Evaluating academic decisions and risk: A study of university business students

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ABSTRACT

Individual decision-making is often expressed through some combination of return or benefit within a context of risk assessment and assumption. Risk is generally defined as variability or chance of loss. Individuals are typically risk averse, where they require a greater benefit for each unit of risk in a decision. Students apply risk assessment when making financial decisions. This research models if risk aversion in making financial decisions extends to academic decisions. Prior literature discusses each decision category, but does not adequately surmise correlation. In a survey of 671 university business students, the findings are that students approach risk differently between financial and academic decisions. In asking students if flipping a coin to decide patterns of paying money versus receiving money when risk is introduced, respondents are less willing to take financial risk when receiving money, but much less willing when paying money. When the question is structured to capture academic decisions, students are more willing to risk a lower grade in a class for higher reward longer-term, such as acquiring greater knowledge or improved employability.

Keywords: academic decisions, financial decisions, risk versus return, risk aversion

INTRODUCTION

This research addresses individual decision-making when risk of loss is introduced as a component. Decisions are evaluated based on benefits and costs. Individuals are assumed to be risk averse, where they are willing to take risks but only to the extent that the chance of a greater benefit is also possible. This research considers decisions by undergraduate business students in a four year institution of higher learning pertaining to financial and academic criteria.

Responses to a survey instrument indicate financial preference for flipping a coin to receive or spend a specified amount of money as opposed to taking a chance to receive more or spend less with a chance of receiving less or spending more. Similarly, academic decisions involve risk as a component of choice. Respondents indicate the level of importance of making a good grade in a less difficult major or class as opposed to the potential of making a lower grade, but acquiring skills for greater benefit in the future. The thesis for this research is to examine 1) to what extent that students apply risk aversion principles to decision-making, and 2) if differences exist between financial and academic decision-making.

To follow are a literature review of prior research, methodology of statistical tools utilized, analysis of data, conclusion and limitations of the research, and references.

LITERATURE REVIEW

Financial decision-making rarely directly follows models derived from economic theory, which assumes that individuals make ration decisions based on cause and effect concepts. Emotional, feelings, perception, and personality factors are frequently the beginning of decisions, where attitudes to risk taking and gambling are related to areas of sensation seeking. Financial decisions frequently follow a pattern where the perceived importance of money and related values of a group of people guide decisions. The research found that business finance students, for example, had a positive attitude to economic risk taking and gambling behavior. For those students the research found lower levels of not only community values, but also in the perceived perception of the value of money (Sjöberg and Engelberg, 2009). Behavioral concepts of bias, irrational tendencies, and thought processes impact human reasoning and rationality for both financial and non-financial decisions. These ideas further extend the concept of rationality in how decisions are formed, structured, and expressed (Chira, Adams, and Thornton, 2008). Intelligence and personality based to some extent on emotions establish dimensions of optimistic or pessimistic tendencies. These factors are important in examining financial behavioral biases between individuals and levels of tolerance along a risk profile (Rosales-Pérez, Fernández-Gámez, Torroba-Díaz, and Molina-Gómez, 2021). Dachner, Miguel, and Patena (2017) base their approach on student autonomy and find that higher levels of perceived or actual autonomy are positively correlated with higher levels of risk, which in turn affects student retention on information (Prinsloo, Müller, and Du Plessis, 2010).

Risk in a general sense is often a function of fear, where the association is an inverse relationship with more fear of failure or disapproval association with less risk-taking (Ponticell, 2003). Thwarted risk-taking, further, is anathema to an environment that produces leadership qualities and actions that are beneficial to learners across a spectrum based on possible benefits and consequences (Clifford, 1991; Erickson, 2007; Robinson & Bell, 2013)

Ample literature is available that describes the role of risk and risk aversion in decision-making. Guiso and Paiella (2008) utilize household survey data to construct a direct measure of

absolute risk aversion based on the maximum price a consumer is willing to pay for a risky security as opposed to a risk free security. In this measure of risk and liquidity constraints, risk aversion is a decreasing on inverse variable in relation to consumption. Household attributes are of little help in predicting their degree of risk aversion, which is characterized by massive unexplained heterogeneity, as numerous differences in groups and behaviors produce myriad cause and effect associations within such groups. Their research finds that the consumer's personal environment affects the degree of risk aversion for that person. Individuals who are more likely to face income uncertainty, such as losing a job or less regularity of earnings, as well as the overall impacts the level of liquidity available to a person, face constraints within a higher degree of absolute risk aversion.

Relationships between individual skills and entrepreneurship point to the human elements associated with risk taking, as a component of entrepreneurship. Hsieh, Parker, and van Praag (2017) propose that risk aversion encourages individuals to become more like entrepreneurs through a balancing of skill profiles. Their research contends that by not taking this possible linkage into account, prior research has underestimated the impacts of both risk aversion and balanced skills on the likelihood individuals choose entrepreneurship. Their findings conclude that even individuals with higher levels of risk aversion relative to lower levels might be suited to entrepreneurship, evidence that supports the mixed findings of prior research. Helsloot and Jong (2006) similarly introduce educational classifications and isolate risks unique to higher education, such as knowledge and learning, a pattern of risk assumption that parallels entrepreneurial considerations.

Gender differences between male and female decision-makers in risk assessments are part of actuarial considerations when evaluating a risk profile for measuring expected benefits. Booth, Lina, and Nolen (2012) found that single-sex classes within coeducational environments are likely to modify students' risk-taking attitudes in economically important ways. Their controlled model tested an experiment using first year college students who made choices over lotteries with distinct outcomes and specified dates of observation. Students were randomly assigned to classes of three types: all female, all male, and coeducational and were forbidden from changing groups during the experiment.

Results were that women are less likely to make risky choices than men at both dates. However, after eight weeks in a single-sex class environment, women were significantly more likely to choose a lottery than their counterparts in coeducational groups. These results are robust to the inclusion of controls for IQ and for personality type, as well as to a number of sensitivity tests. These findings suggest that observed gender differences in human behavior under uncertainty found in previous studies might partly reflect learning attributable to an heterogeneous social environment rather than inherent gender traits, which may also be expressed entrepreneurially (Gurel, Madanoglu, and Altinay, 2021; Polin, 2023). In a manner similar to gender differences, Payan, J. M., Svensson, G., & Høgevold, N. M. (2012) targeted geographic differences of studying abroad and found motivation determinants for those academic endeavors.

Risk aversion decisions frequently involve individual decisions of risk and return when approached from a perspective of an individual risk profile. Ahern, Duchin, and Shumway (2014) find that peer effects are influenced by cognitive processes that affect levels of trust and risk aversion. Chakravarty, Harrison, Haruvy, Ernan, and Rutström, (2011) took this relationship a step further to measure risk aversion when financial decisions are being made with other peoples' money. Decisions with uncertain outcomes are often made by one party in settings

where another party bears the consequences. Whenever an individual is designated to make decisions that affect others, such as in the typical corporate hierarchical structure, does the individual make decisions that reflect the risk preferences of the party bearing the consequences? This research examines this question through lottery choices and sealed-bid auctions that apply controls within the experiments. Results of the analysis conclude that when an individual decides for an anonymous stranger whom the person does not know and is not subject to expectations of an expected decision, there is a tendency to exhibit less risk aversion. This reduction in risk aversion is relative to his or her own preferences, and it is also relative to his or her belief about the preferences of others. This result points to contract designs between principals and agents, has significant implication for cause and effect associated self-interest or agency issues, and relates to how risk is managed as a component of social responsibility (Herrera-Cano, 2016)

METHODOLOGY

This research involves an electronic survey of student subjects in analyzing decision-making. The survey was administered to undergraduate business students at Jacksonville State University in Jacksonville, Alabama via an introductory business, personal financial planning, and senior-level finance courses to capture both financial and academic decision distinctions. There was a total of 671 responses.

Questions involving academic decisions address the preference for a higher grade versus a lower grade but introduce potential benefits from more rigorous majors and class selection. Criteria for observation are selecting an instructor from various sources, receiving a failing grade and its implications, and selecting a major based on career and academic preparation for the future. A Likert scale of preferences from very unimportant to unimportant, neutral, important, very important, and not applicable is developed.

Data are analyzed using Microsoft Excel software to tally data and apply Chi-square statistical tests of independence to responses in measuring associations. Student characteristics are grouped by ACT scores in delineating class standing and major by academic classification and how future plans and risk decisions are identified by ACT profiles.

ANALYSIS OF DATA

A total of 671 students responded to a survey concerning risk. The majority of the students surveyed were “traditional students” between the ages of 18 to 22 (84.2%). Half of the students were male, and the other half were female (one student did not supply gender). Two hundred seventy-nine of the students who responded were Freshman (41.6%), 149 were Juniors (22.2%), 122 were Sophomores (18.2%), 78 were Seniors (11.6%), and 39 were graduate students (5.8%). There 4 students who listed “other” as his or her classification (0.6%)

Most of the students who responded to the survey were working towards a business-related degree (92.1%). Most of the business students included management as his or her major (32.3%), followed by Finance (19.2%), Marketing (17.3%), Accounting (13.7%), and Economics (2.4%). There were also 136 students (20.3%) who were business majors who had not yet selected a major and were listed as “Undecided”. These percentages may be larger than 100% since students could choose multiple majors.

Students were asked to select his or her plan upon graduation. Most students indicated he or she planned to enter the workforce (78.8%) and nearly one-third of the students indicated he

or she would pursue additional education (32.6%). Some students indicated he or she had "Other" plans after graduation (11.8%).

To gauge a student's perception of risk, the survey asked the following questions: (1) If you were given a choice of Receiving $500 or flipping coin and receiving either $0 or $1000 and (2) If you were given a choice of paying $500 or flipping a coin and pay either $0 or $1000. Overwhelmingly, students selected to receive $500 (72.0%) for question (1). For question (2), 354 students selected to pay $500 (52.8%) and 317 selected to flip a coin (47.2%).

Additionally, students were asked if given a choice would you rather take an easy class and earn a higher grade or take a more rigorous class and potentially earn a lower grade but gain the potential to expand knowledge and employability. More than half of the students (58.6%) indicated that he or she would rather take a harder class, while fewer students (41.4%) indicated he or she would rather take the easy class and receive a higher grade. These responses are summarized in Table 1 Academic Decision Criteria Analyzed (Appendix).

A series of Chi-square tests of independence were conducted to determine if any associations exist. The results indicate that there is a significant association between gender and risk decision for receiving money ($\chi^2 = 9.58$, $p = 0.002$). Females were less likely to choose flipping a coin to determine monetary reward. Similarly, there was a significant association between gender and risk decision for paying money ($\chi^2 = 4.37$, $p = 0.037$). Females were less likely to choose flipping a coin to determine monetary cost. Females were also more likely to cite that dollar amount to receive or pay did not impact decision ($\chi^2 = 5.02$, $p = 0.025$).

There were no significant associations detected between major and risk decision. This implies that a student's selected major has no impact on his or her decision concerning flipping a coin to determine outcome or not.

When asked about which factors impact a student's method for selecting instructors, females were more likely to cite external sources as "very important" ($\chi^2 = 16.76$, $p = 0.005$). External sources include tools such as Ratemyprofessor.com, etc.

When asked about which factors impact a student's attitude towards receiving failing grade, males were more likely to cite potential loss of academic scholarship as "important" ($\chi^2 = 21.49$, $p = 0.001$).

Accounting majors and Marketing majors are more likely to be female ($\chi^2 = 7.26$, $p = 0.007$, $\chi^2 = 6.01$, $p = 0.014$), whereas Finance majors and Management majors are more likely to be male ($\chi^2 = 11.03$, $p = 0.001$, $\chi^2 = 4.97$, $p = 0.026$).

Females were more likely to pursue additional education upon graduation ($\chi^2 = 6.52$, $p = 0.011$). There were no other significant associations detected when students were asked to indicate future plans by gender.

There were 526 students who self-reported his or her ACT score. The overall average ACT score was 22.10 (SD = 3.88); the minimum score was 13.00 and maximum score was 33.00. Males reported a slightly higher average ACT score (M= 22.56, SD = 3.92) when compared to females (M = 21.60, SD = 3.79). This difference observed between genders is a significant difference at the 0.05 level of significance ($t = -2.85$, $df = 523$, $p = 0.005$). This implies that males reported a higher average ACT score than females.

Grouped by ACT score by academic classification, the largest number of respondents was freshman and the second largest was junior classification. Freshman reported the lowest mean score, but with highest standard deviation of the classifications identified. By major, management, undecided, and finance were the most prevalent responses. Economics and finance students reported the highest ACT scores of survey respondents, with the highest standard

deviation of scores observed for economics majors. These results are summarized in Table 2 ACT Score Analysis by Classification and Major (Appendix).

Most respondents indicated a plan to enter the workforce after graduation, while those with the highest reported mean ACT scores indicate a desire to pursue additional education, with standard deviation of those scores slightly higher than students who plan to enter workforce. Student responses by ACT score show distinction between students who make financial decisions in terms of paying and receiving money. Mean ACT scores and standard deviations are very similar, but frequency of response for receiving a specified amount as opposed to taking risk is much higher than students who indicate a desire to take a risk when paying a specified amount with the hope of paying nothing. These results are summarized in Table 3 ACT Score Analysis by Future Plans and Risk Decision (Appendix).

CONCLUSION AND LIMITATIONS

This research identifies risk aversion application as students report preferences for financial and academic decisions. Results support both aspects of the research thesis. In finding a difference in willingness to take more financial risk when paying money, as opposed to receiving money, this preference is consistent with risk aversion principles but expands the association relative to financial categories considered (Chakravarty, Harrison, Haruvy, and Rutström, 2011). More than half of respondents indicated a preference or acceptance to pay or receive a specified amount rather than take risk of paying less or receiving more.

Students, likewise, apply risk aversion to academic decisions, but approach the decision differently relative to financial decisions. With 58.6% of respondents preferring a more difficult class with a higher chance of making a lower grade, students are not as concerned with immediate effects (i.e. higher grade), but rather deferred effects from building a knowledge base with positive career implications. That this academic preference points to a higher level of immediate risk and a higher level of deferred or delayed return is not inconsistent with risk-return values associated with risk aversion. Rather, the finding supports risk based decision making at both financial and academic levels, and suggests that individuals place values on return (i.e. money paid or received) that are not necessarily consistent with academic choices which may or may not be pecuniary.

While the findings and conclusion of this research adds to the literature in supporting both areas of the research thesis, limitations within the model impede full application. While no significant differences were found by major, ACT score differences in paying and receiving money suggest socioeconomic variations may occur that should be tested, with gender effects (Polin, 2023) suggesting that females are more risk averse. Including a measure of current grade point average (GPA) could control for potential bias that might affect the important of GPA versus career aspirations.

To the extent that risk-taking parallels entrepreneurship, assessing cost benefit criteria in an academic setting in addition to grades versus foundational knowledge and career preparation could expand the research of Gurel, Madanoglu, Altinay, (2021) and identify higher education impact opportunities that balance the use of scarce education funding dollars with student values and motivational factors (Helsloot and Jong, 2006).

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APPENDIX

Table 1 Academic Decision Criteria Analyzed

	Very Unimportant	Unimportant	Neutral	Important	Very Important	Not Applicable
Selecting Instructor						
Academic Advisement	36	11	90	207	319	8
External Sources	43	32	130	210	246	10
Internal Sources	32	14	127	220	272	6
Receiving a Failing Grade						
Potential Loss of Academic Scholarship	29	14	32	67	490	39
Opinion of Family and Friends	58	69	135	185	216	8
Consequences of current or future	34	22	66	153	384	12
Requirement to repeat class to	31	14	64	166	386	10
Selecting Major						
Job Availability	25	3	38	187	416	2
Prospective Salary	24	6	52	240	344	5
Relocation Requirements	28	65	194	170	204	10
Preparation for Graduate School	31	39	190	187	205	17
Popularity of the Major/ Competitiveness	47	82	193	191	153	5
Education Requirements (Difficulty)	34	40	168	238	186	5
Employment Turnover Rate	31	19	130	230	251	10

Table 2 ACT Score Analysis by Classification and Major

Average ACT score by class standing			
Classification	N	Mean	Standard deviation
Freshman	240	21.39	4.01
Sophomore	95	22.24	3.66
Junior	110	21.93	3.39
Senior	55	23.93	3.51
Graduate	23	24.91	3.81
Other	3	25.00	5.20
Average ACT score by major			
Major	N	Mean	Standard Deviation
Accounting	71	22.76	3.46
Economics	3	24.15	4.91
Finance	102	23.36	3.47
Management	168	20.92	3.77
Marketing	97	21.94	3.54
Undecided	103	22.13	4.08

Students could select multiple majors; the categories are not mutually exclusive.

Table 3 ACT Score Analysis by Future Plans and Risk Decision

Average ACT score by future plans			
Plans after Graduation	N	Mean	Standard Deviation
Purse Additional Education	166	22.75	3.92
Enter Workforce	422	22.03	3.83
Other	56	20.79	3.99
Average ACT score by risk decision			
Decision	N	Mean	Standard Deviation
Flip a Coin; receive either $0 or $1000	142	21.97	3.53
Receive $500	384	22.15	4.01
Flip a coin; pay either $0 or $1000	263	22.24	3.86
Pay $500	263	21.95	3.90

Students could select multiple options; the categories are not mutually exclusive.