Optimism and Skill in the Finance Industry

Markku Kaustia*, Antti Lehtoranta, Vesa Puttonen

Aalto University

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Abstract

We measure financial advisers' sophistication using data from professional exam scores and other variables. We find that less sophisticated advisors have higher return expectations for the general stock market. The nature of this optimism seems dispositional, rather than strategic, or varying with recent market conditions. We hypothesize, and find evidence to support the idea, that unconscious overoptimism acts as a substitute for skill in the production function of advisor services. Over the long-term, skill dominates in advisor career performance, so the substitution effect mostly helps less capable advisers in the earlier stages of their careers, including finding employment.

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1. Introduction

Is seems easy to accept that skill and knowledge contribute to positive career performance in the finance industry. Finance professionals may also benefit from an optimistic personality trait and general outlook, as is the case for the general population (Weinstein, 1980; Puri and Robinson, 2007). More specifically, financial advisers may also benefit from expressing optimistic opinions about stock returns because equity-based investment products typically garner more fees (see, e.g., Gennaioli, Shleifer, and Vishny, 2015). Advisers may be strategically optimistic about stocks in discussions with clients to boost sales, while holding more moderate personal beliefs. Advisers could also be unconsciously overoptimistic

In this paper we hypothesize that optimism can to some extent substitute for a lack of financial adviser skill. Under strategic optimism, particularly the less knowledgeable advisors— recognizing they may be less competitive in other facets of the job compared to their more skillful peers—may be tempted to make sales by quoting optimistic return expectations. Under unconscious optimism, less sophisticated advisers might be more prone to overoptimism bias since less sophisticated agents in general are more likely to be biased.[1] Both mechanisms outlined above suggest an inverse relation between financial sophistication and stock return expectations, that is, that less sophisticated advisers would have higher return expectations.

The first goal of this paper is to test for the hypothesis that financial sophistication and return expectations are negatively related. The second goal is to make headway into the mechanism behind the effect. To identify the relation between sophistication and return expectations we obtain the results of all professional financial adviser certifying exams in Finland during years 2000–

[1] Accounts of speculative episodes suggest that particularly the less sophisticated investors are susceptible to excessive optimism (Shiller, 1984, 1990; Vissing-Jørgensen, 2003).

2010. These exams cover basics of finance, economics, accounting, and law. We link exam scores of 700 advisers to a survey of advisers' stock market return expectations. The survey asks for a return estimate the advisor would convey to his/her clients. It also asks for beliefs on what other advisors are likely to tell their clients. The response rate of the survey is 68%, reducing concerns of a nonresponse bias, and also in stark contrast to most survey studies in finance with 5% to 10% response rates.[2]

We create a sophistication index with principal factor analysis using all of the variables in the data that are plausibly related to financial sophistication: the exam scores, general educational attainment, an indicator for passing a more advanced second level exam, and gender. Aggregating these elements is a natural way to proceed if each one is a noisy proxy of an underlying general financial sophistication factor.[3] As a methodological analogy, think of the general factor *g* in intelligence: it too aggregates noisy sub-components to attain robust explanatory power in many settings. Our empirical tests mostly employ the composite financial sophistication index but we also show subcomponent results for comparison.

Reassuring for validity, the resulting composite index is positively associated with self-perceived ability to form rational return forecasts, as well as tendency to utilize more sophisticated information sources and models. Of the index components, gender is the least justified ex ante. Our baseline model includes it based on prior research showing that the male gender is strongly associated with better financial literacy among the general population after controlling for other factors (Chen and Volpe, 2002; Lusardi and Mitchell, 2008; van Rooij, Lusardi, and Alessie, 2011).

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[2] For example, the response rate in the CFO surveys of Ben-David, Graham, and Harvey (2013) is 5% to 8%.

[3] van Rooij, Lusardi, and Alessie (2011) and Gaudecker (2015) extract the common variation in different measures of financial literacy to create an index. Baker and Wurgler (2006) do the same for different measures of investor sentiment.

It is nevertheless unclear ex ante whether this applies to professional financial advisers. We therefore report the results also with an alternative version of the sophistication index that does not include gender, and obtain qualitatively similar results.

We find that less sophisticated advisers have statistically significantly higher stock return expectations. A one standard deviation reduction in the sophistication index corresponds to a 1.1 percentage point increase in the expected annualized 20-year return on the European stock market. The corresponding effect for emerging market stocks is 2.3 percentage points. Given recent estimates of the ex-ante equity premium around 3–4% (Claus and Thomas, 2001; Fama and French, 2002; Donaldson, Kamstra, and Kramer, 2010), the effect of sophistication seems rather large. Do less sophisticated advisers have overly optimistic return expectations? Without having to take a firm stand on what is an overly optimistic level, we find that less sophisticated advisers more likely have expectations exceeding a threshold level, considering a range of thresholds from 10% to 15%. Another implication of this test (also confirmed in other tests) is that the effect is not driven by unusually high expectations by some unsophisticated agents.

In our most important robustness check we investigate the effect of market conditions on the results. Return expectations in the main data set were elicited in 2006, after a period of rather favorable stock returns in 2003–06, and poor returns in 2001–02. We utilize alternative data sources to study the same issues with expectations surveyed in 2009–12, a period immediately following the global financial crisis of 2008, and covering the European debt crisis. Unlike the main data sample, we are unable to link these data to exam scores, but using other proxies of sophistication produces results similar to the main analysis. Thus, financial sophistication reduces long-term return expectations in various market conditions.

What is the mechanism underlying this effect? We consider, and rule out, several hypotheses related to unobserved heterogeneity, extrapolating from past returns, selection into taking the exam, signaling, and advisor risk aversion. We further discern two versions of how optimism bias would arise in this context. First, according to the strategic skill-compensation hypothesis the less sophisticated advisers knowingly quote higher returns to generate sales, recognizing they may be less competitive in other facets of the job. As one direct test for this idea, we organize an additional survey where we randomly assign advisers into a client condition (asking "what return expectation would you give your clients") and a personal belief condition ("what do you expect"). We find no evidence that the answers in the client condition would be higher. We also find that advisers on average expect other advisers to quote higher returns to their clients. Thus the advisers do not try to outbid what they perceive is the consensus – in fact, they are undercutting it. This result is even more pronounced when limiting to less sophisticated advisers. These results together provide evidence against the strategic skill-compensation hypothesis.

The second variant of the optimism bias story is that lower skilled advisers are just genuinely more optimistic (dispositional optimism). It seems that less sophisticated advisers acquire and process information in ways that make them simultaneously expect high returns, and believe that others expect even higher returns. It is plausible that these beliefs help them create enough sales to stay in business, even if they lack in financial skills. Certain combinations of salesmanship and expertise are likely to be effective on the job, and these factors can be substitutable to some extent. In simplistic terms, to succeed on the job, a financial advisor must be either knowledgeable or optimistic (or both), but cannot simultaneously lack knowledge and optimism. Bénabou and Tirole (2002) explore in a formal model how self-serving beliefs arise endogenously. This mechanism can work while acquiring skills on the job, or be involved in the selection into the profession. This mechanism is consistent with all our results, though the data does allow a test that would further discriminate between the learning-by-doing vs. selection-into-the-profession –aspects of it.

What are the long-term effects of advisor skill and optimism? To answer this question we collect data on advisors' career outcomes and success several years after measuring sophistication and return expectations. We find that more sophisticated advisers stay in the industry and achieve higher level job titles, earn more, and are somewhat more likely to invest in stocks themselves. Optimism in earlier return expectations is not a positive predictor of these outcomes. The conclusion is that skill and knowledge dominate in long-term career outcomes, so skill compensation must operate in the early stages of career, including finding employment. It may be more difficult to show hard skills in a job interview than it is to benefit from optimism, such as being visibly upbeat about the market and the employer's products. For example, a measure of hard skills that we use - the exam score - will only be available later for the employer. Similarly, sales increasing effects of optimism may more easily accrue with naïve clients in an entry-level financial advisor job, than later with more sophisticated clients. While our results indicate that skill wins over the long run, it does not mean that the finance industry is rid of over optimism. First, under the mechanism we propose, a flood of new generations of overoptimistic agents into the industry continues, so the industry will always have some measure of over optimistic and less skilled employees. Second, while we have shown a negative relation between skill and optimism, we cannot rule out the idea that even seasoned financial advisers would be overoptimistic on average.

The results of this paper have following broader implications. First, the paper relates to studies on financial advice and advisers (Hong, Scheinkman, and Xiong, 2008; Bhattacharya et al., 2012; Mullainathan, Nöth, and Schoar, 2012; Gennaioli, Shleifer, and Vishny, 2015; Gaudecker, 2015). Advisers are known to have a significant influence on investors' choices (Campbell, 2006; Bluethgen et al., 2008; Chalmers and Reuter, 2012). Particularly asset class allocation decisions are important (Brinson, Hood, and Beebower, 1986; Xiong et al., 2010) and the variable we study – expected stock market return – is a key input in asset allocation models (Damodaran, 2013). On average, advisers seem to fail in both debiasing their clients and in generating abnormal returns (Mullainathan, Nöth, and Schoar, 2012; Hoechle et al., 2013; Foerster et al., 2014). Our work shows significant heterogeneity among advisers in dimensions that may help explain the existence of the industry even if the average adviser does not add value. More sophisticated (less biased) advisers would be in a better position to add value by debiasing clients. The less sophisticated are unlikely to do so, but they might be able to stay in business by being overly optimistic. This is easier when one is genuinely optimistic (see Carver, Scheier, and Segerstrom, 2010, for a review on the benefits of optimism).

Second, the issue of strategic versus unconscious bias has implications on the discussion of ethics in the financial industry. Cheng, Raina, and Xiong (2014) analyze the private real estate transactions of mortgage securitization managers prior to the collapse of the US housing market in 2007-2008. They find that these transactions implied genuinely optimistic expectations regarding the development of the housing market. Our results are in line with this view of benign over optimism story: financial advisers are not consciously trying to outbid their peers to gain an advantage. Rather, on average they think it is their peers who quote higher expectations, and think themselves to be the more conservative advisers. Of course these results do not imply that distorted incentives wouldn't matter, only that beliefs can also be a factor in optimism.

Finally, we contribute to research on the determinants of return expectations. Using UBS/Gallup surveys of individual investors' one-year return expectations, Vissing-Jørgensen (2003) documents that younger investors, as well as those who have experienced higher past portfolio returns, have higher future return expectations. Dominitz and Manski (2004, 2007) present a similar finding regarding investor age. Amromin and Sharpe (2014) and Greenwood and Shleifer (2014) show that expectations obtained from individual investor surveys are negatively correlated with expected returns from standard models. Barberis et al. (2015) develop a consumption-based asset pricing model that is able to match key aspects of return expectations surveys. Disagreement among investors coupled with short sales constraints can generate overvaluation (Miller, 1977, and others). Earlier studies documenting diffuse expectations include Vissing-Jørgensen (2003) for laymen, Welch (2000) for financial economists, and Ben-David, Graham, and Harvey (2013) for CFOs. Merton and Bodie (2005) argue that professionals' expectations are more homogenous since they tend to use similar data and methods. While we find that sophistication is a strong predictor of expectations, substantial heterogeneity remains even after controlling for employer fixed effects, and even after limiting to a subsample of advisers who state that employer material is a key source on which they base their expectations. This shows that different interpretations of the same information are a major source of heterogeneity. One implication is that using professional advice may not substantially reduce the heterogeneity in investors' expectations.

In the remainder of the paper, Section 2 presents the data, Section 3 discusses the measurement of financial sophistication, and Section 4 presents the main results. Section 5 presents robustness checks and discusses alternative explanations. Section 6 studies advisers' long-term career outcomes and Section 7 concludes.

2. Data

A. Professional examination test scores

We measure adviser ability using a unique objective measure, test score data from the Finnish Association of Securities Dealers' (FASD) professional examinations. FASD is the Finnish investment services industry self-regulatory organization. Its members are brokers, dealers and other licensed financial service providers. FASD maintains two investment services degrees: General Securities Examination (hereafter first level exam) and Investment Adviser Examination (second level exam). The objective of the examination system is to promote financial knowledge in the industry. The law does not require investment advisers to pass the examination, but in practice financial institutions employing financial advisers do require them to pass it.

The test score data includes everyone taking the exam between its inception in 2000 and 2010. The first level exam covers economics, financial statement analysis, financial instruments including derivatives, equity valuation, mutual funds, taxation and securities regulation. Appendix A shows sample questions. The exam has 50 multiple choice questions, where a correct answer gives 2 points, a wrong answer is penalized by 2 points, as well as three verbal questions each worth one point. The maximum score is 103 points and the minimum is -100 points.

About 70% of exam takers pass on a given exam round. Those who fail are allowed to retake the test in three months, but there are incentives against going to the exam unprepared. The advisers' employer pays participation costs (about $300 for retakes) and their superiors get to see the results. Eventually 85% of individuals pass and the remaining 15% are unlikely to work as financial advisers on a continued basis. Our sample does not include these 15%, arguably the least sophisticated or least motivated test takers. If anything, excluding these advisers should bias our results toward the null of no relation between return expectations and sophistication. We use the score from the first test taken by each adviser, but using the highest score attained gives very similar results. Exam difficulty varies slightly from one exam to another, so we standardize raw exam scores by subtracting the test date mean score and dividing by the standard deviation.

B. Survey of return expectations

We manage to link the test score data back to a May 2006 web survey of financial advisers. Advisers who had passed the first level exam were invited to participate with an email message containing a link to a web form. Out of 1,097 usable email addresses, the survey gathered 742 responses, corresponding to a response rate of 68%. We join the data on test scores using adviser's names and their employers, matching 694 out of the 742 advisers. Other data from the same survey were used by Kaustia, Laukkanen, and Puttonen (2009).[4] The data includes information on adviser demographics, expected returns, and determinants of these expectations. Table 1 shows descriptive statistics on the subjects. Of the 742 respondents, 67% are female and 33% male. The average adviser is 44 years old and has 6 years of work experience as a financial adviser. 20% had also passed the second level exam 53% have a college degree.

The respondents were asked to supply a figure they would give their clients when asked about the expected annual nominal return for European (EU-15) stocks, and separately for emerging market stocks over the next 20 years. They were also asked to give their best guess on the figure other advisers would tell their clients to expect from European stocks. After supplying these return expectations the advisers were asked which factors and sources they base their return expectations on. Figure 1 shows the relative frequencies of the various sources the advisers report using. The dominant information source is employer supplied material, such as investment strategy reviews and other internal reports. More than 30% of the respondents also stated that the business media and interest rates influence their return expectations. The respondents were also asked to evaluate their competence of forecasting future returns relative to their peers. We describe the answers in more detail in Section 4.

[4] They did not analyze the question we address, combine the survey data with other data, measure sophistication, nor utilize the variables measuring return expectations.

C. *Advisor career paths and income development*

We collect information on advisors career paths in 2006 to 2016 from multiple sources, most notably the professional social networking service LinkedIn, online employer material, Facebook, and Fonecta Finder - a local commercial contact information service. We obtained this information for 445 financial advisers, representing 60% of the original survey sample. In many cases this information comes from more than one source: For example, LinkedIn is a source in 48% of the cases, and online employer material in 46% of the cases.

We hand-collect data on advisers' income and capital gains from the Finnish Tax Administration's local offices, and it is available for 388 advisers with sufficient matching information available. The income data cover the tax-years 2009-2014. The tax data include two separate items for ordinary income and capital gains. The taxable ordinary income includes wages and retirement benefits, and capital gains include proceeds from selling assets, dividends, and interest income. The data does not cover all possible income items, such as interest on ordinary bank accounts and other income taxed at the source.

3. Measuring adviser sophistication

A. *Constructing the sophistication index*

We define a financially sophisticated individual as someone with an advanced level of financial literacy and who is less likely to make behavioral mistakes. Sophisticated advisers have knowledge about economics, financial market institutions, assets, and regulations, as well as the analytical and cognitive capabilities to use and apply that knowledge in financial decision making. Our combined dataset has five measures that are plausibly correlated with the aspects of financial sophistication: first level exam test scores, whether the adviser has passed a second level exam (but no scores are available), the years of work experience as a financial adviser, general educational attainment, and gender. The remainder of this section discusses each of these measures in turn, as well as describes the construction of a composite sophistication index.

The adviser exams are designed to measure analytical skills and financial knowledge. As with all exams, test scores reflect both true abilities and knowledge of the exam takers, but also probably contain some noise. Therefore, the test scores will give a noisy signal of financial sophistication. Similarly, passing the second level may also be a proxy of sophistication.

Advisers learn about financial markets and their institutions through work experience. The length of work experience will likely have learning curve effects: first year on the job teaches more than the second year, and so on. We use log of years of work experience to account for this effect. However, as we only have a cross-sectional sample of advisers, an additional year of experience does not necessarily mean more sophistication. It could be that the more sophisticated advisers eventually advance to managerial positions. Thus the more experienced advisers in the dataset could also be less sophisticated than the less experienced advisers included in our data. Therefore, experience is also a noisy signal of adviser sophistication.

General educational attainment is a proxy for cognitive, information acquisition, and processing skills. We create a college dummy variable taking the value of one for advisers with a completed university or college degree.[5] However, academic programs vary in quality, as well as in the amount of economic and financial content. Thus, advisers' academic background likely measures financial sophistication, but with some noise.

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[5] About half of each age cohort in Finland graduate from three-year junior-colleges (Gymnasia) qualifying them towards M.Sc. degree granting university studies. We assign college dummy = 1 also to these respondents even if they had not completed a higher academic degree at the time of the survey. The main results are nevertheless similar if we assign college dummy = 0 to them instead.

Chen and Volpe (2002) find that women have a lower level of financial literacy among college students, while controlling for the students' majors, class rank, work experience, and age. Lusardi and Mitchell (2008) document a similar result using data from the Health and Retirement Study (HRS).[6] Van Rooij, Lusardi, and Alessie (2011) find a similar result in Dutch data, and show that the gender gap is even greater in advanced financial literacy. Almenberg and Säve-Söderbergh (2011) find a similar result with in Swedish data. These two studies use data from countries that are close to Finland in terms of institutions and culture. This population-wide gender effect may to some extent also apply to financial advisers. In our adviser sample, men perform better in professional exams, they receive on average 2.4 points more than women do in the first level professional exam. 27% of men have passed the second level exam compared to 16% of women. Further, the fact that two thirds of advisers, in an otherwise male-dominated industry, are women is consistent with more sophisticated employees advancing to other positions. Thus, we believe that the adviser gender noisily measures financial sophistication.

The five variables (test score, 2nd level exam, college dummy, log experience, and gender) each probably measure different aspects of the underlying general sophistication factor, and do so with some noise. We wish to extract the common variation in those variables to use as a sophistication measure, and do this by way of principal factor analysis. Table 2 shows the cross-correlations between these five variables. Most of the cross-correlations are statistically significant. The exception is log experience, which is not correlated with any of the variables at the 5% significance level. When we include all five sophistication proxies to create a single factor output, the factor

[6] We find that men also are significantly more often in charge of the household financial matters than women in the HRS data. Within households consisting of a male and female couple, 60% of the households assign the male as the respondent to financial questions, while more than 80% of the households assign the female as the respondent to family related questions. Even in households where women earn over $10,000 more than their spouses and controlling for age differences, the men are more often the financial respondents.

loading of log experience is almost zero, making it a worse candidate for factor analysis.[7] As previously discussed, there are reasons suggesting that experience may not measure sophistication in these data. It is also confounded with age. We therefore drop log experience variable and use the other four sophistication proxies to create a factor to capture the common variation. We include both experience and age as control variables in the analysis of return expectations.

The absolute loadings of the four factors are roughly equal. The cross-correlation results from Table 2 indicates that gender (female = 1, male = 0) receives a negative factor loading, while the other three receive a positive factor loading. We believe that the common variation in these four variables is correlated with the latent general financial sophistication factor. We denote it by *sophistication composite index*.[8] Most of our empirical analysis employs the composite index but we also show subcomponent results for comparison.

B. Validating the sophistication index

In this section we relate the sophistication composite index to advisers' self-perceived ability to form rational return expectations, as well as the sources of information they use in forming these expectations. We run logit regressions where the dependent variable indicates a particular level of self-perceived ability (such as above average), or with the analysis of information sources, indicates using particular source. In addition to the sophistication index, the regressions include control variables (adviser age and work experience, and in the case of information sources, dummies for below and above average forecasting ability).

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[7] Formally, the Keyser-Meyer-Olkin measure of sampling adequacy for log experience is below the acceptable threshold of 0.5. Linear and quadratic work experience also inadequately explain common variance.

8 This sophistication index is highly correlated with a naïve index constructed by summing over the set of standardized proxy variables with equal weights. Not knowing this ex ante, we first proceeded with the more formal factor analysis, but all subsequently reported results are very similar if we use equal weighting instead.

Ex ante, we would expect sophistication to be positively related to self-perceived ability, as well as to using interest rates, economic statistics and ratios, and outside strategy reviews as information sources. Interest rates and economic statistics are key inputs in forward-looking forecasts of equity returns, such as dividend discount model -based approaches. Using outside strategy reviews, on the other hand, could be a proxy for being generally more informed. The results reported in Table 3 by and large confirm these predictions. Panel A shows that sophistication and self-perceived ability are significantly positively related. Panel B deals with information sources. The relation is positive and statistically significant (at 5% level) for interest rates and economic statistics. It is also positive and statistically significant for outside strategy reviews in a univariate test, but in the full model the *t*-statistic drops to 1.2. While the other information sources (employer material, financial media, discussions with colleagues, and historical returns) could all potentially receive positive weights when formulating a rational forecast, we do not expect them to be strongly related to sophistication in our context. In line with these expectations, Panel B of Table 3 shows that the effects with those information sources are all insignificant.

In addition to the analysis of the correlations between the sophistication-index components discussed earlier, the analysis in Table 3 provides additional confirming evidence of the validity of our sophistication index.

4. Results

A. The level of average expectations

Table 4 shows univariate results on advisers' return expectations. On average advisers expect the European market to return 10.1% per annum over the next 20 years. Regarding emerging market stocks the advisers expect a return of 15.4% per annum. To assess how reasonable these expectations are we compare them to three common measures of (partially) forward-looking expectations at the time of the survey in spring 2006.

First, consider the long-term record of real returns in European stocks. According to Dimson, Marsh, and Staunton (2006) the value-weighted real return during 1900-2005 was 5.6%.[9] We add a forecast of long-term inflation of 1.9% to arrive at expected nominal return of 7.5%.[10] As the second measure we use the equity premium of 3.5% recommended by Donaldson, Kamstra, and Kramer (2010). For the risk-free rate we consider the one-month Euribor rate (2.7%) and the German 10-year government bond yield (4.0%). This gives expected returns of 6.2% and 7.5%, respectively. Third, we consider an estimate derived from the dividend discount model. The dividend yield of European stocks (EURO STOXX 50) was 3.0% and adjusting for stock repurchase probably warrants adding an extra 1%, but most likely not more than 1.5% which is what we use below. Historically dividend growth has not quite kept pace with inflation in Europe, the real dividend growth over 1900-2005 was -0.2%.[11] Putting these numbers together, and again adding 1.9% for expected inflation gives 6.2%. Alternatively, assuming a robust economic growth of 2.5% a year and dividend growth that only lags that by 1% produces an estimate of 7.9%.

How much extra return should one expect from emerging market stocks compared to European stocks? Using the full history of 18 years available as of the survey date in May, 2006 for the MSCI Emerging Market index, we calculate an additional risk premium of 2.9% for emerging markets

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[9] In these calculations we use a weighted average of arithmetic and geometric returns corresponding to the MSE estimator derived in Jacquier, Kane, and Marcus (2005), where arithmetic returns receive a weight of $1-\frac{3H}{T}$, where H is the length of forecast horizon (20 years in our case) and T is the length of the historical data period (105 years in our case). This gives a weight of 0.57 to geometric returns.

[10] This inflation estimate comes from the European Central Bank survey of 5-year inflation forecasts.

[11] Bernstein and Arnott (2003) explain why the dividend growth of listed stocks has been lagging – and should be expected to lag – the growth rate of the economy.

based on volatility ratios as suggested by Damodaran (2013).[12] The difference in realized returns during that time period happens to be the same, 2.9%.

In sum, three commonly used methods for assessing forward-looking returns suggest a range from 6.2% to 7.9% for European stocks in spring 2006, while advisers on average expected 10.1%. A reasonable additional emerging market premium might be around 3% when judged against historical returns and volatility, while the advisers expected 5.3%.

Thus, if anything, the advisers on average seem optimistic regarding stocks in general, and regarding emerging markets in particular. This is consistent with the idea that advisor incentives bias their return expectations upwards. However, we wish to note that the above analysis is intended to be indicative, and one could also rationalize return expectations exceeding those benchmarks. Advisor optimism bias offers a useful backdrop for thinking about the results in this paper but our conclusions are not dependent on a specific assumption for the level of a realistic return expectation.

B. The effect of sophistication on return expectations

In this section we discuss the results of our main research question, that is, does financial sophistication explain the advisers' return expectations? We begin by plotting average expected returns by sophistication quintiles in Figure 2. Expected returns are monotonically decreasing by increasing sophistication for both the European and emerging markets. The slope of the relation is steeper for emerging market expectations.

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[12] What should the emerging market premium be? Damodaran (2013) suggests that volatility ratios should be roughly equal to risk premium ratios. Using the full 18 years of history available on May 31, 2006 for the MSCI Emerging Market monthly USD gross return index, we find that the monthly standard deviation is 6.66% for emerging market stocks and 4.50% for MSCI Europe. Based on the volatility ratio, the implied risk premium for the emerging market stocks should then be 9.0% $\left(= 6.1\% \times \frac{6.66\%}{4.50\%}\right)$, or 2.9 percentage points greater than for European stocks.

We then regress return expectations on the sophistication index and control variables. Table 5 shows the results for European stock market return expectations. Model (1) includes only the sophistication index, controlling for employer fixed-effects. Sophistication is a strongly significant determinant of adviser expectations. Model (2) adds the (log) years of experience as financial adviser and (log) age to the model. The separate experience effect is not economically nor statistically significant. Age is positive but statistically insignificant. We have estimated the model allowing for quadratic age effects and they too are insignificant. Model (3) adds self-perceived forecast ability. Self-identified worse forecasters are significantly more pessimistic, with 1.7 percentage points lower return expectation. The sophistication effect remains highly statistically significant. A one standard deviation increase in the sophistication index reduces the expected stock return by 1.1 percentage points.

Model (4) is a probit regression where the dependent variable equals one for expectations in excess of 12%. The intent here is to pick a return level that can be reasonably thought of as overly optimistic (Section 4.A shows that various methods produce forward looking estimates of 6% to 8%). The results show that less sophisticated advisers are more likely to express expectations in excess of 12%: a one standard deviation increase in sophistication reduces the incidence of expectations in excess of 12% by 8.0 percentage points. Similar results are obtained for other return thresholds, such as 10%, 11%, 13%, and 14%. We confirm that these results are not driven by less sophisticated advisers with extremely high expectations by excluding those who expect more than 20%.

Table 6 reports corresponding estimates for emerging market return expectations. Compared to European expectations, sophistication has a stronger effect. A one standard deviation increase in the sophistication composite index reduces the return expectation by 2.3 percentage points. Emerging markets may be harder to value and thus more susceptible to biases (Daniel, Hirshleifer, and Subrahmanyam, 1998; Hirshleifer, 2001; Kumar, 2009). Both the experience and age effects are stronger for emerging market expectations. For an average adviser, the marginal effect of an additional year of experience reduces expected return by 0.17 percentage points, and an additional year of experience increases expected return by 0.14 percentage points. An extra year of age for most advisers also involves an extra year of work experience, and these would cancel each other on average. The probit model (4) again shows that less sophisticated advisers are more likely to have overly optimistic expectations: a one standard deviation increase in sophistication reduces the incidence of expectations in excess of 15% by 12.5 percentage points. Similar results are again obtained for other values for the threshold level of return.

Table 7 shows the effects of the sophistication sub-components on pooled European and emerging market stock return expectations. The sub-component estimates in all specifications have the expected signs: test score, passed 2nd level dummy, and college dummy have negative signs, while gender has a positive sign. Model (1) uses a sophistication factor created without gender information and includes a separate gender dummy. This sophistication index as well as the gender dummy are both statistically significant. Models (2) to (5) include each sophistication sub-component at a time, and model (6) includes them all jointly. Each sub-component is statistically significant when entered separately. In model (6) the explanatory power is divided between the four sub-components. All the sub-component effects are reduced compared to the separate estimates in models (2) to (5), as one would expect if they all proxied for a general latent sophistication factor. Statistical significance is likewise reduced, and the passed 2nd level dummy becomes statistically insignificant.

In sum, the results of this section provide strong confirming evidence for the hypothesis that financial sophistication and long-term stock market return expectations are negatively related. Less sophisticated advisers are more likely to have 'high' return expectations for various reasonable assumptions about what is meant by high.

C. The role of market conditions and extrapolating from past returns

The relation between return expectations and sophistication could depend on market conditions, for example, if the less sophisticated advisers extrapolate more from past returns. We wish to note, however, that the 20-year expectations we used should be less susceptible to such effects compared to expectations over much shorter horizons like the one-year expectations studied in most prior research.

To address this issue we obtain another data set of adviser return expectations from early 2009 to 2012. The global financial crisis of 2008-2009, and the European debt crisis beginning in 2010, make this period very different from the period leading to spring 2006 when the earlier data on expectations was collected. These data are collected in 15 separate financial adviser seminars from a total of 254 individuals. Figure 3 shows the data collection dates, overlaid on a European stock market index. The seminars typically have 15 to 20 participants, and the response rate is virtually 100%. Similar to the main data, all subjects have passed the first level exam. A drawback of these data is that we must rely on more noisy measures of sophistication. We designate those advisers as experts who 1) have a job title containing the word private banker, manager, or analyst, 2) have two or more years of work experience, and 3) do not make a logical mistake in a simple probability assessment task.[13] This produces 58 experts, representing 23% of the sample. Another difference

[13] The survey contains other questions related to stock market expectations. One of them asks for the respondent to estimate the probability that the market goes up by more than 20% in the next six months, and the next question asks for the probability that the market goes down by more than 20% in the next six months. Some subjects give probabilities that sum up to 100%, effectively implying a zero probability of the market staying within ±20% of current level. We classify this as a mistake.

is that the return expectations questions are not exactly comparable to those in our main data. The new surveys do not include a question on European stock returns nor ask for 20-year returns, but they do ask for 10-year expected returns for emerging markets.

Table 8 model (6) shows the results from a regression explaining return expectations with a sophistication factor comprising of the common variation in the expert dummy discussed above and adviser gender dummy, as well as fixed time effects for each seminar. The sophistication effect is both statistically and economically significant. A one standard deviation increase in this alternative sample sophistication measure decreases expected 10-year emerging market returns by 0.9 percentage points. These results provide added confirmation to the idea that the first order effect of sophistication is to reduce the incidence of high long-term return expectations, irrespective of market conditions.

We also explicitly test for the return extrapolation hypothesis by adding the past return at the time of each survey round as an explanatory variable (and dropping the time fixed effect). We use alternative past return horizons of 1, 3, 6, and 12 months. The effect of past return is positive (*t*-stat 2.0) for the three-month return horizon, and essentially zero for the other horizons. An interaction term between past returns and sophistication is negative for all horizons, meaning that more sophisticated advisors extrapolate less, but it is not statistically significant. The main effect of sophistication remains, i.e., it reduces return expectations in these specifications as well.

D. Mechanism

Expertise should help advisers generate more business. Being optimistic about stocks may also generate more business through helping sell equity based products. Outrageously high expectations could undermine the credibility of an advisor, so limits likely exist to the benefits of overoptimism. One possibility is that less sophisticated advisers rely more on overoptimism, as it may help make up for any shortcomings in expertise. Are the less sophisticated advisers knowingly exploiting this mechanism (strategic skill-compensation hypothesis)?

The data allows addressing this question by way of comparing advisers' expectations to what they perceive their peers to expect. Specifically, the strategic skill-compensation hypothesis predicts that less sophisticated advisers would have higher expectations relative to their forecasts of other advisors' expectations. This is not what we find, however. Unreported results show that advisers who are below median in sophistication, and thus have relatively high return expectations, mistakenly think that other advisors expect 2.2 percentage points higher returns than they do themselves. The corresponding number for advisers who are above median in sophistication is 1.6. An OLS regression controlling for other factors confirms these findings. That is, lack of sophistication does not increase expected returns relative to the perceived consensus. If anything, the converse is true, though the effect is not significant (t-value 1.4). These results do not support the strategic skill-compensation hypothesis.

The lack of evidence for strategic behavior suggests that the lower skilled advisers end up having more optimistic expectations unconsciously. To understand how such an equilibrium can emerge consider, for example, the model by Bénabou and Tirole (2002). In their model, agents with imperfect memory are prone to creating self-serving biases in beliefs in order to maintain and enhance their self-esteem. In our context, maintaining the image of a capable financial advisor – for someone who in fact has lower skills – would involve developing beliefs that help their performance on the job, such as overly optimistic return expectations. It is also possible that among the less financially sophisticated agents, only those equipped with overoptimistic beliefs ever become financial advisers.

The general gist of these stories is consistent with all of our results, that is, optimism helps compensate for lack of real skill in the financial advisory business. However, our data does not allow a test that would further discriminate between more elaborate aspects of the story, such as developing optimistic beliefs on the job vs. selecting to be financial advisor -aspects.

E. Remaining heterogeneity

The main results of this paper point to an important role for financial sophistication in moderating return expectations. Substantial heterogeneity nevertheless remains after accounting for this effect. The different model specifications in Table 5 explain 7.6% to 8.3% of the variation in the European expectations as measured by adjusted R-squared. The gray columns show the decomposed adjusted R-squared contributions of each explanatory variable using the Shorrocks (2013) Shapley-value method. The sophistication index contributes 60% and employer fixed-effects contribute roughly 25% to the model goodness of fit.

The standard deviation of the raw European stock market return expectations is 4.8% (in Table 4). Subsetting to advisers who use employer supplied material as a primary information source (62% of advisers), and demeaning by employers leaves the standard deviation unchanged at 4.8%. This shows that advisers employed by the same bank and using the same primary information source have widely different long-term expectations. This is consistent with models of Harris and Raviv (1993) and Kandel and Pearson (1995) where heterogeneity is driven by individuals' different interpretations of the same information.

5. Robustness checks and alternative explanations

This section discusses additional specifications for demonstrating robustness of the main results and addressing alternative explanations. Note that the issue of market conditions and extrapolating from past returns was already addressed in section 4.C.

A. Unobserved heterogeneity

The first three models of Table 8 estimate the determinants of pooled European and emerging market stock return expectations. Consider first column (3) which shows the results of an adviser fixed effects model. The emerging market dummy captures the average difference between the expected return of emerging market and European stocks. The interaction term between the emerging market dummy and the sophistication index is significantly negative, meaning that more sophisticated advisers expect less extra return from investing in emerging markets. Thus, similar to main results, less sophisticated advisers expect riskier investments to bring in larger increases in return. The difference to main results is that this test is robust to any omitted variables that would equally impact the level of European and emerging market expectations, including any advisor-specific characteristics.

Risk aversion is an adviser specific characteristic that may not equally impact European and emerging market expectations. Would it be plausible that more risk-averse advisers expect more returns from stocks in general, and also a greater premium from emerging market stocks? Such expectations are difficult to rationalize using standard arguments. While a more risk-averse agent may require a higher risk premium to invest themselves, this should not translate into a higher return expectation given observed market prices.

While the adviser fixed effect captures all adviser related effects, the random effects model allows for estimating these effects. The estimated effects of emerging market premium and sophistication interaction are practically equal in the pooled (column 1), random (col. 2) and fixed effects (col. 3) models. A Hausman test of the random effects versus fixed effects model cannot reject the consistency of the random effects model. The estimated sophistication effect at 0.9 percentage points for a one standard deviation change is of same magnitude as the baseline model reported in Table 5.

Taken together, the results discussed in this section speak for the robustness of the main result to potential omitted variables.

B. Selection effects

In this section we discuss two selection effects – one at the level of selection into the exam, and the other at the level of responding to the question on expected returns. As explained below, neither of these effects presents complications for interpreting the paper's main results.

At the time of collecting the return expectations, the adviser exam was not part of official regulation, although the intent was to establish it as such. Potential self-selecting into the exam in ways that correlates with adviser sophistication could bias the estimate of the sophistication effect. For example, relatively less sophisticated advisers who also happen to be pessimistic might avoid taking the exam. Variation in banks' internal policies regarding the exam allows us to evaluate this hypothesis: one bank group had an official policy right from the beginning of the exam era that all financial advisers they employ must do the exam. When we estimate the results within that bank group only, we get results very similar to the baseline: sophistication significantly decreases return expectations.

In another test we concentrate on the 103 individuals who also took a higher level exam in the two-tier exam system. Whether or not the adviser had completed this higher level exam is part of our baseline sophistication index, so in this subsample this component of sophistication is constant. Despite losing part of the variation in measuring sophistication, the results show a relation similar to the baseline analysis (due to a much smaller sample size the t-values for sophistication are smaller, 1.9 and 2.4 for European and emerging market stocks, respectively). These advisers likely were more sophisticated already at the time of the first exam, and thus had relatively less reason to avoid taking the exam. Yet even within this group, there is variation in sophistication, and it is related to return expectations.

We now turn to the issue of responding to the question on expected returns. In the survey, 69% (66%) of the queried advisers reported their return expectations for the European (emerging) markets. The response rates increase to 80% (77%) when we restrict the sample to those advisers for whom we have a full set of control variables available. Adviser sophistication could influence the likelihood of providing a response. On one hand, more sophisticated advisers could be more reluctant to provide a point estimate due to being more aware of the uncertainty involved. On the other hand, less sophisticated advisers may not know what to answer.

Models (4) and (5) of Table 8 explore these effects. The results indicate that sophistication increases the likelihood of responding to the question on expected return. The marginal sophistication effect on the response probability for an average adviser is 5.3 (5.7) percentage points for the question on European (emerging market) stock return expectations. Experience also slightly increases the likelihood of responding. Advisers with missing answers thus appear to be lower in sophistication, and to the extent that they would have high return expectations, this probably works against our results. We nevertheless estimate a Heckman two-step model to check whether the response selection could bias our estimates of sophistication effects on expected returns. Having the sophistication composite index and the log experience in the selection equation, the estimated inverse Mills ratio is statistically insignificant for both European and emerging market expectations. Thus, we believe that selection effects due to sophistication and experience do not bias the main results.

C. Gender effect

Our baseline models explaining adviser expected returns include gender as a component of financial sophistication index. But what if gender affects return expectations through channels other than sophistication? Prior research has shown that men are less risk-averse (Croson and Gneezy, 2009), more subject to overconfidence in investment related matters (Barber and Odean, 2001), and more likely to lie (Erat and Gneezy, 2012) compared to women.

First note that adviser fixed effects and random effects models of Table 8 already show that lower financial sophistication implies a larger increase in expected return from riskier investments (emerging markets vs. European stocks). Gender is one such advisor specific trait controlled for in these regressions, as are any residual overconfidence and risk aversion unrelated to gender.

To further address this issue we estimate the results with a version of the sophistication index that does not include the gender variable. The results shown in Table 9 are qualitatively similar to the baseline results in that sophistication significantly reduces return expectations. However, quantitatively the effect is somewhat weaker, particularly for European market expectations. The full model coefficient is reduced by 34% (26%) for European (emerging market) expectations compared to the baseline estimates. In these specifications a separate statistically significant gender dummy picks up all of the gender effect. We carry out a similar exercise also for the 2009-12 sample discussed in Section 4.C. The coefficient estimate for the expert dummy (the remaining sophistication factor) indicates that experts' return expectations are 1.1 percentage points lower. The *t*-value of the coefficient is -1.7, making it just significant at the 10% level. The separate gender dummy again indicates that women have higher return expectations.

To generate some additional insights into the role of gender, we partition the sample into sophistication terciles and run the regressions from Table 9 in these subsamples. Figure 4 shows the gender effect estimates for these regressions. The coefficient of the gender dummy decreases monotonically when moving from the lowest to the highest sophistication tercile, and is no longer statistically significant in the highest tercile (nor in the middle tercile with emerging markets). This is consistent with the idea that gender is associated with financial sophistication among relatively less sophisticated individuals, in line with studies that find a gender effect in the general population (Chen and Volpe, 2002; Lusardi and Mitchell, 2008; van Rooij, Lusardi, and Alessie, 2011). If the gender effect is due to a cultural bias, it makes sense that the effect would diminish when sophistication increases, which is what we find.

All in all, while the effect of gender may have multiple plausible interpretations, the results discussed in this section show that the main conclusions of this paper are not sensitive to a particular interpretation.

D. Incentives to provide an accurate response

Advisers responding to the web survey asking for return expectations were entered into a lottery in which five individuals were randomly drawn to win a book written by one of the authors. In addition, an executive summary of the survey results was emailed to them. No extrinsic incentives were provided to promote accurate and truthful answers. Prior literature finds that the presence of financial incentives improves performance in tasks where one needs to pay close attention (such as memory and recall related tasks) and in dull tasks where intrinsic motivation may be low (such as coding words). In other types of tasks, the presence or absence of direct monetary incentives in surveys and experiments rarely make a difference (for reviews, see Camerer and Hogarth, 1999; Gneezy, Meier, and Rey-Biel, 2011). We are asking for figures that are central in advisers' daily work, and the respondents likely have high intrinsic motivation regarding such issues.[14] The high

[14] Direct experience by two of the authors actively working in educating similar audiences supports these claims.

response rate (68%) ensures that the sample is not only picking up respondents having unusually high motivation to answer.

E. Signaling adviser quality by lower return expectations

In the model of Hong, Scheinkman, and Xiong (2008) more sophisticated advisers (the tech-savvies) strategically signal their quality and understanding of new technology by overinflating their recommendations to differentiate themselves from less knowledgeable advisers (the old fogies). We do not see such an effect in our data, as we find, contrary to Hong et al., that more sophisticated advisers have lower return expectations. However, one could apply a similar logic but postulate an opposite effect, namely, that advisers would signal their quality by lower expectations.

Suppose advisers trade off the ability to generate sales via higher expectations against signaling their quality via lower expectations. A lower return expectation is a costly signal as it may generate less sales in riskier products and therefore lead to lower total fees. It may also lead to clients holding unnecessarily safe portfolios. Our finding of advisers on average undercutting the consensus is consistent with this hypothesis. However, a return expectation is a rather noisy signal, particularly when much more precise signaling devices are available. This is the case for the 20% of advisers with the more advanced second level exam. Given such a visible and precise signal (exam plaquettes are often displayed in their offices and/or they can wear the exam lapel pin), there should be much less need to rely on a costly and imprecise signal such as lower return expectations. However, we still find, similar to the main sample, that the relatively less sophisticated among this 'elite' group of advisers expect higher returns themselves, while expecting (mistakenly) others to have yet higher expectations. Another piece of evidence against signaling hypothesis comes from the adviser fixed effects results reported in Table 8. Assuming the optimal signal is an adviser specific quantity it should affect European and emerging market expectations similarly, and would hence be captured by an adviser fixed effect. The results in column 3 of Table 8 nevertheless show a remaining sophistication effect, identified based on the spread between emerging market and European expectations for each adviser. These findings collectively cast doubt on the idea that signaling plays a major role in our overall results.

F. Risk aversion

Individuals with lower cognitive ability may be more risk-averse (Dohmen et al., 2010), and more risk-averse individuals rationally require higher expected returns to invest for a given level of risk. This, as such, should not necessarily lead to higher beliefs regarding the general market. In this sub-section we nevertheless investigate if there is a relation between personal risk-aversion and return expectations, without taking a stand on what further assumptions would be required for this logic to explain the relation between sophistication and return expectations that we document. To this end, we construct measures of personal risk aversion from advisers' tendency to guess in the exam. While we do not directly observe the number of guessed answers, we do know the number of wrong answers, penalized by negative points, as well as blank answers, receiving zero points. Making some additional assumptions allows us to create proxies for risk tolerance using these data.

Assume first that the probability of guessing correctly is uncorrelated with exam knowledge, i.e., the number of answers known for sure. Then the number of wrong answers is a sufficient measure of risk taking. It's reciprocal forms our first risk aversion measure, denoted γ_1. Our second measure is based on assuming that more knowledgeable exam takers both know more questions for sure and are also more likely to guess correctly. The lower bound estimate for the number of questions the test-taker didn't know, is the sum of incorrect and blank responses. We divide the number of incorrect answers by this lower bound to get a (downward biased) estimate of the percentage of questions guessed. The reciprocal of this ratio forms. The second risk aversion measure, denoted γ_2.To make the two risk-aversion measures comparable we standardize them to have a standard deviation of one.

Table 10 presents analysis of augmenting the baseline regression with the risk aversion measures. Column (1) repeats the main specification of Table 5 column 3. Column (2) repeats the same specification, but on the subset of advisers whose exams have exam question level data, and so the sample size falls from 434 to 344. Column (3) adds the first risk aversion measure, γ_1, as a control. Column (4) uses the second measure, γ_2. In all specifications, the effect of sophistication on return expectations is little changed by the inclusion of the risk aversion measures, compared to the baseline results. Furthermore, these results do not support the hypothesis that more risk-averse advisers have higher return expectations as the risk-aversion measures are either negative (Column 4) or statistically insignificant (Column 3).

Another possibility is that less sophisticated advisers perceive the market to be more risky, and given that belief, would rationally expect the equilibrium expected return to be higher. The data refutes this hypothesis. As shown in Column 7 of table 8, advisers' return and volatility expectations are uncorrelated. The tabulated results utilize a volatility estimate implied by responses to the probability of market moves in excess of 20% in six months, assuming a normal distribution of returns. The results are similar for the lognormal distribution, and robust to removing outliers. The implied six-month return expectation is correlated with the longer-term return expectation, lending credence to the validity of this measure. Unrepoted results directly querying for volatility estimates from 53 advisers also show a lack of correlation between risk and return expectations.

G. Answers given to clients vs. personal beliefs

The survey question specifically queried the respondents about a return figure they would give when asked by clients. Would advisers respond differently if they were asked about their personal beliefs instead? To investigate this possibility we carried out an additional web-survey of investment advisers who had passed the second level exam as of March 2016. We again asked the advisers about their expectations, but randomly assigned each respondent to one of two treatments. The first group was asked: "What do you tell your clients when they ask about expected stock market returns", i.e., identical to the main survey earlier. We dub this treatment the client frame. The second group was asked "What do you expect stocks to return", dubbed personal frame. We received 54 usable responses (28 responses in client frame, 26 in personal frame) during the survey interval from April 11 to April 16, 2016.

Table 11 reports the differences in stock return expectations between the two groups, controlling for adviser age, education, experience, and gender. For European stock returns, expectations in the personal frame exceeded those in the client frame by 0.46%. This is directly against the hypothesis that advisers consciously provide overoptimistic estimates to clients. Regarding emerging markets, the client frame is higher by 0.19%, but with a t-stat of only 0.2. The effect of the question frame is also very small compared to the sophistication effect estimates. These results do not support the idea that advisers make a distinction between their personal beliefs and what they convey to clients.

6. Advisers' long-term success

In this section we investigate the effect of financial advisors' return expectations and sophistication measured in 2006 on several measures of their success 3 to 10 years later. First, we analyze the advisers' career paths based on information found in LinkedIn and other sources (see

Section 2.C.). Second, we look at their personal income. Given competitive labor markets, advisers' personal incomes should be indicative of their value to their employer, and of their overall professional success. Third, we analyze their own investments, albeit with a noisy measure of capital gains.

Table 12 reports the marginal probabilities for two outcome variables. The dependent variable in Columns 1-3 is a binary indicator of whether the person has a professional online presence. The idea here is that online presence, such as a LinkedIn profile, is more likely for more successful people. It is probably also a function of age, which we control for. The dependent variable in Columns 4-6 is a binary indicator of whether, conditional on having online presence, the job title is classified upper tier.[15]

Columns (1) and (4) show that stock return expectation is negatively correlated with both outcome variables. A one-percentage-point increase in European stock market return expectations in the 2006 reduces the probability of career info availability by 1 percentage point 10 years into the future. Conditional on having career info available, one-percentage-point increase in expectations reduces the probability of having a higher-level job title by 2.3 percentage points. That is, optimism would appear to hurt the career prospects in the long term.

This apparent optimism effect might be caused by the link between return expectations and sophistication. The columns (2) and (5) include our sophistication index into the model. The expectation effect reduces and is no longer statistically significant for career info availability. However, the sophistication effect is both sizable and statistically significant, one s.d. increase in sophistication increase the probability of career info being available by 11 percentage points, and

[15] Out of 415 advisers with information available, we classify 308 (74%) as upper tier, including the following job titles: portfolio manager, wealth manager, investment manager, bank manager, key account manager, and investment expert. The lower tier includes titles such as investment advisor and service advisor.

increases the likelihood of having an upper tier job title by 6 percentage points. More sophisticated advisers are more likely to stay in the finance industry and have more demanding jobs.

If sophistication affects adviser return expectations, as we argue, then the inclusion of expectations in the career progress models will bias the sophistication estimates. We thus drop the expectation variables from the final models (3) and (6) and add additional demographic controls, as well as employer fixed effects. Now one s.d. increase in our sophistication effect is associated with a 9.5 percent higher probability of career info being available, as well as 7.3-percentage-points higher probability of having an upper-tier job title. Both of these sophistication effects are highly statistically significant.

Table 13 reports estimates for similar models of return expectations and sophistication on adviser (log) income and on the likelihood of having recurring sizable capital gains. Column (1) reports that one percentage point higher European stock return expectation in the 2006 survey is associated with a 1.6% lower ordinary income, i.e., more optimistic advisers end up having lower income over the next 10 year period. This effect is statistically significant. In column (2) we add sophistication, the expectation effect reduces somewhat and its statistical significance is reduced, but it remains statistically significant at conventional levels. The estimated sophistication effect on log income is 7.6%, implying that one s.d. increase in the sophistication measure predicts 7.9% higher ordinary income on average. Again, as we argue that sophistication drives stock market expectations we wish to estimate a model where expectations are not included as an explanatory variable, and we also add demographic controls as well as employer fixed effects for the full model specification. Column (3) shows the results for this full specification. Now one s.d. increase yields a 5.5% in log income, i.e. one s.d. higher sophistication is associated with having 5.7% higher ordinary income on average (t-stat is 2.72).

We expect advisers' financial sophistication to predict their tendency to invest in risky assets. We measure this by recurring capital gains in the tax data. This is an imperfect measure because holding non-dividend paying stocks or mutual funds does not result in taxable capital gains. Capital gains may also accrue from other reasons, such as rental income or asset sales. We thus require that, over the examination period 2009-2014, the cross-year median capital gains exceed 1,000 euros in order to set the capital gains indicator variable to one.

Column (4) shows that return expectations surveyed several years earlier do not predict the existence capital gains. Column (5) includes both expectations and sophistication, and finds that one s.d. increase in sophistication is associated with 5.1-percentage-points higher likelihood (z-stat 1.80) of having capital gains. As before, column (6) drops the expectation variable and adds controls for demographic factors as well as for the employer fixed effects. In this full specification, one s.d. increase in sophistication results in 4.5-percentage-points higher probability (z-stat 1.91) of having capital gains. Thus, we find some support for more sophisticated advisers having capital gains, which is indicative of investing in the stock market.

Overall, there is clear evidence that financial adviser sophistication is predictive about real-life outcomes. More sophisticated advisers stay in the industry and achieve higher level jobs, earn more, and are somewhat more likely to invest in stocks themselves. Optimism in earlier return expectations has the opposite effect, but the effect is nevertheless weak compared to that of sophistication.

7. Conclusion

This paper combines data from financial advisers' professional exam scores with other variables from a survey to create an index of financial sophistication – which can be thought of as an advanced measure financial literacy for financial advisers. We find that a one standard deviation decrease in the sophistication index increases financial advisers' expected annualized 20-year European stock market returns by 1.1 percentage points, and emerging market stock returns by 2.3 percentage points. The sophistication effect contributes more than 60% to the model fit, while employer fixed effects contribute 20% to 25%. The effect remains after controlling for unobserved heterogeneity, is present when limiting to more sophisticated advisers, and holds under different market conditions. We present evidence against explanations involving return extrapolation, selection effects, gender issues, and signaling.

Advisers have incentives to generate fees, and asset classes with higher expected returns typically collect higher fees. Advisers therefore have a natural incentive to be optimistic about stock returns. Our finding that sophistication moderates these expectations is consistent with the existence of substitute factors of production in the market for financial advice. Specifically, more sophisticated advisers may be able to add value by offering unbiased advice, but, due to expressing moderate expectations, may lose some overoptimistic clients. Less sophisticated advisers, on the other hand, may partially compensate for their lower skills by attracting clients with higher expectations. We can, however, rule out the hypothesis that advisers are consciously influenced by such strategic considerations. It is plausible that genuinely overoptimistic self-serving beliefs develop endogenously, either through selection into the profession, or while acquiring job specific expertise.

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Appendix A. Examples of exam questions

A. True or False questions

- Under the *Efficient Markets Hypothesis* no investor can beat the market at any given time
- The gearing ratio can be used for evaluating the capital structure of a company
- Relevant sources of risks in structured products include counter-party risk
- When stock returns have a correlation coefficient (ρ) of one there is no benefit from diversification
- The beta of stock A (β_A) is 1.2 and the volatility of its returns (σ_A) is 45%. Claim: This information is not useful in predicting whether the expected stock return of A is greater than the equity market return, assuming a positive equity premium.

B. Short answer questions

- Analyze the following claim: It is possible to completely eliminate the volatility of a portfolio through diversification
- Your client has a large allocation in stocks. He inquires whether purchasing call options would reduce this risk. How do you respond?
- ETCs and ETNs are products similar to ETFs but with certain differences. Explain.

Table 1: Descriptive statistics

The background variables of the financial advisers surveyed. All advisers have passed a first level professional exam. Test score refers to the score from the first level exam. † denotes dummy variables. The three education dummies denote the highest level of educational attainment, i.e. the high school diploma dummy for a university graduate equals zero. The sophistication composite index is a proxy of unobservable sophistication derived from factor analysis of the test score, passed 2nd level exam, and the education dummies. Panel A shows the descriptive statistics for the full sample, Panel B for subsample of Men, and Panel C for subsample of Women. A total of 742 financial advisers were surveyed.

Panel A - All

	Mean	**St.Dev.**	**Median**	**Min**	**Max**	**N**
Female†	0.67	0.47	1	0	1	742
Age (in years)	43.6	9.1	44	23	64	740
Experience (in years)	6.3	5.6	5	0	33	591
Test score	55.7	11.4	56	16	99	694
Passed 2nd level exam†	0.20	0.40	0	0	1	742
University degree†	0.25	0.43	0	0	1	730
College degree†	0.29	0.45	0	0	1	730
High school diploma†	0.23	0.42	0	0	1	730

Panel B - Men

	Mean	**St.Dev.**	**Median**	**Min**	**Max**	**N**
Age (in years)	39.0	9.6	38	23	64	240
Experience (in years)	6.1	6.0	5	0	30	187
Test score	58.2	11.7	59	16	99	224
Passed 2nd level exam†	0.27	0.45	0	0	1	242
University degree†	0.45	0.50	0	0	1	236
College degree†	0.31	0.46	0	0	1	236
High school diploma†	0.14	0.34	0	0	1	236

Panel C - Women

	Mean	**St.Dev.**	**Median**	**Min**	**Max**	**N**
Age (in years)	45.8	8.0	47	24	60	500
Experience (in years)	6.4	5.4	5	0	33	404
Test score	54.5	11.1	55	20	91	470
Passed 2nd level exam†	0.16	0.37	0	0	1	500
University degree†	0.16	0.36	0	0	1	494
College degree†	0.28	0.45	0	0	1	494
High school diploma†	0.28	0.45	0	0	1	494

Table 2: Sophistication proxy cross-correlations
The Spearman rank correlations between the five potential sophistication proxy variables. † denotes dummy variables. The correlation coefficients shown in bold face are different from zero at the 5% significance level. The p-value is shown in the parenthesis.

	Test score, 1st level exam	**Passed 2nd level exam †**	**log[Experience (years) + 1]**	**College †**
Passed 2nd level exam †	**0.09** (0.048)			
log[Experience (years) + 1]	0.08 (0.075)	0.08 (0.067)		
College †	**0.14** (0.002)	**0.15** (<0.001)	-0.09 (0.062)	
Gender, female †	**-0.10** (0.021)	**-0.17** (<0.001)	0.07 (0.152)	**-0.24** (<0.001)

Table 3: Sophistication, forecast ability, and information sources

The effect of sophistication index on self-perceived forecast ability and information sources used as a basis for forming stock return expectations. Frequency denotes the fraction of respondents in the logit model having the specific forecast dummy variable equal to one. Univariate columns show the estimated sophistication effect coefficients and robust z-statistics for a model that includes only sophistication as an explanatory variable. Full model columns show the coefficients and z-statistics for models which also include log experience, log age, and employer fixed effects as control variables. Panel A shows the sophistication effect estimates for two logit models explaining being a not worse forecaster and being a better forecaster, and also for an ordered logit model explaining the probability of being a forecaster of the three possible types: worse, average, or better than average. Panel B shows the estimated marginal sophistication effects of logit models explaining the likelihood of using various sources of information as a basis for stock return expectations. In panel B, the full model controls also include forecast ability. *** and ** denote statistical significance at the 1% and 5% levels.

Panel A: Sophistication and forecast ability

	Frequency (in %)	univariate		full model	
		coeff.	**z-stat**	**coeff.**	**z-stat**
Not worse forecaster	91.5	0.40***	3.3	0.42**	2.1
Better forecaster	8.9	0.44***	2.9	0.23	1.2
Ordered logit	–	0.41***	4.2	0.30**	2.2
Control variables included		No		Yes	

Panel B: Sophistication and information sources

	Frequency (in %)	univariate		full model	
		coeff.	**z-stat**	**coeff.**	**z-stat**
employer material, strategy reviews etc.	70.7	0.08	1.0	0.02	0.2
financial media	44.6	0.01	0.1	0.03	0.3
interest rates	38.2	0.21**	2.6	0.25**	2.4
discussions with collegues	28.6	-0.01	-0.1	-0.04	-0.4
economic statistics and ratios	26.3	0.22**	2.2	0.23**	2.0
outside strategy reviews	23.7	0.25**	2.4	0.15	1.2
historical returns	19.4	0.12	1.2	0.08	0.7
other	3.4	-0.18	-0.7	-0.18	-0.6
Control variables included		No		Yes	

Table 4: The advisers' stock return expectations

This table shows descriptive statistics on investment advisers' return expectations for 20-year investment horizon. The advisers were asked to supply a figure they would give their clients if they were asked for an annual expected return over a 20-year investment horizon for European and emerging market stocks. The advisers were also asked to give a figure they believe the other advisers on average would tell their clients about the expected European stock returns. T.Mean stands for truncated mean, where responses exceeding 25% have been truncated. This truncation cuts out 2% of the right-tail of the European expectations, 8% of the emerging market expectations, and 4% of the consensus expectations distribution.

Panel A: All

Expectation over 20-year horizon	**Mean (%)**	**T.Mean (%)**	**S.d. (%)**	**Min (%)**	**Q1 (%)**	**Median (%)**	**Q3 (%)**	**Max (%)**	**N**
European stocks	10.1	9.5	4.8	0.0	8.0	9.0	10.0	50.0	512
Emerging markets	15.4	12.9	9.8	-1.5	10.0	12.0	15.0	80.0	487
Perceived consensus of European stocks	12.0	11.1	6.1	0.0	9.0	10.0	12.0	50.0	460

Panel B: Men

Expectation over 20-year horizon	**Mean (%)**	**T.Mean (%)**	**S.d. (%)**	**Min (%)**	**Q1 (%)**	**Median (%)**	**Q3 (%)**	**Max (%)**	**N**
European stocks	8.9	8.9	1.9	0.0	8.0	9.0	10.0	15.0	184
Emerging markets	12.7	12.3	4.7	0.0	10.0	12.0	15.0	45.0	179
Perceived consensus of European stocks	10.6	10.5	3.0	0.0	9.0	10.0	12.0	30.0	176

Panel C: Women

Expectation over 20-year horizon	**Mean (%)**	**T.Mean (%)**	**S.d. (%)**	**Min (%)**	**Q1 (%)**	**Median (%)**	**Q3 (%)**	**Max (%)**	**N**
European stocks	10.8	9.9	5.7	2.5	8.0	9.0	10.1	50.0	328
Emerging markets	16.9	13.3	11.5	-1.5	10.0	12.0	20.0	80.0	308
Perceived consensus of European stocks	12.9	11.4	7.3	4.0	9.3	10.0	15.0	50.0	284

Table 5: The determinants of advisers' stock return expectations

Models (1) – (3) show the marginal effects for an OLS model of investment advisers' 20-year European stock return expectations regressed on sophistication composite index, log (experience + 1), log age, and self-perceived stock returns forecast ability. Model (4) shows the marginal effects for a probit model explaining expectations exceeding 12% using the same regressors. The marginal effects are evaluated for an adviser with average sophistication, experience, age, and working for the largest employer. The sophistication index is a proxy for unobserved sophistication derived from factor analysis using test score, second level examination dummy, gender, and college dummy. Better (Worse) than average dummy variables equal 1 if the subject self-reports being better (worse) than the average adviser in forecasting future returns. For models (1) – (3), the t-statistics based on heteroskedasticity robust standard errors are shown in parenthesis. For model (4), the z-statistics shown in parenthesis are based on standard error estimates using the delta-method. Model (4) Adjusted R^2 is the McFadden (1974) adjusted pseudo-R^2. The italicized figures in the gray columns depict percentages of adjusted R^2 decompositions calculated using the Shapley decomposition method of Shorrocks (2013). ***, **, and * denote statistical significance at 1%, 5%, and 10% levels respectively.

	OLS Expected 20-year return						**Probit Ret > 12%**
	(1)		**(2)**		**(3)**		**(4)**
Sophistication composite index	-1.16***	*76.9*	-1.06***	*62.5*	-1.10***	*61.4*	-8.0***
	(-5.26)		(-4.24)		(-4.36)		(-4.40)
Experience (years)			-0.04	*3.4*	-0.06	*3.1*	-0.7**
			(-0.74)		(-1.09)		(-2.42)
Age (years)			0.04	*9.5*	0.04	*9.2*	0.4**
			(1.36)		(1.41)		(2.04)
Better than average forecaster					0.21	*-2.2*	3.8
					(0.44)		(0.79)
Worse than average forecaster					-1.67**	*4.0*	-10.9*
					(-2.48)		(-1.72)
Employer fixed-effects	Yes	*23.1*	Yes	*24.6*	Yes	*24.5*	Yes
Adjusted R^2	0.076	*100*	0.079	*100*	0.083	*100*	0.089
N	481		434		434		434

Table 6: The determinants of advisers' emerging stock return expectations

Models (1) – (3) show the marginal effects for an OLS model of investment advisers' 20-year emerging market stock return expectations regressed on sophistication composite index, log (experience + 1), log age, and self-perceived stock returns forecast ability. Model (4) shows the marginal effects for a probit model explaining expectations exceeding 15% using the same regressors. The marginal effects are evaluated for an adviser with average sophistication, experience, age, and working for the largest employer. The sophistication index is a proxy for unobserved sophistication derived from factor analysis using test score, second level examination dummy, gender, and college dummy. Better (Worse) than average dummy variables equal 1 if the subject self-reports being better (worse) than the average adviser in forecasting future returns. For models (1) – (3), the t-statistics based on heteroskedasticity robust standard errors are shown in parenthesis. For model (4), the z-statistics shown in parenthesis are based on standard error estimates using the delta-method. Model (4) Adjusted R^2 is the McFadden (1974) adjusted pseudo-R^2. The italicized figures in the gray columns depict percentages of adjusted R^2 decompositions calculated using the Shapley decomposition method of Shorrocks (2013). ***, **, and * denote statistical significance at 1%, 5%, and 10% levels respectively.

	OLS						**Probit**
	Expected 20-year Emerging mkt return						**Ret > 15%**
	(1)		**(2)**		**(3)**		**(4)**
Sophistication composite index	-2.87***	*76.9*	-2.30***	*62.5*	-2.32***	*61.4*	-12.5***
	(-6.99)		(-5.28)		(-5.29)		(-4.94)
Experience (years)			-0.16	*3.4*	-0.17*	*3.1*	-0.9*
			(-1.44)		(-1.67)		(-1.85)
Age (years)			0.14**	*9.5*	0.14**	*9.2*	0.7***
			(2.44)		(2.47)		(2.68)
Better than average forecaster					0.47	*-2.2*	-2.9
					(0.50)		(-0.36)
Worse than average forecaster					-0.81	*4.0*	-5.8
					(-0.37)		(-0.69)
Employer fixed-effects	Yes	*23.1*	Yes	*24.6*	Yes	*24.5*	Yes
Adjusted R^2	0.112	*100*	0.122	*100*	0.119	*100*	0.101
N	456		415		415		415

Table 7: The determinants of stock return expectations by sophistication subcomponents
This table shows the results of models of pooled 20-year European and emerging market expected stock returns regressed on sophistication subcomponents. Model (1) includes a sophistication index created without gender information as well as a separate gender dummy variable, while including a full set of controls. Models (2) to (5) show the results where each subcomponent is separately included as an explanatory factor. Model (6) includes all subcomponents together as explanatory factors. Emerging mkt dummy equals one for emerging market expected returns, and zero for European returns. The *t*-statistics based on standard errors clustered by adviser are shown in parenthesis. ***, **, and * denote statistical significance at 1%, 5%, and 10% levels respectively.

	Expected 20-year return (Pooled Euro-emerging mkt)					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Sophistication index (excl. gender)	-1.2***					
	(-4.27)					
Test score		-1.2***				-0.7*
		(-2.96)				(-1.73)
Passed 2nd lvl exam			-1.2*			-0.6
			(-1.75)			(-0.96)
College				-3.0***		-2.3**
				(-3.42)		(-2.48)
Gender, Female	2.1***				2.5***	2.0***
	(3.76)				(4.29)	(3.62)
Emerging mkt dummy	5.2***	5.2***	5.2***	5.2***	5.2***	5.2***
	(13.08)	(12.97)	(13.03)	(13.08)	(13.06)	(13.04)
log[experience (years) + 1]	-0.9*	-1.1**	-1.1**	-1.1**	-1.2**	-1.0*
	(-1.74)	(-1.97)	(-1.97)	(-2.14)	(-2.28)	(-1.83)
log[age (years)]	3.8**	6.8***	6.5***	5.4***	5.6***	3.9**
	(2.30)	(4.18)	(3.74)	(3.42)	(3.50)	(2.34)
Better than average	0.5	-0.1	0.1	0.1	0.6	0.5
	(0.70)	(-0.18)	(0.10)	(0.20)	(0.92)	(0.70)
Worse than average	-1.3	-0.8	-0.9	-0.7	-1.2	-1.2
	(-1.00)	(-0.64)	(-0.68)	(-0.53)	(-0.91)	(-0.89)
Constant	-3.7	-13.0**	-12.4**	-5.9	-10.1*	-1.6
	(-0.65)	(-2.32)	(-2.07)	(-1.05)	(-1.84)	(-0.28)
Employer fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
$\mathbf{R}^2$	0.203	0.178	0.168	0.186	0.182	0.205
N	849	849	849	849	849	849

Table 8: Additional results and robustness checks

This table collates results from additional analysis. Columns (1) – (3) show estimates for models of pooled European and emerging market stock return expectations. Column (1) model is a pooled OLS, column (2) controls for adviser random effects, and column (3) for adviser fixed effects. Columns (4) and (5) show the probit model estimates for the likelihood of responding to the European and emerging market expectation question. Column (6) and (7) show the determinants of expected 10-year emerging market returns from a series of later surveys of financial advisers in 2009–12. Sophistication composite index is a proxy for unobserved sophistication derived from factor analysis using test score, second level examination dummy, college dummy, and gender dummy as inputs. The sophistication index (new) is a proxy for sophistication derived from the gender and logic test variables included in the 2009-12 expectations surveys. The implied expected volatility is the volatility consistent with normally distributed stock returns given the respondents beliefs about the probability of stocks going up or down by 20 percentage points in the next six months. Emerging mkt dummy equals one for emerging market expected returns, and zero for European returns. The t-statistics based on clustered standard errors (z-statistics based on robust standard errors for the probit models) are shown in parenthesis. The R^2 statistic for models (1) and (6) is the ordinary OLS measure, and for models (2) and (3) the overall R^2 measure. Models (4) and (5) report McFadden (1974) pseudo-R^2s. ***, **, and * denote statistical significance at 1%, 5%, and 10% levels respectively.

	Expected 20-year return (Pooled Euro-emerging mkt)			**Probit: Response likelihood**		**Expected 10-year Emerging mkt 2009–12**	
				European	**Emerging**		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Constant	-2.6	-2.5	10.2	0.76	0.97	12.0	11.0
	(-0.46)	(-0.46)	(56.04)	(0.68)	(0.90)	(18.52)	(9.19)
Sophistication composite index	-0.9***	-0.9***		0.21***	0.20***		
	(-3.18)	(-3.18)		(3.19)	(3.12)		
Sophistication index (new)						-0.9***	-1.1***
						(-2.74)	(-2.83)
Implied expected volatility (6 months)							-0.03
							(-0.01)
Emerging mkt dummy	5.3***	5.4***	5.5***				
	(13.04)	(13.58)	(13.99)				
Sophistication index × Emerging mkt dummy	-1.6***	-1.7***	-1.8***				
	(-4.53)	(-4.77)	(-4.98)				
log[experience (years) + 1]	-0.7	-0.7		0.35***	0.27***	0.2	0.9
	(-1.37)	(-1.27)		(4.00)	(3.19)	(0.60)	(1.55)
log[age (years)]	3.7**	3.7**		-0.11	-0.21		
	(2.30)	(2.29)		(-0.36)	(-0.71)		
Employer fixed-effects	Yes	Yes	N/A	Yes	Yes	No	No
Time dummies	—	—	—	—	—	Yes	Yes
Individual effects	Pooled	Random	Fixed	—	—	—	—
$\mathbf{R^2}$	0.212	0.203	0.158	0.057	0.042	0.114	0.166
N	849	849	849	552	552	239	178

Table 9: The determinants of advisers' return expectations with a separate gender effect
Investment advisers' 20-year European and emerging market stock return expectations regressed on sophistication composite index, log experience, log age, gender, and self-perceived forecast ability. The sophistication index used in this table is created without gender information. Gender dummy equals one if the subject is female, and zero if male. Better (Worse) than average dummy variables equal one if the subject self-reports being better (worse) than the average adviser in forecasting future returns. The t-statistics based on heteroskedasticity robust standard errors are shown in parenthesis. The italicized figures in the gray columns depict percentages of adjusted R^2 decompositions calculated using the Shapley decomposition method of Shorrocks (2013). ***, **, and * denote statistical significance at 1%, 5%, and 10% levels respectively.

	European				**Emerging market**			
	(1)		**(2)**		**(1)**		**(2)**	
Constant	9.9***		4.2		15.4***		-6.5	
	(14.75)		(1.03)		(10.25)		(-0.76)	
Sophistication index (excl. gender)	-1.0***	*66.9*	-0.7***	*34.0*	-2.4***	*76.1*	-1.7***	*40.5*
	(-4.36)		(-3.17)		(-6.11)		(-4.15)	
log[experience (years) + 1]	-0.1	*0.7*	-0.5	*3.2*	-0.4	*-1.0*	-1.3*	*2.5*
	(-0.21)		(-1.16)		(-0.55)		(-1.69)	
log[age (years)]			1.6	*7.3*			6.0**	*17.7*
			(1.32)				(2.43)	
Gender, female			1.6***	*28.8*			2.6***	*20.9*
			(3.91)				(3.11)	
Better than average forecaster			0.4	*-2.1*			0.6	*-1.2*
			(0.72)				(0.62)	
Worse than average forecaster			-1.8**	*4.5*			-0.9	*-0.9*
			(-2.56)				(-0.41)	
Employer fixed-effects	Yes	*32.4*	Yes	*24.4*	Yes	*24.9*	Yes	*20.6*
Adjusted R^2	0.059	*100*	0.083	*100*	0.087	*100*	0.117	*100*
N	435		434		416		415	

Table 10: Risk-aversion and stock return expectations
This table shows the marginal effects results of the baseline European 20-year expected return OLS models augmented with two alternative risk-aversion proxy variables based on guessing behavior in the professional exam. Higher number of guesses is translated into lower risk-aversion proxy variable value, i.e. higher tolerance for risk taking is reflected in lower γ-value. γ_1 reflects the risk aversion assuming that the probability of guessing correctly is uncorrelated with the number of known responses. γ_2 assumes that the probability of guessing correctly is increasing linearly in the share of the questions for which the correct answer is known for sure (i.e. more knowledgable exam takers are also better guessers). Model (1) repeats the baseline model results, as shown in Table 5 Column (3). Model (2) repeats the baseline model in the subsample for which the risk-aversion proxy variables can be calculated. Model (3) adds the first risk-taking proxy, γ_1, to the baseline model, while model (4) adds the second risk-taking proxy, γ_2. The t-statistics based on heteroskedasticity robust standard errors are shown in parenthesis. ***, **, and * denote statistical significance at 1%, 5%, and 10% levels respectively.

	Expected 20-year European return			
	(1)	**(2)**	**(3)**	**(4)**
Risk-taking in exam				
γ_1			-0.27	
			(-1.34)	
γ_2				-0.36*
				(-1.70)
Sophistication composite index	-1.10***	-1.16***	-1.13***	-1.18***
	(-4.36)	(-4.05)	(-3.98)	(-4.08)
Experience (years)	-0.06	-0.03	-0.02	-0.02
	(-1.09)	(-0.47)	(-0.35)	(-0.33)
Age (years)]	0.04	0.01	0.01	0.00
	(1.41)	(0.34)	(0.24)	(0.10)
Better than average forecaster	0.21	0.30	0.27	0.30
	(0.44)	(0.55)	(0.48)	(0.54)
Worse than average forecaster	-1.67**	-1.71**	-1.52**	-1.49**
	(-2.48)	(-2.33)	(-2.01)	(-1.98)
Employer fixed-effects	Yes	Yes	Yes	Yes
Adjusted R^2	0.083	0.077	0.077	0.080
N	434	344	344	344

Table 11: Does framing matter: "What do you expect" vs. "What do you tell clients"
This table shows the results of a framing experiment where advisers were randomly assigned to two different treatment groups. The first group were asked questions about return expectations where the questions were asking directly for personal expectations, e.g. "What do you expect European stocks to yield p.a. over the next 20 years?". The second group were asked about the same return expectations, but instead the questions were framed as "What do you tell your clients", e.g. "What do you tell your clients when they ask how much European stocks are going to yield p.a. over the next 20 years?" The table shows the estimate for the second framing group ("What you tell your clients") effect subtracted by the first group ("What you think") effect; a positive value indicates that advisers tell their clients a larger figure than what they themselves believe to be the correct one. The t-statistics based on heteroskedasticity robust standard errors are shown in parenthesis.

	Expected return over 20-years (in %)	
	European	**Emerging**
	(1)	**(2)**
Difference between groups:	-0.46	0.15
client frame - personal frame	(-0.73)	(0.18)
Controls (Age, Education, Experience, Gender)	Yes	Yes
Adjusted R^2	0.192	0.187
N	54	54

Table 12: Career info availability and upper tier job title
This table shows the marginal probabilities of advisers having career info available from public data sources and if info is available having an upper tier job title. The career info of advisers was collected using public data sources, such as LinkedIn and bank websites for the period after the original survey until to date. Columns 1-3 report probabilities of career info availability, and Columns 4-6 report probabilities of having an upper tier job title. The z-statistics are shown in parenthesis. ***, **, and * denote statistical significance at 1%, 5%, and 10% levels respectively.

	Career info available			**Upper tier job title**		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Expected 20-year European stock return	-1.0**	-0.7		-2.3***	-1.6*	
	(-2.21)	(-1.44)		(-2.70)	(-1.92)	
Sophistication index (excl. gender)		11.2***	9.5***		5.7*	7.3***
		(4.80)	(4.43)		(1.95)	(2.93)
Demographic controls	No	No	Yes	No	No	Yes
Employer dummies	No	No	Yes	No	No	Yes
Pseudo-R^2	0.008	0.048	0.106	0.029	0.037	0.066
N	512	481	692	287	269	388

Table 13: Determinants of log ordinary income and marginal probability of having capital gains
This table shows the determinants of adviser log ordinary income and the marginal probabilities of having recurring and sizable capital gains. These data were obtained from the Finnish Tax authority using adviser name and age as identifying keys. The ordinary income is the average reported for years 2009-14. The recurring capital gains indicator is set to one if the median annual capital gains over the period 2009-14 exceed 1,000 euros. Columns 1-3 report the determinants of log income, and Columns 4-6 report the marginal probabilities of recurring capital gains. The t and z-statistics are shown in parenthesis. ***, **, and * denote statistical significance at 1%, 5%, and 10% levels respectively.

	log Income			**Capital Gains**		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Expected 20-year European stock return	-1.6***	-1.3**		-0.3	-0.3	
	(-2.98)	(-2.42)		(-0.42)	(-0.38)	
Sophistication index (excl. gender)		7.6***	5.5***		5.1*	4.5*
		(2.79)	(2.72)		(1.80)	(1.91)
Demographic controls	No	No	Yes	No	No	Yes
Employer dummies	No	No	Yes	No	No	Yes
Adjusted R^2	0.030	0.057	0.312			
Pseudo-R^2				0.001	0.015	0.031
N	255	241	354	255	241	354

Figure 1: Information sources for return expectations
The share of different information sources mentioned by financial advisers as key inputs for basing their expectations on stock returns.

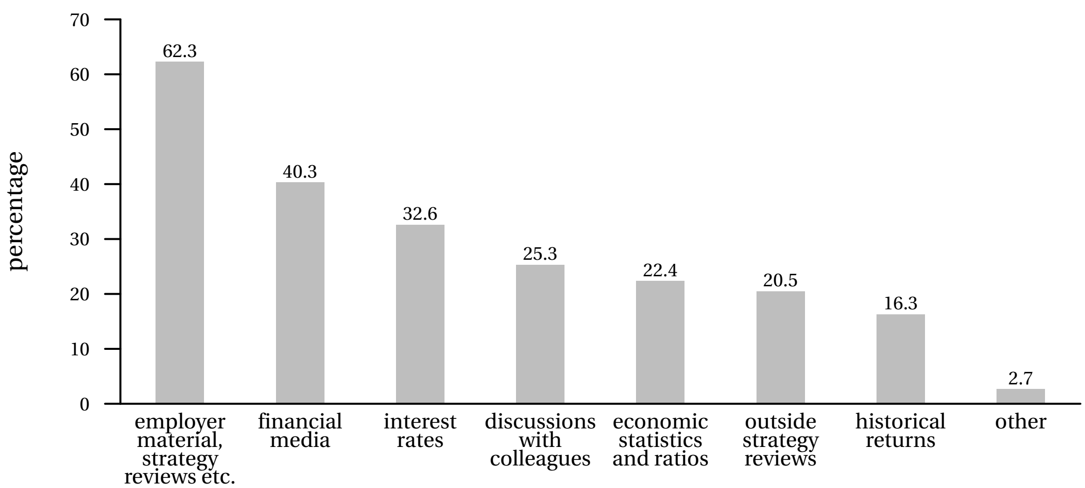


Figure 2: Expected returns by sophistication quintiles
Average expected European and emerging market 20-year returns by sophistication quintiles. The quintiles are formed using a composite sophistication index derived from factor analysis using test score, second level examination, gender, and college dummy. The triangles connected by dashed lines show the emerging market expected returns and the crosses connected by solid lines show the European market expected returns.

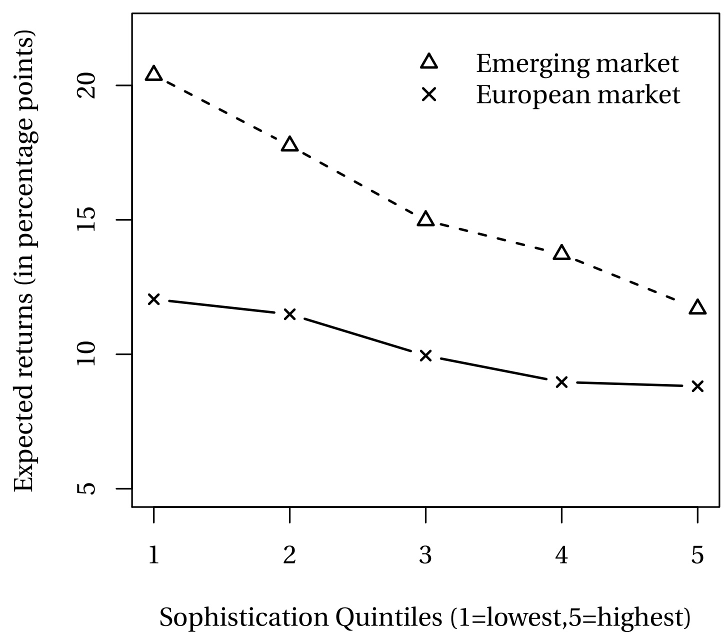


Figure 3: Survey dates and EURO STOXX 50 index
The EURO STOXX 50 index values overlaid on the survey collection dates for the main sample (red line) and the additional sample (green lines).

Figure 4: Gender effect on expected returns by sophistication terciles
The levels of the estimated gender effects (coefficient for a dummy taking the value of one for women, zero for men) from regression models corresponding to those reported as model (2) in Table 9. Grey bar color denotes statistically significant coefficient at the 5% level. White bar denotes statistically insignificant coefficients. The terciles are formed using a version of the composite sophistication index that excludes gender.

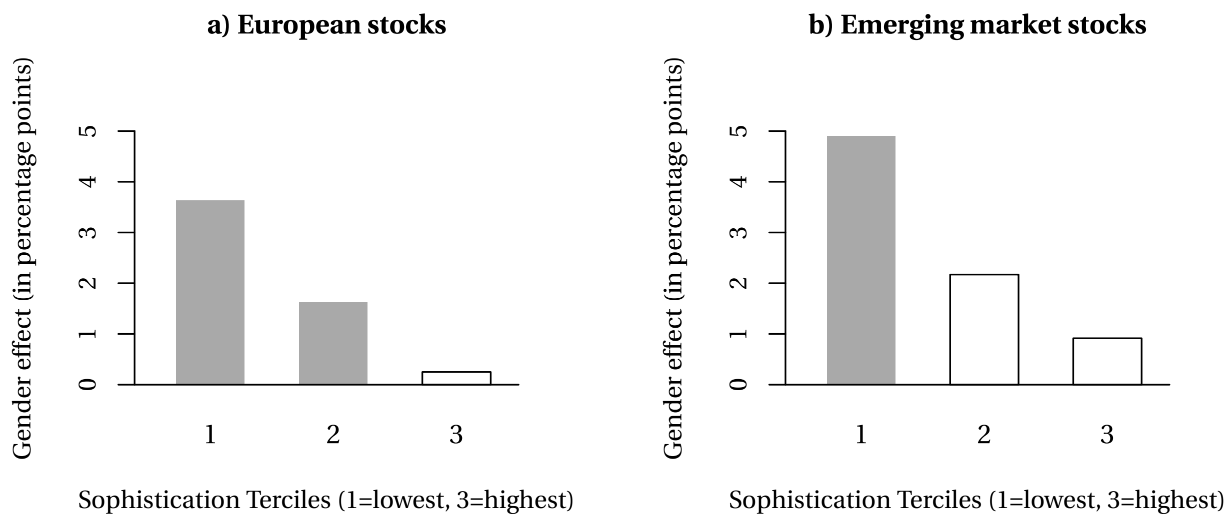
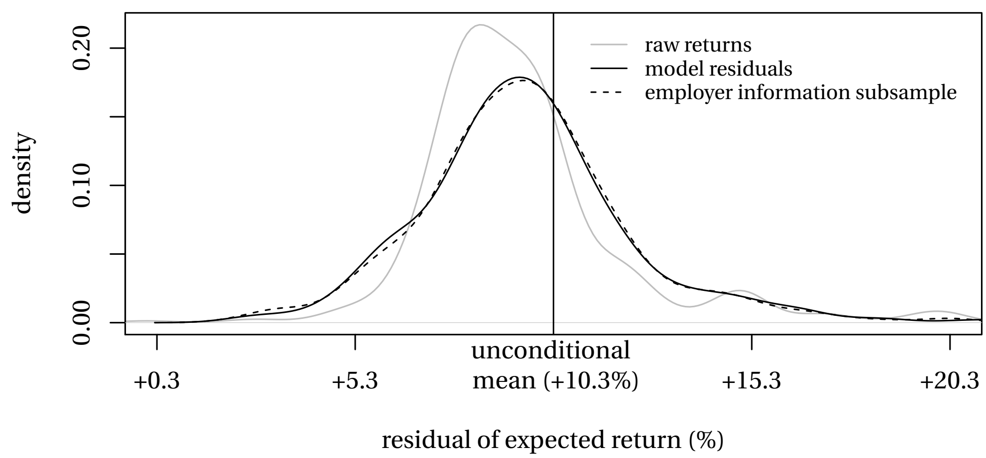


Figure 5: Distribution of the expected returns

Figure a) shows the kernel density estimate of 20-year European return distributions (Epanechnikov kernel, bandwidth = 0.7%), and figure b) shows the density estimate for 20-year emerging market return distributions (Epanechnikov kernel, bandwidth = 1.0%). The model residual curves display the distribution of linear model residuals centered at the mean of the raw returns. This linear model controls for a rich set of covariates, including employer fixed effects. The raw return distribution using the sample included in the regression model is shown in gray for comparison. The employer information subsample curves display the distribution of the same linear model residuals for a subsample where all respondents report employer information as a primary source for basing return expectations.

a) European stocks, 20–year



b) Emerging market stocks, 20–year