THE INFLUENCE OF SOCIO-CULTURAL BACKGROUND ON INDIVIDUAL INVESTOR RISK TOLERANCE AT NAIROBI SECURITES EXCHANGE

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Abstract

The paper analyzes the contribution of socio-cultural background on the determination of investor risk tolerance at the Nairobi Securities Exchange, Kenya.The attributes include; education level, financial knowledge as measured by specialization, marital status, previous stock market experience and ethnic background. The total population of study consisted of 932,510 investors out of which a sample of 500 was picked statistically. Cross tabulation, exact Pearson chi square Analysis of Variance and Logistic regression model were then applied to establish the hypotheses. Education level and Specialization were the most significant variables with Pearson chi square P values of 0.078 and 0.020 respectively. The ANOVA results also revealed significance in the two variables, specialization being at a P value of 0.005 and Education level at 0.078.Ordinal Logistic Regression Model fitted well at a P value of 0.034.The research establishes that financial knowledge is a major determinant of risk tolerance at a P value of 0.008. For every single unit increase in specialization, the expected ordered log of odds of risk tolerance reduced by 0.549 as the threshold of risk tolerance rises holding other factors constant. Education below high school was also found to be considerably significant, for each unit increase in education level from below high school the expected log of odds increased by 1.931 as a threshold of risk tolerance rose, while for each unit increase in stock market experience the expected ordered log of odds of risk tolerance reduced by 0.084 as the threshold for risk tolerance increased holding other variables constant. Marital status was also found to be less significant determinant of risk tolerance, however it was established that divorced investors had very high risk tolerance. Ethnic background did not contribute much in investor risk tolerance. It is expected that investors as well as their advisors and fund managers consider that socio-cultural values to make informed decisions in the stock market.

Key Terms-Risk Tolerance, Risk Tolerance Score, Investment

1 Introduction

Risk tolerance; a person's attitude towards taking risk, is a complex psychological concept. Jackson *et al* (1992), contend that risk tolerance has four dimensions: financial, physical, social and ethical. Callan and Johnson (2003), also note that it has long been accepted in the field of social psychology that attitudes have two

components: a spoken component comprising a person's benefit and an unspoken component reflecting a person's feelings and emotion. Consequently, the measurement of investment risk tolerance needs to capture these aspects of attitudinal constructs, which ventures into the relatively new branch of finance: behavioral finance. Trone *et al* (1996), indicate that measuring a person's investment risk tolerance is difficult because risk tolerance, as a multidimensional attitude, is an elusive concept that appears to be influenced by a number of predisposing factors. This issue remains relatively unanswered within the literature and involves identifying the multidimensional factors that influences a person's investment risk tolerance.

Irwin (1993), classifies the predisposing factors into two categories: environmental and biopsychosocial factors. Environmental factors here include measurable individual and family financial attributes, such as income, net worth, and home ownership status. He defines biopsychosocial factors to include characteristics such as age, gender, personality traits, birth order and ethnicity, which one has little or no control of. Other factors that appear to influence a person's financial risk tolerance include environmental factors such as financial knowledge, and family situation. Roszkowski (1999), and Sulloway (1997), contend that birth order is a significant factor influencing risk tolerance level of individuals. Haynes (2001), also found that factors such as age, race and net worth affect risk attitudes and behavior.

However, this study focused on the influence of socio-cultural attributes on investor risk tolerance. Socio-cultural attributes is a product of the social and cultural background of an individual. The attributes considered in the study included investor education level, specialization in a financial discipline, ethnic background, marital status and stock market experience. The study was carried out to answer the question: to what extent are socio cultural variables linked to individual investor risk tolerance?

2 Literature

Investment behavior of individuals may be influenced by socio cultural components, which include educational background, racial and ethnic perspectives. Schooley and Worden (1996), constituted a sample of 3143 households in America. They concluded that investors make their portfolio allocation based on their time horizon and risk tolerance. About half of them or less reported that they were not willing to take financial risks, whereas only a quarter of investors with time horizon of 10 years or more were not willing to take risk. Investors with post secondary education held higher percentage of their assets in securities, while couples held a large percentage on equity. They used 1989 SCF sponsored by the United States Federal Reserve Board. The researchers gathered detailed information on all assets and liabilities of households as well as demographic characteristics of households to measure their attributes about the economy, financial planning and savings, as well as risk taking for investments.

The financial assets evaluated in the analysis included only those for which the type of investment was actually known. They measured mean levels of risk by a percentage of financial assets invested in equity security or risky asset. By cross tabulations on testing the relationship between investor planning horizons and their attitude towards risk taking, a significant relationship was determined between the two variables. The results revealed that the individuals in the sample were managing their portfolios in line with their risk tolerance and financial planning horizons even before the advent of life-cycle funds (LCF). Sung and Hanna *op cit* using logit analysis determine that whites were more tolerant than other ethnic racial groups. The whites exhibited 65% tolerance,

compared to 48% Hispanics with Blacks trailing by 38%. Barsky *et al* (1997), used a gamble measure on the health and retirement study (HRS) dataset, which was a pure measure of risk tolerance as opposed to the general SCF in the United States. They report that blacks and Hispanics have average risk tolerance than whites.

While testing the efficacy of demographics on risk tolerance, Grabble and Lytton (1998), took 2626 respondents in United States of America. They used discriminate analysis to separate, discriminate, estimate and classify investors. They concluded that whites were more tolerant than blacks. Equally, by heuristics they agree that individuals with higher levels of education are proportionately more likely to have higher risk tolerance than individuals with lower educational levels. Coleman (2003), analyzed SCF models in the USA to compare risk tolerance levels of Whites, Blacks and Hispanics in a logistic regression, controlling for racial/ ethnic group gender, marital status, education age and family size. She finds that Blacks and Hispanics are less likely to be willing to take risk compared to otherwise similar whites. However the results differ when net worth is added to the model, as being Black does not have significant impact on willingness to take risks when controlling net worth. However, Hispanics are more likely to be in the no risk category than Whites if net worth is controlled.

Comparative studies in these determinants were conducted by Xiao *et al* (2005), who collected data from workers in Guangzhou major city and capital of Guangdong province in Southern China and American data from Chicago University. The purpose of the study was to compare Chinese and Americans risk tolerance on a cultural basis total of 2671 respondents. They performed a chi square test to establish whether there was an association between risk preference attitudes and country variables and stock ownership and country variables. With a logit regression on the sample variables, they conclude that Chinese were more tolerant than Americans in their financial decisions. For the Chinese investors, it is the size of their social networth that predicts risk taking, and individual characteristics such as income are less important, because the risk is not carried entirely by individual, but partly by the network. The finding also obtains some anecdotal support from gambling literature in China, since the practice is common in the country. Because of high level of risk tolerance the Chinese immigrants are more willing to be self employed.

Further investigations of race and risk aversion have been carried out by Yao *et al* (2005), in the United States of America. They sought to establish the effect of race and ethnicity on financial risk tolerance. Using 23243 respondents. Cross tabulations of financial risk tolerance levels and ethnicity groups were performed to examine the percentage distribution across risk categories, using a cumulative logistic regression. They established that Whites are more tolerant to risk compared to Blacks. The Whites had 59% risk tolerance levels compared to Blacks 43%. Blacks are more risk tolerant than Hispanics (36%).This could be attributed to low participation in financial markets by Blacks and Hispanics. A majority of these households (57%) are classified as unbanked. They are also likely to be taking less risk because of their labour force instability. However, for long term goals such as retirement, everyone irrespective of race should be willing to take some risk in order to have reasonable returns.

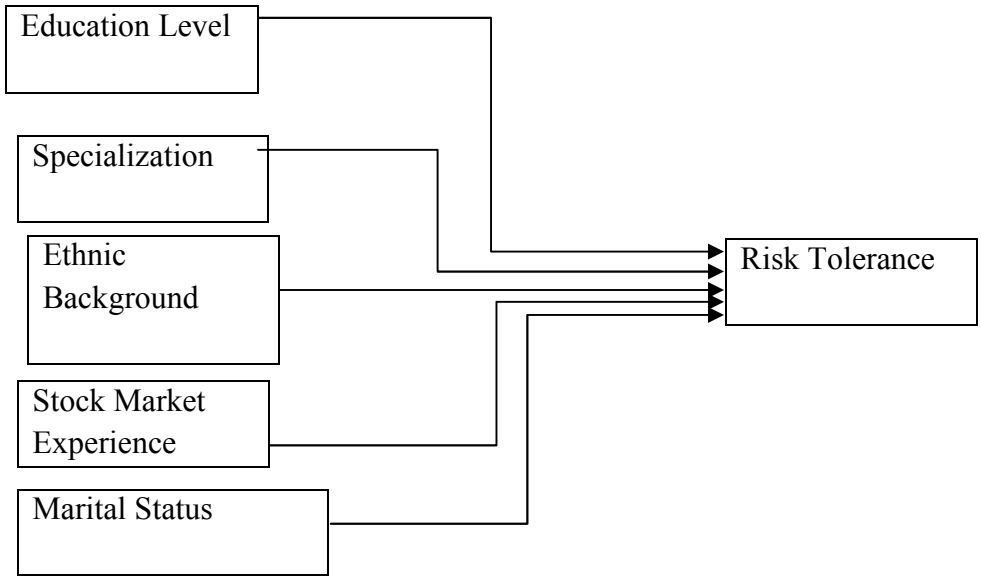
Hanna and Lindermood (2005), examined risk tolerance among married couples in the USA with respect to portfolio choices. They applied SCF questionnaires and combined four years in order to tests time trends. They had a large sample comprising of 16, 952 for more robust estimation of effects of the subgroups. Their

dependent variable being risk tolerance, measured in four responses; substantial, above average, average and not willing to take any financial risks, with the independent variable being wife/ husband. Logistic regression analysis was performed for the households as indicated in appendix. Wives were found to be less willing to take risk than husbands, all other things being equal.

Focusing on racial/ethnic disparities in the stock ownership, Wang and Hanna (2007), applied decomposition method on 4519 households in the United States, with the dependent variable being stock investments and explanatory variables chosen based on normative models of portfolio choice. They were testing on the wealth gap between non-Hispanic White households and households in other racial/ethnic groups. They used multivariate analysis to confirm that savings goal is strongly related to the investment horizon, given the volatility of stocks compared to alternative investments, such as cash equivalents and shorter term government bonds. They found a large disparity in stock ownership between racial groups in the United States.

They contend that differences result from risk tolerance perspective; although they suggest that given similar opportunities of networth between Blacks and Whites, there would be no difference in risk tolerance as well as stock ownership. They also establish that most Whites 64% have at least some types of risk asset investment, but only 33% of Blacks and 27% Hispanics have some type of risky assets. The proportion of Blacks and Hispanics owning any risky assets are so low that any analysis of the rest of risky assets to total investment assets is dominated by investment ownership status. On marriage and risk aversion, Faff *et al* (2008), in Australia, took a potential pool of 250 participants of which only 162 completed the lottery experiment. The participants represented a much broader spectrum of the society along many dimension. With 65% respondent rate, they concluded that being married tend to reduce financial risk tolerance. Their sample was however biased, since 98% of their respondents were married.

Figure 1: Conceptual Framework



3 Methodology

Research Design

Kelinger (2004), defines research design as the plan, structure and strategy of investigation conceived so as to obtain answers to research questions. It includes the overall scheme an outline for each hypothesis and their operational implications as well as the methods used to gather and analyze data. Cooper and Schindler (2008) , classifies business research designs using descriptors such as the purpose of study, method of data collection, power of the researcher to produce effects in the variables under study, time dimension, scope of the study, research environment and the perception of the participants of the research activity. Depending on the descriptors an appropriate option of research design is selected ranging from exploratory studies, descriptive study or causal studies. A descriptive research study may be simple or complex and may be done in many settings. Simple descriptive studies concerns a univariate hypothesis or questions about, or state something about size, form, distribution or existence of a variable. A complex descriptive study on the other hand, involves collecting evidence leading to causal questions, correlation between independent variables and probabilities of interrelationship among the variables in a research. This study adopted a complex descriptive approach to evaluate the determinants of an individual investor's risk tolerance. Investor attributes such as biopsychological, financial and sociocultural were hypothesized to influence an individual's inclination towards risk. Data on the said attributes include investor's age, financial literacy, income, household status, home ownership as well as racial/ethnic orientation will be obtained through a questionnaire.

Target Population

The population of investors from whom a sample for assessing individual risk tolerance in Kenya was drawn, comprised of all investors holding accounts with the Central Depository Systems Corporation (CDSC), the total number of investors were 932,510 as at 30th September 2010 (CMA, 2010). The CDSC was created by the Central Depository Act 2000 to establish and operate a system for central handling securities in Kenya, provide immobilization and eventual dematerialization of, and dealings in securities deposited there with in the country and for connected purposes; such securities are immobilized or dematerialized and dealings in respect of those securities are affected by means of entries in securities accounts without physical necessity of certificates. The CDSC provides a reliable source of demand for investments in the Kenyan capital market. The system has created a databank which is ideal for a framework for establishing whether investment managers, advisors and individuals assess their risk tolerance levels before selecting an investment portfolio given limited resources.

Sampling Frame and Technique

Since the population variance with respect to the dependent variable is unknown and also because a large portion of the predictor and criterion variables are measured as categorical and not continuous variables, the sample size estimate follows the recommendations by Bartlett et al. (2001) and Sekaran (2003) in the form shown below:

$$n_o = \frac{(t)^2 * (p)(q)}{(d)^2}$$

$$n_o = \frac{(2.58)^2 * (0.75)(0.25)}{(0.05)^2} = 499.23, \text{ same as 500 people}$$

Where n_o is the sample size; "t" = the value for the selected alpha level of 1% in each tail to increase precision, hence 2.58; (p) (q) =estimates of variance; where "d" is acceptable margin of error for the proportion being estimated, that is error researcher is willing to accept = 5%. The selected sample size, of 500, is further informed by three factors: the desire to reduce the sampling error, many respondents may not fill all the details and lowering the number of valid responses, and the fact that the target population is expected to be highly heterogeneous with respect to a number of the internal variables under study.

The random sample of 500 individual investors was selected from 22 investment banks and 3 stock brokers which represent the entire licensed brokerage firms by the CMA as at 31 December 2010. A simple random sample was drawn from all the account holders in each investment bank and stock broker, which is considered manageable in terms of costs and representative of all custodians in contact with individual investors. Appendix 3 provides the list of the approximate total number of investors in each custodian firm from which a 0.05% of the total investor population was obtained. Most individual investors' funds are held by these custodians. Fund managers and other custodians mainly deal with institutional investors also other CDS accounts may be inactive. These custodians are appointed by the CDSC, under section 9 of CDS Act.

Data Analysis

Descriptive statistics cross tabulation; ordinal logistic regression and correlation analysis was employed to analyze the data. Histogram of risk tolerance and mean, median score and standard deviations forms descriptive statistics which were further analyzed through statistical package for social sciences (SPSS 17) to determine various coefficients, standard error, regression equations tests, Wolfowitz Wald test, one way as well as paired Analyses of variance (ANOVA) was performed on the data. Ordinal logistic regression was applied to test the implication of individual variable in the determination of an individual's risk tolerance in relation to other variables that have specific ordered characteristics. The log of odds for increase or decrease was obtained for each coefficient of the variables holding others variables constant as explained in section 4.5 below. Each value of the independent components was obtained in the questionnaire and a score ranging to a scale of 47 using a 13-item risk tolerance measurement questionnaire (Grable and Lyton, 1999).

An ordinal logistic regression analysis was preferred, since risk tolerance is deemed to be a function of these selected variables of financial attributes of an individual; home ownership and income (earning level) the variables have been categorized into ordered responses. For home ownership those who have and those without. Income levels were categorized into five groups those who earn under Ksh 30000 per month, between 30000-60000,60000-90000,90000-120000 and over 120000.The dependent variable was converted in to an ordinal scale with five categories of scores. The maximum possible score was 47. A score of 33 and above categorized as very high risk tolerances, 29-32; Above average risk tolerance, 23-28 average risk tolerance ; 19-22 below average while 0-18 low risk tolerance. The equations for this model are as follows:

$$\text{logit}(p) = \log[p / (1- p)] = \ln[p / (1-p)] \quad \ldots\ldots(1)$$

$$\text{logit } p = \frac{p}{1-p} = \beta_o+\beta_e E+\beta_s S+\beta_m M+\beta_i I+\beta_t E+\beta_x X+\varepsilon_i \quad \ldots\ldots(2)$$

Where p is the probability of risk tolerance of an investor

$$P=\frac{e^{\beta o+\beta eE+\beta sS+\beta mM+\beta iI+\beta tE+\beta xX+}}{1+e^{\beta o+\beta eE+\beta sS+\beta mM+\beta iI+\beta tE++\beta xX}} \quad \ldots\ldots(3)$$

Where β_o= coefficient of the constant variable

β_e=coefficient of investor level of education

β_s=coefficient of specialization/qualification in accounting or finance

β_m=coefficient of marital status

β_i=coefficient of investors income/earnings

β_t=coefficient of ethnic background of an investor

β_x= coefficient of experience in stock market investment

ἐί is the error term.

P-represents the logit of risk tolerance it's the log of odds that risk tolerance occurs. Logit risk tolerance represents the log of odds that risk tolerance occurs. The risk tolerance score was ordered in to 5 levels; very high score 33 and above, above average 29-32, average score 23-28, below average 19-22 and very low 0-18.

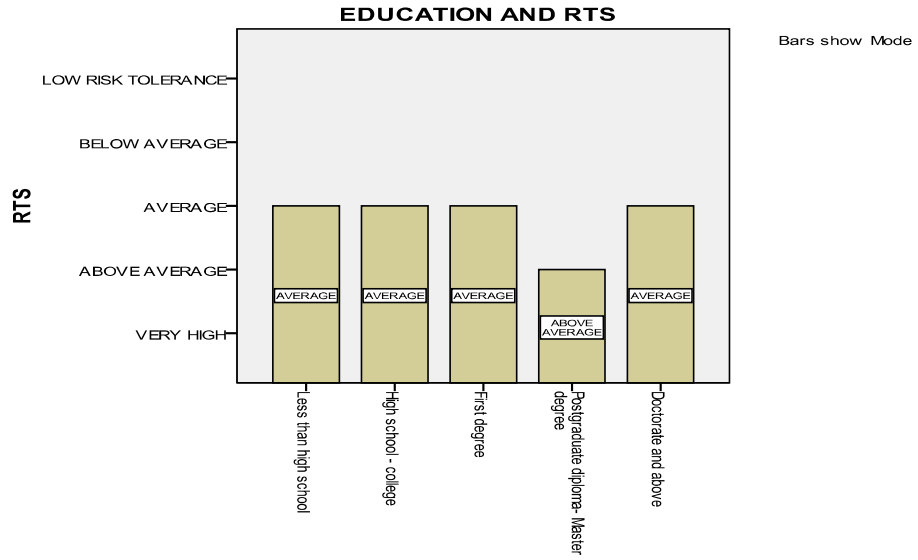
4 Findings

Education and risk tolerance scores

Very high score of risk tolerance was not reported among those with less than high school education; 22 investors with between high school and college had very high risk tolerance, 12 with first degrees; 40 with post graduate diploma and masters; 3 doctorate and above level of education out of a total of 137 respondents. Above average score had a total of 161 including 27 high schools to college, 77 first degrees; 54 post graduate and masters' level and 3 with doctorate and above. Those with below average risk tolerance were 2 college, 13 first degree, 9 post graduate diploma average risk tolerance was reported with 4 less than high school, 36 high school college , 81 first degree 42 post graduate diploma-master and 4 doctorate and above. There were 2 people with low risk tolerance at high school college levels, postgraduate diploma and first degree.

Exact chi square test on correlation was observed to have a P value of 0.078, and therefore at α=7.8% Education levels would singly contribute to risk tolerance; Likelihood ratio had a P value of 0.164. All levels of education beginning from less than high school to doctorate level of education had average score of risk tolerance, except those with post graduate diploma and masters' degree, who had scored above average risk tolerance. This result could have been expected for those with doctorate degree except that the numbers of the doctorate degree holders in the sample were fewer relative to the others in the category. It may therefore be concluded that risk tolerance generally increases with the level of education, since education provides new experiences and exposure to individuals. The figure below shows details of the levels of risk tolerance for each of the categories of investor education.

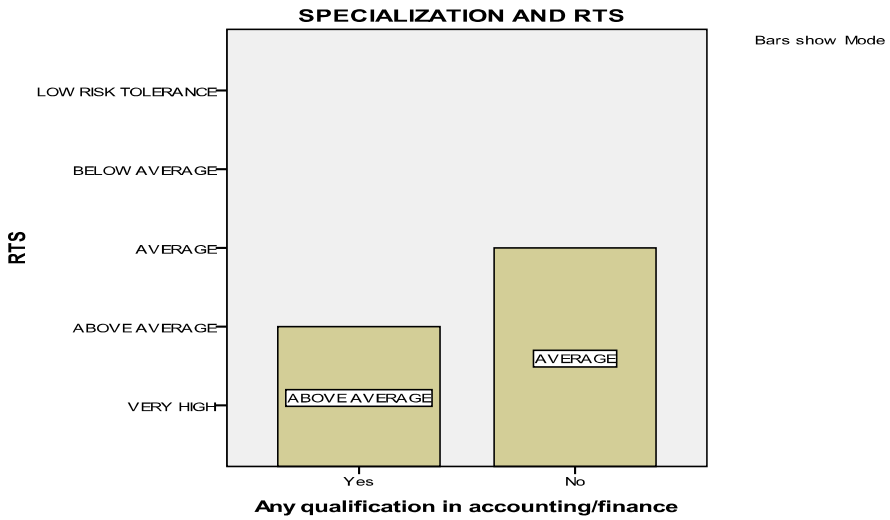
Figure 2: Education and Risk Tolerance



Any qualification in accounting or finance

Of those who had full or partial qualification in accounting or finance 83 had very high risk tolerance scores 100 below average, 82 average, 14 below average and 1 low risk while; among those without qualification, 55 had very high risk tolerance, 63 above average, 85 average, 15 below and 6 low risk tolerance. Those with qualification or specialization in finance or accounting had above average risk tolerance while those without specialization scored average risk tolerance. Those who were specialized would be willing to take more risk other things being equal; this could be due to the understanding of the finance discipline or financial literacy of the expectations of financial instruments. This variable was quite significant on its own in the determination of risk tolerance level of the investors. The Pearson chi had a P value of 0.020 while the likelihood ratio recorded a P value of 0.017.

Figure 3: Specialization and Risk Tolerance

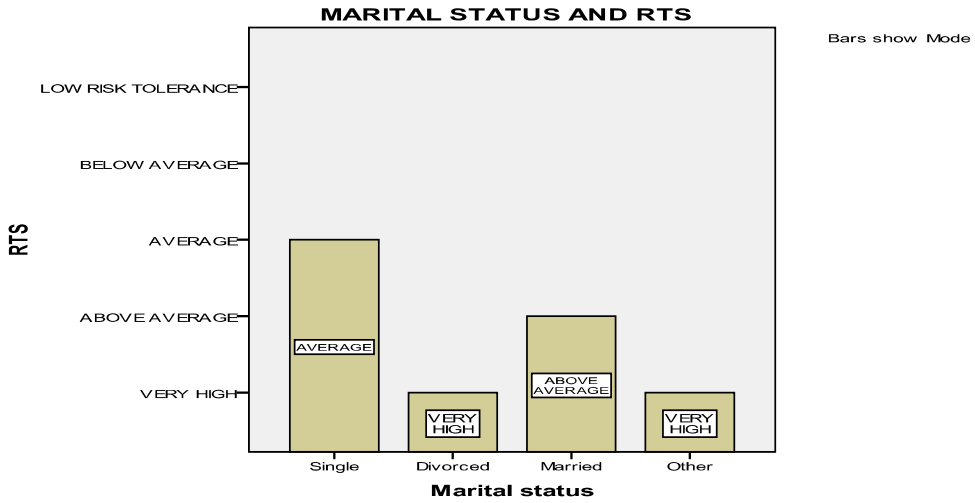


Marital status and risk tolerance

Out of 301 single investors 85 had very high risk tolerance, 89 above average, 105 average, 16 below average and 6 low risk tolerance, 3 divorce investors and very high risk tolerance, 2 had above average and average score and 1 with below average score, 49 married had very high risk tolerance, 64 had above average, 54 average, 12 below average and 1 low risk tolerance while those with other marriages 3 had very high risk tolerance score, 2 with above average and average.

Divorced investors had very high risk tolerance levels possibly due to life challenges that they have been exposed to during and after the divorce process and hence they may invest in more risky securities in the market such as existing ordinary shares, offshore investments and initial public offers. Married respondents had scored above average risk tolerance this could be attributed to some sense of security in marriage and hence they have some room to bear some risk. Single people were the lowest in risk tolerance scores in the marital status category. They may be more cautious because of uncertainty of the possible partners they would meet in life in case they marry or it could be due to little pressure to invest.

Figure 4: Marital Status and Risk Tolerance



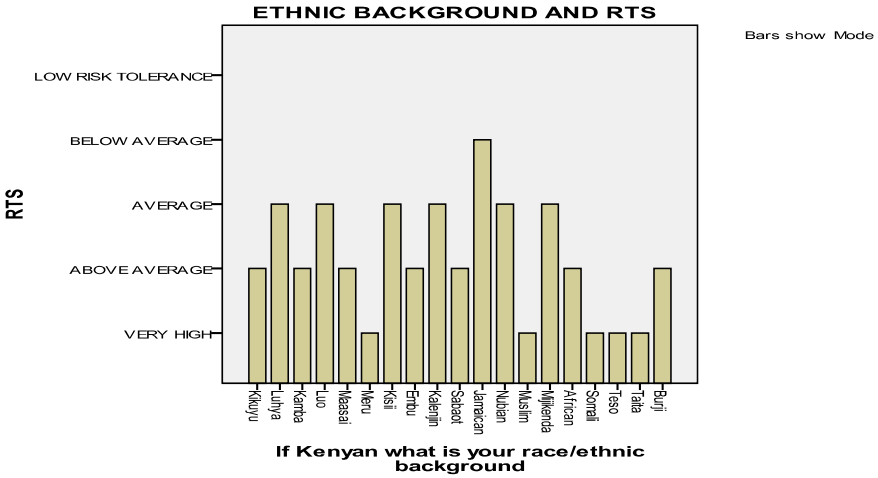
Ethnic background and risk taking

Many of the ethnic groups had between average and high risk tolerance except that kikuyu and Meru still has below average risk tolerance and low risk tolerance scores. Pearson chi square test showed a P value of 0.181 therefore the significance of correlation between ethnic background and risk tolerance could only be achieved at 18.1% Likelihood ratio was 0.534 from exact chi square test; the variable alone does not significantly influence the risk tolerance score of investors. Meru, Muslim, Somali, Teso and Taita had very high risk tolerance scores, while Jamaican Kenyans showed below average risk tolerance. Other tribes such as Kikuyu, Kamba, Maasai, Sabaot and Burji exhibited above average risk tolerance levels. Jamaicans were very few in the sample and hence conclusive evidence cannot be reached on their risk tolerance level.

Meru, Somali and Tesos probably showed higher levels of risk tolerance because of their lifestyles unique to them or the regions which they live in. Kikuyu are more entrepreneurial in their behavior and this may require them to be able to tolerate more risk.Kambas, Sabaot and Maasais occupy hardship areas and hence their above

average risk tolerance may be explained by this fact. Luhyas and Luos were rarely aggressive and scored average risk tolerance as summarized in the figure below.

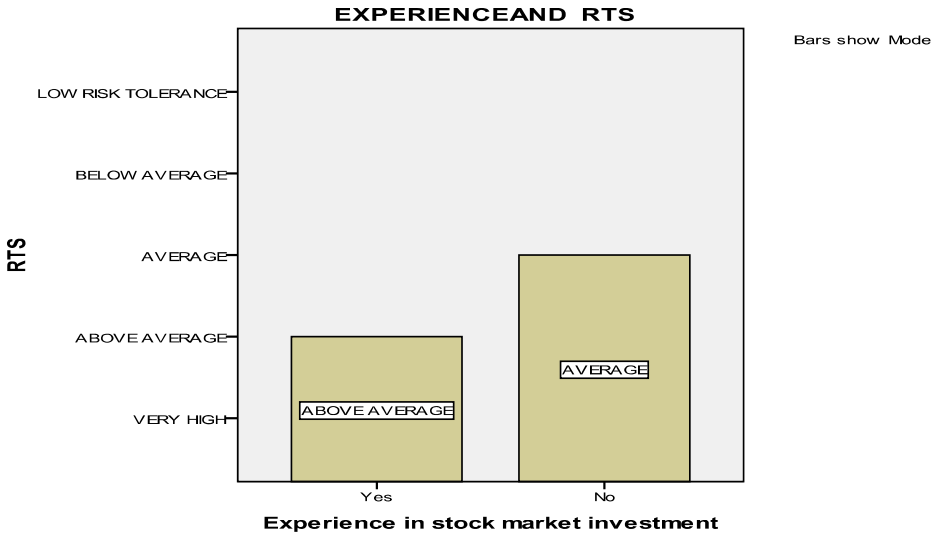
Figure 5: Ethnic Background and Risk Tolerance



Stock market experience and risk tolerance

There were 307 investors without previous stock market experience, 81 had very high risk tolerance, 100 above average, 101 average, 20 below average and 5 low risk tolerance. In the 182 with experience 54 had very high 60 above average 58 average 9 below average and 1 with low risk tolerance. Those with previous experience in the market were more tolerant to risk compared to those without experience; this could be due to the previous exposure and experience of market turbulence especially if they were engaged in active portfolio management the newcomers in the market may not be prepared for risk. Pearson chi square obtained was at a P value of 0.727 and a likelihood ratio of 0.699 meaning the variable on a single basis little influenced the risk tolerance level of the investors.

Figure 6: Stock Market Experience and Risk Tolerance



Paired Cross Tabulation

Selected paired cross tabulation among various socio cultural variables were revealing that among the education levels for those without previous experience in the stock market risk tolerance level increased from average to above average scores as seen in figure 6 below. Investors with less than high school scored average RTS as well as those between high school and college. At first degree up to doctorate level of education had above average risk tolerance. Experience was important to those with less than high school level of education since their risk tolerance levels improved to above average; it was also significant for those with postgraduate to doctorate level of education, impliying that as people trade in the market their risk tolerance rises holding other factors constant. Risk tolerance for those with qualification/specialization in finance or accounting remained at above average for all categories of married investors exept other marital status as shown in figure 7. Divorced investors without specialization recorded very high risk tolerance; married investors without specialization had average score of risk tolerance probably because of lack of financial literacy.

Figure 7: Stock Market Experience Education and Risk Tolerance

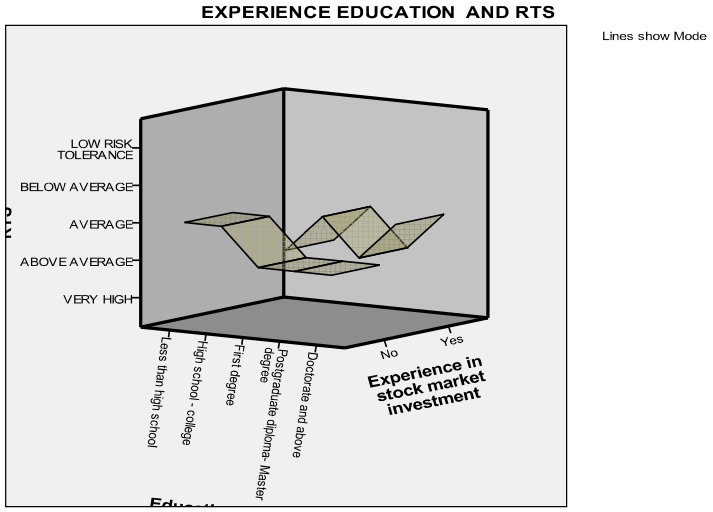
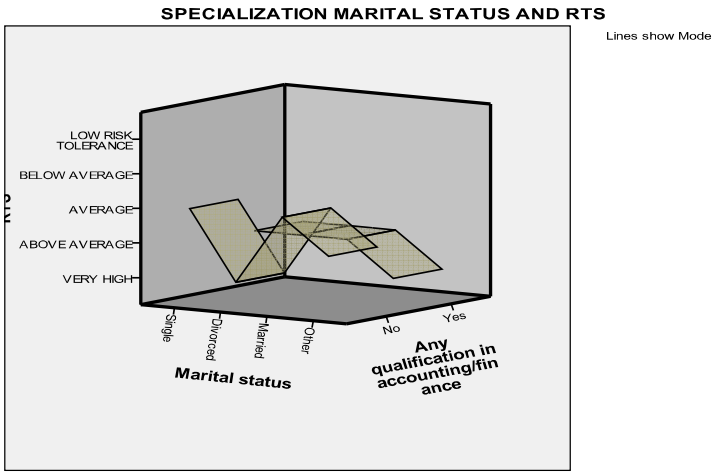


Figure 8: Specialization and Marital Status



Analysis of Variance Results

One way analysis of variance was performed for all the socio cultural variables on risk tolerance to determine whether there was some significance within the groups of each of these variables in the determination of individual investor risk tolerance. It was established that the level of education and specialization contributed highly to the risk tolerance of each of the individuals interviewed. Education recorded a significance with a P value of 0.049 as seen in table 4.2,which is below α=5% at 95% confidence interval while specialization or qualification showed a significance with a P value of 0.005 as shown in table 4.1 below. Marital status groups were not significant in determining individual investor risk tolerance with a P value of 0.741 as reflected in table 4.3 and equally ethnic background which showed a P value of 0.739 but stock market experience portrayed some influence on risk tolerance with a P value of 0.231.

Specialization contributed heavily in determining the risk tolerance level of investors because of financial knowledge exposure among these individuals. Financial literacy is thus more important than general education; however education per se would still influence an individual's risk tolerance level. Previous stock market experience at the Nairobi Securities Exchange was also contributing to risk tolerance; those who have past experience are more prepared and thus would be willing to absorb more risk than those without the experience.

Table 4.1 RTS and Specialization ANOVA

ANOVA

RTS

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.232	1	7.232	8.003	.005
Within Groups	453.625	502	.904		
Total	460.857	503			

Table 4.2 RTS and Education ANOVA

ANOVA

R T S

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	202.535	4	50.634	2.401	.049
Within Groups	10439.857	495	21.091		
Total	10642.392	499			

Table 4.3 RTS and Marital Status ANOVA

ANOVA

RTS

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1.155	3	.385	.417	.741
Within Groups	462.596	501	.923		
Total	463.750	504			

Table 4.4 RTS and Experience ANOVA

ANOVA

RTS

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1.307	1	1.307	1.439	.231
Within Groups	442.243	487	.908		
Total	443.550	488			

Table 4.5 RTS and Ethnic Background ANOVA

ANOVA

RTS

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	12.613	18	.701	.767	.739
Within Groups	361.806	396	.914		
Total	374.419	414			

Ordinal Logistic Regression Model (OLRM)

SPPS ordinal procedure (**Po**l**y**tomous **U**niversal **M**odel **-PLUM**) was used to analyze the data to preserve the natural ordering of data. This is an extension of general regression model to logistic ordinal of general categories. It's a combination of parameter into probabilities of the dependent variable occurring. The risk tolerance score was ordered in to 5 levels; very high score 33 and above, above average 29-32, average score 23-28, below average 19-22 and very low 0-18.The model fitted very well with significance level of P = 0.034 which is less than P = 0.50 meaning that the independent variables contributed jointly in determination of risk tolerance to a significant extent.

Table 4.6 Ordinal Logistic Regression Fitting information

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	327.607			
Final	309.519	18.088	9	.034

Link function: Logit.

The parameter estimates indicated in the appendix, were computed with SPSS calculating standard error and a Wald test which is a variant of z test was performed through the program. Education below high school level was found to be considerably significant in determination of risk tolerance with P=0.056 almost equivalent to α=5%. Those with less than high school education are therefore influential to risk tolerance. For each unit increase in education level from below high school level, the expected ordered log of odds of risk tolerance increased by 1.931, for each unit increase in education level between high school and college the expected log of odds of risk tolerance reduced by 0.135 while for each unit increase in education level from first degree the expected log of odds of risk tolerance reduced by 0.088 and for each unit increase of education level from masters the expected log of odds of risk tolerance reduced by 0.146 as the threshold for risk tolerance rises holding other factors constant.

The risk tolerance scores increases with the level of education, below high school level respondents had an average RTS less than 25.The scores increased to 30 from high school level to doctorate level of education as shown in the appendix. The study reveals that level of education influences an individual's willingness to take investment risk and that higher levels of attained education are associated with increased levels of risk tolerance, because education plays an important role in the level of understanding of risks inherent to the financial investment and therefore higher education encourages taking more financial risk. Therefore this research concurs with Grable and Lytton(1998). Grable and Lytton (1999), Grable (2000), Grable and Joo (2004) and Al-Ajmi (2008) who found that individuals with higher attained education were more risk tolerant than individuals with lower attained educational levels, although it contradicts Faff et al. (2003) found that education was not a significant determinant of an individual's attitude towards risk.

Qualification in finance or accounting was found to be significant in determination of risk tolerance at P= 0.008 which is Greater than 0.050 therefore the null hypothesis that specialization does not influence an investor's risk tolerance was rejected. For every single unit increase in specialization or qualification in accounting or finance, the expected ordered log of odds of risk tolerance reduced by 0.549 as the threshold of risk tolerance rises holding other variables constant. This implied that those who had partial or full qualification in accounting and or finance had higher average score of risk tolerance compared to those without qualification or specializations as indicated in the appendix. Grable and Joo (2004) argued that financial education may have influence on an individual's risk tolerance determination. They recommend a further study to test the hypothesis of whether

business /financial education background or specialization would significantly influence an individual's risk tolerance level.

In this study marital status of investors was not found to be a significant determinant of risk tolerance with P values ranging between 0.438-0.639 and this concurs with a number of studies such as (Grable et. al., 2006; Grable and Lytton, 1999; Masters 1989). For one unit increase of marital status for the single investors, the expected ordered log of odds of risk tolerance increased by 0.654 as the threshold of risk tolerance increased holding other factors constant. Every single unit increase in marital status for divorced investors led to a reduction of expected ordered log of odds of risk tolerance by 0.525 as the threshold of risk tolerance rises holding other variables constant, while for a single unit increase in marital status for married investor the expected ordered log of odds of risk tolerance increased by 0.571 as the threshold of risk tolerance increased holding other variables constant. The average risk tolerance scores for single investors was lowest, married individuals also had a lower mean RTS less than 30.Divorced individual investors scored above 30, while those with other marital relations had the highest RTS of almost 32 as portrayed in the appendix. The study contradicts other studies by Faff et al., (2004), Grable and Joo (2004), and Yao and Hanna (2004) who found support for the notion that single individuals are more risk tolerant than married individuals. The study results are also contrary to the findings of Grable (2000), Watson and McNaughton (2007) who found that married investors were more risk tolerant than singles.

Experiences in stock market is not a significant determines of risk tolerance at P=0.682 and hence we fail to reject the null hypothesis. Each unit increase in stock market experience the expected ordered log of odds of risk tolerance reduced by 0.084 as the threshold for risk tolerance increased holding other variables constant. Therefore, investors without previous experience in the stock market investment generally had lower RTS than those with past experience in the market. Race and ethnic group are not significant determinant of risk tolerance with P values of between 0.058 – 0.969.If the significance level of the research was increased to 10% then it could have been an important factor in determining risk tolerance. Kenyan Muslim and Burji were among the most risk tolerant with an average RTS about 35. Jamaican Kenyan were the least risk tolerant, other tribes such as Kikuyu, Luo , Maasais ,Kalenjin, Kamba among others had average risk tolerance as shown in the appendix. For every unit increase in ethnic race level for Jamaican Kenyan, the expected ordered log of odds of investor risk tolerance increased by 5.204 as the threshold of risk tolerance increased holding other variables constant.

Appendix1: Parameter Estimates

Parameter Estimates

							95% Confidence Interval	
		Estimate	Std. Error	Wald	df	Sig.	Lower Bound	Upper Bound
Threshold	[RTS = 1]	-.792	2.118	.140	1	.708	-4.943	3.358
	[RTS = 2]	.661	2.118	.097	1	.755	-3.490	4.812
	[RTS = 3]	3.045	2.126	2.051	1	.152	-1.122	7.211

	[RTS = 4]	4.946	2.168	5.205	1	.023	.697	9.195
Location	[Var1_Quez6_Education_level=1]	1.931	1.001	3.721	1	.054	-.031	3.892
	[Var1_Quez6_Education_level=2]	-.135	.641	.044	1	.833	-1.392	1.122
	[Var1_Quez6_Education_level=3]	-.088	.614	.021	1	.886	-1.291	1.115
	[Var1_Quez6_Education_level=4]	-.146	.622	.055	1	.814	-1.365	1.073
	[Var1_Quez6_Education_level=5]	0[a]	.	.	0	.	.	.
	[Var1_Quez7_AnyQualification_accounting_finance=1]	-.549	.208	6.979	1	.008	-.956	-.142
	[Var1_Quez7_AnyQualification_accounting_finance=2]	0[a]	.	.	0	.	.	.
	[Var2_Quez4_MaritalStatus=1]	.654	.843	.600	1	.438	-1.000	2.307
	[Var2_Quez4_MaritalStatus=3]	-.525	1.117	.221	1	.639	-2.714	1.665
	[Var2_Quez4_MaritalStatus=4]	.571	.844	.458	1	.499	-1.083	2.226
	[Var2_Quez4_MaritalStatus=5]	0[a]	.	.	0	.	.	.
	[Quez10_Experience_in_stock_market_investment=1]	-.084	.205	.168	1	.682	-.485	.317
	[Quez10_Experience_in_stock_market_investment=2]	0[a]	.	.	0	.	.	.
	[Var5_Quez19_If_Kenyan_what_is_your_race=1]	.239	1.842	.017	1	.897	-3.372	3.849
	[Var5_Quez19_If_Kenyan_what_is_your_race=2]	.661	1.859	.127	1	.722	-2.982	4.304

[Var5_Quez19_If_Kenyan_what_is_your_race=3]	-.072	1.855	.002	1	.969	-3.708	3.563
[Var5_Quez19_If_Kenyan_what_is_your_race=4]	.109	1.851	.003	1	.953	-3.519	3.736
[Var5_Quez19_If_Kenyan_what_is_your_race=5]	-.473	2.126	.049	1	.824	-4.640	3.695
[Var5_Quez19_If_Kenyan_what_is_your_race=6]	-1.282	1.917	.447	1	.504	-5.039	2.476
[Var5_Quez19_If_Kenyan_what_is_your_race=8]	.076	1.882	.002	1	.968	-3.614	3.765
[Var5_Quez19_If_Kenyan_what_is_your_race=9]	-.257	2.260	.013	1	.910	-4.687	4.173
[Var5_Quez19_If_Kenyan_what_is_your_race=10]	.182	1.859	.010	1	.922	-3.462	3.826
[Var5_Quez19_If_Kenyan_what_is_your_race=11]	.963	2.263	.181	1	.671	-3.473	5.398
[Var5_Quez19_If_Kenyan_what_is_your_race=12]	5.204	2.741	3.603	1	.058	-.169	10.577
[Var5_Quez19_If_Kenyan_what_is_your_race=13]	1.334	2.656	.252	1	.615	-3.871	6.539
[Var5_Quez19_If_Kenyan_what_is_your_race=14]	-20.014	.000	.	1	.	-20.014	-20.014
[Var5_Quez19_If_Kenyan_what_is_your_race=15]	-.496	2.050	.059	1	.809	-4.514	3.522

[Var5_Quez19_If_Kenyan_what_is_your_race=16]	.689	2.011	.117	1	.732	-3.252	4.629
[Var5_Quez19_If_Kenyan_what_is_your_race=17]	-.506	1.951	.067	1	.795	-4.329	3.317
[Var5_Quez19_If_Kenyan_what_is_your_race=18]	-.333	2.118	.025	1	.875	-4.485	3.819
[Var5_Quez19_If_Kenyan_what_is_your_race=19]	.234	1.989	.014	1	.906	-3.664	4.133
[Var5_Quez19_If_Kenyan_what_is_your_race=20]	0[a]	.	.	0	.	.	.

Link function: Logit.

a. This parameter is set to zero because it is redundant.

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