam et al., 2010).

Another method used to assess risk tolerance involves the use of a psychometrically designed scale (Roszkowski, Davey, & Grable, 2005). The history of risk scales can be traced back to the late 1950s (Atkinson, 1957). A major advancement in the study of choice in risky situations occurred in the late 1950s and early 1960s. Wallach and Kogan (1959, 1961) developed the widely used Choice Dilemmas Questionnaire to measure risk preferences in everyday life situations. The original questionnaire required subjects to advise other individuals regarding 12 choices with two outcomes: a sure gain or a sure loss. Choice dilemmas were commonly used to measure risk-taking propensities for three decades. Beginning in the early 1980s, the choice dilemma approach came under increased scrutiny for lack of validity and reliability. MacCrimmon and Wehrung (1986) showed that one dimensional questions (e.g., "how risk tolerant are you?") measure only a small part of the multidimensional nature of risk and that most people overestimate their risk preferences in these situations. MacCrimmon and Wehrung also concluded that "there is no particular reason to believe that a person who takes risks in one area of life is necessarily willing to take risks in all areas" (p. 51).

The development of more accurate risk-tolerance scales took a leap forward in the 1980s and 1990s. Researchers concluded that a scale should, at a minimum, gauge a person's attitude toward and behavior regarding the following dimensions: (a) general risk-taking propensities, (b) gambles and speculations, (c) losses and gains, (d) experience or knowledge, (e) comfort, and (f) investing. Grable and Lytton (1999b) collapsed these diverse factors into three core risk-tolerance dimensions: (a) investment risk, (b) comfort and experience, and (c) speculation.

While there are few publicly available scales that have been designed to measure the multidimensional nature of risk tolerance, there have been a small number of open access research attempts to measure risk attitudes using scaling methods (e.g., Barsky, Juster, Kimball, & Shapiro, 1997; Grable & Lytton, 1999b; Guillemette, Finke, & Gilliam, 2012; Hanna & Lindamood, 2004; Roszkowski, 1999; Weber et al., 2002). One of the most reliable scales developed to date is known as the *Survey of Financial Risk Tolerance*® that was originally created by Roszkowski for The American College. The survey, which is no longer available commercially, attempted to measure risk tolerance directly through a combination of closed- and open-ended questions. The survey included 40 items. Some items required multiple responses, while others were phrased as multiple-choice questions. Roszkowski reported a reliability coefficient for this measure of 0.91, which is exceptionally high. The validity of the items also appeared high; however, there are no published data describing the survey's criterion (i.e., concurrent) validity. Questions and concepts from this scale have since been commercialized by an Australian firm. The Finametrica® risk-profiling system is used by thousands of financial advisers. A publicly available alternative is a 13-item risk scale developed by Grable and Lytton (1999b). This multiple-choice question scale has been tested and shown to offer acceptable levels of validity and reliability ($\alpha=0.75$). A more traditional Likert-type scale was designed by Weber et al. (2002). The instrument, using a five-point likelihood agreement scale, is intended to be used to assess risk tolerance in five content areas, including investing versus gambling, health/safety, recreation, ethical, and social decisions. Alternative scales include experimental measures using hypothetical questions based on percentage changes in income. These scales are most often used to derive a person's relative risk aversion within EUT frameworks. Two of the most popular instruments were developed by Barsky et al. (1997) and Hanna and Lindamood (2004). In the case of the later measure, Hanna and Lindamood noted a statistically significant positive correlation between scale scores and risk-tolerance levels as measured with the SCF item.

The final method for assessing risk tolerance involves using a combination of the approaches listed above (Guillemette et al., 2012). Although there is scant research to support the idea that multiple measures may lead to more accurate descriptions of a person's risk tolerance, the logic of doing so is apparent. The concept of triangulation, where an answer to a complex question is derived from multiple perspectives (Lytton, Grable, & Klock, 2013), used in the social sciences indicates that a combination of approaches may produce meaningful results.

A Conceptual Model of the Factors Affecting Financial Risk Tolerance

An issue of particular importance to consumers, investment advisers, researchers, and policy makers involves understanding the factors associated with risk tolerance. Because a person's tolerance for risk has such a significant impact on the way individuals make decisions it is important to have a conceptual understanding of the factors that influence risk tolerance (Campbell, 2006). There are a number of demographic, socioeconomic, psychosocial, and other factors generally thought to be associated with financial risk tolerance. Table 2.1 summarizes consensus findings from the literature regarding the influence of certain individual characteristics on risk tolerance.

Based on relationships shown in Table 2.1, and additional risk-tolerance research conducted throughout the last two decades, it is possible to better understand, conceptually, how financial risk tolerance is influenced by personal and environmental factors. Figure 2.1 presents a conceptual model of the principal factors affecting financial risk tolerance. The framework is an adaptation of an intervention model developed by Irwin (1993) who was among the first to illustrate the relationship between risk tolerance and risk-taking behaviors. Building upon a causal model of adolescent risk-taking behavior created by Irwin and Millstein (1986), Irwin determined that there are a number of predisposing factors that influence both risk tolerance (i.e., attitude toward risk) and risk taking (i.e., risky behavior). The model is

Table 2.1 Factors associated with financial risk tolerance

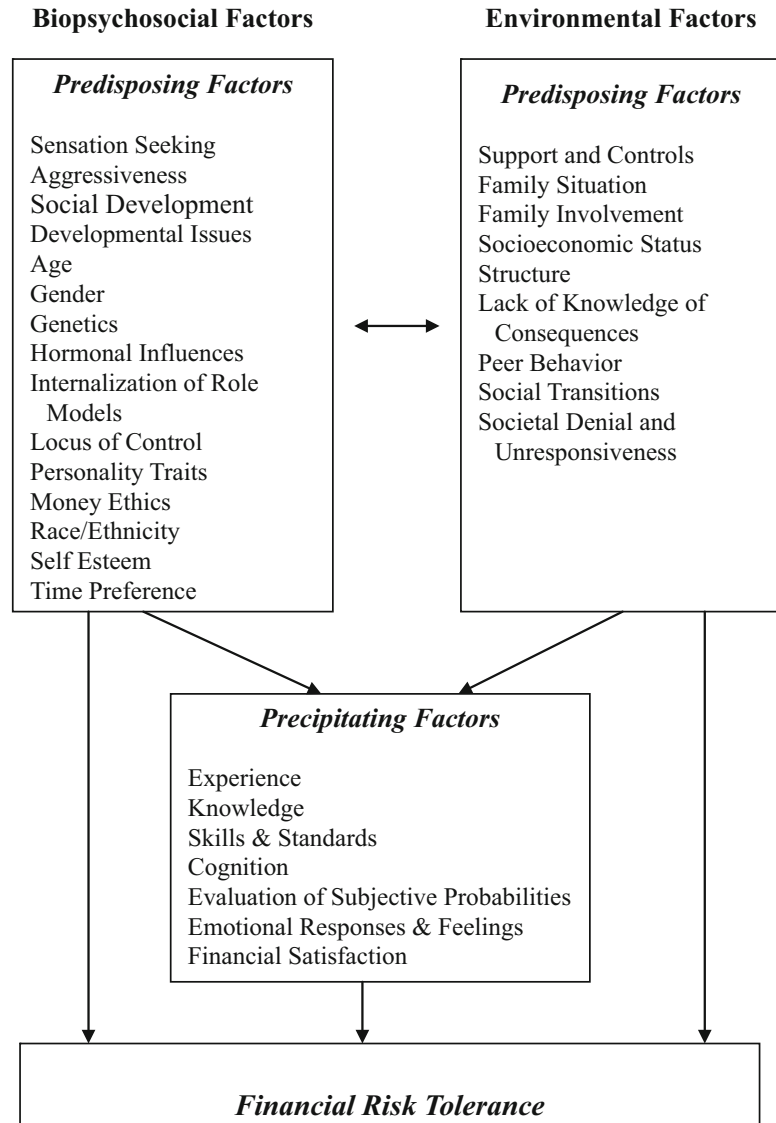
Individual characteristic	Assumed to be more risk tolerant	Level of support in the literature ^a
Gender	Male	High
Age	Younger	Moderate
Marital status	Single	Moderate
Marital/Gender interaction	Single male	High
Ethnicity	Non-Hispanic white	Moderate
Income	High	Moderate
Net worth	High	High
Financial satisfaction	High	High
Financial knowledge	High	High
Education	Bachelor's degree or higher	Moderate
Employment status	Employed full-time	Moderate
Occupation	Professional	Moderate
Income source	Business owner	High
Income variability	Stable and predictable	High
Household size	Large	Moderate
Homeownership	Owner	Low
Religiosity	Less religious	Moderate
Self-esteem	High	High
Locus of control	Internal	Low
Personality	Type A	High
Sensation seeking	High	High
Mood	Happy	High

^aStatistics compiled from a review of 144 studies published between 1960 and 2014. Some studies dealt only with one or a few characteristics. In some cases, the number of studies was small (e.g., $n < 5$)

Note: Coding: (Approximate percent of reviewed articles supporting assumed relationship): high: 80–100 %; moderate: 50–79 %; low: 0–49 %

based on life cycle and adolescent developmental theory. It is interesting that even though Irwin's conceptualization was grounded in biological, cognitive, psychological, and social domains, the definitions, assumptions, and hypothesized associations within the model are similar to those in the personal, consumer, and household finance fields. In general, Irwin's research showed that many of the demographic, socioeconomic, attitudinal, and psychological factors shown in Table 2.1, as well as other factors, can be used to better understand and explain risk tolerance. The model

Fig. 2.1 Principal factors affecting financial risk tolerance. Adapted and modified from Irwin, 1993



presented here uses comparable terminology to that first suggested by Irwin (Fig. 2.1).

Similar to Irwin's (1993) model, the framework "highlights the importance of biopsychosocial factors which are primarily endogenous and environmental factors that are primarily exogenous" (p. 21). The model also delineates the role of predisposing and precipitating factors, both of which may lead to increased or decreased levels of risk tolerance, which, in turn, can cause a person to initiate, change, or terminate a risky behavior. Additionally, the model borrows language from Loewenstein et al. (2001) by showing that certain

factors, such as cognition, emotion, and probability assessment, precipitate a person's willingness to take risks. A brief description of the primary factors in the model is presented below.

Biopsychosocial Factors

Predisposing biopsychosocial factors include beliefs, gender, sensation seeking traits, aggressiveness, self-esteem, personality, locus of control, social development, developmental issues, age, genetics, hormonal influences, time prefer-

ence, internationalization, money ethics, and ethnicity. According to Irwin (1993), “attitudes, perceptions, motivations, and intentions all predict the onset of behaviors” (p. 22). As suggested in Fig. 2.1, these biopsychosocial factors are predisposing characteristics, meaning that they are inherent traits or personality dimensions over which a person has little or no initial control.

Environmental Factors

Predisposing environmental factors differ from biopsychosocial characteristics in one significant way; rather than being innate traits unique to a person or individual, these factors result from influences in the social environment. Examples include family situation, socioeconomic status, and peer behavior. As suggested by Irwin (1993), “the protective role of supportive environment must be acknowledged” (p. 23). As shown in Fig. 2.1, environmental factors interact with biopsychosocial factors and together these predisposing personal elements help shape precipitating factors and financial risk tolerance.

Precipitating Factors

As the model indicates, biopsychosocial and environmental factors are predisposing characteristics that influence an individual’s tolerance for financial risk. Tolerance for financial risk plays a key role in a person’s assessment of the risks and benefits associated with a course of action; however, before assessing and engaging in a risky financial behavior, individuals are often subject to precipitating factors. These are aspects of a person’s life that impact the assessment of risk by influencing the decision-making process or causing a person to adjust their core level of risk tolerance prior to or when engaging in a behavior.

Lack of experience or knowledge and lack of skills are examples of factors that influence both risk tolerance and risk taking (Campbell, 2006). For example, a person’s tolerance for risk may be very low when it comes to investing in stocks or

stock mutual funds; however, when confronted with evidence from a salesperson or a neighbor who appears to be more knowledgeable and wealthy, the person may conclude that the risks associated with high risk investing are lower than they really are. The person in this example may make a risky purchase, even though this behavior runs counter to the person’s true level of risk tolerance.

The use of predisposing and precipitating factors within a single framework offers a unique conceptual vantage point to better understand financial risk tolerance. Although many of the factors shown in Fig. 2.1 can be measured directly or through scaling methods, there have been few unified research attempts to predict a person’s risk tolerance using predisposing and precipitating personal characteristics concurrently. Grable and Joo (2004) and Grable, Britt, and Webb (2008) did test broad aspects of the model and found it to be useful. The need exists, primarily from a descriptive rather than normative perspective, to continue to evaluate financial risk tolerance using all or most of the factors shown in Fig. 2.1. Additionally, the following challenges remain in the development and application of this and other models of the principal factors that attempt to both explain and predict financial risk tolerance:

- (a) Specification and standardization of predisposing and precipitating factor measures;
- (b) Further specification of possible mediators, modifiers, and interaction effects with factors not specified in the current model;
- (c) Detailed specification of factor relationships through path analyses;
- (d) Standardization of “positive” and “negative” outcomes from risk-taking behavior; and
- (e) Development of cohort, cultural, and historical influence measures.

Future Research Directions

Over the past two decades great strides in the consumer finance field’s knowledge about and appreciation of risk tolerance have been made.

These strides have led to a better understanding of the role risk tolerance plays when people make risky financial decisions; however, additional theoretical and empirical studies are needed. Such research can help elevate the field of consumer finance and the practice of financial planning from the use of hit-and-miss assessment techniques and qualitative assessments into a world of quantified practice standards. To borrow from Campbell (2006), a better understanding of risk tolerance may contribute to definitions of financial literacy, as well as help explain why certain households maximize wealth accumulation over time while others do not.

Future research devoted to the fusing of financial risk-tolerance insights into useful tools for consumer finance researchers may require additional refinement of existing measures of predisposing and precipitating factors affecting risk tolerance and the development of new measures (Webley, 1995). Ultimately, four distinct, yet related, research programs are needed. The first program ought to be devoted to the testing of the relationships between and among predisposing factors, precipitating factors, and a person's tolerance for financial risk. The second program should be devoted to creating a universally accepted standardized measure of financial risk tolerance. This second research agenda needs to build upon research conducted in the first program by creating scale items or multidimensional measures that incorporate the multifaceted nature of financial risk tolerance with known predispositions of individual decision makers. The third program should focus on clearly differentiating between constructs commonly associated with financial risk tolerance and those that are synonymous with risk tolerance. For example, Carr (2014) provided evidence that while risk tolerance is related to constructs such as risk perception, risk preference, risk need, and risk capacity, these concepts are not substitutes for each other. Finally, more work is needed to better understand how risk attitudes impact actual risk-taking behavior (Corter & Chen, 2005). A growing body of evidence now suggests that risk attitudes may not be as stable as previously thought (Hoffmann, Post, & Pennings, 2013; Yao & Curl, 2011), and as a result, investor behavior may vary

based on market conditions; however, others have noted that while variations in risk tolerance may exist, such changes may not be meaningful (Guillemette & Finke, 2014; Van de Venter, Michayluk, & Davey, 2012). More work in this area is needed. These four programs of study should eventually lead to a more comprehensive appreciation for and understanding of a person's overall tolerance for financial risk. This, in turn, will lead to a better understanding of how and why individuals engage in certain risky financial behaviors. Ultimately, a unified model of risk tolerance can emerge from such research. It is also possible that a theory of financial risk tolerance could emerge from this work.

Researchers interested in consumer finance issues, as they relate to risk tolerance, have much work to do in upcoming years to fully understand the normative and descriptive relationships between risk tolerance and financial behaviors. Future research directions include determining all of the following:

- (a) How do individuals define risk tolerance in everyday financial situations?
- (b) What factors influence a person's willingness to engage in everyday financial risk-taking behaviors?
- (c) Does risk tolerance remain constant across domains and activities?
- (d) Do experts define risk situations differently than non-experts?
- (e) Does risk tolerance change over time?
- (f) How do individuals evaluate risky actions?
- (g) How does a person's nationality and/or cultural background affect risk tolerance?
- (h) Do people living in free-market economies act differently in terms of willingness to take risks than individuals who live in economically restricted nations?
- (i) Does financial education influence risk tolerance?
- (j) How do emotional responses and feelings influence risk tolerance?
- (k) How do time preferences relate to risk tolerance?
- (l) Does financial risk tolerance mediate the relationship between individual characteristics and risk-taking behavior?

The interconnection between financial risk tolerance and risk-taking behaviors, within the field of consumer finance, is one that offers many research opportunities. Information from forthcoming studies will most certainly improve the lives of consumers and help researchers and policy makers better understand how and why people make risky choices.

About the Author

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