"A Behavioural Approach to MiFID"

AUTHORS	Luis Miguel Doncel Walter Reinhart Jorge Sainz
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Luis Miguel Doncel (Spain), Walter Reinhart (USA), Jorge Sainz (Spain)

A behavioral approach to MiFID

Abstract

New European regulation on financial markets forces financial institutions to correctly measure their clients' risk profiles before advising them on financial products. Our aim is to determine if there is a relation between financial knowledge and risk tolerance, since institutions may find it interesting to know why some investors are willing to bear higher risk. We gave a questionnaire to a group of students to measure the relationships between certain variables and to estimate the relationships among them using a bivariate probit. We find that although knowledge is relevant and affects risk tolerance, personal characteristics are the main factor on the investment dilemma.

Keywords: risk aversion, experimental finance, bivariate probit.
JEL Classification: J24, D14, C91.

Introduction

The new European Investment Services Directive — Markets in Financial Instruments Directive (MiFID) — changes the relationship between institutions and investors, giving the investment firms the responsibility "…to insure that the product is appropriate for the individual client, and that the client is fully apprised of any risk warnings related to particular products"[1]. The immediate result is that European financial institutions now need to asses the risk profiles of their clients before making any recommendations about financial products. The underlying idea is that only the more knowledgeable investors will be allow to invest in the riskier securities, and that banks and other financial institutions will invest in the education of their clients so they will be willing to acquire riskier assets.

MiFID tries to protect investors from the use of financial products that are becoming increasingly complex. As the financial assets are increasingly sophisticated, the marketing and commercialization of products rely on the ability of the seller and on the knowledge of the buyer and his perception of risk as well. To avoid abuses on the selling side the directive establishes safeguards for the clients that should be clearly informed on the risk of the product and on how it relates to their own profile.

To evaluate the logic of these measures, we decided to test the effects of economic and financial knowledge on risk tolerance because, as Fellner and Maciejovsky (2007) point out, it is related to the financial behavior of investors. To evaluate the effects of the MiFID, we surveyed a group of undergraduate students majoring in social sciences at a mid-size public university in Madrid, Spain. Our aim was to assess if their proficiency in some subjects and their market experience affected their risk aversion, justifying the effort that institutions will have to make following the new regulation.

Instead of using experiments like, for instance, the one developed by Harrison et al. (2005) to evaluate changes in individuals' attitudes toward risk, we chose the questionnaire method because we believe that using a more diversified base of students, thereby avoiding sample selection bias, will help us find robust measures of the relationship between risk and knowledge.

Besides controlling for individuals' socioeconomic characteristics, including income, age, gender, etc. (Friend and Blume, 1974), we used knowledge of finance as a key aspect governing attitudes toward risk, and questioned the students about it. The details of the questionnaire and the variables used in the econometric model are discussed in the next section. Section 2 discusses the empirical model, and the results are presented in section 3. Conclusions are presented and summarized in the last section.

1. The questionnaire[2] and the data

The questionnaire was sent to a total of 125 students of economics, business, and law. We got a total response of 93 questionnaires, out of which 12 were eliminated because they were missing two or more questions. All respondents were given a present with an economic value of 10€, since previous results show that rewards for answering questionnaires improve the quality of the responses. To get a complete assessment of the students' socio-demographics profiles, we established five questions that offered a complete view of the sample. They asked for age, major, and gender. To extract students' socioeconomic background, we knew from previous experience that questions addressing family income directly got vague or no response. To avoid that problem we divided the areas from which the students were drawn depending on their average income, using data from the INE (National Institute for Statistics and Madrid Regional Government).

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[1] European Commission (2006).

[2] The original questionnaire can be found at
http://www.economiaaplicada.com/drs/quest.pdf

We control for two aspects that are relevant to risk perception: previous investment experience and the respondents' self-assessment of their investment capacities. We did so because we expect students with market experience to be more risk averse, since individuals with more self-confidence are likely to take more risk (Grable, 2000). We found that no student had fixed income experience, but several of them had previously purchased or helped to purchase investment funds or stocks.

3. The more difficult task is to avoid bias in the answers related to risk behavior. Several questionnaires are built to evaluate risk tolerance (Yook and Everett, 2003). We use a modified version of the Risk Tolerance Questionnaire (RTQ) as described in Corter and Chen (2006), although the questions on risk tolerance were reduced. That allows us to keep an equilibrated set of questions, since previous experience shows that surveys with more than 20 questions reduce the number of responses because individuals find them too cumbersome and lose interest in the test.

The last set of questions relates to investment experience and investment knowledge, as a key aspect of the new MiFID regulation. The questions were designed to evaluate the theoretical knowledge over a set of eight questions that evaluate the effect of students' academic performance on their risk tolerance. We questioned their knowledge on macroeconomics, microeconomics, and financial economics, since we consider these subjects relevant to understanding market performance. To include non-academic knowledge, we also control for the information available both in economic newspapers and on specialized web pages. Summarized results can be found in Table 1.

Table 1. Data summary for 81 complete observations

Variable	Description	Number	Percentage
Gender	Male	42	52
	Female	39	48
Age	18-20	22	27
	Above 20	59	73
Area	Affluent	47	58
	Less affluent	34	42
Previous investment			
Shares	Experience	25	31
	No experience	56	69
Funds	Experience	12	15
	No experience	69	85
Nose	Feelings	22	27
	Information	59	73
Knowledge			

Micro	Medium-high	65	80
	Low	16	20
Macro	Medium-high	66	81
	Low	15	16
Finance	Medium-high	49	60
	Low	32	40
Financial information			
Salmon	Never	56	69
	Uses	25	31
Web	Never	54	67
	Uses	27	33

2. The analysis

To establish the relationship between individuals, their risk appraisal, the socioeconomic variables, and their financial knowledge, we employed discrete choice models. On first approximation, the probability of being risk averse depends on socio-demographic characteristics, the experience variables, and the financial knowledge variables, and it is estimated by a univariate probit through the structural model:

$$r^* = a + \beta_i x_i + u, \qquad (1)$$

where r^* is the latent variable (risk aversion, where 0 implies a risk-averse individual and 1 a risk taker), x_i is a vector that includes the socio-demographic (AGE, GENDER, INCOME), experience, and knowledge (SHARE, FUND, NOSE, KNOW) variables, with β_i indicating the parameters to be estimated and u a (0,1) normally distributed error term.

AGE, GENDER, and INCOME represent, as previously mentioned, the socio-demographic characteristics of the individuals. SHARE and FUND refer to prior experience investing in the stock market and indicate the category in which such investment was made. NOSE defines individuals' self-appraisal of their ability to invest by instinct instead of fundamentals. Finally, KNOW incorporates a set of knowledge that helps them in making financial decisions.

Univariate results may present a potential bias due to the overlap in the unobserved characteristics that affect both risk aversion and financial knowledge. The unobserved heterogeneity will be captured by u that will be correlated with the variables that explain both financial knowledge and socioeconomic characteristics. That is, financial knowledge is not exogenous, and the coefficients on those individuals with strong knowledge will be biased, capturing not only the true effect but also the effect of the unobservable characteristics on the risk profile.

Because we use different predictors for each equation, and to account for that heterogeneity, we

used a seemingly unrelated bivariate probit model, which is a joint model for two binary outcomes:

$$r_1^* = a_1 + \beta_1 x_1 + u_1,$$

$$s_2^* = a_2 + \beta_2 x_2 + u_2, \qquad (2)$$

where r and s represent the two latent binary variables, which may be correlated, x_i represents the different vectors of identifying variables for each model, and u_1 and u_2 are the error terms that follow a bivariate normal distribution with mean equal to zero and variances equal to one.

The advantage of this model over a univariate probit model is that the estimate of the latter may be biased because of the likely overlap between the unobserved characteristics that determine both knowledge of finance and risk aversion. This unobserved heterogeneity allows for correlation between the explanatory variables that describe risk attitudes and the error term. In that case, risk is not exogenous, and the coefficients on the risk variables in the probit models will be biased, capturing both the effects of being risk averse and the effects of being knowledgeable about finance. The vectors x_1 and x_2 represent the socio-demographic and experience characteristics of the individuals and the financial knowledge variables, respectively. The difficulty of the analysis lies in the fact that the restriction variables of being financially knowledgeable are orthogonal with the error terms. The terms included under financial knowledge (KNOW) are MICRO, MACRO, FIN, WEB, SALMON, which represent information that can be acquired through the study of microeconomics, macroeconomics, financial economics, and the use of financial web pages and economic newspapers. The results of the univariate and bivariate models are shown in Table 2.

Table 2. Univariate and bivariate probit model estimations

RISK	Univariate probit model		Bivariate probit model	
	Coefficients	Std. error	Coefficients	Std. error
Constant	.168	.413	-.152	.294
Gender	.008*	.289	.015*	.283
Age	.503	.296	.413	.331
Area	.037**	.296	.060	.292
Shares	.202	.333	.209	.334
Funds	-.117	.415	-.130	.416
Nose	.169*	.426	.165*	.343
Know	-.439	.357	Coefficients	Std. error
Constant	-	-	.418	.240
Micro	-	-	-.608	.653
Macro	-	-	.477*	.706
Finance	-	-	1.59	.699
Salmon	-	-	-.013*	.380
Web	-	-	-.255	.356
Pseudo R2	0.372	-	-	-
Rho	-	-	-.291	.215

Note: *, ** denote significance at 5% and 10%, respectively.

3. Empirical results

Results suggest that there is a negative (-.29) and significant correlation between the errors of both equations of the bivariate model. This implies that the unobserved heterogeneity on the probability of being risk averse is relevant and negatively correlated with the unobserved influences on the probability of being financially knowledgeable. In other words, there are effects not accounted for (most likely personal characteristics) that increase the probability of being risk averse and reduce the probability of being financially savvy, or vice versa.

Some variables are statistically significant in both models. As is usually related in the financial and psychology literature (Barber and Odean, 2001; Beyer, 1990; or Fellner and Maciejovsky, 2007), males tend to be more overconfident. Over-confidence is a general characteristic of those who make financial investments, but it is greater in men than in women, since the former believe that their knowledge of markets and the value of stocks is more precise than is actually the case. In our results, men are risk-takers more often than women (results in both cases are positive and significant for the variable of GENDER) in both the univariate and bivariate models. Also, self-appraisal (defined by NOSE) exhibits a positive sign and statistical relevance in the two models, implying that individuals with strong beliefs in their feelings are more often risk-takers, since they think that their ability will give them returns superior to those of the market.

In the univariate model, AREA (the proxy for income) shows weak significance. In this case, we can read the results as indicating the less income, the less risk tolerance in making financial decisions. In more affluent areas, residents are more used to investing in stocks, and this implies a better background for risk taking in financial decisions. Some studies show that parents' education and economic habits are an important source of cognitive ability (Christelis et al., 2006), so students

from affluent areas seem to be more risk averse. The same could be said about AGE, with young people leaning more toward risk.

Results for previous investment experience are consistent with those in previous studies. People with a greater aversion to risk invest in mutual funds, whereas more overconfident people prefer to invest directly in the market. This is specially the case in the Spanish market, where structured retail mutual funds with guaranteed returns represent the largest share of mutual funds growth.

Theoretical or applied knowledge about the stock market yields more risk-averse individuals as the negative sign of the univariate model and the results of the multivariate model point out, as shown by the variables MICRO, MACRO and FINANCE. We also find that the risk effect varies with the subjects and the way information is acquired. Highly interested individuals who manage to collect every piece of available information to obtain a superior performance show lower risk aversion. Financial information becomes a powerful tool and reveals a more "dedicated" investor. Our results indicate that investors who fit this profile exhibit a higher grade of risk aversion in both variables, with economic newspapers denoting significance at 97.5%.

The results differ for formal education. While knowledge of microeconomics yields more risk-tolerant individuals, macroeconomic studies increased their appraisal on risk, and for the latter case, we find significance of 95.3%. Finally, and in consonance with Sjöberg and Engelberg (2006), students of finance exhibit a greater disposition to expose themselves to financial risks, perhaps because of their own attitude toward risk taking or perhaps because of their greater confidence in their knowledge of stock market performance.

Conclusions

Under the new MiFID directive, European financial institutions will have to assess their clients' risk profiles and advise them on the choice of assets. Our aim was to evaluate the effect of financial and economic knowledge on these risk profiles and, therefore, on the choice of assets. To assess the effect of economics and financial knowledge, we used a questionnaire and evaluated the responses of undergraduate students majoring in social sciences.

Our questionnaires' results indicate that socioeconomic characteristics and financial knowledge affect risk profiles, yielding the results expected by the regulator. As investors become more financially knowledgeable, they also become less risk tolerant. Additional results show that females living in affluent areas and regular readers of economics newspapers and financial web pages constitute the profile of a risk-averse investor. In this context, it is worthwhile for financial institutions to match financial products for investors with the risk attitudes indicated by their profiles because investors' decisions are related to socioeconomic characteristics and the amount of financial knowledge they have.

These results open possibilities for new areas of research. It will be especially interesting to use a more diverse base of respondents to the survey, to see if the result holds. It also will be interesting to assess the real test that financial institutions are currently performing and its investments result to see if there is a bias between declared and real investments.

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