

Do Smarter Consumers Get Better Advice?

An Analytical Framework and Evidence from German Private Pensions*

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Abstract

The existing theoretical and empirical literature considers expert advice to be a substitute for a consumer's information: According to these papers, more informed consumers should ignore the advice given to them, but the advisor does not (or cannot) take this into account. We show in a simple analytical framework that higher signals of consumer information should indeed lead advisors to provide better services. The model also suggests an identification strategy, i.e. to focus on consumers with bad signals (proxied by low education) but high financial literacy and vice versa. To verify our main hypotheses, we choose a two-pronged approach using data from the SAVE-panel. First we show that individuals with higher financial literacy are more likely to solicit financial advice, but less likely to follow it. Then, we turn to data on the market for subsidized private pension plans in Germany. The data is uniquely suited to our investigation, as we observe whether consumers buy a contract with the firm employing their financial advisor. We

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show that individuals are strongly influenced by their source of advice – with dependent financial advisors steering customers towards choice options yielding higher kickbacks. We finally demonstrate that individuals with higher financial literacy are less susceptible to this effect.

1 Introduction

1.1 Motivation

Whether their names are Iago, Alcibiades, Haman, Wormtongue or Madoff: There are copious examples in history and literature of advisors who had their own fortune in mind before that of their advisees or customers. The conflict of interest between the two roles is generic, though its extent may differ: In the best – or at least not so bad – case, the advisor has to work and think harder to find a better solution for the person who has placed trust in him; and is tempted to take the easy route instead. In the worst case, an advisor’s incentives may be diametrically opposed to the customer’s interests: Consider the case of salespeople whose bonuses depend on their volume of sales irrespective of the customer’s utility.¹

Nevertheless, people routinely rely on other individuals’ paid or unpaid advice: on mechanics for car repairs, friends and salespeople when choosing a new outfit, relatives and spouses when evaluating a job offer, to name just a few. Arguably, it would be impossible (or at least uneconomical) to collect the required and relevant information for choices in every field oneself, which ensures that advisors will keep on playing a role in daily life. Their influence ranges from minor decisions (like the color of trousers to match a shirt) to very far-reaching ones, such as the choice of pension plans or major investments. This explains why economists from different areas of interest have recently started studying the role of financial advisors.

This paper contributes to our understanding of the role of financial advisors. First we offer a different analytical explanation for the apparent puzzle that mostly better informed, wealthier individuals employ financial advisors.² We argue in a simple analytical model, which includes the possibility to search for an option without seeking advice, that customers who appear to be better informed – customers with higher financial literacy – may induce their advisor to provide better advice on their behalf. As a result, individuals with a higher level of expertise may still be more likely to solicit advice, despite the fact that they are able to find better solutions on their own. By integrating the consumer’s choice whether or not to employ an advisor, this generates an *ex ante*

¹This case potentially arises in Inderst and Ottaviani (2009), which we discuss in the literature section below.

²See, e.g. Bi, Montalto, and Fox (2002), van Rooij, Lusardi, and Alessie (2011), Calcagno and Monticone (2011) or Hackethal, Haliassos, and Jappelli (2010) discussed below.

complementarity between information and advice, as opposed to the purely substitutive relationship proposed by, e.g., Georgarakos and Inderst (2010). The central hypothesis derived from the model is the following: Consumers whose level of information, or signal thereof, to the advisor is better, should receive better advice. As a consequence, they should be more likely to follow the advice given to them, all else equal.

We study two different settings to approach this subject empirically, both based on data from the representative SAVE survey: First we use a number of general questions and exploit the panel structure of the data to make first inferences about the relationship between financial literacy and financial advice. Then, in order to corroborate these results, we turn to the topic of German private pension contracts in particular. Some background is required to illuminate why this topic is of more than just regional interest: In 2001, Germany introduced state subsidies for private pension and old-age savings plans – the so called Riester-pension – part of a fundamental reform of the straining public pension system. Apart from its importance for the sustainability of the German social security system, this has also been a large scale choice experiment: Individuals were aware of the need to make decisions and choose private plans due to substantial cuts to the previously very generous public pensions; yet the typical heuristics of such an important choice – such as observing other people’s outcomes within social networks – were impossible to adopt as nobody had as of yet entered the payment phase. Faced with a wide array of complex financial products, many individuals procrastinated, which led to a number of substantial legal reforms aimed at simplifying the products.

The remainder of this article proceeds as follows: First, we briefly present the related

are tempted to lie to their clients regarding the utility the latter will receive from the product. With a certain probability, these lies are discovered ex-post, in which case the principal (firm) incurs liability. Stronger incentives (higher bonuses) lead to a more pronounced misselling problem.

As opposed to the articles above – with the exception of Aghion and Tirole (1997) – we allow consumers to search on their own in case they do not wish to consult an advisor or follow his advice. This introduces a simple outside option which depends on the level of investor sophistication. Further, we distinguish between “hard” and “soft” information – the costs of the options proposed by the advisor may be verifiable by the client, i.e. “hard” information, again depending on the client’s financial acumen. In combination, this leads to a concave maximization problem on the part of the advisor. As a result, he can have an incentive to provide consumers with higher financial literacy with better advice.

1.2.2 Empirical Papers on Search and Financial Advice

Two recent papers show that search efforts and differing search costs have significant effects on outcomes in insurance and financial markets: Green, Hollifield, and Schürhoff (2007) empirically analyze the market power that dealers can exert in municipal bond markets, in which transaction data is only released ex-post so that at the time of the deal the markets can be considered opaque. The higher the customers’ incentives to gather information (larger deals) and the lower their complexity, the smaller the markups that dealers charge on average. Bolhaar, Lindeboom, and van der Klaauw (2010) study the search behavior of Dutch consumers for health insurance contracts. In a simple theoretical model, they provide a further rationale for price dispersion in a market for a relatively homogeneous good, namely different search costs.⁵ They further make use of a quirk in the system, according to which some consumers can (relatively randomly, at first glance) be offered so called group contracts—they show that more sophisticated consumers are significantly more likely to own (cheaper) group contracts.

The second related strand in the empirical literature focuses on the propensity and reasons of consumers to consult financial advisors: In a mainly descriptive paper, Bi, Montalto, and Fox (2002) address the question which households in a 1998 Survey of

⁵For a theoretical investigation into the incentives of firms to provide complicated price structures for homogenous goods, see Carlin (2009).

Consumer Finances dataset use financial planners. They find that better informed households are more likely to employ financial planners, which points in the direction of complementarities and supports our approach. Moreover, Lusardi and Mitchell (2006), van Rooij, Lusardi, and Alessie (2011) as well as ? find that individuals with low financial literacy are more likely to rely on informal sources of advice, like family and friends, whereas financially literate individuals are more likely to consult formal sources of advice like newspapers, magazines, the internet, and professional advisors. Hackethal, Haliasos, and Jappelli (2010) seek to provide an alternative explanation for this finding—they argue that it is higher opportunity costs of time that lead wealthier and older clients to make use of financial planners, even though they would be better suited to perform the task themselves. Intriguingly, using two different data-sets with trade and banking data they find that investors whose accounts were supervised by agents had higher costs and lower returns on average than those who managed their own accounts.

There are a couple of article similar to ours. Georgarakos and Inderst (2010) is both a formal and empirical study of individual investment behavior in relation to financial advice. They construct a “cheap talk”-game, in which an advisor (agent) recommends one of two investment alternatives as more suitable for the investor (principal). While an uninformed investor must decide whether or not to trust the advice, an informed investor will (from a threshold level of information on) choose to completely disregard the advice and make her own decision—in this sense, information and advice are substitutes. They verify this result empirically using Eurobarometer data and show that “trust” only plays a role for less sophisticated investors, which supports their theory. Hackethal, Inderst, and Meyer (2011) consider, both in a simple theoretical model as well as empirically, how the reliance on an advisor affects the trading behavior of individuals. They show, similar to our results, that investors are less likely to follow advice given to them the more precise their own information and the larger the perceived conflict of interest of the advisor. More trades, which are beneficial to the advisor, should occur when individuals follow the recommendations. Both of these results are verified empirically using data from brokerage accounts. Calcagno and Monticone (2011) also model the interaction between an uninformed investor and a perfectly informed advisor. In their model the advisor has an incentive to reveal his information about asset returns to financially literate customers, while he does not have an incentive to reveal information to financially illiterate customers. Illiterate investors can either delegate their asset

choice fully to the advisor or they can invest autonomously. This leads to the prediction that financially literate consumers are more likely to consult advisors, because they can improve their knowledge by asking for advice. The authors can confirm their predictions on the basis of data on the customers of a large Italian bank.

1.2.3 Contribution

Our paper contributes to the theoretical and empirical literature on advice in general and financial advice in particular. In our analytical model, we introduce a game of advice in which the customer’s degree of sophistication (or access to information) and the advisor’s quality of service are *ex ante* complementary, as opposed to the substitutive relationship proposed so far. From this model we derive a number of hypotheses regarding the likelihood of consulting an advisor and following his advice given a consumer’s financial literacy. Our central hypothesis is that an advisor’s (beneficial) effort should increase in the signal of the consumer’s financial knowledge that he observes.

We use a dual strategy to test our hypotheses: Using the SAVE-panel, we first study how consumers interact with financial advisors in general—as a crucial difference to Georgarakos and Inderst (2010), we include the decision whether or not to consult an advisor in the analysis. We find that the probability of consulting an advisor increases with the level of financial knowledge of a consumer, while the (self-assessed) likelihood of following his advice decreases in financial literacy.

We then turn to German private pension contracts in particular. We find that more knowledgeable consumers on average compare more offers, which indicates lower search costs. They are also more likely to consult with advisors, but less likely to follow their advice in the case of dependent advisors. We are able to study this last question, because we observe whether the chosen plan originated with a customer’s bank or insurance – therefore we observe whether or not the individual has chosen the *advisor’s* favored alternative. We show that individuals are less likely to adopt this “default” choice, the higher their level of financial literacy and the more search effort (measured by the number of products they report to have compared) they have exerted.

2 Analytical Framework and Hypotheses

We try to depict the following typical situation in our model: A customer at a bank sits down with an advisor – either for the first time or the advisor does not have a very close relationship to the client, which appears likely for most cases – in order to discuss the purchase of a financial product such as a private pension. Therefore the advisor tries to “get to know” his client with a few questions regarding her investment goals and major expenditures in the foreseeable future.⁶ From this conversation and the bank database, he can derive her educational attainment as well as her monthly income. Based on this information, which we call *signal* in the model, he can judge her knowledge of financial matters to a certain degree and decides what kind of an investment alternative to suggest to her. In addition to the hard evidence in the data, we can draw on a number of experiences and ample anecdotal evidence to support this setting, e.g. an advisor getting a different binder with information materials after hearing that a customer has a PhD in economics or a different advisor offering to consult with the research department of the bank after a number of (semi-) informed questions and then coming up with a different offer. At the other end of the spectrum: a young woman without a high-school degree returning from a trip to the bank—originally to open an account—with a contract for a private pension insurance whose monthly required payments exceeded her disposable income.

For the following, it is necessary to define our understanding of the concept “financial literacy”. Matching the way we measure it in the empirical part, we prefer a wide interpretation: Financial literacy is an individual’s level of understanding regarding financial matters and financial products, in particular with respect to their risk, returns and cost structure as well as further benefits and relevant features.⁷

Based on this understanding, our model combines the following central building blocks:

- 1) Individuals with higher financial literacy should have lower search costs, i.e. a better outside option apart from financial advice.

⁶According to the European Markets in Financial Instruments Directive (MiFID) advisors are required to collect information on clients’ risk attitudes, current portfolios and previous investment experience.

⁷Applied to the example of private pensions, this would include benefits to the surviving spouse and guaranteed annuities on the up-side, and administrative costs or limitations of withdrawals on the down-side.

- 2) Individuals with higher financial literacy should be able to better understand the advice given to them (in a way presented in detail below).
- 3) Advisers perceive a signal of the customer’s financial literacy and are able to react to (1) and (2)—therefore they may have an incentive to give individuals with higher financial literacy (or signals thereof) better advice.

In the following sections, we present our brief model which organizes our empirical predictions. In order to further stress the inter-connectedness between the theory and the empirical part of the analysis, we phrase our results as testable “hypotheses” instead of “propositions”.

2.1 Financial Literacy and Consumer Outside Option

Consider a model with two agents, a consumer/client (she) and a financial advisor (he). The consumer faces an investment choice from a distribution Q of potential investment alternatives. Each alternative a_i out of Q gives the consumer utility $u(a_i)$ respectively. Consumers differ in their levels of financial know-how or literacy λ_j , with consumer j ’s financial literacy normalized to the half-open interval $\lambda_j \in [0; 1)$.

We assume that the consumer does not know the potential alternatives open to her ex ante. Instead, to uncover them on her own, she may engage in random search along the lines of Stigler (1961). Instead of spelling out the search model, we simply assume that this random search results in an alternative that yields expected utility $Eu(a_S | n^*(\lambda_j))$. Here, $n^*(\lambda_j)$ denotes the (ex ante) optimal number of search items that an individual with a given level of financial literacy chooses.⁸ Rothschild (1974) demonstrates in a rather general setting that n^* and thereby Eu should be increasing as the search costs that an individual faces decrease.⁹ In the following, we simplify notation for this term to $Eu(a_S | \lambda_j)$.

For our theoretical framework, we posit that $Eu(a_S | \lambda_j)$ is strictly increasing in λ_j which corresponds to strictly decreasing search costs in the level of financial literacy. We will try to establish this relationship empirically (see hypothesis 1 below). There are a number of arguments in favor: First, higher financial literacy may be associated

⁸Equivalently, one could define a reservation value depending on the level of financial literacy. A higher reservation value is ex ante equivalent to an (in expectation) higher optimal number of search items.

⁹In particular, these results do not depend on the consumer knowing the distribution of prices.

with faster comprehension of technical terms and concepts, therefore less time and effort need to be spent for every search step. Second, better financial skills may be related to more efficient search techniques, such as requiring less time to recognize and dismiss unsuitable offers. Third, psychological costs such as anticipating discomfort due to lack of understanding should be lower the higher the level of expertise. It should be noted that Hackethal, Haliassos, and Jappelli (2010) argue for the opposite relationship due to higher opportunity costs of the time spent on research for people with better skills. We test the following prediction with regard to private pension contract offers empirically in section 5.

Hypothesis 1: *Due to lower search costs, the optimal number of alternatives that individuals compare when making investment decisions is increasing in their financial literacy.*

2.2 Structure of the Financial Advice Game

As opposed to searching for an alternative on their own, consumers may also turn to a financial advisor. The timing of our model of advice is the following: First the consumer makes the choice whether to consult a financial advisor or to search on her own (a consumer who decides to search on her own and picks $n = 0$ stays out of the market). If she approaches an advisor, he observes a noisy signal S of her financial literacy. Denoting the type distribution function of individuals who approach financial advisors as $F(\cdot)$, we model the signal by $S' > S \Rightarrow F(\cdot | S') < F(\cdot | S) \forall \cdot$. Therefore, the higher the signal, the higher the estimate of the customer's financial literacy by the advisor. We denote the associated density function as $f(\cdot)$. This form of noisy signal appears justified, as in practice, the advisor may ask the customer about her income, educational attainment and previous investment experience, which are known to be related to financial literacy, but cannot force her to complete a sophisticated test on the premises. Then, the advisor suggests an alternative a_A to the consumer, who only understands this advice with probability β_j in a sense described in detail below. Finally, the consumer decides whether to follow the advice given to her, to decline and search on her own, or not to invest.

If the consumer chooses to consult an advisor, she incurs the fixed costs c , which can be interpreted as the time and hassle costs of making an appointment in addition to eventual fees charged by the institution. For our model, to get clearer effects we assume

that these costs are identical for all customers.

The advisor's task is to choose and suggest an alternative a_A for the consumer. We assume that the alternatives in Q can be ordered according to the preferences of the advisor and the customer in the following way: for every $a_i \in Q$, there exists a choice variable of the advisor $e_i \in [0; E]$ which determines the utility $u(a_i, e)$ the advisor derives if the customer follows the advice and accepts the offer. As an interpretation, e may resemble the difference between the maximum possible kickback an advisor could receive and the kickback from the alternative chosen, or different levels of (effort) cost may be associated with preparing and customizing different offers. We further assume that, given that the offer is accepted by the customer, the utility to the advisor $u(a_i, e) > 0 \forall e$, while if the customer rejects the offer the advisor receives a strictly lower utility, normalized to 0. The assumption that even the alternative favored least by the advisor is still preferable to rejection by the consumer could be explained, for example, by the advisor's reputation suffering from his suggestion being shunned – in the extreme, an advisor is liable for demonstrably bad advice in many jurisdictions, so in particular, one could imagine advisors being punished for (detected) bad advice along the lines of Inderst and Ottaviani (2009). A minimum value of 0 for the rejection resembles limited liability of the advisor.¹⁰ We refrain from subtracting eventual effort costs in order to ease the notational burden in the following – our results below would be qualitatively unchanged if we assumed that the advisor is left with a utility of $-c(e)$ if his advice is rejected, with $c(e)$ nondecreasing in e . To summarize: In our setting, the advisor either makes a successful sale and receives $u(a_i, e)$ or he is left with a payoff normalized to 0.

We assume that there is an inherent conflict of interest between the advisor and the advisee in that there is a subset of Q which we call the *relevant alternatives*, such that (I) $\frac{\partial u(a_A(e))}{\partial e} > 0$ and (II) $\frac{\partial v(e)}{\partial e} < 0$: A higher choice of e improves the result for the customer, while it reduces the advisor's utility. In particular, the advisor has a most favored (default) alternative that he can suggest with $e = 0$, which we call a_0 . This implies, that switches away from the default alternative are beneficial to the customer. The relevant alternatives can be generated by eliminating all alternatives from Q which are dominated (an alternative a_i is dominated if a_j exists, such that both $u(a_j) > u(a_i)$ and $v(a_j) > v(a_i)$). This leaves at least one alternative, a_0 , which will be the only

¹⁰For advisors dependently employed, this is part of their contract, independent financial advisors are required to own malpractice insurance.

alternative only if it is also the option that maximizes the customer's utility. Our assumption regarding the conflict of interest implies that this is not the case. It also implies that the advisor does not wish to unnecessarily harm the consumer while at the same time reducing his own utility. The additional assumption implied by (I) and (II) is that $u(e)$ is differentiable and for simplification we also assume that it is strictly concave: improving the customer's utility becomes increasingly expensive in foregone premiums for the advisor.

To summarize, there are two ways of interpreting this setup: It may either be costly for the advisor, in terms of mental effort and time, to research alternatives beyond the standard suggestion waiting in his drawer and to explain them to the satisfaction of the consumer; or the default investment is simply the alternative that yields the highest provision, and accordingly higher costs to the advisor resemble smaller provisions.¹¹ These two alternatives are not mutually exclusive, the utility $u(e)$ should be interpreted as an amalgam of monetary and non-monetary payoffs.

2.3 The Advisor's Problem

For a rational consumer to make a decision, she has to compare the utility she derives from the advisor's offer with the expected utility from searching in the market on her own. Some customers may not be able to perform the required computations. To take this into account, we assume – following, e.g., Inderst and Peitz (2008) – that expertise/financial literacy influences the informativeness of advice to the consumer: with probability β , the customer “understands” advice given to her, i.e. she is able to judge the relationship between $Eu(a_S)$ and $u(a_A)$. In other words, with probability β , the offer by the financial advisor is hard information for the customer, with probability $1 - \beta$ it is soft information and all the customer learns is that the given investment alternative was suggested.

Let us first consider the decision of a consumer who has hard information: She should reject (not follow) advice whenever the following condition holds, i.e. she derives a higher expected utility from independent search than from the advised alternative:

¹¹In the extreme for the second interpretation, there may only be two classes of alternatives from the point of view of the advisor: contracts yielding a provision, or contracts yielding no provision. This second interpretation on its own would be in conflict with the differentiability assumption above, while the mental-effort interpretation can easily be reconciled with this assumption.

$$u(a_A) < Eu(a_S | j) \quad (1)$$

As we assumed that $u(a_A)$ is a function of the choice e by the advisor and $Eu(a_S | j)$ is strictly increasing in j , by (1) we can specify a critical value $\hat{e}(e)$ for each e , such that $u(a_A) = Eu(a_S | \hat{e}(e))$. Then a consumer will only accept the offer if her financial literacy is below this cutoff-value, i.e. $j \leq \hat{e}(e)$. The advisor who has observed (noisy) signal S of the customer's financial literacy, expects her to accept a given offer with probability $F(\hat{e}(e)|S)$. This probability is strictly decreasing in S and increasing in e . For simplicity, we make the strong assumption that uninformed consumers, for whom the advice is soft information, comply with the suggestion of the advisor.¹² As a justification for this assumption (outside the model), it may be easier for an advisor to dupe a consumer if she cannot understand the details of the given offer. Therefore, the expected gain $E[\Pi|S]$ that the advisor derives from choosing e given the observed signal S is:

$$E[\Pi|S] = u(e)(1 - E[S](1 - F(\hat{e}(e)|S))) \quad (2)$$

The advisor expects to gain utility $u(e)$ unless he is facing an informed consumer whose financial literacy is above $\hat{e}(e)$. The advisor's choice e given the signal S gives rise to the following first order condition:

$$\frac{\partial E[\Pi|S]}{\partial e} = u'(e)(1 - E[S]) + E[S][u'(e)F(\hat{e}(e)|S) + u(e)f(\hat{e}(e)|S)\frac{\partial \hat{e}}{\partial e}] \quad (\text{FOC})$$

A change in e has the following effects: First, it reduces the advisor's utility in the case that the customer is uninformed (first term). Second, it reduces the advisor's utility in the case that the customer is informed but would have chosen the advised alternative nevertheless. Finally, it increases the probability that an informed consumer will choose to follow his advice at the margin of $F(\hat{e}(e)|S)$. When is (FOC) also sufficient? It turns out

¹²The alternative would be to compare the expected utility from advice, given the signal of financial literacy the consumer expects the advisor to have received, with the expected utility from search. We show that the distortions introduced by our assumption are not too extensive, and that they are smaller for consumers with low financial literacy below, when discussing the consumer's participation constraint.

that the expected profit function of the advisor is concave as long as the signal S is not too informative;¹³ but one cannot rule out that the function is downward sloping over the entire domain – in which case the optimally suggested alternative by the advisor is clearly $e = 0$. If one defines incentive compatibility for the advisor as the condition for suggesting *any* but the default alternative, this boils down to the following:

$$| \beta'(0)(1 - E[\beta|S]) + E[\beta|S] \beta'(0) F(\hat{\beta}(0)|S) | < E[\beta|S] \beta'(0) f(\hat{\beta}(0)|S) \frac{\partial \hat{\beta}}{\partial e} \quad (\text{IC})$$

We are interested in when this condition is more likely to hold: Much depends on the value of $\beta'(e)$, which can be interpreted as the foregone bonus if an alternative other than the one most favored by the advisor is selected. This is equivalent to the finding of Inderst and Ottaviani (2009) that higher bonuses for advisors increase the misselling problem in a purely binary setup. In our setting, the larger the step down from the optimum, the higher the incentive for the advisor to sell nothing but the default option. We find multiple effects of higher financial literacy: First, the share of informed consumers increases, which puts more weight on the second term on the left-hand side. Then, $F(\hat{\beta}(0)|S)$ decreases together with the cutoff-value above which consumers prefer acquiring information on their own. Finally, the right-hand side increases, again, as long as the signal to the advisor is not too informative, i.e. as long as $f(\hat{\beta}(0)|S)$ is non-degenerate. All of these effects work in the same direction: The higher the (perceived) financial literacy of the consumer, the more likely the advisor is to give better advice. From a policy perspective, this finding may be surprising: The more an individual is educated with regard to financial matters, the more likely she is to get useful financial advice from a bank or insurance agent.

The last component of the inequality is the initial level of $\beta(0)$. Interestingly, an increase of this value enhances the likelihood that a financial advisor picks a more useful alternative for the consumer ($e > 0$). In terms of incentives, this means that it is preferable to have a relatively high compensation for the advisor when he sells a contract to a customer (high $\beta(0)$), with as little as possible differentiation between the different alternatives that he can offer (small slope of β). Clearly, if the financial advisor is employed by a firm selling financial products of its own, this will generally not be in

¹³See the mathematical appendix for a detailed discussion.

the interest of the company. This may introduce systematically different effects between dependent advisors, i.e. advisors employed by a bank or insurance company, and independent financial advisors, if the former have “steeper” incentive functions.¹⁴ We will use this distinction in our empirical approach in section 5.

Condition (IC) is more likely to be satisfied the higher the signal S and thereby the higher $E[\epsilon | S]$. This allows us to derive the central hypothesis of our model: As the signal S is informative with regard to the consumer’s financial literacy ϵ_j , this implies that with increasing signals of financial literacy, the advisor is more likely to provide positive effort. Using (FOC), which solves the advisor’s maximization problem whenever (IC) is satisfied, it is straightforward to see that a higher signal also induces a higher *level* of the advisor’s effort in optimum. We combine these observations in the following hypothesis:

Hypothesis 2: *The higher the signal of financial literacy S that the advisor observes,*
a) *the more likely he is to suggest an alternative that is better for the consumer than the default, and b) the better the advice he gives in this case.*

While this is the effect we were searching for, given the data available to us, we cannot observe the effort choice of advisors directly. What we do see is the choice behavior of consumers. Intuitively, we would expect consumers who receive better advice to be more willing to follow it. If we back out the advisor’s optimal choice $e^*(S)$ and insert it into the consumer’s constraint (1), we can show that this is true. This allows us to derive the following corollary, which we use in our identification strategy in the empirical part of the paper:

Corollary to Hypothesis 2: *For a given level of financial literacy of the consumer, the higher the signal that the advisor observes, (the better the suggested alternative and) the more likely the consumer is to follow the advice she receives.*

¹⁴From discussions with current and former employees of independent financial advisors, we learned that some firms enforce a cap to sales kickbacks for individual contracts which results in a comparatively “flat” structure of bonuses.

2.4 Financial Literacy and the Decisions to Solicit and Follow Advice

To close the model, we now have to consider on the one hand which consumers decide to consult a financial advisor and on the other hand how likely they are to follow the advice they receive given that they sought it. For a consumer to approach an advisor, the expected utility gain over searching autonomously must exceed her costs θ . The consumer's participation constraint is:

$$(1 - \lambda_j)E[u(a_A)|\lambda_j] + \lambda_j E \max\{u(a_A|\lambda_j); E[u(a_S)|\lambda_j]\} - \theta > E[u(a_S)|\lambda_j] \quad (\text{PC})$$

The left-hand side of the inequality resembles the *ex ante* expected utility from the decision to consult a financial advisor: If the consumer does not understand the advice, she accepts the offer as assumed above. The utility from the advised alternative is an expected value due to the fact that the consumer herself cannot perfectly observe the signal S as perceived by the advisor; she can only anticipate the level of effort he will exert based on the distribution of S given her financial literacy λ_j . The second term, implying that she understands the advice, resembles an option value: If she prefers the suggestion to searching on her own, she takes it, otherwise she declines. As $E \max\{u(a_A|\lambda_j); E[u(a_S)|\lambda_j]\}$ is strictly larger than $E[u(a_A)|\lambda_j]$ and $E[u(a_S)|\lambda_j]$, respectively, this option is valuable to the consumer.¹⁵

First note that individuals with very low financial literacy expect to have to take the advice they receive at face value. If the signal S is informative for low values of θ , the likelihood that the financial advisor will take advantage of them is high. If their outside option $E[u(a_S)|\lambda_j]$ is negative *and* they expect to receive bad advice, they prefer to stay out of the market entirely. This reflects the stylized fact that individuals with very low financial knowledge are generally less likely to participate in stock markets (see, e.g., van Rooij, Lusardi, and Alessie (2011)) or own private pension insurance (see, e.g., Bucher-Koenen (2010)). Further, this would be exacerbated if one allows θ to be decreasing in the financial literacy of consumers, say if it were to include psychological costs of soliciting advice.

¹⁵Note that θ is defined on an open interval – therefore there is always a possibility that the consumer's financial literacy will be overestimated to her benefit.

Now consider the effects of an increase in the level of financial literacy of the consumer. If the (expected) signal S is positively correlated with the actual value, then the advice becomes more valuable in expectation. Further, the customer will be more likely to understand the advice given to her – this increases the probability of benefitting from the option value of being able to (informedly) choose between the advised option and own search. These two effects both make it more likely for more financially literate consumers to solicit advice.

There are two at least potentially countervailing effects: First, the value of the outside option – own search – straightforwardly increases. If this effect is dominant, this would lead consumers to prefer own search to advice. Finally, there is the effect of λ on what we coined the option value of advice $E \max\{u(a_A | j); E[u(a_S) | j]\}$. As λ is defined on a half-open interval, there is always the possibility that the consumer’s financial literacy will be over-estimated from the signal and as a result, the option value is always positive, though it may be decreasing in λ – intuitively, the advisor, from a certain level on, cannot feasibly do better than the customer.

Given this brief discussion and the stylized fact that consumers with the lowest levels of financial literacy abstain from entering the market for risky asset and are significantly less likely to own private pension insurance – i.e. the least knowledgeable customers’ outside option of own search must be negative – we propose that the probability of consulting a financial advisor must be at least locally increasing in their level of financial literacy. While this effect does not necessarily have to be monotone, we propose the following hypothesis:

Hypothesis 3: *Individuals with higher levels of financial literacy are more likely to solicit financial advice than those with the lowest level of financial literacy.*

Note that if consumers are aware of the signal-generating process, then for a given level of financial literacy a higher signal unequivocally would lead a consumer to be more likely to solicit advice: Intuitively, a graduate from a prestigious university *expects* to receive better advice than a high-school dropout, even if both persons are equally knowledgeable in financial matters.

This brief discussion allows us to revisit the behavioral assumption above that uninformed consumers follow the advisors’ suggestions: First-off, it is completely rational for consumers to act in this manner as long as $E[u(a_A) | j] > E[u(a_S) | j]$. Given that

advice was solicited, (PC) a relatively financially illiterate consumer should follow this rule: then the participation constraint immediately implies the above. This can intuitively be interpreted in the following way: If someone did not expect to understand the advice she received, but still solicited it (incurring cost c in the process), then she must expect to follow the advice even if it turns out not to be intelligible ex post.¹⁶ The higher the costs c , the more slack there will be for this constraint. For higher levels of c , i.e. consumers who solicit advice with the expectation that they will be able to make sense of it, this argument no longer holds. But as they are more likely to understand the advice given, the share of individuals, for which the behavioral assumption applies, decreases in c .

Finally, we study the likelihood of a given consumer who *has* solicited advice following the suggestion she receives. According to our assumptions above, she understands the suggestion with probability π_j and she follows it whenever she does not understand it. Ex ante, therefore a consumer who has approached an advisor will *disregard* advice with probability $\pi_j \mathbf{Pr}(u(a_A) > Eu(a_S) | \pi_j)$, where \mathbf{Pr} denotes the probability with respect to the realization of S given π_j . Again, we observe multiple effects of increasing levels of financial literacy π : On the one hand, the probability of understanding the offer and therefore being able to decline it increases. It is further increased by the higher value of the outside option. The countervailing effect is that the increased efforts of the advisor may overcompensate the better outside option. If we are able to control for the signal that the advisor observes, we can eliminate the countervailing effect for our next hypothesis¹⁷:

Hypothesis 4: *Given a signal level S , the higher a consumer's financial literacy, the higher is the likelihood that she will reject the advisor's suggestion.*

The structure of the problem allows us to make a further prediction regarding individual choice behavior: By Hypothesis 2, the advisor exerts more effort if he observes a better signal, which in turn leads consumers to be more likely to follow advice. By Hypothesis 4, the magnitude of this second effect should differ over levels of financial literacy. In particular, it should be more visible for individuals with high financial liter-

¹⁶See Hackethal, Inderst, and Meyer (2011) for a similar argument.

¹⁷Note again that the strong behavioral assumption is not necessary for our result, as the increased expected value of own search efforts would be sufficient, given that one can control for the signal

acy, in other words, the cross-partial derivative of the signal and financial literacy on the probability of following advice should be positive. We state this in our final hypothesis:

Hypothesis 5: *For individuals with higher levels of financial literacy, the increase in the likelihood of following financial advice with the level of the signal S should be stronger than for individuals with lower levels of financial literacy.*

3 Data

3.1 The SAVE Survey

In the empirical part of this article, we use SAVE, a panel of German households that contains detailed information on households' financial situation and socio-economic as well as psychological characteristics.¹⁸ Our analysis is mainly based on data from SAVE 2008 and 2009. There are between 2,222 and 2,608 observations in the sample. We make extensive use of a special module of questions regarding Riester-pensions and the search process which we were able to add to the questionnaire in 2008. In addition to that we use information on financial literacy from the survey conducted in 2007.

Missing values in the data set are imputed using an iterative multiple imputation procedure based on a Markov-Chain Monte-Carlo approach (Schunk (2008)). The goal of this procedure is to increase the efficiency of our estimates due to a larger number of observations and to reduce the item non-response bias that occurs if observations with and without missing values differ systematically. For our analysis, five multiply imputed data sets are used and the results are derived using Rubin's method (Rubin (1987, 1996)). In the case of our explained variables (financial advice and following the advice) and key explanatory variables (financial literacy) robustness checks are conducted on the basis of unimputed data. The socio-demographic characteristics of the sample are provided in Table B1 in the appendix.

All descriptive statistics are weighted and results are representative for the German population.¹⁹ For the regression analyses no weights are used, following Deaton (1997).

¹⁸SAVE was first conducted in 2001 by the Mannheim Research Institute for the Economics of Aging (MEA). Consecutive waves were in the field in 2003/2004, and every year since 2005. A detailed description of the scientific background, design and results of the survey can be found in Börsch-Supan, Coppola, Essig, Eymann, and Schunk (2009).

¹⁹The reference statistic to calibrate weights according to income and age classes is the German

3.2 Variables

3.2.1 Financial Advice—General Context

As discussed above, we use a dual strategy in trying to test our hypotheses, with measures of behavior regarding financial advice in general and behavior regarding the private pension choice in particular. For the general context, we use the following measures:

In the context of saving behavior, respondents are asked with whom they talk about financial issues. The exact wording of the question is *“Do you talk about financial topics with: relatives, who do not live in the same household / friends / colleagues / neighbors / financial advisors of banks, insurance companies or financial service providers. / I do not talk with any of these persons about financial topics.”* Respondents were able to give multiple responses. The focus of our study is professional financial advice. Thus we construct a dummy variable equal to one if individuals consulted a professional from a bank, insurance company or financial service provider. In 2009 about one third of the respondents in the sample talked to financial advisors (33.2%). Results are almost identical in 2007 (31.1%) and 2008 (33.2%).

As a follow-up question we asked those respondents who consult professional advisors how closely they followed the advice. The question included was *“How closely do you follow the advice obtained? Please evaluate your behavior on a scale from 0–“I / We do not follow the advice at all” to 10–“I / We follow the advice given entirely”* Answers to this question are depicted in the histogram in Figure 1.

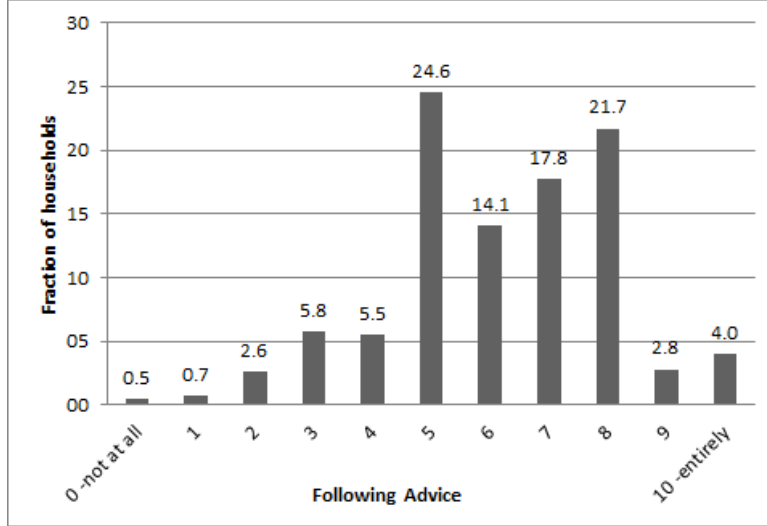
3.2.2 Financial Advice—Riester-pensions

In SAVE 2008 we added four questions regarding the search process of consumers for subsidized private pension plans, so-called Riester-pensions. Two questions examined the number of alternative providers households approached and the number of written offers they obtained in total. In addition to this, we asked households how they obtained the information on the different offers, in particular whether they conducted own research, consulted peers or contacted dependent and independent financial advisors. The final question focused on the actual contract partner. We asked respondents whether they signed the contract with a familiar contract partner, i.e. a bank or insurance company

Mikrozensus. For a detailed description see Börsch-Supan, Coppola, Essig, Eymann, and Schunk (2009), p. 48-52.

Figure 1: Following Financial Advice

This figure shows the relative frequency of respective responses regarding the following of financial advice by professional advisors in SAVE 2009.



with which they already have other contracts, or an unfamiliar contract partner, i.e. a bank or insurance company or other provider of contracts with whom there were no prior relations. The wording of the questions is in appendix D.

3.2.3 Measuring Financial Literacy

We measure financial sophistication using two different “objective” —as opposed to a “subjective”, i.e. self-assessed—measures of financial literacy.

A set of eleven financial literacy questions was developed and evaluated by Lusardi and Mitchell (2007) and van Rooij, Lusardi, and Alessie (2011). A subset of nine of these questions was introduced into SAVE in 2009. For the purpose of our study we construct a measure composed of four—judging by the answering behavior of respondents—relatively difficult questions. Our measure contains four of the five questions labeled “advanced financial literacy” by Lusardi and Mitchell (2007) and van Rooij, Lusardi, and Alessie (2011).²⁰ For this advanced measure, we create an index that reflects the number of correct answers by the individual and can therefore assume the values 0 through 4. Around 18% of the individuals in the 2009 survey were unable to give any correct answer and almost 14% gave only one correct answer. Sixteen percent were able to answer half

²⁰We exclude the fifth question on the relationship between bond price and interest, because only few respondents knew the correct answer and a principal components analysis shows that this item does not correlate well with the other four items.

of the questions correctly, 22% gave three correct answers and almost 30% were able to get all answers right.²¹

For different reasons, we also introduce a second measure based on a similar set of only three basic questions, originally developed by Lusardi and Mitchell (2006) for the Health and Retirement Study in 2004 to assess the fundamental skills regarding individual saving and investment decisions, which was included in SAVE 2007. In the 2007 survey respondents encountered the financial literacy questions for the first time in SAVE, therefore arguably this year’s answers have greater validity than in the following years. Moreover, there might be endogeneity problems related to financial literacy and financial advice, which we try to address by exploiting the panel structure of SAVE and using the lagged measure of financial literacy, defined as follows: a dummy variable, which takes the value 1 if all questions were answered correctly and 0 otherwise. In the year 2007 out of our sample 53.2% of the respondents were able to answer all financial literacy questions, whereas 46.8% had a least one incorrect answer or “do not know”.²² Previous studies of financial literacy among SAVE respondents analyzed the answers to the individual questions in more detail and show that this dummy is a good indicator of individuals’ knowledge—they also revealed that financial literacy is particularly low among women, individuals with low education or income and individuals living in east Germany (see Bucher-Koenen and Lusardi (2011)).

The questions for both measures of financial literacy can be found in the Appendix in section C.

4 Financial Literacy and Financial Advice

First, we briefly outline our empirical strategy to emphasize the relationship to our analytical framework. It relies on the fortunate fact that due to the structure of our questionnaire, we have access to the measure of the customer’s financial literacy which the advisor does not observe directly. For the signal of the advisee’s expertise, we need characteristics that are on average indicative of the individual’s financial literacy as well

²¹For an analysis of the answering behavior across socio-demographic characteristics and a comparison with respondents in the US and the Netherlands see Bucher-Koenen (2010)

²²In the questionnaire 2007 the interest and the inflation question did not have a “do not know” option. For this reason we treat missing answers as “do not know” and do not drop them from the sample.

as generally observable. We choose educational attainment, in particular whether or not the individual has completed tertiary education, because it fulfills both requirements: It is correlated with financial literacy (Advanced Financial Literacy 2009: Corr .178, $p < 0.01$, Financial Literacy 2007: Corr .193, $p < 0.01$) and it has even been used as a proxy for financial expertise in academic studies such as e.g. Georgarakos and Inderst (2010). Regarding observability, tertiary education confers a title to its holder, which is typically included in bank forms and protocols of advice sessions. The second signal that we contemplate is even more clearly observable to the advisor: the gender of the person seeking advice. Lusardi and Mitchell (2008), van Rooij, Lusardi, and Alessie (2011) and Bucher-Koenen and Lusardi (2011) each show that the financial literacy of women is on average significantly lower than that of men, even after controlling for factors such as education, age and income.²³ The correlations coefficients are .194 ($p < 0.01$) for the advanced financial literacy measure 2009 and .144 ($p < 0.01$) for the basic measure 2007, for males respectively.

We would briefly like to address three empirical issues that arise in our approach in advance. The first issue is one of endogeneity: If one were to observe that higher levels of financial literacy are associated with a visit to a financial advisor, the causality is unclear. Perhaps an individual learned from the advisor, then the higher level of literacy may be a result of, not a reason for the visit. This effect would bias our estimates upwards. We solve this by using the panel structure of our data and employing the level of financial literacy that the customer exhibited *before* she solicited financial advice. The second issue is related to the question of who follows financial advice. Our model predicts that individuals with higher levels of financial literacy should be more likely to approach a financial advisor. This introduces a potential selection bias for the decision whether or not to follow the advice one receives, as both steps depend on the level of financial literacy. We account for this by using a Heckman (1979) selection model in our estimation of the second stage. Finally, the correlation between financial literacy and educational attainment is both a blessing, due to the reasons discussed above, and a curse. This correlation introduces collinearity between the two measures; as a result, we will in some cases not be fully able to separate their effects.

²³Bucher-Koenen and Lusardi (2011) also uses data from the SAVE survey and therefore provides results for the German population.

4.1 Financial Literacy and the Demand for Financial Advice

In this section, we analyze which characteristics contribute to the decision whether or not to consult a financial advisor during a given year. We estimate different probit models of the following form:

$$y_{jt} = \alpha_0 + \alpha_1 X_{jt,(t-2)} + \alpha_2 Z_{jt} + \epsilon_{jt} \quad (3)$$

Here, y is a dummy-variable that signifies whether someone has talked to a financial advisor in year t , i.e. 2009. X is one of two measures of financial literacy, depending on the specification: In models I and II, we use the score on the advanced financial literacy test, which may range from 0 to 4. To counter the issue of potential endogeneity—consulting with a financial advisor might improve a person’s understanding of financial matters, as discussed above—we instead use the 2007 measure of basic financial literacy in model III.²⁴ The detailed results and specifications of the different models that we estimate for this section can be found in Table 1. Hypothesis 3 predicts a significantly positive sign of α_1 : The higher the level of financial literacy, the more likely the individual should be to solicit advice.

In all three models, we find a significantly positive effect of financial literacy on the decision to consult a financial advisor. A higher score on the advanced literacy test increases the probability of consulting an advisor by between 2% and 3.1% per point. Being able to answer all three basic questions two years earlier makes it about 3.4% more likely that someone will consult a financial advisor in the given year.²⁵

The difference between models I and II is the introduction of a dummy that measures whether an individual has previously contracted a financial advisor. While not included in our analytical approach, relational factors²⁶ are likely to play a role in the decision of individuals. To take this into account, we control for whether somebody has received financial advice in the previous year, to which the results are robust.

²⁴The 2007 version of SAVE did not yet include the advanced financial literacy questions.

²⁵As a robustness check, we also introduced dummies for the respective number of correct answers for the simple measure. We find that giving one wrong answer and two wrong answers respectively lower the probability of soliciting financial advice significantly, but the difference between the two effects is not statistically significant. Therefore it appears to be justified to simply use a dummy for answering all questions correctly.

²⁶See Ottaviani and Sørensen (2006) for a model of reputation acquisition of advisors.

Individuals with higher monthly income are significantly more likely to seek out financial advice. The effect of our signals is neutral, in one of the specifications, the effect of university education is even negative. Our model has two potential explanations, why individuals with high financial literacy and a good signal would be more likely to approach an advisor: They are more likely to understand the advice offered to them and they anticipate that they will receive better advice than others whose signals are less promising. Our results suggest that the first channel plays a bigger result than the second, which has no significant effect on the choice to consult a financial advisor.

To relate our findings to our theoretical model: We find robust evidence that is consistent with hypothesis 3: Individuals with higher levels of financial expertise are more likely to solicit financial advice. The other major factor that encourages seeking advice is monthly income.²⁷

²⁷As opposed to Bi, Montalto, and Fox (2002) and Hackethal, Haliassos, and Jappelli (2010), we do not find positive overall effects of education and age; unlike them, we are able to control for financial literacy directly.

Table 1: Determinants of Consulting Financial Advisors

This table reports the effect of financial literacy and various covariates on consulting a financial advisor. The dependent variable in all specifications is a dummy that indicates if a household consulted with a financial advisor in 2009. We report marginal effects (Marg. Eff.) after estimating a probit evaluated at the mean of all variables and the respective standard errors (Std. Err.). Marginal effects and standard errors are calculated using 5 imputed data sets and combined according to Rubin's Rule (Rubin (1987, 1996)). Financial literacy is measured by two different measures: Financial Literacy 2009 measures the number of correct answers to the advanced financial literacy questions in 2009. It takes values between 0 and 4. Financial Literacy 2007 is a dummy variable which takes value 1 if all financial literacy questions in 2007 were answered correctly. (d) indicates the change of a dummy variable from 0 to 1. N= 2,141 for all specifications.

	I			II			III		
	Marg. Eff.	Std. Err.		Marg. Eff.	Std. Err.		Marg. Eff.	Std. Err.	
Financial Literacy 2009	0.031***	0.008		0.020***	0.007				
Financial Literacy 2007 (d)							0.034*	0.020	
Living in East Germany (d)	0.015	0.023		0.017	0.021		0.014	0.021	
Male (d)	0.012	0.021		0.018	0.020		0.023	0.019	
Age	-0.002	0.007		-0.007*	0.004		-0.007*	0.004	
Age squ.	0.000	0.000		0.000*	0.000		0.000*	0.000	
Income (log)	0.084***	0.024		0.052***	0.018		0.056***	0.018	
University degree (d)	-0.008	0.031		-0.041*	0.025		-0.039	0.025	
Positive Financial Wealth (d)	0.256***	0.035		0.178***	0.033		0.189***	0.033	
German nationality (d)	0.146	0.089		0.181***	0.077		0.186***	0.076	
Consulted an Advisor in 2008 (d)				0.332***	0.015		0.334***	0.014	
N	2141			2141			2141		
Pseudo R2	0.068			0.185			0.183		

Source: Authors' calculation based on SAVE 2009 and 2007; * significant at 10%; ** significant at 5%; *** significant at 1%.

4.2 Customer Expertise and Following Advice

Next, we wish to study the determinants of a customer following the financial advice she has received. In the general context, we are able to use a self-reported direct measure observed within the SAVE survey: participants were asked to which degree they followed the financial advice they had received, given the decision to consult an advisor. The answers are on a 11-point scale (from 0 – “not at all” to 10 – “entirely”) in the questionnaire. The measure is by necessity imperfect for two reasons: It is self-reported, which may introduce, for example, justification biases or similar issues. In addition, individuals may interpret the question and answer possibilities differently. We apply various strategies to address these issues, but clearly cannot solve them completely.

In this section, we employ different specifications of the following form:

$$y_{jt} = \alpha_0 + \alpha_1 x_{jt} + \alpha_2 S_{jt} + \alpha_4 Z_{jt} + \epsilon_{jt} \quad (4)$$

Here, y is the self-reported measure of how closely the advice was followed. x is the measure of financial literacy, S is the vector of two signals, gender and university degree, and Z is a vector of controls. We present the detailed results of four different models in Table 2 below, each dealing with a different issue.²⁸ Model I is a simple OLS for the entire sample. The peak of answers at “5” can be an indication of default answering behavior and is likely to introduce unnecessary noise, therefore we exclude these answers in specification II, which is otherwise identical, and in the other specifications.

In specification III, we pay heed to the possibility that we observe the propensity to follow only for the (selection of) survey participants who actually solicited advice. Our previous results (and theoretical model) both indicate that this could introduce a selection bias, since individuals with low financial literacy (who would be more likely to follow advice later on) are less likely to solicit advice. Therefore we potentially underestimate, in absolute terms, the effect of financial literacy on following in the previous specifications. To counter this, we run a two-stage Heckman selection model. For the selection stage, we use the model from the previous subsection, so that dummies

²⁸For brevity, we only report OLS coefficients and standard errors, which are readily interpretable. Ordered probit regressions deliver qualitatively identical results. We also ran probit regressions with a dummy taking the value 1 above the cutoff-value 8, indicated by the distribution of answers. Again, the results were qualitatively unchanged.

for German nationality and positive financial wealth are included in the first stage, only. On the one hand, nationality in our sample can be seen as a proxy for a person’s propensity to remain in the country in the long-run and therefore the interest in making long-term investments. On the other hand, potential language issues may work as a psychological barrier to approach an advisor. The fact that an individual has positive assets clearly affect whether she will be interested in financial advice, but not necessarily whether she will follow it. The results bear this out: exclusion restrictions are jointly significant at the 1% level in the first stage, while they are jointly insignificant when inserted into the second stage in all cases.

Finally, we separate the samples for models IV and V into individuals with high financial literacy (four correct answers) in model IV and lower financial literacy (less than four correct answers) in model V, as we would expect different effects of the signals that we observe in each of the groups.

For each of the specifications, our hypotheses predict the following signs: β_1 , the direct effect of financial literacy, should be negative by Hypothesis 4, as we control for the signals. β_2 , the direct effect of the signals, should be positive, by Hypothesis 2. Finally, Hypothesis 5 implies that the effect of the signal should be strictly higher for individuals with high financial literacy than for individuals with low financial literacy, for which we use specifications IV, V.

Our results are the following. The Heckman Model does not deliver effects that are significantly different from the simple specifications, which is reflected by the non-significance of the rho-value. We find supporting evidence for Hypothesis 4: The higher the financial literacy of individuals, the less they report to follow the advice received. The coefficients in each of the specifications are negative and significant at the 10%-level, only, which reflects the lack of specificity of the underlying measure. Also, in every specifications, both gender and university education do not have a significant direct effect on the propensity to follow advice. There are two potential reasons for this, so this is not enough in itself to repudiate Hypothesis 2: On the one hand, it is difficult to completely disentangle the effects of education and financial literacy, on the other hand the measure for the dependent variable is not optimally suited, again. Finally, we study whether the signals have different effects for individuals with higher and lower financial literacy. Using a between-models χ^2 test, we find that the effects of university education are significantly different at the 5% level in each of the data-sets.

This is the pattern predicted by Hypothesis 5. However, the effect of gender does not differ between the models. Among our controls, we find a significant positive effect of having previously consulted an advisor for the whole sample, which again points in the direction of relational effects. Further, individuals with higher age according to their own reporting are less likely to follow financial advice.

To summarize the results of the general questions regarding financial advice: We find robust support for Hypotheses 3 and 4, as well as some support for Hypothesis 5. “Smarter” individuals are more likely to consult an advisor, but, controlling for the signal, are significantly less likely to follow it. We do not find a significant direct effect of the signals of financial literacy, gender and education, on the propensity to follow advice. As predicted by Hypothesis 5, the effect of the signals on the propensity to follow is significantly stronger for smarter individuals than for those less versed in financial questions.

Table 2: Determinants of Following Financial Advice

This table reports the effect of financial literacy and various covariates on following the advice after consulting a financial advisor. We estimate ordinary least squares models. The dependent variable measures how strongly households follow the given advice on a scale from 0 to 10. Coefficient (Coef.) and standard errors (Std. Err.) are calculated using 5 imputed data sets and combined according to Rubin's Rule (Rubin (1987, 1996)). Financial literacy is measured by counting the number of correct answers to the financial literacy task in 2009 (it can take values 0 to 4). correctly answered. (d) indicates the change of a dummy variable from 0 to 1. Specification I contains all households conditional on consulting a financial advisor. In Specification II to V those responding the middle of the scale (5) are excluded. Specification III corrects for selection into consulting an advisor. Specification IV and V the sample is split into those with 4 and those with less than 4 correct answers on the financial literacy task.

	I			II			III			IV			V		
	Coef.	Std. Err.		Coef.	Std. Err.		Coef.	Std. Err.		Coef.	Std. Err.		Coef.	Std. Err.	
Financial Literacy 2009	-0.119*	0.067		-0.146*	0.084		-0.116*	0.069							
Male (d)	-0.016	0.149		-0.087	0.186		-0.014	0.149		-0.265	0.238		0.176	0.308	
University degree (d)	-0.105	0.186		-0.232	0.230		-0.108	0.188		-0.618**	0.307		0.305	0.360	
Income (log)	-0.032	0.141		0.032	0.166		-0.026	0.151		0.067	0.198		-0.270	0.322	
Living in East Germany (d)	-0.017	0.192		0.091	0.251		-0.016	0.192		-0.054	0.315		0.423	0.416	
Consulted an Advisor in 2008 (d)	0.267*	0.160		0.256	0.207		0.308	0.348		0.101	0.266		0.418	0.325	
Age	-0.059*	0.034		-0.060	0.041		-0.060*	0.034		-0.066	0.051		-0.029	0.069	
Age squ.	0.000	0.000		0.001	0.000		0.000	0.000		0.001	0.000		0.000	0.001	
Constant	8.246***	1.287		8.246***	1.523		8.148***	1.542		7.800***	1.925		9.094***	2.719	
Rho							0.026	0.218							
Sigma							1.948	0.058							
Lambda							0.053	0.425							
N	752			566			566			357			209		
R2	0.016			0.019						0.025			0.041		

Source: Authors' Calculation based on SAVE 2009 and 2007; * significant at 10%; ** significant at 5%; *** significant at 1%.

5 Financial Advice and Private Pension Choice

After studying the effects of customer expertise on the behavior of seeking and following financial advice in general, we now turn to a specific application for which we have unique data. We outlined in the introduction why the search for and choice of subsidized private pensions in Germany is a fascinating application of our analytical framework. To provide a brief outline of the institutional details: The fundamental idea of the so-called Riester Pensions—named after the former labor minister Walter Riester—is that eligible individuals contribute 4% of their monthly income to a private pension contract and receive a lump-sum subsidy of currently 154 Euros per year in addition to the gains of the underlying pension plan. Additionally, families with children obtain 300 Euros for each kid (185 Euros, if the child was born before 2008). Thus, Riester subsidies are particularly generous for individuals with lower income and families with children. Every person potentially affected by the future reductions in public pensions due to recent pension reforms is eligible for subsidies, which covers about 40 million individuals according to estimates.²⁹ Up to date, around 13 million contracts have been signed. Coppola and Reil-Held (2009) provide an overview of the dynamic of the adoption of Riester pensions by German households over time. In the 2008 wave of our sample, 37.0% of households own at least one so called Riester private pension insurance contract, a further 9.2% report that they are planning to sign such a contract.

There is a lively current discussion about the alleged lack of transparency in the market—both regarding the multitude of offers on the macro-level³⁰ and the complexity of the cost structure of individual contracts.³¹ This complexity leads to interesting search patterns of individuals in the SAVE survey. Forty-four percent of consumers who own a Riester contract report that they acquired information regarding only one provider, 15.6% even state that they obtained no information concerning providers prior to signing their contract. In total, therefore almost 60% of consumers did not compare providers

²⁹Around 87% of individuals in our sample are eligible for the state subsidies that make Riester pensions attractive investments.

³⁰In 2008 around 4,300 different Riester products were registered as certified products by the *Bundesanstalt für Finanzdienstleistungsaufsicht*—the Federal Financial Supervisory Authority—which is responsible for the regulation. Of those contracts around 4,000 were at the time available to customers. This number is inflated as identical offers may go by different names, which contributes to the opacity of the market.

³¹For a comprehensive overview, we refer to the book-length study by Feigl, Jaroszek, Leinert, Tiffe, and Westerheide (2010).

before signing a pension contract.³²

Table 3: Riester Pensions—Search for Information

This table displays the search for information of households who own Riester pensions at the end of 2007. Panel A contains the number of providers contacted by individuals who own a contract, Panel C shows the number of written offers obtained by those households, N=406.

Panel A: <i>Comparison of Providers</i>		
	Freq.	Percent
No info	63	15.6
1 provider	179	44.1
2 or 3	128	31.6
More than 3	36	8.8
Total	406	100
Panel B: <i>Written Offers</i>		
	Freq.	Percent
No written offer	182	44.9
1 offer	117	28.7
2 or 3	91	22.3
More than 3	16	4.1
Total	406	100

Source: SAVE 2008, data is weighted.

Comparing individual offers in this market is more difficult than one would expect. Due to the pension character of products and different levels of subsidies, contracts are individualized to a certain degree and therefore depend on starting age, marital status, number of children and current income, to name the most important factors. If a consumer wishes to compare contracts, she therefore has to provide these characteristics in order to obtain a spelled-out personalized offer. This is the background of the second question in our survey about how many written offers individuals compared before signing. Among owners of Riester pensions, 44.9% of individuals signed the contract without studying a written offer, a further 28.7% only obtained and studied a single offer in writing. Therefore the share of individuals who did not compare written offers is almost 74%. With about three-quarters of consumers choosing the first option they encounter, the origin of this offer, i.e. their source of information and financial advice, clearly plays a crucial role in this important long-term decision.

In the remainder of this section, we proceed as follows: First we determine how the number of providers an individual approached is related to her financial literacy. In the next subsection, we then look at the determinants for the choice of whether to approach (or be approached by) a dependent or an independent financial advisor in

³²The pattern does not change when including households who only plan to sign a Riester contract and have not done so yet.

the context of private pensions. We also examine how many written offers individuals obtain, given that they approached a financial advisor—we interpret this as a measure of the quality of advice these households are offered. In the last subsection, we consider how the customer’s expertise affects her decision to follow the advice using an objective measure, as opposed to the subjective measure in the general section above. We are able to analyze whether she has signed the contract with an unfamiliar or familiar contract partner given her source of advice. Note that the population in our analysis is composed of all individuals who have either purchased a private pension insurance or report planning to do so in the near future. Prior to this, there is a selection step: some individuals consider Riester pensions while others do not. Bucher-Koenen (2010) analyzes this decision in detail. For the remainder of this article, we report regression results that disregard this selection step. For each of the calculations, we have also carried out a Heckman selection model and confirmed that the results are qualitatively unchanged. For the selection equation, following the results in Bucher-Koenen (2010) we utilize the fact whether individuals have children. The rationale is that Riester subsidies are particularly generous for families with children and thus predict ownership of Riester contracts but do not significantly influence the search/advice process.³³

5.1 Financial Literacy and Search Efforts by Consumers

The most basic question we ask in this context is how individuals’ financial expertise affects the number of providers that they approach. We already showed in the introduction to this section that around 60% of households who own a Riester pension approached at most one provider before signing their contract. Here we compare the number of providers approached by individuals’ level of financial literacy.³⁴ Individuals with low levels of financial literacy are those unable to answer 3 basic financial literacy questions; individuals with high financial literacy were able to give three correct answers. Among those with low financial literacy more than 70% obtained information from one provider or less. Less than 30% approached 2 providers or more. In contrast to this, among those

³³Results are provided by the authors upon request.

³⁴For the analysis in this section we use the financial literacy measure from 2007. The reason is that we only have the advanced measure in the 2009 survey and we would lose observations when merging the 2009 data to the 2008 sample. This is critical as our working sample only consists of 406 households. Additionally, as discussed above by using the 2007 measure we address endogeneity concerns. Sensitivity checks show that our analyses are robust to using the advanced financial literacy measure from the 2009 survey, despite the smaller sample.

with higher levels of financial literacy around 46% compared several providers and only 54% approached one provider or less. This is a striking result in itself: Even among those considered financially literate more than half did not compare providers prior to signing a private pension contract to which they contribute 4% of their monthly earnings.

We conduct multivariate analyses to better understand the influence of financial literacy on comparing providers. As our measure of the number of providers that consumers compared is coded “none, one, two to three, more than three”, we run an ordered probit model ³⁵ of the following form:

$$y_{jt} = \alpha_0 + \alpha_1 X_{jt-1} + \alpha_2 Z_{jt} + \epsilon_{jt} \quad (5)$$

Again, X is the measure of financial literacy and Z resembles the controls. According to Hypothesis 1, we expect α_1 to be positive: Higher financial literacy should lead to more alternative providers being compared.

The results of the descriptive analysis above are supported by the regressions. Financial literacy has a significant positive impact on the number of offers that consumers compare (see Table 4). We also limit the sample to individuals who purchased their insurance contract post 2007 (specification II) to further rule out endogeneity, which in turn reduces sample size substantially, and the effect remains significant. In the context of a search model, it truly appears that higher expertise lowers search costs. Note that we are able to control for opportunity costs of time: In the limited sample, income has a negative effect on the number of providers approached by consumers. Finally we find that men report to approach significantly more different providers than women, even controlling for the level of financial literacy; the same holds for university education in the overall sample.³⁶

³⁵We get identical results when using a probit model for the probability of approaching more than one provider.

³⁶In these regressions we include only households which own Riester pensions. Our results persist when we model the selection step.

Table 4: Determinants of Search for Information

This table displays the results of an ordered probit regression of financial literacy and a variety of covariates on the number of providers households contacted before signing a contract. Specification I contains all households who owned a contract in 2008 (N=393). Specification II uses only a reduced sample of households who did not report ownership of a Riester contract before 2007 (N=105). Coefficients and robust standard errors are calculated using 5 imputed data sets and combined according to Rubin's Rule (Rubin (1987, 1996)). Financial literacy is measured by a dummy equal to one if all questions were correctly answered in 2007. (d) indicates the change of a dummy variable from 0 to 1. Ref. indicates the reference category if various dummies are used.

	I		II	
	Coeff.	Std. Err.	Coeff.	Std. Err.
Financial Literacy (d)	0.28**	0.127	0.476*	0.246
Living in East Germany (d)	-0.058	0.127	-0.065	0.249
Male (d)	0.429***	0.12	0.551**	0.231
Age	0.027	0.065	-0.12	0.117
Age squ.	-0.000	0.001	0.001	0.001
Income (log)	-0.115	0.123	-0.444*	0.24
University degree (d)	0.349**	0.157	0.353	0.338
Observations	393		105	
Pseudo R2	0.036		0.067	

Source: SAVE 2007 and 2008, own calculation. * significant at 10%; ** significant at 5%; *** significant at 1%.

5.2 Sources of Financial Advice

5.2.1 Consulting Professional Financial Advisors

In this section we consider which customers owning or searching for³⁷ a Riester pension contract choose to solicit dependent and independent advice, respectively. In contrast to section 4.1, we are now able to more closely distinguish the different channels of advice. Table 5 displays which sources of information consumers utilize in our sample: About 28% of the households report that they conducted own research before signing a Riester contract. A subset of 16.6% talked to an advisor in addition to searching by themselves, which leaves 11.6% who only searched for information on their own. A substantially larger share of households has only consulted advisors (42.5%), while 29.4% report not to have obtained any information.

Our third hypothesis states that individuals with higher financial literacy should be more likely to solicit financial advice compared to the group with low literacy: The descriptive statistics bear this out. Among those with high levels of financial literacy 64.4% consulted an advisor—for 43.1% the advisor was the only source of information,

³⁷Note that in the previous section, by contrast we only studied individuals who actually have purchased a contract, to highlight the fact that even among those who are already locked in to a pension insurance plan, many did not compare offers prior to signing.

Table 5: Riester Pensions—Source of Information

This table displays the sources of information households used when searching for a Riester contract. Information is for households who own a contract in 2008 or plan to buy one in the near future, N=500.

	Freq.	Percent
No own search and no advisor	147	29.37
Only own search	58	11.55
Only advice	212	42.47
Advice and own search	83	16.62
Total	500	100

Source: SAVE 2008, data is weighted.

21.3% consulted advisors in addition to on research—among those with lower levels of financial literacy 50.0% of the respondents approached financial advisors—only 8.7% of which consulted advisors in addition to conducting their own research.

To be able to control for the influence of other factors, we run the following familiar probit regressions:

$$y_{jt} = \alpha_0 + \alpha_1 X_{jt,(t-2)} + \alpha_2 Z_{jt} + \epsilon_{jt} \quad (6)$$

The complete regression results can be found in Table 6. Again, in specification II we reduced the sample to individuals who actually purchased insurance during the year in question. Straightforwardly, the effect of financial literacy on the propensity to consult an advisor is significant and positive. More financially literate individuals are between 10% and 17% more likely to consult an advisor concerning their private pension insurance. For the complete sample, we find a significant positive effect for men, in addition. This may simply reflect our previous finding that men exert more search effort in general, or men may additionally anticipate that they may receive better advice later on. Further, there is a positive, though decreasing, effect of age. Overall, we find further support for our third Hypothesis, parallel to Section 4 – smarter individuals are more likely to solicit financial advice.

5.2.2 Dependent vs. Independent Advice

In addition to this, our data allow us to differentiate between dependent—those working for a bank or insurance company—and independent advisors. Overall about 48% of respondents consulted with dependent advisors and about 20% approached independent

Table 6: Determinants of Consulting a Financial Advisor

This table displays the marginal effects and standard errors after estimating probit models. The dependent variable is a dummy if a an advisor was consulted. Marginal effects and standard errors are calculated using 5 imputed data sets and combined according to Rubin’s Rule (Rubin (1987, 1996)). Financial literacy is measured by a dummy equal to one if all questions were correctly answered in 2007. (d) indicates the change of a dummy variable from 0 to 1. Ref. indicates the reference category if various dummies are used.

	I.		II.	
	Marg.Eff.	Std. Err.	Marg.Eff.	Std. Err.
Financial Literacy (d)	0.099**	0.048	0.174**	0.076
Living in East Germany (d)	0.019	0.054	0.080	0.090
Male (d)	0.092**	0.047	0.000	0.080
Age	0.052**	0.022	0.045	0.034
Age squ.	-0.001**	0.000	-0.001	0.000
Income (log)	0.052	0.043	0.076	0.060
University degree (d)	-0.047	0.065	-0.081	0.115
N	478		183	
Pseudo R2	0.035		0.046	

Source: SAVE 2007 and 2008, own calculation. * significant at 10%; ** significant at 5%; *** significant at 1%.

advisors. There is some overlap: 8.7% report to have talked to both independent and dependent advisors when preparing to purchase a contract. Interestingly, there is hardly any difference in the probability to approach dependent advisors between those with high and low financial literacy: About 45.5% of the illiterate and 48.7% of literate respondents talk to financial advisors of banks or insurance companies. However, there is a large difference in the likelihood to consult with an independent advisor: Only about 12.6% of illiterate households seek independent advice, whereas the fraction is almost twice as high for respondents with higher levels of financial literacy (24.7%).

Our model predicts that smarter consumers are more likely to approach an advisor for two reasons: They are more likely to understand the advice received and they anticipate to get better advice. We briefly discuss that for an advisor to really be willing to provide a better service, his incentive structure must be relatively “flat” – he must obtain a similar bonus for any product that he successfully sells. The incentive structures of dependent financial advisors, employees of banks or insurance companies, and independent advisors in reality differ substantially: While the former have “own” products to sell and associated with this relatively steep incentive functions (), the latter, as discussions with practitioners revealed, have relatively flat bonus-structures with strictly enforced upper limits.³⁸

³⁸In their model which includes prospecting for clients, Inderst and Ottaviani (2009) demonstrate

Our setup allows us to try to better understand the two reasons for why smarter consumers are more likely to seek advice: If consumers are more likely to consult an advisor only because they expect to understand him better, then we should observe similar results regarding dependent and independent advisors. If on the other hand the expectations regarding the quality play an additional role in the decision to consult an advisor, then the effect of financial literacy on obtaining independent advice should be relatively stronger.

To test this, we estimate a simultaneous equation probit model for the two decisions of the following form:

$$y_{jt} = \alpha_0 + \alpha_1 X_{jt-1} + \alpha_2 Z_{jt} + \epsilon_{jt} \quad (7)$$

Here, y is a vector that captures whether individual j solicited dependent and independent advice, x is our measure of financial literacy and z is a set of controls. We provide the detailed regression results in table 7. Our results remain strongly in line with our predictions. Individuals with higher financial literacy are significantly more likely to consult an independent financial advisor, controlling for income, which also has a significant positive effect.³⁹ For the choice of dependent advisor, the effect is not only smaller, it is actually insignificant. Regarding the difference in the influence of financial literacy on dependent and independent advice, χ^2 tests show that the effects on the two choices are significantly larger for independent than for dependent advisors at the 1% level. We find that women are significantly less likely to approach (or be approached) by a dependent financial advisor, while this is (barely) not significant for independent advisors at the 10% level.

To summarize the findings of this section: Our results are in line with Hypothesis 3: individuals with higher financial literacy are more likely to solicit the services of financial advisors. The observation that this effect is significantly stronger for independent than for dependent advice indicates that smarter consumers may expect to obtain better advice — or alternatively, that they are better able to pick an advisor whose incentives

that higher powered contracts may additionally induce agents to approach more clients and “oversell” their product, in which case an individual who intended only to open a bank account may find herself with a pension insurance in the evening.

³⁹The financial literacy effect is also robust to limiting the sample to individuals who bought their insurance post 2007.

Table 7: Dependent and Independent Financial Advice

This table displays the marginal effects and standard errors after estimating a simultaneous probit equation model (biprobit). The two dependent variables are one dummy if a dependent advisor was consulted and a second dummy if an independent advisor was consulted. Marginal effects and standard errors are calculated using 5 imputed data sets and combined according to Rubin’s Rule (Rubin (1987, 1996)). Financial literacy is measured by a dummy equal to one if all questions were correctly answered in 2007. (d) indicates the change of a dummy variable from 0 to 1. Ref. indicates the reference category if various dummies are used.

	I: Dependent advisor		II: Independent advisor	
	Marg.Eff.	Std. Err.	Marg.Eff.	Std. Err.
Financial Literacy (d)	-0.009	0.053	0.106***	0.039
Living in East Germany (d)	0.010	0.056	-0.009	0.041
Male (d)	0.096*	0.049	0.059	0.037
Age	0.054**	0.024	-0.005	0.019
Age squ.	-0.001**	0.000	0.000	0.000
Income (log)	0.027	0.045	0.060*	0.037
University degree (d)	0.009	0.069	-0.044	0.045
N	478		478	

Source: SAVE 2007 and 2008, own calculation. * significant at 10%; ** significant at 5%; *** significant at 1%.

are better aligned with theirs.

5.3 Financial Literacy and the Quality of Advice

While in Section 4, we attempted to indirectly disentangle the quality of advice from the data, we observe a direct, if imperfect, measure for the quality of advice in the pension context: the number of written offers that households report to have obtained. We are aware of the limitations of this measure, e.g., more choices are not necessarily experienced to be beneficial, or this may even signal attempts at selling sub-par products by employing framing such as compromise effects. We still feel that much can be learned from analyzing the decision making process of a representative sample of households in their choice of financial products in this fashion. We address the issues raised above, at least partially, by focussing only on the binary outcome of whether a customer was presented with more than one written offer by the advisor or whether he was not provided with any alternatives for comparison. We argue that, while still noisy, the latter in most cases constitutes worse advice than the former.

Table 8 displays some descriptive results that shed first light on these relationships: Given on the sources of advice chosen by individuals and their financial literacy, which share of customers compared more than one written offer. We would like to draw attention especially to the second row: Given that someone *only* relied on an advisor, she

was almost three times as likely to be offered more than one alternative if she was financially literate (22.7%) than if she was not (8.9%). Apart from the upper right field of the matrix, which covers only those 16 somewhat exceptional individuals who report to have only searched themselves and have low financial literacy, those most likely to have obtained multiple offers are those who searched on their own in addition to receiving advice.

Table 8: Number of Written Offers and Financial Literacy

This table displays the probability to obtain more than one written offer when searching for information about Riester contracts. Information is for households who own a contract in 2008 or plan to buy one in the near future, N=500. In column II. and III. the sample is split into those who are (un)able to give three correct responses to the financial literacy task.

	I.All	II.High Lit	III.Low Lit
only own search	47.3	41.4	62.2
only advice	17.6	22.7	8.9
advice and own search	58.5	59.2	55.2
N	500	330	170

Source: SAVE 2008, data is weighted.

In our regression analysis, we are now able to directly address the question of the quality of advice given the qualification of consumers. We estimate probit models of the following form:

$$p_{jt}(\#o > 1 | advice) = \alpha_0 + \alpha_1 X_{jt-1} + \alpha_2 S_{jt} + \alpha_3 Z_{jt} + \epsilon_{jt} \quad (8)$$

The approach is very simple: Given that someone has solicited advice, we analyze the probability that she has obtained more than one written offer and relate it to her level of financial literacy X , the signals for financial literacy S as well as a set of controls Z . Our model predicts a positive sign for α_2 — higher signals of financial literacy should lead to better advice being proffered. A positive and significant sign for α_1 , the effect of financial literacy itself, might imply that the signals do not capture all that the advisor observes or that the advisee takes an active role in the process, e.g. by asking more questions. In model I, we look at the sample of *all* individuals who approached an advisor, in model II, we look only at those who report not to have sought information on their own in addition to consulting an advisor. Column III represents a different, though related regression. Returning to the question of how likely individuals are to follow advice, here we look at the probability of an individual seeking out information

on her own, given that she has also solicited financial advice. The rational (parallel to our model) is that individuals who are unsatisfied with the advice received should be more likely to search for information on their own, in addition. The detailed results may be found in Table 9.

Table 9: Number of Written Offers and Financial Literacy

This table displays the marginal effects and standard errors after estimating probit models. In specification I and II the dependent variable is a dummy taking value one if more than one written offer was obtained. Specification I contains all households who approached a professional advisor (N=287). Specification II limits the observations to those who consulted advisors but did not conduct own search (N=207). In specification III the dependent variable is a dummy which is equal to one when households conducted own search given that they also approached an advisor (N=287). Marginal effects and standard errors are calculated using 5 imputed data sets and combined according to Rubin's Rule (Rubin (1987, 1996)). Financial literacy is measured by a dummy equal to one if all questions were correctly answered in 2007. (d) indicates the change of a dummy variable from 0 to 1. Ref. indicates the reference category if various dummies are used.

	I. Comparing offers		II. Comparing Offers		III. Own Search	
	Marg.Eff.	Std. Err.	Marg.Eff.	Std. Err.	Marg.Eff.	Std. Err.
Financial Literacy (d)	0.116*	0.061	0.117*	0.061	0.141**	0.065
Living in East Germany (d)	-0.039	0.066	-0.044	0.066	0.044	0.063
Male (d)	0.132**	0.056	0.045	0.057	0.116**	0.055
Age	-0.023	0.030	-0.006	0.029	-0.023	0.030
Age squ.	0.000	0.000	0.000	0.000	0.000	0.000
Income (log)	0.054	0.057	0.000	0.053	0.054	0.056
University degree (d)	0.084	0.072	-0.001	0.081	0.054	0.068
N	287		207		287	
Pseudo R2	0.060		0.033		0.055	

Source: SAVE 2007 and 2008, own calculation. * significant at 10%; ** significant at 5%; *** significant at 1%.

The first, and central finding is that individuals with a higher level of financial literacy are about 11% more likely to obtain multiple offers, both if one allows them to search on their own and if one looks at individuals who completely relied on financial advice for their decision. They are offered more alternatives by the advisor, potentially because they demand it, which in our eyes clearly resembles receiving better advice. For the sample including individuals who also search on their own, males obtain more written offers, though dropping those with own search in II turns this insignificant. The effect of university education is parallel, though it already starts out insignificant.

The results of the alternative model III show who is more likely to search on their own in addition to receiving financial advice. It can be interpreted as a further test of hypothesis 4. We find that smarter individuals are significantly and substantially, about 14%, more likely to obtain additional information on their own given that they consulted

an advisor, which strongly supports our hypothesis. It is also worthy to note that despite controlling for ability, income, age and education, men are significantly more likely to additionally search on their own than women. The pattern that emerges in this respect deserves more close scrutiny in future studies.

5.4 Expertise, Advice and the Choice of Contract Partners

The last step of our analysis is to show that the choice of advisor related to consumers' levels of financial literacy is associated with other economically relevant decisions that consumers make. In particular, we will show that it significantly affects the contracting partner that individuals contract with. Regarding this contract choice of consumers who own a Riester pension, we observe whether they contracted with a company that is also their provider of banking or insurance services. In this case, we refer to the firm as "familiar contracting partner". If the consumer has no such interactions with her pension provider, we refer to the situation as "unfamiliar contracting partner". As the final step of our analysis, we now turn to the question which customers sign a contract with a firm that is likely also to employ their (dependent) advisor as opposed to with an unfamiliar firm.

We first estimate a basic model of the following form:

$$y_{jt} = \alpha_0 + \alpha_1 X_{jt-1} + \alpha_2 Z_{jt} + \epsilon_{jt} \quad (9)$$

y captures whether the consumer has purchased a contract from a familiar firm and X is our measure of financial literacy, while Z are the familiar controls. We would expect the overall effect of financial literacy to be negative. Next, we add the channels of this effect that we have identified above. In our first alternative model II, we look at the effect of comparing more than one offer. In the second alternative, III, we control for the source of information with dummies for whether the individual has respectively consulted a dependent or independent advisor, or searched on her own. In the last specification, IV, we include both the sources of information and the fact whether or not somebody compares multiple offers. For the detailed specifications and results, we refer to Table 10.

For our basic model, as expected, we find a significantly negative effect of financial

literacy on the probability that the consumer purchases her contract with a known firm. The only other controls we find that show a significant sign, which is robust over all specifications, is the measures for age (positive) and age squared (negative). This may be related to different levels of experience and more possibilities to interact with players apart from the relational savings and insurance company at different stages in life. While the overall effect of financial literacy is negative, we also care about the channel by which this comes to be. Controlling for the sources of information, the coefficient for financial literacy is slightly smaller and still significant at the 5%-level. What we do find, though, is that individuals who consult an independent advisor are significantly less likely to sign a contract with a familiar firm. In itself, this is not surprising. It points in the direction that part of the overall sign of financial literacy is due to the fact that more literate consumers are more likely to consult an independent advisor as discovered above. When we control for the customer stating that she compared multiple offers, this has a significantly negative effect on the probability that the consumer stays with a familiar company. For this regression, the term for financial literacy also remains significant. Combining all controls in the final specification, we find significantly negative effects for consulting an independent and significantly positive effects for consulting a dependent advisor. The financial literacy remains significantly negative.

To summarize these results: The overall effect of higher financial literacy on the probability that an owner of a Riester pension contract signed with a familiar company is significantly negative. These consumers are more likely to collect more alternatives to compare than their peers, are more likely to solicit independent and as likely to solicit dependent advice, as shown above. Each of these factors contributes to their choosing a contract partner beyond their “default” alternatives, their relational bank or insurance company.

Table 10: Determinants Contract Partner

This table reports the effect of financial literacy and various covariates on signing a Riester contract with a familiar provider. The dependent variable in all specifications is a dummy that indicates if a household owned a Riester contract provided by a bank or insurance company where the households also owned other products. We report marginal effects (Marg. Eff.) after estimating a probit evaluated at the mean of all variables and the respective standard errors (Std. Err.). Marginal effects and standard errors are calculated using 5 imputed data sets and combined according to Rubin's Rule (Rubin (1987, 1996)). Financial literacy is measured by a dummy equal to one if all questions of the task were correctly answered in 2007. (d) indicates the change of a dummy variable from 0 to 1. Ref. indicates the reference category if various dummies are used, N= 478.

	I.			II.			III.			IV.		
	Marg. Eff.	Std. Err.		Marg. Eff.	Std. Err.		Marg. Eff.	Std. Err.		Marg. Eff.	Std. Err.	
Financial Literacy (d)	-0.116**	0.049		-0.105**	0.049		-0.092**	0.048		-0.089*	0.048	
Approaching more than 1 provider (d)				-0.079*	0.044					-0.066	0.057	
Dependent advice (d)							0.088**	0.043		0.100**	0.045	
Independent advice (d)							-0.137***	0.049		-0.117**	0.052	
Own search (d)							-0.045	0.045		-0.010	0.055	
Living in East Germany (d)	0.050	0.053		0.055	0.053		0.048	0.052		0.051	0.052	
Male (d)	0.010	0.043		0.021	0.044		0.011	0.043		0.015	0.043	
Age	0.046**	0.020		0.047**	0.020		0.040**	0.019		0.041**	0.019	
Age squ.	-0.001**	0.000		-0.001**	0.000		-0.001**	0.000		-0.001**	0.000	
Income (log)	-0.002	0.046		0.003	0.046		0.007	0.045		0.007	0.045	
University degree (d)	0.051	0.058		0.062	0.058		0.049	0.058		0.054	0.058	
N	478			478			478			478		
Pseudo R2	0.026			0.032			0.053			0.056		

Source: SAVE 2007 and 2008, own calculation. * significant at 10%; ** significant at 5%; *** significant at 1%.

6 Conclusion

The question that motivated our study was why more informed individuals with higher levels of financial literacy are more likely to solicit advice in general and financial advice in particular. Existing explanations focus on higher opportunity costs of people with higher incomes, such as Hackethal, Haliassos, and Jappelli (2010). Controlling for income simultaneously should eradicate this effect, but it does not: The level of financial literacy still significantly contributes to explaining whether or not an individual solicits financial advice. We suggest an alternative channel in an analytical model. Individuals with higher levels of expertise may receive (and expect to receive) better advice, which would result in ex-ante complementarities between advice and consumer information. Similarly to Inderst and Ottaviani (2009) this will especially be the case if the advisor's incentives are not stacked too greatly on behalf of one favored option; as opposed to, for example, a bank employee charged with selling his bank's products exclusively. As a result, our model predicts that individuals with higher levels of financial literacy should be more likely to solicit financial advice. On the other hand, they may be less prone to follow the advice given to them conditional on soliciting it, as they are more often aware of the fact that their outside option, own search, yields better expected outcomes.

In the empirical part of this work we are fortunate in that we are both able to observe individual's choice *whether* to consult a financial advisor, as opposed to the related work of Georgarakos and Inderst (2010), and also which kind of advisor they consult, the latter in the context of private pension contracts. We show that it is more sophisticated consumers who consult advisors more frequently in the general context, and that the more financial literate individuals report to be somewhat less likely to follow the advice they received. For the choice of private pension provider, more sophisticated consumers in their own search efforts compare more offers than the less financially literate—an indication that their search costs are truly *lower*. While they are neither more nor less likely to consult a dependent financial advisor at their bank or insurance company, they are substantially more likely to consult a third-party independent financial advisor. These observations have a clear consequence with respect to their investment choice: financially literate consumers are significantly less likely to sign the pension contract with a familiar company, their default option: Due to the non-homogeneous fee-structures of Riester pensions spelled out in detail in Feigl, Jaroszek, Leinert, Tiffe, and Westerheide

(2010) comparing multiple offers can result in substantial savings in fees: One example where higher levels of financial literacy may result in considerable payoffs.

In answering the question posed in our title: We provide a theoretical foundation and find empirical evidence that smarter consumers do receive better advice. Beyond that, they are also more likely to ask for it and are better at picking advisors who are more likely to give them advice that is in their interest. From a welfare point of view, this is a serious conundrum: those whose financial decision making capabilities are worst are actually less prone to ask for the help they need. As consultations with financial advisors can also be a source of financial knowledge and improve financial decision making, the more sophisticated consumers are caught in a virtuous circle, while those most in need watch inactively from the sidelines. Our analysis suggests two reasons for this fact: less financially literate consumers may expect not to understand the advice they are going to receive and they anticipate that the advisor will provide them with sub-par services. The latter may include being talked into purchasing products which are over-priced or not suited to the consumer's current situation. These problems have come to the attention of politicians, to some degree. Recent legal reforms require financial advisors to provide a written, checklist-like protocol of advisory sessions, which aims at increasing transparency of the process. But an example shows how the potential effectiveness of even such weak measures is further undermined: Interpreting the law literally, only the employee of the bank offering advice is required to sign the protocol.

A Mathematical Appendix

The advisor's maximization problem - sufficiency

Concavity of the advisor's expected profit function requires the following second derivative to be negative:

$$\begin{aligned} \frac{\partial^2 E[\Pi|S]}{\partial e^2} = & v''(e)(1 - E[s|e]) + E[s|e][v''(e)F(\hat{e}(e)|s)] + \\ & 2v'(e)f(\hat{e}(e)|s)\frac{\partial \hat{e}(e)}{\partial e} + v(e)\frac{\partial^2 \hat{e}(e)}{\partial e^2}[f(\hat{e}(e)|s) + \frac{\partial f(\hat{e}(e)|s)}{\partial \hat{e}}] \end{aligned} \quad (10)$$

Inspecting the individual terms, we find that $v''(e)$ is negative due to the concavity of $v(e)$, i.e. increasing costs of effort, therefore the first term and the first part of the second term are negative. The second part of the second term is negative as $v'(e)$ is negative. The sign of $\frac{\partial^2 \hat{e}(e)}{\partial e^2}$ depends on assumptions regarding the customer's utility and search costs in relationship to the distribution of offers. It appears sensible to impose that the increase in the critical type is non-increasing in the effort spent, therefore this term is non-positive. This leaves the last part of the second term. We know that the second derivative must be negative if $f(\hat{e}(e)|s) \geq |\frac{\partial f(\hat{e}(e)|s)}{\partial \hat{e}}|$.⁴⁰ This will be the case if the conditional distribution of types is relatively "smooth", or equivalently, if the signal obtained by the advisor is not too informative. To illustrate, take the case of a perfectly informative signal, such that $E[s|e] = e$. Then one of two choices must be optimal for the advisor: either $e = 0$ or making the informed consumer exactly indifferent between accepting and rejecting the offer, a generally convex problem.

⁴⁰This condition is stronger than necessary, if it is not fulfilled, the shape of the function depends on the relative magnitude of the terms.

B Summary Statistics

Table B1: Summary Statistics

This table contains summary statistics for 2,608 respondents in SAVE 2008.

Variable	Mean	Std. Dev.	Min	Max
Age	51.28	16.40	21	96
Female	0.55	0.50	0	1
Living in East Germany	0.28	0.45	0	1
Living with a partner	0.63	0.48	0	1
Householdsize	2.43	1.24	1	9
Retired	0.33	0.47	0	1
No vocational training	0.14	0.34	0	1
Vocational Training	0.70	0.46	0	1
University Degree	0.17	0.37	0	1
Lower sec. schooling	0.35	0.48	0	1
Intermediate sec. schooling	0.37	0.48	0	1
Upper sec. schooling	0.28	0.45	0	1
Income (per month in Eur.)	2,100	1,453	18	22,500
Net wealth at the end of 2007	179,503	340,635	0	7,720,000

Source: own calculation on the basis of SAVE 2008, data is weighted and imputed.

C Measures of Financial Literacy

Basic Financial Literacy (SAVE 2007)

1. *Understanding of Interest Rate (Numeracy)*

“Suppose you had €100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow: more than €102, exactly €102, less than €102?”

2. *Understanding of Inflation*

“Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, would you be able to buy more than, exactly the same as, or less than today with the money in this account?”

3. *Understanding of Risk and Diversification*

“Do you think that the following statement is true or false? Buying a single company stock usually provides a safer return than a stock mutual fund.” do not know

Advanced Financial Literacy (SAVE 2009)

1. *Understanding Average Asset Fluctuations*

“Normally, which asset displays the highest fluctuations over time: Savings accounts, bonds, stocks?” Do not know / refuse to answer

2. *Understanding of the Main Function of the Stock Market*

“Which of the following statements describes the main function of the stock market?” The stock market helps to predict stock earnings. / The stock market results in an increase in the price of stocks. / The stock market brings people who want to buy stocks together with those who want to sell stocks. / None of the above. / Do not know / refuse to answer

3. *Understanding of Risk and Diversification*

“Do you think that the following statement is true or false? Buying a single company stock usually provides a safer return than a stock mutual fund.” do not know

4. *Understanding of Mutual Funds*

“Which of the following statements is correct?” Once one invests in a mutual fund, one cannot withdraw the money in the first year. / Mutual funds can invest in several assets, for example invest in both stocks and bonds. / Mutual funds pay a guaranteed rate of return which depends on their past performance. / None of the above. / Do not know / refuse to answer

D Questions relating to private pension choice

1. *Comparison of providers*

“In case that you or your partner have signed or are planning to sign a Riester contract in the near future: How many providers did you consult?” None / One provider / Two to three providers / More than three / Question does not apply; I/ we have neither procured nor plan to procure a Riester contract in the near future”

2. *Comparison of offers*

“How many offers in written form did you or your partner obtain before signing a contract over the course of your planning process?” None / One offer in written form / Two to three offers in written form / More than three offers in written form

3. *Sources of information*

“How/ from whom did you obtain information on the different offers? Several answers are possible” Own research / Relatives / Friends / Colleagues / Consultants employed by a bank and/ or an insurance company / Independent financial or investment advisors

4. *Chosen provider*

“What provider did you or your partner procure/ are planning on procuring the Riester contract from? Several answers are possible” My/ our main bank / Another bank / An insurance company that I/ we have already concluded another insurance contract with (e.g. liability or household insurance) / An insurance company that I/ we do not have any other insurance contracts with / Another provider of Riester products, please specify:

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